The Impact of Crisis Sales Promotions on Branded and Unbranded Toys

Danijel Bratina

This paper presents the research findings of a toys brands sales promotions study conducted in q4 (4th quarter) of years 2007 and 2009 (pre- and mid- crisis). The primary research objectives were to determine the impact of economic crisis determinants (such as lowered purchasing power, increased unemployment rates, changed purchasing behavior of consumers) on new years' toy sales, in particular the impact on known brands' sales vs. sales of unbranded products. Eight known toys brands promotions sales have been compared to eight unbranded competitive products in different toys subcategories for the two q4 of year 2007 and 2009. Findings show that although the mean purchase amount had considerably diminished in year 2009, major brands sales were not affected at all.

Key Words: scan*pro model, effects of crisis on purchasing
behaviour, toys market, sales promotions effects
jel *Classification:* m31

Introduction

Sales promotions have been increasingly used as the primary marketing communication tool in almost all consumer markets. This is due to their relatively easy accountability and immediate effects, compared to other elements of the marketing communication mix. (Bell, Chiang, and Padmanabhan 1999; Conchar and Zinkhan 2005; Assmus, Farley, and Leehmann 1984; Bucklin and Gupta 2000; Tellis 1988; Van Heerde 1999) Although there has been an increased interest in gaining some generalizations from sales promotion activities, few conclusions have been made so far on the impact of sales promotions (mainly price reductions), with the exception of the fact that temporary reductions of prices considerably increase sales for the time of the promotion being in effect. Other researches, such as pre- and post- promotion dips, long term effects of sales promotions and other, have not yet reached a generalization state. This is mainly due to the fact that it is impossible to include all deter-

minants that affect consumer behavior in a purchasing process (Jedidi, Mela, and Gupta 1999; Raju 1992).

Sales of toys have historically been heavily promoted in Q4 of the year, due to the Christmas season. Q4 sales compared to the other periods of the year also account for around 70% of total annual volume. Typical marketing activities that are used by retailers in this period are heavy discounting, price bundling, catalogue sales, increased TV advertising and increased in-store promotions.

Our study arises from a former study of the impacts of price promotions on brands that was conducted in 2007 and included toy brands. Our findings at that time were that brands' equity as defined by Aaker (1991) or Keller (1998) determinants (whichever used) have negative effects on sales promotions, meaning that the more powerful the brand, the less effect sales promotion has on its sales during the period of discounted pricing. This fact does not change if additional marketing communications tools (advertising, point of purchase advertising, ...) are used.

The economic crisis started in Slovenia with a delay of 9–12 months, where its effects started to show only by the end of 2008. On the other hand, Slovenia was among the hardest hit economies in the EU-25, its GNP in 2009 reaching a drop of 8.5% (SURS 2009). Some Asian and Eastern Europe countries had declared themselves to be out of recession already in 2009, while Slovenia in 2010 was still well into the recovery process.

Some studies have been conducted on the changes of purchasing behavior during recession (e. g. Faganel 2011). Perhaps the most comprehensive is that of Granfield (2009), who lists ten effects of crisis on purchasing trends, namely:

- *The Aldi effect* – finding cheaper retail outlets to purchase the same things, rather than not purchasing at all.
- *The lipstick effect* – purchasing items of smaller value in place of more expensive luxury items as a personal treat.
- *The armchair effect* – consumers look to their homes as the new entertainment hub; triggers home upgrades as they wish to make houses "entertainment" ready.
- *The rain-check effect* – high value purchase decisions, or high risk decisions, will be put on hold, as consumers look to postpone any non-essential purchases to more settled economic times.
- *The Mr. Burns effect* – consumers reduce charitable donations and ethical behaviours in the face of economic downturn.

TABLE 1 Effects of crysis on sales

Type of effect	Purchasing behaviour
Aldi effect	Less total revenue
Lipstick effect	Buying cheaper and/or unbranded toys
Armchair effect	Less total revenue due to reuse of already owned toys
Rain-check effect	Less total revenue
Mr. Burns effect	No effect
Herd effect	Increased impact of other effects
DIY effect	Less total revenue
Real Money effect	Buying cheaper and/or unbranded toys + diminished buying on credit terms
Optimist effect	Increased sales of creative toys
Calvin effect	Look for value in a toy rather than just buy presents.

- *The herd effect* – even those consumers with financial stability will modify behaviours, influenced by the behaviour and panic of those around them.
- *The DIY effect* – consumers will start to opt for self-service rather than do-it-for-me, as decreasing discretionary spending forces them to cut back on non-essential services.
- *The Real Money effect* – consumers avoid using voluntary credit as they fear committing themselves to a future debt, i. e. Will I have the money to pay off that sofa in 24 months time?
- *The optimism effect* – consumers will look to companies or brands with fun/light-hearted personalities that relieve the temporary doom & gloom of life.
- *The Calvin effect* – consumers look to rein in their hedonistic spending patterns in favour of a more conservative approach to their money.

In terms of purchasing toys within a single toys' chain (the possibility of switching stores being excluded), these effects could be summarized as shown in table 1.

The purpose of our study was to determine which of the above mentioned effects have actually affected consumers in their purchasing behaviour of toys. Not all effects, however, can be explicitly confirmed because, as shown in table 1, some effects have equal impacts and it is difficult to attribute the impact to a single effect. We thus focused our research on the changes in sales of unbranded vs. branded products, chan-

ges in total revenue, mean purchase amount to account for aggregated Aldi/DIY/Armchair effects and for the Lipstick/Real Money/Calvin effects.

Research Objectives and Methodology

The aim of our research is to gain an insight into the effects of the crisis period on sales of branded and unbranded products.

The research studies sales promotion effects (quantities sold) during a non-crisis and a crisis period (Q4 in 2007 and 2009) on 8 different toy products from 5 different subcategories of toys. We focused our research on 5 subcategories of toys – in parenthesis the market leader for the Slovenian market is listed and has been compared to an unbranded copy or equivalent:

1. Construction toys (LEGO)
2. R/C (radio/controlled) cars (Nikko)
3. R/C flying toys (Silverlit)
4. Baby dolls (Baby Born)
5. Electronic educational toys for 6m (Fisher Price)
6. Racing car slots (Carrera)
7. Girls' dolls (Barbie)
8. Musical instrument (Bontempi)

All brands have been compared to their complementary unbranded (or unknown brands) products. To determine toy brands' equity determinants we used Keller's (1998) model of brand equity, which is based on two groups of determinants – brand recognition and brand image. The purpose of this paper is not to argue or study different brand equity models nor it is to evaluate the Keller's model. We thus used a simple method to determine the two brand equity determinants by surveying customers of a determined toy's chain in two different periods (December 2007 and December 2009) about the knowledge of the above mentioned brands. Surveying was conducted by paid interviewers positioned at the exits of 10 different stores of the same chain, who in total surveyed 450 respondents in 2008 and 390 respondents in 2009. Brand awareness was measured with an open-ended question to assess un-helped recognition and a dichotomic question to assess helped awareness. Both have been combined into a factor of awareness (biased average – 70% of un-helped recognition and 30% of helped – into a single percentage unit measuring

TABLE 2	Calculated brand awareness determinant		TABLE 3	Calculated brand image	

Brand	2007	2009	Brand	2007	2009
LEGO	100	100	Lego	90	86
Nikko	45	40	Nikko	70	60
Silverlit	35	50	Silverlit	80	76
Baby Born	65	67	Baby Born	76	74
Fisher Price	95	90	Fisher Price	88	82
Carrera	67	70	Carrera	64	45
Barbie Mattel	92	90	Barbie Mattel	61	49

brand awareness). The two questions measuring brand image have been equally aggregated into a single factor of brand image. Results for both years are shown in table 2 (awareness) and table 3 (image).

Sales quantities have been downloaded from the selected toy's chain sales from 1. Oct till 31. Dec 2007 and 1. Oct till 31. Dec 2009 from 10 of their major stores spread around Slovenia (5 located in towns with population above 10,000, and 5 in towns with population below 10,000). Because of the confidientiality agreement we are unable to disclose the absolute monetary values of sales, we only show relative sales values of different brands in each store in year 2009 compared to the year 2007. To eliminate the doubt of sales being affected by some new items' one-year hit (like for example Tamagochi in 2000) we only looked at one single product's sale (or its replacement – new packaging/restyling) for each different brand.

Competitive (unbranded) products were selected using the following criteria: same sub-category, same size, same or comparable functions. Although this was fairly easy for some brands (Lego, Silverlit),we found it very hard in other (baby born, Fisher price), mainly due to the large selection of unbranded alternatives. We opted for a solution of the best-selling competitive alternative. Sales are shown in tables 4 (2007) and 5 (2009).

In both periods analyzed, the five stores from bigger towns show an inverted picture as opposed to the five stores from smaller towns. While in bigger towns there is a strong preference for the branded products, the difference is not so big for the shops in smaller towns (sig. < 0.01). This could be due to an extreme difference in purchasing power between bigger and smaller towns in Slovenia (SURS 2009), where the difference

TABLE 4   Quantities sold in 2007

Store	Lego	Nikko	Silverlit	Baby born	Fisher Price	Carrera	Barbie Mattel
	Unbrand.	Unbrand.	Unbrand.	Unbrand.	Unbrand.	Unbrand.	Unbrand.
Store 1	150	25	102	55	110	25	45
	15	20	20	12	25	10	9
Store 2	122	25	98	45	79	23	23
	18	26	10	12	30	2	7
Store 3	114	18	50	40	102	18	6
	2	14	12	12	15	2	8
Store 4	88	29	71	30	77	10	25
	15	15	25	8	30	3	12
Store 5	75	17	40	22	55	5	43
	25	10	6	10	10	0	12
Store 6	98	14	25	22	30	6	5
	30	3	7	18	20	7	9
Store 7	75	10	26	12	15	2	6
	1	3	7	15	15	19	9
Store 8	45	5	14	8	5	3	12
	3	15	10	14	15	7	0
Store 9	23	7	10	9	17	8	8
	2	12	15	15	27	10	12
Store 10	12	6	5	3	0	9	4
	0	7	18	8	5	12	9
Total	802	156	441	246	490	109	177
	111	125	130	124	192	72	87

between the richest and poorest areas is more than 200% (in terms of salaries).

Branded products all show an increased number of units sold (except for Lego), while unbranded items show a decrease in the number of products sold between the two periods analysed.

Brand Determinants

As already mentioned, brand determinants from a simplified Keller's brand equity model have been computed using a cross-sectional ques-

TABLE 5   Quantities sold in 2009

Store	Lego	Nikko	Silverlit	Baby born	Fisher Price	Carrera	Barbie Mattel
	Unbrand.	Unbrand.	Unbrand.	Unbrand.	Unbrand.	Unbrand.	Unbrand.
Store 1	155	41	113	71	118	19	29
	15	21	22	6	25	1	13
Store 2	130	25	112	59	75	38	29
	1	9	0	12	17	0	8
Store 3	99	32	68	42	96	29	9
	7	7	0	17	11	0	9
Store 4	95	46	70	13	95	25	29
	12	12	28	12	34	0	0
Store 5	64	21	42	6	46	4	54
	22	11	0	9	0	0	0
Store 6	78	4	24	25	23	2	17
	30	6	0	1	23	5	14
Store 7	59	26	30	11	18	0	3
	5	3	8	19	17	23	14
Store 8	59	11	3	7	19	16	27
	5	8	0	15	15	10	0
Store 9	9	9	0	16	3	3	5
	0	3	19	16	21	14	0
Store 10	1	0	20	13	8	4	6
	3	7	21	0	4	6	0
Total	749	215	482	263	501	140	208
	100	87	98	107	167	59	58

tionnaire. Brand awareness and image (computed variables) are shown in tables 5 and 6.

We have tested both samples for statistical differences and found the following evidence. Except for the brand Silverlit, all brands show a decrease in perceived quality levels and in positive associations, and all except Lego are statistically significant ($p < 0.01$). Silverlit was a relatively new brand in 2007, thus an increase in its awareness and knowledge could derive from this fact. While for the others, being very different brands, showing similar patterns, we could deduce that, with an increased invol-

TABLE 6   Awareness variables of Keller's brand equity model

	Lego	Nikko	Silverlit	Baby born	Fisher Price	Carrera	Barbie Mattel
2007, $n = 450$							
(1)	100	20	30	40	70	15	80
(2)	100	70	60	80	90	60	95
(3)	100	35	39	52	76	28.5	84.5
2009, $n = 390$							
(1)	100	18	55	28	48	10	90
(2)	100	56	75	65	75	55	82
(3)	100	29.4	61	39.1	56.1	30.5	87.6

Notes: (1) perceived quality, (2) percentage of positive associations, (3) computed awareness variable.

TABLE 7   Image variables of Keller's brand equity model

	Lego	Nikko	Silverlit	Baby born	Fisher Price	Carrera	Barbie Mattel
2007, $n = 450$							
(1)	4.2	2.6	2.5	3.5	4.4	1.5	2.2
(2)	80	45	55	80	78	45	75
(3)	82	48.5	52.5	75	83	37.5	59.5
2009, $n = 390$							
(1)	4.1	2.7	3.4	3	4.2	1.7	3
(2)	75	49	52	77	74	28	77
(3)	78.5	51.5	60	68.5	79	31	68.5

Notes: (1) perceived quality, (2) percentage of positive associations, (3) computed awareness variable.

vement of the purchaser's mental activity in the process of the products' acquisition, they become more critical about products.

A Model of Sales: Impact of Brand Equity Determinants on Sales Promotions

Data availability from the company's information system (quantities sold of each item/day, price of sold item, promotion activities, catalogue dates,...) allowed us to build a SCAN*PRO (Wittink et al. 1988) model of sales promotion, in which we added brand equity determinants. We applied the most commonly used model for analyzing the effects of sales

promotions – Wittink's scan*pro model – which to date has been used in already more than 2000 different research studies (Bratina and Faganel 2008). It would be beyond the scope of this paper to propose and test different fundamental approaches to the study of sales promotion effects, and thus we applied the most widely used. scan*pro can be written as:

$$Q_{it} = \frac{P_{jt}}{\tilde{P}_j} \prod_{l=1}^{4} \Upsilon_{lj}^{D_{ljt}} e^{\upsilon_{it}}. \tag{1}$$

Where the first part represents the relative price (if no promotion it is 1) and the product represents different promotional activities as well as brand determinants (in our case 4). By simple log-log linearization we get a simple regression model:

$$\ln Q_{it} - \ln \lambda_i = \beta_i \ln \left(\frac{P_t}{\tilde{P}} \right) + \sum_{l=1}^{n} D_{lt} \ln \gamma_l + \upsilon_{it}, \tag{2}$$

where the term β_i directly represents price elasticity, while terms D_{lt} show the impact of catalogue, brand awareness and brand image.

It could be argued that some determinants have not been included (such as advertising). We have omitted this on purpose to allow for the model to be built exclusively on company's internal data. Advertising data are usually available only from syndicated research companies. The company itself did no advertising (except for the catalogues), but some advertising has been done by the suppliers of the toys themselves.

The model we built used daily data from 1. Oct to 31. Dec in years 2007 and 2009. Since all ten stores had the same marketing activities variables (price changes at same time, in-store display on same dates and other communication mix activities), first we aggregated daily sales among all stores. Such data however are subject to daily fluctuation of sales due to uncontrolled effects (weather, discrete events, . . .). Findings are shown in table 7 (for 2007) and 8 (for 2009).

Models' R^2 vary from 0.35 to 0.75 which makes them relevant (using the rule of thumb stating the R^2 threshold of 0.25).

Both models, from 2007 and 2009, show that branded products' price elasticity is lower than unbranded. This could be due to two facts – brand's immunity to price promotion (an attribute that could be used as a measure of the brand's power, see Aaker 1991) or the fact that brands amounts their products less often and for lower discounts. Such discounts could end up below the threshold line (Hannsens, Parsons, and Sc-

TABLE 8   SCAN*PRO coefficents for sales in 2007

Brand	Price	Catalogue*	Brand awar.	Brand image
Lego	−1.2	−0.266	0.066	0.041
Unbranded	−2.12	0	n/a	n/a
Nikko	−0.23	0.316	0.669	0.722
Unbranded	−1.4	0	n/a	n/a
Silverlit	−0.25	−0.945	0.749	0
Unbranded	−0.52	0	n/a	n/a
Baby born	−0.12	−0.171	0.342	0.132
Unbranded	−0.33	−0.473	n/a	n/a
Fisher Price	−0.6	−0.54	0.007	0.097
Unbranded	−1.2	−0.7	n/a	n/a
Carrera	−0.3	−1.02	10.43	0.845
Unbranded	−0.5	−5	n/a	n/a
Barbie Mattel	−1.3	−0.3	0.285	0.348
Unbranded	−2	−0.1	n/a	n/a

Notes: *1 = yes, 0 = no; n/a = not available, not measured.

hultz 2001; Van Heerde, Leefland, and Wittink 2001) of a demand/price curve, and thus cause no effects. We deduce that the first fact is true, as the discount depth and frequency in not different between branded and unbranded products. It should also be noted that in 2009 price elasticity decreased for branded products and increased for unbranded.

Discussion

If we first analyze quantities sold in Q4 of 2007 and 2009, using a simple two samples *t*-test, we can statistically confirm that sales of branded items were affected positively, while sales of unbranded items diminished during the same period in the 5 stores inside major towns, while this effect is less evident for the five stores in smaller towns. Increases in branded items sales vary from 0% to 70% in major stores, and from 0% to 55% in stores located in smaller towns. At the same time the total turnover of branded items (in monetary values) increased by 18% (figures not shown due do privacy protection), while unbranded items showed only a 3% increase in the same time (aggregated for all ten stores).

Brand awareness determinants and brand image determinants have on average not changed in the two periods. However some brands showed

TABLE 9 SCAN*PRO coefficients in 2009

Brand	Price	Catalogue*	Brand awar.	Brand image
Lego	−0.8	−0.35	0.02	0.05
Unbranded	−1.5	0	n/a	n/a
Nikko	−0.2	n/a	0.7	0.712
Unbranded	n/a	0	n/a	n/a
Silverlit	−0.5	−1.2	0.545	0
Unbranded	−0.6	0	n/a	n/a
Baby born	−0.06	−0.15	0.214	0.121
Unbranded	n/a	−0.32	n/a	n/a
Fisher Price	−1.2	−0.7	0.125	0.023
Unbranded	n/a	n/a	n/a	n/a
Carrera	−0.5	−1.3	0.52	0.23
Unbranded	n/a	n/a	n/a	n/a
Barbie Mattel	−1.3	−0.5	0.42	0.52
Unbranded	−2	n/a	n/a	n/a

Notes: * 1 = yes, 0 = no; n/a = not available, not measured.

statistically significant changes in positive direction (Silverlit) and negative (Baby born, Fisher Price) for calculated awareness, and positive (Silverlit, Barbie) and negative (Baby born, Carrera) for calculated image.

We tried to find a correlation between brand's equity factors (awareness and image – as aggregated variables and as separate determinants) and the change in quantities sold/turnover created for all the brands analyzed. We found only weak positive correlation between brand awareness (any combination) and quantities sold. All other correlations were statistically insignificant.

The model shown in table 9 represents a sales forecast model based on the SCAN*PRO model. It is known that such models have powerful prediction results around data points, but fail considerably on the edges (close or equal to zero and large discounts) of continuous variables. This is mainly due to simplification of the model to a easily interpretable model, while it has been proven that the sales deal curve is S- shaped, where the left arm of the S-shape is attributed to consumer's threshold, where consumers are not responding to low or insignificant discounts, while the right arm of the S-shape is attributed to a saturation effect, where consumers are reluctant to buy more than a certain amount of the

product, due to their inability to store or consume a greater volume of the product. Both effects vary considerably among different markets and for different brands. To account for both effects semi parametric analysis is used (Van Heerde, Leefland, and Wittink 2001, 2004). The range of discounts for our products was from 5

While we can confirm that the effect was not negligible for the 5% discount (we were over the threshold for the given product), we can not say for sure that the 40% was not already in the saturation area of the discount levels as we did not have a continuous set of discounts for a given product, but only a few.

The model shows that price elasticity is negative from −0.12 up to −2 and is higher for unbranded products. Although we can not statistically test it, we can clearly see a pattern where values for price elasticity for branded products are higher in 2007 than in 2009, while for unbranded products they are higher in 2009. Consumers shifted their purchases to branded products already before discount periods started, and discounting had less effect on the total quantity of the product sold. On the other hand, unbranded products needed more incentives (higher discounts) to be sold.

Catalogue sales (modeled as dummies) contribute additionally to the effect of price promotions, which confirms many other research results (Blattberg and Neslin 1989; Assuncao and Meyer 1993; Conchar, R., and Zinkhan 2005; Dekimpe and Hannssens 1995; Macé and Neslin 2004). We were not able to test the difference between branded and unbranded products due to data unavailability for unbranded products.

Conclusion

In our research, we evaluate sales for eight branded and unbranded toys products in two different periods (Q4 of years 2007 and 2009), where we tried to find any effects of crisis on sales. Our findings show that brands cope with crisis considerably better than unbranded products in all sub-categories studied. Their market share increased in the 2nd period at the expenses of unbranded products, whose sales recessed. This effect is more pronounced in urban areas, whereas in rural areas it is counter-balanced by a lowered purchasing power, forcing consumers to be more price conscious to the detriment of quality. However the effect of branded sales increase still predominates over the lowered purchasing power effect.

Looking through the perspective of Granfield's (2009) effects of crisis,

we can confirm that consumers have been buying more conservatively (taking less risk) by purchasing branded – higher quality products. Our study does not take into account the price differences between branded and unbranded products, which affect consumers' functions of benefit (Papatla and Krishnamurthi 1996; Assuncao and Meyer 1993).

Although our study shows some directions, further insight is needed in the research, mainly in terms of accountability for heterogeneity of consumers (using household panels), differences in prices and adding other variables to control the effects on sales (such as advertising and other marketing communication tools).

One should also research for heterogeneity of products, as not only are the effects of price promotions of different types of products (FMCG, durables, . . .) on sales different, but also the effects of the crisis are different.

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