Value Chain Management – Integrating Marketing and Logistics

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Abstract

The concepts of efficient consumer response, supply chain management and vertical marketing systems have similar objectives – optimisation in the value chain and focus on the customers – with individually varying emphases. They all rely strongly on vertical cooperation in the value chain. A few researchers refer to value chain management as a concept that combines elements of the presented concepts. However this newly proposed concept is currently rather vague. This research shows a comparison of efficient consumer response, supply chain management and vertical marketing systems to identify the cooperation differentiators and important criteria to assess the cooperation concepts. In a scoring approach experts weighted the criteria and assessed proposed cooperation concepts. The results can be used for a more detailed definition of value chain management.

Keywords: Value Chain Management, Supply Chain Management, Vertical Marketing Systems, Efficient Consumer Response, Vertical Cooperation

1. Introduction

A survey conducted by ERNEST & YOUNG revealed that cooperation among value chain partners leads to better performances for the cooperating companies than those that do not cooperate [52]. The literature offers a wide range of concepts concerning cooperation. This article will focus on the concepts of supply chain management (SCM), vertical marketing systems (VMS) and efficient consumer response (ECR). The reason for this emphasis is the acknowledgement and distribution in literature and amongst practitioners. When comparing these concepts the similarity regarding their objectives becomes obvious – optimization in the value chain and focus on the customers – with individually varying emphases. They also have in common their factor of success that is often regarded to be critical: They all rely strongly on vertical cooperation in the value chain [12, 21, 28, 38, 45, 54, 59, 62].

In existing literature the discussion about SCM, VMS and ECR is often conducted separately. In practice too the concepts are often carried out independently due to functional organization of firms. For instance SCM is generally regarded as a responsibility of logistic functions whereas marketing might install a VMS. As SCHULZ put it, “logistics is not an island anymore” [52]. The same could be said for marketing as well. A separately held discussion and execution does not meet the requirements of a highly competitive time. Value chain management is proposed to be an integrating concept but little is known about it. This research aims at improving the concept of value chain management by analysing the unique characteristics of SCM, VMS and ECR.

This paper is structured as follows. Chapter 2 will review the literature on supply chain management, efficient consumer response, and vertical marketing systems with respect to cooperation differentiators. The evaluation will be carried out in chapter 3. Finally, conclusions on value chain management and vertical cooperation in general will be given.

2. Literature Review

Vertical cooperation is acknowledged to be the collaboration between companies of different value adding steps in a value chain [6]. Motivation and objectives for vertical cooperation are manifold [10, 9, 13, 26, 31, 36, 37, 43, 47, 56, 58]. KARL/ORWART list for instance “information availability, information asymmetry, opportunistic behaviour, yield network benefits or the general increase of efficiency of economic transactions” [31] as reasons to engage in cooperations. Since vertical cooperation is discussed in different contexts, the motivations and objectives vary and are often not discussed in a concluding way [25].
2.1. Concepts on vertical cooperation

Regarding SCM, ECR and VMS heterogeneous definitions can be found. With different emphases most definitions agree on the cooperation aspect within the value chain. The following table exhibits rather recent definitions stressing the cooperation aspect.

<table>
<thead>
<tr>
<th>Author</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLANCHARD, 2007</td>
<td>Supply chain management “concludes … collaborating with channel partners, including suppliers, intermediaries, third parties and customer”.</td>
</tr>
<tr>
<td>FAWCETT ET AL., 2007</td>
<td>In supply chain management “relationships are established to assure that each company in the chain performs in a way that improves success of the entire supply chain. SCM is a collaborative specialization”.</td>
</tr>
<tr>
<td>SETH/RANDALL, 2001</td>
<td>Efficient consumer response is “an initiative to get manufactures, wholesalers an retailers to co-operate”</td>
</tr>
<tr>
<td>VARLEY, 2006</td>
<td>Efficient consumer response involves the way in which retailers, suppliers and third-party service suppliers (such as logistics companies) work together”</td>
</tr>
<tr>
<td>HAVALDAR, 2005</td>
<td>The Vertical marketing system, “consisting of manufacturers, distributors and manufacture’s representatives, acts in a unified manner”</td>
</tr>
<tr>
<td>PETER/DONELLY, 2004</td>
<td>Vertical marketing systems are “channels in which members are more dependant on one another and develop long-term working relationships”</td>
</tr>
</tbody>
</table>

Table 1. Definitions regarding vertical cooperation.

All concepts agree on the main objective of an optimisation of the entire value chain by focussing on the customer [15, 17, 21, 23, 37, 38, 50, 51, 55, 59, 62]. In order to understand the concepts better, a closer look on the differences by comparison is necessary.

2.2. Synopsis of SCM, ECR and VMS

Before the concepts are compared, the cooperation differentiators will be introduced. They can be structured into three groups: cooperation scope, cooperation content and cooperation enabler.

I. Cooperation scope:

The number of cooperation partners defines whether the cooperation is considered to be a ‘dyadic cooperation’, which consists only of two partners or a ‘small group cooperation’ with three to seven partners. More than seven partners define a ‘big group cooperation’ [3]. The cooperation access is distinguished into an open and a closed cooperation. The former has no restrictions towards partners and timing whereas the latter does not allow new cooperation partners after the cooperation kick-off [3]. Depending on the geographical coverage one finds local, regional, national, international and global cooperation. This is considered to be the cooperation expansion. It seems important to point out the difference between international and global because they are often used as synonyms. Cooperation is considered to be international when the partners collaborate across national borders. A global cooperation goes beyond that and can be regarded to be a borderless cooperation operating worldwide.

II. Cooperation content:

Vertical cooperation varies with respect towards the cooperation content [33, 58]. The four ‘P’s’ of the marketing-mix can be a good approach to structuring the cooperation content. A cooperation for a product development between a manufacturer and a retailer will be regarded as ‘product cooperation’. In order to pay respect to the distinctive logistical side, e.g. within SCM, the fourth ‘P’, place, will be specified by and changed into value chain design, value chain planning and value chain operation. Value chain design describes the decision on the distribution channel. Value chain planning circumscribes e.g. the common demand forecasting. Lastly value chain operation describes the operational cooperation that is visible in the collaboration between the cooperation partners’ interfaces.

III. Cooperation enabler: These describe the usage of the information technology. The implementation of one common enterprise resource planning system can be used as an example. The following table displays the differences in the three concepts [4, 5, 7, 9, 11, 14, 15, 18, 20, 22, 23, 24, 32, 34, 37, 39, 41, 42, 44, 48, 50, 51, 53, 57, 61].
Table 2. Synopsis on SCM, VMS and ECR

<table>
<thead>
<tr>
<th>I. Cooperation Scope</th>
<th>Supply Chain Management</th>
<th>Vertical Marketing Systems</th>
<th>Efficient Consumer Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of cooperation partners</td>
<td>Small group to big group cooperation depending on the number of firms in the supply chain</td>
<td>Dyadic cooperation</td>
<td>Small group to big group cooperation depending on the number of firms in the supply chain</td>
</tr>
<tr>
<td>Cooperation expansion</td>
<td>Local to global</td>
<td>Local to international</td>
<td>Local to international</td>
</tr>
<tr>
<td>(c) Cooperation access</td>
<td>Open</td>
<td>Open or closed cooperation possible</td>
<td>Open</td>
</tr>
</tbody>
</table>

II. Cooperation Content

| ‘Product’ cooperation | - | Product Development, Product Design, Product Quality | Product introduction, Product development, private label product development |
| ‘Price’ cooperation | - | Cooperative price recommendations, terms of conditions and delivery | - |
| ‘Promotion’ cooperation | - | product promotion, product advertisement | Efficient promotion |

Value chain design

| Value chain design | Direct or indirect distribution | Indirect distribution | Direct or indirect distribution |
| Collative Planning, Forecasting and Replenishment, Supply Chain Risk Management, Supply Chain Event Management | Order assistance, Inventory optimisation, production planning optimisation | Efficient assortment, category management, efficient controlling |

Operation

| Operation | Interface optimisation | - | Efficient Replenishment, Efficient Administration, Efficient Sourcing, Vendor Managed Inventory, Cross Docking, Computer Assisted Ordering |

III. Cooperation Enabler

| Information Technology | Electronic Data Exchange | - | Electronic Data Exchange, Enterprise Resource Planning System |

There are few researchers who refer to value chain management as a concept that combines the presented concepts [35, 52]. Value chain management refers to the value chain concept by PORTER that integrates the primary activities such as logistics or marketing & sales with the support activities like human resource management or procurement [46]. KANNEGIESSER refers to VCM as the “holistic
redesign of processes from the retail customer to the purchasing from the manufacturer including Sales, Marketing, Logistics, Production and Purchasing” [30]. However this rather newly proposed concept currently lacks concision [29][30]. Value Chain Management needs to be more precise in order to be recognized as the integrating vertical cooperation concept.

3. Evaluation Procedure

3.1. Methodology

Six experts of vertical cooperation will be chosen to carry out the evaluation. The evaluation by scoring is designed as follows: Firstly, criteria on how to evaluate concepts on vertical cooperation will be identified in the literature. The experts will determine the relative importance of the criteria. Secondly, six cooperation concepts formed out of the identified differentiators will be given to the experts. Besides the three-presented ones, SCM, VMS, ECR, three artificial concepts will be designed. In order to obtain a real evaluation of the experts, the concepts will only be described. Concept names will not be given to avoid partisan evaluation. For the grading, a five point Likert scale will be used. In the style of the German academic grading system ‘1’ will be the best result, ‘5’ the worst.

For the following analysis the relative importance of the criteria will be used as factors for the individual grades of the six concepts. Lower scores indicate better evaluation results.

3.2. Experts

Six German experts have been chosen to participate in this research because of their function and expertise concerning vertical cooperation. The group consists of four managers and two researchers. This asymmetry has been taken into account to have a strong practical input.

<table>
<thead>
<tr>
<th>Group</th>
<th>Industry</th>
<th>Function</th>
<th>Sales 2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>B2B manager</td>
<td>Agrochemical</td>
<td>Supply Chain Manager</td>
<td>46 m EUR</td>
</tr>
<tr>
<td></td>
<td>Automotive</td>
<td>Production Planner</td>
<td>95.9 bn EUR</td>
</tr>
<tr>
<td>B2C manager</td>
<td>Home Care &amp; Personal Care / FMCG</td>
<td>Purchaser</td>
<td>14.1 bn EUR</td>
</tr>
<tr>
<td></td>
<td>Food industry / FMCG</td>
<td>Key Account Manager</td>
<td>6.5 bn EUR</td>
</tr>
<tr>
<td>Researcher</td>
<td>Education</td>
<td>Professor</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Education</td>
<td>Professor</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 3. Expert groups.

To avoid unique industry or market results, the managers have been chosen from different industries that interact on B2B, agrochemical and automotive, and B2C, FMCG, markets. The same goes for the individual function they hold in the firm. It could be likely that an expert who works in Logistics has a tendency to evaluate logistical cooperation better than a cooperation emphasizing on marketing scope. To receive a diverse feedback, experts with different functional backgrounds have been chosen. Each firm is regarded to be market leading in its industry. Both of the professors research and teach at German universities. They have been respectively chosen for their focus on Logistics and on Marketing.

3.3. Evaluation

With preliminary announcement, the questionnaire was sent out via e-mail to the experts. To avoid distortion, the questionnaire was originally sent out in German. The results have been translated for this paper. The evaluation process of each expert would have been guided via telephone in case of a need for assistance would have been expressed; however this was not the case.

Depending on the cooperation, various criteria can be found. But in order to have applicable criteria to all concepts this research will focus on the following eight criteria:
I. Implementation expenses  
Cooperation is highly dependant on its implementation expenses. High expenses for minor cooperation advantages are not efficient. But cooperation cannot succeed if the cooperation partners flinch from executing a proper implementation with the necessary expenses [16, 19].

II. Cost cutting potential  
Cooperation can be used to cut costs in many ways. It can be achieved e.g. through economies of scale or the access to know-how that can increase efficiency [27, 36].

III. Risk reduction  
With cooperation, risks can be reduced for the cooperation partners, e.g. through sharing the risk of an investment or diversification in the competences [36, 49].

IV. Sales growth potential  
Depending on the cooperation, it can imply sales growth because of access to new markets or rounding off the product range through economies of scope [36],

V. Innovation potential  
Within a cooperation e.g. technology transfer or common research can lead to an increased innovation potential [25, 49, 56].

VI. Interdependence risk  
In order to achieve the cooperation objectives, e.g. technology sharing, cooperations are often long-term. To cut cooperative ties is not easy and can be risky with subject to the interdependence. It is important that the advantages of the cooperation justify the abandonment of degrees of interdependence and independence.

VII. Flexibility  
With increasing uncertainty due to the dynamics and the complexity of a firm’s environment the need for flexibility grows. Scientists believe that cooperating can be a way to gain flexibility [19, 36, 60],

VIII. Service quality  
Services that improve customer satisfaction and loyalty are important differentiators and can be used to gain competitive advantages [1, 2]. Cooperation can help to increase the offer of services and their quality.

The first part of the questionnaire stated the criteria and a short description explaining them as displayed above. The expert had to allocate 100 percent on the criteria. The higher the number for a certain criteria, the higher the importance regarded by the expert. In order to have the criteria ‘implementation expenses’ and ‘dependence risk’ put positively as well as the other criteria, ‘low’ has been added in the questionnaire. This is especially important for the following analysis. The arithmetic importance will be used as a factor to the scale points of the next part.

The second part described in brief six cooperation concepts without dropping the name. The identified differentiators of cooperation scope, cooperation content and cooperation enabler were used for the description of SCM, VMS and ECR and three newly designed concepts:

I. Supply chain management  
Seven companies in a value chain cooperate globally. The value chain can be designed via direct or indirect distribution. New companies that offer value for the unique chain can access the cooperation anytime. The cooperation objective is the optimisation of logistics through cooperative planning, forecasting and replenishment. Information is exchanged electronically.

II. Low intensity concept (Low)  
A local cooperation involves two companies that work in an indirect channel of distribution. The cooperation is closed towards new companies. The partners exchange relevant information e.g. with respect to orders or changes in demand. A special communication tool is not in place.
III. Vertical marketing systems
Two companies have installed a national cooperation in an indirect channel of distribution. Their cooperation focus is a common product development and introduction, recommended retail prices, shared terms and conditions of delivery and payment and common advertisement and promotion. The cooperation is supported by modern IT-solutions like a common enterprise resource planning system.

IV. Medium intensity concept (Med.)
Four companies of one value chain have founded an international cooperation. The partners are open towards integrating new partners into their cooperation. Cooperation focus is the common product development and introduction, the planning and execution of common promotion and the conjoint planning of replenishment. The information sharing of the partners takes place by using simple IT-tools like excel spreadsheets to arrange and update delivery dates.

V. Efficient consumer response
Six companies of one value chain cooperate on an international level. New cooperation partners, who have a link to the value chain, can access this cooperation anytime. The cooperation contains a common product development including designing individual products for one partner. Sales promotions are commonly planned and executed. The partners agree conjointly on the assortment. Common sourcing aims at advantages like economies of scope. The use of modern logistics practices like cross docking is carried out to optimise replenishment. A common controlling makes sure the planning and decision are efficient. The partners use one common enterprise resource planning system.

VI. Maximum intensity concept (Max.)
A cooperation involves ten companies in a value chain. New cooperation partners are admitted anytime. The partners cooperate with regard to common product development, including designing individual products for one partner that can be sold as private labels. Pricing decisions are taken together. Sales promotions are commonly planned and executed. The partners agree conjointly on the assortment. The use of modern logistics practices like cross docking is carried out to optimise replenishment. A common controlling makes sure the planning and decision are efficient. The partners use one common enterprise resource planning system.

The experts needed to assess each criterion with respect to the described concept. The following extract of the questionnaire may clarify exemplary the procedure.

Q1: Seven companies in a value chain cooperate globally. The value chain can be designed via direct or indirect distribution. New companies that offer value for the unique chain can access the cooperation anytime. The cooperation objective is the optimisation of logistics through cooperative planning, forecasting and replenishment. Information is exchanged electronically.

The final score of each concept is received by multiplying the calculated factors from the first part with the scale points.

Figure 1. Extract of the questionnaire.
3.4. Results

The results will be discussed within the two parts of the questionnaire, criteria and concepts. The answers of the six experts on the importance of the eight criteria are arithmetically averaged and shown in the following figure.

![Figure 2. Average importance of cooperation criteria.](image)

When looking at the average percentage, the cost cutting potential seems to be the most important criterion in vertical cooperation. Innovation potential is regarded to be of lowest importance in vertical cooperation. At first this might seem surprising with the high number of R&D cooperation, but these are often not within the value chain but with competitors or public institutions like universities [49]. The following figure shows the results by group arithmetic average.

![Figure 3. Average importance of cooperation criteria by group.](image)

It becomes obvious that the experts have different opinions of the sales growth potential of vertical cooperation. The experts working in B2C industries (20%) and the researchers (17%) see the ‘sales
growth potential” as the most important criterion after ‘cost cutting potential’ (22%) being of capital importance. The B2B experts award it the lowest importance (8%) after the ‘low implementation expenses’. Also striking is the different evaluation of ‘service quality’ within vertical cooperation. For the B2B group this is the most important criterion (18%) whereas the others regard it with almost equal low importance (7%, 8%). This might be explainable with a high importance of service quality in the B2B market in general [8]. The numbers, illustrated in figure 3, lead to the general assumption, that the researchers and B2C managers’ opinions are rather similar on most criteria. Cooperation in B2C industries is a rather long-established concept. First VMS in B2C markets came alive in the early 70ies. The research and the literature followed from this focussed in the beginning on these industries as well. This could explain why the researcher and B2C manager have similar point of views. Lastly, the procedure to have the experts decide on the importance of each criterion seems to pay off when looking at the diverse results. Depending on industry and function, criteria are regarded differently. Purporting weights given by the authors probably would have been less adequate.

The average criteria importance has been used as factors for the chosen scale point. The concept scores, being the weighted average, are shown below. They are sorted by ranking.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Max.</th>
<th>ECR</th>
<th>Med.</th>
<th>SCM</th>
<th>VMS</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low implementation expenses</td>
<td>38,33</td>
<td>36,67</td>
<td>28,33</td>
<td>30,00</td>
<td>20,00</td>
<td>15,00</td>
</tr>
<tr>
<td>Cost cutting potential</td>
<td>27,78</td>
<td>34,72</td>
<td>45,14</td>
<td>31,25</td>
<td>52,08</td>
<td>52,08</td>
</tr>
<tr>
<td>Risk reduction</td>
<td>29,17</td>
<td>27,08</td>
<td>27,08</td>
<td>31,25</td>
<td>35,42</td>
<td>37,50</td>
</tr>
<tr>
<td>Sales growth potential</td>
<td>25,56</td>
<td>28,11</td>
<td>33,22</td>
<td>30,67</td>
<td>40,89</td>
<td>40,89</td>
</tr>
<tr>
<td>Innovation potential</td>
<td>18,33</td>
<td>18,33</td>
<td>16,81</td>
<td>24,44</td>
<td>16,81</td>
<td>33,61</td>
</tr>
<tr>
<td>Low interdependence risk</td>
<td>30,42</td>
<td>32,44</td>
<td>36,50</td>
<td>38,53</td>
<td>30,42</td>
<td>38,53</td>
</tr>
<tr>
<td>Flexibility</td>
<td>20,00</td>
<td>21,67</td>
<td>26,67</td>
<td>28,33</td>
<td>25,00</td>
<td>25,00</td>
</tr>
<tr>
<td>Service quality</td>
<td>23,47</td>
<td>27,08</td>
<td>28,89</td>
<td>30,69</td>
<td>28,89</td>
<td>32,50</td>
</tr>
<tr>
<td>Total weighted average</td>
<td>26,63</td>
<td>28,26</td>
<td>30,33</td>
<td>30,65</td>
<td>31,19</td>
<td>34,39</td>
</tr>
</tbody>
</table>

Figure 7. Weighted results of vertical cooperation concepts.

The ‘maximum intensity concept’ is the winning concept, the ‘low intensity concept’ the loser. As this does not seem to be surprising, a closer look on the criteria scores is necessary to understand the results. To visualize them they are put into the following chart.

Figure 9. Weighted results of vertical cooperation concepts
The ‘low intensity concept’s’ strength, ‘low implementation expenses’, is ruled out by the little ‘cost cutting potential’ and ‘sales growth potential’ according to the experts’ assessment. The ‘maximum intensity concept’, the ‘medium intensity concept’, ECR and SCM are regarded to have similar cost cutting and sales growth potentials. These were the two criteria that were weighted with the highest importance. The first three concepts involve marketing and logistics cooperation scope whereas SCM does not. This taken into account, it seems surprising that SCM shows similar potential to the opinion of the experts. The ‘maximum intensity concept’ is the winner. As this might seem obvious, it is important to remember that the experts were not aware of the fact that this is the ‘max intensity concept’ as they were only given descriptions of each concept. This proves the point that vertical cooperation should not only focus on logistics or marketing, but should integrate both in their full extent. The main difference with the ECR concept was the number of cooperation partners and the common pricing. So far, VMS is the only concept that includes pricing matters into the cooperation scope but shows lacks on logistics matters.

Criticism needs to be expressed concerning the criterion ‘implementation expenses’. Even though the ‘maximum intensity concept’ has the worst score regarding the implementation expenses, it seems likely that this research has not taken them properly into account. This criterion seems to be in a trade-off-conflict with the others. The average weight given by the experts seems low (10%). Without the characteristics of the implementing firm it seems very difficult to evaluate implementation expenses. In order to avoid associations with certain concepts, the names were not given in the questionnaire. The experts had to focus their evaluation on the given differentiators. But the verbal paraphrase harbours the risk of individual interpretation.

4. Conclusions
This research presents for the first time an approach to evaluate vertical cooperation concepts. It has reviewed the literature and proposed cooperation differentiators with respect to cooperation scope, cooperation content and cooperation enabler. The same has been done for evaluation criteria of cooperation. Six experts have been asked for their opinion on the weight of criteria and six described vertical cooperation concepts. The winning concept should be used as the fundament for further research of the concept of value chain management. It became obvious that an integrating concept cannot just put SCM and ECR together, as proposed, but needs to go beyond. For instance should the cooperation content differentiator ‘price cooperation’ be included into the concept. This can become evident in common pricing decisions or shared terms and conditions of delivery and payment. Cooperation on pricing seems more difficult to carry out, as the information that needs to be shared is very sensitive. Decision in the cooperation could affect a single firm’s sales or even profit. But a vertical pricing cooperation can offer advantages as well. If for instance reduced costs are passed on to the end consumer, the cooperation partners can all benefit from higher volumes, which can lead to better economies of scale for all partners. Cooperative pricing in a value chain can gain significant competitive advantage compared to other value chain. An integrating concept as value chain management should include this cooperation differentiator. It should be subject to further research to let value chain management be the integrating concept as intended. Further research should focus as well on the implementation of VCM. Keywords as green supply chain management or corporate social responsibility point out the gaining importance of sustainability in the literature and practice [3]. So far, this is not considered in the differentiators or in the criteria. In order to have a cooperation concept that is up-to-date, future research could try to integrate this into VCM. As shown the experts weighted the criteria differently. Further researching could focus on the similarities and differences in different markets and industries. It would be interesting to integrate B2A experts as well, since e.g. public private partnerships can describe vertical cooperation too. But it needs to be checked if the same differentiators and criteria are applicable for B2A. The managers questioned in this research have gained a lot of their expertise working for big, global operating companies. It would be interesting to learn how experts from SME regard vertical cooperation.

It is important to emphasize that every firm needs to decide individually what concept is best suitable. This became obvious with the criteria ‘implementation expenses’. These concepts cannot be regarded as ‘one size fits all’ concepts as sometimes presented in the literature. Researchers can only give general recommendations but cannot decide for individual companies. Investment appraisals should be the final criteria to decide what is applicable and what not.
References