PRICE PROMOTIONS – IMPLICATIONS FOR LOGISTICS AND CONSUMER BEHAVIOUR

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Abstract

Forward buying is common business practice among retailers who purchase large quantities from their suppliers when product price is low. They keep those large quantities at their stock after the price promotion ends and continue to sell them at the regular price. But what about consumers? They use different ways for informing about products and their prices and although they are well informed about prices, for some of them contemporary lifestyle leaves little time available for consumer goods shopping. One would expect that smart consumers would wait for the lower prices and then purchase extra inventory, more than they need at the moment, in order to seize the opportunity of lower prices and avoid frequent shopping trips. This kind of consumer behaviour is also well known as the starting whip in the bullwhip effect in the supply chain. This paper aims to fill the gap in the literature of products stockpiling in households (at the consumer level). Indicative research was conducted among 305 households in order to find out to what extent and to which product categories consumers are prone to stockpiling. Certain attention was given to household's space constraints and the perception of extra inventory in the household as a good investment. Research has shown that most consumers are prone to buy products for future consumption, mostly due to rational behaviour and awareness of price promotion. Commonly stockpiled are non-perishable product categories and products that do not lead to higher consumption. Respondents who stockpile food categories mostly believe that higher household inventory of products lead to increased consumption. Unlike the household's space constraints, perception of extra inventory in the household as a good investment proves to be statistically significant for consumers in deciding on purchasing amount of products.

Key words: stockpiling, households, price promotions, stockpiling constraints

1. INTRODUCTION

Although contemporary literature and business practice put consumers in the centre, due to the retail concentration process in the food and fast-moving consumer goods (FMCG) sector, retailers became the most powerful member in the supply chain. With the raise of their power, trade promotions became large cost for manufacturers, equally or even larger than usual advertising of their brand. Various costs resulted from activities encouraged by retailers which enabled them to charge manufacturers slotting allowances, to demand product variety, to include manufacturers in their promotion programs and to use price promotions for forward buying (Buzzell et al., 1990). Retailers use forward buying in order to seize the opportunity of manufacturer's deals and together with price fluctuations, forward buying has the key role in the bullwhip effect (Zotteri, 2013).

Consumers can also behave in a similar way and if they are forward-looking it can affect their purchase decisions (Ching & Osborne, 2015), which is in the same time limited by factors such as storage constraints, finance and others which also affect purchase amount. Price promotions are seen as a critical in the management of the fast-moving-consumer goods (Breiter & Huchzermeier, 2015) with special emphasize on their profitability for retailers and manufacturers, but also logistical issues such as demand forecasting, inventory management, out-of-stock situations and stockpiling in the consumers' households. American Marketing Association (2017) defines price promotion as "the advertising of a price for a product or service and usually, the price being promoted is a reduction from a previously established price and may take the form of a lower price, a coupon to be redeemed, or a rebate to be received". As one of the results of price promotions, household's products stockpiling can occur. Huchzermeier and Iyer (2006) state consumer stockpiling behaviour as one of the four key factors, along with information sharing, variety effects and customer segmentation, that has to be taken into account in order to decrease the promotion forecast error in the supply chain. Furtherly, Pozzi (2013) emphasizes the role of technology and development of e-commerce which facilitates stockpiling because of ease of price comparison between retailers and absence of physical costs such as carrying large and heavy bags from the store.

However, apart from physical costs, buying large amounts of products requires certain storage space, especially for large and bulky products, and certain financial investment. Same as in companies, inventories in households are frozen capital, particularly if there are extra inventories for future use. This paper is focused on the implications that price promotion have on logistics and final consumer level. Therefore, following are research questions of the paper:

- Are consumers prone to buy products for future consumption? For which product categories?
- Do space constraints in household affect consumers to buy larger amounts of products during price promotions that will be used until next price promotion?
- Does perception of extra inventory in household as a good investment affect consumers to buy larger amounts of products during price promotions?

For this purpose, the survey questionnaire was conducted on the sample of 305 consumers, i.e. shoppers. It was examined whether respondents buy larger amounts

of products for future use, which product categories they buy in large amounts and what is their perception of the increased consumption due to extra inventory in household.

2. LITERATURE REVIEW

2.1. Supply chain pricing issues – implications for stockpiling

Pricing issues have been and still are one of the most tense areas in the relationship of retailers and their suppliers, especially when it comes to promotional pricing. Price promotions significantly challenge supply chain coordination and those fluctuations in prices are one of the key causes of bullwhip effect. Among other things, they lead to forward buying at retailer level and stockpiling at consumer level. Lack of coordination is mostly induced by different objectives of supply chain members and lack of information sharing (Chopra & Meindl, 2016). Therefore, when it comes to price promotions, bullwhip effect could be avoided by the timely or even real-time information sharing on price promotions' start, duration and expected effect. However, retailers often avoid sharing of those information in order to keep the information from their competition, i.e. other retailers. Breiter and Huchzermeier (2015) report that retailers and manufacturers in Germany agree on a yearly basis on wholesale prices and timing of price promotions, but not on regular retail or promotional prices, since it is prohibited by the law. The importance of those prices arises from the fact that retailers use products on promotional prices to attract as many as possible consumers in their stores and want those prices to be more attractive (lower) than competitions' prices. Furtherly, not any product can be equally tempting to consumers. Usually more attractive are famous brands or goods of well-known quality. On the other hand, manufacturers of such products don't want too low promotional prices because, among other reasons, it can lower their brand image among consumers. In the late 1980's, American retailers demonstrated their power in the supply chain and the importance of price promotions for them by announcing to their suppliers that "everything we buy from you will be at the lowest promotion price offered throughout our entire system", which led to a strong opposition from the suppliers and disruption of their relationship (Buzzell et al., 1990). One would expect that store flyers[1] affect positively stockpiling and additionally encourage it, but Gázquez-Abad & Martínez-López (2016) report that store flyers affect more brand switching than stockpiling. However, if the manufacturer managed to build strong brand with loyal consumers, brand switching should not present a large problem. Loyal consumers will stockpile their favourite branded products in their households for future consumption, while consumers who are not loyal to one brand, but are more inclined to brand switching will not stockpile products in their households (Chan et al., 2004; Gázquez-Abad & Martínez-López, 2016). Some benefits of consumer

[1] Store flyer is a "frequently distributed free printed matter, part of the mass communication marketing from the sender(s), with a minimum of four pages, immediately readable, targeted at private households or firms" (Schmidt & Bjerre, 2003 *cited in* Gázquez-Abad & Martínez-López, 2016)

stockpiling for manufactures are increased consumption, preventive brand switching and repeated purchases (Ailawadi et al., 2007). However, companies can have profit issues in long-term period if stockpiling is regular by loyal consumers (Gangwar et al., 2015), who would buy products at regular prices as well. Previously imposes other potential issues in retailer – manufacturer relationship, such as different goals in increase, both sales and consumption - of the one brand (manufacturer) or of the whole product category (retailer) (Chan et al., 2004) or the retailer's private label.

When retailers want their consumers to stockpile, e.g. during seasonal clearance, promotion at the point of sale such as additional displays is more effective than store flyers (Gázquez-Abad & Martínez-López, 2016). In nowadays dynamic pricing environment, strategic consumers wait to make a purchase at a specific price or the target time, but company can also benefit by keeping the consumers in the game, not to leave the market due to too high price, because they know that price will be lower and affordable at a certain moment (Cho et al., 2009). Benefit of product stockpiling in consumers' households can be alleviated reaction to out-of-stock situation in the store, whereby consumers will probably postpone or cancel the purchase (won't switch brands or go to other retailer's store) because of the existing inventory at home (Verhoef & Sloot, 2006).

2.2. Logistics implications of pricing strategies

Since all consumers don't need and don't want to search the best prices in the market and stockpile products for the future consumption, for example organic food consumers (Brčić-Stipčević et al., 2011), this allows retailers to use higher prices strategies. High – low pricing strategy and price skimming are greatly represented among retailers given that consumers do make purchases regardless of the price level (Ching & Osborne, 2015). Because of the occasional and timely limited promotional prices in their offer, which are often the best prices in the market in the certain moment, these strategies have mostly logistics disadvantages. Most emphasized are (Levy & Weitz, 2012; Zentes et al., 2011; Huchzermeier & Iyer, 2006):

- purchase acceleration which usually lead to product stockpiling, especially of fast moving consumer goods (FMCG);
- more difficult retailers' planning of future demand and large forecast error;
- more difficult inventory management and high inventory costs;
- greater challenges for supply chain coordination which can lead to bullwhip effect.

There are also several logistics advantages. An opportunity to make a clearance of products with slow inventory turnover and increased consumption (Levy & Weitz, 2012) can lead to greater logistics efficiency by reducing average inventory level and better use of economies of scale when ordering and transporting because of sales increase induced by increased consumption. In addition to that, Hamister and Suresh (2008) show that dynamic pricing may also "lead to higher profitability and reduced demand variability when demand is serially correlated".

High-low pricing strategy resulted with the appearance of the consumer segment called *cherry pickers,* who catch the best offers in the market. They research, compare and buy only during special price promotions and their average consumer basket is

lower than others' consumers (Bell & Lattin, 1998; Popkowski Leszczyc et al., 2004; Fox & Hoch, 2005), imposing the conclusion that they don't buy large amounts and stockpile them, but do more frequent shopping trips.
Furtherly, significant part of FMCG products are not type of the products whose consumption will or can increase because of the stockpiled inventory in the household. Shapiro (2016) states that this fact prompted development of Every Day Low Prices (EDLP) retail strategy. Due to less price and demand fluctuations, these EDLP retailers base their price advantage largely on logistics efficiency, mostly on inventory management and transport (Levy & Weitz, 2012), but in-store (e.g. shelf replenishment by using retail ready packaging) logistics as well. Therefore, Bolton and co-authors (2006) state that retailers should focus their price fluctuations on the product categories that stimulate demand increase (consumption increase) and not only stockpiling.

2.3. Stockpiling, product categories and constraints

Consumer stockpiling raises logistical issues of price promotions. Short term price promotions affect what amount will consumers purchase and lately consume. However, Breiter and Huchzermeier (2015) showed that demand during price promotion is significantly determined by household inventory levels. This confirms the state of Beasley (1998) who reported that inventory level has negative effect to the incidence of stockpiling, while deal proneness and depth of a price cut have a positive effect. When consumers buy larger amounts during price promotions, Bell et al. (2002) distinguish pure stockpiling (there is no increased consumption and next purchase will be later than usual) and flexible consumption (increased consumption because of the larger inventory in the household and next purchase will be less later than in case of pure stockpiling). Furtherly, increased consumption can be induced by the household's income or by using stockpiled products as a substitute for other similar products or categories (Chan et al., 2004). Flexible consumption causes lower level of bullwhip effect than pure stockpiling.

Flexible consumption is variously present among different product categories. While some categories are subject to increased consumption, some categories' consumption is not affected by large inventory in the households. Price promotions are more often and deeper in the categories which are subject to increased consumption (Bell et al, 2002) and also are more often a subject to bullwhip effect. Similarly, Shapiro (2016) sees expandability or growth potential within the product category as two-parted – expandable consumption (potential increase in consumption – using more of the same product if you have it in household) and expandable purchasing (potential increase in purchasing amount because there are no or are reduced constraints for inventory holding). An important role have the characteristics of the products within the category. Pure stockpiling usually occurs among categories with limited expandable consumption, but with expandable purchasing (durable goods with longer shelf life). Gangwar et al. (2014) state that toilet tissues and coffee have relatively constant consumption and their stockpiling would probably lead to longer time before next purchase. On the other hand, flexible consumption usually occurs among categories with both expandable consumption and expandable purchasing,

such as snacks or drinks. But, short shelf-life of large number of consumer packed products can have constraint effect on the purchasing.

Products or categories with higher absolute prices or of larger size volume can have other constraints for expandable purchasing and consequently expandable consumption. Although budget constraint is seen as one of the most common constraints and as a barrier between attitudes and behaviour of the consumer in the contemporary environment (Uncles, 2006), Satomura et al. (2011) emphasize the role of multiple constraints, including space constraints induced by weight or quantity of the products. They find it unlikely that consumers will hire additional storage space to hold their household inventory of large volume products. Bell and Hilber (2006) showed that household storage constraints are statistically and quantitatively significant for purchasing quantity of products which are spatially demanding and require certain storage space, like detergents or paper towels, while smaller and less spatially demanding products like pills are not affected by storage constraints in household and it does not affect stockpiling behaviour. Pires and Salvo (2015) found that budget or cash constraints are economically significant for the low-income households and less significant for high-income households what is in accordance with the fact that high-income households more often buy large packaging than low-income households. Large packaging have higher financial and storage requirements, but usually offer better regular unit price. However, price promotions of smaller packaging can achieve even better unit price. Nevertheless, Orhun and Palazzolo (2016) state that even on price promotions low-income households do not succeed to take the advantage of lower price and stockpile products for future use because of the liquidity constraints.

Another perspective on stockpiling constraints gave Huchzermeier and Iyer (2006) who researched non-loyal consumer segment of canned tomato soup who are more prone to stockpiling than loyal consumer segment. They state holding cost, storage space and liquidity constraint as important factors that those consumers take into account when deciding on purchasing amount during price promotion.

3. RESEARCH METHODOLOGY

For the purpose of this indicative research, test method and a highly structured questionnaire as a test instrument were used. The research was conducted in February 2017 on a convenient sample of 305 respondents in two counties of eastern Croatia. Respondents were persons who are involved in shopping for their household, but not necessarily primary shoppers. They were questioned for their purchases in FMCG retailers, in whose stores prevail food products and other non-food products for everyday consumption. Therefore their characteristic product categories were examined like chocolates and personal hygiene products, while categories like furniture or seasonal products were not examined. Respondents could participate in research through online questionnaire created in provided Google Forms template or paper questionnaire. The questionnaire contained multiple choice questions and 5-point Likert scale measures. The following table 1 shows sample description.

Table 1. Sample description

		n	%
Gender	**Total**	**305**	**100**
	Male	66	21.6
	Female	239	78.4
Age	**Total**	**305**	**100**
	18-29	51	16.7
	29-39	75	24.6
	39-49	67	22.0
	49-59	79	25.9
	60 and more	33	10.8
Education	**Total**	**302**	**100**
	Primary school	9	3.0
	High school	116	38.4
	Faculty and higher	177	58.6
Place of residence	**Total**	**300**	**100**
	Town	227	74.4
	Smaller place	73	23.9
Monthly income of all members in household	**Total**	**302**	**100**
	Less than 5.000,00 HRK	69	22.6
	5,000.00 – 10,999.00 HRK	170	55.7
	11,000.00– 16,999.00 HRK	51	16.7
	Equal to or greater than 17.000,00 HRK	12	3.9
Employment status	**Total**	**305**	**100**
	Employed	252	82.6
	Unemployed	25	8.2
	Student	9	3.0
	Retired	19	6.2
Members of household	**Total**	**304**	**100**
	1	42	13.8
	2	75	24.6
	3	83	27.2
	4	68	22.3
	5	36	11.8
Children in household under 15 years old	**Total**	**293**	**100**
	0	171	58.4
	1	67	22.9
	2	42	14.3
	3	12	4.1
	4 and more	1	0.3
Housing	**Total**	**305**	**100**
	Apartment	147	48.2
	House	158	51.8
The size of the living space in m^2	**Total**	**305**	**100**
	0 – 49.99	36	11.8
	50 – 89.99	117	38.4
	Equal to or greater than 90	152	49.8

Source: authors' work

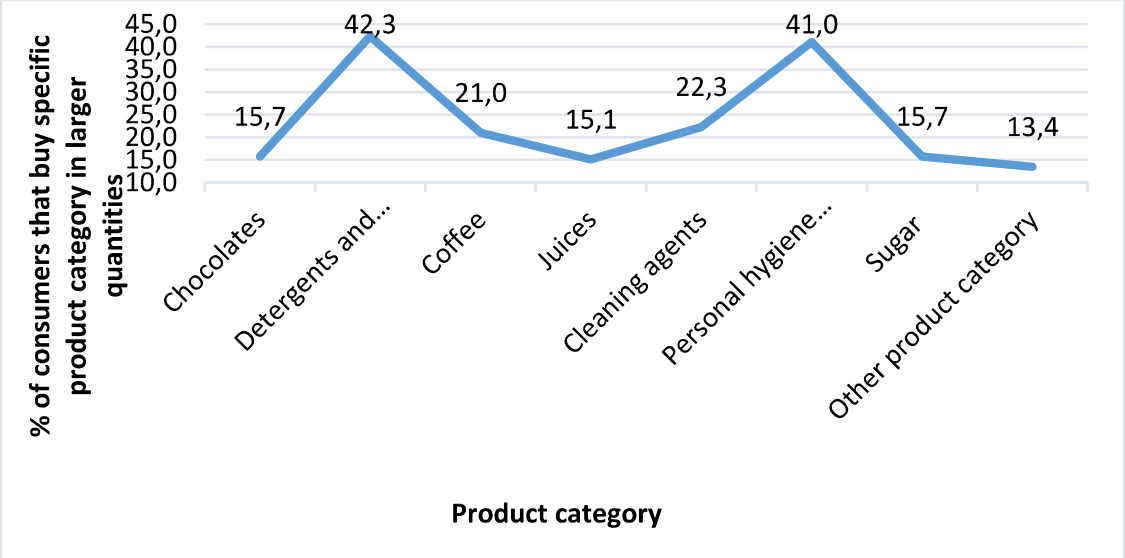
Survey questions were created based on Gangwar et al. (2014), Bell and Hilber (2006), but also authors' own contribution. Next chapter shows research results.

4. RESEARCH RESULTS

In order to find out whether respondents buy larger amounts of products, i.e. stockpile, they weren't directly asked whether they buy larger amounts of products, but to mark certain product categories that they buy in larger amounts. Among product categories, an option that they don't buy larger amounts of products was also offered. Most of the respondents marked one or more categories. While 70% of respondents buy in larger amounts, 30% of them marked that they don't buy any product category in larger amounts. These 30% of respondents are mostly two-member households (34.4%), but with no children (64.4%), mostly highly educated (65.6%), but with middle monthly household income (57.8 %). It is interesting that there is no difference whether they live in the apartment (50%) or house (50%) and that majority of them have large living space, more than 90 m^2 (44.74%). Those who are prone to stockpiling of at least one product category are mostly three-member households (30 %), but also mostly without children (54.6%). Most of them are highly educated (55.9%) and with middle monthly household income (55.7 %). They live mostly in house (52.3%) and have living space larger than 90 m^2 (51.9%).

Specific product categories which are bought in larger amounts are shown in the Graph 1. Majority of respondents buy washing detergents and softeners (42.3%) and personal hygiene products (41%), such as shampoos or shower gel, followed by cleaning agents (22.3 %). Food products like juices (15.1%), sugar (15.7%) or coffee (21%) are less often bought in larger amounts for future consumption. This could be logically described with product characteristic of longer expiry date as one of the most important physical characteristic when deciding in which product category on price promotion consumer will do stockpiling.

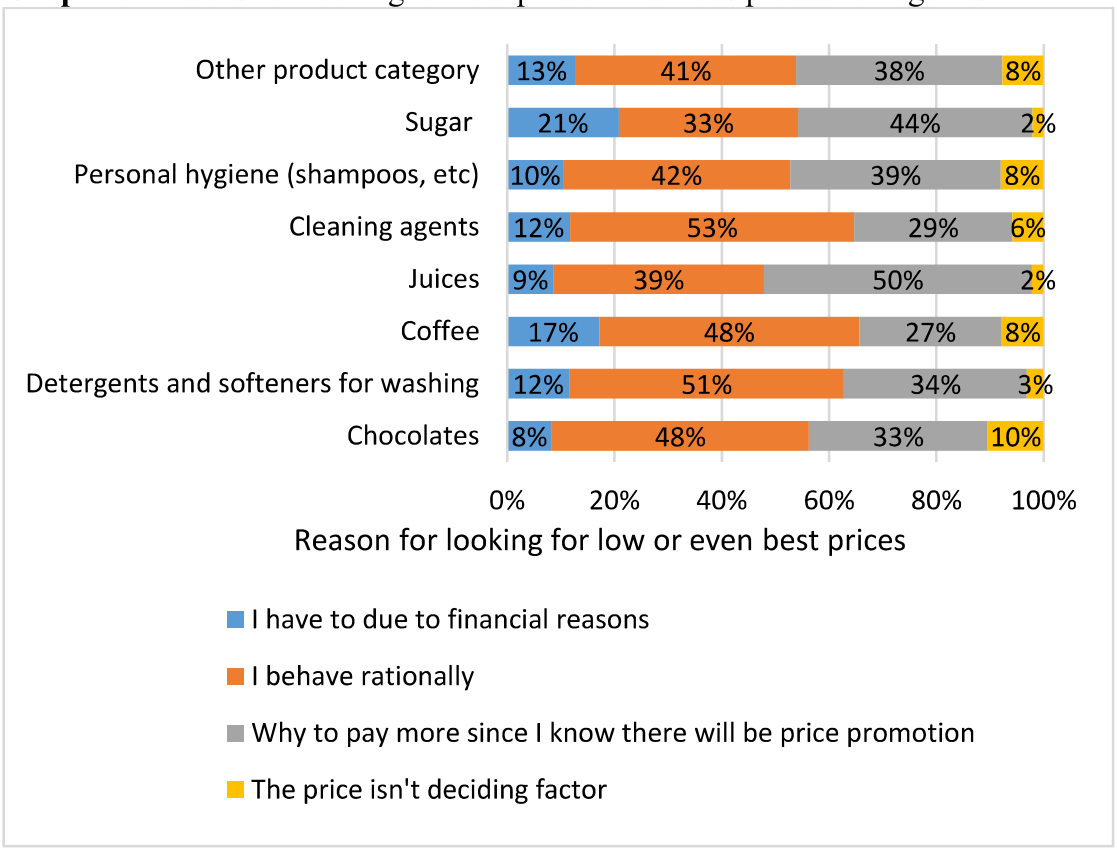
Graph 1. Buying larger amounts of various product categories



Source: authors' work

For different product categories, consumers look for low or even best prices in the market due to the different reasons. Graph 2 shows those reasons of respondents that buy certain product categories in larger amounts. Scores for all product categories are not equal to 100 % due to decimal rounding.

Graph 2. Reasons for looking for low prices of various product categories

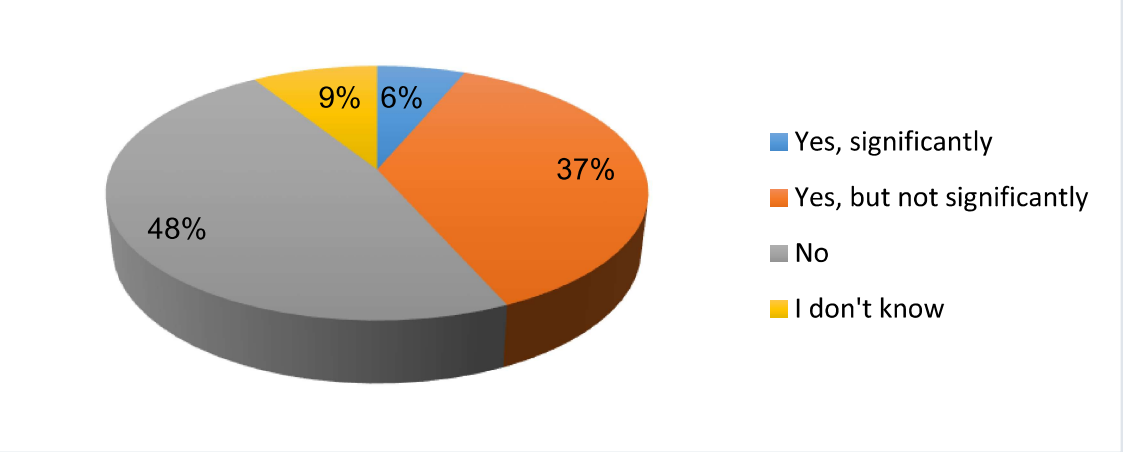


Source: authors' work

Financial reasons are most represented among two food categories – sugar (21%) and coffee (17%). Rational behaviour is most present among non-perishable categories, which are also quite financially demanding – cleaning agents (53%) and detergents and softeners for washing (51%). For the category of juices (50%) respondents mostly calculate because of the future regular price promotions to which they are accustomed. The price isn't deciding factor mostly for chocolate (10%), coffee (8%) and personal hygiene (8%).

Graph 3 shows the perception of respondents whether higher household inventory of products lead to increased consumption. Majority of respondents (48%) believe that higher household inventory doesn't encourage their increased consumption. However, significant proportion of respondents (43%) think that they increase their consumption, but only 6% of them significantly.

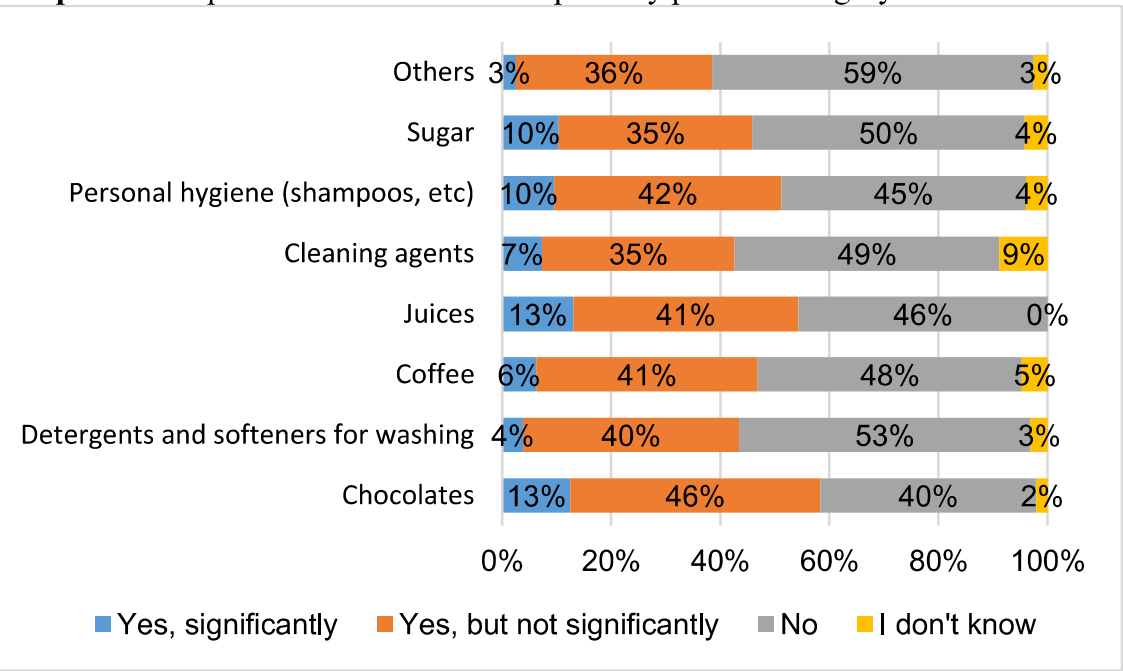
Graph 3. Perception of increased consumption due to higher household inventory



Source: authors' work

Furtherly, graph 4 shows the perception of increased consumption by product category of the respondents who pleaded that they buy certain product category in larger amounts. As for the graph 2, due to decimal rounding scores for all product categories are not equal to 100 % . The largest perception of increased consumption is in categories of chocolates (59%) and juices (54%). It is interesting that a large percentage of respondents find increased consumption within personal hygiene category (52%). On the other hand, the largest percentage of respondents perceive no increased consumption in the category of detergents and softeners for washing (53%), sugar (50%), cleaning agents (49%) and coffee (48%).

Graph 4. Perception of increased consumption by product category



Source: authors' work

For the purpose of this study and stockpiling constraints research, authors developed two three-item scales, for *space constraints* in the household for buying larger amounts of products and for perception of extra inventory in the household as a *good investment* (budget constraint). Scales consisted of three statements measured in five-point Likert scales. Table 2. presents the complete item scale.

Table 2. Item scale

Space constraints	The amount of product I buy on the price promotion is limited to the available space in the household for product storage.
	The amount of product I buy on the price promotion is limited by the size of the product and the space it occupies.
	If I had more space in the household, I would buy larger amounts of products on the price promotion.
Good investment	Larger household inventories are a good investment if bought on a price promotion.
	I rather buy higher amounts at once on price promotion.
	It is better to keep larger amounts in the household than to waste time and money on frequent shopping.

Source: authors' work

Both created constructs have satisfying Cronbach's Alpha since 0.7 is considered to be an acceptable reliability coefficient[2]. Space constraints scale has 0.798 and extra inventory as a good investment 0.722 (Table 3).

Table 3. Reliability analysis of the constructs and descriptive statistics

Measurement scale	**Cronbach's Alpha**	**N of Items**	**Mean**	**Variance**	**Standard deviation**
Space constraints	.798	3	8.04	13.746	3.708
Good investment	.722	3	9.57	11.618	3.408

Source: authors' work

Table 4. shows the proportion of the variance in the dependent variable that is explained by this model. R Square of .267 means that this model explains 26.7 % of the variance in buying larger amounts of products during price promotion that will be used until next price promotion (dependent variable).

[2] Nunnaly, J. (1978). Psychometric theory. New York: McGraw-Hill *cited in* Santos, J. R. A. (1999). Cronbach's alpha: A tool for assessing the reliability of scales. Journal of extension, 37(2), 1-5. Available at: https://www.joe.org/joe/1999april/tt3.php/journal-current-issue.php [accessed: March, 5 2017]

Table 4. Model summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.517[a]	.267	.262	1.251

a. Predictors: (Constant), Space_constraint, Good_investment

b. Dependent Variable: I buy larger amounts of products that will be used until next price promotion

Source: authors' work

The ANOVA results are shown in the table 5. Considering that Sig = .000, i.e. p<0005, this indicates the statistical significance of the result in the Model summary table.

Table 5. ANOVA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	167.574	2	83.787	53.521	.000[b]
	Residual	460.259	294	1.566		
	Total	627.833	296			

a. Dependent Variable: I buy larger amounts of products that will be used until next price promotion.

b. Predictors: (Constant), Space_constraints, Good_investment

Source: authors' work

The following table 6 reveals which variable contribute to the prediction of the dependent variable. The Significance column indicates that space constraints in household is not statistically significant variable (p=0.350).

Table 6. Regression coefficient

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.753	.251		2.996	.003
	Good_investment	.223	.022	.522	10.323	.000
	Space_constraints	-.019	.020	-.047	-.937	.350

a. Dependent Variable: I buy larger amounts of products that will be used until next price promotion

Source: authors' work

On the other hand, perception of large amounts of products in household as a good investment has a significant positive influence on buying larger amounts of products during price promotions that will be used until next price promotion ($p=0.000$; $\beta=0.522$).

5. CONCLUSION

Encouraged by contemporary lifestyle, financial situation and retailers' offers, consumers are more prone to save the money or to save the time. Household's products stockpiling can save their time by reducing the frequency of necessary shopping trips, but stockpiling during price promotions can save them both, time and money. However, this kind of behaviour affects supply chain activities and efficiency.

More affected by stockpiling are retailers and members of their supply chain who use high-low pricing strategy and have occasionally deep price promotions, unlike those retailers who use EDLP strategy. They have significant logistical issues due to unstable and irregular demand incurred by short-term price promotions. The occasional price promotion became quite regular over a certain period of time that consumers got accustomed to them and include them into account of what, when and how much to buy. On the other side, consumers take into account their constraints as well, which usually manifest in the form of budget or liquidity constraints, household's space constraints, time constraints, etc.

Research has shown that most consumers are prone to buy products for future consumption, i.e. to stockpiling (70%) of various product categories. The most common are non-perishable product categories and also products that do not lead to higher consumption - washing detergents and softeners, personal hygiene products and cleaning agents, unlike chocolates or juices that could lead. Furtherly, detergents and softeners are bulky and highly space demanding products and despite that are very often bought in large amounts, most likely due to large money saving during price promotions. Previously confirms the results obtained using regression analysis which suggest that space constraints is not statistically significant variable. However, budget and liquidity constraints, which are turned in this paper as perception of extra inventory in the household as a good investment, proved to be significant in deciding on purchasing amount of products that will be used until next price promotion. Further research should be done in other countries with different disposable income (or/and life standard), and available living space then in Croatia to validate these conclusions.

Research also showed different reasons for looking for low prices of product categories that are bought in larger amounts, but in all product categories prevail rational behaviour and awareness of price promotion.

Results also show that significant proportion of respondents (43%) believe that higher household inventory of products lead to increased consumption which is most present among those respondents who buy food categories in larger amounts – chocolates and juices. Increased consumption is the least present for non-perishable categories – cleaning agents and detergents and softeners.

Findings in this study once again imply retailers that price promotions could lead to logistical challenges because of the large number of consumers who are prone to stockpiling. They should take consumer stockpiling behaviour into account when forecasting demand. Also, they should try to focus even more on product categories with potential for increased consumption as those who would attract consumers in the store and minimize deep price promotions of product categories like detergents, softeners and personal hygiene products. They need to keep in mind that consumers' household space constraints or the product size are less likely to negatively affect the stockpiling if consumers find their offer as a good investment, what means to stockpile and leave the market for certain period of time.

Research limitations arise from geographically restricted area from which the included respondents come, own assessment of the respondents which may differ from the actual behaviour and few independent variables included in the regression model.

Future research should give special attention to the problem of food waste in the supply chains caused by the consumer products stockpiling in the households. When it comes to regression model used in this paper, future research should include more independent variables, e.g. time constraints, in order to identify more statistically significant variables and achieve higher explanation of the variance within the model. Including larger geographic area and representative sample in the survey would also be preferable. However, if possible, panel data would give even better insight in consumer stockpiling with more accurate information.

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