Original Article

On the validity of price knowledge measurements via self-assessment scales: Two studies in retailing

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ABSTRACT Price knowledge as a psychological construct has been one of the top behavioural pricing themes in the last four decades. Because the price of a product has a major influence on the buying decision, it is natural to focus on this issue. However, the broad range of aims of these studies, and the range of measurement methods for the construct, have produced differences in findings. Accordingly, in order to enable the practice to use at least some findings on price knowledge for marketing purposes, there is a need for more methodological research. In response to this need, our study aimed to prove the validity of the scales that are frequently used to measure price knowledge. We organised two studies employing two times two within the subjects' factorial design. One factor addresses the method for measuring price knowledge (that is, self-assessment versus percentage absolute deviation (PAD)), and the other factor addresses the retail branch of our study (food versus clothes). In the food sample, we found two significant correlations between self-assessment and PAD. In the clothing sample, we found no such correlations. We conclude that care has to be taken when self-assessment scales are used to measure price knowledge.

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INTRODUCTION

Building on the foundational studies of Daniel Kahneman and Amos Tversky, research in behavioural economics¹ and in consumer psychology has yielded several fundamental

findings over the past 30 years.² While most of these findings were useful in many fields of marketing research, they were particularly fruitful for research in the field of behavioural pricing.^{3–5} Among the important findings, this rich body of research has demonstrated that consumers from all over the world have low levels of price recall and awareness for many products, for

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example, clothes, durable goods or food.⁵⁻⁸ Theoretically, these research results should have influenced marketing practice tremendously, while allowing them to optimise their pricing (for example, by building up a profitable price recall or, more generally, a price knowledge-oriented pricing strategy). In fact, this was not the case.⁹ Most research in this field does not affect marketing practice. We can only speculate on the reasons for this result, but we surmise that it is at least partly because of the checkered quality of actual price knowledge literature, which suffers from problems and shortcomings, as follows.

A first issue of concern is that some of the studies cited above were conducted more than 20 years ago. Since that time, marketing practice has dramatically changed, as have consumers. For instance, the Internet now offers tools such as PriceGrabber.com for gathering price information. Although these developments might have some impact on actual price knowledge, there is a clear need for fresh research on the behavioural and psychological aspects of pricing.

Second, most of the earlier studies simply focus on very robust effects, without accounting for the (moderating) factors that might be also relevant for price knowledge (for example, kind of brand (private label, national brand) or customers' age).

Third, and perhaps arguably, the body of research may suffer from motivational bias in the data, because of the fact that, typically, participants in empirical studies on price knowledge do not suffer penalties when they fail to correctly memorise prices. This is in contrast to the real world, where customers could be penalised by paying higher prices. When the consumer does not know the correct price, it is logical to surmise that this methodological issue might affect the empirical findings.

Notably, most of these shortcomings are not really fundamental and can be resolved with simple extensions or replications of the studies. More serious, however, is the concern that the cited research findings are often in sharp contrast to the real-life experiences of marketing managers. In fact, there is mounting evidence

that in competitive markets, as many markets are today, even small price increases lead to substantial short- and long-term customer reactions.¹⁰ Obviously, customers are price-aware and price-sensitive. In order to enable practice to use at least some findings on price knowledge for marketing purposes, there is a need for more methodological research, particularly with respect to the measurement of price knowledge. That said, the aim of this paper is to prove the validity of the scales that are conventionally used for measuring price knowledge.¹¹ More precisely, we challenge the validity of the scales 'Grocery Market Knowledge (Price)'¹² and 'Comparison Shopping (Check Prices)'.¹³ We chose these two scales because they are commonly used in marketing research as measures or indicators of price knowledge.¹⁴

LITERATURE REVIEW

Price knowledge has been a research object in behavioural pricing theory for more than 40 years. Many studies have focused on different products (for example, food versus non-food products), places (for example, the United States versus other countries), and perspectives (for example, macro-economic versus socio-demographic determinants). These studies have, as well, used a range of different measurement methods for the construct, as in the following:

Methods for measuring price recall: The recall test has been the most common method used for measuring price knowledge in the past. The subjects are asked to recall the price of a specific product that has been mentioned and/or presented before.¹⁵

Methods for measuring price recognition: Two possible research methods for a recognition test are the method of single stimuli and the forced choice method. In the method of single stimuli, different prices of a product are presented to the subject one at a time. Then the subject must judge each price as wrong or right. In the forced choice method, the different prices are presented simultaneously and the subject has to identify the correct price of the product.⁶

Methods for measuring price rankings: In these methods, the subjects have to rank the presented products according to the extent of the prices. Monroe and Lee¹⁶ assume that consumers, while they are shopping, are more aware of price differences (relative price knowledge) than of exact prices (p. 214).¹⁶

Methods for measuring price intuition (deal spotting): The deal spotting method assumes that, indeed, subjects are not able to identify whether a price is correct, but they have an intuition for the normal price and are able to classify it as low- or high-priced.

Methods for measuring self-assessment: In these methods, respondents must answer a questionnaire composed of scales that are often used in marketing research and are included in, for instance, the Marketing Scales Handbooks.¹⁴

However, the empirical findings gathered with these diverse methods are partly inconclusive. While some studies report that the socio-economic environment can lead to divergent findings in methodologically similar price knowledge studies (p. 76),⁵ other authors do not find those differences (p. 350).¹⁷ Third-party studies, as well, report that even in different parts of a single country (in this case the United States), price knowledge varies.¹⁸ In addition, price knowledge measures might be influenced by the chosen products and product categories, for example food and non-food.⁵ There are conflicting results with respect to the price knowledge of frequently purchased products.^{19–21} In contrast, in their meta-analysis, Estelami and Lehman¹⁵ find no support for the hypothesis that frequently purchased goods can be described by a higher level of price knowledge than services and consumer durables.

To add to the confusion, there is a lack of clarity on how to define the term ‘price knowledge’. The definitions are often closely connected with the research design, as shown by Monroe and Lee (p. 213).¹⁶ As a result, some researchers^{22–24} use the ‘percentage absolute deviation’ (PAD), whereas others define different levels of price knowledge (for example, prices falling within a range, such as

± 5 per cent, see Goldman²⁵). The PAD is calculated as follows²⁶:

$$PAD = \frac{|actual\ price - estimated\ price|}{actual\ price} \quad (1)$$

Another research stream considers any answer about the price, irrespective of correctness.²⁵ Undoubtedly, the different focuses, objects and methods used in empirical research complicate the comparability of results (for example, effects of promotions on price knowledge).²¹ Overall, therefore, it is difficult to see the ‘big picture’ in price knowledge research.

Against this background, it is amazing that there are only a few studies in the literature focusing on methodological issues arising from a comparison of two or more methods. To the best of our knowledge, the first such paper was that of Conover,³ which enfolded two studies. In the first study, 168 shoppers were recruited from within the store. After recalling the price of the target product, the customer was asked to rank by sorting cards, from high to low, all the brands carried by the store in that category. Overall, 51.2 per cent of all customers were able to recall the price of the specific product. In addition, the relative price recall (ranking) was rather accurate. A comparison of both methods indicated that the shopper’s accuracy in relative price recall was only slightly related to their accuracy in exact price recall. In the follow-up study, 66 shoppers were led to an isolated room where they participated in a recall test of common products, using a ranking somewhat different from Study 1. Instead of using cards, the shoppers were asked to point to the place on a line, ranking from 1 to 9. Two days later, each shopper was called by phone and asked to recall the exact prices of each product he or she had selected. The recall value while in the store was 25.6 per cent, and after 2 days actually increased to 27.4 per cent. The method of measuring relative price recalls used in this case indicates a very good relative price recall.

Four years later, Mazumdar and Monroe⁴ also administered memory tests in a combined method study: first, a recall test of prices of the chosen brands, and second, a price ranking of both chosen and rejected brands. The results show that 33 per cent of the subjects were able to recall the exact price, 37.2 per cent estimated the correct price ranks and 48 per cent recognised the right purchase price. Mazumdar and Monroe verified their hypothesis – that when buyers try to remember specific prices of chosen brands (intentional learning), the price recall would be greater than the price ranking accuracy, and when buyers are not concerned about remembering specific prices (incidental learning), they will be more accurate in providing the price rank of a brand than recalling its actual price.

In a later complementary study, Dehaene²⁷ and Vanhuele and Drèze⁵ introduced their triple-code model to marketing literature. In this method, a combination of price recall, price recognition and deal spotting is used. The goal of their study was to measure the degree to which consumers use auditory verbal, visual Arabic or analogue magnitude representations to memorise prices. Pictures of 174 stock-keeping units (SKU) sold by the store were taken in eight product categories, and were reproduced in an interview folder. After the respondents had indicated which SKU they usually purchased, they had to estimate the SKU's normal price. Then a series of hypothetical prices was presented and the subjects were asked whether the presented price was a good, normal or bad deal. Finally, a recognition test was conducted. The respondents were shown the actual price of a product, along with a 10 per cent higher price and a 10 per cent lower price. As a result, only 2.1 per cent were able to recall the exact prices. In the recognition test, the number of observed correct responses increased to 42.2 per cent; after correction using a formula of the theory of guessing behaviour, it was 13.3 per cent.

In addition to these multi-method approaches, marketing research often used self-assessment scales for measuring individual customers' price knowledge. Although price knowledge could

theoretically be a fundamental construct for pricing strategies, however, the validity of these self-assessment scales has not been challenged until now. Therefore, this paper proves the validity of those scales that are often used for measuring price knowledge. More precisely, we challenge the validity of the scales 'Grocery Market Knowledge (Price)'¹² and 'Comparison Shopping (Check Prices)'¹³. We chose these two scales because they are commonly used in marketing research as measures or indicators of price knowledge.¹⁴

The remainder of this paper is structured as follows. Next we will describe the methodology we used in order to test the chosen scales. We will then describe the characteristics of our studies, before presenting and discussing our results. Finally, we will derive implications and suggest avenues for further research.

METHODOLOGY

The 'Comparison Shopping (Check Prices)' scale of Putrevu and Ratchford¹³ consists of two sub-scales: 'checking price tags' ('I read price tags of the grocery products that I buy'; 'I check the prices of the grocery products that I purchase'; 'Before buying a product, I check the price') and 'looking for in-store promotions' ('I look for special deals inside the store before buying grocery products'; 'I look for unadvertised specials offered by supermarkets'; 'I look for special displays in supermarkets'). All items are measured by a 7-point Likert scale (1 = agree and 7 = disagree).

The 'Grocery Market Knowledge (Price)' scale of Urbany *et al*¹² consists of three items: 'I know a lot about (city name) grocery stores'; 'I know which stores have the best prices'; and 'I know which stores have the best price specials'. All items are measured by a 7-point Likert scale (1 = agree and 7 = disagree).

We chose these two scales because they are commonly used in marketing research as measures or indicators of price knowledge. In order to prove the validity of these measurement tools, we organised two studies employing two times two within respondents' factorial design. While one factor addresses the method for

measuring price knowledge (self-assessment versus PAD), the other factor addresses retail branch characteristics (clothing versus food).

In both studies, we, at first, asked each respondent to estimate correct prices for several products in food retailing (Study 1) and in clothing retailing (Study 2), before respondents answered the above-mentioned scales. We then calculated PAD and compared the individual PAD with customers' scores on the mentioned self-assessment scale. In both studies, we used exactly the same methods and approaches.³ We chose these two retail branches because they are important for marketing with respect to turnovers. Moreover, we assume that product characteristics may influence customers' price knowledge.²⁶ This might be because of factors like different prices in promotions, differences in purchase frequency or differences in customers' involvement. Accordingly, we assume that choosing these two branches with different product characteristics should add validity to our findings.

Study 1: Food retailing

Sample characteristics

In the food retailing study, we collected data on the accuracy of grocery shopper price knowledge. In doing so, we followed the concepts of Evanschitzky *et al.*⁷ and Kenning *et al.*⁸ With the help of the regional store management, we selected a total of 20 products. We recruited all our respondents in this study from one major German city, and in one relatively short period of time between May and June 2005. Using the mall intercept method,²⁸ three trained interviewers approached 300 randomly selected people in-store before shopping. Forty-eight per cent of them were female, while 52 per cent were male. The mean-age was 31.23 years. To measure price recall, the products for which they would estimate prices were presented. More precisely, we gave the following instructions to the respondents:

We have given you a list of products. Please estimate the normal price of each product. Do

not think only about the price these products usually cost at (this particular retailer), but also about their prices at other retailers where you shop.

Following Vanhuele and Drèze²⁹ in this study, no incentives were given to participants, in order to avoid attracting price-sensitive consumers. In contrast to many earlier studies^{3,20,22,23} that requested product prices immediately after the purchase, the method of interviewing shoppers immediately after they have entered the store avoids measuring price knowledge based on price recall from short-term memory. It focuses instead on price knowledge of long-term memory. By doing so, we follow the method of Vanhuele and Drèze (p. 74),⁵ Evanschitzky *et al.*⁷ and Kenning *et al.*⁸

Measurements

The price knowledge data were calculated at the level of the individual respondent. The accuracy of price estimation was measured by price recall. More precisely, we used the above-defined PAD.^{19,22,23,30}

Because we asked consumers to indicate the normal price of a particular product, we were able to calculate the individual PAD. A greater difference between the estimated normal price and the actual price results in a higher absolute value of the PAD, and this, consequently, indicates a lower level of actual consumer price knowledge.

Construct validity

Measurement reliability of the scales was examined through Average Variance Extracted (AVE) and the examination of Cronbach's Alpha.³¹ First, analysing the data of the Urbany *et al.* scale,¹² we found a Cronbach's Alpha = 0.814 and a value of AVE = 72.92 per cent. To prove the validity of 'checking price tags,' we found a Cronbach's Alpha = 0.804 and a value of AVE = 72.27 per cent. For validity of the scale 'looking for in-store promotions,' we calculated a Cronbach's Alpha = 0.76 and a value of AVE = 68.13 per cent. Overall, we assume that our measurements are acceptable.³²

Table 1: Means and standard deviations of Study 1 (food)

	Mean	STD
Checking price tags	2.68	1.44
Looking for in-store promotions	3.79	1.65
Grocery Market Knowledge (Price)	4.25	1.43
PAD	0.238	0.223

Table 2: Correlation-analysis Study 1 (food)

	Correlation coefficient	P-value
Checking price tags ↔ PAD	0.210**	0.000
Looking for in-store promotions ↔ PAD	0.099	0.091
Grocery Market Knowledge (Price) ↔ PAD	0.143*	0.014

**correlations significant ($P < 0.01$), *correlations significant ($P < 0.05$).

To prove the validity of the three sub-scales, we first calculated the factor-sum means for each respondent on the level of each of the three scales. We then compared the measurement of PAD with the self-assessment given by the three scales, using simple correlation analysis.

Results

First, we analysed the means and standard deviations (STD) of the three scales and individuals' PAD 1 (Table 1). For the scale 'checking price tags', we found a mean = 2.68; for the scale 'looking for in-store promotions', a mean = 3.79; and for 'Grocery Market Knowledge', a mean = 4.25 by 7-point Likert scales. The PAD was 24 per cent with an STD = 22 per cent.

Second, we used simple Pearson Correlation. We found significant but nevertheless weak correlations between PAD and the sub-scale 'checking price tags', as well as the 'Grocery Market Knowledge (Price)' scale. However, no correlation was found between PAD and the sub-scale 'looking for in-store promotions' (see Table 2 and Appendix).

Third, to add evidence we conducted a multiple linear regression. In this we used individual PAD as the dependent variable and several self-assessment scales as independent

variables. We found values for PAD/checking price tags ($\beta = 0.202$ and $P = 0.006$); PAD/looking for in-store promotions ($\beta = -0.050$ and $P = 0.492$); and PAD/Grocery Market Knowledge ($\beta = 0.070$ and $P = 0.327$). The value for R^2 is 0.038. Overall, these findings of our complementary regression analysis confirm our findings in the correlation analysis.

With respect to the appendix, it is assumed that there may be no non-linear relationships between the self-assessment scales and the PAD (see Figures A1–A3).

Study 2: Clothes retailing

Sample characteristics

In our second study, we collected data on the accuracy of clothing shopper price knowledge. The sampling time frame was one week in February 2008. Trained interviewers were stationed in 10 outlets of a major German clothing industry chain, located in 10 different cities in Germany. Presenting the products for which prices should be estimated, the interviewers approached 439 consumers directly as they entered the store. The sample consisted of 48 per cent men and 52 per cent women, with an average age of 32 years. The interview procedure was exactly the same as in the above-described food study.

Measurements

In order to compare the results of our studies, data were calculated at the level of the individual respondent. Again, we used PAD to measure the accuracy of price estimation. Again, we calculated the factor-sum means for each respondent on the level of each of the three scales and compared the measurement of PAD with the self-assessment given by the three scales, using simple correlation analysis.

Construct validity

As with Study 1, measurement reliability of the scales was examined through Average Variance Extracted and the examination of Cronbach's Alpha.³¹ First, again analysing the data of the Urbany *et al* scale,¹² we found a Cronbach's

Table 3: Means and standard deviation of Study 2 (clothes)

	Mean	STD
Checking price tags	2.12	1.45
Looking for in-store promotions	3.29	2.31
Grocery Market Knowledge (Price)	4.34	1.70
PAD	0.260	0.302

Table 4: Correlation-analysis Study 2 (clothes)

	Correlation coefficient	P-value
Checking price tags ↔ PAD	0.090	0.067
Looking for in-store promotions ↔ PAD	-0.022	0.654
Grocery Market Knowledge (Price) ↔ PAD	0.068	0.179

Alpha=0.839 and a value of AVE=75.67 per cent. To prove the validity of 'checking price tags' by Putrevu and Ratchford,¹³ we found a Cronbach's Alpha=0.821 and a value of AVE=73.59 per cent. For validity of the scale 'looking for in-store promotions,' we calculated a Cronbach's Alpha=0.708 and a value of AVE=63.01 per cent. Here, too, we assume that our measurements are acceptable.³²

Results

First, we calculated means and STD (Table 3). We found a mean=2.12 for the scale 'checking price tags', a mean=3.29 for the scale 'looking for in-store promotions', and a mean=4.34 for the scale 'Grocery Market Knowledge'. The mean of PAD in clothing retailing was 26 per cent with an STD=30 per cent. Estelami and Lehmann¹⁵ explored 250 price knowledge studies, and found that the average PAD for consumer durables is 22.29 per cent, and, for frequently purchased goods, 14.0 per cent. In our studies, the PAD's are even higher.

With the data from the clothing sample, we again ran simple correlation analysis. In this sample, we found PAD and the challenged self-assessment scales to be completely uncorrelated (see Table 4 and Appendix). In the last step we again analysed our data with a multiple linear regression. As results,

we found the values for PAD/checking price tags ($\beta=0.096$ and $P=0.085$); PAD/looking for in-store promotions ($\beta=-0.065$ and $P=0.276$); and PAD/Grocery Market Knowledge ($\beta=0.076$ and $P=0.165$). The value for R^2 is 0.013.

Overall, these findings from our complementary regression analysis again confirm our findings in the correlation analysis. Regarding the appendix again, even in Study 2 there may be no non-linear relationships between PAD and the analysed self-assessment scales (see Figures A4–A6).

COMPARISON OF RESULTS

In order to test the above-mentioned validity of the three scales, we compared the results of the studies. In food retailing, we found two significant but weak correlations between self-assessment of the respondents and actual price knowledge with a correlation of $\text{corr.}=0.210$ and $\text{corr.}=0.143$. In this case, our data partly confirm the validity of the scale 'checking price tags' by Putrevu and Ratchford¹³ and 'Grocery Market Knowledge (Price)' by Urbany *et al.*¹² The scale 'looking for in-store promotions' shows no significance, with $\text{corr.}=0.099$. In contrast, the analysis of correlations in the clothing business represents no significant correlations in all tested scales. In this product category, we found no confirmation for the validity of the scales.

DISCUSSION AND IMPLICATIONS

The aim of this study was to prove the validity of scales that are often used for measuring price knowledge, using a comparison of the consumers' self-assessment about price knowledge and the consumers' actual price knowledge, estimated by price recall test calculated by PAD.¹¹ We found partial correlations between the self-assessment and actual price knowledge in food retailing, but no correlations between both in the clothing retail sample.

One reason for the relatively low external validity of self-assessment scales might be social desirability. This widely observed phenomenon is defined as the tendency of a person to behave in a way that is socially acceptable and desirable. Social desirability in its extreme, however, can create difficulties in research. When research

participants provide 'socially desirable' answers, results can often be confounded.³³ In our data, we assume that people might tend towards social desirability, because it might be more socially acceptable to claim to know prices. Accordingly, people might tend to claim high levels of price knowledge even if this is not the case.

Another reason for the discrepancy between self-assessment and PAD might be overconfidence.³⁴ This effect refers to the human tendency to be more confident in behaviours, attributes and physical characteristics than is realistic.

In addition, we found that in the food branch of our study the discrepancy between self-assessment and PAD is relatively low, compared to clothes. We suggest that there might be several reasons for these branch-related differences. One reason might be differences in pricing strategies.

For instance, Srivastava *et al*³⁵ observed that consumers are less likely to search actively for prices if price-matching refunds are offered. Such policies are likely to create a strong and favourable price image of a retailer. However, neither the food retailer nor the clothing chain of our study apply such a policy. Both use the same format of prices,³⁶ with mostly 9 and 5 endings, and they are not part of national discount houses.

In addition, there is evidence that the presentation of price information is likely to contribute to consumers' general price knowledge. Increased promotions, therefore, further facilitate elaboration of price information.³⁷ We assume a higher price promotion frequency in food retailing than in the clothing business. However, we could find no correlation between real price knowledge and the self-assessment scale 'looking for in-store promotions' by Putrevu and Ratchford¹³ in Studies 1 and 2.

Another potential explanation for our findings may be rooted in distribution policy. Typically, there are more food outlets than apparel outlets in a given region or area. Accordingly, food prices should have a higher visibility, resulting in a better performance, which could be reflected in the correlations between self-assessment and real price knowledge in the food sample.

Finally, the observed differences between the food and the clothes sample might be induced by product characteristics. Here, we can differentiate between high- and low-purchase frequency. Within the context of grocery shopping, fast-moving grocery products such as coffee, milk and butter are typically characterised by a higher level of price knowledge than are products purchased less frequently.^{19–21} However, in their meta-analysis, Estelami and Lehmann¹⁵ do not find any support for the hypothesis that frequently purchased goods can be described by a higher level of price knowledge than services and consumer durables. To conclude, there are several potential reasons for branch-related differences in price knowledge. Assuming that it is still unclear which reasons are substantial, we call for further research on this subject.

LIMITATIONS

Our study has limitations that should be clearly addressed here. First we prove the validity of price knowledge scales that have been developed and tested primarily in the Anglo-American market, and that have now been extended to the German market, but we do so without explicitly making a cross-cultural comparison. This is important, because the impact of a particular culture on price awareness is generally acknowledged.^{17,38–40}

Second, in order to increase the validity of our comparison, we focused on a clothing business store chain from which we analysed 10 locations, and we used a single food retailer. At the 10 clothing locations, we expected to approach more heterogeneous respondents than would be anticipated in food retailing.

Another limitation relates to the product categories in which we analysed price knowledge. Our study tested only clothing and food products. As a consequence, we cannot report on the validity of self-assessment scales for price knowledge-measuring in other branches.

However, we do not believe that there are severe limitations in the generalisation or the substantive implications of our results. The retailers we analysed are typical in size and success for the German market. Nonetheless,

as indicated above, we would recommend replications of this study in different environmental and cultural contexts, especially with respect to the branch differences as reported here.

CONCLUSION

The aim of this paper was to prove the validity of scales that are often used and recommended for measuring price knowledge. In order to do so we organised two studies employing two times two within respondents' factorial design. While one factor addresses the method for measuring price knowledge (self-assessment versus PAD), the other factor addresses branch characteristics (clothing versus food). In the food sample, we found two significant correlations between self-assessment of the respondents and real price knowledge. In contrast, the analysis of correlations in the clothing branch represents no significant correlations in all tested scales. Overall, our test of the three scales 'checking price tags', 'Grocery Market Knowledge (Price)' and 'looking for in-store promotions' revealed a relatively poor validity of the three scales for measuring actual price knowledge. Therefore, we assume that they are of limited theoretical and practical use. Against this background, we call for research that would develop better scales for measuring price knowledge via self-assessment scales. In particular, we assume that self-assessment scales, which are commonly used in marketing research as measures or indicators for price knowledge, are not presently able to measure actual price knowledge.

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APPENDIX

Study: Food retailing

See Figures A1–A3

Figure A1: Scatter plot of PAD and 'checking price tags'.

Figure A2: Scatter plot of PAD and 'looking for in-store promotions'.

Figure A3: Scatter plot of PAD and 'Grocery Market Knowledge (Price)'.

Figure A5: Scatter plot of PAD and 'looking for in-store promotions'.

Study: Clothes retailing

See Figures A4–A6

Figure A4: Scatter plot of PAD and 'checking price tags'.

Figure A6: Scatter plot of PAD and 'Grocery Market Knowledge (Price)'.