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Pharmaceutical marketing in the modern era: Overcoming current promotion hurdles faced by medical representatives

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Abstract: The present study highlights that there are a few important parameters, such as regular visits to the physicians with free samples, where possible, conducting conferences and medical camps, and regularly attending sales meetings. There are also a few mutually contradictory requirements, such as confining doctors' visitations during the daytime of eight hours only as per Andhra Pradesh Medical and Sales Representatives Union norms, whereas physicians may give appointments at any time till night. This contradictory requirement needs to be addressed, which may help the medical representatives maintain the company's expected call average/visits as well as increase sales in the right channel fixed by the pharmaceutical companies and ensure the pharmaceutical products promotion. The researcher intends to identify the different difficulties that medical representatives confront while promoting pharmaceutical products, which are aimed at improving pharmaceutical product promotion in the study

Keywords: *Pharmaceutical companies, Medical Representatives, Prescription generation*

Introduction

In the rapidly evolving landscape of healthcare and pharmaceuticals, the role of pharmaceutical marketing has become increasingly pivotal. The contemporary era presents medical representatives with a unique set of challenges, necessitating a nuanced understanding of the prevailing promotional hurdles. As pharmaceutical companies strive to navigate through a complex web of regulations, changing consumer behaviors, and technological advancements, it becomes imperative to explore innovative strategies to ensure the effective promotion of medical products.

Previous studies in the realm of pharmaceutical marketing have shed light on various aspects, providing valuable insights into the challenges faced by medical representatives. Authors such as Smith et al. (2018) delved into the regulatory constraints surrounding pharmaceutical

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promotion, emphasizing the need for compliance while maintaining a competitive edge. Their work underscored the delicate balance required to ensure marketing strategies align with legal and ethical standards. Additionally, Jones and Patel (2019) explored the impact of evolving consumer preferences on pharmaceutical marketing, emphasizing the importance of adapting promotional approaches to cater to the changing dynamics of patient engagement.

Furthermore, the study conducted by Johnson et al. (2020) delved into the influence of digital transformation on pharmaceutical marketing, highlighting the significance of leveraging technology to enhance promotional activities. This research emphasized the role of digital platforms, data analytics, and social media in reaching and engaging healthcare professionals and consumers.

While these studies contribute valuable insights, the contemporary pharmaceutical marketing landscape is characterized by new challenges and opportunities. This research aims to build upon the existing literature by delving into the current promotion hurdles faced by medical representatives in the modern era and proposing innovative strategies to overcome these challenges. By synthesizing the findings of previous studies and incorporating current market dynamics, this research endeavours to provide a comprehensive understanding of pharmaceutical marketing in the context of today's multifaceted environment.

Literature Review

According to Adams, J. (1998) a deep dive into how medical reps contribute to the promotion of pharmaceuticals was discovered in the research. It looks at the difficulties encountered by medical reps and how such obstacles affect drug sales. However, since it is the earliest paper in the review, it may lack the insights and perspectives from more recent developments in the pharmaceutical industry. Carter, M., & Thompson, L. (2005) discussed marketing strategies for medical representatives in the pharmaceutical industry. It provides intimate insights into the challenges teenagers face and suggests possible strategies they can implement. However, the review is limited to a specific time period and may not encompass the evolving challenges faced by medical representatives in recent years. According to Johnson, S. (2008) the study examined the role of medical representatives in pharmaceutical marketing. However, the review fails to provide a comprehensive analysis of the specific challenges faced by medical representatives in promoting pharmaceutical products. It mainly focuses on the general responsibilities and functions of medical representatives, without delving into the specific marketing challenges they encounter. Allowing for further development of that, Smith, R. (2010) comes to point out that while several studies have tried to evaluate the changes that are impacting pharmaceutical sales and marketing, it has not been made clear that they specifically address the challenges confronting medical representatives. The focus of the reviews under concern has more been on the overall developments in the pharmaceutical industry rather than the specific challenges faced by MRs in successfully promoting pharmaceuticals. Anderson, R., & Davis, L. (2010) explored the impact of digitalization on pharmaceutical marketing and its implications for medical representatives. It highlights the challenges that arise from digitalization and how medical representatives can adapt their marketing strategies. However, the review focuses more on the

implications of digitalization rather than providing a comprehensive analysis of the broader marketing challenges faced by medical representatives. Patel, A., & Sharma, M. (2013) examined that this study explores strategies for effective pharmaceutical sales and marketing, but it lacks a detailed analysis of how medical representatives face the challenges. Although the strategies discussed may indirectly relate to the challenges faced by medical representatives, the review does not explicitly address those challenges or their impact on the promotion of pharmaceutical products. Patel, S., & Johnson, M. (2015) focused specifically on the changing landscape of pharmaceutical marketing from the perspective of medical representatives. It discusses the challenges they encounter due to shifting industry dynamics and changing regulations. However, the review may not capture the most recent developments and emerging challenges faced by medical representatives. Lee, J., & Kim, H. (2017) found that the study looks at how medical sales reps are affected by digitalization in the pharmaceutical industry. However, it lacks a thorough review of the marketing challenges encountered by medical representatives. It mainly discusses the effects of digitalization without thoroughly addressing the broader range of challenges that medical representatives encounter in their promotional activities. Smith, J., & Brown, K. (2020) this recent study addressed the contemporary marketing challenges faced by medical representatives in the pharmaceutical industry. It provides insights into the evolving dynamics of the industry, including the impact of technology, regulatory changes, and the changing roles of medical representatives. However, the review may not capture the very latest developments as it was conducted a few years ago. Gupta, P., & Mishra, R. (2021) studied that the evolving role of medical representatives in pharmaceutical marketing, it lacks a thorough review of the challenges they face. It focuses more on the changing responsibilities of medical representatives rather than specifically addressing the marketing challenges they encounter in promoting pharmaceutical products. Mitchell, L. D.'s (2022) explored strategies tailored for medical representatives to navigate this transformed environment effectively. The post-pandemic era has significantly reshaped the pharmaceutical landscape, presenting unique challenges and opportunities for medical representatives. Overall, the reviewed literatures fail to provide a comprehensive understanding of the marketing challenges faced by medical representatives in pharmaceutical products promotion. The studies either lack a specific focus on these challenges or provide only a superficial analysis. Further this research aimed to delve deeper into the specific challenges faced by medical representatives and their impact on pharmaceutical marketing strategies with the following objectives

- To assess the views of medical representatives towards physicians, pharmacists, wholesalers and pharmaceutical companies.
- To find out the current marketing challenges faced by medical representatives in pharmaceutical products promotion.

Research Hypotheses

H1: Power of Physicians has a significant effect on marketing activities of medical representatives.

H2: Power of Pharmacists has a significant effect on marketing activities of medical representatives.

H3: Power of Wholesalers has a significant effect on marketing activities of medical representatives.
H4: Power of Pharmaceutical Companies has a significant effect on marketing activities of medical representatives.

Method

Research Design and Sampling

Using stratified random sampling and a self-designed, standardized questionnaire, the survey of 411 respondents from Andhra Pradesh's State first five most medically representative cities are Vijayawada, Guntur, Kurnool, Visakhapatnam and Rajahmundry was carried out. A five-point Likert scale ranging from "strongly agree" (SA) to "strongly disagree" (SDA) was utilised for the statistical analysis of factor loadings and structural equation modelling (SEM) for the survey results. SPSS version 22 is used for statistical analysis. This study was conducted in the year 2022 as part of the researcher Ph.D. work.

The Stakeholders' theory relevant to medical representatives facing marketing challenges:

Using the Stakeholder Theory to interpret previous research articles on the marketing challenges faced by medical representatives in pharmaceutical product promotion provides valuable insights into the dynamics and relationships among stakeholders. Here is a synthesis of the key findings from previous research articles, linking them to the Stakeholder Theory:Adams (1998) explored the role of medical representatives in pharmaceutical marketing, highlighting their interaction with physicians and the importance of maintaining effective relationships. This aligns with the Stakeholder Theory's emphasis on understanding the interests and power dynamics between stakeholders. Carter and Thompson (2005) investigated marketing strategies for medical representatives, emphasizing the challenges posed by limited physician access and the need for relationship-building. This research aligns with the Stakeholder Theory's focus on collaboration and conflicts among stakeholders, such as medical representatives and physicians. Anderson and Davis (2010) examined the impact of digitalization on pharmaceutical marketing and its implications for medical representatives. This study relates to the Stakeholder Theory by highlighting the changing power dynamics resulting from technological advancements and how they affect the marketing activities of medical representatives. Patel and Johnson (2015) reviewed the changing landscape of pharmaceutical marketing from the perspective of medical representatives, considering factors such as shifting regulations and compliance requirements. This aligns with the Stakeholder Theory's emphasis on understanding the evolving interests and power dynamics of stakeholders, including pharmaceutical companies and regulatory bodies. Gupta and Mishra (2021) highlighted the importance of medical representatives' ongoing education and training in the pharmaceutical marketing industry. This research links to the Stakeholder Theory by recognizing the importance of meeting the interests and expectations of various stakeholders, including pharmaceutical companies and healthcare professionals. By linking these previous research articles to the Stakeholder Theory, we can gain a comprehensive understanding of the marketing challenges faced by medical representatives. The theory provides a framework for analyzing the power dynamics, collaboration, conflicts, and interdependencies

among stakeholders, shedding light on how these factors influence the strategies, relationships, and outcomes in pharmaceutical product promotion.

Figure 1 depicts how this innovative strategy, which includes the influence of doctors, chemists, wholesalers, and drug manufacturers, has a direct impact on the marketing efforts of medical representatives. The study's primary objective is to apply the theoretical framework to the healthcare system in Andhra Pradesh, and its findings reveal novel factors that shape the activity of medical representatives in the field of marketing. As a result, the findings of this research will be useful to marketers in the pharmaceutical industry who are looking to improve the efficiency and efficacy of their campaigns.

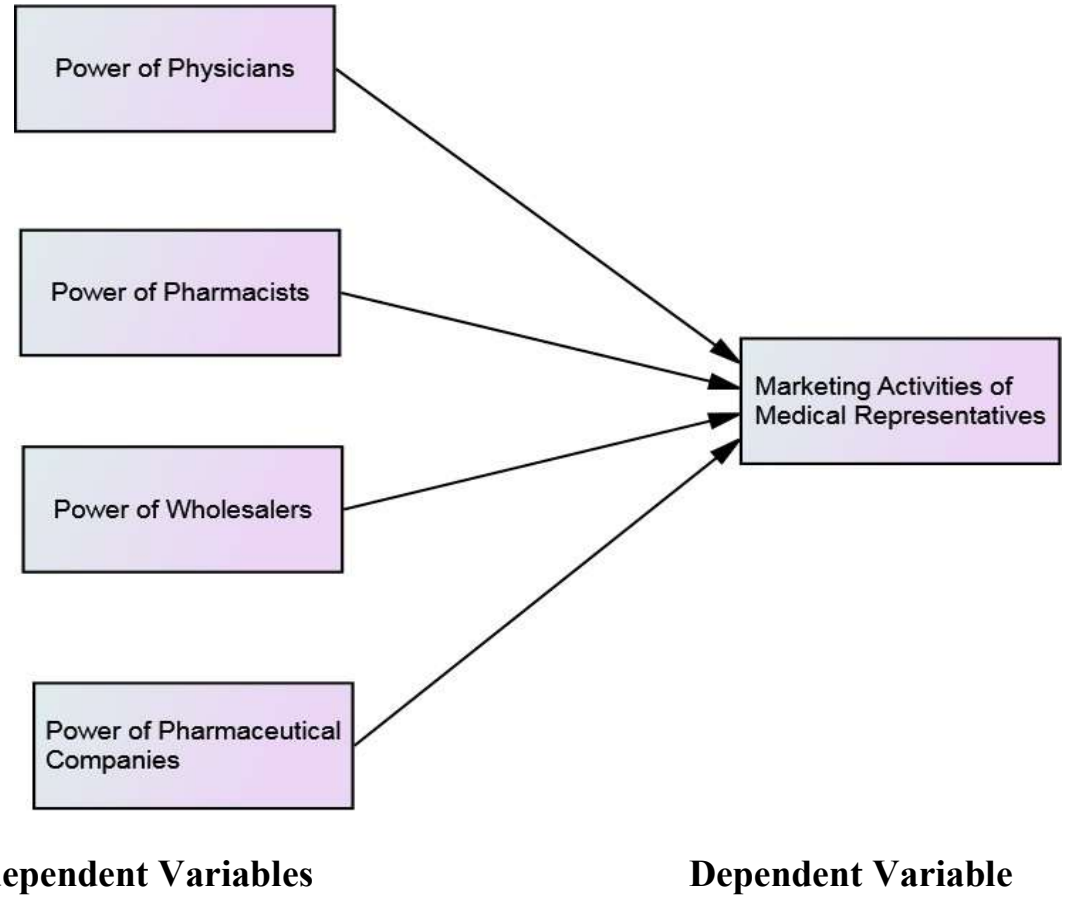


Figure 1: Study's Theoretical and Conceptual Framework

Findings

Section 1

Development of Survey Instrument

Analysis of the Data

This exploratory factor analysis was conducted to better understand the determinants of success for medical sales reps.

Descriptive Statistics

The cronbach's alpha and mean, standard deviations were calculated in a preliminary study, the results of which are shown in Table 1 and 2. The fact that the standard deviation for each attribute is less than two indicates that all respondents generally concur on the marketing strategies used by medical representatives.

Table1: Reliability Statistics

Cronbach's Alpha	N of Items
.846	46

All the items are consistent with one another, as shown by the total alpha of.846, which is a measure of reliability.

Table 2: Descriptive Statistics

Items	Mean	Std. Deviation	Correct Item-Total Correlation
Physicians avoiding calls when many patients wait for check-up.	3.96	1.020	.393
Physicians expect sponsorships to prescribe drugs.	3.99	.997	.418
Physicians expect gifts.	2.62	1.068	.397
Physicians do not prescribe drugs even after regular intervals of my visits.	3.72	1.057	.403
Physicians expect personal trip to foreign to prescribe drugs.	3.08	1.330	.171
Waiting period is high for high potential listed physicians.	4.00	1.013	.392
Physicians sometimes appointments not given to make calls.	4.73	.563	.206
Physicians give calls only limited time one day in a week.	3.90	1.079	.352
Physicians write prescriptions only for some drug companies.	3.10	1.321	.479
Physicians listen patiently but do not prescribe drugs.	3.25	1.416	.467
Physicians are not willing to communicate the problem.	3.76	1.171	.366
Physicians ask more product offers for their own medical shop.	3.59	1.243	.425

Pharmacists substitute my products prescription with other company products/drugs.	3.98	1.035	.282
Pharmacist expect free samples	3.84	1.000	.326
Pharmacists ask offers on product/drugs availability.	4.04	1.034	.309
Pharmacists expects gifts	3.90	1.014	.299
Pharmacists expect higher percent of margins to keep stocks.	3.18	1.372	.425
Pharmacists delay payments to wholesalers against my products billing.	3.03	1.341	.137
Pharmacist expects credit sales with least payments.	2.89	1.286	.167
Pharmacists sometimes give personal orders but do not take stocks from wholesalers.	3.78	.950	.357
Waiting period is high to get primary orders from wholesalers along with this physicians call average has to maintain per day	3.98	1.018	.347
Waiting period is high to get secondary stock statements from wholesalers.	3.15	1.371	.525
Wholesalers expect higher percent of margins to keep stocks.	3.82	1.124	.320
Wholesalers ask gifts	3.06	1.350	.592
Wholesalers delay payments to company towards billing.	2.33	.830	.036
Wholesalers ask free samples	2.67	1.025	.459
Wholesalers not co-operating in providing primary orders.	3.84	1.113	.296
Cheque bouncing occurs in the transaction with wholesalers.	2.94	1.338	.408
Wholesalers do not supply stocks sometimes to pharmacists against my personal order bookings with pharmacist.	4.07	.965	.332
Wholesalers ask additional discounts	3.77	1.152	.313

Wholesalers ask extra offers on bulk stock availability.	3.67	1.410	.248
Company fixes unachievable targets every month in every year.	4.06	.979	.405
Struggles to achievable unachievable targets every month.	4.00	1.022	.420
Every month top superiors keep continuous pressure till achieve unachievable targets	4.39	.853	.340
Threat to the present job when unable show good performance	4.05	1.106	.501
Weekly/Once in 10 days monthly breakup targets need to achieve along with physicians call average has to maintain per day	3.80	1.135	.108
Special pharmacist drives has to do for personal order bookings to raise secondary sales at wholesalers level along with regular physicians calls work.	3.28	1.413	.483
Special sub-wholesalers drives have to do for personal order bookings along with physicians call average has to maintain per day.	3.19	1.394	.578
Wholesalers visit at Ex-stations and out-stations is a difficult task to travel long distance and try to collect primary orders.	4.03	.997	.391
Lot of physical and mental strain and stress feeling in the process of trying for unachievable targets.	3.98	.969	.387
Implement minimum wages.	3.82	1.133	.235
Inadequate promotional materials(samples, literatures etc).	3.12	1.346	.564
Humiliation facing in sales meetings when sales performance is not up to the mark.	3.25	1.438	.052
Lengthy company meeting formats need to update before meeting along with maintaining doctors call average.	3.55	1.338	.454

Every year sales targets increases with high growth.	4.00	.941	.351
Long distances need to travel for company meetings quiet frequently.	3.67	1.441	.015

1.1.2. Sample Adequacy

Factor analysis requires a minimum of five observations per variable and a confidence interval of at least ten observations per variable, both of which were satisfied by the n=411 participants in this research. Reference: (Hair et al., 2013). Because there are 41 main variables in the research, the minimum required sample size is 410; thus, It is claimed that the selected sample size is sufficient for factor analysis. Kaiser-Meyer-Olkin (KMO) is used to evaluate sample size since it reveals the fraction of observed variability that cannot be attributed to sampling error. KMO must be more than 0.50, and values greater than 0.90 are preferable for the best possible fit and for each individual variable. This has been shown to be true (Hair et al., 2013). For this data set, the KMO value is 0.921.

Table 3: KMO

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.921
Bartlett's Test of Sphericity	Approx.Chi-Square	6648.208
	Df	190
	Sig.	.000

1.1.3. Measures of Inter-Correlation

For exploratory factor analysis to proceed, it is also necessary that the data pass the Bartlett test of sphericity. The trial of sphericity by Bartlett investigates the false assumption that the connection grid is a lattice of character traits; assuming the outcome is genuinely huge (sig0.05), the lattice isn't a personality grid, showing that the factors should be corresponded with each other for the EFA to be important. The result is significant at 0.05; Chi-square=6648.208 (p=0.000).

1.1.4. Exploratory Factor Analysis

Factor analysis may be used to determine the structure of the study's variables by focusing on their interrelation. In factor analysis, the components are correlated using a correlation matrix. R factor analysis, which looks at a bunch of variables to uncover latent dimensions, is the most common kind of factor analysis. Factor analysis in R was used for this investigation. Exploratory factor analysis seeks to uncover the relationships between variables in a dataset. The data in this research are organized into factors, or clusters, according to their levels of correlation. All conditions for factor analysis might be satisfied on the basis of this study.

1.1.5. Rotation types

Factor rotation is the most useful technique for deciphering factors, since it helps to distinguish

between factor loadings. In this research, the most popular and widely-applied rotation method, varimax rotation, was utilized. The number of variables with high factor loading is reduced, and a single variable that contributes to that loading may be isolated.

1.1.6. Factoring method

The term "extraction" is used to describe the process of collecting underlying factors in situations where principal component analysis is more suited for data reduction. To explain the most variation with the given collection of variables, it is necessary to zero down on the fewest possible contributing components. Inferring factors with minimally different variance and, in certain circumstances, incorrect variance, are derived from the analysis of total variance. The current research made use of principal component analysis.

1.1.7. Find out how many factors can be extracted

The next step is counting how many factors can be extracted. How do you determine how many elements to take out? The choice depends on a number of factors.

Table 4: Communalities

Communalities	Initial	Extraction
Physicians avoiding calls when many patients wait for check-up.	1.000	.801
Physicians expect sponsorships to prescribe drugs	1.000	.780
Waiting period is high for high potential listed physicians.	1.000	.773
Physicians give calls only limited time one day in a week.	1.000	.746
Physicians are not willing to communicate the problem.	1.000	.758
Physicians ask more product offers for their own medical shop.	1.000	.700
Pharmacists substitute my products prescription with other company products/drugs.	1.000	.768
Pharmacists expect free samples.	1.000	.781
Pharmacists expect offers on product/drugs availability.	1.000	.759
Pharmacists expect gifts	1.000	.767
Pharmacists sometimes give personal orders but do not take stocks from wholesalers.	1.000	.731
Waiting period is high to get primary orders from wholesalers along with this physicians call average has to maintain per day.	1.000	.897
Wholesalers ask higher percent of margins to keep stocks.	1.000	.838

Wholesalers not co-operating in providing primary orders.	1.000	.803
Wholesalers do not supply stocks sometimes to pharmacists against my personal order bookings with pharmacist.	1.000	.821
Company fixes unachievable targets every month in every year.	1.000	.821
Struggles to achieve unachievable targets every month.	1.000	.813
Wholesaler's visit at Ex-stations and out-stations is a difficult task to travel long distance and try to collect primary orders.	1.000	.804
Lot of physical and mental strain and stress feeling in the process of trying for unachievable targets	1.000	.758
Every year sales targets increases with high growth	1.000	.706
Extraction Method: Principal Component Analysis.		

The number of components to extract may be affected by a variety of variables, but there is no single rule of thumb. According to (Habing, 2003). Kaiser's criteria (Latent root criterion), the first criterion employed in the study, specifies that factors with latent roots or Eigen values more than one are significant, whereas factors with Eigen values less than one are not.

The scree plot test's findings form the basis for this study's second factor extraction criteria. The number of components in the extraction sequence is plotted against the number of latent roots in a graph for the scree plot test. The initial part of the graph slopes downhill, and the maximum extraction point is located at the highest point of the curve.

1.1.8. Cattell's Scree Plot for Factor Extraction

Table 4 lists the initial Eigen values as well as the sums of squared loadings for extraction and rotation. The initial Eigen values column displays Eigen values in descending sequence for all possible variables. After factor extraction, the extraction total of squared loadings displays the factors with multiple Eigen values. The rotation sum of squared loadings demonstrates five extracted factors and 78.13% of variance after rotation.

Table 5: Total Variance Explained

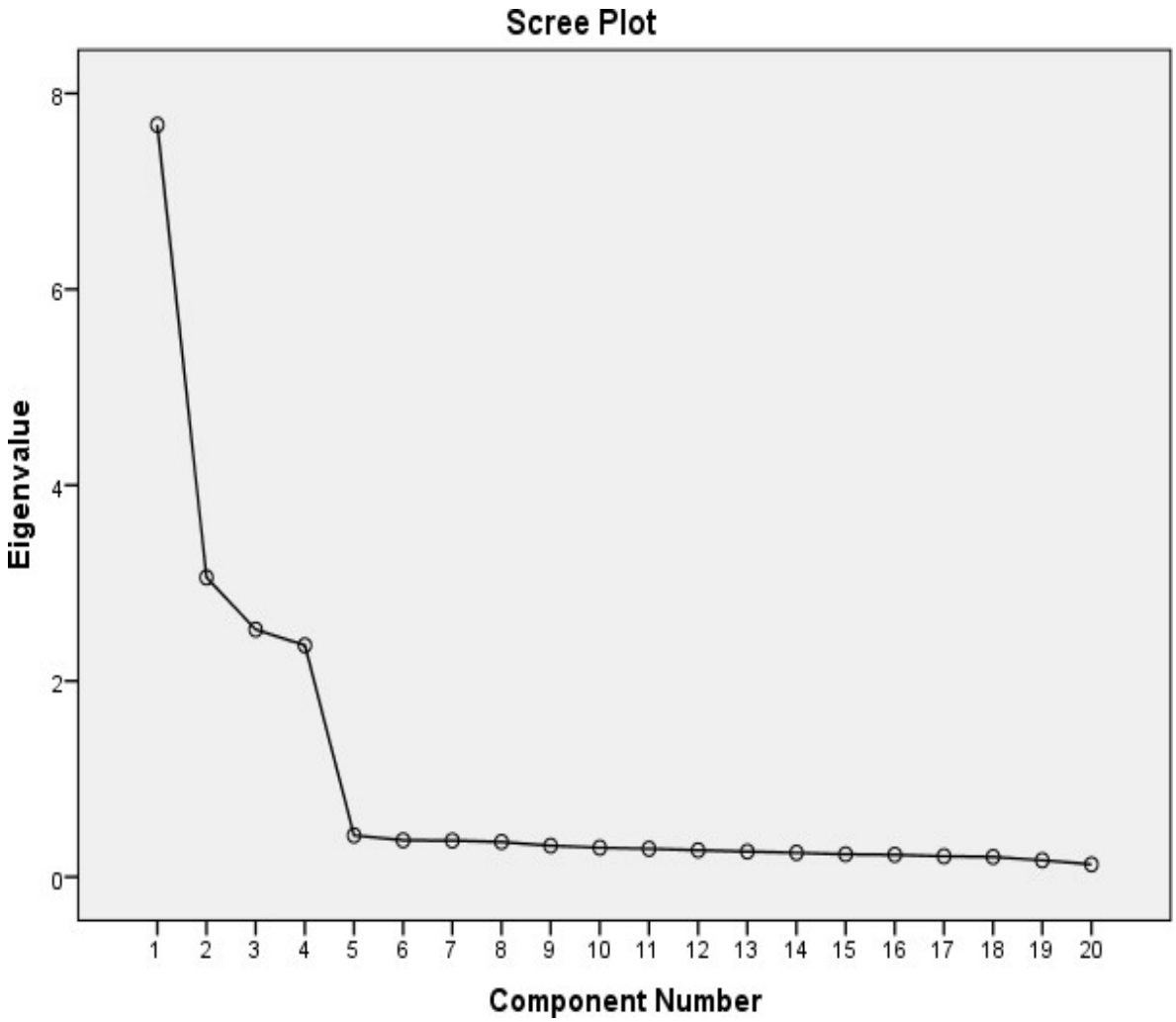
	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.679	38.395	38.395	7.679	38.395	38.395	4.563	22.815	22.815
2	3.057	15.285	53.680	3.057	15.285	53.680	3.892	19.459	42.274

3	2.526	12.629	66.309	2.526	12.629	66.309	3.825	19.123	61.397
4	2.365	11.824	78.133	2.365	11.824	78.133	3.347	16.736	78.133
5	.423	2.117	80.250						
6	.374	1.870	82.121						
7	.371	1.855	83.976						
8	.356	1.782	85.758						
9	.318	1.591	87.349						
10	.298	1.490	88.839						
11	.287	1.437	90.275						
12	.272	1.358	91.634						
13	.259	1.295	92.929						
14	.246	1.229	94.158						
15	.231	1.155	95.313						
16	.226	1.131	96.444						
17	.211	1.053	97.497						
18	.203	1.017	98.514						
19	.169	.846	99.360						
20	.128	.640	100.000						
Extraction Method: Principal Component Analysis.									

1.1.9. Best Solution of EFA

In order to find the optimal component structure and rule out the presence of any weak or cross loading variables, the factor analysis was run many times using a wide variety of input variables. All of the criteria used to detect factor structure were satisfied by the rotated component matrix shown below. For future studies, we will retain the factors with loadings over 40.

Figure1.Cattell's Scree Plot for Factor Extraction



1.1.10. Naming the extracted Factors

Names are given to the extracted factors after considering the variables themselves, the results of previous research, and the advice of professionals and academics. As a result, the resulting variables are known as Power of Physicians, Power of Pharmacists, Power of Wholesalers, and Power of Pharmaceutical Companies. According to previous studies, all of the factors are important and are supported by experts, academicians, and previous research studies.

Table 6: The Optimal Factor Analysis Conclusion

Rotated Component Matrix[a]				
Items	Component			
	1	2	3	4
Physicians avoiding calls when many patients wait for check-up.	.871			
Physicians expect sponsorships to prescribe drugs	.854			
Waiting period is high for high potential listed physicians.	.854			
Physicians give calls only limited time one day in a week.	.843			
Physicians are not willing to communicate the problem.	.843			
Physicians ask more product offers for their own medical shop.	.802			
Company fixes unachievable targets every month in every year		.881		
Some companies implement minimum wages		.874		
Threat to the present job when unable to show continuous performance.		.863		
Receiving inadequate promotional materials.		.825		
Every year companies increasing sales targets with high growth		.800		
Pharmacists substitute my products prescription with other company products/drugs.			.862	
Pharmacists expect free samples.			.862	
Pharmacists expect offers on product/drugs availability.			.844	
Pharmacists expect gifts			.841	
Pharmacistssometimes give personal orders but do not take stocks from wholesalers.			.834	

Waiting period is high to get primary orders from wholesalers along with this physicians call average has to maintain per day.				.914
Wholesalers ask higher percent of margins to keep stocks.				.881
Wholesalers not co-operating in providing primary orders.				.875
Wholesalers do not supply stocks sometimes to pharmacists against my personal order bookings with pharmacist.				.864
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.[a]				
a. Rotation converged in 5 iterations.				

Items having cross loadings over 0.20 were removed from the analysis.

1.1.11. Reliability of Theoretical Model

Reliability pertains to the consistency at the item level for a specific component. If the set of variables is reliable, they always cluster in one place. It addresses the continuity degree across the several metric variables. (Hairetal. 2013). One approach for evaluating reliability in the exploratory factor analysis is to follow the loadings on each factor's Cronbach alpha. Mostly, Cronbach's alpha is used to determine this if scales are coherent in the numerous scientific research studies. It is considered within the 0.70 limit to be reliable and if it drops to 060. (Cronbach, 1951, and Straub et al., 2004). Tables 6-9 illustrate the findings of the internal consistency of each factor.

Table7: Reliability Analysis of Factor 1: Power of Physicians

Item-Total Statistics					
Items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha of six items
Physicians avoiding calls when many patients wait for check-up.	161.87	341.313	.393	.841	.841
Physicians expect sponsorships to prescribe drugs	161.85	340.782	.418	.841	
Waiting period is high for high potential listed physicians.	161.83	341.486	.392	.841	
Physicians give calls only limited time one day in a week.	161.93	341.959	.352	.842	
Physicians are not willing to communicate the problem.	162.07	339.988	.366	.841	
Physicians ask more product offers for their own medical shop.	162.25	336.250	.425	.840	

Table8: Reliability AnalysisofFactor2: Power of Pharmaceutical Companies

Item-Total Statistics					
Items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha of five items
Company fixes unachievable targets every month in every year.	161.78	341.579	.405	.841	.841
Some companies implement minimum wages	161.84	340.296	.420	.840	
Threat to the present job when unable to show continuous performance.	161.80	341.784	.391	.841	
Receiving inadequate promotional materials.	161.85	342.346	.387	.841	
Every year companies increasing sales targets with high growth	161.83	344.038	.351	.842	

Table 9: Reliability Analysis of Factor 3: Power of Pharmacists

Item-Total Statistics					
Items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha of five items
Pharmacists substitute my products prescription with other company products/drugs.	161.85	345.258	.282	.843	.842
Pharmacists expect free samples.	162.00	344.095	.326	.842	
Pharmacists expect offers on product/drugs availability.	161.80	344.235	.309	.843	
Pharmacists expect gifts.	161.94	344.879	.299	.843	
Pharmacists sometimes give personal orders but do not take stocks from wholesalers.	162.05	343.722	.357	.842	

Table 10: Reliability Analysis of Factor 4: Power of Wholesalers

Item-Total Statistics					
Items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha of four items
Waiting period is high to get primary orders from wholesalers along with this physician call average has to maintain per day.	161.86	343.040	.347	.842	.842
Wholesalers ask higher percent of margins to keep stocks.	162.02	342.595	.320	.842	
Wholesalers not co-operating in providing primary orders.	161.99	343.717	.296	.843	
Wholesalers do not supply stocks sometimes to pharmacists against my personal order bookings with pharmacist.	161.77	344.365	.332	.842	

Validity of Theoretical Model

The term "validity" is used to describe how well the instrument measures the target variables.

Convergent validity

When talking about the reality that all of the variables connected to a single component are strongly linked, we talk about convergent validity. All items with factor loadings over 0.50 exhibit convergent validity.

Discriminant validity

Discriminant validity measures how well two variables perform independently of one another. It implies that the variables should be more strongly related to their own factors than to others. The pattern grid is examined to determine discriminant validity during an exploratory factor analysis. Variables should be heavily weighted on only one element. Cross loadings should vary by more than 0.2 if they evolve.

Table 11: Consolidated Factor Matrix

Items	Component			
	1	2	3	4
Factor 1: Power of Physicians				
Physicians avoiding calls when many patients wait for check-up	.871			
Waiting period is high for high potential listed physicians to to get appointment	.854			
Physicians expects sponsorships to prescribe drugs	.854			
Physicians are not willing to communicate the problem	.843			
Physicians give calls only limited time one day in a week	.843			
Physicians ask more product offers for their own medical shop	.802			
Factor 2: Power of Pharmaceutical companies				
Company fixes unachievable targets every month in every year		.881		
Some companies implement minimum wages		.874		
Threat to the present job when unable to show continuous performance.		.863		
Receiving inadequate promotional materials from the companies(samples, literature etc)		.825		
Every year sales targets increases with high growth		.800		
Factor 3: Power of Pharmacists				
Pharmacists substitute my products prescription with other company products/drugs			.862	
Pharmacists ask free samples			.862	
Pharmacists ask gifts			.844	
Pharmacists ask offers on product/drugs availability			.841	
Pharmacists give personal orders but do not take stocks from wholesalers.			.834	
Factor 4: Power of Wholesalers				
Waiting period is high to get primary orders from wholesalers along with this doctors call average has to maintain per day.				.914
Wholesalers ask higher percent of margins to keep stocks				.881
Wholesalers not co-operating in primary orders providing				.875
Wholesalers do not supply stocks to pharmacists against my personal order bookings with pharmacists				.864
Eigen value				2.36
Variance %	7.67	3.05	2.52	16.73
Cumulative % of variance explained	22.81	19.45	19.12	78.13
Cronbach's alpha	22.81	42.27	61.39	.842
	.841	.841	.841	
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.[a]				
a. Rotation converged in 5 iterations.				

Face Validity

We can determine the correct sense for each particular factor by loading them. The instrument's face validity was thus assured. (Kaplan & Sacuzzo, 1993). The theoretical model tried to achieve the desired and precise levels of reliability and scale validity. Table 10 shows the consolidated component matrix of a four-factor theoretical model.

Section2

Development of Measurement Model

Assessment of Normality

Table12: Descriptive Statistics of factors

		BD	BC	BW	BPC
N	Valid	411	411	411	411
Skewness		-1.073	-1.086	-1.115	-1.249
Std.ErrorofSkewness		0.12	0.12	0.12	0.12
Kurtosis		0.862	1.163	0.988	1.846
Std.ErrorofKurtosis		0.24	0.24	0.24	0.24

Confirmative Factor Analysis for Each Factor (Basic Models)

In order to verify the factors' uni-dimensionality, each of the primary factors was subjected to a confirmatory factor analysis.

CFA of Power of Physicians

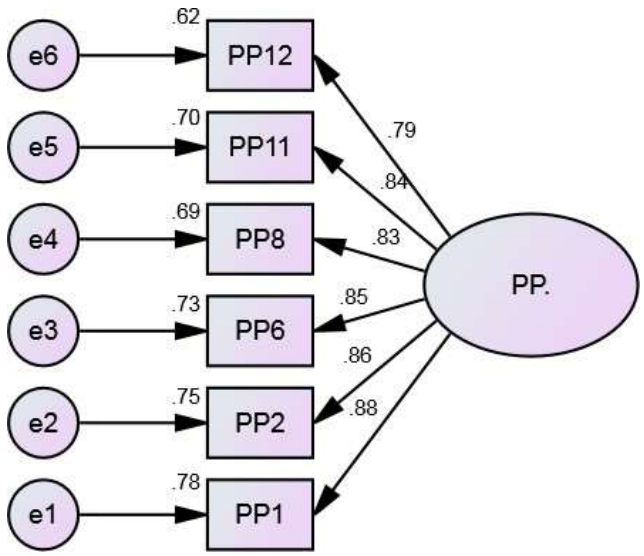


Figure 2: CFA of Power of Physicians

Table 13: CFA Results of Power of Physicians

Attribute	Factor Loadings	Squared Loadings	AVE	CR
PP1	0.88	0.78	0.72	0.94
PP2	0.86	0.75		
PP6	0.85	0.73		
PP8	0.83	0.69		
PP11	0.84	0.70		
PP12	0.79	0.62		

Table 14: Fit Indices of Power of Physicians

χ^2	Df	GFI	AGFI	CFI	TLI	NFI	IFI	RMR	SRMR	RMSEA	PCLOSE
19.929	9	0.984	0.963	0.994	0.991	0.990	0.994	0.018	0.0141	0.054	0.0366

CFA of Power of Pharmacists

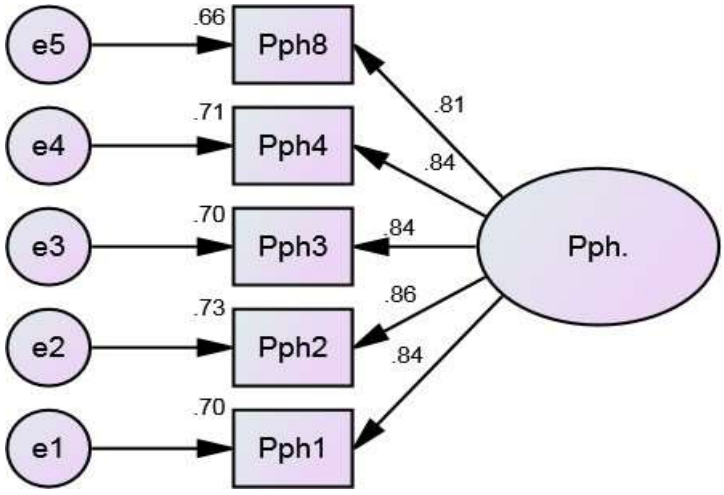


Figure 3: CFA of Power of Pharmacists

Table 15: CFA Results of Power of Pharmacists

Attribute	Factor Loadings	Squared Loadings	AVE	CR
Pph1	0.84	0.70	0.70	0.91
Pph2	0.86	0.73		
Pph3	0.84	0.70		
Pph4	0.84	0.71		
Pph8	0.81	0.66		

Table 16: Fit Indices of Power of Pharmacists

χ^2	Df	GFI	AGFI	CFI	TLI	NFI	IFI	RMR	SRMR	RMSEA	PCLOSE
9.374	5	0.991	0.974	0.997	0.994	0.993	0.997	0.011	0.0114	0.046	0.489

CFA of Power of Wholesalers

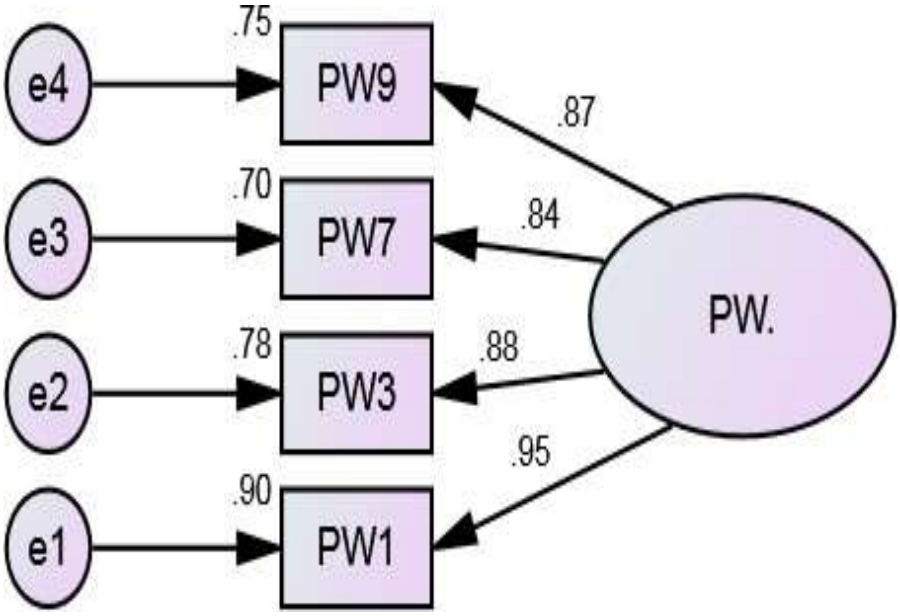


Figure 4: CFA of Power of Wholesalers

Table 17: CFA Results of Power of Wholesalers

Attribute	Factor Loadings	Squared Loadings	AVE	CR
PW1	0.95	0.90	0.78	0.88
PW3	0.88	0.78		
PW7	0.84	0.70		
PW9	0.87	0.75		

Table 18: Fit Indices of Power of Wholesalers

χ^2	Df	GFI	AGFI	CFI	TLI	NFI	IFI	RMR	SRMR	RMSEA	PCLOSE
0.099	2	1.000	0.999	1.000	1.004	1.000	1.001	0.001	0.0011	0.000	0.982

CFA of Power of Pharmaceutical Companies

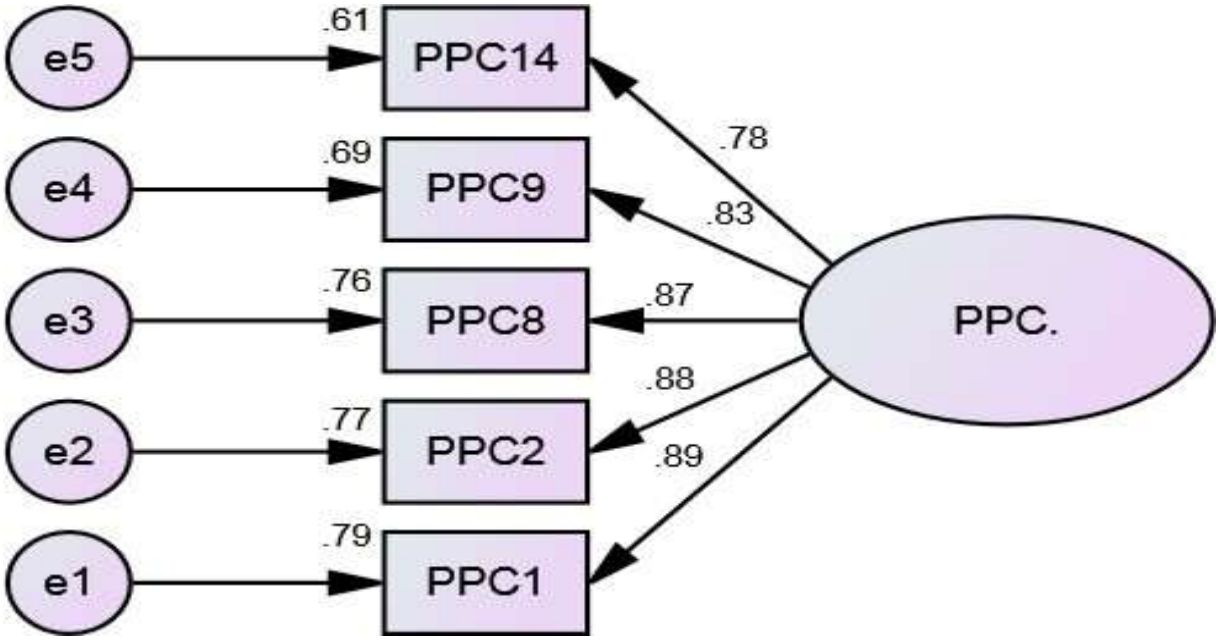


Figure 5: CFA of Power Pharmaceutical Companies

Table 19: CFA Results of Power of Pharmaceutical Companies

Attribute	Factor Loadings	Squared Loadings	AVE	CR
PPC1	0.89	0.79	0.72	0.91
PPC2	0.88	0.77		
PPC8	0.87	0.76		
PPC9	0.83	0.69		
PPC14	0.78	0.61		

Table20: Fit Indices of Power of Pharmaceutical Companies

χ^2	Df	GFI	AGFI	CFI	TLI	NFI	IFI	RMR	SRMR	RMSEA	PCLOSE
13.423	5	0.987	0.962	0.995	0.989	0.992	0.995	0.012	0.0131	0.064	0.241

First-order Measurement Model

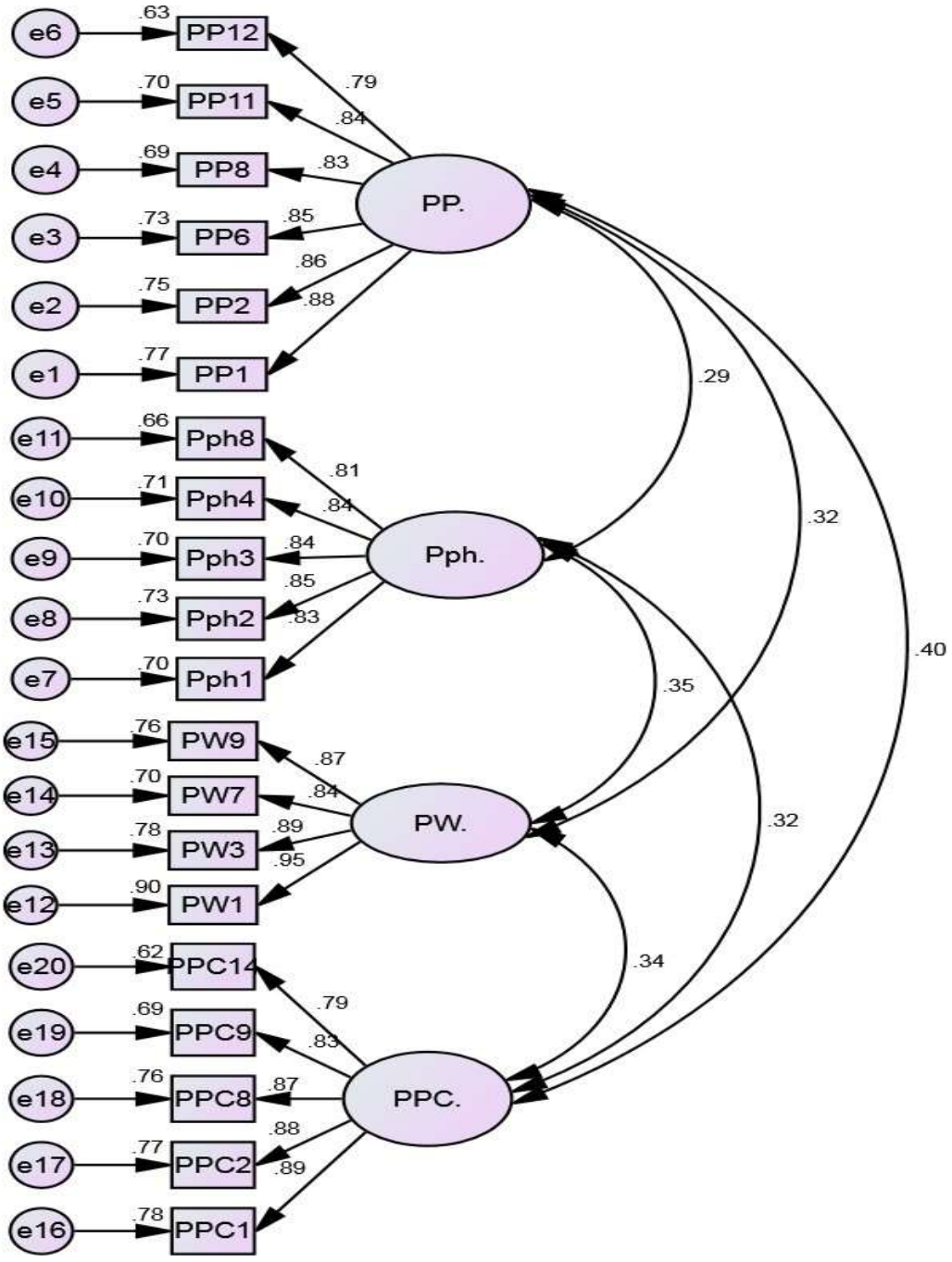


Figure 6: Hypothesized Model with Four Factorial Structures at the First Order

Table21: Four-Factor Model, Hypothesized at the First Order

χ^2	Df	GFI	AGFI	CFI	TLI	NFI	IFI	RMR	SRMR	RMSEA	PCLOSE
198.167	164	0.954	0.941	0.995	0.994	0.971	0.995	0.031	0.0280	0.023	1.000

Table22: Modelled Measuring Outcomes from AMOS

Regression Paths	Standard Loadings	Critical Ratio	P*	AVE	CR
Power of Physicians (PP)					
PP1 <--- PP.	0.88	**	0.000		
PP2 <--- PP.	0.86	24.248	0.000	**0.72**	**0.94**
PP6 <--- PP.	0.85	23.631	0.000		
PP8 <--- PP.	0.82	22.368	0.000		
PP11 <--- PP.	0.83	22.718	0.000		
PP12 <--- PP.	0.78	20.458	0.000		
Power of Pharmacist (Pph.)					
Pph1 <--- Pph.	0.83	**	0.000		
Pph2 <--- Pph.	0.85	21.207	0.000	**0.70**	**0.91**
Pph3 <--- Pph.	0.83	20.453	0.000		
Pph4 <--- Pph.	0.84	20.676	0.000		
Pph8 <--- Pph.	0.81	19.530	0.000		
Power of Wholesalers (PW)					
PW1 <--- PW.	0.95	**	0.000		
PW3 <--- PW.	0.88	30.092	0.000	**0.78**	**0.88**
PW7 <--- PW.	0.83	26.139	0.000		
PW9 <--- PW.	0.86	28.572	0.000		
Power of Pharmaceutical Companies (PPC)					
PPC1 <--- PPC.	0.88	**	0.000		
PPC2 <--- PPC.	0.88	25.276	0.000	**0.72**	**0.91**
PPC8 <--- PPC.	0.86	24.663	0.000		
PPC9 <--- PPC.	0.82	22.416	0.000		
PPC14 <--- PPC.	0.78	20.273	0.000		

Table 23: The Outcome of a First-Order Model for Measuring: Establish Significance Level Correlations to Assess the Logic of Your Hypotheses

Path	Estimate	Critical Ratio	P*
PW.<-->PPC.	.339	6.059	0.000
PP.<-->Pph.	.291	5.180	0.000
PP.<-->PW.	.315	5.700	0.000
PP.<-->PPC.	.400	6.900	0.000
Pph.<-->PW.	.347	6.105	0.000
Pph.<-->PPC.	.323	5.671	0.000

Table24: Theoretical and Experimental Model Factor Loadings

Items	Theoretical Model (EFA)	First-order Measurement Model(CFA)
Power of Physicians		
Physicians avoiding calls when many patients wait for check-up	.871	0.88
Waiting period is high for high potential listed physicians to to get appointment	.854	0.86
Physicians expects sponsorships to prescribe drugs	.854	0.85
Physicians are not willing to communicate the problem	.843	0.83
Physicians give calls only limited time one day in a week	.843	0.84
Physicians ask more product offers for their own medical shop	.802	0.79
Power of Pharmaceutical companies		
Company fixes unachievable targets every month in every year	.881	0.89
Some companies implement minimum wages	.874	0.88
Threat to the present job when unable to show continuous performance.	.863	0.87
Receiving inadequate promotional materials from the companies(samples, literature etc)	.825	0.83
Every year sales targets increases with high growth	.800	0.79
Power of Pharmacists		
Pharmacists substitute my products prescription with other company products/drugs	.862	0.83
Pharmacists ask free samples	.862	0.85
Pharmacists ask gifts	.844	0.84
Pharmacists ask offers on product/drugs availability	.841	0.84
Pharmacists give personal orders but do not take stocks from wholesalers.	.834	0.81

Power of Wholesalers Waiting period is high to get primary orders from wholesalers along with this doctors call average has to maintain per day. Wholesalers ask higher percent of margins to keep stocks Wholesalers not co-operating in primary orders providing Wholesalers do not supply stocks to pharmacists against my personal order bookings with pharmacists	914 .881 .875 .864	0.95 0.89 0.84 0.87

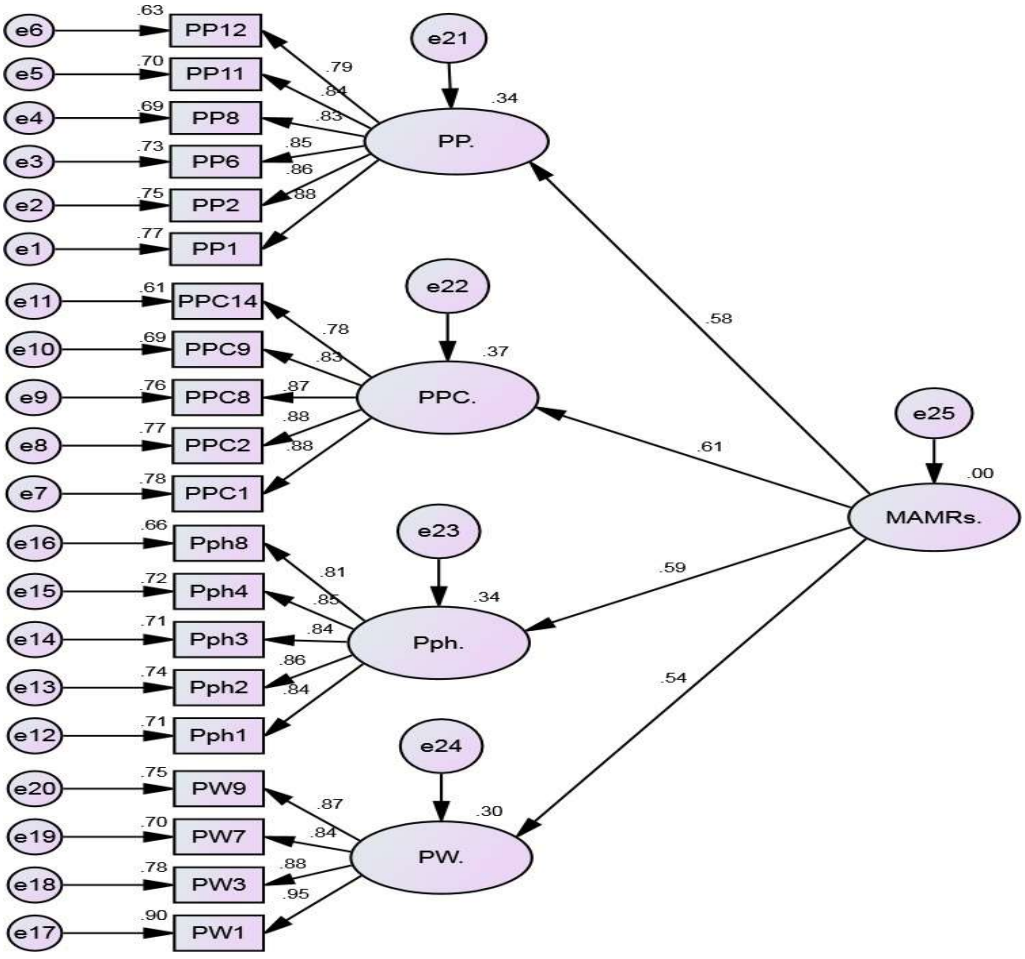


Figure 7: Reflective-Second Order Measurement Model

Table24: Using structural equation modelling to make sense of the model fit indices at the second level of measurement

Name of Category	Name of Index	Adequate fit	Index Value	Conclusion
Absolute Fit measure	CMIN/Df	Less than 5	1.200	Acceptable
	GFI	Greater than 0.90	0.953	Acceptable
	AGFI	Greater than 0.90	0.941	Acceptable
	RMSEA	Less than 0.10	0.022	Acceptable
Incremental fit measure	NFI	Greater than 0.90	0.970	Acceptable
	CFI	Greater than 0.90	0.995	Acceptable
	TLI	Greater than 0.90	0.994	Acceptable
	IFI	Greater than 0.90	0.995	Acceptable
Parsimonious fit measure	PGFI	Greater than 0.50	0.767	Acceptable
	PCFI	Greater than 0.50	0.885	Acceptable
	PNFI	Greater than 0.50	0.863	Acceptable
Root Mean Square Residual	RMR	Near to Zero	0.040	The required level is mostly derived.
Standardized Root-Mean Square Residual	SRMR	Less than 0.05	0.036	The required level is derived

According to the above table, all of the indices values meet the necessary criteria for absolute fitness. As a result of meeting all of the criteria, the model is appropriate for establishing links between factors and contributing variables in measuring marketing challenges to medical representatives.

Table 26: Results of Hypotheses Testing

Hypothesis	Standardized Coefficient	P Value	Testing of Hypothesis
H1: Power of Physicians has a significant effect on marketing activities of medical representatives.	0.581	0.000	Accepted
H2: Power of Pharmacists has a significant effect on marketing activities of medical representatives.	0.587	0.000	Accepted
H3: Power of Wholesalers has a significant effect on marketing activities of medical representatives.	0.544	0.000	Accepted
H4: Power of Pharmaceutical Companies has a significant effect on marketing activities of medical representatives.	0.607	0.000	Accepted

Limitations of the Study

Although the study was well planned it suffered from some unavoidable limitations.

- The first and second lock downs imposed by COVID-19 have restricted the free movement from place to place in conducting the survey. Hence the study has been confined only to five major cities of Andhra Pradesh.
- The data collection from the respondents posed a major limitation. Some of the respondents were reluctant to answer the questionnaire nor had they time to answer them fully.

Discussion

In light of the ongoing epidemic, the pharmaceutical industry has taken on more significance. In today's competitive, dynamic, and complicated business climate, the marketing of pharmaceutical products is essential to the growth and development of a company. Despite the fact that certain steps have been made to enhance pharmaceutical product advertising, there are still some challenges for the medical representatives that need to be addressed with the power of pharmaceutical companies, pharmacists, physicians, and wholesalers. Thus, pharmaceutical product marketing has generated momentum and relevance, prompting the researcher to launch an investigation into how medical professionals might promote pharmaceutical products more effectively.

It is found that the following order of importance: the first power of pharmaceutical companies, the second power of pharmacists, the third power of physicians, and the fourth power of wholesalers have a significant impact on the marketing activities of medical representatives. First, Pharmaceutical companies hold significant power as they develop and produce the medications that medical representatives promote. They have control over the product portfolio, pricing strategies, marketing budgets, and overall brand image. Their decisions regarding product development, market positioning, and promotional activities directly impact the effectiveness of medical representatives' marketing efforts. Secondly, Pharmacists play a crucial role in the healthcare system as they are responsible for dispensing medications and providing patient

counseling. Their power lies in their expertise and influence over medication choices. If pharmacists are well-informed and have positive perceptions about a particular pharmaceutical product, they can recommend it to patients, ultimately affecting the success of a medical representative's marketing efforts. Thirdly, Physicians have significant decision-making power regarding prescribing medications. They play a crucial role in determining which drugs are appropriate for their patients based on medical conditions, efficacy, safety, and other factors. Medical representatives heavily rely on building relationships with physicians, providing them with relevant information, clinical data, and samples to influence their prescribing habits. Physicians' preferences and perceptions greatly impact the success of a medical representative's marketing activities. Finally, Wholesalers act as intermediaries between pharmaceutical manufacturers and retail pharmacies. They have control over the distribution and supply chain, including stock availability, pricing, and logistics. Their power lies in their ability to influence which medications reach the pharmacies and ultimately the patients. Medical representatives need to work closely with wholesalers to ensure sufficient stock availability and to navigate any challenges in distribution, as it directly impacts the accessibility and availability of their promoted products.

The marketing efforts of medical representatives are heavily influenced by the combined strength of these groups. The pharmaceutical companies, pharmacists, physicians, and wholesalers have to cooperate and support medical representatives in fulfilling their duties so that efficient and effective pharmaceutical product promotion can take place, which is ultimately helpful for the well being of patients. Even to succeed, medical representatives must understand and navigate the dynamics among these powers, build relationships, provide accurate and persuasive information, and align their marketing strategies with the interests and needs of pharmaceutical companies, pharmacists, physicians, and wholesalers.

Conclusion and Suggestions

The pharmaceutical companies should fix reasonable targets based on ground study and realities and ensure the quality of work life of the medical representatives. The physicians need to follow their professional ethics while prescribing the right drug for the patients. There should be provision for extending the time slot of visitation to physicians without confining only to morning to evening timings. This may help the medical representatives to maintain companies expected call average/visits as well as to increase sales in right channel. The unions, which work for the welfare of medical representatives as per the labour laws, need to understand and cooperate with positive spirit and negotiate with the company management for suitable compensation to the extra hours put in by the medical representatives without confining to eight hours work. The pharmacists should strictly adhere to the physicians' prescription and the wholesalers promptly honour the pharmacists' requirements. Such a streamlining will prevent any unethical practices from creeping in and will help reduce the challenges faced by the medical representatives in executing their prescribed duties, and pharmaceutical product promotion will improve.

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