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Expression of Irrationality in Consumer Behaviour: Aspect of Price Perception

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Consumer decision-making and its determining factors have been analysed by a number of marketing researchers; however, the majority of studies concentrate on the rational approach. Although sporadic, recent theoretical and empirical studies reveal that researchers of consumer behaviour should also place considerable attention on the analysis of issues related to consumer irrationality. In order to disclose the expression of consumer irrationality in decision-making related to purchasing and consumption, scenarios associated with price perception were chosen for analysis in this paper allowing determination of a possible economically rational decision and a comparison with decisions made by consumers thereof. Theoretically sound assumptions in relation to consumer irrationality expression in the context of price perception and relations with consumer behaviour were tested on fast-moving consumption goods (FMCG). In the study of experimental scenarios, the authors of the paper analysed 8 assumptions related to irrationality expression in the context of price perception. In the case of FMCG, 6 assumptions were confirmed as significant from the perspective of irrational price perception, of which 5 were at the company level and 1 at the consumer level. In order to reveal possible relations between irrational price perception and consumer behaviour, a survey of experiment participants was performed. The results demonstrated a significant relation between these variables in terms of all the assumptions confirmed during the experiment.

Keywords: *Irrationality, Consumer Behaviour, Price, Experiment.*

Introduction

Changing lifestyles, habits and interests affect typical consumption patterns. This has been proved by Kasriel-Alexander (2015) who identified 10 global consumer behaviour trends associated with the need of buying convenience, perception of consumption as a route to progress, feeling like influencers, experience sharing, priorities given to purchases and shopping malls operating in the community mode, importance of the millennial generation, attention to privacy, global trade, virtual and real space convergence, and reliance on information provided on the internet. A more comprehensive analysis of global consumer behaviour trends allows observing that some trends are characterised by more or less obvious consumer irrationality expression.

In order to forecast contemporary consumer behaviour in the decision-making process, there is a need to get familiar with the expression of consumer irrationality in information processing, price evaluation, and choice of brands. Studies that have been conducted so far allow making an assumption that the consumer rationality/irrationality contrast, in comparison with other contexts, may be most evident in terms of price perception. On the other hand, relations between consumer irrationality and price perception (Basu, 2006; Spann & Tellis, 2006; Peine, 2008; Ariely, 2008; Pospisil, 2010; McKenzie & Lee, 2010; Asamoah & Chovancova, 2011; Trevisian & Lanciotti, 2012) may be considered to be among the least analysed consumer-behaviour-related spheres.

Consumer irrationality from the perspective of price may be explained by the effects of transaction, separation, endowment, overvalue, image and zero price (Ariely, 2008; Asamoah & Chovancova, 2011; Trevisian & Lanciotti, 2012). The choice of the price that is appropriate for a consumer may be also affected by the principles of standard price, discount, price sensitivity and price stimuli limit. Price perception varies depending on purchasing space, i.e. physical or online store (Jensen *et al.*, 2003; Spann & Tellis, 2006), or method of payment (Van der Horst & Matthijsen, 2013). Besides, the final decision to purchase is also influenced by the amount of information related to the price of a product (Gneezy and Nelson, 2009). In order to reveal the expression of consumer irrationality in making purchasing- and consumption-related decisions, the above-mentioned authors have analysed situations associated with price perception, allowing determination of an economically rational decision and a comparison with a decision made by a consumer thereof.

In respect of attention paid to the sphere of irrational price perception and timeliness as well as controversial aspects of research, this paper formulates the following questions of concern: what assumptions determine expression of consumer irrationality in the context of price perception and how does consumer behaviour vary depending on that?

The purpose of this article is to reveal assumptions about consumer irrationality expression in the context of price perception and to substantiate relations between irrational price perception and consumer behaviour in the case of FMCG.

In order to achieve this aim, the paper integrates theoretical analysis of assumptions related to irrationality expression in the context of price perception and their relations with consumer behaviour as well as the methods of experiment and survey.

The paper is organised as follows: theoretical assumptions about irrationality expression in the context of price perception are defined, research methods are substantiated and results are provided, which are followed by the main conclusions and further research directions.

Consumer Irrationality and Price Perception: Literature Review

The conducted analysis of research studies on relations between consumer irrationality and price perception (Peine, 2008; Ariely, 2008; Basu 2006; McKenzie & Lee, 2010; Asamoah & Chovancova, 2011; Pospisil, 2010; Trevisian & Lanciotti, 2012) demonstrated evident expressions of consumer irrationality in terms of price even though price is based on economic indices and, thus, is understood as a criterion in the evaluation of alternatives, based on which a rational decision may be made.

According to Asamoah and Chovancova (2011), in price evaluation, consumer feelings are inseparable from perceptions. The process of price perception is not direct and depends on perceiver's expectations, previous knowledge, generated information and stimuli. Due to this, price perception is often expressed through irrational consumer behaviour. Such empirical studies are scarce, and only a few authors (Jensen *et al.*, 2003; Spann & Tellis, 2006; Peine, 2008; Gneezy & Nelson, 2009; McKenzie & Lee, 2010, Van der Horst & Matthijsen, 2013) have revealed various aspects of irrationality related to price perception.

In a study by Jensen *et al.* (2003) aimed at finding out how online advertising and its method of presentation may determine price perception of products offered on the internet and physical stores, the researchers found that the majority of consumers expected lower prices at stores on the internet than at physical stores. A possible cause of such a belief is that consumers associate virtual stores with lower overheads in business development and expect this to be reflected on the prices of offered products. Due to perceived easy access to the internet, users may think that by way of available simple comparison of competitive prices they force sellers to lower prices. Broad internet search is perceived to be an easy and fast way compared with search for prices at traditional trade companies. In order to substantiate this, the researchers conducted a survey of students to find out how the use of reference prices in online advertising affected a consumer's perceived price for products purchased at a real or an internet store and how the use of prices in online advertising affected consumers' intentions to look for information about a better price at websites and real stores. It was observed that the given price had a lower positive influence on price perception on the internet than at a physical store. Intentions to search for information in real environment were greater than intentions to search for information on the internet.

Spann and Tellis (2006) admitted that irrational consumer behaviour was evident in the evaluation of price perception in virtual environment, i.e. the internet. The researchers studied price perception at internet auctions where consumers offered their own price.

In defining their perceived price, auctions provide a consumer with a possibility to get a price that is lower than their reservation price but close to marginal costs of a seller. However, the majority of consumers do not benefit from the price setting mechanism to get their expected low price. The researchers found out that inexperienced consumers tended to set a higher price at such auctions than real prices offered by sellers. Such examples are evident models of irrational price perception. The research results revealed contradictions in the evaluation of a consumer rationality assumption in virtual environment, which is supposed to be a facilitator for consumers in decision-making.

Peine (2008) studied price effects, price perception and consumer behaviour, employing several scenarios related to price, both high and low. In the study, the researcher measured the price effect using 24 emotions. Consumers were asked to express those emotions that they experienced during decision-making rather than those that they expected to occur when the benefit of decision-making was realised. The difference between positive and negative emotions was assessed according to the evaluation theory, i.e. the difference between motivating and non-motivating events, accordingly. Price perception was measured when consumers were asked to evaluate the value for money and to indicate how they perceived price (non-)fairness. Perceived price and perceived fairness of price were considered appropriate constructs of price perception due to 2 reasons. First, evaluation of information regarding price in terms of its value and fairness requires some cognitive efforts. Second, perception of value and price fairness is closely associated with consumer behaviour, which was evaluated using 2 main intentions (wish to disseminate positive verbal recommendations and intention to buy). The research results revealed that there were 9 dominant emotions of 24 intended for measurement of price effects. The emotions that demonstrated negative price effects were unhappy, blue, fearful, sluggish, and sad; positive price effects were demonstrated by pleased, happy, elated, and active. All the 9 emotions were expressed in the case of both scenarios. The research confirmed that an increase in perceived price also enhanced a negative price effect and reduced a positive one. Besides, it was also observed that a negative price effect was related to passive consumer behaviour, and positive – with active. The results of this research allow stating that consumers are sensitive to changes of price and are ignorant of additional facts related to changes in price in the case of evident price comparison.

Gneezy and Nelson (2009) in their study aimed at determination of influence of information about price on the perceived quality of a product found out that consumers often lacked time, experience and stimulus in order to evaluate the real price of a product; therefore, products with higher prices were often evaluated as higher quality. In order to prove that high price in fact reduced the perceived quality, the researchers conducted an experiment where they gave a cookie of an unknown brand to taste and evaluate to 3 groups of participants. For the purpose of creating a negative experience, the given cookie was not fresh but a week's old. Three possible prices (low, medium and high) were offered. Participants of the experiment evaluated a cookie of higher price as lower quality. In order to make sure whether the real quality of a product was significant, the researchers conducted another experiment. The results confirmed that in the case of a higher product quality the perceived value of a

product was directly related to a higher price. When the product quality was lower, no direct relations between the analysed variables were found. In order to ascertain whether information may influence experience when it is provided before use, Gneezy and Nelson (2009) conducted a third experiment. One group was provided with information about price before tasting a cookie and another group after tasting it. When participants were told the price before tasting, a high-priced cookie seemed to be less tasty than a medium-priced cookie; however, when information about the price was provided after tasting, no such effect was observed.

According to Van der Horst and Matthijsen (2013), price perception may be irrational when choosing a payment method. The researchers claim that a phenomenon of payment-related pain exists and describe it as a direct and immediate discomfort or pain occurring during the payment process. There is a positive relation between payment-related pain and the amount of money paid. The results of the conducted study demonstrated that payment in cash or by bank card was not a conscious decision, but ritual and hard to affect. Payment in cash caused more positive emotions than payment by debit card. The conducted research showed that consumers liked to have cash even though they did not intend to spend it in the near future. Both debit and credit cards activate automatic behaviour regardless of whether a subject performs a transaction or only considers to do so. Transactions performed in cash are more evident than electronic transactions. Such evidence provides greater payment-related pain, which deters consumers from large purchases and impulsive decision-making. However, the researchers also determined an inconsistency between theory and neuroscientific research results. Theoretically, payment in cash produces greater payment-related pain than payment by card; meanwhile, neuroscientific research has shown that payment in cash is associated with positive emotions. Besides, it has also been observed that young consumers – even those who mostly claim to perform debit card payment – demonstrate a greater unconscious and automatic tendency of payment in cash than older age consumers.

In summary of empirical results regarding expression of consumer irrationality, price perception may be observed to vary depending on the purchasing space, i.e. physical or online store, and on the payment method, i.e. cash or card. Moreover, the final decision whether to buy is affected by the amount of information associated with price. Consumers are sensitive to changes in price: upon increase of price, they do not tend to clarify the reasons causing such a change. Consumers also positively react to a provided comparison of prices showing obvious differences between compared prices of products.

Assumptions of Consumer Irrationality Expression in the Context of Price Perception and Relations with Consumer Behaviour

The assumptions related to expression of consumer irrationality in the context of price perception are distinguished at 2 levels: company and consumer (Table 1).

Table 1

Assumptions related to consumer irrationality expression in the context of price perception

Level	Description / substantiation of an assumption
Assumptions at the level of the company	Inclusion of an additional proposal element. This assumption is based on the transaction effect described by Trevisian and Lanciotti (2012). The theory claims that upon inclusion of an additional element of proposal consumers are encouraged to choose it only because of greater benefit obtained for the same price (although consumers do not consider the proposal as necessary before its inclusion). Use of odd prices as an assumption related to irrational price perception has been identified on the basis of the overvalue effect distinguished by Asamoah and Chovancova (2011). It may be claimed that prices formed of odd numbers, most frequently number 9 (e.g. 19.99), force consumers to think that the price is lower than it is in reality. Correction of rightmost digits. This assumption is based on the image effect identified by Asamoah and Chovancova (2011). The hypothesis is formulated that prices wthat end with digits 99 will be perceived by consumers as prices of special proposals, e.g. those that have a discount. Zero price determination. This assumption originates from the zero price effect proposed by Ariely (2008). Such an assumption is based on the idea that the use of the word "free" in a proposal (e.g. a free cup when buying coffee) makes it more attractive to consumers and the demand for the offered product increases. Higher price for higher quality products. This assumption is related to the results obtained by Gneezy and Nelson (2009). When the quality of offered products is not good enough, a higher price may be set than the product is in fact worth. In respect of this assumption, it may be claimed that the quality is assessed to be better if a higher price is set. Price comparison. On the basis of the results of the research conducted by Jensen *et al.* (2003), an assumption is made that consumers are more favourable towards the price if they are informed about a comparative price of another product. Enhancement of price. This assumption has been distinguished in the study by Peine (2008). On the basis of the study results, it may be stated that consumers are not favourable towards the price if it is enhanced, regardless of the reasons. They are not interested in the circumstances of price enhancement and immediately perceive it as an unfair price. Therefore, if a price of a product needs to be enhanced, it should be done with care and such a price increase should be less obvious to consumers.
Assumptions at the level of the consumer	An assumption defining the choice of payment method has been formulated according to the separation effect distinguished by Trevisian and Lanciotti (2012) and the research results obtained by Van der Horst and Matthijsen (2013). These allow claiming that consumers perceive the size of price more clearly when they pay in cash. When consumers choose to pay by card, the amount spent does not seem to be so big and consumers tend to forget the purchasing process and the amount spent. Experience in product use. This assumption is related to an endowment effect distinguished by Trevisian and Lanciotti (2012). It may be claimed that consumers value those items which they possess. According to this assumption, consumers would value the product more if they were allowed to try and use it before buying.
Assumptions at the level of the consumer	Emotional status, as an assumption of irrational price perception, is based on the provisions by Elliot (1997), Trevisian and Lanciotti (2012), Pospisil (2012) as well as the findings of studies by Peine (2008) and Van der Horst and Matthijsen (2013). In regard of this, it may be generalised that price perception changes depending on the emotional status of consumers, which affects their intention to buy a product and disseminate verbal recommendations about it. Purchasing space. The need to identify this assumption has been argued by Chen *et al.* (2005), Spann and Tellis (2006), and Jensen *et al.* (2003). On the basis of insights of the mentioned researchers, it may be formulated that consumers tend to exert less effort in search for information about a product and its price at an internet store than at a physical store.

In order to foresee the consequences of consumer behaviour under determined assumptions, it was important to recognise irrational price perception effects. According to the behaviour marketing model defined by Peine (2008) and with the purpose to adapt it to the analysed situation, the price information construct was identified with defined assumptions at the level of the company and the consumer. Following the results of the research conducted by Peine (2008), price perception determined by these assumptions consists of the variables of perceived price value and perceived price fairness and is associated with consumer-behaviour-related consequences. On the basis of Peine's results (2008), consumer behaviour is characterised by 2 dimensions, i.e. the intention to buy or not to buy and the intention to disseminate verbal recommendations or its absence (Figure 1).

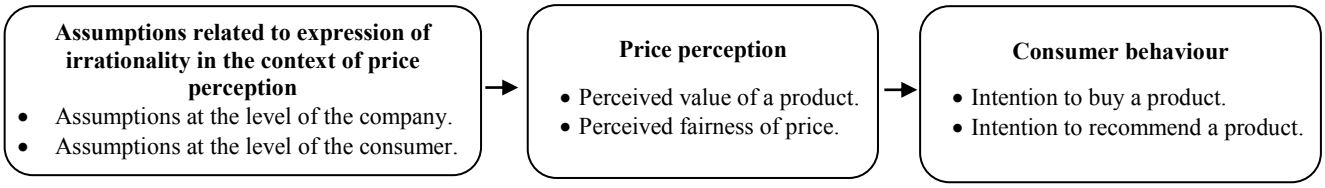

Figure 1. Assumptions related to irrational price perception by consumers and relations with consumer behaviour (adapted from Peine, 2008)

In summary of conducted theoretical studies, the defined assumptions related to expression of consumer irrationality were a reference point in foreseeing consumer behaviour consequences caused by irrational price perception. In order to establish the empirical basis for generalised theoretical provisions, the authors of the paper tested the assumptions related to expression of irrationality in the context of price perception and relations with consumer behaviour thereof in the case of fast-moving consumption goods.

Research Design

For the empirical research of consumer irrationality expression in the context of price perception, a strategy associated with a qualitative social research approach was chosen. The realisation of this strategy involves the application of the experiment method, used in many previous studies on irrational price perception and correlations with consumer behaviour thereof (Basu, 2006; Ariely, 2008; Peine, 2008; Gneezy & Nelson, 2009; Trevisian & Lanciotti, 2012; Van der Horst & Matthijsen, 2013).

Experiment is regarded as the main research method in the conducted study of consumer irrationality expression in the context of price perception. According to Bradley (2013), for the processing of information related to the price of a product, experiment is the most common method where survey is also employed. Based on this provision, the conducted research was separated into 2 stages. In Stage 1, purchasing scenarios were modelled with the aim to identify which of them demonstrated the greatest irrational price perception. The results of this study allowed distinguishing significant assumptions related to consumer irrationality expression in the context of price perception, in the case of which relations between irrational price perception and consumer behaviour were studied. For these purposes, the survey method was employed in Stage 2 of the study.

Of note, the research was based on the study by Peine (2008). During the experiment, the research participants were presented with designed scenarios, which had originated from the assumptions related to consumer irrationality expression in the context of price perception. They were used instead of the price-related information construct employed in Peine's (2008) study.

In order to determine relations between irrational price perception and consumer behaviour regarding the selected assumptions, a survey was conducted. For the purposes of this research instrument, questions and scales of analysed variables applied in Peine's (2008) research were employed.

Stage 1 of empirical research: modelling of experimental scenarios. By way of a laboratory experiment, a quasi-experimental research type was used, i.e. the experiments involved 2 groups; however, the groups were not identically similar, but were selected according to unified parameters resulting in sufficient similarity of the chosen groups.

All the experimental scenarios were modelled for fast-moving consumption goods. The experiment participants were selected according to whether they reported buying fast-moving consumption goods at least once per week. Two groups were necessary (experimental and control). An equal number of the participants was taken to be the main criterion in selection. Another important condition was a similar distribution of the participants in different groups in terms of 3 criteria: gender, age and income (Kardelis, 2002). In the experiment, 8 different purchasing-related scenarios were modelled. They were to illustrate expression of 8 assumptions shown in Figure 1. Although the authors of the paper provided 11 assumptions, only 8 were tested in this experiment (6 at the level of the company and 2 at the level of the consumer). Enhancement of price (assumption at the level of the company) and choice of the payment method as well as emotional status (assumptions at the level of the consumer) were rejected. The assumption of choice of the payment method was eliminated from further research because specific tools for neuromarketing research are necessary for substantiation of such an assumption, and there were no possibilities of employing such tools in this study. Elimination of emotional status is justified by the fact that emotional reactions caused by created scenarios are required in order to substantiate this assumption. This aim could be achieved in a neuromarketing research study. The assumption about

price enhancement was rejected because it should be tested in a different way, i.e. by subjecting both scenarios to the same group and not to 2 different groups. Meanwhile, the logic of this particular research was based on the fact that an experimental scenario modelled according to the studied assumption was tested in the experimental group, and the control group was subjected to the scenario where such an assumption was absent.

The participants in both the experimental and the control group were subjected to 8 different scenarios where they were asked to choose the most appropriate variant out of several possible, to answer a question about a cookie upon tasting it, and to answer open questions regarding the provided visual information. The results were analysed comparing the percentage distribution of answers of both groups, and a greater than 10 % difference in distribution of answers was regarded as crucial in terms of irrational price perception.

This approach was based on experience in previous conducted research studies (Spann & Tellis, 2006; Ariely, 2008; Trevisian & Lanciotti, 2012).

Stage 2 of empirical research: survey. In Stage 2 of empirical research, the participants of both groups, who gave consent as to further participation in the research, were asked to take part in the survey and fill in the questionnaire, which consisted of 4 questions: 2 for the purpose of identifying price perception and the other 2 for determining consumer behaviour consequences in the case of all confirmed assumptions. The questionnaire was sent by e-mail to all the participants of the experimental research who agreed to take part in the survey; it was also disseminated over social networks. Correlation analysis was employed for data processing.

Research Findings

Experiment. The final number of the experiment participants was 82 consumers of fast-moving consumption goods. There were 41 participants in the experimental and the control group each. The majority of the participants in both groups were 26−40 year old women, whose average monthly income was EUR 500−1000.

Scenario 1: inclusion of an additional proposal element. This scenario was aimed at testing the assumption about the inclusion of an additional proposal element. The scenario was created on the basis of the experiment with an electronic and a paper version of a newspaper, as described by Trevisian and Lanciotti (2012). The participants of the experiment were subjected to 2 situations with a choice available. The first scenario was intended for the experimental group. The participants had to choose between a paper version of a newspaper for EUR 1.50, an electronic version for EUR 1, or both an electronic and a paper version for EUR 1.50. In the second scenario, which was intended for the control group, an electronic version of a newspaper was offered for EUR 1 and both electronic and paper versions together for EUR 1.50. In the experimental group, 56.1 % chose both an electronic and a paper version together, 34.1 % chose an electronic version, and 9.8 % chose a paper version. In the control group, like in the experimental group, 56.1 % chose both an electronic and a paper version together and 43.9 % chose an electronic version of a newspaper. Because the majority of the experiment participants chose both an electronic and a paper version together even if they were not offered an additional proposal, the assumption about the inclusion of an additional proposal element was denied.

Scenario 2: odd pricing. The scenario was aimed to substantiate and deny the assumption related to odd pricing. In order to test this assumption, the experiment described by Basu (2006) was used. The participants were divided into 2 groups. The participants in one group were offered to buy a bottle (1 L) of mineral water for EUR 0.47 or a bottle of a soft drink for EUR 0.50. The participants in the other group were offered a bottle of mineral water (1 L) for EUR 0.48 or a bottle of a soft drink (1 L) for EUR 0.50. In the experimental group, 75.6 % of the participants chose mineral water and 24.4 % a soft drink. Meanwhile, in the control group, 53.7 % chose mineral water and 46.3 % a soft drink. The assumption about odd pricing was considered confirmed because the number of the participants who chose mineral water was by 20 % greater in the experimental group than in the control group.

Since the assumption was confirmed, it was decided to test the differences in irrationality expression in different demographic groups. The tendencies were tested according to age since it was speculated that older age people tended to drink mineral water rather than soft drinks and younger vice versa. In the experimental group, the majority of the participants in all age groups chose mineral water: 66.7 % in the age group 18−25; 78.9 % in the age group 26−40; 72.7 % in the age group 41−60; and 100 % among those aged 61 and older. In the control group, the majority of the participants of 18−25 and 41−60 years old chose soft drinks, 63.6 % and 54.5 %, respectively. The majority of the participants in the age groups 26−40 and over 61 years old chose mineral water, 62.5 % and 100 %, respectively.

Thus, in both groups, the participants who were older than 61 years chose mineral water regardless of the given price, which may be explained by the fact that consumers of such age do not tend to consume soft drinks at all.

Scenario 3: correction of rightmost digits. This scenario was aimed at disclosing the significance of the assumption regarding the use of the digits on the right in the price. This assumption, like in scenario 2, was based on the experiment described by Basu (2006). The participants were divided into 2 groups. One group was offered to purchase a bottle of sparkling wine for EUR 3.99 or cider (0.5 L) for EUR 1; the participants in the other group were offered to buy a bottle of sparkling wine for EUR 4 or cider (0.5 L) for EUR 1. In the experimental group, 75.6 % of the participants chose to buy sparkling wine and 24.4 % cider. In the control group, 61 % of the participants chose sparkling wine and 39 % cider.

Since the number of the participants who chose sparkling wine was lower by 14.6 % when the price was rounded up to even digits (greater than 10 % difference), the assumption of correction of rightmost digits was considered confirmed.

Because this assumption was confirmed, differences in the expression of irrationality were tested in different demographic groups. The tendencies were tested according to age, as it was considered possible that older age people

tended to prefer sparkling wine to cider and younger vice versa. It is commonly believed that cider is preferred by younger consumers. In the experimental group, the majority of the participants of all the age groups preferred sparkling wine: 77.8 % among those aged 18−25; 68.4 % among those aged 26−40; 81.8 % among those aged 41−60; and 100 % among those aged 61 and older. In the control group, except for those aged 41−60, the majority of the participants also chose sparkling wine: 81.8 % in the age group 18−25; 56.3 % in the age group 26−40; and 100 % in the age group 61 and older. The participants who were 41−60 years old chose cider (63.6 %).

In both groups, the participants in the oldest age group preferred sparkling wine most probably because they did not tend to drink cider. Irrationality in terms of price perception was most evident in the age group 41−60. In comparison with the experimental group where the price of sparkling wine was changed, the majority of the participants in this age group chose sparkling wine. This was also evident among the participants in the age group 26−40 because there were by 12.1% fewer participants in the control group than in the experimental group who chose sparkling wine while the percentage distribution was similar or equal in other age groups.

Scenario 4: zero price setting. This scenario was used to test the consumer behaviour expression in relation to zero price. The scenario was based on the experiment conducted by Ariely (2008) where chocolate and high quality truffles were used. In our study, a chocolate bar and a box of chocolate sweets were used. The participants in the experimental group were offered a chocolate bar for EUR 0.00 and a box of chocolate sweets for EUR 0.70. The control group were offered a chocolate bar for EUR 0.30 or a box of chocolate sweets for EUR 1. In the experimental group, 80.5 % of the participants chose a chocolate bar and 19.5 % preferred chocolate sweets in a box. In the control group, 61 % of the participants chose a box of chocolate sweets and 39 % preferred a bar of chocolate. Since the majority of the participants chose a bar of chocolate when it was offered for free and a box of chocolate sweets when a bar of chocolate was offered for a particular price, the assumption about zero price setting was considered confirmed.

Differences in expression of irrationality were also observed in different age groups. It is commonly thought that older age consumers tend to buy chocolate sweets in boxes rather than bars of chocolate and younger consumers vice versa. The majority of the participants in the experimental group chose a bar of chocolate, except for those aged 41−60 who chose chocolate sweets in a box (63.6 %). The participants in the age groups 18−25 and 61 and older preferred a bar of chocolate (100 %). In the control group, 90.9 % of the participants aged 41−60 chose a box of chocolate sweets instead of a bar of chocolate, and 100 % of the participants in the age group of 61 and older also chose a box of chocolates. Meanwhile, the participants aged 26−40 chose a bar of chocolate (62.5 %) rather than a box of chocolate sweets, and more than half of the participants aged 18−25 (54.5 %) chose a box of chocolate sweets.

The lowest expression of irrationality was observed in the age group 41−60 since the majority of the participants in this group chose a box of chocolate sweets even if the zero price component was used. In all the other groups, zero price served as a stimulus for irrationality because the majority of the participants in all the groups except for the age group 18−25 chose a box of chocolate sweets when a bar of chocolate was offered for a particular price. However, even among those aged 18−25, this difference was evident because there were 45.5 % fewer participants in the control group who chose a chocolate bar than in the experimental group. The greatest expression of irrationality in terms of zero price perception may be observed in the group of the participants aged 61 and older: 100 % of the participants chose a bar of chocolate in one scenario and 100 % of the participants preferred a box of chocolate sweets in the other.

Scenario 5: setting a higher price for high quality products. This scenario was modelled in order to find out whether the perception of the product value depends on its price when the set price is high. This experiment was based on Gneezy and Nelson's (2009) study conducted using fresh and a week's old cookies. Both research groups were asked to taste an analogous high quality cookie. The price for a cookie was set EUR 0.20 for the experimental group and EUR 0.10 for the control group. Both groups were asked to evaluate the quality of a cookie on a 7-point Likert scale where 1 referred to very low quality and 7 to very high quality. In the experimental group, the mean quality of a cookie was 5.12 and the most frequently chosen score was 6 of 7. In the control group, the mean quality of a cookie was 4.51 and the most frequently chosen scores were 3, 4 and 5. Since a cookie was evaluated as higher quality when a higher price was set, the assumption about a higher price for high quality goods was considered confirmed.

In terms of this assumption, differences in the expression of irrationality were thought to be possible between the participants with different income. Consumers with higher income are less sensitive to price; therefore, it may be considered that their perceived quality should not differ depending on price. In the experimental group, 38.5 % of the participants with the lowest income evaluated the quality of a cookie as 4 points; 26.3 % of the participants in the group of EUR 501−1000 income evaluated it as 5 points; half of the participants (50 %) in the group of monthly income EUR 1001−1500 evaluated the quality of a cookie to be 6 points; the major part of the participants (66.7 %) with the highest income evaluated it as 6 points.

In the control group, the quality of a cookie was evaluated as 6 points by 36.4% in the group of the participants with monthly income EUR 500 and lower; as 5 points by 35 % of the participants with income EUR 501−1000; as 3 by the greatest part (71.4%) of the participants with income EUR 1001−1500; and as 4 points by 66.7% in the group of the participants with the highest monthly income.

The lowest irrationality in quality evaluation in terms of price was observed in the group with EUR 501−1000 income per month and the highest in the group with EUR 1001−1500 income. It is interesting to note that the lowest income group, unlike all other groups, evaluated the quality lower when the price was bigger. On the basis of these results, a tendency may be observed that consumers

with lower income consider the quality of a product as lower when the price is lower, and consumers with higher income associate high quality with high price.

Scenario 6: use of price comparison. This scenario was aimed at finding out whether a comparison of prices provided determined any changes in consumer behaviour. On the basis of the study by Jensen *et al.* (2003), 2 leaflets were shown to the research participants. One of the leaflets advertising a toothpaste listed its advantages and provided a price EUR 2.50. The other leaflet of an analogous toothpaste provided a note next to the current price EUR 2.50 about its previous price EUR 3.00. The research participants were shown both leaflets and were asked whether they would buy an advertised toothpaste. They were asked to rate their intention to buy this toothpaste on a 7-point Likert scale where 1 referred to completely disagree and 7 to completely agree. In the experimental group, 26.8 % of the participants completely agreed that they would buy such a toothpaste, and 4.9 % completely disagreed. The mean score for the intention to buy was 4.88 points of 7. In order to get more specific research results, the scores of agreement (total score of the answers *completely agree* and *agree*) and disagreement (total score of the answers *completely disagree* and *disagree*) as well as neutral position were distinguished. Their distribution in percentage was provided. The results were as follows: 29.3 % disagreed that they would buy a toothpaste for the price offered; 7.3 % were neutral; and 63.4 % agreed to buy such a toothpaste.

In the control group, 12.2 % of the participants completely agreed to buy this toothpaste, and 9.8 % completely disagreed. The mean score for the intention to buy was 4.15 of 7. In order to get more specific research results, the scores of agreement (total score of the answers *completely agree* and *agree*) and disagreement (total score of the answers *completely disagree* and *disagree*) as well as neutral position were distinguished. Their distribution in percentage was provided. The results were as follows: 34.1 % disagreed that they would buy the toothpaste for the indicated price; 17.1 % were neutral; and 48.8 % agreed that they would buy the toothpaste.

Since the provided comparative price was a greater stimulus for the participants to buy the product, the assumption related to a provided comparative price was considered confirmed.

In respect of this assumption, it was expedient to test the differences in expression of irrationality between genders and groups with income differences. This choice is grounded on the fact that women and consumers with lower income tend to react more favourably to discounts. In the experimental group, the greatest part of men evaluated their intention to buy this toothpaste as 6 and 7 points (25% each); among women, 28 % completely agreed that they would buy the toothpaste. According to income, in the group with the lowest income, the greatest part of the participants evaluated their intention to buy the toothpaste as 5 and 7 (23.1 % each); 31.6 % of the participants in the group with EUR 501−1000 income per month evaluated their intention to buy the toothpaste as 6 points. Meanwhile, in the group with EUR 1001−1500 income, the majority of the participants indicated the scores 3 and 7 (33.3 % each). In the group with the highest income, the evaluation of the intention to buy was distributed equally between 2.5 and 7 points (33.3 % each); however, there were no participants who completely agreed with the statement about the intention to buy the toothpaste. In the control group, the greatest part of men indicated 4 and 5 for the statement about the intention to buy the toothpaste (26.7 % each); 26.9 % of women indicated 5 points. In the group with the lowest income, 36.4% of the participants evaluated their intention to buy the toothpaste as 5 points. In the group with EUR 501−1000 income per month, 30 % of the participants indicated 3 points and in the group with EUR 1001−1500 income more than half of the participants (57.1 %) indicated 5 points. The highest income group evaluated their intention to buy the toothpaste as 4.5 and 6 (33.3 % each). There were no participants who completely agreed with the statement about the intention to buy the toothpaste in the highest income group and EUR 1001−1500 income group.

There were no great differences between men and women. The intention to buy the product when the comparative price was not provided decreased to a similar extent among men and women. In terms of income, the greatest price-related irrationality was observed in the group with EUR 501−1000 income because there was the greatest change in the evaluation of the intention to buy when the comparative price was not provided and in the group with EUR 1001−1500 income since there were no participants who completely agreed to the statement about their intention to buy the toothpaste when the comparative price was not provided. Meanwhile, such participants were present in the experimental group. Thus, irrationality was evident in the group of the participants with medium income when the comparative price was provided.

Scenario 7: experience in product use. This scenario tested how consumers tended to evaluate a product which they already had and a product which they intended to purchase. This scenario was based on the experiment described by Trevisian and Lanciotti (2012). The participants in the control group were shown a bottle of high quality French wine and were asked how much they would pay for it. The experimental group were shown a bottle of the same wine. They were asked to imagine that they already owned this bottle and how much they wanted to get for it.

Results. The mean price of the wine was EUR 17.95 in the experimental group and EUR 11.56 in the control group. In the modelled scenarios, the price for wine was higher when it was owned by the experiment participants than when it was not. Therefore, the assumption related to the experience in product use was considered confirmed.

Since the research participants were asked to provide their own information rather than choose from the given options, it might be considered that differences in the expression of irrationality might appear between the groups of the participants with different income. In the experimental group, 23.1 % of the participants with the lowest income indicated EUR 10.00 as a possible price for wine and 15.8 % of the participants with EUR 501−1000 income indicated the price to be EUR 15.00. Meanwhile, 33.3 % of the participants in the group with EUR 1001−1500 income per month indicated the price to

be EUR 12.00. In the group of the participants with the highest mean income per month, the choice for price was distributed between EUR 15.00, EUR 20.00 and EUR 30.00.

In the control group, the majority of the participants in all the groups, except for those with EUR 1500 income and higher indicated the price to be EUR 10.00. In this group, the dominant prices were EUR 5.50, EUR 12.00 and EUR 20.00; 18.2 % of the participants in the group with the lowest income chose the price to be EUR 10.00 and EUR 20.00.

The research results revealed that the expression of irrationality in groups with different income was similar because the price increased to some extent in all the cases when the participants were told that they owned the wine. The smallest expression of irrationality was observed in the group of the participants with the lowest income because the majority still chose the same or even higher price when they intended to buy wine rather than own it.

Scenario 8: purchasing space. This scenario allows testing the significance of the assumption that consumers tend to shop on the internet and are more favourable towards prices provided on the internet. This scenario was modelled on the basis of the study by Jensen *et al.* (2003). The experiment participants were asked 2 questions about shampoo. The experimental group were asked the following questions: Would you buy shampoo at an internet store? and What price would you consider as fair at an internet store? The control group were asked: Would you buy shampoo at a physical store? and What price would you consider to be fair at a physical store?

In the experimental group, 90.2 % of the participants indicated that they would buy shampoo at an internet store and the mean price should be EUR 5.77. In the control group, 100 % of the participants would buy shampoo at a physical store and the mean price, in their opinion, should be EUR 5.82.

The obtained research results allow making an assumption that the research participants tend to shop at a physical store rather than at an internet store; the perception of the price did not considerably differ depending on the purchasing space. On the basis of this, the assumption about purchasing space was considered denied.

In summary of the results of all the experimental scenarios, it may be stated that 6 of 8 assumptions tested in the experiment were confirmed as significant in terms of expression of irrational price perception: 5 assumptions were confirmed at the level of the company (odd pricing, correction of rightmost digits, zero price setting, higher price setting for high quality products, and comparative price) and 1 at the level of the consumer (experience in the product use). In terms of all the confirmed assumptions, a cross-analysis was conducted in order to test the differences in the expression of irrationality between different demographic groups. It was observed that expression of irrationality was also different between different age and income groups. The study was aimed at identification of relations between irrational price perception and consumer behaviour on the grounds of the results of the experimental scenario research.

Survey. Of 82 experiment participants, 79 respondents agreed to take part in the survey. In order to identify relations between irrational price perception and consumer behaviour, correlation analysis was performed.

In terms of all the above-mentioned assumptions, in order to empirically substantiate the relations between price perception and consumer behaviour, price value and price fairness were combined to construct one variable of price perception; meanwhile, the intention to buy and the intention to recommend were combined to form one consumer behaviour variable. Then, in the case of each assumption, the normality distribution of price perception and consumer behaviour variables was tested using the Kolmogorov-Smirnov test in order to find out which correlation coefficient (Pearson or Spearman) was more effective. When the variables of all the assumptions were tested following the above-mentioned test, it was obtained that only in the case of the zero price assumption both variables were distributed according to normal distribution, i.e. the p value was lower than 0.05. Therefore, the correlation between price perception and consumer behaviour variables was tested using the Spearman correlation coefficient in the case of all the assumptions, except for the zero price assumption when the association between price perception and consumer behaviour was measured using the Pearson correlation coefficient. The results of the correlation analysis showed that the association between irrational price perception and consumer behaviour in the case of the assumption of odd pricing was statistically significant because the p value was lower than 0.05. The calculated Spearman correlation coefficient was 0.245, which means that there was a weak correlation between irrational price perception and consumer behaviour in terms of the assumption about odd pricing as the coefficient value was within the interval of 0.2−0.4.

The association between irrational price perception and consumer behaviour in terms of the assumption about correction of the rightmost digits was statistically significant because the p value was lower than 0.01. Meanwhile, the calculated Spearman correlation coefficient was 0.343, which demonstrates a weak correlation between irrational price perception and consumer behaviour in terms of the assumption about correction of rightmost digits.

The results of correlation analysis in terms of the assumption of zero price setting demonstrated a statistically significant correlation between irrational price perception and consumer behaviour because the p value was lower than 0.05. Since the calculated Spearman correlation coefficient was 0.223, it may be stated that there was a weak correlation between irrational price perception and consumer behaviour in the case of the assumption of zero price setting.

The correlation between irrational price perception and consumer behaviour in terms of the assumption about higher price setting for high quality products was statistically significant because the p value was lower than 0.01. Since the calculated Spearman correlation coefficient was 0.376, the correlation between irrational price perception and consumer behaviour in terms of the

assumption about higher price setting for high quality products was weak.

The correlation analysis in the case of the assumption about the provided comparative price revealed that there was a statistically significant correlation between irrational price perception and consumer behaviour because the p value was lower than 0.01. The Spearman correlation coefficient was 0.561, which means that there was a moderate correlation between irrational price perception and consumer behaviour in terms of the provided comparative price since it was within the interval 0.4−0.7.

The correlation between irrational price perception and consumer behaviour in terms of the assumption about the experience in the use of a product was statistically significant because the p value was lower than 0.01. The Spearman correlation coefficient was 0.296, which shows a weak correlation between irrational price perception and consumer behaviour in terms of the assumption about experience in the use of a product as the coefficient was within the range 0.2−0.4.

Significant correlations between price perception and consumer behaviour were observed for all the assumptions related to the expression of consumer irrationality in the context of price perception confirmed by the research (see Figure 2).

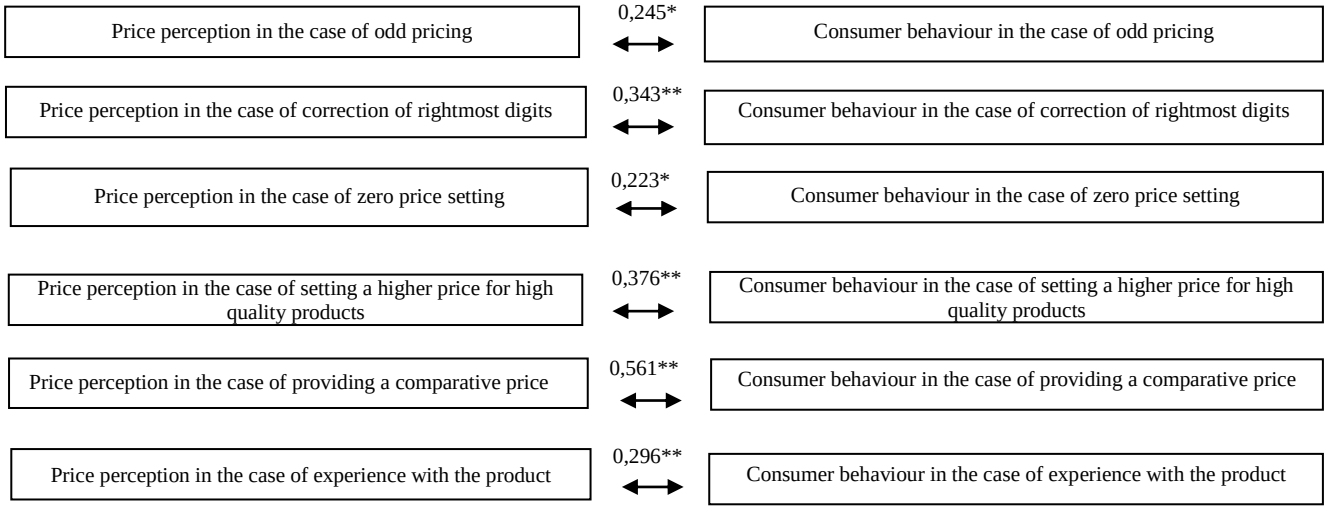

Figure 2. Correlation between irrational price perception and consumer behaviour in the case of confirmed assumptions
* Correlation coefficient at the statistical probability level 0.05.
** Correlation coefficient at the statistical probability level 0.01.

Conclusions and Directions for Future Research

1. The aspect of price perception was chosen as the priority direction in this research on expression of irrationality in consumer behaviour; the results of previous studies (Basu, 2006; Spann & Tellis, 2006; Peine, 2008; Ariely, 2008; Gneezy & Nelson, 2009; Pospisil, 2010; McKenzie & Lee, 2010; Asamoah & Chovancova, 2011; Trevisian & Lanciotti, 2012; Van der Horst, Matthijsen, 2013) in this field were analysed. This analysis allowed distinguishing 11 assumptions about the expression of consumer irrationality in the context of price perception. The assumptions were distinguished at the levels of the company and the consumer. There were 7 assumptions identified at the level of the company: inclusion of an additional element in the proposal, odd pricing, correction of rightmost digits, zero price setting, higher price for high quality products, comparative price provided, and product price enhancement; 4 assumptions identified at the level of the consumer were choice of the payment method, experience in the product use, emotional status, and purchasing space. The findings indicate that there is a relation between irrational price perception and consumer behaviour. This relation was substantiated by way of testing the relations between the price perception variable, consisting of the dimensions of product value and product price fairness, and the consumer behaviour variable, consisting of the dimensions of the intention to purchase a product and the intention to recommend it.

2. In respect of previous studies and possibilities, for empirical research purposes, it was decided to test only 8 assumptions about the expression of irrationality in the context of price perception, refusing to test 1 assumption at the level of the company (product price enhancement) and 2 assumptions at the level of the consumer (choice of the payment method and emotional status). During the experimental research on fast-moving consumption goods, 5 assumptions at the level of the company were confirmed: odd pricing, correction of rightmost digits, zero price setting, higher price for high quality products and provided comparative price. One assumption at the level of the consumer – experience in the product use – was also confirmed.

3. In general, the results of the correlation analysis seem to imply that there is a significant association between irrational price perception and consumer behaviour in terms of the assumptions that were included in the survey. However, in all the cases, except for the expression of the assumption about the comparative price, this correlation was weak. In the case of the assumption about the comparative price, the correlation between irrational price perception and consumer behaviour was moderate. The weakest correlation between the analysed

variables (0.223) was identified in the case of the assumption about zero price setting. This evidence suggests that although zero price setting is efficient it is useful only in the short-term perspective, i.e. the use of this decision may only give instantaneous benefit. It is accepted that the application of the comparative price is more beneficial in the long term. The results obtained in the study demonstrated that a company might affect consumer perception about the price of a product and change consumer behaviour through its marketing decisions. Taking into consideration 5 assumptions at the level of the company in the case of which irrational price perception was obvious and the fact that such price perception correlates with consumer behaviour, the results point towards the idea that a company may cause consumer irrationality by setting prices of products that are appropriate for identified purchasing scenarios. At the level of the consumer, only 1 assumption was confirmed, i.e. experience in the product use. In comparison with other assumptions, the expression of this assumption may be influenced by a company to a lesser extent; however, a company may still establish conditions for its appearance.

In respect of the results, the following *recommendations for further research* are provided:

- In this empirical study, 8 of 11 assumptions about consumer irrationality expression in the context of price perception, identified in the theoretical analysis, were tested. One assumption at the level of the consumer, i.e. product price enhancement, and 2 assumptions at the level of the company, i.e. emotional status and choice of the payment method, were not tested. In this respect, future work may concentrate on empirical testing of these 3 assumptions.
- The conducted research did not reveal how separate price perception dimensions (product value and price fairness) were associated with separate dimensions of consumer behaviour (intention to buy a product and intention to recommend it). Therefore, further research could be conducted in order to test the relations between separate dimensions of price perception and consumer behaviour.
- This study analysed the association between price perception and consumer behaviour; however, the causality was not analysed. In respect of this, further research could be aimed at identification of influence of irrational price perception on consumer behaviour.
- With different research tools, studies related to irrationality expression in the case of information processing or brand choice could be undertaken.

References

Gorkan, A., Furnham, A., & Fagan, P. (2014). Pricing Practices: A Critical Review of their Effects on Consumer Perceptions and Behaviour. *Journal of Retailing and Consumer Services*, 21 (5), 696–707. http://dx.doi.org/10.1016/j.jretconser.2014.04.013

Ariely, D. (2008). Predictably Irrational: The Hidden Forces that Shape our Decisions. London: Harper Collins Publishers: bachelor‘s thesis: International business and logistics, Helsinki Metropolia University of Applied Sciences.

Asamoah, E. S., & Chovancova, M. (2014). The Influence of Price Endings on Consumer Behaviour: an Application of the Psychology of Perception. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, 59(7), 29–38. http://dx.doi.org/10.11118/actaun201159070029

Barkin, E. (2013). The Prospects and Limitations of Neuromarketing. *Customer Relationship Management Magazine*, 17(7), 46–50.

Basu, K. (2006). Consumer Cognition and Pricing in the Nines in Oligopolistic Markets. *Journal of Economics & Management Strategy*, 1, 125–141. http://dx.doi.org/10.1111/j.1530-9134.2006.00094.x

Bradley, N. (2013). Marketing Research Tools & Techniques, 3rd ed. Oxford: Oxford University Press.

Chakrabortty, R. K., Hossain, M. M., Azad, H., & Islam, M., J. (2013). Analysing Effects Of Sales Promotion And Advertising On Consumer’s Purchase Behaviour. *World*, 3 (4).

Elliot, R. (1997). Existential Consumption and Irrational Desire. *European Journal of Marketing*, 31, 285–296. http://dx.doi.org/10.1108/03090569710162371

Gneezy, A., & Nelson, L. D. (2009). Getting Less Than you Pay for: Very High Prices Lead to Inferences of Very Low Quality, *Advances in consumer research*, 36, 119–122.

Goh, K., H., & Bockstedt, J. C. (2013). The Framing Effects of Multipart Pricing on Consumer Purchasing Behavior of Customized Information Good Bundles. *Information Systems Research*, 24(2), 334–351. http://dx.doi.org/10.1287/isre.1120.0428

Guyah, D. (2013). Consumer Behavior: Irrational Purchases in Modern Society. Available from internet: http://academic-hub.blogspot.com.

Hejase H., Hamdar, B., Farha, G., Boudiab, R., & Beyruti, N. (2013). Subliminal Marketing: An Exploratory Research in Lebanon. *Journal of Business Management*, 3 (1), 112–135.

Jensen, T., Kees, J., Burton, S. & Turnipseed, F., L. (2003). Advertised reference prices in an Internet environment: effects on consumer price perceptions and channel search intentions. *Journal of Interactive Marketing*, 17(2), 20–33. http://dx.doi.org/10.1002/dir.10052

Kardelis, K. (2002). Moksliniu tyrimu metodologija ir metodai: 2-asis pataisytas ir papildytas leidimas. Kaunas: Judex.

Karthikeyan, C., & Karthikeyan, R. (2013). Atheoretical Reading on Brand Loyalty – a Psychological Sensory Approach. *International Journal of Business and Mangement Invention*, 5 (2), 1–5.

Kasriel-Alexander, D. (2015). Top 10 global consumer trends for 2015. Available from internet: http://blog.euromonitor.com/2015/01/top-10-consumer-trends-for-2015.html

Mahiuddin, F., Qin, X. (2013). Irrationality: Source Of Sustainable Competitive Advantage?. *European Journal of Business and Social Sciences*, 5 (2), 32–44.

Malik, M., E., Ghafoor, M.,M., Iqbal, H., K., Ali, Q., Hunbal, H., Noman, M., & Ahmad, B. (2013). Impact of Brand Image and Advertisement On Consumer Buying Behavior. *World Applied Sciences Journal*, 23 (1), 117–122.

McKenzie, R. B., & Lee, D., R. (2010). Consumer Choice and Demand in Traditional and Network Markets, Microeconomics for MBAs: The Economic Way of Thinking for Managers, 2nd edition. Cambridge University Press.

Morin, Ch. Neuromarketing: the New Science of Consumer Behavior. Available from internet: http://link.springer.com/article/10.1007/s12115-010-9408-1

Pospisil, J. Irrationality in Consumer Behavior And Its Influence Over The Advertising Messages Perception. na.

Solution Providers. (2012). From classical price theory to behavioural pricing. Available from internet: http://www.solutionproviders.com

Spann, M., & Tellis, G. J. (2006). Does The Internet Promote Better Consumer Decisions? The Case of Name-Your-Own-Price Auctions. *Journal of Marketing*, 70, 65–78. http://dx.doi.org/10.1509/jmkg.2006.70.1.65

Trevisian, E., & Lanciotti, A. (2012). Behavioural Pricing: Rational Marketing for Irrational Consumers. Available from internet:http://media.pricingsociety.com/publications/Behavioural_Pricing_Rational_Marketing_for_Irrational_Consumers.pdf?elq=15d0cb09625e4a3d9949bfe86d89c4cd&elqCampaignId=56

Tsai, D., Chen, W. W., & Chen, H. K. (2008). Factors Influencing Irrational Buying: The Case of Television Shopping, Available from internet: http://ir.lib.ksu.edu.tw/bitstream/987654321/4954/1/factors+influencing+irrational+buyingthe+case+of+shopping.pdf

Van der Horst, F., Mathijsen, E. (2013). The Irrationality of Payment Behaviour. Conclusions Based on Literature and Direct Observations in a Virtual-Reality and a Neuroscientific Study, *DNB Occasional Studies*, 4, 69.

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