Axel Winkelmann

Integrated Couponing

A Process-Based Framework for In-Store Coupon Promotion Handling in Retail

Advances in Information Systems and Management Science

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Herausgegeben von

Prof. Dr. Jörg Becker
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Editor's Foreword

The conceptual design of information systems is a core task of IS research and is positioned at the intersection of business administration and computer science. It is widely accepted that conceptual modelling is able to improve the development process. By using semi-formal languages, conceptual modelling intends to create abstract artefacts of the information system and its components in order to facilitate the communication within the development team.

Axel Winkelmann especially contributes to the body of knowledge in the information systems discipline by outlining an efficient framework for integrated coupon processing. Although coupon campaigns are very popular among marketing managers and consumers, the efficiency of issuing coupons on a broad basis is doubted. Many campaigns turn out to be inefficient due to the selection of wrong consumer groups or an uncontrolled spreading of coupons. A selective distribution of coupons via direct mail, email or SMS is either very costly or insecure. Furthermore, most traditional ways of coupon processing do not allow a matching between personal coupon information and purchased items as personal information on a coupon is stored on a second barcode that cannot be analyzed at the check-out due to technical restrictions. Bearing this in mind, the author develops a new concept for integrated issuing and clearing of coupons on a store-level to overcome existing problems of traditional couponing.

Axel Winkelmann's dissertation is an important and original work. His conceptual approach is well-founded and excellently illustrated. It is a valuable contribution to the Information Systems discipline and offers substantial impact to the debate on coupon efficiency from a technological point of view.

Münster, July 2006
Jörg Becker

Preface

The conceptual framework for in-store coupon promotion handling in retail is a result of my four years of work on coupon clearing processes and mechanisms at the European Research Center for Information Systems. In 2001, some regulative German laws were abolished and price reductions beyond 3 percent became possible. From the beginning, I was fascinated by the possibilities that couponing could offer to German retailers. Although most research was done with the focus on the impact of coupons, I soon realized that most problems of traditional couponing resulted from the way of coupon treatment. Inefficient ways of distribution and various media discontinuities during the processing (e.g. manual counting of redeemed coupons) led to negative side-effects such as fault and redemption by wrong consumers. This was the initial point for my process-based framework for coupon handling, which avoids the negative side-effects of traditional coupon processing.

Naturally, research is collaborative and so is this work (albeit a monograph). I am especially thankful to Prof. Dr. Jörg Becker, who gave me the opportunity of researching and writing my dissertation in an open-minded, creative environment at his chair. Likewise, I would like to thank Prof. Dr. Heinz Lothar Grob for supervising my thesis, as well. I am extremely grateful to my friends at the ERCIS who supported my work with their comments and critical discussions. Especially, I would like to thank Tobias Rieke and Patrick Delfmann, who discussed various parts of my work and helped further developing it. Furthermore, Burkhard Weiß and Andrew Ebbens helped improving my writing style and gave helpful comments on my work.

Research would not have been possible without all the discussions with respondents from manufacturers, retailers, clearinghouses, and coupon associations all over the world. Examinations of various ways of coupon processing, a research project on POS coupons, and many talks with the industry encouraged me in specifying a conceptual model for an integrated approach. I would, representatively for many interviews I have conducted, especially like to thank Alexander Schüle and Christoph Thye from acardo technologies AG, who encouraged and supported my work with various lengthy discussions of the concept and its technological background.

The greatest thanks go to Christina Daniel for providing me not only with inspiring support but also with abundant love. Most of all, I would like to thank my parents, Klara and Joachim Winkelmann. I would not have been able to start and finish this

dissertation without their infinite support, encouragement, and help all over my life. This book is dedicated to them. Thank you.

Münster, July 2006
Axel Winkelmann

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5 Traditional coupon processing

5.1 Fundamentals of traditional coupon processing

5.1.1 General aspects

In general, NORDSIECK defines a process as a collection of functions, aiming at a clear division of activity sequences. This division has to be in line with the objectives and the development of the process-objects in the correct order.[418] HAMMER AND CHAMPY emphasize the customer orientation. They define "a process as a collection of activities that takes one or more kinds of input and creates an output that is a value to the customer."[419] BECKER and other authors understand a process as a "completely closed, timely and logical sequence of activities, which are required to work on a process-oriented business object."[420] Furthermore, essential features of a business process are interfaces to the business partners of the company.[421]

Interorganizational processes[422] can either be inbound or outbound, which means that processes are triggered outside the company or come from within but end outside. For example, delivery processes (demand side) or replenishment processes (supply side) are typical interorganizational business processes.[423] One of the main problems is that parts of the process are not in the area of accountability. Instead, most external process parts are a "black box" to the company.[424] KUGELER mentions that most corporate processes are interorganizational processes.[425]

Coupon processing can be implemented in various ways, ranging from manual processing with many media discontinuities to automated and integrated approaches. Therefore, it is necessary for the process management to consider economic consequences, which follow the process design.

---

418 See Nordsieck (1934), p. 77. Also see Davenport (1993) and Porter's value chain model in Porter (1985).

419 Hammer, Champy (1993), p. 35. Also see Davenport (1993) and Porter's value chain model in Porter (1985).

420 Becker, Kahn (2003), p. 4; also see Becker, Schütte (2004), p. 107; Schütte (1998), p. 100; Rosemann (1996), p. 9.

421 See Becker, Kahn (2003), p. 4.

422 Dominant abbreviations for interorganizational processes are business-to-business (B2B), business-to-consumer (B2C), business-to-administration (B2A), and consumer-to-consumer (C2C), see zur Mühlen (2004), p. 37.

423 See zur Mühlen (2004), p. 37 f.

424 See zur Mühlen (2004), p. 38.

425 See Kugeler (2000), p. 18.

Traditional couponing consists of four process steps that mostly are interorganizational. The process steps work on the business-object "coupon", with each step occuring at an independent time from each other (cf. fig. 5.1). Printing and distribution of coupons are activities of the issuing phase, whilst redeeming and analyzing belong to the clearing phase.[426] Depending on the process arrangements, couponing is more or less integrated and flexible.

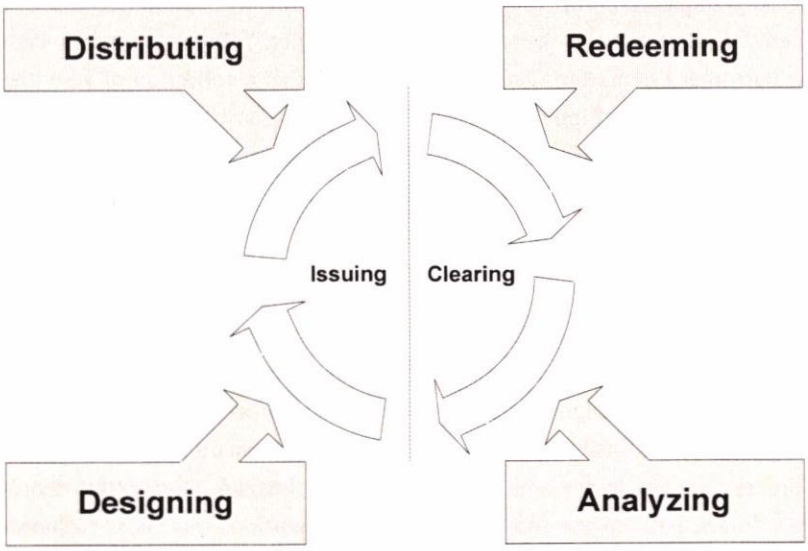

Fig. 5.1: The four steps of couponing

5.1.2 Coupon issuing

Within the issuing phase, design and distribution of coupons are normally separated from each other. Manufacturers or printing companies / publishing houses can plan and print coupons in terms of on- / in-pack coupons, loose coupons, FSI advertisings, etc. Furthermore, consumers can print e-coupons on the internet themselves. The printing process is not necessary if e-coupons can be redeemed directly on the internet or if mobile technology is used that enables customers to show electronic proof at the

[426] Prior to the printing phase, there should also be a planning phase. As the planning phase (e.g. setting up marketing meetings, allocate budgets, etc.) is detached from the actual coupon process and the planning process is very unstructured and cannot be modified or further integrated its consequences will only partially be considered within the phase of the coupon process cycle and will not be mentioned as an independent phase.

cash desk.[427] For example, Benetton and s.Oliver experimented with a scanning technology for SMS/MMS-coupons at the POS. Grocery chains such as Sainsbury, Jacksons, or Virgin also experiment with such coupons.[428] In selected stores, consumers have been able to redeem e-coupons directly from the mobile phone.[429] Nevertheless, in 2005 only pilot trials existed,[430] and a print process is usually necessary with coupons that shall be redeemed at the POS.

The coupon distribution hardly corresponds with other couponing phases.[431] Normally, coupons in grocery retail are distributed offline, because online coupons offer many fraud risks and do not reach all customer segments.[432] With mass media distribution, the success of a coupon campaign has to be estimated in advance, because the redemption rate can hardly be influenced after the distribution. If it turns out during a promotion that undesired consumer segments redeem the distributed coupons, marketers are not able to change a promotion's specifications.[433]

The estimation of the right redemption rate and the success of a campaign is very difficult. There are various examples of misredemption, misunderstandings, and errors in the coupon design all of which lead to costly error corrections.[434] Furthermore, a testing of a coupon design in test markets is very difficult, because competitors may detect the test and react quickly to a planned promotion. With direct media campaigns, it is easier for marketers to adopt their campaign, because they do not send all coupons to consumers at the same time. Therefore, they are able to adapt their campaign to changing market demands. Unfortunately, direct mail campaigns are very expensive. Consumer segments need to be identified, and addresses need to be gathered. Mostly, direct mail is used in conjunction with loyalty clubs. Email-campaigns, as a cheap

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427 See Oliver, Shor (2003), pp. 121-134 for a discussion on the advantageous and disadvantageous effects of digital promotion codes.

428 For examples see The Grocer (2005); Hunter (2005); Stevenson (2005); Houghton (2005); Carter (2004); Pearse (2004); Krah (2003). First electronic issuing experiments date back to the mid 1980s when companies developed a coupon kiosk system, see Rigg (1986).

429 For a detailed explanation of the technology and process see Becker, Schütte (2004), p. 410 f.

430 See Wieking (2005), p. 22.

431 For an overview of the German coupon distribution market see Diercks (2003), especially pp. 105-224.

432 According to a study of the EHI only every tenth company uses the internet in their coupon distribution mix. See Schäfer (2003), p. 25 f.

433 For example, the goal of promotion is to increase brand awareness and to attain new customers - but instead of new consumers, only brand loyal consumers start redeeming the coupon.

434 Examples for disastrous campaigns are manifold. For example, Baker (2002), p. 476 reports that Esso had to withdraw a voucher game with individual numbers on the vouchers, because after two weeks twenty first prize winners turned up while only two should have existed for the whole promotion. Hoover once had a "Free Flight" campaign that was underestimated dramatically in terms of redemption rate. It led to losses initially estimated at £20 million and a lot of adverse publicity.

alternative to postal campaigns, offer higher fraud risks and do not reach every consumer.

The costs for a coupon promotion are very high. There are costs for printing, distributing, redeeming, and processing of coupons. It is estimated that those costs are at least equal to two thirds of the face value of the coupon.[435] Therefore, a profitability analysis is necessary to measure the sales effect of coupons.[436] In tab. 5.1, the capital budget planning and success evaluation is a multi-period example, which includes dynamic redemption effects. To simplify the example, only direct benefits are calculated. Indirect benefits such as advertising effects or long-term effects of a market-share increase due to brand-switchers are not measured. To calculate a net present value, an opportunistic interest rate is normally considered. Due to the fact that coupon promotion campaigns only last for a short time, it is assumed that all five periods are very short (e.g. one period = one week). Therefore, for simplification no interest rate is assumed.[437]

In the example, a price reduction of 0.40 Cents is granted and the manufacturer has a profit margin of 1.10 Euros with every purchased article. Processing costs can be divided into fix costs regarding coupon issuing and variable costs regarding coupon clearing. Unlike variable costs, fix costs for printing and distributing can be calculated in advance. In the example, the costs are calculated with a CPT of 20 Euros.[438] Variable clearing costs for accepting and handling coupons are calculated with six Cents per coupon redeemed.[439] This includes effort reimbursement for retailers and clearing houses. As reimbursement costs are dependent on the success of a campaign in terms of redemption rate, these costs are difficult to estimate prior to a campaign.

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435 See O'Guinn, Allen, Semenik (2005), p. 647. For example, Procter&Gamble has distributed more than 700 million coupons for its Folger coffee brand in 1995. Administrative costs alone totaled $14 million. See Promo Magazine (1996), p. 48 f.

436 The figures are hypothetical although many researchers mention similar figures for different article groups.

437 For a detailed insight into capital budgeting with financial plans see Grob (1993); Grob (2001). With a limited budget and various marketing alternatives, a utility analysis may be reasonable, see Grob (1985a), p. 150 ff.

438 See also Bly (2001), p. 316, who assumes $20 CPT. For direct mail, typical CPT are mentioned to be $700, including printing, postage, letter shop costs, and mailing list rental. Mason, Burns (1998), p. 558 ff. give an overview of various advertising formats.

439 In the USA, many manufacturers reimburse 5-8 US-Cents per redeemed coupon, see NCH Retailer Relations (2006b).

Tab. 5.1: Profitability analysis for a coupon program

	t=0	t=1	t=2	t=3	t=4	t=5
Basic information						
Issued coupons (units)	100,000	100,000	50,000	30,000	20,000	0
* Redemption rate		5.00%	3.00%	2.00%	2.00%	3.50%
= **Redeemed coupons (units)**		**5,000**	**3,000**	**1,000**	**600**	**700**
Required Budget						
Printing costs	0.01 €	0.01 €	0.01 €	0.01 €	0.01 €	0.01 €
+ Distribution costs	0.01 €	0.01 €	0.01 €	0.01 €	0.01 €	0.01 €
= **Costs per issued coupon**	0.02 €	0.02 €	0.02 €	0.02 €	0.02 €	0.02 €
* Issued coupons (units)	100,000.00	100,000.00	50,000.00	30,000.00	20,000.00	0.00
= **Production costs (fix)**	2,000.00 €	2,000.00 €	1,000.00 €	600.00 €	400.00 €	- €
Face value	0.40 €	0.40 €	0.40 €	0.40 €	0.40 €	0.40 €
+ Clearing costs	0.06 €	0.06 €	0.06 €	0.06 €	0.06 €	0.06 €
= **Promotional costs / redeemed coupon**	0.46 €	0.46 €	0.46 €	0.46 €	0.46 €	0.46 €
* Number of redeemed coupons	0	5,000	3,000	1,000	600	700
= **Redemption costs (variable)**	0.00 €	2,300.00 €	1,380.00 €	460.00 €	276.00 €	322.00 €
Production costs (fix)	2,000.00 €	2,000.00 €	1,000.00 €	600.00 €	400.00 €	0.00 €
+ Redemption costs (variable)	0.00 €	2,300.00 €	1,380.00 €	460.00 €	276.00 €	322.00 €
= **Promotional costs**	**2,000.00 €**	**4,300.00 €**	**2,380.00 €**	**1,060.00 €**	**676.00 €**	**322.00 €**
Additional sales and profits						
Sold products (units)		24,900	22,875	20,950	20,550	20,700
- Original baseline sales (units)		20,000	20,000	20,000	20,000	20,000
= **Incremental sales (units)**	0	4,900	2,875	950	550	700
* Profit margin / unit	1.10 €	1.10 €	1.10 €	1.10 €	1.10 €	1.10 €
- Promotional costs	2,000.00 €	4,300.00 €	2,380.00 €	1,060.00 €	676.00 €	322.00 €
= **Total additional profits**	**-2,000.00 €**	**1,090.00 €**	**782.50 €**	**-15.00 €**	**-71.00 €**	**448.00 €**
Accumulated additional sales value	**234.50 €**					

The manufacturer intends to issue different quantities of coupons during each of the five periods in the same region. During the first period, consumers will redeem the highest amount of coupons because the promotion is new and will lead to a high involvement. The redemption rate will decline during the campaign, because consumers are saturated or the interest abates. Only at the end of the campaign the redemption will increase slightly, because people discover that they have to redeem their coupons soon in order to avoid invalidation. With 300,000 issued coupons, which totals fix costs of 6,000 Euros, 10,300 coupons will be redeemed during the promotion. Therefore, total costs of the promotion will summate to 10,738 Euros.

The calculation of additional sales and profits is very difficult in practice. Baseline sales have to be calculated first. They include all sales that would have been achieved without any promotional activity. Incremental sales need to be calculated as the difference between actual respectively expected sales and baseline sales. Unfortunately, incremental sales also consider sales of brand loyal consumers that use coupon promotions for buying ahead. This effect will wear off in the following periods, because brand loyal consumers will not purchase the same amount due to their prior stockpiling (cf. fig. 5.2). As other promotions and competitors' activities influence sales in the long run, the long-term success of a coupon campaign is difficult to measure.[440]

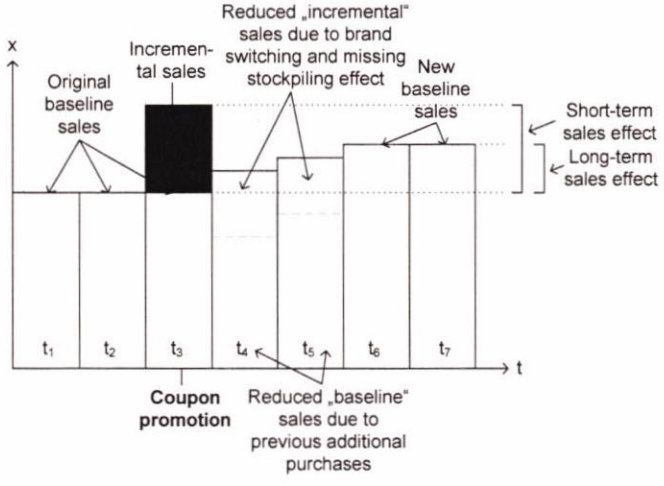

Fig. 5.2: Long-term and short-term sales success of a coupon promotion

440 Anderson, Song (2004), p. 413 distinguish between new customer effect (positive), trading down effect (negative), and regular price effect (positive or negative) for determining optimal coupon and price strategies.

To simplify calculations, only incremental sales are taken into account in tab. 5.1. For example, in period one 5,000 coupons are redeemed. As the number of sold units is 24,900 articles and the baseline is 20,000 articles, incremental sales comprise 4,900 articles. However, the incremental sales do not consider purchase acceleration and stockpiling effects, which can only be measured in the long run. In total, the redeemed coupons sum up to 10,300 units, whereas the incremental sales only account for 9,975 articles. Regarding variable and fixed costs, the promotion offers a marginal short-term benefit of 234.50 Euros.[441]

In general, clearing houses are able to provide general advice about coupon promotions in the planning phase of a campaign, due to their long experience with coupon campaigns. Clearing houses often help to avoid mistakes in the planning and redemption phase due to their long-term and intense experience with coupon promotions. For example, BECKER, VERING, AND WINKELMANN report that sometimes coupon advertisements only mention redemption conditions in the advertising campaign, but not on the coupon itself. Hence, consumers, who clipped the coupons of their newspapers, do not only redeem coupons in participating stores, but also in competitive stores. Wrong decisions regarding barcode colors (e.g. a black barcode on a dark blue coupon) or paper grade can also be very costly, because cashiers cannot handle coupons efficiently at the POS.[442] Typically, clearing houses offer access to promotion databases with historic information in terms of face value, product categories, distribution channels, etc. Manufacturers often possess historic information about usage patterns of redeemed coupons and corresponding purchases, which can also be used for future coupon promotions.[443] Furthermore, consumer and promotional panels that are offered by market research institutes can also be used for coupon planning.

During the issuing process, clearing houses assign an individual promotion barcode to the coupon promotion for coupon campaigns with semi-automatic or automatic clearing. The barcode will be printed on the coupon later on. In addition, if clearing houses are going to deal with automatic clearing, they have to link the coupon barcode to the

441 Note that the discussion is not based on full product costs, but marginal product costs only. Furthermore, long-term effects such as increased market share and therefore economies of scale are not considered.

442 See Becker, Vering, Winkelmann (2003b), p. 22 f. The authors give some examples for wrong decisions in the planning phase. For example, a small German brewery decided to promote its bottle beer with a BOGOF coupon campaign in supermarkets on its own. Unfortunately, it forgot to write down the conditions properly so that people started using the coupons in pubs. Gastronomes accepted the coupons, but asked the brewery for a reimbursement of their sales and not their wholesale price.

443 See Garg et al. (2001), p. 7.

barcodes of products that have to be purchased in order to redeem the coupon.[444] Participating retailers normally receive information about the coupon promotion such as duration, face value, expected sales volume, etc. prior to the start of a promotion. Therefore, they are able to some extent to prevent running out of stock at demand peaks, by ordering additional quantities ahead of the actual campaign. In addition, cashiers are able to familiarize themselves with new coupons and their redemption conditions, limiting the likelihood of fraud.

5.1.3 Coupon clearing

In 1952, A.C. Nielsen Junior noticed that retailers had difficulties to balance coupon accounts with each manufacturer. The individual returning of redeemed coupons turned out to be hardly possible for retailers with an increasing number of coupon promotions and issuers. After discussions with retailers and manufacturers, Nielsen developed a concept for centralized coupon clearing over the next years. After initial skepticism, leading manufacturers accepted his clearing concept leading to the first clearing company in the USA in 1957, and the first coupon counting company in Mexico.[445] In Germany, the first clearing houses started in 2001.[446]

The clearing phase of a coupon promotion consists of redeeming and counting/analyzing coupons. It accounts for the processing of all fiscal and data flows or also coupon flows between issuer and redeemer.[447] In retail, the coupons are redeemed at the POS, where the coupons are cashed after the conditions are matched. In general, the retailer or supplier does not clear the coupons in terms of counting and reimbursement himself. Clearing houses deal as neutral mediators between retailer and producer. Therefore, the coupons are forwarded to a clearing house for counting and analyzing. Most clearing companies offer services far beyond coupon counting and analyzing. They accompany all steps in a coupon promotion and facilitate an efficient settlement of campaigns. They provide standardized processes and interfaces for coupon campaigns to all parties concerned. Clearing companies are responsible for advising retailers and suppliers and for assisting with new campaigns.

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444 See information on automatic clearing for a detailed explanation why it may be sensible to link barcodes with each other.

445 See Pohlmann (2003), p. 8

446 acardo technologies established its business in 2000, and developed its clearing business from 2001 onwards, see acardo technologies (2006). NCH started a German branch in Hamburg soon after (see Pohlmann (2003), p. 83). In 2002, Sogec Marketing and Clearing Solution followed. For a history on clearing houses in Germany see Becker, Vering, Winkelmann (2003b), p. 38 ff.

447 See Becker et al. (2005), p. 713.

The clearing house receives redeemed coupons from the retailer, sorts, counts, and reports the redeemed coupon amount to the manufacturers. Clearing houses reimburse participating retailers and receive a refund from the manufacturer. Both clearing house and retailer charge a handling fee, which has to be paid on top of the reimbursed face values.[448] Fig. 5.3 describes a generic couponing process for manufacturer coupons in a one-count clearing system, which is common in European countries.[449]

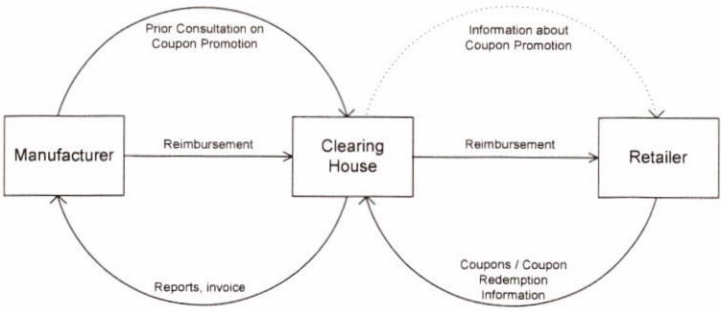

Fig. 5.3: Generic couponing process in a one-count clearing system

In addition, clearing houses help to strengthen security aspects. Many clearing houses automatically check redeemed coupons regarding different aspects of fraud such as coupon redemption on Sundays[450] or after closing time. Global connections between clearing companies and associations help to maintain and improve knowledge about security aspects. Clearing houses and associations discussed many issues on electronic coupons and mobile coupons during the last years. Both approaches are very vulnerable for manipulation. Cost-benefit analyses and risk assessment are necessary to minimize fraud costs for retailers and manufacturers.[451]

Retailers and manufacturers in the USA still use a two-step clearing system due to a historic lack of trust between the manufacturer and retail communities. The US-industry has continuously experienced considerable fraud. The fraud was not just consumers wrongly following the terms appearing on the coupons, but more importantly "organized fraud". Stores redeemed coupons for products they did not stock, and criminal organizations copied coupons or submitted coupons in large quantities.

448 The cost of coupon redemption to manufacturers was approximately 5 billion Dollars in 1989, increasing since then, see Chiang (1995), p. 118. In the USA, the retailers' handling fees are approximately 5-8 US-Cents per redeemed coupon, see Berger, Ploss (2003), p. 90; Mogelonsky (1995), p. 73; for latest handling fees see NCH Retailer Relations (2006b), who lists manufacturers' redemption policies.

449 See Pohlmann (2003), p. 86.

450 In Germany, retail shops are not allowed to open on Sundays. For exceptions see Becker, Winkelmann (2006), p. 239 f.

451 See Becker, Vering, Winkelmann (2003b), p. 23.

Manufacturers and their respective clearing houses wanted to "feel" the redeemed coupons for themselves, and did not trust any retailers' clearing houses. As a result, the coupons have been counted twice. Retail clearing agents receive the coupons from the retailer, count and sort the coupons by manufacturer, and send them to the manufacturers' clearing house for examination and reimbursement. Fig. 5.4 describes a generic couponing process for manufacturer coupons in a two-count clearing system.

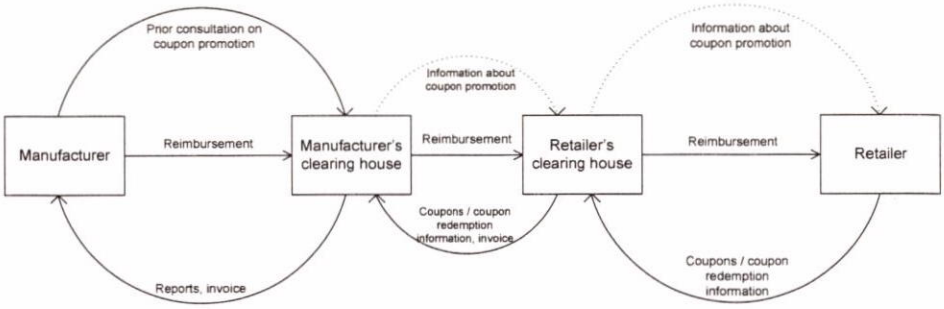

Fig. 5.4: Generic couponing process in a two-count clearing system

MOGELONSKY reports that supermarkets in the two-count system usually count coupons manually, before a retailer's clearing house in Mexico manually sorts and counts each manufacturer's coupons.[452] Traditional couponing systems include hand-counting, or gross weighting, of nonstandard-sized manufacturers' coupons.[453] Afterwards, manufacturers and their agents, receive the counted coupons along with a statement, which lists the coupons that have been redeemed, and an invoice. The manufacturer or its Mexican based clearing house often counts the coupons a second time before any reimbursement is made.[454] Many times, there are discrepancies between the counting parties, which lead to time-consuming and frustrating adjustments and negotiations.[455] ALTER reports that manufacturers' representatives estimate that 6% of all coupon submissions show discrepancy.[456] However, if all parties are satisfied, retailers receive the money for the redeemed face values and a handling charge per coupon. Due to the complex procedure, the average payment time for this process is between 45 to 60 days.[457] ASIS assumes 60 to 90 days for a whole cycle of manual coupon processing.[458]

452 See Mogelonsky (1995), p. 73.
453 See Avery, Haynes (1996), p. 405.
454 According to Thissen (2004), p. 89, there are about 35 counting plants in Acuna, Mexico, alone. McChesney (1982), p. 13, reports that there had been approximately 70 clearing centers in the United States at the beginning of the 1980s.
455 See Whalen (1994), p. 26.
456 See Alter (1981).
457 See Mogelonsky (1995), p. 73.
458 See ASIS Standing Committee on Coupon Security (1984).

Tab. 5.2 describes the responsibilities and processes within a two-step clearing system.[459]

Manufacturer	Retailer	Retailer's agent	Manufacturer's agent
• Allocate marketing budget • Evaluate effectiveness of programs • Develop coupon promotions with guidelines • Submit coupon release notice	• Honor coupons from consumers • Scan/verify purchase • Submit coupons for payment	• Sort, count, and invoice coupons by manufacturer • Pay retailers upon receipt of coupons • Collect receivables from manufacturer agents and reconcile invoices • Provide adjustment detail to retailer	• Scan / count coupons • Pay retailers/retail agents upon manufacturers' payment policies • Adjust details provided to submitter • Retain data - all transaction detail maintained to the invoice, store tag, and offer level • Provide promotion statistics to manufacturer

Tab. 5.2: Responsibilities of participants of the couponing process[460]

The laborious procedure can be shortened significantly with automated clearing approaches. For a differentiation between manual and automatic clearing approaches and mixed forms between both, it is necessary to examine the coupon clearing process in the narrow sense. The clearing process is understood as the whole handling of the voucher from the preparation of the campaign, towards the coupon redemption at the POS and analysis of all redemption data.[461] Significant handling differences occur within the process, which are reflected by the handling costs, handling time, data gathering, and data transfer.[462]

Clearing dissimilarities arise from the method of cash register preparation, the gathering and processing of coupons at the POS, obligations of storing the received coupons

459 For a detailed discussion on fraud see chapter 5.3.
460 For further information see NCH Retailer Relations (2006a).
461 See Becker, Vering, Winkelmann (2003a), p. 7; Becker et al. (2005), p. 713.
462 See Becker, Vering, Winkelmann (2003b), p. 23-37.

as well as forwarding them to the clearing house and analyzing the coupons at the clearing house (cf. fig. 5.5).

	Attribute	Attribute value		
Promotion preparation	Designing coupon	Barcode not necessary	Barcode necessary	
	Entering promotion data into POS system	Not necessary	Manual update	Automatic update
Coupon redemption	Face value gathering	Manual	Automatic	
	Article-coupon-matching (with respect to amount and brand)	Manual	Automatic	
	Validity check	Manual	Automatic	
	Coupon storage	Necessary (cash-substitute)	Not necessary	
	Coupon / information transmission	Paper based / manual	Electronical / automatic	
Coupon analysis	Counting and intake of coupon information	Manual	Automatic via scanning	Automatic via EDI

Fig. 5.5: Systematization of clearing approaches[463]

Manual clearing

Manual coupon clearing is the oldest form of coupon clearing. All interactions between the clearing house, the retailers, and the customers are processed manually. The manual approach to coupon clearing was widely used in the grocery sector until electronic scanning cash registers emerged in many countries, especially in the U.S.

On behalf of the retailer, there will be no investment in infrastructure necessary, if the clearing is settled manually, because no special cash register prerequisites have to be met and no coupon data has to be transmitted (cf. fig. 5.6). Because the entry of couponing data into the cash registers is not required, the cashiers have to decide autonomously, whether a coupon should be accepted or rejected. Thus, the employees need to receive intensive training to avoid the redemption of invalid coupon variants or counterfeit coupons.

463 Adopted, translated and extended from Becker, Vering, Winkelmann (2003a), p. 8.

	Attribute	Attribute value		
Promotion preparation	Designing coupon	Barcode not necessary	Barcode necessary	
	Entering promotion data into POS system	Not necessary	Manual update	Automatic update
Coupon redemption	Face value gathering	Manual	Automatic	
	Article-coupon-matching (with respect to amount and brand)	Manual	Automatic	
	Validity check	Manual	Automatic	
	Coupon storage	Necessary (cash-substitute)	Not necessary	
	Coupon / information transmission	Paper based / manual	Electronical / automatic	
Coupon analysis	Counting and intake of coupon information	Manual	Automatic via scanning	Automatic via EDI

Fig. 5.6: Systematization of manual coupon clearing[464]

Typically, manual couponing is still used in areas where only few coupons are redeemed, or where the issuing and accepting company are identical. For example, in tourism most coupons are cleared manually and do not posses any barcodes. The hotel employee can check the conditions accurately, because there is no pressure of time when customers check-in at the hotel. Moreover, there are only few products and alternatives that coupon conditions can be matched to. Therefore, there is no need for any sort of electronic support for coupon acceptance.

Cashiers are responsible for the collection and acceptance of coupons in retail. They check the conditions of acceptance and manually enter the coupon value into the cash register as a rebate. The conditions of acceptance need to be verified manually to ensure that the redemption takes place within the campaigning period, and only for an eligible product (and not for a competitor's product). This verification turns out to be very difficult, in particular in the case of high purchasing quantities. It is not uncommon to present the coupons to the cashier towards the end of a shopping tour, when

464 Adopted, translated and extended from Becker, Vering, Winkelmann (2003a), p. 9.

most of the purchased items have already been packed away. This means, processing can be very time-consuming and expensive.[465]

Storage of the redeemed coupons at the selling point is essential, because coupons serve as refunding evidence to the producer. They are nearly as valuable as cash to the retailer. The coupons are delivered to the clearing house, where the coupons are counted by hand.

In general, clearing houses open allocation accounts for each manufacturer and corresponding promotion (cf. fig. 5.7). The manufacturer discloses campaign information in terms of face value, conditions, and participating stores (1a, 1b). The clearing house gives an estimate on the redemption rate based on its experience (2). After the manufacturer decides about the budget of the campaign and therefore the coupon volume (3), the clearing company asks for a payment based on the expected promotion value including additional handling fees prior to the campaign (4a, b). In addition, promotion details such as volume, redemption estimate, and expected product sales are forwarded to participating retailers to inform them about a new promotion and to enforce them to increase the stored product quantity (5a, b, c). With manual clearing, participating retailers forward their coupons to the clearing company (6), who either reimburses from the allocation account, directly after the coupon counting, or reimburses (9) after a clearing invoice is sent (7) and the manufacturer releases the amount for payment (9).

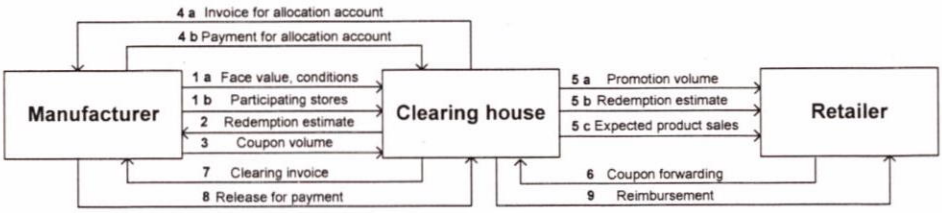

Fig. 5.7: Manual clearing: information flow, coupon forwarding, cash cycle

Coupon forwarding sometimes is difficult for retailers. Especially when it comes to two-count clearing systems (as is the case in the USA), it is not always easy to see where to forward the coupons to. If the coupons have to be sent directly to the manufacturer, the retailers will be asked to sort coupons, prepare an invoice, and mail coupons and invoice to the manufacturer. As addresses may change, clearing houses recommend using the latest promotional address, printed on coupons, for acquiring the

465 See Davidson (2004), p. 168 f.

current address information.[466] Furthermore, many manufacturers have their own redemption policies that retailers need to consider when accepting coupons. Although most manufacturers claim not to be too rigid in the enforcement of their coupon redemption policies, there is a risk for retailers of not being reimbursed. NCH alone, who represents various manufacturers in the USA, has approximately 130 different manufacturer policies on their website and more can be obtained on request.[467]

Automatic clearing

Historically, first clearing approaches were developed without the use of information technology and automation in the 19th and 20th century. Cashiers had to check the conditions manually and enter the face value discount into the cash machine by hand as a negative article. Furthermore, clearing houses had to count coupons one by one without the use of technology. With the help of scanner technology in the late 1970s, clearing houses started a semi-automated clearing approach.[468] To some extent, it became possible to automate the redemption process with an increasing acceptance of scanning-technology at the POS (cf. fig. 5.8 for the similar development of scanner technology in Germany). First OCR data entry mechanisms for coupon clearing evolved in 1980. In 1986, the first computer based coupon management software ACE was introduced. From 1989 onwards, cashiers and clearing houses could gather coupon data with the help of barcodes.[469]

466 See NCH Marketing Services (2006).

467 As of January 2006. See http://www.nchmarketing.com/us/rtlrel/MfrRedempPols.asp.

468 According to Davidson (2004), p. 168, the grocery chain Vons was a pioneer in the scanner usage in the 1970s. Scanners accelerated check-out and helped reducing storage space by improving inventory turns. Scanners also led to reduced labor costs and improved customer service. For an introduction to the mechanisms of scanner technology see e.g. Precht, Meier, Tremel (2004), p. 96 ff.

469 For an introduction to the (NCH-based) history of coupon-clearing see Pohlmann (2003), p. 84.

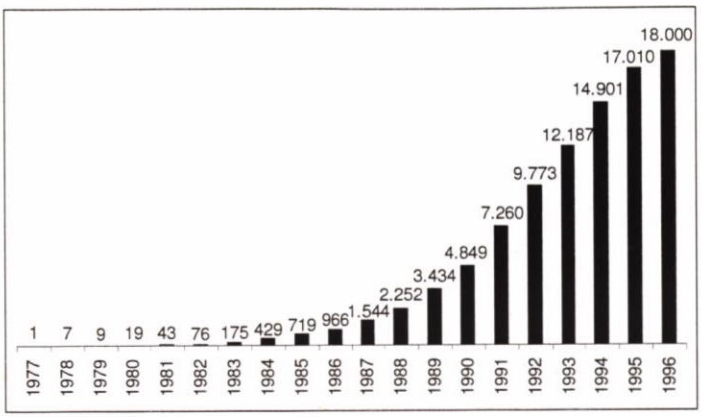

Fig. 5.8: Scanner-technology use: scanners in German retailing over time[470]

In the 1990s, Catalina tried to introduce the first clearing system into the US-American market that, to some extent, processed redemption data automatically. It failed due to the large investments that retailers needed in order to get the new technology running.[471] Furthermore, industry did not want the mixed handling of manually and electronically cleared coupons. As coupon conditions still had to be checked manually at the POS and only redemption data was transmitted automatically from retail to clearing companies, it was assumed that fraud left manufacturers with the demand of actually "feeling" the coupons. They did not trust a new clearing system.[472]

Within an automatic clearing system, retailers have to rely on the master data of the promoted coupons, because the matching between coupon conditions and product that has to be bought, is made with the help of the UPC-barcodes of promoted articles and coupon.[473] In Europe, especially Germany, the quality of master data[474] has improved

470 Lambracht (2001); also see CCG (1997), p. 19 and Rotthowe (1998), p. 201, who use slightly different figures.

471 Until the so-called 2005 Sunrise Date, Jan. 1, 2005, the national council for barcode standards UCC – now GS1 US - did not expect US-American retailers to be able to scan 13 digit barcodes, see Gallagher (2004), p. 49; Rauch, Casison-Tansiri (2004), p. 9.

472 The first electronic systems had already been named automatic clearing system, but talks with employees of the clearing industry during this thesis pointed out that the term "automatic" clearing is not understood in the same way in every clearing company. In this thesis, "automatic" means that all steps are processed automatically, not only the transmission of redemption data from the retailer to the clearing house. If the conditions of coupons are not checked automatically at the POS, "automatic" clearing would be pointless because fraud could still happen. For a detailed differentiation between different clearing concepts, see the following subchapters, especially fig. 5.9.

473 According to Kuipers (2004), p. 74 f., Nestlé assumed that more than 50% of items had incorrect or redundant master data entries. For more general trend in data quality see Agosta (2005), p. 34 f., who claims that according to a survey 30% of data warehousing maintainers suffer from poor data quality in the USA in 2005.

mainly for two reasons during the last years. Manufacturers and retailers have started standardizing and centralizing their master data management within their company.[475] New ERP systems and efficient (IT-) processes have further improved the quality. Moreover, electronic market places, collaboration in terms of ECR and CPFR,[476] and the establishment of a European wide centralized article master data pool have forced companies to ensure a better quality of their data.[477]

In general, the usage of a centralized database such as SINFOS reduces the data input effort in retail. Typing mistakes or errata are avoided, because retailers do not have to re-enter the data, but can receive them electronically via the database. SINFOS checks manufacturers' article master data regarding consistency with multiple algorithms (cf. fig. 5.9). More than 2,000 participants are already using the central master database.[478] Some manufacturers such as Schwarzkopf and Henkel even enforce retailers' use of SINFOS to keep their H&S product master data up to date and in a good quality.[479]

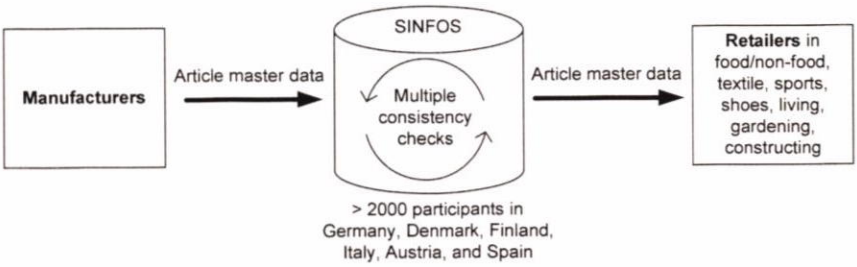

Fig. 5.9: SINFOS database

Companies such as TIBCO or IBM recently have started offering master data management software to help retailers and manufacturers to improve their data quality. Master data definition and management mainly is a data and process problem. Data management software defines a repository that stays consistent with various changes within and all over the original applications.[480]

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474 Master Data can be defined as all information that is needed for an information wide "system of record" for core businesses in order to capture business transactions and measure results of these entities; see Griffin (2005b), p. 54. In the context of couponing mainly article master data and promotional master data are needed.

475 See Loshin (2005b), p. 72 and p. 77; Yang (2005), p. 45; Griffin (2005a), p. 12 and p. 72.

476 For an insight into ECR and CPFR see for example Becker, Winkelmann (2006), p. 411 ff.; Berens, Sarx (2000); Brettschneider (2000); Weisphal (2003); Andraski (2003), p. 13; Steermann (2003); Andraski, Haedicke (2003).

477 For a discussion on SINFOS see Sternberg (1988), p. 16 f.; Becker, Winkelmann (2006), p. 134 ff.

478 As of January 2006.

479 See Freynhagen (2004).

480 See Ferguson (2005) ,p. 32; Silicon (2005).

With this background, acardo technologies started a first approach into automated clearing in Germany in 2002. The clearing company developed a clearing algorithm based on the EAN13-barcode[481]. Unlike US-American counterparts, the clearing company was able to rely on high quality master data and additional databases with promotion data. Furthermore, couponing evolved as a new marketing instrument in Germany. Therefore, acardo technologies was able to set up and test new ways of clearing without any hesitation and objections from industry and retailers.[482]

	Attribute	Attribute value		
Promotion preparation	Designing coupon	Barcode not necessary		Barcode necessary
	Entering promotion data into POS system	Not necessary	Manual update	Automatic update
Coupon redemption	Face value gathering	Manual		Automatic
	Article-coupon-matching (with respect to amount and brand)	Manual		Automatic
	Validity check	Manual		Automatic
	Coupon storage	Necessary (cash-substitute)		Not necessary
	Coupon / information transmission	Paper based / manual		Electronical / automatic
Coupon analysis	Counting and intake of coupon information	Manual	Automatic via scanning	Automatic via EDI

Fig. 5.10: Systematization of automatic coupon clearing[483]

Automatic clearing is a new form of coupon clearing. In contrast to manual couponing, all steps are processed without human interaction (cf. fig. 5.10). Automatic clearing is very cost efficient compared to manual clearing. It improves the handling at the POS, because cashiers do not have to check conditions anymore. The numeracy and literacy skill requirements for cashiers can be reduced with scanners.[484] Furthermore, the redeemed coupons do not have to be counted, sorted, and forwarded to a

481 On an international level, the European Article Number (EAN) is known as Global Trade Item Number (GTIN), which subsumes all previous European (EAN) and American (UPC) standards in an attempt to unify the declaration of item identifiers on a global level. For a better understanding, the GTIN13 will still be called EAN13 during this thesis.

482 See Linkemann (2003), p. 20 f.

483 Adopted, translated and extended from Becker, Vering, Winkelmann (2003a), p. 10.

484 See Pryor, Schaffer (2000), p. 54.

clearing company. Instead, the redeemed amount is reported to the clearing house automatically. Therefore, stores do not have to store coupons.

The preparation of automatic coupon clearing promotions is more complex, and the process needs to be more standardized than manual clearing. There are up to 4,000 valid coupon promotions with information on approximately 20,000 articles in the USA at the same time.[485] In general, there are three prerequisites for establishing any kind of automatic coupon clearing.

First, powerful cash registers are necessary for handling the automatic coupon redemption rules with condition algorithms, such as "Buy product A and get product B for half", or "Buy product A twice and get a third for free." Most modern cash registers are capable of additional algorithms at least to some extent. Many cash register producers have started offering software updates or clearing algorithms for their cash registers in Germany already. Automatic coupon clearing enables retailers and producers to use promotions even with relative face values (e.g. 8% off). Due to the difficulties of calculating relative values manually, this kind of promotion is not possible with non-automatic clearing approaches, because cashiers have to register the absolute face value manually into the cash register.

Second, retail stores need to be connected directly to their clearing company or indirectly via their retail headquarters to transmit coupon redemption data and receive cash desk files that contain promotional information. Today, most stores have a connection between store-IT and head office-IT.[486]

Third, due to automatic processing, article and promotional master data need to be of high quality. Algorithms within the cash desk care about the promotional conditions such as buy-one-get-one-free (BOGOF). After the master data quality check at the clearing house, retailers receive a cash desk file that contains all necessary information about latest promotions.

Information, data, and coupon flow between manufacturer, retailer and clearing house is similar to the manual clearing approach (cf. fig. 5.11). Manufacturers have to transmit all product EANs that are associated with a coupon promotion (1c). Furthermore, the clearing house has to send promotional data for the cash desk in advance of a

485 See Mückel (2003), p. 516.

486 For an insight into different IT-architectures between stores and head office see for example Becker, Schütte (2004), p. 433 ff.; Hansen (1998). Modern ERP-systems such as Semiramis (http://www.semiramis.com) offer the possibility to use the system on thin-client basis directly over the internet. Nevertheless, to some extent a data storage in the store is necessary in case that the connection fails.

promotion (5d). The main advantage is to be found in the transactions between retailer and clearing house, because retailers do not have to redeem coupons anymore. All redemption information is transmitted electronically (6) without any media discontinuities.

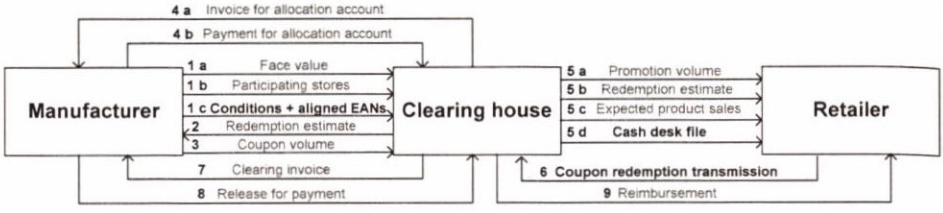

Fig. 5.11: Automatic clearing: information flow, data forwarding, cash cycle

Advocates of manual or semi-automatic clearing approaches sometimes argue that it is not possible to redeem all coupons automatically,[487] because there may also be some hard-to-handle coupons.[488] Moreover, some product EANs may not be considered in the cash desk file.[489] However, automatic clearing has been used in some German retail companies and sales channels such as Real, Extra, Müller and Edeka South-West since 2002.[490] The risk of missing product EANs can be limited due to manifold data gathering and in-store quality checks. The processing of promotional master data lies in the responsibility of the clearing house. Nevertheless, there is a slight risk of missing some product codes in the cash desk file. If so, cashiers will be able to overrule the automatic coupon-product-matching process and redeem the coupon manually. The clearing house should receive an automatic notification of the missing product barcode with the next coupon redemption transmission. An update of the cash desk file will be released soon afterwards. If the clearing house finds redemption irregularities on a larger scale, the retailer will be asked about his redemptions and may have to prove his connected sales. For example, the retailer redeemed 100 BOGOF-coupons for "Johnny Walker"-whiskey, which account for 100 "Johnny Walker"-sales plus 100 gratis beverages. Therefore, he must have purchased at least 200 bottles of "Johnny

487 For example, see Konrad (2002).

488 For example, coupons that cannot be scanned properly, because the EAN is not printed correctly, or coupons without barcodes, which were clipped by consumers.

489 Due to a lack of standardization in master data maintenance, manufacturers sometimes forget to notify clearing houses about older product EANs that are not used anymore, or that were on the market only for a short time. For example, sometimes products are promoted in different sizes regarding special events such as Christmas or a sports event. Although manufacturers will produce those items only for a short time, retailers can sell these articles much longer. Also see GS1 Germany (2001).

490 Information according to Christoph Thye, CEO acardo technologies AG. Also see customers and history of the clearing house at http://www.acardo-ag.de.

Walker" from his wholesaler prior or during the promotion. In general, storage and counting of coupons is not necessary anymore, which improves security and limits financial risks compared to manual clearing.

Mixed clearing forms: semi-automatic clearing

There are also many clearing alternatives outside Germany, which automate some of the coupon processing, but do not automate every step. Clearing variants, which are not fully integrated and also not carried out manually, are called semi-automatic clearing variants. Semi-automatic coupon-processing variants have been very popular since the introduction of scanning cash desks in the 1980s, because they are easier to handle and more flexible than automatic approaches. Nevertheless, they are not very efficient in terms of costs and fraud prevention. Processes can vary from manual redemption, validation, and counting at the cash desk to an automatic validity check, but manual counting. Depending on the characteristics of the clearing processes, either these clearing approaches can be considered semi-automatic or semi-manual clearing approaches (cf. fig. 5.12).

	Attribute	Attribute value		
Promotion preparation	Designing coupon	Barcode not necessary	Barcode necessary	
	Entering promotion data into POS system	Not necessary	Manual update	Automatic update
Coupon redemption	Face value gathering	Manual	Automatic	
	Article-coupon-matching (with respect to amount and brand)	Manual	Automatic	
	Validity check	Manual	Automatic	
	Coupon storage	Necessary (cash-substitute)	Not necessary	
	Coupon / information transmission	Paper based / manual	Electronical / automatic	
Coupon analysis	Counting and intake of coupon information	Manual	Automatic via scanning	Automatic via EDI

Fig. 5.12: Typical example of a semi-automatic coupon clearing approach[491]

[491] Adopted, translated and extended from Becker, Vering, Winkelmann (2003a), p. 113.

The characteristics of the semi-automatic clearing and its integration differ highly. With the semi-automatic clearing, the preparations of the cash register system can be performed by manual (or automatic) loading of the coupon characteristics. Often, a special preparation of the cash register is omitted so that all verifications are carried out manually by the cashier. In terms of efficiency, semi-automatic approaches lie between manual and automatic approaches (cf. fig. 5.13). Due to a reduced handling overhead, promotion costs can be a little lower than with manual clearing. Nevertheless, they are not as low as automatic clearing costs, because there are still some media discontinuities that lead to higher costs (e.g. forwarding the coupons to the clearing house). Printing and distribution costs are equally high with each clearing variant. In terms of preparation at the POS, automatic approaches are superior, because the cash desk file upload will be done automatically. Cashiers do not need to be informed about promotions in contrast to manual promotions. Redemption efficiency and clearing efficiency are far higher with automatic variants due to automation. In addition, the conflict potential is lower, because fraud is hardly possible.

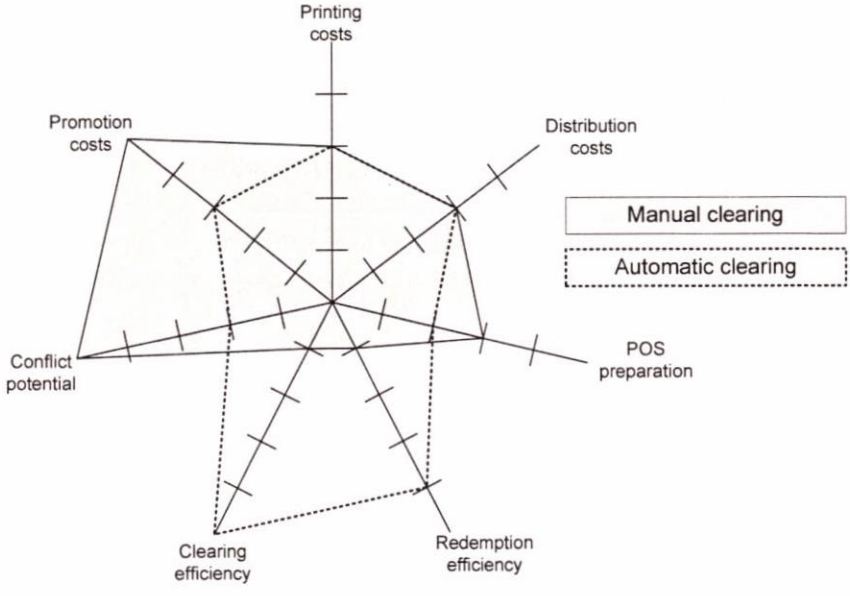

Fig. 5.13: Comparison of manual and automatic clearing[492]

The value of the coupon is represented by an EAN13 barcode and can therefore be redeemed automatically by the electronic scanning cash register.[493] In many cases, an

[492] The comparison only describes tendencies between manual and automatic clearing. Nevertheless, concrete characteristics need to be evaluated according to the individual situation of a retailer.

[493] Nevertheless, the cash desk must be able to do so. In addition, valid promotion information is necessary, see discussion on p. 152. According to the latest EHI study on cash desk systems 17% of

...

automatic validation does not take place, and the coupons are forwarded to a clearing house instead.

The very simple data logic of the EAN13 coupon code cannot fully represent individual features. These characteristics can be attached to an additional EAN128 code. Semi-automatic clearing occurs whenever EAN128 barcodes are used, because these barcodes cannot yet be processed at most cash desks.[494] Thus, the coupons have to be counted and the additional information has to be extracted from the coupon at the clearing house. In such cases, it is necessary to physically transport the coupon to the clearing house.

5.2 Reasons for the assignment of intermediaries

During the coupon process, various intermediaries are involved for processing, counting, and analyzing coupons. Clearing houses are the main intermediaries in the coupon process. There are various economic reasons and explanations for the involvement of intermediaries for the implementation of a centralized planning, distributing, and clearing of coupons.

5.2.1 Old economic explanatory approach: make or buy

The neoclassic make or buy theory mainly focuses on production costs, and assumes a system of complete rationality without transaction costs in a new institutional sense.[495] Companies in a labor divisional economy have to answer two strategic questions. First they have to determine the range of their organizational processes.[496] They have to decide what the core economic tasks are and therefore what shall be accomplished within a company and which actions shall be performed elsewhere in the case that certain economic tasks are available in a market.[497] Furthermore, the second decision concerns the structure of external relationships regarding tightness, trust, etc.[498] With the help of specialized companies, many retail processes can be improved due to out-

52 interviewed grocery retailers still use individual, old-fashioned cash desk software, see Acar (2006), p. 70.

494 See Thye (2003), p. 46. For an overview of current cash desk technology see Zimmer (2005), p. 26 ff.

495 See Nelson (2001), p. 212; Furubotn, Richter (2000), p. 55 f.

496 See Hansen (1990), p. 38 ff. See Schmidt (1935) for first economic arguments on make or buy.

497 For make or buy regarding standardized software see Keil, Lang (1998), p. 852. For a detailed consideration of make or buy regarding information management see Brenner, Wilking, Zarnekow (1999); Vering (2002), p. 26 ff.

498 See Domberger (1998), p. 3.

sourcing.[499] Depending on the market availability and the strategic importance of retail processes, the decision will be of a make or buy type.[500] By aggregating client requirements, specialized enterprises are able to perform designated activities at their optimum scale, using economies of scale. This means, lower per unit costs can be achieved compared to any of their clients.[501]

Coupon processes have some economic tasks that are predestined for an outsourcing. Hence, cost advantages can be generated by reconfiguring the value chain.[502] Especially distribution and counting of redeemed coupons are processes with low strategic importance but high market availability (cf. fig. 5.14). Coupon promotions are temporary. Therefore, coupon issuers would have to employ people for the distribution and counting process of every single coupon promotion. Issuers would have to have at hand the correct knowledge, contacts, and technology for distribution and coupon counting. Clearing houses offer standardized processes, which allow both retailers and manufacturers to rely on the processes and to accelerate processing. Therefore, an explanation for the manifold inclusion of clearing houses into a coupon campaign is apparent.

Fig. 5.14: Make or buy regarding couponing

The make or buy decision within the process of promotion planning is not as obvious. Promotion planning is a strategic and tactical aspect of marketing. Therefore, some companies may decide to do planning inhouse. In contrary, some manufacturers do

499 See Stigler (1967), p. 56-62; Alderson, Martin (1967), p. 50 ff.
500 See Anderson, Weitz (1986), who propose a framework to analyze make or buy decisions on the vertical integration of marketing activities.
501 See Mc Cammon, Little (1965), p. 337.
502 See Porter (1985).

not have the knowledge to plan coupon promotions properly. However, many companies decide on their own about the promotional budget, because the strategic importance may be very high and the market availability may be quite low (cf. fig. 5.14).

5.2.2 New economic explanatory approach: new institutional economics

The New Institutional Economics is an approach to embed a theory of social and legal institutions into economics. It intends to explain institutions regarding history, sociology, economy, and politics. The theory grounds on neo-classical theory, but modifies and extends its assumptions. The assumption of scarcity (which leads to competition) is an important underlying factor. Furthermore, choices based on mental models with incomplete information are taken into account. Institutions are built to reduce uncertainty in human relation and exchange.[503]

COASE first described the costs of using the price mechanism regarding institutions in his early work. He discovered that the costs of acquiring commodities on the market are higher than only the production costs of commodities.[504] First economic works on transaction[505] costs date back to the 1950s. Publications and discussions appeared more broadly at the beginning of the 1970s, resulting in the New Institutional Economics, which first come to prominence in the mid 1970s.[506]

Theory of Transaction Costs

The division of labor and the coordination of labor cause additional costs next to production costs. These costs include all efforts and sacrifices, which are necessary to exchange services and to overcome information asymmetry.[507] As the make or buy theory mainly considers production costs, the transaction theory discusses transaction costs. These costs can be defined as "the costs of running the economic system"[508] in the sense of ex ante search costs, negotiation costs, coordination costs, and monito-

503 See North (1992), p. 3 f.

504 See Coase (1937); Coase (1960); Coase (1974b); Gümbel (1985), pp. 145-172.

505 Williamson (1996), p. 379, defines transaction as: "A transaction appears when a good is transferred across a technologically separable interface."

506 For an overview see Williamson (1975), especially the first chapter. See also Williamson (1971). In the following, aspects regarding the theory of transaction costs and the principal-agent theory will be considered. Furthermore, the new institutional economics offers insights into economic and legal property-rights, and public-choice theories.

507 See Hansen (1990), p. 39. Picot (1982) sees the transaction cost concept as the economic justification to allocate responsibility of company organizations. Also Picot (1985).

508 Arrow (1969), p. 48.

ring and enforcement costs.[509] The way of processing a task will be efficient if the sum of its transaction costs is smaller than the costs of any alternative way of fulfillment at equal production costs. Alternatives can be a task processing either within a company or outside of a company.[510]

Transaction costs can occur at every level of the value chain. Manufacturers, as well as retailers and consumers, have costs occurring in every transaction. There are a number of transaction costs identified in various determinant systems.[511] They include intrapersonal costs, such as information costs and bargaining costs, which comprise aspects of limited rationality and strategic behavior. Policing and enforcement costs can occur on the market, as well.[512] In addition, transport costs and stock keeping costs have to be considered.[513]

The transaction theory is a basis for the explanation of the activation or exclusion of certain forms of retail organizations. The shortening of transportation and the reduction of transactions lead to cost reductions and thus competitive advantages. Nevertheless, the theory is not valid for all considerations. Advantages due to central logistics can compensate disadvantages in additional transport efforts to a central warehouse and vice versa.[514] ALDERSON argues that the efficiency of distribution depends on the number of transactions that are necessary for a trade of commodities. In his principle of transaction efficiency, he assumes that each market partner is a producer and consumer of goods. Moreover, only one intermediary (retailer) is needed to exploit the full potential of specialization.[515] Intermediaries increase the efficiency of markets by aggregating transactions to create economies of scale and scope.[516] Because each market partner is a producer and consumer, the number of direct transactions (T) between all partners (N) is[517]

$$T = \frac{N(N-1)}{2}.$$

509 See Peng, Wang (2002), p. 52.
510 Although Coase (1937) discussed companies only, transaction costs also occur in the public and private sector.
511 See Williamson (1998), especially pp. 15-42; Picot (1986), pp. 1-16; Anderson, Weitz (1986), pp. 3-19; Nelson (1970).
512 See Picot (1986), p. 3.
513 See Williamson (1998), p. 223 ff.
514 See Tietz (1993), p. 16.
515 See Brandt (1960), p. 2 ff.
516 See Alderson (1954); Coyle, Andraski (1990).
517 See Tietz (1993), p. 16 ff.

The number of market transactions with five market players is ten, but with ten players the number increases to 45 already. With an intermediary, this number would reduce to five and ten respectively.

A manufacturer coupon promotion leads to numerous interactions between retail chains, retail stores, and manufacturers, because a promotion is often available at many different stores and retail chains. Furthermore, retailers run many promotions at the same time. With M being the number of manufacturers, and R being the number of retailers, without intermediaries (clearing houses) the number of transactions would be

$T = M * R$.

As each manufacturer coupon can belong to a different product category, there can also be different contact persons for each promotion. Without clearing houses, retailers need to align their redemption processes with manufacturers on an individual, bilateral basis. It would be necessary to define the way of processing the coupons or data about the coupons. Bank account information would need to be exchanged and verified. Participating retailers and / or manufacturers as well as processes and data formats would probably differ slightly for every coupon promotion.

An intermediary can reduce transaction costs greatly (cf. fig. 5.15). Standardized processes and consistent contact persons in the clearing house offer increased reliability to retailers and manufacturers. The reduced number of interfaces and lower complexity outweigh additional costs for the handling fee of clearing houses.

With just one clearing house between manufacturers and retailers, the number of transactions (T) is reduced to M + R instead of M * R (see illustration 1 and 2 in fig. 5.15), with M being the number of manufacturers and R being the number of retailers. Although just one clearing house (C) would be an easy solution for transaction reduction, this can also lead to an absolute monopoly for the clearing house with all the disadvantages of monopoly, such as higher costs and less innovation.[518]

[518] For an overview of disadvantages of monopoly e.g. see Skousen (2001), p. 24 ff.

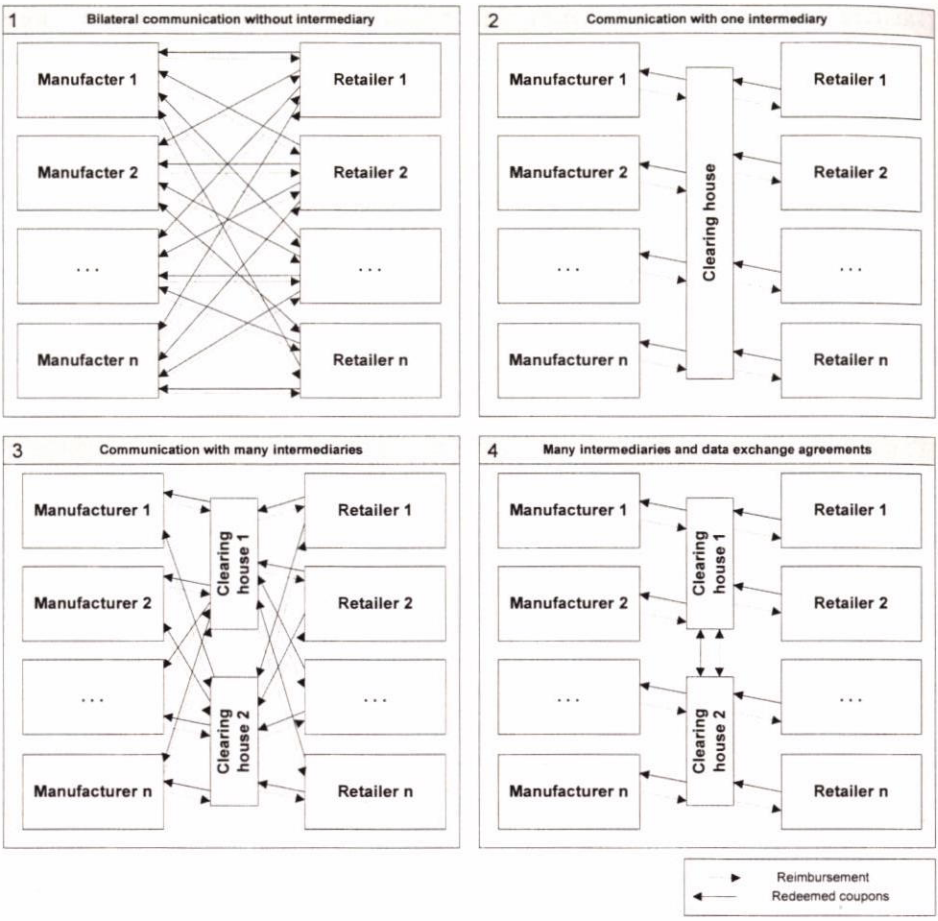

Fig. 5.15: Advantages in using an intermediary[519]

Many retailers and manufacturers prefer their own clearing company with various clearing companies being on the market. To overcome communication problems (see illustration 3 in fig. 5.15), clearing houses have signed data exchange contracts and serve their individual clients only (see illustration 4 in fig. 5.15). The number of transactions increases to

$$T = \frac{C(C-1)}{2} + M + R$$

but is still less than without exchange contracts with

$$T = C * (M + R).$$

[519] Translated and expanded from Becker, Vering, Winkelmann (2003b), p. 21.

Although having just one intermediary seems reasonable in terms of minimal transactions, there are various reasons for a broader number of clearing houses except from monopoly reasons. A lack of trust leads to a double counting of coupons in the USA. Hence, a retailers' and a manufacturers' clearing house is necessary. In addition, many retail chains sign agreements with one trusted clearing company to keep their processes stable and reliable in the long run. Manufacturers, who have also signed agreements with one or few clearing houses, often would like to start a coupon promotion that runs with various retail chains and therefore different retailers' clearing houses. They do not want to force retailers to change the clearing house every time. This means, each retailer adheres to his clearing partner, and all clearing houses have to exchange necessary data with each other.[520]

A clearing house is an interface between industry and retail and knows the contact persons of each coupon promotion. It tracks different coupon promotions at the same time. Retailers are able to call their trusted clearing company to get sufficient information about a suspicious coupon or a coupon promotion. Thus, retailers can check promotion information very quickly to avoid delays in redemption.[521]

Principal-agent-theory: asymmetric information

Asymmetric information assumes limited rationality of all participating institutions or people regarding judgments on other institutions or people. All participants within a system act opportunistically. The principal-agent-theory as an underlying theory assumes that a principal (e.g. a manager) consigns an agent (e.g. his employee) to do something for him. The principal expects the agent to follow the principal's objectives, but the agent follows his own objectives instead.[522]

JENSEN AND MECKLING first discussed the principal-agent theory based on the theory of incomplete contracts.[523] Because of limited information and information asymmetries, the principal is not able to control or influence the agent's behavior, who may use the asymmetric information to his advantage. The agent also tends to be more risk averse than the principal because of his responsibility.[524] Researchers often discuss performance-related incentives as a good solution for effective behavior stimulation. Fur-

520 For example, in Germany all clearing houses have signed agreements to exchange promotion data for promotions with various retail chains.
521 See Becker, Vering, Winkelmann (2003b), p. 23.
522 For an introduction to the principal-agent theory see for example Eisenhardt (1989); Fehr, Schmidt (2004).
523 See Jensen, Meckling (1976).
524 See Eisenhardt (1989).

thermore, hierarchic control mechanisms, reputation, and trust are mentioned as effective countermeasures against misbehavior.[525] Without any intervention, activity under asymmetric information would only lead to a third best result, assuming that symmetric information would lead to the best result. To overcome asymmetric information and therefore to achieve a second best result, so called agency costs for the above discussed countermeasures have to be spent as a dead weight loss.[526]

Within the couponing process, manufacturers and retailers can be seen as principals and agents. The manufacturer (principal) would like to increase his sales by the use of coupon conditions. Although the retailer (agent) has the same intention, his objectives slightly differ from his contractor's objectives, because the retailer can increase his turnover with the help of redemption maximizing regardless of target groups or manufacturers' campaign objectives.

According to basic principles of the principal-agent-theory, *hidden characteristics* become a problem, if the principal is not able to get to know all characteristics of an agent before a contract (a coupon promotion).[527] Hence, he could select the wrong agents.[528] Regarding coupon promotions, the manufacturer may select retailers, who are not capable of handling coupon promotions properly, because they do not understand the redemption conditions of manual coupons due to a lack of qualification, or they unwittingly do not place coupon dispensers at the right place or issue coupons after the validity date. Furthermore, it may not be appropriate for some retail stores to participate in coupon promotions, because their appearance and service would impact a manufacturer's brand – especially a high quality brand – negatively. Intermediaries acting as retailer monitores become necessary, because manufacturers are not able to monitor each individual retailer due to time, personal resources, and geographical restrictions.

Moral hazard describes negative behavior changes within a principal-agent-relationship.[529] It can be differed into a retailer's *hidden action*, which cannot be observed by the manufacturer and *hidden information*, which can be observed by the manufacturer, but cannot be estimated and understood correctly.[530] For example, it is possible for a retailer to influence his redemption rate with additional coupon redee-

525 For example see Hofmann (2003); Demski, Sappington (1984); Iyer, Schwarz, Zenios (2005).

526 For an introduction to agency costs see for example Hart (1995), especially chapter 6. Also see Anson (2002), p. 297 f., who discusses agency costs in the context of firm management.

527 See Mas-Colell, Whinston, Green (1995), especially chapter 14, pp. 477-510.

528 There may also be a slight danger of adverse selection, a systematic choice of wrong agents due to wrong incentives. See Akerlof (1970).

529 See Laffont, Martimort (2001), especially chapter 4.

530 See Schnedler (2004); Völker, Kasper (2005), p. 108 ff.

ming for consumers, who are buying the promoted product without being aware of the promotion. Although the customer is pleased about the unexpected saving, the behavior is not in favor of the manufacturer's intention. He would like to increase sales and not decrease prices for consumers, who would have bought the product anyway. Further known examples of hidden action are price increases in advance to a promotion to skim some of the face value (see chapter 4.1.2). Double or triple couponing may also fall under the moral hazard phenomenon (see chapter 3.2, especially p. 34). Sometimes, manufacturers wonder about a retailer's relatively higher redemption rate, but cannot explain the phenomenon as the retailer argues that there has been some unexpected high coupon redemption concerning the discussed product.

Permanent monitoring of coupon promotions as well as local or regional persons in charge of supervision or trusted clearing houses that supervise promotions may help manufacturers to overcome some of the asymmetric information problems. Furthermore, manufacturers started a double-clearing system to crosscheck the redeemed coupons to detect some irregularities.[531]

5.3 Coupon processing difficulties regarding fraud

Fraud is a serious problem in traditional, non-integrated coupon processing.[532] In 1965, NIELSEN already reported that approximately 1% of issued coupons were misredeemed in 1965.[533] According to HAUGH, fraud problems had inflated the reported redemption rate by a factor of approximately 20%-25% in the 1970s.[534] The Joint Industry Committee estimated that 5%-8% of all redeemed coupons are redeemed falsely.[535] Industry sources estimate that more than 20% of all coupons are incorrectly redeemed (ranging from wrong size to intended fraud).[536] Some manufacturers received more coupons regarding their test-products than they had test-packages on the market.[537] In 1977, investigators distributed coupons for a non-existent product, which 2,000 to 2,100 stores even attempted to redeem.[538] In 1986, criminals tried to redeem coupons worth $186 million for a fictitious cockroach spray.[539]

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531 See detailed information on a double-clearing system in chapter 5.1.
532 For an embracing, general discussion on (coupon) fraud see Hayes (1991).
533 See Nielsen (1965), p. 15.
534 See Haugh (1975), p. 64. Also see Cary (1984) and Solomon (1980), who indicate 20%. Freeman (1986) sees a fraudulent rate of 10%-15%.
535 See Joint Industry Committee (JIC) (1996), p. 34 ff. and p. 103.
536 See Dupont (2000), p. 15 as an excerpt from Dupont (1999).
537 See McChesney (1982), p. 13.
538 See Cary (1984); New York Times (1981); National Crime News (1980).
539 See Stewart (1986), p. 11.

Coupon abuse exists in various forms. Fraud problems are retailer-related, for example, redemption without matching the redemption conditions at all, redemption for a different size of the brand than indicated on the coupon, or even redemption for a competitive brand in the case of stock outs.[540] Consumers participate by submitting expired vouchers with their purchase, by redeeming coupons for items they did not buy, or by removing an on-pack-coupon from one product to place it on the desired product.[541] There are illegal organizations, who even collect or copy coupons and redeem them via unethical retailers without any coupon condition matching.[542] In addition, fraud exists on the level of clearing houses. Counting plants and their employees may be bribed for or gain from miscounting, overpayment or ignorance of signals of void coupons.[543] NCH estimated that coupon misbehavior had accounted for $200 million yearly in the 1990s.[544] According to HAMMONDS AND MOLPUS, today's coupon fraud costs the industry between $500 million and $800 million every year.[545]

Modern technologies have enforced the fraud problems. Consumers and illegal organizations have commenced copying, falsifying, and re-distributing coupons. In combination with high quality printer capabilities, the internet has worsened the fraud problem.[546] People have even started modifying coupons or creating fraudulent coupons. Print-at-home coupons are a serious problem for counterfeit, because there are no standards for these coupons and consumers sometimes even show up with coupons that entitle for a reduction greater than the product price.[547] Furthermore, e-marketplaces such as eBay have become very popular for coupon resale.[548] For example, people have started selling bulk coupons of more than 20 coupons, expired coupons or

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540 See Reibstein, Traver (1982), p. 103; Ploss (2002b).

541 For studies on consumer fraud see Wilkes (1978), p. 67 ff.; Cole (1989), p. 107-120; Muncy, Vitell (1992), p. 297 ff.; Fullerton, Punj (1993), p. 570 ff; Fullerton, Kathleen, Dodge (1996), p. 805 ff. For general information on customer fraud see Tian, Keep (2002), especially chapter 7, in which consumers' different coupon fraud motives are discussed (see particularly p. 107 and the compilation of fraud studies in the appendix on p. 222 ff.) As a main cause of fraud, the authors discuss redeeming coupons for wrong articles, redeeming expired coupons, reusing coupons instead of leaving them with retailers, and faking ownership of coupons that are issued for other consumers in the target market.

542 See O'Guinn, Allen, Semenik (2005), p. 647.

543 See McChesney (1982), p. 14.

544 See The New American (1997).

545 See Hammonds, Molpus (2003). Tim Hammonds is the President and CEO of the Food Marketing Institute; C. Manly Molpus is the President and CEO of the Grocery Manufacturers of America. Heinzel (1978) reports $120 million to $185 million for 1978. National Crime News (1980) and Feyder (1980) estimate $159 million to $200 million in coupon fraud in 1979. Longworth (1981) sees $200 million to $250 million in coupon fraud in 1980. Recktenwald, Cawley (1984) assume $225 million for 1984. Freeman (1986) estimates $499 million Dollars in fraud for 1986.

546 See Rubach (2002), p. 12.

547 See McTaggart (2003), p. 26.

548 See Childs (2003).

even scanned coupons or e-coupons. This behavior has destructed every promotional strategy, leaving companies with hardly anything but the costs for their promotions.[549] As a consequence, eBay has expanded its policies regarding manufacturers' coupons in order to protect manufacturers' belongings, and thus no longer allows the trade of coupons in bulk.[550]

Issuers of semi-automatically or manually cleared vouchers have developed several methods against the counterfeiting of printed coupons. Some manufacturers print a silver banknote stripe on their coupons. Other manufacturers use holograms or watermarks. Many issuers are turning to technology to fight counterfeit. In the USA, service companies offer coupon signature systems, personalized watermark imprinting and several ID verification systems for the coupon redemption security. Even improved cashier training is an adequate measurement against fraud. However, there is no guidance for detecting fraud at the cash desk. Many coupons look legitimate although they are void. A standardization that helps identifying counterfeit is not at hand.[551]

With automatic clearing on the other hand, all promotion codes and article codes are known at the cash desk. Therefore, fraud within automatic systems is hardly possible. If the EAN-code is not known to an automatic system (which should not happen very often), coupons could either be rejected or manually redeemed by the cashier. All other redemption errors are impossible. Coupons are redeemed manually with manual and most semi-automatic coupon clearing, which causes much false redemption. Shoppers use coupons that are out of date or have the wrong size or number of products (cf. fig. 5.16). Neither producers nor retailers want to stick to the redemption costs of false redemptions. Therefore, manual redemption processes offer high risks for potential irritation between retailers and manufacturers.

549 See Rayner (2005), p. 39.
550 See Greer (2004a); Chain Store Age (2004), p. 72.
551 See Rayner (2005), p. 39 ff.; McTaggart (2003), p. 26.

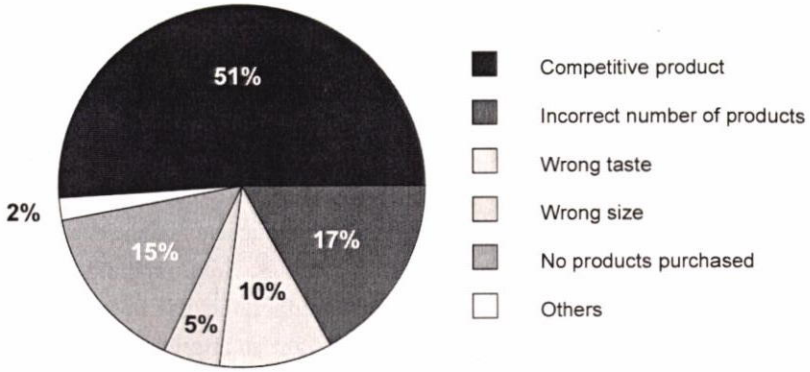

Fig. 5.16: False redemptions due to manual or semi-automatic approaches[552]

Criminal organizations, involved in coupon redemption fraud and money-laundering schemes, can easily receive millions by redeeming bulk coupons.[553] Normally, schemes involve three main components. First, businesses need to be recruited to pose as legitimate coupon acceptors; second, coupons for bulk redemptions need to be obtained,[554] and third, checks need to be redeemed in order to receive the money (fig. 5.17).[555] Coupon "middlemen" often sort, count, package, and mail a retailer's coupons to manufacturers or clearing houses on behalf of the retailer. It is known that several of these middlemen took coupons from magazines and combined them with legally redeemed coupons to make a larger submission to the clearing house.[556] Even clearing houses and printing plants are found guilty of fraud.[557] Manufacturers' representatives

552 According to Joint Industry Committee (JIC) (1996), p. 35.

553 See FBI National Press Office (2003). There are rumors that some of the organized fraud profits are used to underwrite terrorism, because Arab immigrants, who have been connected to terrorist organizations, have headed many detected networks in the USA, see Landauer (1980), Rubin (1980); Glabman (1987); The New American (1997); , p. 4; Hammonds, Molpus (2003).

554 Especially unsold newspapers that do not have to be returned to the distributors if unsold, offer possibilities for fraud. Furthermore, unsold newspapers, that are not destroyed properly, may be subject to misredemption. See ASIS Standing Committee on Coupon Security (1984), p. 12, who even report of cases, where FSI coupons worth up to $250,000 were stolen from newspaper warehouses.

555 For a detailed insight into a 2003 case, see Emerson (2003), p. 29 f.

556 See McChesney (1982), p. 14.

557 See Blakey (1988), p. 147, who describes the case US v. Modicut, 483 F. Supp. 70 (M.D. La. 1980), in which a clearing house was prosecuted for coupon fraud because of padding its submissions to manufacturers. Print shops may deliberately overrun the coupon amount and submit the excess amount to a clearing house via a retailer, see ASIS Standing Committee on Coupon Security (1984).

sometimes use coupon fraud to boost their sales in offering extra coupons to retailers in exchange for prominent product placement.[558]

There have been a number of multi-million Dollar coupon deceptions with traditional couponing.[559] For example, three managers of a New York supermarket chain were running a 20-year coupon fraud operation, which totaled $3.5 million.[560] In other cases, intermediaries redeemed coupons on behalf of as many as 80 stores at one time, which brought them a few hundred Dollars several times a week.[561]

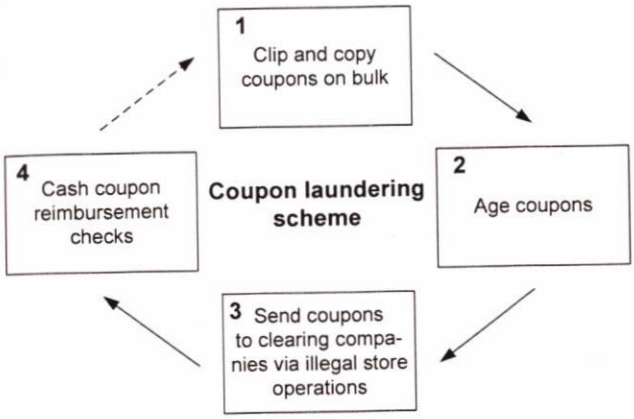

Fig. 5.17: Coupon laundering scheme[562]

5.4 Influencing factors for the selection of a coupon processing approach

Although automatic processing of coupons outperforms manual methods in terms of efficiency, costs, and fraud prevention, there are various factors that determine whether an issuing company or manufacturer and a redeeming company or retailer choose to prefer an automatic, semi-automatic or manual processing. Main factors are shown in fig. 5.18.

558 See Solomon (1980), p. D-1; Blakey (1988), p. 140.
559 Solomon (1980) reported that 743 people in a radius of 59 miles around Philadelphia were found to be involved in coupon fraud in 1979. This included 354 retailers with only PO boxes as their addresses.
560 See Shimp (2000), p. 213.
561 See McChesney (1982), p. 15.
562 Based on the description of Stich (2005), p. 46.

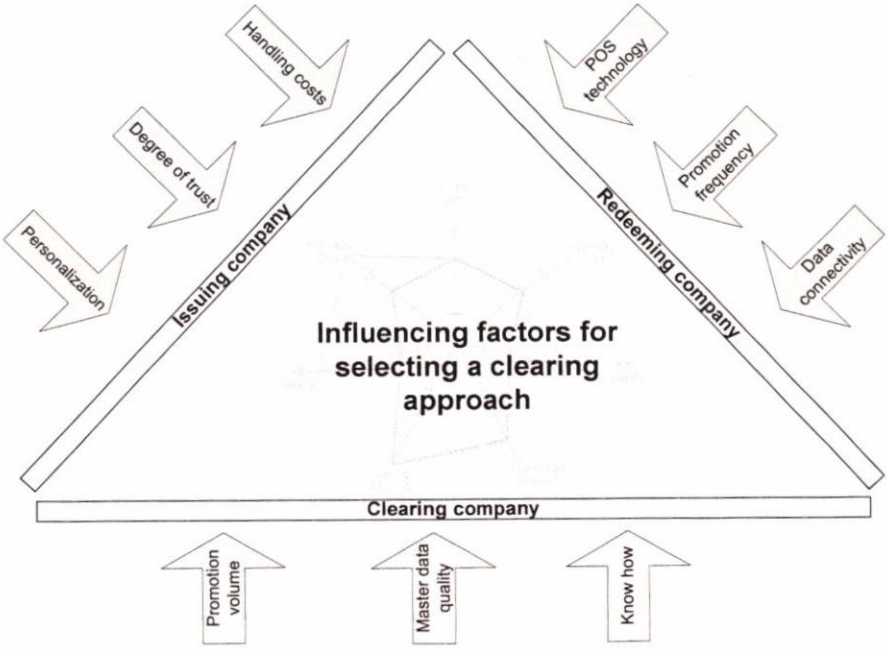

Fig. 5.18: Influencing factors for selecting a clearing approach

One of the main criteria for not considering automated clearing approaches is an outdated POS technology. If the cash desk is not able to handle automatic condition checks and to exchange cash desk files with the head office or clearing house, automatic clearing will not be possible. Moreover, a low promotion frequency does not justify the investment into cash desk software that is needed for automatic approaches. Good data connectivity is necessary for automatic clearing in order to transmit coupon data from retailer to clearing house and to receive electronic promotion information.

From the clearing house's point of view, the promotion volume has to be reasonable for the use of automatic coupon clearing, because the preparation of a coupon campaign, in terms of cash desk file preparation and uploading, must amortize. Furthermore, the master data must be of high quality and the clearing house must posses adequate know-how about process automation. Today, only few clearing-houses have considerable knowledge about automatic clearing.

For manufacturers, the degree of trust opposed to retailers is very important, because less automation of a coupon campaign means more fraud risks. In addition, the handling costs for coupons will increase if coupons are redeemed and counted manually.

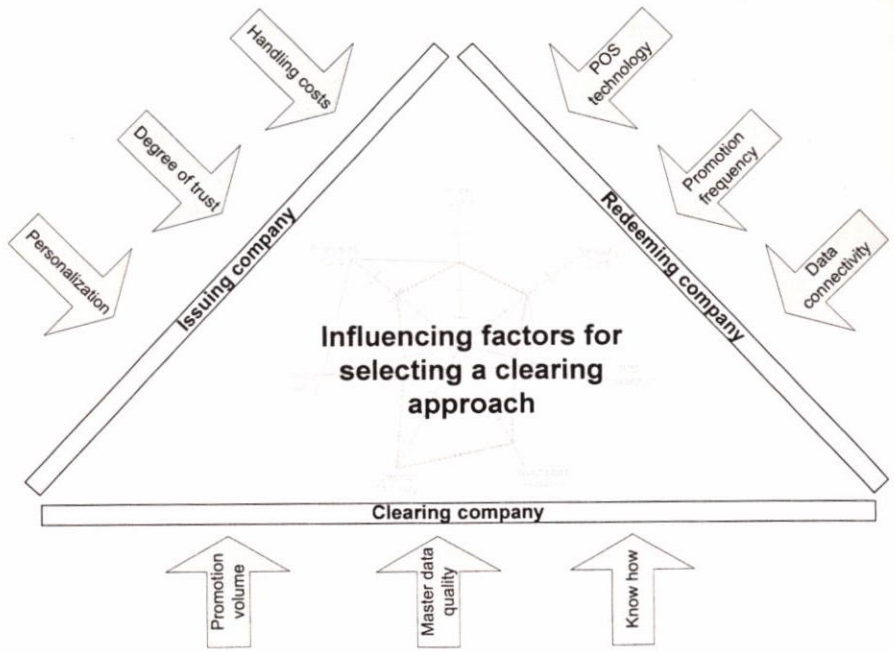

Fig. 5.18: Influencing factors for selecting a clearing approach

One of the main criteria for not considering automated clearing approaches is an outdated POS technology. If the cash desk is not able to handle automatic condition checks and to exchange cash desk files with the head office or clearing house, automatic clearing will not be possible. Moreover, a low promotion frequency does not justify the investment into cash desk software that is needed for automatic approaches. Good data connectivity is necessary for automatic clearing in order to transmit coupon data from retailer to clearing house and to receive electronic promotion information.

From the clearing house's point of view, the promotion volume has to be reasonable for the use of automatic coupon clearing, because the preparation of a coupon campaign, in terms of cash desk file preparation and uploading, must amortize. Furthermore, the master data must be of high quality and the clearing house must posses adequate know-how about process automation. Today, only few clearing-houses have considerable knowledge about automatic clearing.

For manufacturers, the degree of trust opposed to retailers is very important, because less automation of a coupon campaign means more fraud risks. In addition, the handling costs for coupons will increase if coupons are redeemed and counted manually.

Today's automatic clearing solutions only allow impersonalized couponing for national campaigns, because most cash desks do not allow a clearing of EAN128-barcodes, which is necessary for personalization in this case. If a manufacturer likes to run a personalized campaign, he will have to rely on a semi-automatic clearing approach in terms of coupon handling.[563]

Retail sectors with only limited coupon redemption frequencies, small promotion volume and/or inferior IT-infrastructure such as small drugstores in Germany or furniture retail in general tend not to use automated clearing approaches. For them, semi-automatic or manual approaches are sufficient.

563 It is possible to check the coupon conditions with an EAN13-barcode, but an additional EAN128-barcode is necessary for personal information. Therefore, not only the coupon redemption data, but also the whole coupon has to be forwarded to the clearing house for manual analyses.

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