

CONCEPTUALIZATION OF EXTERNAL KNOWLEDGE REVERSE FLOWS

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Abstract

Research in reverse logistics was previously focused mainly on manufacturing enterprises and on tangible reverse flows. However, with steady increasing proportion of services in GDP and with servitization of products, direction of further research in reverse logistics could aim on service sector and on intangible reverse flows, i.e. on information and especially on knowledge. The concept of gathering information from and about customers is not new and has been investigated by marketing researchers for a long time. Nevertheless, information about (dis)satisfaction of customers, their experience with products or complaints was gathered mainly in order to increase satisfaction, improve the experience or reduce the number of complaints. As one of the main purposes of reverse logistics is to reduce reverse flows, among others faulty products or services, this can be done by designing better products or services. However, companies need to obtain knowledge from customers in order to innovate products or services. Therefore, the purpose of this article is to introduce a conceptual framework that will help to analyze the current research that focuses on using knowledge from customers to reduce reverse flows. Using the designed framework, further research project will be introduced and briefly discussed.

Keywords: Reverse logistics, customer knowledge management, information, conceptual framework

1. INTRODUCTION

Recent development in logistics follows the general development trends based on information systems, social networks, globalization (on the supply and the demand side), servitization, big data and more. Interestingly, practice of reverse logistics (RL) does not keep this pace nor the research is. The common denominator of these trends is increased possibilities of information and knowledge that can be obtained from customer however the research on using customer knowledge seems to be scarce. Although reverse flows seem to have a rich potential for obtaining customer knowledge, reverse logistics research partially neglects the role of knowledge management [1], information systems [2], [3], performance management [4] and quality management [5], [6]. Consequently, the theory lacks the understanding of mechanisms how customer knowledge embedded in reverse flows can be obtained or used in order to help the company with designing and innovating new products (or services) and thus increasing performance.

Therefore, the goal of this paper is to introduce a conceptual framework that grounds the forthcoming research focused on using information from customer produced in and by the reverse flows. Consequentially, the nature of this paper is theoretical. The data that were used for designing the conceptual framework come from research articles that were focused on Customer Knowledge Management and on using information from customers for the knowledge management purposes. The reason was that no usable research in the reverse logistics discipline was found. The conceptual framework that introduces the future study in this article originates and follows the outputs of the reverse logistics research that was done by my colleagues and me in the past 5 years. This stream of this research developed from investigating how companies support information and knowledge management in reverse flows.

This rest of the text is divided into four sections. The next section introduces the background of the researched phenomena, specifically the nature of information in reverse logistics and customer knowledge management.

The third section presents and describes the conceptual framework. The fourth section discusses the implications for the forthcoming research and the fifth section concludes the article.

2. BACKGROUND

In this paper, the reverse logistics (RL) is understood 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*” [7], and is treated as part of the closed-loop supply chain (see [8]). For the purpose of this study, knowledge management (KM) is defined as: “*the effective learning processes associated with exploration, exploitation and sharing of human knowledge (tacit and explicit) that use appropriate technology and cultural environment to enhance an organization’s intellectual capital and performance*” [9, p. 12]. The rest of this section contains the background and context needed to reason the content of the conceptual framework focusing on two topics. Firstly, as information is necessary antecedent of knowledge, the background of information management in RL is introduced. Secondly, customer knowledge management as an approach that can be used for understanding the reverse flow of knowledge from customer is discussed.

2.1. Information Management in Reverse Logistics

The scattered research development in information management (support) in RL was reviewed in different published research [2]. Since then, several review studies were published focusing on research in RL at general level. Agrawal et al. [10] found two articles dealing with information management, Govindan et al. [11] found one article focusing on information systems, and Hosseini et al. [12] identified lack of emphasis on ICT in some studies. Clearly, the role of ICT and importance of information management in RL do not get the proper attention. Although the researchers dealing with RL (e.g.[13]) would conform to utmost importance of information in RL coming either directly from customer or through the supply chain channels, actual empirical research is far from being developed. While even if the information management research in RL was vital, it cannot imply anything about using knowledge management or customer knowledge in RL.

2.2. Customer Knowledge Management in Reverse Logistics

Similarly to information management the review covering infrequent knowledge management research in RL was created for the purpose of previous studies and presented in [1]. Not a single article focusing on using customer knowledge in RL was found: Hosseini et al. [12] even described the “*immaturity and low investment in knowledge management and information system*” as one of the major barriers associated with RL. They also highlighted that studies have overlooked the potential of design of products and management of knowledge. In other disciplines scholars had started focusing on customer knowledge soon after the emergence of knowledge management concept (e.g. [14]). These efforts led to establishing customer knowledge management (CKM) (see [15]), which can be understood as knowledge management that is not focusing on general human knowledge but on customer knowledge. In general, customer knowledge can be distinguished into three types: knowledge *about*, *for*, and *from* customer [16]. For the conceptual framework, knowledge from customer is essential, as it can provide ideas for product and service development [17].

In CKM distinguishing the term knowledge from information or data is crucial, as it can distinguish CKM from customer relationship management (CRM) that focuses primarily on customer data and information. CKM focuses primarily on how to use knowledge from customer [15], [17], and not only on transactional data, as CRM does [14]. Therefore, the theoretical differences between CKM and CRM as stated by García-Murillo and Annabi [17] can be summarized in **Table 1**. However, according to Salomann et al. [16] the CKM and CRM initiatives are pursuing the same goal: “*the delivery of continuous improvement towards customers*”, and according to them CKM can be treated as a closed loop knowledge cycle between various CRM processes.

Table 1 Differences between CRM and CKM according to [16]

Differentiating factor	CRM	CKM
Direction	One way	Two way
Medium	Technology	Personal
Information	Data	Customer experience
Objective	Identify profitable customers, customized marketing	Gather customer ideas, identify service improvement areas, new product development
Employee role	Little	Gather knowledge from conversation with the customer

CKM could lead to product and service innovations, competitive intelligence, customer loyalty, and better collaboration [14]. Moreover, Shieh [18] found positive correlation between several CKM dimensions (team learning, sharing intellectual capital, collaborating innovation, and creating customer value) and organizational performance.

Summarized, CKM can be treated as part of KM, distinguished on general level from CRM in using knowledge instead of data and information. In the context of reverse logistics, knowledge from customer can be understood as reverse knowledge flows, and knowledge for customer as forward knowledge flows. Therefore, the conceptual framework, which is based on CKM, directly relates to the reverse flows, especially when information (and knowledge originating from it) is according to RL definition inherent part of reverse flows.

3. CONCEPTUAL FRAMEWORK

Based on the background of the study presented in the previous section and on the previous research, the conceptual framework was designed and is presented in **Figure 1**. In the framework, which should guide the future research dealing with using knowledge from customer for product or service innovations, the focus is on customer behavior, details of knowledge flow from the customer to producer, and use of the customer knowledge (i.e. output of knowledge reverse flows) on the producer side. Thus, referring to the previous section 2.2 only the knowledge from customers is relevant.

Customer behavior in the context of product returns was studied in detail in various studies in reverse logistics, the most recent e.g. [19]. However, the reasons and behavioral patterns concerning the provision of feedback were not studied in high extent.

The knowledge from customer can get to the producer generally through three channels. Firstly, it is direct engagement of the producer with the customer, mainly in the personal or electronical form. Personal forms of obtaining knowledge from customers can consist of serving (selling to) the customer or communicating with the customer in any personal way. Electronical forms can include any communication through company social networks or websites (e.g. [20]), formal documents such as complaints, or electronic surveys. Secondly, the knowledge from customer can flow through the supply chain where the main medium can be information systems that are used for supply chain management purposes. Thirdly, companies can use external knowledge sources, such as various social networks (other than their own) or web aggregators.

The last part of the framework deals with the ways where and how can be the knowledge from customers used. The connection with knowledge management in the form of customer knowledge management is straightforward and consists mainly from using customer knowledge for organizational learning. Similarly, using customer knowledge in customer relationship management was found inherent for the discipline [18]. Customer knowledge can play vital part in quality management in order to improve the quality of product or services based on the customer experience. Similarly, as process management and process innovations can

be understood as part of quality management, the customer knowledge can be utilized in process improvement. In closed loop supply chain management, the customer knowledge can be used for decreasing the volume of reverse flows, mainly through better product design and forward logistics. Performance management can benefit from customer knowledge by designing new performance metric according to customer experience.

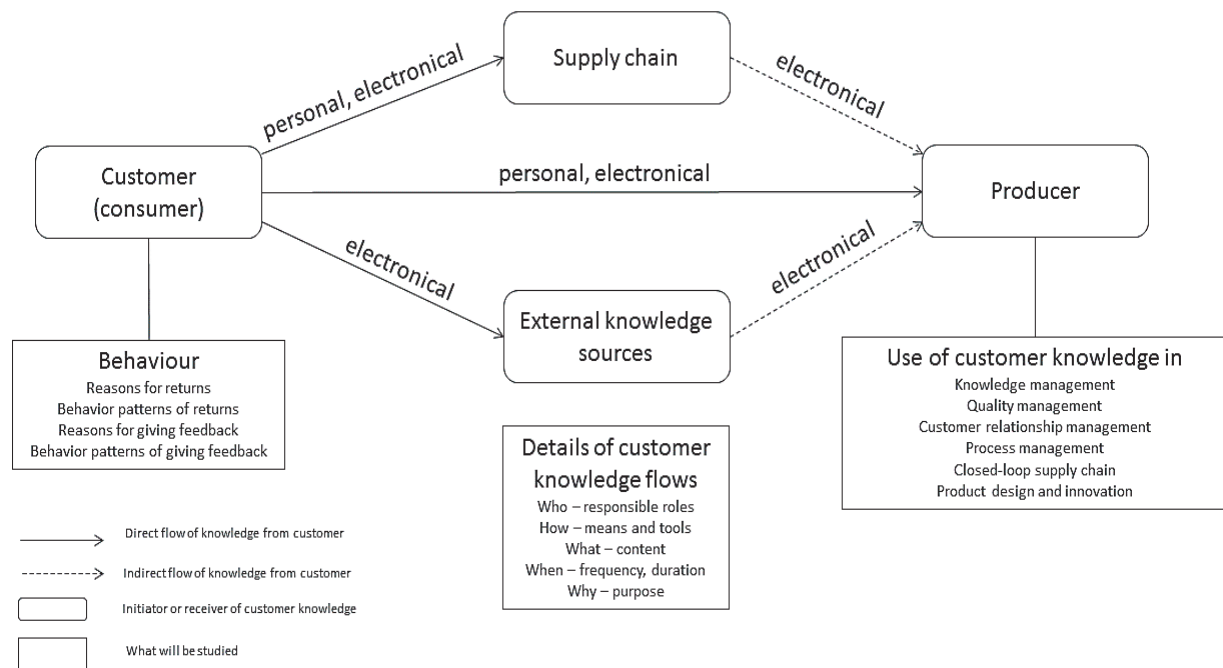


Figure 1 The conceptual framework of external knowledge reverse flows

4. DISCUSSION

The reason, why the reverse logistics perspective was chosen is because scholars seem to omit the fact that the reverse flows can generate rich information content about the reasons why product returns happen, what is customer experience and that it could bring new perspectives on the phenomena (of using knowledge from customers for product and service innovations). The conceptual framework will therefore guide the forthcoming research which will try to investigate if, how, and why the producers gather knowledge from customers and how the knowledge is used in innovations. The framework will serve as an initial guidance for content analysis which will be starting point of the research project. The whole research design is presented in **Figure 2**.

The nature of the research is mixed as it combines content analysis of research studies that covers the content of the framework. The next step in the research will be case study research which will have either explanatory or exploratory nature which will be decided according to the results of the content analysis. If the content analysis reveals enough concepts about the researched phenomena then the explanatory research will be needed as the identified concepts will be explained. The exploratory case study will be needed if the content analysis will not find enough evidence. Next stage will follow similar logic, meaning that if the explanatory research will successfully reveal reasons why and how the customer knowledge is used then it will be possible to test it on a larger sample by a survey. Otherwise, more exploration will be needed on larger sample. The final stage will consist from follow-up interviews in order to enrich the quantitative data obtained through the survey.

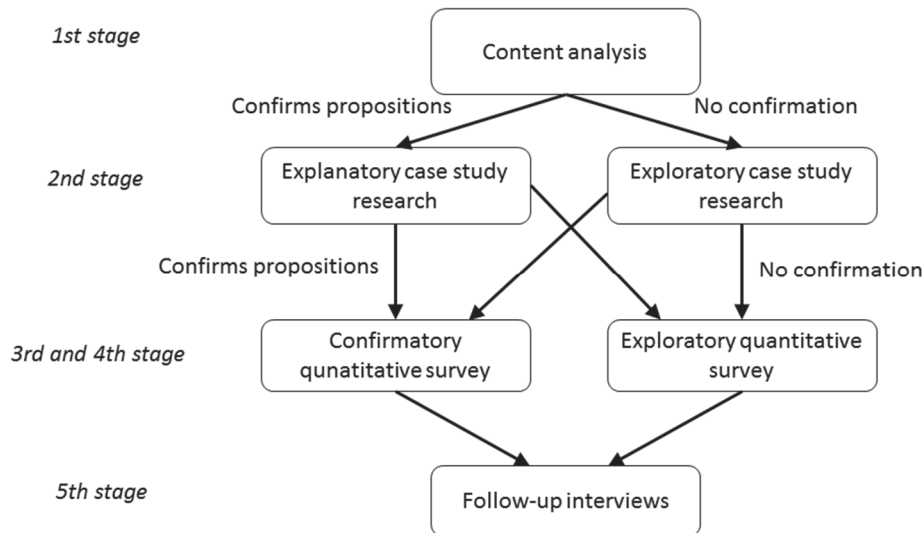


Figure 2 Stages of the forthcoming research

5. CONCLUSION

This article introduces a conceptual framework of a research project that will investigate the relationship between the knowledge from customers that originates from reverse flows and the product or service innovations. In order to fulfill this goal and elaborate the conceptual framework, design of the future research was described. The design consist from several stages which follow mixed method research design including content analysis literature review, exploratory and explanatory case study, confirmatory and exploratory survey and descriptive qualitative interviews.

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