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Logistical Reasons Causing Return from Retail: A Case of Pharmaceutical Retail Market in Pakistan

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Abstract : ***The main objective of the study was to identify the factors, especially related to logistics, that contribute the most to product returns from retail pharmacy market back to distributers and manufacturers. From literature search the mostly emphasized three logistical factors namely Customer Service (CS), Inventory and Storage (IS) and Transportation were picked to study their impact on Returns (RE). This study was conducted for the retail pharmacy market of Pakistan. Data was collected through a close ended questionnaire by a small team of enumerators. A total of 161 valid responses from a sample of 370 pharmacies, picked randomly, were received and analyzed through SPSS. The analysis indicated that CS and IS are significant contributors for the return of medicines (RE) from pharmacies to wholesalers or distributors. Role of TR was not very significant in the sample picked for this research.***

Keywords: Product returns, pharmacy, customer service, inventory, storage, transportation.

1. BACKGROUND

Pharmacies return product back for a variety of reasons, most common of them is life expiry of medicines but there are many other reasons such as product damage, compound breakdown, incorrect product or size delivered etc. Unlike return of medicine from end users, the product returned from retail shops or pharmacy outlets does not touch the hands of the users, so it is usually rechecked by the quality control of pharmaceutical manufactures in order to be eligible for resale. Anyhow, product returns within channel partners are still a big problem, as it is the wastage of resources and efforts of the organizations involved. There might be various reasons, avoidable or unavoidable, but for sure returns consume additional resources ultimately adding up to the cost of supply of medicines. Would it not be better to reduce all unnecessary and additional consumption of resources, in handling the return of medicines, to make the supply chain more efficient? Few studies are carried out which discussed this burning and sensitive issues in different markets.

The intent of this study is to explore the weaknesses in forward logistics and related activities, at retailer pharmacies, which cause return of medicines from retailer to wholesalers,

distributor and pharmaceutical manufacturers and also to study the mishandling and shortcomings at the end of retailer causing product return. This study will review the intensity of factors that trigger return of medicine back to their supplier or in upstream to their supply chain partners. What we aim to do is, to re-examine few of the already defined reasons or category of reasons which trigger product returns in Pakistan's retail pharmacy market, and then we will look at which among these reasons are the main contributors towards product returns. Following are the research questions which this researcher will try to get answers for.

- What are general factors that trigger product return?
- What are contributions of those factors to the product return?
- Which logistical factor is the biggest contributor to the pharmaceutical product returns?

In next section of this research paper we will try to search answers for the above question in the available literature and then will empirically analyse the hypotheses established about the logistical factors that cause return of medicine from of retail pharmacy market to distributors and manufacturers.

2. LITERATURE REVIEW

The science and the business behind pharma have existed for centuries in the form of ancient remedies and usage and supply of herbal medicines (Taylor, 2016). But wars were the real driver behind the growth of pharma industry (Torrejon, 2015), as Pfizer struck gold during the American civil war (Taylor, 2016). Although the period between 1918 and 1939 is considered as the breakthrough period for pharma industry but after the World War II the pharmaceutical companies changed their focus and instead of selling medicines to high purchasing parties like governments, institutions, military etc., they started selling their products to general public directly or through channel partners. For this reason, ways to maintain quality were explored while keeping the cost as low as possible (Torrejon, 2015). It is highly argued that needy markets should be allowed to take back and sell product returned from customers after quality reevaluation (Narayana, et al, 2019) against the current policies to destroy the returns from patients (World Health Organization, 2003) which is an additional cost and reason for some pharmacies to have a no return policy (Narayana, et al, 2019).

The pharmaceutical industry has generally divided medicines into three categories; *Prescription medicines*, which are only sold to the customer if and when they prove that the medicine was prescribed by an appropriate medical professional. *Pharmacy medicines* (Generic) do not require a prescription but are only sold at pharmacies and, *Over the counter* (OTC) (or general sales list), are those kinds of medicines that can be purchased from any shop (Medicine Act, 1968; Choangalia, & Deshmukh, 2018).

With medicines that fall into the category of either Prescribed or Pharmacy medicines, the doctor becomes the customer, and the patients becomes only the end consumers, as they no longer have the option to make a choice. This also makes the customer (doctor) a very competent person to evaluate product (Westfall, et al, 1997). The doctors have far more information on the formula and composition of the medicine and how it will affect patients, as compared to the knowledge of the salesperson, who is tasked to convince the doctor to write the medicine for the patient (Ahmed & Jalees, 2008). The marketing in pharmaceutical industry is very less consumer interactive, and relies more on direct marketing, medical journals, sponsorships, medical conferences, giving out samples to doctors and pharmacies and other methods are used, all of which are to interact with the doctor or the chemist in big pharmacies. The use of media advertisement, like radio, TV and billboard is largely restricted and only available for some OTC medicines, and very few other pharmacy medicines (Ahmed & Sattar, 2014). Once the patient starts taking the medicine, it is highly likely that the patient will take the same medicine again if faced with the same condition, as around 76% of patient practice self-medication (Waheed, 2017). Some patients/consumers also do not prefer getting a different brand medicine to that which was written by the doctor, even if

both carry the same chemical formula, it also affects the goodwill of the pharmacy in a negative manner (Abbas & Farooquie, 2018).

3. LOGISTICS AND DISTRIBUTION OF MEDICINES

The distribution is defined as the physical and legal movement of any product. In any industry, distributor is the key point as it is the gateway of communication between the manufacturers and the wholesalers and retailers, making the distributor the main party that mainly relies on better logistics services for the sake of customer satisfaction and service quality (Rosenbloom, 2004). Globally a mistake of billions dollars, in the shipment of its products, is made by the pharmaceutical industry and the consequences of such mishaps eventually affect the customer. Theses mishaps are mainly because of lack of proper logistical operations. The two biggest reasons are; the delay in shipments, which reduces the shelf life of the medicine for the retailer, if they are not expired already during the shipment and the other being shipment of medicines at a temperature which does not match the temperature range that is recommended for storage of that medicine. Such mistakes make theses medicine less effective, as the chemical compounds break down, which leads to three possible scenarios, first being the medicine less effective as the chemical built is not as strong due to breakdowns, second is the possibility that the medicine breakdowns into mundane compounds, which make medicine useless and the third possibility is that the chemical breaks down into compounds that are actually harmful to its users. In any of the above scenarios the medicine becomes definitely ineffective, if not dangerous to use (Sykes, 2018).

Proper storage and appropriate distribution methods are important for the distribution of any product but in the case of medicines these become more important and sensitive than the non-availability of medicine itself. If medicines are not properly handled, delivered and stored then the consequences may result in major increases in cost and more importantly injurious to health (Ali, 2016; Sykes, 2018), because of breakdown of chemical compound, which in the language of science is called half-life. Half-life is a time period in which the radioactivity of a certain isotope drops by half. For heavy and unstable compounds, it is just a matter of days, and these compounds are used in many drugs, especially for drugs like that of cancer. Some medical products also change form when exposed to temperature moisture, sunlight, and heavy motion and handling. (Sykes, 2018).

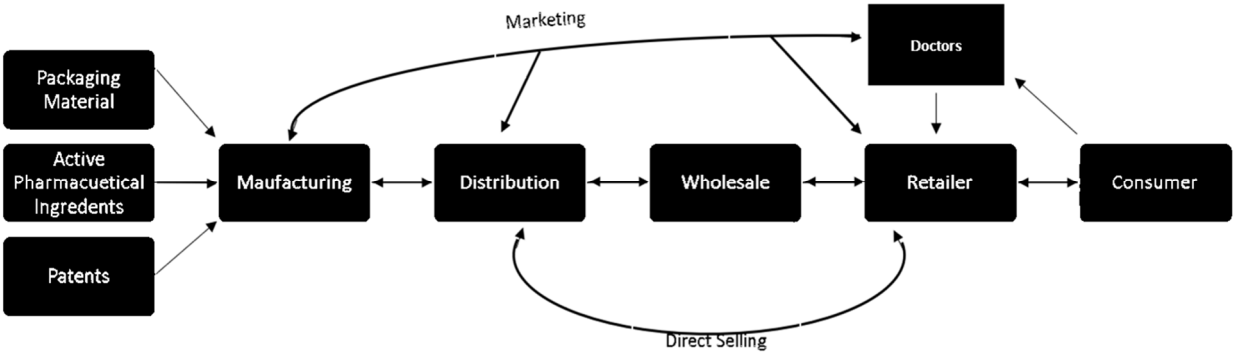


Figure 1: Pharmaceutical Supply Chain
Source: Choangalia, & Deshmukh, 2018; Ahmed & Sattar, 2009

Along with the forward flow of product towards the consumer, also comes a reverse flow of product from various members of the value chain toward the manufacturer. Rarely the consumer wishes to return the medicines for money refund or exchange for complaints about customer services as it apparently does not matter to consumers and mostly it is due to the price of the medicine in relation to the purchasing power of the buyer (Abbas, 2013). According to the requirements set by World Health Organization (WHO), any returns, recalls and reissues coming from the patients/consumer should not be taken back for stock or re-evaluation but should directly

be destroyed. If it is from a pharmaceutical firm then all recalled and returned pharmaceutical products should be handled accordingly with proper method and approved procedures and all related data and information should be maintained in records. These returned products should not be sold or mixed with salable products and be kept in quarantine until it has been approved by professional quality control personnel who is an expert and is officially nominated to handle quality check and re-evaluation. All such stock return transactions must be identifiable and maintained into the records of inventory and/or stocks (World Health Organization, 2003).

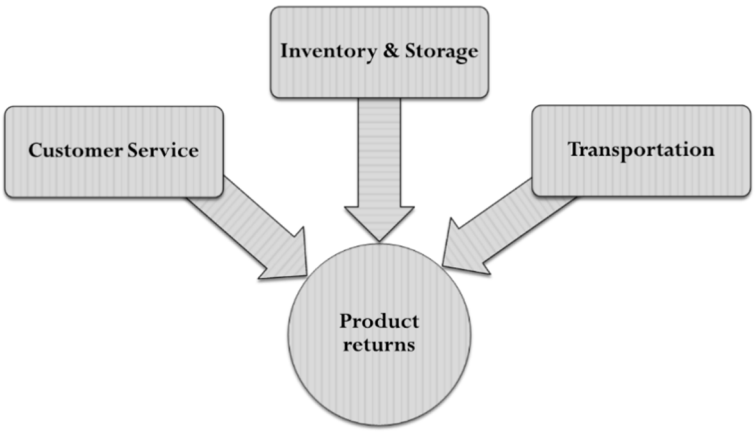
Logistic factors like traffic can also damage the quality of product and sometimes some chain members are not capable of carrying out proper quality checks during handling and transportation. A heavy investment made on implementing quality controls and checks make the transport methods more effective (Nsamzinshuti et al, 2017). Sometimes factors like safety stock can also cause product returns. Factors related to safety stock can arise because of forecasting errors or lack of information regarding the life of the product (Narayana, et al, 2019). One of the major causes of product return is also the insufficient knowledge and lack of information communication and awareness which worsens further along the downstream over the length of supply chain. The longer the supply chain goes the lesser care is taken of the product, additionally the manufacturer losses control and due to lack of right awareness not enough attention is given in terms of handling, storage, and distribution. Additionally, towards the lower end of supply chain there are less regulations and controls compared to the upstream of supply chain (Sykes, 2018). There are various other factors which affect the return from pharmacies and one of them is the design of the distribution network system. Sometimes medicines have to cover the longer geographic area of distribution and that is due to longer supply chain and lengthy downstream and complex distribution channel partners, which causes numerous exchanges of hands the product goes through (Macmillan, 2012). Secondly the capability and extent of the use of information technology within retail market; which ensures how well the inventory is controlled and does the information about the product being communicated between supply chain members, like what is the average consumption rate of the area that the pharmacy servers. Thirdly, is the quality of storage; which means how medicines are stored, capability of storage facility, methods of material handling and stocking (Macmillan, 2012; Narayana, et al, 2019). Finally, it is quality and efficiency of transportation and delivery systems which includes functions like delivery cycle, vehicle capability and condition, route and schedule of delivery (Macmillan, 2012; Sykes, 2018; Narayana, et al, 2019).

Moreover, there are also few logistics related factors which are mostly overlooked by many researchers but still are very much important. Such factors are divided into many various sub-fields, like packaging; which is highly important in the pharmaceutical industry as not only does it need to focus on regular things which other industries face to but it has to deal with problems like counterfeit medicines as well (Pareek & Khunteta, 2014). Moreover integration, recommendations, customer focused product design and more importantly, the guidelines for customer service and satisfaction, if not followed properly might lead to product returns as well (Ahmed & Sattar, 2009; Abbas & Farooquie, 2018; Duffy & Clark 2003). The distributor is also responsible to keep track of expiries, it ends up becoming a major problem for the manufacturer. Most of reputed manufacturers maintain a 1% to 2% expiry levels of their total sales, anything more than this is a problem. The wholesaler/pharmacy retailer has to inform the distributor 5-6 months before the product expires and the distributor has to tell the company 3-4 months before the expiry date. The company then tries to liquidate the stock otherwise it will have to compensate the wholesaler and/or retailer (Filmore, et al, 2004; Ahmed & Sattar, 2009).

4. RETAIL PHARMACY MARKET IN PAKISTAN

A 2014 data of pharma products sold in Pakistan shows that 64% of sale comes from Generic pharma products, while Prescription medicines and over the counter sale (OTC) bring in 10% and 26% of sales respectively (Choangalia, & Deshmukh, 2018). A common activity found

among the people of Pakistan is the act of self-medication, which is a major force in drug sales, this trend is seen in all areas of the country (Waheed, 2017). Records from 2017 show that in Pakistan manufacturing units of pharmaceutical industry are in total of 759, these also include manufacturing units of 25 multinational pharmaceutical corporations in Pakistan. In total the industry is only capable of meeting demand in range of 70% for the entire country. This could be due to the reason that the industry is concentrated in some parts of the country, like the high presence in provincial capitals (Waheed, 2017). While the province of Punjab has the highest number of pharmaceutical businesses, but if we talk in terms of size of business, production levels, capacity utilized then Karachi is the business hub of pharmaceutical industry (Waheed, 2017). In the pharmaceutical industry of Pakistan, marketing/sales is either done by the company itself or it is outsourced but most of the companies prefer to handle it in-house to have more control by training their staff as how to strengthen relationship between doctors and the sales persons for long term benefits. Similarly, distribution can also be done by the company itself or be outsourced, either nationally or regionally. Many companies prefer regional outsourcing because distribution is a costly scenario and business have to freeze a very high amounts of funds for longer period and national level distribution, obviously needs higher funds and resources. Compared to national distributor, regional distributor provide more flexibility and control to the manufacturing company and lower average distribution cost (Ahmed & Sattar, 2009).



Stock is provided in exchange of advance payment by the manufacturer to the distributor, in order to reduce the cash flow pressure, various polices also force the distributor to have 1-month worth of stock at all times, meaning that the distributor has to pay for 2-months' worth of stock and cycle the inventory with respect to lead time and minimum inventory levels (Duffy & Clark, 2003). The distributor goes through financial troubles when selling a new product or when selling to an institution, as they take a 30-day credit period (Ahmed & Sattar, 2009). In Pakistan the entire pharmaceutical marketing hinges around prescription generation by doctors which liquidates the inventory in pharmacy, allowing the cycle to run, Companies focus on generating prescription, while they take the information from the distributor if the product is moving accordingly (Kola & Landis, 2004).

5. RESEARCH FRAMEWORK AND METHOD

Based on the search in literature, the framework for this research will include and analyze the impact of mostly researched and agreed factors causing reverse flow to upstream partners or return of medicines from retail pharmaceutical market to distributers and manufacturers. In our model *Product Return* (RE) is the dependent variable and the major factors or predictors for the return of medicine from retail pharma market are *Customer Service* (CS), *Inventory and Storage* (IS) and *Transportation* (TR) which according to the literature are the major reasons for return of medicine from retail pharmacy market.

Product Returns (RE): Product returns from retail pharmacy market to supplier / distributor / wholesaler is what we are studying and want to see which factor affects or triggers returns most. It is the dependent variable in our analysis.

Customer Service (CS): Appropriate logistics services are the biggest contributor to the customer service, for not only the end user but also for business customer. Many sub fields of logistics like packaging, safety seals, recommendations and idea sharing, integration, and even product design are part of customer service, and all of these are very important to discourage product return. This variable is used as independent variable in this model.

Inventory and Storage (IS): This factor includes activities such as quality maintenance, ordering quantity, over and under stocking, temperature control, spoilage prevention, damages and material handling. This variable is also used as independent variable in this model.

Transportation (TR): This factor has become synonym with logistics, it includes sub factors like, vehicle storage, in vehicle temperature control, scheduling, transportation related material handling, collision control, transportation time etc. This variable is also used as independent variable in this model.

Considering the above variables, the following hypotheses are formulated to achieve the objective of the research and to get answers for the question raised.

H_1: The level and quality of Customer Service provided by suppliers is significantly related to product returns.

H_2: The pharmacies' Inventory and Storage is significantly related to product returns.

H_3: The Transportation from Supplier to Pharmacies (and medical stores) is significantly related to product returns.

This study is limited to the city of Karachi which is the largest port city and undoubtedly the commercial hub of Pakistan. For the sake of convenience in the collection of data the city was imaginarily divided into five zones; the East, West, North, South and Central. These zones can be considered as a sort of strata for the collection of data. The population of pharmacies and medical stores in Karachi is within the range of 4000 to 5000 retail stores in Karachi. The sample analyzed here consists of 161 retail pharmacies selected randomly. The participating outlets were given a questionnaire to fill in. The survey instrument contained 52 questions in all. Few questions were about the profile of respondents and most of the questions, taken from similar studies, were on Likert scale. Since some of the respondents were unable to understand questions in English so questionnaire was made in both Urdu and English languages.

6. ANALYSIS AND RESULTS

Sample Profile

The distribution of the population and our sample is well spread out evenly. Our sample shows that most of the sample pharmacies are near hospital, as that make some strategic sense.

Table 1: Profile Statistics of Responding Businesses

Attributes	Frequency	
Geographical Distribution	North	33
	South	29
	East	37
	West	32
	Central	30
Proximity to Hospital Clinic	Near to Hospital	96
	Away from	65
Age of Business	1 to 5 years	14
	6 to 10 years	90
	11 to 20 years	51
	21+ years	06

Number of Employees	1 to 3 persons	45
	4 to 6 person	86
	7 to 10 persons	22
	11+ persons	08
Type	Stand Alone	136
	Chain Business	25
Operating Hours	12 Hrs.	135
	18 Hrs.	23
	24 Hrs.	03

Looking at the age of business we can say that most of our respondents are well established. It was also noted that most of the pharmacies do not require too many people to operate, hence the range of 4 to 6 was very common. Also, more than 80% of the pharmacies work only for 12 hours and only 3 out of 161 were open for 24 hours.

Reliability and Descriptive Statistics

Cronbach's alpha is a measure of internal consistency, that is, how closely related a set of items are as a group. It is considered to be a measure of scale reliability. A "high" value for alpha does not imply that the measure is unidimensional. As shown in Table 2, the total reliability of all the variables in this research is 0.701 which is just within the acceptable moderate range.

Table 2: Reliability Test

Reliability Statistics	
Cronbach's Alpha	N of Items
.701	28

The Descriptive Statistics given in Table 3 explains the size of sample, the center, spread and the shape and distribution of data. For 161 observations the mean and standard deviation is given here.

Table 3: Descriptive Statistics

	Mean	Std. Deviation	N
RE	20.5652	3.81081	161
CS	27.1863	3.97210	161
IS	30.3602	5.01940	161
TR	28.1677	5.26336	161

Table 4 shows the results of correlation analysis. There is a low correlation between RE and CS which is 0.299 but P value is 0.000 which is less than 0.05 mean we accept hypothesis RE and CS. Also, low correlation between RE and IS which is 0.221 but again the P value is 0.002 which less than 0.05 means we accept hypothesis RE and IS. There is negative low correlation between RE and TR which is - 0.123 and P value is 0.059 which greater than 0.05 mean we reject it

Table 4: Correlations

		RE	CS	IS	TR
Pearson Correlation	RE	1.000	.299	.221	-.123
	CS	.299	1.000	.143	-.006
	IS	.221	.143	1.000	.077
	TR	-.123	-.006	.077	1.000
Sig. (1-tailed)	RE	.	.000	.002	.059
	CS	.000	.	.035	.468
	IS	.002	.035	.	.166
	TR	.059	.468	.166	.
N	RE	161	161	161	161
	CS	161	161	161	161
	IS	161	161	161	161
	TR	161	161	161	161

Hypotheses Testing with Regression Analysis

Model summary shown in Table 5 provides information about the regression line's ability to account for the total variation in the dependent variable. As can be seen from this table, the value of our R^2 is 0.439, which means that 43.9 percent of the total variance in Product Return (RE) has been explained by our three predictors denoted as TR, CS, and IS in this model.

Table 5: Model Summary [b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	..663[a]	.439	.428	3.56670	.439	8.550	3	157	.000

a. Predictors: (Constant), TR, CS, IS
b. Dependent Variable: RE

Table 6 shows the statistical significance of the model. The F-ratio in the ANOVA tests tells whether the overall regression model is a good fit for the data.

Table 6: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	326.312	3	108.771	8.550	.000[b]
	Residual	1997.253	157	12.721		
	Total	2323.565	160			

a. Dependent Variable: RE
b. Predictors: (Constant), TR, CS, IS

The table shows that the independent variables statistically significantly predict the dependent variable, *F (3, 157) = 8,550, p (.001) < .05* which shows that the regression model is a good fit of the data.

Statistical significance of the independent Variables: Statistical significance of each of the independent variables tests whether the unstandardized (or standardized) coefficients are equal to 0 (zero) in the population (i.e. for each of the coefficients, H0: $\beta = 0$ versus Ha: $\beta \neq 0$ is conducted). If $p < .05$, the coefficients are statistically significantly different to 0 (zero). The usefulness of these tests of significance are to investigate if each explanatory variable needs to be in the model, given that the others are already there.

Table 7: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	11.848	2.808		4.220	.000
	CS	.260	.072	.271	3.624	.000
	IS	.146	.057	.192	2.565	.011
	TR	-.099	.054	-.137	-1.840	.068

a. Dependent Variable: RE

In this table, the tests tell us that Customer Service (CS) *p (.000) < 0.05* and Inventory & Storage (IS) *p(.011) < 0.05* are significant, but Transport (TR) is not significant *P(.068) > 0.05.* It means that the Transport (TR) as explanatory variable is no more useful in the model, when the other two variables are already in the model. In other words, with Customer Service (CS) and Inventory and Stock (IS) in the model, Transportation no more adds a substantial contribution to explaining Returns (RE).

Estimated model coefficients: The general form of the equation to predict Customer Returns (RE) from Customer Service (CS), Inventory and Stock (IS) and Transportation (TR), is:

$Y = \beta_0 + \beta_1 x_1 + \beta_2 X_2 + \beta_3 X_3$

RE = 11.848 + 0.260 (CS) + 0.146 (IS) – 0.099 (TR)

Table 8: Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	17.7131	24.9434	20.5652	1.42809	161
Residual	-7.48463	11.33403	.00000	3.53311	161
Std. Predicted Value	-1.997	3.066	.000	1.000	161
Std. Residual	-2.098	3.178	.000	.991	161

a. Dependent Variable: RE

A multiple regression was run to predict Return from Retail Market, from Customer Service (CS), Inventory and Stock (IS) and Transportation (TR). The model statistically significantly predicted Returns F (3, 157) = 8,550, p (.001) < .05, R^2 = 0,439. Out of three only, two variables customer Service (CS) p(.000) < 0.05 and Inventory & Storage (IS) p(.011) < 0.05 added statistically significantly to the prediction thus accepting Hypothesis H_1 and Hypothesis H_2. But Hypothesis H_3 is not accepted. The highest contributing predictor is Customer Service (CS) (0,260), and the next is Inventory and Stock (IS) (.146) to explain Returns (RE). And, 44 % overlapping predictive work was done by the predictors. This proves the combination of the variables had been quite good.

7. DISCUSSION AND FINDINGS

Our findings are fairly consistent with previously available data regarding consumer services, when we compare our findings to that of Ahmed & Sattar (2009), similarly in terms of Inventory and storage our data is consistent with that of Kola & Landis (2004) and Duffy & Clark (2003), as it is important for supply chain partners to manage the stock allocation and inventory flows to control product returns. Our research is in contrast to the of Mahani, et al, (2018), their study suggests that it is important for the pharmaceutical value chain to provide medicine on time with a quality that at least meets the benchmark but our data suggests otherwise. This contrast may be a result of difference in the theme of this research and that of Mahani, et al's research, as our focus

is on returns of pharmaceutical products while theirs is regarding optimization of ordering quantity. It can be said that although there is some sort of similarity between the two research but still a straight comparison is not possible. Another argument may be that retailers are dedicated buyers in pharmaceutical industry and, as a practice, would not return the product immediately rather would try to find a solution at their end. At this point this is just a speculation that requires further study on, if the pharmacies view timely delivery as a requirement to purchase or as a standard of practice.

8. CONCLUSION AND RECOMMENDATIONS

The two predictor Customer Service (CS) and Inventory and Stock (IS) proved to be the important predictors of Return (RE) of medicines from retail market back to manufacturers through distributers and wholesalers but transport in our sample did not exhibit any significant impact on returns. Although transportation is a very important logistical activity but to a pleasant surprise it was not any dominant factor causing return of medicines. Although many international studies considered it as an important reason for returns of products (Nsamzinshuti et al, 2017). Customer Service (CS), though after going through the literature, was expected not to be that important especially for returns from retail market but it proved to be major contributor in medicine returns. Inventory and Stocking procedures are important factors and it was observed that even with insufficient facilities and resources the retail pharmacies try to maintain a better standard of handling and storage of medicines. There are a variety of other factors that could be major cause for product returns from pharmacies. Here in this study Inventory and Storage factors were merged together but if they are studied independently and are further broken down, then better and more useful results can be achieved. It would also be interesting and beneficial to study the 'whats' and 'hows' of the product returns from pharmacies, which would provide a further in-depth knowledge which would assist in coming on to a clear outcome. Many researchers consider product returns as a form of loss of sale while some view it as an issue that requires further steps to be resolved (Walsh, et al, 2014). Hence, it is clear that having fewer or no returns will add into efficiency by managing sale and saving investments, which otherwise can be used in research and development of newer and better drugs. Such development would be helpful to all members of the supply chains especially the end user or the patient whose life could improve or be saved by implementation better strategies.

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