Supply Chain Management in Reversal Perspective

Bharat Bhushan, Manoj Kumar

ABSTRACT

Environmental and economic problems have vital impacts on reverse offer chain management and thought to create one among the biological process cornerstones of sustainable offer chains. Perusal of the literature shows that a broad frame of reference for reverse offer chain management is not adequately developed. Recent, although restricted, analysis has begun to identify that these sustainable offer chain practices, that include the reverse provision factors, cause additional integrated offer chains, that ultimately can cause improved economic performance. The objectives of this paper is to: report and review numerous views on style and development of reverse Supply Chain.

KeyWords

Remanufacturing; Reverse supply chain management; Recycling; Reverse logistics
INTRODUCTION

Reverse provision that is that the management or come flow as a result of product recovery, product come, or stock, kind a closed-loop offers chain. The success of the closed-loop offer chain depends on actions of both manufacturers and customers. Now, makers require manufacturing products which are easy for dismantling, utilize and remanufacturing due to the law of environmental protection. On the opposite hand, the quantity of consumers supporting environmental protection by delivering their used products to assortment points is increasing. According to the findings, the entire price spent in reverse logistics is large. In order to attenuate the entire reverse logistics price and high utilization rate of assortment points, choosing appropriate locations for assortment points is important problems in RSC/reverse logistics. Reverse supplying receive increasing attention from both the academic world and industries in recent years. There is variety of reasons for its attention. in step with the findings of Rogers and Tibben-Lembke (1998), the overall supplying cost amounted to $862 billion in 1997 and also the total cost spent in reverse supplying is big that amounted to around $35 billion which is around 4wd of the overall supplying cost in the same year. The issues regarding energy saving, inexperienced legislation and the rise of electronic retaining is increasing. Also, the emergence of e-bay advocates product apply. internet buyers typically come back things like papers, metal cans, and plastic bottles whose consumption and come back rates are high. though most companies realize that the overall process price of returned product is over the overall producing price, it's found that strategic collections of returned product will result in repetitive purchases and reduce the chance of fluctuating the material demand and price.

REVIEW METHODOLOGY

There are going to be adoption content analysis technique for literature review. Content analysis is an empiric analysis technique that's accustomed systematically evaluates the symbolic content of all styles of recorded communication. This technique conjointly helps to identify the literature in terms of varied, thereby making a realm of analysis opportunities. Al-Mashari and Zairi used content analysis to research the implementation of SAP R/3 for re-engineering the availability chain victimisation enterprise resource systems. Gallivan adopted content analysis methodology to look at case studies of open source computer code comes in the research in the end between trust and management in a virtual organization. Content analysis was additionally used by Byrd and Davidson to look at the impact of data technology on offer chain; and by Ellinger et al. In their research on the transportation business in the United States of America. Recently, Marasco additionally used an analogous technique for review of literature on third party provision. The review is proscribed to the printed literature including white papers and literature obtained from electronic sources. Search engines were used to explore Science Direct, Emerald Insight, Springer and Inderscience databases for literature. Keywords like “green supply chain”, “product returns”, “product recovery”, “reverse logistics”, “end-of-life products”, “closed-loop supply chains”, “recycling”, “re manufacturing” were used to notice related literature.

RESEARCH ON REVERSE PROVIDE CHAIN NETWORK DESIGN

A review on numerous quantitative models for RL networks is given by Fleischmann et al.. the situation of assortment points in a very RL system has been examined by Bloemhof-Ruwaard, Fleischmann, and van Nunen. Fleischmann, Beullens, Bloemhof-Ruwaard, and van Wassenhove have given a generic MILP model considering a single product flow between incapacitated facilities and reprocessing as a product-recovery option.
Jayaraman, Patterson, and Rolland have proposed a MILP model by considering the reverse flow of products. Pochampally, Gupta, and Kamarthi have proposed a physical programming approach to identify potential recovery facilities in a very region wherever reverse offer chain to be established. The Savaskan, Bhattacharya, and van Wassenhove (2004) have proposed a product-recovery strategy counting on WHO collects the used products.
Pricing the remanufactured product available could be a complicated and difficult issue because of random returns and demands. This makes it troublesome to work out the worth of a remanufactured product vis-à-vis new product. The groupings of literature underneath RL outputs given in Table.

### Compensation and pricing
Researchers have studied the connection between markets for new and remanufactured merchandise and developed models to work out the optimum price for remanufactured merchandise and elements. The competition between original equipment makers (OEMs) and local remanufacturers not solely have an effect on the provision of used merchandise however additionally the worth of the remanufactured product. They found that OEMs ar during a higher position to offer remanufactured merchandise at a lower cost than those offered by local remanufacturer. Ferguson and Toktay have discussed methods used by OEMs to discourage the entry of freelance remanufacturers. Substitution of latest merchandise by remanufactured merchandise is discussed by Bayindir et al. Researchers have additionally counseled early entry of OEMs in RL to achieve 1st mover benefits and to find out significant engineering capabilities and merchandise disassembly information.

### Coordination Support
Coordination in RL is also discussed by the authors. Some authors have discussed the importance of communication to help in fast and early disposition of came product and additionally assisting in remanufacturing designing. Some authors have suggested the employment of data

---

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Parameters</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Model</td>
<td>SIM=Simulation , LP = linear programming model, MILP = mixed integer linear programming model, MINLP = mixed integer non-linear programming model, NE = network equilibrium model, ST = stochastic model, SM = simulation model, OT = other models</td>
</tr>
<tr>
<td>2.</td>
<td>Solution method</td>
<td>GA=Genetic Algorithm, EX = exact solution method, HE = heuristics method, MHE=Multi-heuristics method</td>
</tr>
<tr>
<td>3.</td>
<td>Period</td>
<td>S = single-period, M = multi-period</td>
</tr>
<tr>
<td>4.</td>
<td>Product commodity</td>
<td>S = single, M = multiple</td>
</tr>
<tr>
<td>5.</td>
<td>Levels</td>
<td>S = single, T = two, M = multiple</td>
</tr>
<tr>
<td>6.</td>
<td>Recovery Option</td>
<td>S = single recovery option, M = multiple recovery options</td>
</tr>
<tr>
<td>7.</td>
<td>Issue</td>
<td>MI=Multiple Issues SI=Single Issue</td>
</tr>
<tr>
<td>8.</td>
<td>Constraints</td>
<td>MC=multi-Constraints , SC=Single Constraint</td>
</tr>
<tr>
<td>9.</td>
<td>Network structure</td>
<td>(OL = open-loop, CL = closed-loop)</td>
</tr>
<tr>
<td>10.</td>
<td>Model objectives</td>
<td>S = single, M = multiple, CM = cost minimisation, PM = profit maximization, RM = risk minimization, OT = others such as environmental impact minimization, total tardiness of cycle time minimization, etc.</td>
</tr>
</tbody>
</table>

**Fig: Abbreviation**

**REVERSE OFFER CHAIN/REVERSE SUPPLY OUT PUTS**

Pricing the remanufactured product available could be a complicated and difficult issue because of random returns and demands. This makes it troublesome to work out the worth of a remanufactured product vis-à-vis new product. The groupings of literature underneath RL outputs given in Table.

### Compensation and pricing
Researchers have studied the connection between markets for new and remanufactured merchandise and developed models to work out the optimum price for remanufactured merchandise and elements. The competition between original equipment makers (OEMs) and local remanufacturers not solely have an effect on the provision of used merchandise however additionally the worth of the remanufactured product. They found that OEMs ar during a higher position to offer remanufactured merchandise at a lower cost than those offered by local remanufacturer. Ferguson and Toktay have discussed methods used by OEMs to discourage the entry of freelance remanufacturers. Substitution of latest merchandise by remanufactured merchandise is discussed by Bayindir et al. Researchers have additionally counseled early entry of OEMs in RL to achieve 1st mover benefits and to find out significant engineering capabilities and merchandise disassembly information.

### Coordination Support
Coordination in RL is also discussed by the authors. Some authors have discussed the importance of communication to help in fast and early disposition of came product and additionally assisting in remanufacturing designing. Some authors have suggested the employment of data
support systems to assist in coordination.

**Customer Relation**

The benefits of RL on client relationship like improved client retention and client satisfaction through liberalized returns policies is analyzed by Fuller et al., Turner et al., Wise and Baumgartner, Sarkis et al., and Mollenkopf et al. Amini and Retzalff-Roberts suggest reduction in cycle time of providing refunds and exchanges to clients as the simplest way of enhancing customer service quality. Daugherty et al. suggest the utilization of data technology for higher client relations and enhanced service.

**Reverse Chain**

An understanding of reverse provides chain is additionally explored by the authors. programming arrivals of recent modules, storing or disposing excess recovered modules are a number of the factors analyzed by researchers. Analysis is additionally carried to research capability designing techniques and material designing systems in an exceedingly remanufacturing environment; Ferrer and Whybark. a couple of authors have conjointly mentioned the side of provide designing by considering the standard structure of product.

**CONCLUSION**

This paper presents a comprehensive literature review of the journal papers on reverse logistics/closed loop provide chain printed in last two decades. We have used a holistic views approach to review the research on the various problems associated with design and development of reverse logistics system/reverse provide chain systems. After mensuration quite 100 papers, we have to come on this conclusion that the research in RL is many-sided and distinguishes itself from forward logistics. The reviews also show those research publications on RL ar increasing specially after 2004 and so it shows the growing recognition of RL as a driver of provide chain and logistics.

**REFERENCE**


