Factors of Efficient Distribution Channel and its Impact on Channel Superior Performance: Evidence from the Indian Pharmaceutical Industry

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ABSTRACT

Due to increasing focus on health-care in India, Pharmacy industry has been provided an impetus for a faster growth trajectory. Crucial to success for any industry is the seamless integration of its supply chain. Pharma is no exception. While there are many empirical studies on different aspects of distribution, Marketing channels, supply chain and consumers and that too predominantly conducted outside India, there are no integrated supply chain model frame work to drive optimisations at all levels and improve channel superior performance. Main objective is to garner insights from supply chain perspective by understanding different aspects and drivers of the pharmaceutical value chain which will include Distributors & wholesalers, pharmacies (Hospital pharmacy, Retail chains, and standalone).

Study seeks to establish association criteria and satisfaction of the distributors/wholesalers with respect to their suppliers in order to facilitate the development of an end to end framework for the pharmaceutical supply chain.

Research was of an exploratory nature and a total of 15 pharmaceutical distributors and pharmaceutical wholesalers representative of the population ,5 hospital pharmacy managers,4 retail chain stores and 15 stand-alone pharmacy managers representing the population were considered as respondents for channel dynamics.

Data was collected through questionnaire and in-depth interviews using convenience sampling and the data so gathered was analysed using tools like SPSS/excel. Study revealed that inventory turnover, margins, and exclusivity was vital for supplier association criterion for pharmaceutical distributors and collaborative behaviour and absence of supply chain interruptions for their satisfaction respectively.

This study is of high significance in the modern market scenario in light of increasing spend on health care and focus on affordable health care facilities driven by Government policies and regulations in India.

Keywords: Distribution, Pharmaceutical Industry, Retail, Supply chain, Channels, Brand.

INTRODUCTION:

The Indian pharmaceuticals market is the third largest in terms of volume and thirteenth largest in terms of value, and it accounts for 20 percent in the volume terms and 1.4 percent in value terms of the Global Pharmaceutical Industry as per a report by Equity Master.

This sector is expected to grow over 15 percent per annum between 2015 and 2020 and will exceed the global pharma industry in terms of performance, which is estimated to grow at a yearly rate of 5 percent within the same time.

India is an emerging economy with exponential growth rate. And has recently replaced france as the sixth

largest economy in the world. Major growth drivers are Indian demographics with strong economic growth, growing Indian middle class with a rise in disposable income, technical capability, an increased rate of disposable income being spent on healthcare and increased penetration of health insurance and supportive government initiatives.

LITERATURE REVIEW:

Studies Related to Distributor/Wholesellers Association Criteria and their Performance:
Mukherjee (2016) has analyzed the most appropriate approach to supplier selection and the criteria that were most cited in regards to supplier selection. For the purpose, the researcher considered 78 papers to pinpoint the factors influencing supplier choice and evaluation method. AHP and their AHP in combination with their integrated models were found to be predominantly used for the selection. Author further highlights cost, quality, delivery and service as the predominantly cited guidelines for supplier selection. While the above-mentioned criteria are vague in definition and majorly sourced from the manufacturing industry, it gives direction to the criterion that a distributor/ wholesaler might also consider in their supplier selection process

Kumar Kar, & K. Pani (2014) in their identify the crucial supplier selection criteria across sectors and across purchasing circumstances, and consequently determine the significance of these criteria. Results of the study indicate that the evaluation standards like product quality, delivery compliance and price have the highest criticality, while criterion such as e-transaction capability is advancing on the list, with the enhanced adoption of e-procurement platforms.

Mehralian, Gatari, Morakabati, & Vatanpour, (2012) identify risk factors perceived by suppliers in the supplier selection process found that delivery factor was primary and cost, quality, ICT, flexibility, seniority, technology and finally environmental factors take subsequent importance. Results indicate that from a buyers perspective, delivery is seen to be the highest priority and timely and secure deliveries were valued by the buyer the most.

Jambulingam, Kathuria, & Nevin(2011) attempted to study the role of fairness, trust and loyalty in terms of supplier and buyer interdependence.

Results indicate that under conditions where both the supplier, a wholesaler in this case and the buyer (Pharmacy), procedural and distributive justice on the part of the wholesaler is critical in order to foster a trusting relationship with the pharmacies, which converts to loyalty.

Examining the market contingencies of the pharmacy and assisting them in the identification of relevant offerings is one such example where the wholesalers demonstrates intention helpful to the pharmacy indicating to the pharmacies that the wholesalers care about them and are reliable. In contrast, the asymmetric buyer-dependence situation is based on the supplier's fair procedures. This procedural fairness can be demonstrated by establishing business processes that can be monitored, and tracked by the pharmacies.

It is significant to regard the role trust plays in deeply interdependent relationships. Building trust becomes compelling in symmetric relationships and supplier's procedural fairness plays an essential role in earning loyalty.

In a study on supplier selection factors for para-pharmaceuticals Kirytopoulos, K., Leopoulos, V., & Voulgaridou, D. (2008) conclude that supplier Brand Company is the first choice for the service provider which in turn is attributed to its high-quality specifications and low-risk characterization. The study also indicated that Supplier's profile is the most important criterion in the selection of a supplier's offer. This is especially insightful as risk mitigation is a characteristic that is considered.

Another study on supplier selection by Katsikeas, C. S., Paparoidamis, N. G., & Katsikea, E. (2004) points out towards the importance of supplier reliability performance and supplier service performance regarding them as critical for supply sourcing decisions. The research findings also clearly demonstrate the criticality of understanding distributors' perceptions of supplier performance and responding to their requirements over price competitiveness and product attributes, which is conventionally emphasized in marketing strategy.

Zineldin & Jonsson(2000) identified and studied the underlying variables for trust and commitment between the corporation and downstream actors in the supply chain.

Results indicate the vital role satisfaction of the buying party for the development of a high trust and commitment relationship between the two parties. Adaptability on the suppliers part when it comes to buyers' needs is also indicated to be critical in order to develop a high trust and high commitment relationship between the two parties.

Relationship termination cost, shared value, the absence of opportunistic behavior and proper communication were also indicated to have a significant impact on the relationship.

A follow-up study by Jonsson & Zineldin (2003) attempt to study the impact of certain variables with perceived satisfaction on an inter-organizational level. Study indicates three important variables including the reputation

of the supplier, cooperation and the benefits derived from the relationship to be the most important factors determining satisfaction level. This hints at a level of collaborative behaviour and mutual trust between the supplier and their buyers for an optimal satisfactory relationship.

Monczka, Petersen, Handfield & Ragatz (1998) in their study indicated that trust was indicated to be the most important variable that fosters strategic alliances. Bilateral communication function also represented a significant role in ascertaining alliances' success with information distribution being an important predictor of success. Joint problem solving is seen as a superior alternative to destructive or avoidance techniques of conflict resolution.

Anderson, J. C., & Narus, J. A. (1984) have examined the working relationship between distributor-manufacturer relationship from a distributors perspective and successfully concluded that the pharma manufacturer's need to consider the perceptions and needs of distributors on priority with stressing on reasonable policies in comparison with competing manufacturers which was the highest rated indicator, and subsequently, the relationship between the two parties. The reasonable policies, in this context, includes inventory return, credit, and a number of franchised distributors in a trade area.

STATEMENT OF PROBLEM:

The Indian pharmaceutical industry is at the frontiers in the global context with the CAGR at 23.9%. The market is estimated to be worth 55 billion dollars by the year 2020. While the robust growth is attributed to exports of pharmaceuticals, the domestic market is on a rise at a rapid rate. There have been attempts to study components of the supply chain of the pharmaceutical industry but most of the investigations are conducted in European nations or the North American subcontinent.

Given the rapid pace of growth in the spending of pharmaceuticals and other related industries, such as supplements, driven by increasing consumer spending, the rapid pace of urbanization, and rising health care insurance, a need for developing an end to end framework to understand the dynamics of the industry becomes pivotal.

OBJECTIVES:

1. To identify the various factors influencing a pharmaceutical Distributor/wholesaler supplier selection.
2. To study the impact of various factors of supplier selection on Distributor/wholesaler satisfaction.
3. To contrast the differences between the buying behaviours of Retail pharmacy chains, Standalone pharmacies, and Hospital pharmacies.
4. To develop an end to end supply chain framework for the Indian pharmaceutical industry.

HYPOTHESES:

Hypothesis 1:
H_0: The return on Investments, brand of the supplier's product and fairness in policies does not significantly contribute to supplier selection.
H_a: The return on Investments, brand of the supplier's product and fairness in policies significantly contributes to supplier selection.

Hypothesis 2:
H_0: The variables of timely delivery and collaborative behaviour do not significantly contribute to distributors/wholesalers satisfaction.
H_a: The variables of timely delivery and collaborative behaviour significantly contribute to distributors/wholesalers satisfaction.

Hypothesis 3:
H_0: There are no significant differences between Retail pharmacy chains, Standalone pharmacies, and Hospital pharmacies.
H_a: There are significant differences between Retail pharmacy chains, Standalone pharmacies, and Hospital pharmacies.

RESEARCH METHODOLGY

Research was exploratory in nature with both the independent and the dependent variables mentioned clearly and measured in a quantifiable manner.

Primary data was collected with the help of in-depth interview and questionnaire which would inculcate the basic points of the hypothesis. Data through questionnaire was collected by using statements made on a 5 – Point Likert Scale with 1 meaning "Totally Disagree" to 5 meaning "Totally Agree" or a 10 point likert scale for

improved sensitivity.

Secondary data for the purpose of literature review as well as for the determination of the scale to be used for measurement was gathered from various research journals from websites such as Google Scholar, Researchgate, JStor and several pharmaceutical research journals.

Research tools:

For analysis of the data following aspects were dealt with

Interview: To identify uncovered factors/ independent variables

Correlation Analysis: Used to establish a relationship between dependent and one independent variable.

Pairwise t test: A paired t-test is used to compare two population means where you have two samples in which observations in one sample can be paired with observations in the other.

Frequency distribution and Cross tabulation

Sample Design:

For the data collection, respondents from Bangalore were chosen. A total of 15 pharmaceutical distributors and pharmaceutical wholesalers representative of the population were considered. 5 hospital pharmacy managers, 4 retail chain stores and 15 stand-alone pharmacy managers representing the population was considered. Sampling technique employed convenience sampling..

LIMITATIONS OF STUDY:

The extent of impact of online pharmaceutical retail was not considered. The point of view of doctors on the pharmaceutical sales representatives was not covered in the study.

DATA ANALYSIS AND DISCUSSION:

Quantitative Analysis:

Factors Impacting Distributor's Association with their Upstream Suppliers:

Descriptive statistics was used to understand distributor association criteria that measure the importance of the various factors before considering the association with a company points and revealed the following aspects:

Inventory turnover was found to be the most important factor in association with a particular upstream supplier. This was closely followed by the margin provided with a mean of 7.76.

Regularity and the value of schemes were also found to be important association criteria with their mean values at 6.59 and 6.71 given that push for the product becomes easier with the schemes attached with the purchase of bulk orders.

Ease of stock returns were found to be the least important criterion in associating with a supplier given that such returns usually does not happen.

Table 4.1: Correlation matrix

		Brand	Overall Margins	Inventory turnover	Discounts	Regularity of Scheme	Value of Scheme	Credit period	Ease of stock return	Exclusivity
Brand	Pearson Correlation	1	-.196	.149	.423	.313	.022	-.219	.164	.636**
	Sig. (2-tailed)		.451	.569	.090	.221	.934	.398	.528	.006
	N	17	17	17	17	17	17	17	17	17
Overall Margins	Pearson Correlation	-.196	1	.216	.111	.015	.150	-.019	-.049	-.299
	Sig. (2-tailed)	.451		.405	.672	.955	.564	.943	.850	.244
	N	17	17	17	17	17	17	17	17	17
Inventory turnover	Pearson Correlation	.149	.216	1	.058	.104	.160	-.183	-.186	.029
	Sig. (2-tailed)	.569	.405		.824	.691	.541	.483	.475	.911
	N	17	17	17	17	17	17	17	17	17
Discounts	Pearson	.423	.111	.058	1	.659**	.505*	.191	-.213	.138

		Brand	Overall Margins	Inventory turnover	Discounts	Regularity of Scheme	Value of Scheme	Credit period	Ease of stock return	Exclusivity
	Correlation									
	Sig. (2-tailed)	.090	.672	.824		.004	.039	.463	.411	.597
	N	17	17	17	17	17	17	17	17	17
Regularity of Scheme	Pearson Correlation	.313	.015	.104	.659**	1	.899**	.050	.050	.345
	Sig. (2-tailed)	.221	.955	.691	.004		.000	.849	.850	.175
	N	17	17	17	17	17	17	17	17	17
Value of Scheme	Pearson Correlation	.022	.150	.160	.505*	.899**	1	.101	.046	.190
	Sig. (2-tailed)	.934	.564	.541	.039	.000		.698	.860	.464
	N	17	17	17	17	17	17	17	17	17
Credit period	Pearson Correlation	-.219	-.019	-.183	.191	.050	.101	1	.301	-.179
	Sig. (2-tailed)	.398	.943	.483	.463	.849	.698		.240	.492
	N	17	17	17	17	17	17	17	17	17
Ease of stock return	Pearson Correlation	.164	-.049	-.186	-.213	.050	.046	.301	1	.623**
	Sig. (2-tailed)	.528	.850	.475	.411	.850	.860	.240		.008
	N	17	17	17	17	17	17	17	17	17
Exclusivity	Pearson Correlation	.636**	-.299	.029	.138	.345	.190	-.179	.623**	1
	Sig. (2-tailed)	.006	.244	.911	.597	.175	.464	.492	.008	
	N	17	17	17	17	17	17	17	17	17
**. Correlation is significant at the 0.01 level (2-tailed).										
*. Correlation is significant at the 0.05 level (2-tailed).										

Brand, credit period and exclusivity exhibited the highest deviation scores. This is majorly due to the fact that different types of distributors value different criterion in very different way.

The credit period becomes important to a certain category of distributors, especially those distributors with a small cash reserve, hence making then highly dependent on this particular factor in associating with an upstream supplier.

Interpretation:

Brand and exclusivity shows a very strong correlation indicating the demand to be the exclusive distributor in a trade area when branded medications are concerned at 99% significance level. This is a major observation when it comes to distributors with few number of upstream suppliers and hence depend on the products of these upstream suppliers exclusively dealing with their products through these distributors alone for a given trade area.

Discounts and regularity of schemes also show a very high correlation at 99% significance level.

There is also a very high correlation between the value and regularity of the schemes to be passed onto the retailers. The importance of these factors are apparent when exclusively generic and unbranded medications are concerned as this motivates their downstream buyers to make bulk purchases and push these unbranded generic products.

Table 4.2: Cross tabulation for Brand and association with Distributors

Crosstab										
Branded vs Generic with brand as criteria for distributors			**Brand**							**Total**
			Not important	**Somewhat Important**	**Somewhat important**	**Very Important**	**Very important**	**Extremely Important**	**Extremely Important**	
Type of Distributor	Branded Only	Count	0	0	0	0	1	1	3	5
		% within Type of Distributor	0.0%	0.0%	0.0%	0.0%	20.0%	20.0%	60.0%	100.0%
		% within Brand	0.0%	0.0%	0.0%	0.0%	25.0%	100.0%	75.0%	29.4%
		% of Total	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**5.9%**	**5.9%**	**17.6%**	**29.4%**
	Generics only	Count	4	1	0	0	0	0	0	5
		% within Type of Distributor	80.0%	20.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
		% within Brand	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	29.4%
		% of Total	**23.5%**	**5.9%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**29.4%**
	Generics and branded	Count	0	0	1	1	2	0	1	5
		% within Type of Distributor	0.0%	0.0%	20.0%	20.0%	40.0%	0.0%	20.0%	100.0%
		% within Brand	0.0%	0.0%	50.0%	100.0%	50.0%	0.0%	25.0%	29.4%
		% of Total	**0.0%**	**0.0%**	**5.9%**	**5.9%**	**11.8%**	**0.0%**	**5.9%**	**29.4%**
	Surgicals	Count	0	0	1	0	1	0	0	2
		% within Type of Distributor	0.0%	0.0%	50.0%	0.0%	50.0%	0.0%	0.0%	100.0%
		% within Brand	0.0%	0.0%	50.0%	0.0%	25.0%	0.0%	0.0%	11.8%
		% of Total	**0.0%**	**0.0%**	**5.9%**	**0.0%**	**5.9%**	**0.0%**	**0.0%**	**11.8%**
Total		Count	4	1	2	1	4	1	4	17
		% within Type of Distributor	23.5%	5.9%	11.8%	5.9%	23.5%	5.9%	23.5%	100.0%
		% within Brand	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	**23.5%**	**5.9%**	**11.8%**	**5.9%**	**23.5%**	**5.9%**	**23.5%**	**100.0%**

As can be observed from the above table for brand as a criterion, the distributors of exclusively branded products rated it extremely important, whereas the distributors of both the generics and branded medication found it to be in the midway of somewhat and very important.

Similarly cross tabulation was performed for other criteria and the following results were revealed:

Cross tabulation for Inventory and association with Distributors:
Inventory turnover was ranked as one of the most important criterion in the distributors association with an upstream supplier. There is an unanimous consent with 60% of the exclusively branded as well as generic distributors ranked Inventory turnover to be extremely important.

The surgical distributors is split half with half of them stating inventory turnover to be extremely important and the other half stating it to be very important.

Cross tabulation for Margins and association with Distributors:
With margins, Generic distributors and distributors dealing with both the generic and branded stressed on the importance of margins while the distributors of exclusively branded medications didn't stress on the margins provided by the suppliers.

Given the distinctions between the 2 different types of markets where the generic and unbranded medication market being highly competitive with no exclusivity being enjoyed by any of the distributors and certain degree of exclusivity being enjoyed by the distributors of branded medication, the trade-off for the distributors dealing with branded medication being margins versus sakes.

Cross tabulation for Exclusivity and association with Distributors:
When it comes to exclusivity of the distribution, 100% of the distributors dealing with branded medication

exclusively claimed it to be very to extremely important. The exclusivity for branded products helps them trade off margins and other criterion that are being measured.

80% of the exclusively generic distributors claimed exclusivity to be not important because the market dynamics precludes exclusivity and is highly competitive in nature. Thus, for the distributors dealing with only generics, exclusivity is not an important criterion in determining an association with their upstream suppliers.

Cross tabulation for Credit Period and association with Distributors:

With Credit period, the exclusively 60% of branded distributors stated that the credit period is of little significant to them. This is in contrast with the exclusively generic distributors who state credit period to be of high to extreme importance.

This is in part because of the size of the distributor with a majority of distributors for generics being very small, and hence with smaller surplus cash and the branded medication distributors being relatively large with larger cash surplus

Factors Impacting Distributor's Satisfaction:

The impact of various factors on the satisfaction of pharmaceutical distributors with their upstream suppliers was studied.

Table 4.3: Descriptive Statistics Distributor satisfaction

	N	Minimum	Maximum	Mean	Std. Deviation
Delivery reliability	17	1	5	4.06	1.298
timely delivery	17	3	5	4.47	.717
Transportation quality	17	3	5	4.35	.606
Product variety	15	2	5	3.87	1.060
delivery quantity	17	1	5	3.65	1.367
flexibility in delivering	12	1	5	3.58	1.443
Communications	17	1	5	4.18	1.131
Mutual trust	17	1	5	4.24	1.300
Joint problem solving	17	1	5	3.88	1.054

From the above table, the satisfaction criteria for the distributors can be interpreted.

The mean values of the parameters indicate timely delivery and transportation quality to be of high importance for satisfaction with their mean values being 4.47 and 4.35.

The smooth flow of the supply chain and prevention of interruptions in the supply chain is the reason for the relatively high importance.

While all of the parameters were marked as highly important, the mutual trust between the distributors and their suppliers was of relatively higher importance as there is the need for mutual trust in such relationships.

Collaborative relations in the form of mutual trust and timely communication of any policy changes, communication of campaigns, schemes were also found to be of great significance.

Table 4.4: Correlation matrix delivery and Association with distributors

Correlations		Delivery reliability	timely delivery	Transportation quality	Product variety	delivery quantity	flexibility in delivering	Communications	Mutual trust	Joint problem solving
Delivery reliability	Pearson Correlation	1	.371	-.425	-.494	.259	.437	-.050	-.046	.051
	Sig. (2-tailed)		.142	.089	.061	.315	.156	.849	.862	.846
	N	17	17	17	15	17	12	17	17	17
timely delivery	Pearson Correlation	.371	1	.025	-.293	.116	-.230	-.109	.276	.078
	Sig. (2-tailed)	.142		.923	.290	.657	.472	.678	.284	.767
	N	17	17	17	15	17	12	17	17	17
Transportation	Pearson Correlation	-.425	.025	1	.291	-.217	-.112	-.188	-.191	-.127

Correlations		Delivery reliability	timely delivery	Transport ation quality	Product variety	delivery quantity	flexibility in delivering	Communi cations	Mutual trust	Joint problem solving
quality	Sig. (2-tailed)	.089	.923		.292	.402	.729	.471	.462	.628
	N	17	17	17	15	17	12	17	17	17
Product variety	Pearson Correlation	-.494	-.293	.291	1	.003	-.023	-.456	-.136	-.336
	Sig. (2-tailed)	.061	.290	.292		.991	.945	.088	.629	.221
	N	15	15	15	15	15	12	15	15	15
delivery quantity	Pearson Correlation	.259	.116	-.217	.003	1	.693*	-.281	-.021	.143
	Sig. (2-tailed)	.315	.657	.402	.991		.012	.275	.937	.584
	N	17	17	17	15	17	12	17	17	17
flexibility in delivering	Pearson Correlation	.437	-.230	-.112	-.023	.693*	1	-.334	-.411	-.097
	Sig. (2-tailed)	.156	.472	.729	.945	.012		.288	.185	.765
	N	12	12	12	12	12	12	12	12	12
Communications	Pearson Correlation	-.050	-.109	-.188	-.456	-.281	-.334	1	.607**	.595*
	Sig. (2-tailed)	.849	.678	.471	.088	.275	.288		.010	.012
	N	17	17	17	15	17	12	17	17	17
Mutual trust	Pearson Correlation	-.046	.276	-.191	-.136	-.021	-.411	.607**	1	.660**
	Sig. (2-tailed)	.862	.284	.462	.629	.937	.185	.010		.004
	N	17	17	17	15	17	12	17	17	17
Joint problem solving	Pearson Correlation	.051	.078	-.127	-.336	.143	-.097	.595*	.660**	1
	Sig. (2-tailed)	.846	.767	.628	.221	.584	.765	.012	.004	
	N	17	17	17	15	17	12	17	17	17
*. Correlation is significant at the 0.05 level (2-tailed).										
**. Correlation is significant at the 0.01 level (2-tailed).										

From the above correlation table, it can be concluded that:
There is a very strong correlation between mutual trust and joint problem solving, Mutual trust and communications, all of which falls under the broader category of collaborative behaviour between the two parties. There is a strong correlation between flexibility in delivering and delivery quantity with both of these factors being closely interrelated. The distributor expects their upstream suppliers to deliver smaller quantities when required while being flexible with the delivery.

Table 4.5: Cross tabulation for Delivery reliability and association with Distributors

Type of Distributor * Delivery reliability Crosstabulation			Delivery reliability				Total
			Not Important	Fairly Important	Very Important	Extremely Important	
Type of Distributor	Branded Only	Count	0	0	1	4	5
		% within Type of Distributor	0.0%	0.0%	20.0%	80.0%	100.0%
		% within Delivery reliability	0.0%	0.0%	16.7%	50.0%	29.4%
	Generics only	Count	1	0	3	1	5
		% within Type of Distributor	20.0%	0.0%	60.0%	20.0%	100.0%
		% within Delivery reliability	50.0%	0.0%	50.0%	12.5%	29.4%
	Generics and branded	Count	0	1	2	2	5
		% within Type of Distributor	0.0%	20.0%	40.0%	40.0%	100.0%

Type of Distributor * Delivery reliability Crosstabulation							
			Delivery reliability				Total
			Not Important	Fairly Important	Very Important	Extremely Important	
		% within Delivery reliability	0.0%	100.0%	33.3%	25.0%	29.4%
	Surgicals	Count	1	0	0	1	2
		% within Type of Distributor	50.0%	0.0%	0.0%	50.0%	100.0%
		% within Delivery reliability	50.0%	0.0%	0.0%	12.5%	11.8%
Total		Count	**2**	**1**	**6**	**8**	**17**
		% within Type of Distributor	**11.8%**	**5.9%**	**35.3%**	**47.1%**	**100.0%**
		% within Delivery reliability	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

With the factor of delivery reliability, both the exclusively branded and the distributors dealing with branded and generic medication stressed on the importance of delivery reliability ranking it from very important to critically important. Similarly cross tabulation was performed for other criteria and the following results were revealed:

Cross tabulation for Timely delivery and association with Distributors:
In the case of the factor of timely delivery, the generics only distributors as well as distributors dealing with both kind of products ranked it to be very to critically important. This is a major indicator of how smoothly the supply chain operates without interruptions.

Cross tabulation for Transportation quality and association with Distributors:
When it comes to the delivery factors, reliability was the important consideration for distributors dealing solely with branded medication. The rest of the distributors were split on the parameter while still ranking it high.
On the issue of transportation quality, all the types of distributors rated it to be very to extremely important in satisfactory relationship. With the interruption in supply chain caused by lower transportation quality, which can cascade into late delivery to the downstream partners, i.e., retailers can be the possible reason for the high rank.

Cross tabulation for Mutual trust and association with Distributors:
There is a consensus among all the types of distributors of the important role mutual trust plays in the satisfactory relationship between the distributors and their upstream suppliers. 80- 100% of the distributors stated it to very to extremely important.

Cross tabulation for Communications and association with Distributors:
There is a strong tendency of all the types of distributors to assess mutual trust as the most important factor in a satisfactory relationship. This is closely followed by timely communications. The reason for the relatively lower rank for the joint problem solving parameter is it is a function of mutual trust and the relatively lower occurrence of such scenarios altogether.

Contrasting the Differences Between the Buying Behaviors of Standalone Pharmacy, Retail Pharmacy Chain and Hospital Pharmacy:
The contrast between the purchasing behaviour and the supplier selection criterion of the standalone pharmacies is explained below.

Table 4.6: Stand alone pharma supplier selection matrix Statistics

	Brand of the product	Overall Margins	Inventory turnover	Discounts	Regularity of Scheme	Value of Scheme	Credit period	Ease of stock return
Mean	8.86	8.14	7.79	7.57	7.43	7.42	5.36	6.50
Std. Deviation	1.834	1.748	2.045	2.102	1.950	1.828	4.308	3.414
Variance	3.363	3.055	4.181	4.418	3.802	3.341	18.555	11.654

From the above table, it can be concluded that the most important criterion for the retailer in selecting a distributor or wholesaler to associate with is the brand followed by margins, turnover and discounts.

The schemes were also found to be an important criterion especially for the products with a lower turnover and hence are given by the distributor in order to improve the push of the product.

Ease of stock returns was found to be of relatively lower importance as such returns follow standard protocols with standards being set by the regulating authority.

Credit period was found to be of less importance but the standard deviation and the variance suggests that the parameter lies in the spectrum of either of high importance or low importance based on the retailer.

Key findings related retailer association with supplier on important criteria:

Brand of the product:
85% of the retailers considered brand to be an important factor in associating with the distributor with 65% of the retailer considering brand to be an extremely important factor.

This is especially true for the retailers that are highly reliant on the doctors in the surrounding areas.

Substitution of medication, even with the substitute being completely identical to the medication prescribed has seen a relatively lower acceptance by the end consumer.

Margins provided by the distributor:
85% of the retailers consider margins to be either extremely or very important factor in associating with a distributor. Half of the retailers consider margins to be extremely important and 36% consider margins provided to be important in associating with the distributor.

Inventory turnover:
Inventory turnover of the products was found to be the third most important factor in determining the association criterion with about 70% of the retailers either considering it an extremely important or a very important factor in associating with the distributor. Half of the respondents claim it to be an extremely important factor for associating with a distributor.

Discounts and schemes provided by the distributor:
The importance of discounts and schemes are apparent for the selection of a distributor, esp. with products with lower inventory turnover with 43 and 35 % of the retailers stressing on the critical importance of the discounts and schemes for associating with a distributor.

Credit period provided by the distributor:
About half of retailers consider credit period to be an important factor in associating with a particular distributor. This is especially true for retailers with smaller retailers who highly depend on lengthier credit period to sustain in the space due to relatively lower cash reserves.

Ease of Stock returns:
Ease of stock return was also considered to be an important criterion with 42% of the respondent group claiming it to be a critical factor in selection of a distributor.

The ease of stock return was considered for near expiry and expired stock with some distributors, especially for generic medication, not accepting returns in which case, the retailer has to bear 100% of the loss. This is a considerably less existent condition and can be a result of overstocking during highly beneficial schemes.

FINDINGS:

Factors Impacting Distributor's Association with their Upstream Suppliers:
The objective studies the various factors that impact the distributor association criteria with a company and scores the factors that impact their decision.

Through the review of the literature, several factors were zeroed in upon and the most important factors were measured on a Likert scale.

Of all the factors, Inventory turnover was found to be the most important factor in association with a particular upstream supplier. This was closely followed by the margin provided by the upstream suppliers.

Regularity and the value of schemes were also found to be important association criteria given that push for the product becomes easier with the schemes associated with the purchase of a larger quantity of the products. This

is especially true with the suppliers dealing with only generic medications.

Ease of stock returns was found to be the least significant in association intention with a supplier given that such returns are very few in number.

From the correlation analysis, brand and exclusivity show a very strong correlation indicating the demand to be the exclusive distributor in a trade area when branded medications are concerned. Discounts and regularity of schemes also show a very high correlation and a very high correlation was seen between the value and regularity of the schemes to be passed onto the retailers.

For a brand as a criterion, the distributors of exclusively branded products rated it extremely important, whereas the distributors of both the generics and branded medication found it to be in the midway of somewhat and very important. The exclusively branded as well as generic distributors ranked Inventory turnover to be extremely important. The surgical distributors are split half with half of them stating inventory turnover to be extremely important and the other half saying it to be very important.

With margins, Generic distributors and distributors dealing with both the generic and branded stressed the importance of margins while the distributors of exclusively branded medications didn't stress on the margins provided by the suppliers.

This is because of the nature of the 2 distinctly varied markets where the generic market is highly competitive and vice-versa.

When it comes to the exclusivity of the distribution, 100% of the distributors dealing with branded medication exclusively claimed it to be very to extremely important and 80% of the exclusively generic distributors claimed it to be not at all important.

With Credit period, the distributors dealing with exclusively branded, medication stated that the credit period is of little significance to them. This is in contrast with the exclusively generic distributors who state credit period to be of high to extreme importance.

This is in part because of the size of the distributor with a majority of distributors for generics being very small, and hence with smaller surplus cash and the branded medication distributors being relatively large with a larger cash surplus.

Factors Impacting Distributor's Satisfaction:

With Hypothesis 2, factors extracted from the review of the literature and their relationship with distributor satisfaction was studied.

The results indicate timely delivery and transportation quality to be of high importance for satisfaction with their mean values being.

The smooth flow of the supply chain is the reason for the relatively high importance as the lack of satisfaction of these 2 parameters would likely indicate there would be an interruption of the smooth flow of the goods to their downstream buyers.

While all of the criterions were marked as highly important, the mutual trust between the distributors and their suppliers was of relatively higher importance as there is the need for mutual trust in such relationships.

Collaborative relations in the form of mutual trust and timely communication of any policy changes, communication of campaigns, schemes were also found to be of great significance for the satisfactory relationship between the 2 parties.

From the correlation analysis, it can be inferred that there is a very strong correlation between mutual trust and joint problem solving, Mutual trust and communications, parameters that fall under the broader category of collaborative behavior between the two parties.

When it comes to the delivery factors, reliability was the important consideration for distributors dealing solely with branded medication. The rest of the distributors were split on the parameter while still ranking it high.

Timely delivery was ranked higher for generic distributors while the other types didn't stress its importance. On the parameter of transportation quality, all the types of distributors rated it to be very to extremely important in a satisfactory relationship. With the interruption in supply chain caused by lower transportation quality, which can cascade into late delivery to the downstream partners, i.e., retailers can be the possible reason for the high rank.

There is a strong tendency of all the types of distributors to assess mutual trust as the most important factor in a satisfactory relationship. This is closely followed by timely communications. The reason for the relatively lower rank for the joint problem-solving parameter is it is a function of mutual trust and the relatively lower incident of such situations.

In conclusion, it can be inferred that the parameter of a collaborative relationship between the 2 parties as well as factors that can play a vital role when it comes to supply chain interruptions play an important role in determining the satisfaction of relationship between distributors and their upstream suppliers.

Contrasting the Differences Between the Buying Behavors of Standalone Pharmacy, Retail Pharmacy Chain and Hospital Pharmacy:

The third hypothesis tries to distinguish between the 3 pharmaceutical retail formats that include: Standalone pharmacy, retail pharmacy chains, and hospital pharmacy.

Analysis for the standalone pharmacy indicates that the most important criterion for the retailer in selecting a distributor to associate with is the brand followed by margins, turnover, and discounts.

The schemes were also found to be an important criterion especially for the products with a lower turnover and hence are given by the distributor in order to improve the push of the product.

This is especially true when it comes to the generic product category that relies heavily on the retailers push. This is only true when it comes to the standalone pharma and not the other two as they are highly reliant on the centralized purchase or doctors in the hospitals for their purchase decision.

Credit period was found to be of less importance but the standard deviation and the variance suggest that the parameter lies in the spectrum of either of high importance or low importance based on the retailer's purchasing power where smaller retailers rank this parameter high.

The retailers considered brand to be an important factor in associating with the distributor with a large proportion ranking it to be an extremely important factor.

Margins were also designated to be either extremely or very important factor in associating with a distributor. About half of the retailers consider margins to be extremely important and a good proportion of the rest considered margins provided to be important in associating with the distributor.

Inventory turnover of the products was found to be the third most important factor in determining the association criterion with about 70% of the retailers either considering it an extremely important or a very important factor in associating with the distributor. Half of the respondents claim it to be an extremely important factor for associating with a distributor.

The importance of discounts and schemes are apparent for the selection of a distributor, esp. with products with lower inventory turnover with a large number of the retailers stressing on the critical importance of the discounts and schemes for associating with a distributor.

Ease of stock return was also considered to be an important criterion with 42% of the respondent group claiming it to be a critical factor in selection of a distributor.

The ease of stock return was considered for near expiry and expired stock with some distributors, especially for generic medication, not accepting returns in which case, the retailer has to bear 100% of the loss. This is a considerably less existent condition and can be a result of overstocking during highly beneficial schemes.

The standalone pharmaceutical retailer depends on their own judgements while it comes to procurement. The above mentioned selection criterion is purely a projection for the stand alone formats.

In contrast to this, retail pharmaceutical chains and hospitals tend to have centralized procurement units enabling both bulk purchase with no intermediaries or very few intermediaries enabling discounts to the end consumer.

The centralized purchasing units for retail pharmacy chain takes care of :

1. Managing hundreds and thousands of brands and products in terms of sourcing
2. Automated Inventory management and ordering as per local demand to avoid additional capital investment needs and minimize losses

This minimizes the loss of margins by sourcing all products directly from manufacturers and its direct authorized distributors only. The stocks are maintained in proper storage conditions during warehousing and transportation to the pharmacies, further minimizing losses due to damage.

Due to reach and better negotiating capacity because of the size, the ability to earn a better income is higher through this channel. This is a shared income between the franchise and its associates.

The hospital pharma relies heavily on branded medications with the doctor being an important deciding factor in composition determination. The margins are increased due to the contracts negotiated between a few selected distributor and the procurement incharge of the hospital pharmacy.

This in turn is reliant upon the doctors operating in the hospitals as all of the traffic to the hospital pharma is prescriptions from the doctor operating in the hospital.

Supply Chain Framework of the Indian Pharmaceutical Industry:

Clear interrelations are seen among the individual components of the value chain with distinguishing features of all the components involved.

The distributor's satisfactory relationship with the manufacturer depends upon the collaborative behaviour factors that include mutual trust, timely communication and the joint problem solving along with factors that affect the supply chain. The presence or absence of factors such as timely delivery and delivery reliability was

closely related to the satisfaction of the distributor with their upstream supplier.

While Inventory turnover and margins were the most emphasised factors in associating with their upstream suppliers, the distributor also emphasised on the importance of the schemes that are to be passed onto the retailer. This is especially true with the generic drug distributors where the market is highly competitive and the retailers' purchase being highly influenced by value and regularity of the schemes.

The retailer on the other hand emphasised on factors that are closely connected to the return on investment with inventory turnover, margins and schemes being stressed upon.

Contribution to the Body of Knowledge

The study is confined to the pharmaceutical distributors, retailers, and consumers of Bengaluru, several insights on the pharmaceutical industry including the association criteria and factors impacting the satisfaction of a pharmaceutical distributor with their suppliers, contrasting buying behaviors of the 3 separate formats of pharmaceutical retail. This research can be a stepping stone for more in-depth research which will help us better understand the dynamics of the pharmaceutical industry.

Managerial Implications:

The managers can relook their strategy and align the compensation, both monetary and nonmonetary, with the association criterion to improve their value proposition to the distributors.

Also, the pharmaceutical companies can improve their relationship management and prevent instances of supply chain interruptions to improve distributor relationship.

The generic drug manufacturer can focus on optimizing schemes as schemes were found to be important for the retailers.

CONCLUSION:

The study thus proves an interrelation among the various components of the supply chain. The pharmaceutical companies can consider the findings to make suitable changes in the components including distributor's association and satisfaction criteria, At the same time, the distributors can also look at the purchase behavior of the retailers to improve their relationship with the retailers.

With the industry dynamics in a constant flux, the pharmaceutical components must be closely monitored to constantly modify the offering in order to sustain and thrive in the marketplace.

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