A HAZARD ANALYSIS OF CONSUMERS' SWITCHING BEHAVIOUR IN GERMAN FOOD RETAILING FOR DAIRY PRODUCTS

Götz Olearius, Jutta Roosen, Larissa Drescher

GOlearius@tum.de

Technische Universität München, Lehrstuhl für BWL – Marketing und Konsumforschung, Alte Akademie 16, 85354 Freising

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EINE HAZARD-ANALYSE ZU GESCHÄFTSSTÄTTENWECHSELN IM DEUTSCHEN LEBENSMITTELEINZELHANDEL FÜR MILCHPRODUKTE

Abstract: German food retailing is characterized by fierce competition among retail chains for consumer shopping. This paper considers the switching behaviour using data of white dairy product purchases. The empirical investigation uses a survival analysis approach, in particular hazard analysis. The results extend the knowledge of shopping behaviour by providing a new set of explaining variables and the importance of the first store, defined as store with the major share of household budget, becomes apparent. On average, households buy dairy products 42 times per year. Thereof 58 % are retail chain switches and in 41 % of all cases the households remain at the previously visited retail chain. Generally a low customer loyalty is visible in this investigation. It is shown that switching behaviour is widely influenced - amongst others - by percentage of private label products, percentage of special offers and price consciousness.

Keywords: switching behaviour, store choice, store loyalty, hazard analysis, food retailing.

Zusammenfassung: Der deutsche Lebensmitteleinzelhandel ist durch einen starken Wettbewerb um die Konsumenten gekennzeichnet, der möglicherweise zu vermehrten Geschäftsstättenwechseln führt. In diesem Aufsatz werden die Geschäftswechsel beim Kauf von Milchprodukten untersucht. Mit Hilfe eines parametrischen Hazard Modells werden Determinanten des Geschäftsstättenwechsels ausfindig gemacht. Es zeigt sich, dass die Handelskette mit dem größten Ausgabenanteil eines Haushalts, eine besondere Rolle spielt. Weiterhin wird das Wechselverhalten u. a. vom Preisbewusstsein des Konsumenten und dem Anteil der eingekauften Handelsmarken und Sonderangebote beeinflusst. Durchschnittlich kaufen die 312 Haushalte des Panels 42 Mal im Jahr Molkereiprodukte der weißen Linie. Davon fallen 58 % der Einkäufe in die Gruppe der Geschäftsstättenwechsel.

Schlüsselwörter: Geschäftsstättenwahl, Geschäftsstättenwechsel, Einkaufsverhalten, Hazard Analyse, Lebensmitteleinzelhandel

Introduction

In order to survive in a highly competitive food market, successful retailers must retain steady customers and gain new ones in order to defend and extend market share. For this reason the question of store choice is of much interest in empirical research. Stakeholders face particular challenges in German food retailing. A sharp competition is visible as the total selling area has rapidly increased in the last two decades. According to KPMG (2006) the whole selling area of the food retailing grew between 1995 and 2005 about 20 % to a total of 29 million m² (KPMG, 2006). At the same time, numerous mergers led to growing market concentration. The German antitrust agency casts doubts on the true nature of price competition in the sector and currently takes the remaining food retailers under scrutiny (BUNDESKARTELLAMT, 2011).

This paper analyses consumer retail chain switching behaviour in German food retailing. It is based on a hazard analysis of purchase events. In recent years multinominal logit models which take several different aspects of store choice into consideration were developed and applied. Improved hazard models which calculate the likelihood of a purchase in a particular retail chain at the time *t* were also applied. In contrast to static logit models being based on cross-section data, these dynamic models consider changes in shopping behaviour over time. Hazard analysis deals with events which occur in a certain period of time. The duration between two events is essential. In our

case the duration between two retail purchases is examined. Generally the shopping behaviour of households is understood as a long-term process and short-term tendencies are neglected.

The consumers' choice of a retail chain is an important and complex investigation object. In the analysis of store choice and loyalty a great variety of research paradigms has been applied in the past. Different reasons for the store switching behaviour of consumers can be found in the literature: Laziness, habit, convenience, time and money saving, full enjoyment (MCGOLDRICK and ANDRE, 1997). Store choice behaviour hence is on the one hand determined by consumer attitudes towards stores and on the other hand by store specific characteristics.

A number of recent papers have addressed retail chain choice or store choice. Some have modelled the choice of retail chain with respect to the resting time between two purchases/events (hazard analysis and competing risk models). For example, RHEE and BELL (2001) calculate a random-effects probit model and prove a great inertia of supermarket customers leading to a high customer loyalty. In other studies it is shown that consumers change stores systematically - regardless of special offers - and that often a pattern can be observed. This behaviour is denoted as multiple store shopping (GIJSBRECHT ET AL, 2008). POPKOWSKI LESZCZYC and TIMMERMANS (1996) explain the store choice with the shopping frequency and the timing of purchases as a function of socio-demographic characteristics. This connection of shopping frequency and timing of purchases is also found in other studies (SEETHARAMAN and CHINTAGUNTA, 2003; CHINTAGUNTA and HALDAR, 1998; POPKOWSKI LESZCZYC ET AL, 2000).

The objective of this paper is to examine consumer behaviour regarding their choice of retail chain in the German food market. The dynamics are modelled by means of hazard analysis. The purpose of this analysis is to find the extent of retail chain switching, their causes and to identify socio-demographic determinants of chain switching. Furthermore, differences in switching behaviour from and to the first store in comparison to other stores are identified. To pursue these objectives we apply a parametric hazard model with individual models for the transition possibility to any individual store.

In the present study the switching behaviour and retail chain loyalty of consumers with regard to the top ten food retailers in Germany is examined. The retail chain loyalty was selected as an investigation object because in the present data set a single store cannot be identified, but only the affiliation to a retail chain is listed. However, the authors don't expect restrictions on the explanatory content by focusing on retail chain level because a large part of the German food retailing is dominated by stores of this type. In our dataset the top ten covers more than 89 % of the entire market.

The paper proceeds as follows. The next section presents the data and methods. The result section introduces first the descriptive statistics and then the results of the hazard analysis. Then the paper concludes.

Data and Methods

We use GfK panel data ConsumerScan for the year 2007. We restrict the analysis to the events of dairy product purchases of households in the metropolitan area of Munich. This was done as some food retail chains are only present in geographically limited areas. Hence we restrict the study to an area with a homogeneous availability of different retail chains and focus on the metropolitan area of Munich.

Dairy products are defined as food based on milk and distinguished into white (e.g. milk, whipped cream and yoghurt) and the yellow (types of cheese) products (VIGNALI, 1999). The analysis presented here focuses on the purchase of white dairy products. Dairy products were selected, because these products are basic food items that are bought by many households on a regular basis.

In addition, milk is a very homogeneous good in comparison to other classes of goods. In the data set the daily purchases at household level are listed and the chain of purchase can be identified.

Moreover, socio-demographic variables of the households are used in the analysis. To analyse the impact of distance on shopping behaviour, we use information on the driving duration for the households to the retail chain. The addition of driving duration variable is of special interest, because distance to a retail chain is mentioned as one of the most important reasons for choosing the retail chain in the literature (URBANY ET AL., 1996). Ceteris paribus the nearest retail chain in the place of residence of a household should benefit while a disadvantage of further distant retail chains can be assumed. Consumers do not only save carrying costs and have lower search costs, but they also reduce the time involved with purchasing food or other products (WILLIAMSON 2002).

Methodically the choice of the retail chain is investigated applying a hazard model that quantifies the time intervals between two retail chain purchases. The longer the time span between two chain switches, the more the household is considered as loyal. The hazard model calculates and compares the likelihood for entry of different incidents (purchase in the previous outlet or chain switches). The model is based on a parametric survival function with single models for each retail chain. Estimations are based on the maximum likelihood method (FINE, GRAY, 1999).

There is no generally approved and actively used theoretical framework for store switching behaviour. Instead, approaches of explanation and methods which are not based on a theory are used. However, it can be assumed that a purchase should create an advantage for the household at the base of the utility theory. The utility theory assumes from the fact that people always select the possibility with the biggest benefit. In connection with store switching this means that a household assigns to different retail chains different expected benefit values. According to the utility theory they choose the purchase occasion with the biggest benefit for them. Weighting of single factors like expected price level or expected shopping experience occurs individually according to the preferences of a household.

Of interest in this study is the probability that a household will switch from the current retail chain to a competitor. On the one hand a transition to another retail chain is complex and time-consuming for the household. On the other hand the household discovers a new shopping experience and can avail a different product and price assortment. Table 1 shows exemplary retail chain purchases of one household. The duration between retail chain switches is denoted in days and varies in this example between 2 and 7 days. The model takes into account that one or several shopping trips per day are made. Hence survival time analysis deals with multiple failure events (CLEVES ET AL., 1999).

Tab. 1: Exemplary retail chain switches of one household.

Day	Month	Retail Chain	Switch	Duration in days
18	Jan 07	Discounter	0	
20	Jan 07	Supermarket A	1	2
23	Jan 07	Supermarket A	0	
25	Jan 07	Supermarket A	0	
27	Jan 07	Self-Service Department Store	1	7
3	Feb 07	Supermarket A	1	7
5	Feb 07	Supermarket A	0	

Source: GFK PANEL DATA 2007; own calculation.

We make the assumptions that the shopping trip intervals of households are independent from each other and that households are homogeneous with regard to shopping intervals. We outline below the hazard model for shopping trips following POPKOWSKI LESZCZYC and TIMMERMANS (1996).

Considering the continuous variable *T* for time, the probability that a household makes a shopping trip to a given chain at a particular point in time *t* results as

$$f(t) = \lim_{\Delta t \to 0} \frac{P[t \leq T < (t + \Delta t)]}{\Delta t}$$

The probability that a household will purchase products in a certain retail chain before the end of time *t* is given by the cumulative incidence function, *F(t)*, where

$$F(t) = P(T \leq t) = \int_0^t f(u)du$$

In contrast to the cumulative incidence function the survival function denotes the counter event. The probability that a household will not have made a switch until the end of time *t* is reflected by survival function:

$$S(t) = P(T \geq t) = \int_t^\infty f(u)du$$

The hazard function, *h(t)*, describes the likelihood of a shopping trip at time *t* under the assumption that no trip has occurred up to time t_n. Every time period t_n mirrors the *n* intershopping trip times of varying length. So the hazard function with regard to multiple shopping occasions can be written as:

$$h(t) = \lim_{\Delta t \to 0} \frac{P[t_n \leq T_n < (t_n + \Delta t) | T_n \geq t_n]}{\Delta t} = \frac{f(t)}{S(t)}$$

The hazard model applied in this paper contains three categories: Likelihood of repetitive purchases in the previously visited retail chain, in each of the other top ten retail chains, and purchases in any other retail chain are included.

As independent variables household and purchase specifics are used. The resulting hazard function is the product of the baseline hazard rate $h_0(t)$ that is chain specific and the covariate function that is household and purchase specific, $g(x_j)$, (STATA PRESS, 2007):

$$h(t_j) = h_0(t)g(x_j)$$

For the estimation of the hazard rate different density distributions are commonly used, e. g. exponential distribution, Weibull, Gompertz. The distribution which fits best is identified with the help of the Akaike information criterion (AIC) (CLEVES ET AL, 2008).

Analysis and Findings

Descriptive statistics

In total we observe 13 064 shopping trips in 2007 by 312 households from the metropolitan area of Munich. In 41 % of all cases the purchase was conducted in the same retail chain as before, whereas in the remaining 58 % of purchases a retail chain switch occurred. Retail chains are often sorted according to the respective budget shares of the household (CUNNINGHAM, 1956; ENIS and PAUL, 1970). The retail chain with the largest expenditure share is called first store. Based on the data set, households spent between 84.65 % and 47.37 % of their budget in the first retail chain.

Table 2 shows the transition matrix for the top 10 retail chains. The switching frequencies are listed for every source state (rows) and all possible purpose states (columns). A matrix with 121 cells results which gives rise to eleven submodels where the time between two purchase events will be considered as dependent variable. The possibility that the next purchase is at the same chain as before is given on the diagonal of the left part of the matrix and marked in grey, which is also a possible category for the next purchase event.

In total, a retail chain switch occurs in 21.3 % (*n*= 2 783) of purchase events, no chain switch in the remaining 78.7 % purchase events (*n*=10 281).

Tab. 2: Switching frequencies.

	1	2	3	4	5	6	7	8	9	10	Other
	Disc.	Superm.	Superm.	Disc.	Self-Service	Disc.	Disc.	Specialised Trade	Self-Service	Consumer Market	
1	71	257	159	154	39	41	338	113	138	75	635
2	86	734	112	110	39	25	191	130	110	24	290
3	72	102	759	86	47	37	155	118	306	39	310
4	30	102	104	65	61	21	172	124	76	29	675
5	13	36	39	33	207	8	22	7	2	5	165
6	30	94	100	72	33	17	62	21	7	39	927
7	39	107	82	296	39	15	45	15	5	13	224
8	125	81	80	34	11	9	25	8	3	31	133
9	9	29	21	37	10	3	20	7	2	8	367
10	38	31	49	7	5	1	21	7	2	147	100
Other	67	121	113	57	81	103	195	550	651	30	648

Source: GFK PANEL DATA 2007; own calculation.

Tab. 3: Descriptive statistics of independent variables.

	Minimum	Maximum	Mean	Standard Deviation	Units
Household specific independent variables					
Size of household	1	6	2,07	1,15	Persons
Frequency of purchases	1	103	26,2	22	Purchases
City Size	4 000	1 200 000	1 010 498	434 502	Inhabitants
Age	17	72	43	16	Years
Net income	250	4 125	2 282	994	Euro
Price consciousness	1	5	3,1	1,4	Scale
Budget Ratio	47.37	84.65	62.5	30.2	%
First Store	0	1	0,55	0,5	%
Extent of Purchase	1	6	3.9	1.7	Scale
Driving duration to the retail chain	10.3	874.8	279.3	152.9	Seconds
Purchase specific independent variables					
Percentage of private labels	0	75	32	33	%
Percentage of special price offers	0	69	4	10	%

Source: GFK PANEL DATA 2007; own calculation; N = 312 Households.

As independent variables household-specific and purchase-specific variables are used (see table 3). A household spends on average 102.43 Euros on dairy products in the year 2007. On average, 2.07 persons live in a household; the average age is 43 years and mean income is slightly above 2 200 Euros. An attitude statement measures price consciousness as "The price is more important than brand" on a 5-point scale. It shows that the price is more important than the brand for consumers

of the panel. Averaged over all purchases 62.5 % of the household budget is allocated in the respective chain. This may or may not be the first store. 50 % of the purchases occur in the first store. The extent of a purchase is measured on a 6-point scale, where 1 refers to purchases up to 75 cents and six to purchases above 5.52 Euros. The mean driving duration to any retail chain is 278 seconds or 4.5 minutes. A share of 32 % of the entire purchases are private label products and in 4 % of all product purchase involve special price offers.

The ten biggest food retail chains (see table 4) can be split in five retail formats: four discounters, two supermarkets, two self-service department stores, specialized trade and one consumer market. The discount format is the retail format with the biggest share of the market and represents the market leader. Discounters offer a narrow assortment of goods which is offered to a consistently low price level. It is obvious that both the expenditures and the frequencies of purchases decline according to the ranking list. One recognizes clear differences in retail formats by mean expenditures per purchase. While the values of discounter and supermarkets are low, values of self-service department stores and specialized trade are high.

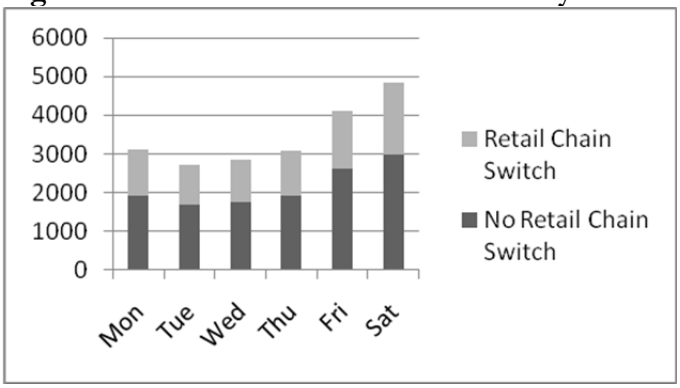
Tab. 4: Market shares.

Ranking list	Retail Format	Mean expenditures per purchase in Euro	Expenditures for dairy products in Euro in 2007	Std. Dev.	Freq. of purchases
1	Discounter	2.43	5 939	260	2 447
2	Supermarket	2.28	3 859	247	1 694
3	Supermarket	2.02	3 265	205	1 618
4	Discounter	2.37	3 088	233	1 304
5	Self-Service Department	4.27	2 441	528	572
6	Discounter	1.63	2 435	151	1 498
7	Discounter	2.42	2 301	254	951
8	Specialised Trade	3.74	2 171	391	580
9	Self-Service Department	3.29	1 784	375	543
10	Consumer Market	3.23	1 422	294	440
Rest		2.17	3 250	216	1 416
Total		2.71	31 959	287	13 063

Source: GFK PANEL DATA; 2007; own calculation.

In figure 1 the retail chain purchase frequency on six weekdays is presented and divided into loyal state dependent behavior and disloyal switching behavior. It appears that Saturday followed by Friday are the sales-strongest days. On Saturday most retail chain switches take place. The high switching readiness on the weekend is possibly due to less time restrictions than on weekdays. Therefore consumers have more time to search and try alternatives.

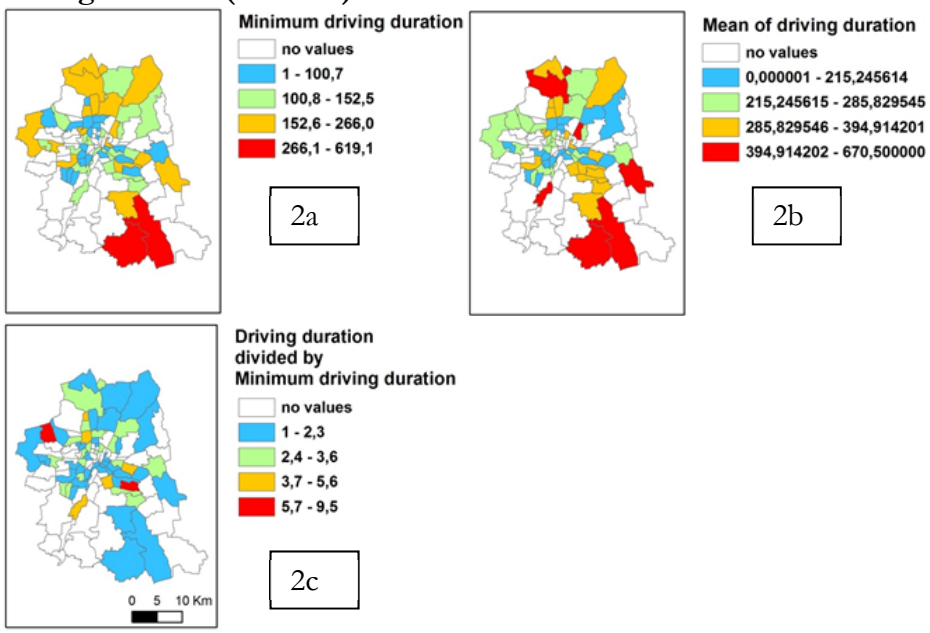
Figure 1: Retail chain switches on weekdays in 2007



Source: GFK PANEL DATA 2007; own calculation.

Figure 2 shows the driving distances of households to food retailers in seconds by post code areas. It is apparent that two districts in the south (Sauerlach and Brunnthal) have a high value for minimum driving duration (figure 2a) and mean driving duration (figure 2b). This suggests that there is a low density of retail chains and little variety for the consumer. Figure 2c puts the actual driving duration of a purchase in relation to the minimum driving duration. It shows that the nearest store is often visited in these postal-code districts.

Figure 2: Minimum and mean driving duration and driving duration divided by minimum driving duration (seconds).



Source: GFK PANEL DATA 2007; own calculation.

The distribution of the parametric hazard function was specified as Gompertz distribution according to minimum AIC. AIC and BIC values for different distributions are listed in table 5.

Tab. 5: Tested distributions.

Distribution	Observations	ll(null)	ll(model)	df	AIC	BIC
exponential	13064	-6615.9	-4620.9	12	9265.7	9353.4
gompertz	13064	-6160.4	-4155.1	13	8336.3	8431.3
loglogistic	13064	-6423.8	-4519.1	13	9064.2	9159.1
weibull	13064	-6341.5	-4340.9	13	8707.8	8802.8
lognormal	13064	-6663.8	-4739.7	13	9505.4	9600.4

Source: GFK PANEL DATA 2007; own calculation.

Detailed results of the hazard model are presented in table 6. The table reports the effect strength of each independent variable using hazard ratios. Each of the first 10 columns reports the hazard ratio of switching to the given retail chain. A hazard ratio smaller than one indicates a negative influence of the independent variable on switching to the given retail chain. Hence it becomes less likely for a customer to purchase in the respective chain. A positive influence of the independent variable is observed, if the hazard ratio is greater than one. In this case, the probability to switch to the retail chain increases with an increase in the independent variable. The last column (repetitive purchase) defines the likelihood of remaining in the chain of the previous purchase.

Tab. 6: Significant hazard ratios of the hazard model – Part I

	Haz. Ratio	**P>|z|**	**Haz. Ratio**	**P>|z|**	**Haz. Ratio**	**P>|z|**	**Haz. Ratio**	**P>|z|**	**Haz. Ratio**	**P>|z|**	**Haz. Ratio**	**P>|z|**
Failure variable	**Switching to Retail Chain 1**		**Switching to Retail Chain 2**		**Switching to Retail Chain 3**		**Switching to Retail Chain 4**		**Switching to Retail Chain 5**		**Switching to Retail Chain 6**	
Retail Format	**Discounter**		**Supermarket**		**Supermarket**		**Discounter**		**Self-service department**		**Discounter**	
Household specific independent variables												
Size of household	1,005		1,013		0,911		1,078		1,093		1,114	
Rob. Std. Err.	0,082		0,115		0,120		0,110		0,105		0,139	
City size	0,997	*	1,010	**	1,000		1,000		0,999		1,010	***
Rob. Std. Err.	0,002		0,003		0,003		0,003		0,002		0,004	
Age	0,994		0,996		1,002		0,991		0,997		0,990	
Rob. Std. Err.	0,005		0,011		0,011		0,008		0,007		0,009	
Net income	1,079		0,866		0,891		0,656	*	0,904		0,917	
Rob. Std. Err.	0,106		0,166		0,145		0,179		0,102		0,149	
Price consciousness	1,266	***	0,902		0,921		0,966		1,053		0,884	
Rob. Std. Err.	0,088		0,089		0,086		0,109		0,128		0,071	
Budget Ratio	0,986	***	0,983	***	0,981	***	1,016	***	1,008	**	1,003	
Rob. Std. Err.	0,003		0,003		0,004		0,004		0,004		0,004	
First Store	1,001		1,018	***	1,013	*	0,997		0,981	**	0,986	*
Rob. Std. Err.	0,004		0,007		0,007		0,006		0,008		0,008	
Extent of Purchase	0,990		1,061		1,026		0,756	***	0,890	***	0,831	***
Rob. Std. Err.	0,025		0,039		0,039		0,027		0,032		0,033	
Driving duration to the retail chain in relation to minimum driving duration	1,011		0,332	***	0,613	***	0,828	***	1,001		0,863	*
Rob. Std. Err.	0,020		0,092		0,084		0,061		0,021		0,071	
Purchase specific independent variables												
Percentage of private label products	Cf. Footnote		0,739	***	1,069		1,486	***	1,579	***	1,675	***
Rob. Std. Err.			0,065		0,073		0,077		0,069		0,062	
Percentage of special offer prices	0,017	***	1,236	**	0,754		0,949		0,952		0,646	**
Rob. Std. Err.	0,011		0,115		0,135		0,218		0,099		0,122	

Probability of error:

*** = 1 %, ** = 5 %, * = 10 %.

Footnote: A calculation of the variable 'Percentage of private label products' was not possible, because retailer No. 1 does only have private label products.

Source: GFK PANEL DATA 2007; own calculation.

Tab. 6: Significant hazard ratios of the hazard model – Part II

	Haz. Ratio	P>|z|	Haz. Ratio	P>|z|	Haz. Ratio	P>|z|	Haz. Ratio	P>|z|	Haz. Ratio	P>|z|	Haz. Ratio	P>|z|
Failure variable	**Switching to Retail Chain 7**		**Switching to Retail Chain 8**		**Switching to Retail Chain 9**		**Switching to Retail Chain 10**		**Switching to any other Retail Chain**		**Repetitive Purchase**	
Retail Format	**Discounter**		**Specialised Trade**		**Self-service department store**		**Consumer Market**					
Household specific independent variables												
Size of household	1,105		1,621	***	0,969		0,638	**	0,912		0,987	
Rob. Std. Err.	0,257		0,244		0,150		0,131		0,105		0,027	
City size	1,020	***	1,010	***	0,988	***	1,000		0,993	***	1,000	
Rob. Std. Err.	0,005		0,005		0,003		0,006		0,002		0,001	
Age	1,013		1,036	**	0,983		1,012		1,015	**	0,996	**
Rob. Std. Err.	0,021		0,017		0,011		0,015		0,007		0,002	
Net income	0,960		0,800		1,040		1,200		1,085		0,976	
Rob. Std. Err.	0,231		0,183		0,231		0,239		0,144		0,039	
Price consciousness	0,553	***	0,791		0,956		0,635	***	1,068		0,953	*
Rob. Std. Err.	0,075		0,124		0,191		0,095		0,093		0,026	
Budget Ratio	1,020	**	1,040	***	1,041	***	1,016	**	1,012	***	1,015	***
Rob. Std. Err.	0,010		0,010		0,010		0,008		0,004		0,001	
First Store	0,995		0,969	**	0,986		0,981	**	0,976	***	1,005	***
Rob. Std. Err.	0,010		0,012		0,009		0,009		0,006		0,001	
Extent of Purchase	1,381	**	1,238	**	0,988		1,248	***	0,878	***	0,974	*
Rob. Std. Err.	0,217		0,124		0,064		0,094		0,033		0,014	
Driving duration to the retail chain in relation to minimum driving duration	1,065	***	1,084	***	1,037		1,042	*	1,019		0,945	***
Rob. Std. Err.	0,026		0,015		0,027		0,024		0,017		0,016	
Purchase specific independent variables												
Percentage of private label products	0,151	***	0,843		0,964		0,507	***	0,828	*	0,963	
Rob. Std. Err.	0,055		0,106		0,109		0,090		0,082		0,023	
Percentage of special offer prices	1,156		1,791	***	1,250	**	1,361	**	1,259	**	0,854	***
Rob. Std. Err.	0,270		0,192		0,135		0,169		0,113		0,050	

Probability of error:

*** = 1 %, ** = 5 %, * = 10 %.

Source: GFK PANEL DATA 2007; own calculation.

The independent variables are split into household-specific variables and purchase-specific variables. Within the group of household-specific variables it stands out that no variable shows continuously significant results with the same direction of effect. First, this is an indicator of the variety of the purchasing behaviour of consumers and retail chains. With regard to the first variable 'size of household' only two results are significant. Hence, chain switching does not seem to be substantially influenced by household size. It is interesting to note that households with many members prefer switching to a specialised trade (chain 8) to purchasing in the consumer market (chain 10).

Regarding the variable 'city size' the analysis reveals a stronger influence on switching behaviour. With increasing city size, retail chains 2, 6, 7, 8 benefit from customers switching to them whereas retail chain 9 and the other chains bear disadvantages. The variables 'age' and 'income' show only in rare cases significant impact. Eventually, the classical socio-demographic variables explain only a small proportion of purchase behaviour. The emphasis of previous research on purchasing behaviour was always placed on variables like 'household size', 'city size', 'occupation', 'age' and 'income'. Nowadays, however, purchasing behaviour has changed and has become more individual. This first result of our research has also been supported by other investigations (RHEE and BELL, 2002).

The variable 'price-consciousness' shows that especially price-conscious buyers often switch to bigger retail chains. This result is intuitive, as big retail chains possess price leadership in the market of dairy products. The variable 'budget ratio' shows continuously highly significant results. While the first three retail chains have a hazard ratio smaller than one, the remaining stores are marked by a value higher than one. This means that the households, which allocate a large part of their expenses in a single retail chain, switch less often to the first three retail chains of the panel.

The variable 'first store' measures, if the purchase is made in the first store. If the household buys in the first store, then it is likely that it switch to chain 2 or chain 3, while the impact is negative for chains 5, 6, 8 and 10.

The variable 'extent of purchase' illustrates in which way switching behaviour is affected by the average purchase size of a household. It appears that households with high expenditures per purchase often switch especially to retail chains No. 7, 8 and 10.

Finally, the driving duration to the retail chain in proportion to the nearest retail chain is also measured as an independent variable. Retail chains 2, 3 and 4 benefit from closer distance to the consumer's place of resident while retail chains 7, 8 and 10 also obtain purchase visits when being far away. The fact that the highest value is reached for specialized trade (retail chain 8) is not surprising, as this business type benefits from locations close to the centre and has the ability to convince customers for this reason compared to other competitors.

Retail chain specific variables

The group of retail chain specific variables consists of two variables: percentage of private label products and percentage of special offer prices in the basket purchased by the household. With the systematic use of private label products and special prices the retail chains try to convince consumers to switch to their chain. The highest hazard rates are obtained by retail chain 6 for private label products and retail chain 8 for special offer prices which hence are successful of obtaining new customers using these price and product strategies.

Repetitive Purchase

The last column of the table is not connected to switching behaviour, but to repetitive purchases. The variable 'first store' (hazard ratio: 1,005) shows that the likelihood for repeating purchasing increases if the purchase was made in the First Store. It furthermore shows that customers are more loyal chains where they allocate a large budget share. More price consciousness leads to less loyalty, as does a longer driving distance to the store.

Conclusions

The analysis presented in this paper reveals the extent as well as causes of retail chain switching. On average households purchase white dairy products 42 times per year. Thereof retail chain switches occur in 58 % of the cases. Provided with this insight it can be concluded that the shopping behaviour of customers can be interpreted as low customer loyalty and that switching readiness seems to be high. It is shown that switching behaviour is widely influenced by several variables. However, it is obvious that the influence of classical socio-demographic variables like age and net

income is only small. Individual buying and consumption habits such as percentage of private label products and percentage of special offer prices are in contrast more important and pervasive.
Finally, the results show that heterogeneity is present in the group of consumers as well as in the group of the retail chains.

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