Reverse logistics operations in a pharmaceutical retail environment

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Abstract: Not all the sales/deliveries at consumers'/intermediaries’ end are always final. They may return it for a number of reasons. Consumers'/intermediaries’ may also often find some medicines undesirably accumulated. Retailers may have such accumulations for poor sales, unexpected customer returns, perishability, etc. Therefore, another similar flow (reverse logistics) is required to carry such medicines backward for recovering value/proper disposal. This research aims at providing a detailed account of reverse logistics management of undesired medicines, various related issues and its performance, with respect to Indian pharmaceutical retail environment. What is being done (practices), why it is being done (drivers), how it is being done (return conditions) and what inhibits (barriers) are the major issues examined. Besides, the performance of reverse logistics programs was evaluated from the retailers’ perspectives. The findings of this study are expected to establish some evidence regarding the prevalent reverse logistics practices and related issues for academicians and practitioners.

Keywords: reverse logistics; reverse supply chains; returns management; recall of medicines.


Biographical notes: Haidar Abbas earned his degrees [BSc (Hons), MBA and PhD] from Aligarh Muslim University with reasonably good credentials. He qualified the National Eligibility Test for Lecturership conducted by University Grants Commission, Govt. of India with very good percentage and thus, was also awarded Junior Research Fellowship to pursue higher studies. He is a recipient of several fellowships and grants, he has also received the best research paper award for his research entitled ‘Return and disposal of unused medicines; a customers’ perspective of reverse logistics’ in an international conference ICIOMS in Kuala Lumpur, Malaysia. Before joining Al Buraimi
1 Introduction and review of previous studies

It is a well-accepted fact that every man-made product or system is to be returned or discarded at some point in time during its life cycle. Therefore, it becomes mandatory to think of some kind of recovery and reverse logistics activities for recapturing the remaining value or for proper disposal. In many countries, the producer is legally obliged to take care of the returning products (Ali, 2015). The most relevant concept related to these issues is reverse logistics.

Rogers and Tibben-Lembke (1999) defined the term reverse logistics as “the process of planning, implementing, and controlling the efficient, cost-effective flow of raw materials, in-process inventory, finished goods, and related information from the point of consumption to the point of origin for the purpose of recapturing value or proper disposal”.

Reverse supply chain activities include collection/sorting/testing (John et al., 2017; Shaik, 2015; Erol et al., 2010), transportation and distribution (Erol et al., 2010), warehousing (Erol et al., 2010), repair (David and Shalle, 2014; Erol et al., 2010; Dissanayake and Singh, 2008), refurbish (Mohamed et al, 2015; Dissanayake and Singh, 2008; Sahyouni et al., 2007), retrieval (Dissanayake and Singh, 2008), reuse (Erol et al., 2010; Sahyouni et al., 2007), remanufacturing (Erol et al., 2010; Dissanayake and Singh, 2008), recycling (Sahyouni et al., 2007), disposal (Saravanan and Kumar, 2016; Erol et al., 2010), redistribution/resale (Erol et al., 2010; Dissanayake and Singh, 2008) and the information management (Erol et al., 2010). The inclination of third party logistics service provider towards this establishing opportunity has been attracted the attention of researchers (Shaharudin et al., 2015; Murugesan and Haq, 2010).

Ritchie et al. (2000) discussed the reverse logistics operations of hospitals. They mentioned three kinds of reverse logistics activities namely ‘reuse’, ‘recycle’ and ‘disposal’ which should be applied on the basis of the integrity of medicines. Sartori (2011) reported that Healthcare Distribution Management Association (HDMA) estimated 3–4% of products going out from pharmaceutical warehouses ultimately coming back.
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For retailers, the much obvious reasons for the occurrence of returnable stock of medicines include customer returns, supply error (supply of undesired medicines, expired medicines, defective medicines, etc.) (Khan and Subzwari, 2009) and others (documentation error, launch of better substitutes, withdrawal, overstocking, etc.) and the driver of return is same i.e., adjustment/settlement of such no more required stocks. Hence, a sound return policy (Batarfi et al., 2017) should be in place to ensure the optimisation of the reverse logistics practices. It has been observed that for returning such medicines upward in the chain retailers have to fulfill one or more of the four commonly found return conditions; availability of purchase bill, certain minimum worth, the reasonable (acceptable) state of medicines, and time elapsed between purchase and return. If not returned, they have been found reporting about the disposal of such stocks using one or more of the four disposal options; throwing in the garbage, land-filling after some treatment, sewer and burning in some isolated places.

The retailers were found bearing in their minds one or more of the several criteria while using any of the above-mentioned disposal practice. They opt for a particular disposal method for saving time, saving money, avoiding procedures, complying companies’ policies, complying government legislations, and for their concern for the environment. How they perceive each of these disposal methods with respect to the environment and what they actually do is an interesting affair of inquiry.

A list of inhibitors which include lack of financial resources (Ganjali et al., 2014; Yacob et al., 2012), problems with industrial infrastructure (Yacob et al., 2012), poor enforcement of environmental legislations (Ali, 2015; Yacob et al., 2012), little recognition of reverse logistics in creating competitive advantage (Hosseini et al., 2014; Janzen and Rosier, 2008), un-quantified reverse logistics costs (Janzen and Rosier, 2008), lack of clear return policies and guidelines (Janzen and Rosier, 2008), lack of modern information (technological) systems (Garg et al., 2016), lack of interest of the stakeholders (Thiyagarajan and Ali, 2016), poor management of intermediaries (Janzen and Rosier, 2008), and meeting recovery deadline are barriers to the implementation of reverse logistics programs (Dissanayake and Singh, 2008).

Some of the key reverse logistics performance indicators suggested in the available literature include improved customer service and satisfaction (Agrawal and Choudhary, 2014; Wipro Technologies, 2009; Janzen and Rosier, 2008; Li and Olorunniwo, 2008), dock-to-stock speed (Li and Olorunniwo, 2008), lead time (Yogi, 2015), reduction in uncertainty (Lee and Lam, 2012), inventory accuracy (Li and Olorunniwo, 2008; Lee and Lam, 2012), cost containment (Mishra and Napier, 2014; Wipro Technologies, 2009; Janzen and Rosier, 2008; Genchev, 2007; Lee and Lam, 2012), increased service revenues and profitability (Klapalova, 2015; Lee and Lam, 2012; Wipro Technologies, 2009; Genchev, 2007), decreased occurrence of stock outs and other undesirable situations (Lee and Lam, 2012), environmental regulatory compliance (Vlachos, 2014) and sustainability through corporate social responsibility approach (Sarkis et al., 2010) are only some of the key reverse logistics performance indicators.

The Indian Pharmaceutical Industry, being the worlds’ third-largest in terms of volume, 14th in terms of value is one among the five emerging global markets. Moreover, India currently holds a modest 1–2% share of global market. The significance of efficiency and effectiveness in the context of pharmaceutical supply chains can be understood with the help of two specific and extreme situations; urgency of a particular medicine where timely delivery plays an important role (eg life-saving drugs) and urgent
withdrawal (recall) of any medicine reportedly having some defects (capable of inflicting serious untoward health issues) that deserve the earliest possible pull away. The second situation becomes one of the most important drivers for the existence of reverse logistics in pharmaceutical chains.

Many a time, the pharmaceutical companies are not able to exactly fix the reason as to why so many unanticipated and unsolicited returns are happening. On the other hand, regulatory or civic bodies also remain concerned about the health, hygiene and environmental effects of improper dealing with undesired medicines. Despite clear-cut usage and disposal guidelines as well as government’s stringent regulatory framework, they find themselves helpless in understand the underlying deterrents. An effective reverse logistics system in place not only brings monetary prosperity for all the stakeholders from customer to the company but also secures the personal and environmental health. Thus, the researchers have made an attempt to examine as to why most of the return cases happen, whether there exist any gap between ideal practice (eco-friendly) and the prevalent practice for disposal, the reason behind adopting a particular disposal practice, their perception about various disposal practices in relation to environment, the degree of influence of various barriers, and resultant perceived performance of the reverse logistics programs executed by the pharmaceutical companies they deal with. The researchers have also tested whether there existed any perceptual and practice gap between the retailers and stockists of dispensaries regarding the various inhibitors and the performance. For the purpose of crystallising the interpretation, researchers have also worked on finding the possibility of grouping the various barriers into two or more groups based on their similar or dissimilar nature.

Since researchers did not come across any study focusing on the abovementioned dimensions particularly in the context of Indian pharmaceutical retail sector as far as their accessed resources were concerned, they undertook to pursue the one, conducted extensive literature survey on each selected issue and proceeded to bridge this void.

2 Objectives and methodology

Related to the major issues covered under this study (reverse logistics practices, drivers and barriers of reverse logistics, and linkage of these variables with reverse logistics performance, the researchers have framed three objectives:

a to identify and examine reverse logistics practices
b to establish drivers and barriers of reverse logistics
c to evaluate the reverse logistics performance.

With respect to the above-mentioned objectives, researchers attempted to find the answers to the following questions.

1 What are the prevalent reverse logistics practices in retailing of pharmaceuticals?
2 Is there any gap between what the retailers believe and what they practice as far as their disposal practice is concerned?
3 Do the two kinds of retailers perceive the equal degree of deterrence from all the examined barriers?
Do the two kinds of retailers perceive the performance of reverse logistics same for themselves on all the selected dimensions?

Related with the last two objectives, two hypotheses are formulated and tested.

H01 Barriers are equally deterrent for both entities of retailers (medical stores and hospitals) in the successful implementation of their reverse logistics.

H02 Performance of reverse logistics is perceived equally by the two entities of retailers.

The nature of the objectives suggests a descriptive type of research design for the present research. The study is based on primary data collected personally on convenience basis (from eight district cities of Uttar Pradesh) using a structured closed ended questionnaire. In this study, the researchers have determined an average sample size (210) based on the previous similar studies (Jack et al., 2010). The initial sample size of 210 was reduced to 185, which after editing became 171 (124 from medical stores and 47 from dispensaries). The response rate here has been quite large and therefore, the non-response doesn’t seem to produce any effect on the sample estimates. Prior to the collection of data, a pilot survey was conducted in Aligarh to judge the suitability of the questionnaires. The data are analysed using descriptive statistics measures, weighted scores analysis, t-test, ANOVA and factor analysis.

In order to identify a new, smaller set of uncorrelated variables to replace the original set of correlated variables for the purpose of another subsequent multivariate analysis, researchers usually go for factor analysis. This analysis can be done either through principal components analysis or through common factor analysis.

If the primary purpose is to determine the minimum number of factors accounting for maximum variance in the data for use in subsequent multivariate analysis, one goes for principal components analysis. The factors are called principal components. But if the main aim is to identify the underlying dimensions and the common variance is more of interest, then common factor analysis is deemed more important. For this study, researchers deemed the principal component analysis (PCA) more suitable.

3 Data analysis and interpretation

Out of 171 responses, 124 are from medical stores and 47 from dispensaries of hospitals/nursing homes. The size of a hospital/nursing home is indicated by the number of beds (≤ 50 and > 50) and the size of a medical store by its annual turnover (≤ 50 lakhs and > 50 lakhs Rs). The majority of the medical stores were found to have their annual turnover 50 lakhs or low however 70% of the hospitals were having more than 50 beds.

In response to the first question asked from retailers on their most frequent past practice to deal with the unused stock of their medicines, weighted scores suggest that sale/resale has been the most frequently used practice followed by return, donate, and dispose of.

This order of preference obtained from the data can be understood well because it is a general tendency of businessmen to generate as much revenue as possible. The next obvious option is to return the unused medicines for the purpose of settlement either by the means of refund or exchange, which is again a method to recover the money invested.
in its purchase. The third option, donate to the needy people, is indicative of people being considerate of others rather than to destroy the medicines. Only in limited cases, the unused medicines are disposed of.

Next question was asked about the most frequent reason for the accumulation of such stocks. On the basis of weighted scores, customer returns, and supply error (supply of undesired medicines, defective medicines, and expired medicines, etc.) appear to be the most and least frequent reasons respectively. It is expected otherwise also that ideally, the reasons related to supply error should never be the most frequent ones as these will harm the health of mutual trust and relationship, which, in turn, will affect the health of the business.

Not all the medicines which a retailer fails to sell are returned successfully for one or more reason. Keeping this in mind, a question was asked of the respondents as to what conditions do they need to fulfil so that their returns are accepted by manufacturers. Availability of purchase bill and the reasonable state of medicines are two equally important conditions that a retailer needs to fulfil for returning his/her stocks of medicines to the manufacturer. Reasonable state of medicines means that these medicines should come in wholesale units and there should be no problem/ with the medicines other than those for which returns are acceptable. These responses also indicate that manufacturers are generally flexible towards the condition of the minimum monetary worth of the medicine being returned to them and the time elapsed between its purchase and return.

Retailers having unused medicines also have an option to dispose of them. On being asked what they do most to dispose of such medicines, the majority (approx 80%) was found to have involved in either throwing such medicines in the garbage or in land-filling after treatment. Sewer (9.35%) was the least preferred disposal methods. More than half of the medical stores were indulged in throwing in the garbage (no medical store was going for sewer) while around 70% of the hospitals and nursing homes were doing land-filling after treatment. For opting a particular disposal method, the most important reason cited by the majority of the retailers (approx 70%) was compliance of legislation. However, for all the hospitals, environmental concern is also an equally important reason while it is not so for medical stores. Approximately half of the medical stores also use a particular disposal method to save time and money while no hospital is found concerned about these two reasons. It shows that retailers, on an average basis, are concerned more about certain factors other than legislation and the environment.

Next, retailers were asked to express their opinion regarding the impact of various disposal methods on the environment using a five-point scale (1-most unsafe through 5-safest). It is surprising to know that on this scale of safety for the environment, throw, despite being used by most of them, has been adjudged as the more unsafe method (with a mean of 2.36) than land-filling after treatment. Land-filling after treatment has been the safest method (mean = 3.59) from the environment point of view. The contradicting results regarding throw reflect that retailers, in general, are indifferent towards the environment. However, if one takes the responses for the two classes of respondents separately, one finds medical stores to be more negligent with respect to the environment.

Retailers are found to have no driving force other than the settlement of their unused medicines (an exchange or refund). Unlike the case of end users where most of the settlements are made by refund, retailers get most of the settlements in terms of other required stocks (exchange).
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One question was asked from retailers regarding their perception of the effectiveness of several barrier elements on a five point scale where 1-most ineffective to 5-most effective. The results show that retailers perceive the lack of ICT advancement (mean-2.92) and poor coordination (mean-2.91) to be the two most important barriers.

Having checked the feasibility for conducting factor analysis for reducing the items of barrier scale into a manageable number of factors, the researchers conducted factor analysis. PCA of data has reduced the six variables into two factors accounting for a cumulative 65.842 per cent of the total variance. Both the factors have met the reliability criterion ($\alpha \geq 0.60$) satisfactorily (Malhotra and Dash, 2007).

Table 1  Results of factor analysis-RL barriers for retailers

<table>
<thead>
<tr>
<th>Factors</th>
<th>Variables</th>
<th>Variance explained</th>
<th>Factor loading</th>
<th>Cronbach’s $\alpha$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal barriers</td>
<td>Poor coordination among supply chain members</td>
<td>48.260</td>
<td>.867</td>
<td>.815</td>
</tr>
<tr>
<td></td>
<td>Companies return policies</td>
<td></td>
<td>.839</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lack of ICT advancement</td>
<td></td>
<td>.833</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Negligible economic gain</td>
<td></td>
<td>.666</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Higher costs</td>
<td></td>
<td>.550</td>
<td></td>
</tr>
<tr>
<td>External barriers</td>
<td>Poor enforcement of government policies</td>
<td>17.582</td>
<td>.989</td>
<td>-</td>
</tr>
</tbody>
</table>

Based on the nature of loaded variables, these barriers were grouped and named as internal and external barriers (Table 1).

Table 2  RL barriers vs. kind of retailers

<table>
<thead>
<tr>
<th></th>
<th>Levene’s test for equality of variances</th>
<th>t-test for equality of means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$F$</td>
<td>Sig.</td>
</tr>
<tr>
<td>Internal barriers</td>
<td>Equal variances assumed</td>
<td>3.404</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td>1.981</td>
</tr>
<tr>
<td>External barriers</td>
<td>Equal variances assumed</td>
<td>1.915</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td>.173</td>
</tr>
</tbody>
</table>

$H_01$ was tested using t-test. This hypothesis is tested in two parts – one for internal barriers ($H_01a$) and other for external barriers ($H_01b$). Since p-value for F-test for both the barrier groups is greater than 0.05, therefore, researchers considered the t-test based on ‘equal variances’. Again based on the probabilities (0.064, 0.848) which are greater than 0.05 (Table 2), so the null hypothesis of no bearing of kind of entity with the group of internal as well as external barriers cannot be rejected. Failure to reject these two sub-hypotheses about the two types of entities means that they do not perceive the two kinds of barriers differently. However, in order to establish their respective degrees of
influence, researchers took the help of descriptive. Based on the average perception irrespective of the nature of retail operations, lack of ICT advancement and poor coordination among supply chain members were found almost strongest deterrents, followed by poor enforcement of government regulations, negligible economic gains, higher costs, and companies return policies respectively.

The simplicity of required documentation, affordability of costs, companies’ responsiveness, the profitability of companies RLP and regulatory compliance are the parameters about which most of the retailers care about their overall satisfaction with RLP of companies. Regulatory compliance of companies as observed by retailers means how far the companies are compliant with government regulations in dealing with medicines which only incur costs to the companies. Therefore, the retailers were asked to show their level of agreement on a five-point Likert scale regarding six statement about these parameters where 1-strongly disagree to 5-strongly agree. Having the least mean scores, affordability of costs incurred in dealing with such types of stocks (3.58) which affect their overall profits and the responsiveness of companies (3.68) are the issues which the manufacturers should take care of.

Having checked its feasibility, researchers again conducted the factor analysis to reduce these performance parameters into a number of manageable factors. PCA of data has reduced the six variables into two factors. Table-3 shows the two factors extracted which account for a cumulative 70.658 per cent of the total variance and are found reliable ($\alpha$-0.818, 0.704).

**Table 3**

<table>
<thead>
<tr>
<th>Factors</th>
<th>Variables</th>
<th>Variance explained</th>
<th>Factor loading</th>
<th>Cronbach’s $\alpha$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-financial performance</td>
<td>Overall satisfaction</td>
<td>43.690</td>
<td>.847</td>
<td>.818</td>
</tr>
<tr>
<td>Non-financial performance</td>
<td>Simple required documentation</td>
<td></td>
<td>.841</td>
<td></td>
</tr>
<tr>
<td>Non-financial performance</td>
<td>Companies highly responsive</td>
<td></td>
<td>.771</td>
<td></td>
</tr>
<tr>
<td>Non-financial performance</td>
<td>Regulatory compliance</td>
<td></td>
<td>.770</td>
<td></td>
</tr>
<tr>
<td>Financial performance</td>
<td>Easily affordable costs</td>
<td>26.968</td>
<td>.873</td>
<td>.704</td>
</tr>
<tr>
<td>Financial performance</td>
<td>Overall profitable</td>
<td></td>
<td>.865</td>
<td></td>
</tr>
</tbody>
</table>

Depending upon the nature of constituent parameters, the first type of performance was named as non-financial performance while the second category was named as financial performance (Table 4). $H_2$ was tested in two parts; one for non-financial parameters and other for financial parameters. Since the p-value for F-test in both the performance parameter groups is greater than 0.05 ($\alpha$), therefore, researchers considered the t-test based on ‘equal variances’ for both the performance parameter groups. Again, based on the probabilities, (.016 and 0.028) which are lesser than the level of significance (Table 4), so the null hypothesis of no bearing on retailers’ kind of entity with the non-financial as well as financial performance parameters can be rejected. Rejection of these two hypotheses means that retailers’ nature of operation has certain bearing with their perception regarding the two kinds of performance. Manufacturers, therefore, have to take their cases separately and devise a separate strategy for their satisfaction.
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Table 4  Reverse logistics performance vs. kind of retailers

<table>
<thead>
<tr>
<th></th>
<th>Levene’s test for equality of variances</th>
<th>t-test for equality of means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td>Non-financial</td>
<td>Equal variances assumed .753 .387</td>
<td>2.426</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td>–2.322</td>
</tr>
<tr>
<td>Financial</td>
<td>Equal variances assumed .936 .335</td>
<td>2.214</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td>2.085</td>
</tr>
</tbody>
</table>

4 Conclusions and recommendations

In practice, retailers also have four options namely resale, return, donate, and dispose of. When their responses were analysed together, researchers came to know that resale and dispose of were the most and least preferred choices for the retailers. As the recovery of costs remains the primary, and in most cases, the only driver, resale becomes the best practice on the ground, seconded by return. For being a rational economic man, disposal is the least preferred choice. Our finding related with the cost recovery seems to corroborate the findings of Klapalova (2015) who said that it was cost reduction which mattered for most of the stakeholders.

Customer returns and supply error emerged out to be the most and least important reasons for the occurrence of the unused stocks respectively. Irrespective of the kind of retail entity, availability of purchase bill and reasonable state of medicines are found as the two important conditions to be fulfilled in order to have a return successful. For saving money and time, and procedural avoidance, most of the retailers opt between throwing such medicines in the garbage and land-filling such medicines after proper treatment. None of these three reasons had anything to do with most of the hospitals and nursing homes as they were disposing of using a particular method of disposal for their concern about the environment and regulatory compliance. However, on an average basis, land-filling after treatment is perceived as the safest disposal method among the four available options. This finding again parallels with Vlachos (2014) who also found the there is a perceived relationship between reverse logistics practices and the environment. Here, it can be easily concluded that these are mostly the outside retailers who need more guidance, persuasion and close vigilance as far as a shift toward ideal disposal practices is desired.

Driving force for end users as well as retailers for returning their unused medicines is one and only one; settlement of unused medicines (either by refund or by exchange). Manufacturers’ return policies and lack of ICT advancement came out to be the most ineffective and most effective barriers respectively. Poor coordination among the supply chain members was also an equally important barrier identified for the retailers. This poor
coordination among the supply chain members may safely be presumed largely on account of lack of ICT advancement, yet other factors for poor coordination can be a matter of further inquiry. Hence, it can be said that to increase the effectiveness of their reverse logistics programs, companies need to focus on the ICT infrastructure and coordination more than anything. However, it is a point to mention that supply error which could be attributed largely to these two key barriers is significantly low. Researchers found that the nature of operation had no bearing on their perception regarding the two kinds of barriers.

The parameters with highest and lowest mean values were simple required documentation and affordable costs respectively. Affordability of costs somehow reflects the value recovery parameter of reverse logistics performance considered key aspect by Agrawal and Choudhary (2014). Researchers found that retailers’ nature of operation had certain bearing with their perception regarding the two kinds of performance.

Based on the above-made conclusions, the researchers suggest that retailers, as well as manufacturers, need to investigate the reasons behind customers’ returns (being the prime reason) and need to devise ways to minimise it. This research highlighted the fact that retailers are using the disposal methods which they themselves consider comparatively less safe. Therefore, it can be recommended that the manufacturers, government, and non-government bodies need to first collect more pieces of evidence for exploring the exact reasons behind the adoption of less safe disposal methods (like throwing their unused medicines into the garbage) and then, motivate and encourage the retailers (particularly the medical store keepers) to adopt environment friendly disposal methods.

Lack of ICT advancement and poor coordination among the various entities of supply chains are perceived by retailers as the two equally important barriers for the execution of reverse logistics which manufacturers need to concentrate upon. Having already said about the notion of a link between these two barriers, the researchers expect that future researchers may try to examine a linkage among these various barriers. Going thoroughly through the responses, one may also relate the response received about barriers and the responses received about the statement related to performance. For instance, the statement about poor coordination in the barriers category and the statement about the process responsiveness in the performance category seem to show similar concern; inefficiency. Thus, based on the analysis of retailers’ perception, it is recommended that manufacturers should focus on making the reverse logistics costs affordable, practices more profitable and the process a bit more responsive.

The findings of this study will support the novice academicians develop an understanding of the concept and the young researchers to think critically about various related issues. Future researchers may take a note of these limitations as a research gap while advancing their work in this direction. They may also work upon the areas like finding the linkage among various barriers, an interaction between drivers and barriers, the impact of these barriers on performance, etc. However, besides enriching the academic literature, this study also gives certain clues about the gap between perception and practices, desiring the attention of companies, government and non-government bodies, policy makers and whistleblowers for some persuasive and concrete steps.
5 Limitations of the study and directions for future research

Like other academic studies, the present study, related to the reverse logistics operations in the Indian pharmaceutical retail environment, is also subject to some limitations. Limitations include sampling (convenience), sample size (determined on the pretext of the previous studies), data collection method (personal interviews), geographical limitation (only a few cities of Western Uttar Pradesh) and others (time, budget, respondents’ reluctance in divulging their information).

References


