Study on the impact of the energy label – and potential changes to it – on consumer understanding and on purchase decisions

ENER/C3/2013-428 FINAL REPORT

LE London Economics

October 2014

This report was ordered and paid for by the European Commission. The content of this report represents the views of London Economics and is its sole responsibility; it can in no way be taken to reflect the views of the European Commission or any other body of the European Union. The European Commission does not guarantee the accuracy of the data included in this report, nor do they accept responsibility for any use made by third parties thereof.

About London Economics

London Economics is one of Europe's leading specialist economics and policy consultancies and has its head office in London. We also have offices in Brussels, Dublin, Cardiff and Budapest, and associated offices in Paris and Valletta.

We advise clients in both the public and private sectors on economic and financial analysis, policy development and evaluation, business strategy, and regulatory and competition policy. Our consultants are highly-qualified economists with experience in applying a wide variety of analytical techniques to assist our work, including cost-benefit analysis, multi-criteria analysis, policy simulation, scenario building, statistical analysis and mathematical modelling. We are also experienced in using a wide range of data collection techniques including literature reviews, survey questionnaires, interviews and focus groups.

Head Office: Somerset House, New Wing, Strand, London, WC2R 1LA, United Kingdom.
w: londoneconomics.co.uk e: info@londoneconomics.co.uk : @LondonEconomics
t: +44 (0)20 3701 7700 f: +44 (0)20 3701 7701

Acknowledgements

We would like to thank participants of the stakeholder consultation meeting organised by the services of the European Commission on the method to update existing energy label scales to reflect technological progress of the labelled products in Brussels 19 February 2014 for their feedback on the outcomes of Phase I of the study. We would also like to thank the retail stores that kindly participated in Phase II:

- MDA Arques (France);
- MDA Marquette lez Lilles (France) ;
- Mercator Tehnika (Ljubljana,Slovenia); and,
- Big Bang (Ljubljana,Slovenia).

Contents

Page

Tables, Figures and Boxes

Page

Tables

Tables, Figures and Boxes

Page

Figures

Tables, Figures and Boxes

Page

Tables, Figures and Boxes

Page

Glossary

Member State codes

BE	Belgium	LT	Lithuania
BG	Bulgaria	LU	Luxembourg
CZ	Czech Republic	HU	Hungary
DK	Denmark	MT	Malta
DE	Germany	NL	Netherlands
EE	Estonia	AT	Austria
IE	Ireland	PL	Poland
EL	Greece	PT	Portugal
ES	Spain	RO	Romania
FR	France	SI	Slovenia
HR	Croatia	SK	Slovakia
IT	Italy	FI	Finland
CY	Cyprus	SE	Sweden
LV	Latvia	UK	United Kingdom

Executive summary

This study provides an assessment of alternative energy label designs. The study explores consumers' understanding of the individual elements of the energy label and how the label design influences consumer choice. To this end, the study implemented two behavioural experiments to measure cognitive and behavioural responses to various label elements.

Based on this, the study explores consumer understanding and product choice for the following energy label frames:

- The use of letters versus numbers for the main element of the label;
- The use of a numeric scale with ratings for future technologies shown in grey arrows;
- The use of a reverse numeric scale; and,
- The introduction of a benchmark marker to indicate best available current technology.

The objective is to add to the evidence base on the most effective labelling design for possible future EU energy efficiency labels. The aim of the study was not to assess the transition to any possible new label, and as such the study does not comment on transition.

There are two phases to this study:

- Phase I is a targeted literature review and an online behavioural experiment.
  - The objective of the review is to investigate existing knowledge on consumer behaviour and understanding under alternative energy labelling frames.
  - The online experiment tested choice and understanding in an incentivised experiment and understanding test. The behavioural experiment is conducted in seven Member States.
- Phase II is a bricks-and-mortar experiment that is carried out at retail stores and centralised locations in four Member States.

The sample size for the Phase I and II experiment and understanding test is shown in the table below.

Table 1: Experiment sample sizes

Phase I		Phase II	
Member State	**Number of respondents**	**Member State**	**Number of respondents**
Czech Republic	500	Czech Republic	125
France	1007	France	125
Italy	1000	Slovenia	125
Norway	503	Portugal	125
Poland	500		
Romania	501		
United Kingdom	1001		
Total	**5012**		**500**

Phase I tests five label frames:

- closed alphabetic scale (A to G scale)
- closed numeric scale (30 to 100)
- open numeric scale (0 to 110 with grey bars for energy efficiency of future and past technologies)
- closed numeric scale with a benchmark marker showing current best available technology; and,
- closed ended reversed numeric scale (7 to 1).

Phase II tests four alternative label frames:

- A+++ to D label
- A to G label
- Numeric 40-100 label with ratings for possible future technologies 0-30 shown in grey
- Reverse numeric 9 to 3, reflecting a first update from a numeric 7 to 1 label

Following presentation of the findings from Phase I at the Stakeholder consultation meeting organised by the services of the European Commission on the method to update existing energy label scales to reflect technological progress of the labelled products on 19 February 2014, four label frames were then tested in Phase II.

The findings from both phases of the study combined, along with literature review, indicate the following in terms of consumer choice and understanding under the label frames tested.

Consumer understanding

- Energy efficiency scales that include letters as opposed to numbers are generally better understood by consumers.

- Consumer understanding of the energy efficiency scale with A+++ to D and A to G scale is similar between the two.

- The differences in understanding between the alternate numeric scales tested is mixed and provides no clear indication as to which numeric scale may be best understood by consumers in the market.

- One third of consumers understand the meaning of the open ended scale. This increases to just under two thirds when consumers are provided with prior information in regard to the meaning of the open ended scale.

- Over half of consumers understand that the benchmark marker indicates best available technology.

- The provision of prior information can improve consumer understanding of the energy efficiency scale. As previously stated, this is particularly the case with the open ended scale where understanding improves substantially if a prior explanation is provided.

- The majority of consumers were able to correctly identify the product that was least costly to use indicating that they understand the meaning of kWh/annum. Similarly, consumers that understand the meaning of kWh/annum are more likely to correctly identify the product that is least costly to run.

- Consumers are less likely to identify the least costly product to use when the product is affixed with a numeric or reverse numeric label compared to the A+++ to D and alphabetic label.

- Understanding the energy efficiency scale is an important determinate in whether the consumers choose the most energy efficient product; and, understanding is generally higher for the A+++ to D and alphabetic scale than the numeric scales.

Consumer choice

- There is some evidence that label frames which use alphabetic scales lead to more consumers choosing energy efficient products compared numeric scales.

- There is some evidence that labels with an A to G scale lead to more consumers choosing energy efficient products compared to the A+++to D scales.

- The choice between one and another label design has a greater difference in impact on behaviour for consumers who consider energy efficiency of low importance in their purchasing decision, compared to consumers that consider energy efficiency as an important criterion in product choice.

- The choice of label design is of greater importance in influencing behaviour for products where energy efficiency is not of key importance to consumers when selecting a product.

1 Introduction

1.1 Objectives of the study

This study provides an assessment of alternative energy label designs. The study explores consumers' understanding of the individual elements of the energy label and how the label design influences consumer purchase decisions. To this end, the study implemented two behavioural experiments to measure cognitive and behavioural responses to various label elements.

Based on this, the study explores consumer understanding of the following aspects of energy labels to indicate the energy efficiency of the product:

- The use of letters versus numbers for the main element of the label;
- The use of an open-ended versus a closed-ended scale;
- Effectiveness of including an the indication of where the best available technology of a certain year is
- The use of a numeric scale with ratings for future technologies shown in grey arrows;
- The use of an increasing or reverse (decreasing) numeric scale.

The aim is to add to the evidence base on the most effective labelling design for possible future EU energy efficiency labels. The objective of the study was not to assess the transition to any possible new label, and as such the study does not comment on transition.

1.2 Methodology

There are two phases to this study:

- Phase I is a targeted literature review and an online behavioural experiment in seven Member States.
- Phase II is a bricks-and-mortar experiment that was carried out at retail stores and centralised locations in four Member States.

The experiments did not involve the actual purchase of products by consumers. The choices made were hypothetical. The Phase I experiment was incentivised. This meant that the respondents earnt more or less depending on their choices in the experiment; and, we incentivised the positive environmental impact of *purchasing* more energy efficient products. Monetary incentives are often used in behavioural experiments to ensure respondents put real effort into the task and to mirror the gains (and losses) that are present in real markets.

As with all surveys and controlled experiments consumers that participated in the Phase I and II experiment knew they were taking part in a study. In experiment design this is often referred to as the demand effect. This means that respondents may inadvertently pick up signals as to what behaviour is expected of them in the experiment environment, and as such the experiment itself can generate effects which would otherwise not be there. Demand effects do not necessarily have to be problematic. Good experiment design ensures that demand effects are minimised. To do this, the effect must not differ across treatments (so that unbiased treatment effects can be estimated). In this experiment the treatments (the different energy label designs) were

implemented under identical conditions within each Phase ensuring any demand effects are the same across treatments. Further, the strength of experiments is to explore the relative effects on behaviour between treatments. Absolute magnitudes cannot be generally extrapolated to the field setting. In order to extrapolate absolute magnitudes to field settings a more extensive field experiment would need to be implemented where consumers actually bought the products. This was not a feasible option within this study. Therefore, the strength of this controlled online and bricks and mortar experiment is the comparison of behaviour and understanding between the different label designs.

In Phase I the sample is large at 5012 respondents in total. Phase II included a total sample size of 500. This meant that for each label frame the number of individual observations in Phase II was 125. Many studies are conducted with samples of this size. Nevertheless, the sample size may lead to cases where effects on understanding and choice are not identified due to the sample size.

The remainder of the report is the following:

- Findings from the targeted literature review
- The online behavioural experiment and understanding tests
- The bricks and mortar experiment and understanding tests
- Conclusions to the study

2 Phase I Preparatory phase – targeted literature review

The first task in the consumer research was to undertake a targeted review of the existing literature on consumer behaviour under alternative energy labelling frames.

The preparatory phase considered four alternative frames. These frames are:

- Alphabetical scale
- Numerical scale
- The use of a benchmark marker
- Continuous scale

2.1 Numeric versus alphabetic scales

This section reviews previous findings on how consumers' understanding of energy efficiency labels compares between labels using alphabetic ordinal scales and those using numeric ordinal scales, and what impact the two alternative scales have on behaviour.

Alphabetic Scales

Alphabetical scales are one of the most widely-used categorical scales to describe energy efficiency. Most countries where an alphabetical scale has been implemented adopted a design that is very similar to the EU energy label (Buy Smart +, 2012). There is strong evidence from multiple studies that alphabetical scales are widely understood and interpreted correctly by consumers and help them to effectively compare the energy efficiency of different products.

In China, for instance, a study conducted by the China National Institute for Standardisation found that labels which used a letter scale were the most comprehensive for consumers. 100% of the study respondents interpreted the scale correctly (Egan & Waide, 2005).

'A-G' Scale

The alphabetical scale adopted in the EU has evolved over time from an 'A-G' scale to an 'A+' scale to reflect the efficiency improvements of the market as a whole.

Studies in the UK and across the EU have found that the 'A-G' scale is correctly understood by between 70 and 80 per cent of consumers (Consumer Focus, 2012; Heinzle & Wuestenhagen, 2009). The grading information was easily found by the majority of consumers who reported that their behaviour was influenced by the label (Consumer Focus, 2012).

The effectiveness of the 'A-G' label scale on consumers' decision making when purchasing white goods was also high, with most people being influenced by the energy rating (Heinzle & Wuestenhagen, 2009), and the rating was almost as important in the decision making process as product price (Consumer Focus 2012). Only 11 per cent of respondents in the Consumer Focus study reported that they did not use the efficiency rating because they were not concerned about energy savings. Additionally, study participants were more often influenced by the A-G efficiency

rating than by operating costs (Consumer Focus, 2012). Hence, the 'A-G' energy labels performed highly both in terms of understanding and influence on purchasing behaviour.

'A+' Scale

Studies that have compared understanding and effectiveness of an 'A-G' scale and an 'A+++' provide mixed results. In the study by Consumer Focus (2012), consumers preferred the A-G scale over the 'A+' scale. Only 50% of consumers surveyed understood the 'A+' scale correctly compared to 70% that correctly understood the A-G scale. In contrast, Waide and Whatson (2013) did not find a statistically significant difference in consumer understanding between an 'A-G' and an 'A+++-D' scale. Further, they found no evidence of confusion when using an 'A+-F' scale, either. However, the sample size was relatively small – 95 participants took part in the focus groups. Hence, a larger sample would be necessary to verify this result.

Waide and Watson (2013) also assessed consumers' willingness-to-pay for more energy efficient products using an 'A+++-D' scale. They found that on average, survey respondents were willing to pay €40 more for every higher label class refrigerator-freezer. Further, respondents were willing to pay 44% more for an A+++ than for an A-grade product. In the case of televisions, participants were willing to pay €50 more on average for an additional label class, and 50% more for an A-grade TV-set compared to a G-grade one on the 'A-G' scale. In comparison, Heinze and Wuestenhagen (2010) find higher marginal increases in willingness to pay, but in a different set-up.

The importance of the energy rating for consumers' purchasing decisions has been found to be lower when an 'A+' scale was used as opposed to an 'A-G' scale. Heinze & Wuestenhagen (2009) found that the importance given to the energy rating decreased by 10% when the A+ scale was used. Under the 'A+' framing, consumers attached higher importance to price. As Heinze and Wuestenhagen (2011) show in their conjoint analysis, the 'A-G' scale has a greater impact on purchasing behaviour and more consumers were willing to pay a larger premium for the highest classes on the 'A-G' scale than on the 'A+' scale.

Numeric Scale

Numeric closed scales are also widely used on energy labels. Countries including China, Tunisia and Korea use numeric ordinal scales. In China and Korea the scale is between 1 and 5, and in Tunisia it is between 1 and 8. Research from China and Tunisia shows that consumers generally understand these scales (Egan & Waide, 2005). However, the numeric scale was less understandable than the alphabetic one in the studies conducted in China. This issue was addressed by the designers adding a character for "class" next to the number.

In conclusion, identified studies drawing on experience from different countries suggest that both alphabetic and numeric closed ordinal scales are well understood by consumers and effectively influence their purchasing decisions. The evidence in favour of the alphabetical scale is slightly stronger (Egan & Waide, 2005). In addition an A-G scale is both less confusing and more effective than an 'A+' scale.

2.2 Benchmark markers

The only countries, to our knowledge, that have so far adopted a form of benchmarking in their energy label are the USA and Canada. They use a closed scale that indicates the cost or energy units of both the lowest and highest energy spending relevant products on the market. A marker positions the labelled appliance in the range with its cost or energy consumption units.

When evaluating the US labelling program, Egan (2000a) used a combination of focus groups, interviews and surveys. The study assessed, amongst others, how consumers used the comparative feature of the label. It was found that participants could rarely understand and use the benchmarks of best and worst-performing comparable devices. Instead, they mostly used the individual model information depicted on the label. As a result, interviewees often did not realise that the model was inefficient relative to other models. In other cases, participants requested external comparison, i.e. to physically check the labels of other models and compare the individual characteristics. The problem was more pronounced with the continuous scale than any other scales evaluated, such as stars, thermometer and speedometer.

The US Environmental Protection Agency (2010) conducted a study to inform the design of a fuel economy label on vehicles. Participants in the focus group phases responded well to labels with a comparative element, and recommended the use of clear words for benchmark markers such as “best” and “worst”.

Currently existing literature does not provide much information on the impact of a benchmark marker on EU consumers’ understanding and purchasing behaviour.

2.3 Continuous scales

While the experimental phase of this study does not specifically include a continuous scale frame, the preparatory phase did include these labels. In this sub-section we therefore discuss consumer understanding and behaviour under these labelling types.

Continuous scales are currently used in the USA and Canada in contrast to the EU, Australia, and Brazil where various categorical scales are used (as discussed above).

In the US Labelling Program Evaluation, Egan (2000a, 2000b) concluded that the categorical scales that were tested were better understood by participants than the continuous scale. This evidence is supported by market research in India conducted by the Bureau of Energy Efficiency (Dethman et al 2000). Study respondents perceived both horizontal continuous and categorical scales well. However, categorical scales performed better than the continuous scales when testing consumers’ comprehension in a side-by-side comparison of labels.

The Fuel Economy Label Study (2010) provides contrasting evidence. The most favoured label design by the focus groups used a horizontal continuous scale, bound by markers for best and worst-performing vehicles. Some study participants noted that a categorical scale, such as a 5-star scale, does not provide sufficient information about fuel efficiency positioning to inform vehicle choice.

To the best of our knowledge, vertical continuous colour-coded scales have not yet been tested for consumer understanding and response.

2.4 Preparatory phase conclusions

The existing literature on alternative energy labelling frames and their impact on consumer decision making and understanding appears limited. However, there are some findings that emerge. Namely, alphabetical scales are generally well understood by consumers and lead to a higher willingness to pay for more energy efficient products. Numerical scales are also understood by consumers, but there is some evidence that consumers do not understand numerical scales as well as alphabetical scales. Benchmarking best available technology does not appear to be widespread, and where it does exist, some confusion can arise as to its meaning. Where benchmarks are used clear explanation of their meaning on the label is recommended. Continuous scales are generally not as well understood by consumers compared to categorical scales.

3 Phase I Online behavioural experiment

The Phase I online behavioural experiment was implemented in 7 Member States to assess how the alternative label frames impact upon consumer purchasing decisions and understanding.

The Member States were the Czech Republic, France, Italy, Norway, Poland, Romania and the United Kingdom. In total 5012 consumers participated in the Phase I behavioural experiment. Table 2 presents the sample sizes for each country.

Table 2: Phase I online experiment sample size

Country	Sample size
Czech Republic	500
France	1007
Italy	1000
Norway	503
Poland	500
Romania	501
United Kingdom	1001

3.1 Products

Three products were used in the Phase I experiment: Televisions, washing machines and light bulbs.

These products are present in the majority of households across the EU and vary in several characteristics including the frequency with which consumers purchase them, their price levels and whether the products are luxuries/necessities.

This enables us to identify whether different energy label designs have similar impacts across products that have varying characteristics, or whether different energy label designs appear to be more suitable for certain products.

Product specific characteristics of each product were displayed on the labels within the experiment. These characteristics remained constant for each product throughout the experiment to ensure that the focus of the study was on the impact of different designs of energy labels on consumer behaviour and understanding. This is to ensure that any observed differences in consumer behaviour across the different energy label frames can be attributed to changes in the label design and not other product specific characteristics.

The product specific characteristics were the following:

- Televisions: screen size 32 inches, full high definition LED.
- Washing machines: Spin speed 1400rpm, 7kg wash load.
- Light bulb: Energy saving halogen, lifetime 2000 hours.

3.2 Label frames

Five label frames were tested in the experiment. These were:

- closed alphabetic scale (Treatment 1 and the baseline treatment;
- closed numeric scale (Treatment 2);
- open numeric scale (Treatment 3);
- closed numeric scale with a benchmark marker showing current best available technology (Treatment 4); and,
- closed ended reversed numeric scale (treatment 5).

The label frames are presented on Annex 2.

The closed alphabetic scale is used as the baseline treatment in the experiment. Treatment 2 is the closed numeric scale. Comparing between the baseline and Treatment 2 allows us to investigate the impact of moving from alphabetical to numerical scaling on consumer behaviour and understating. Treatment 3 is the open numeric scale. Comparison between this treatment and Treatment 2 allows us to isolate the effect of moving from a closed ended to an opened scale. Treatment 4 is a closed numeric scale with a marker indicating the best available technology in the current year. Comparison between Treatment 2 and Treatment 4 allows us to assess the effect of introducing a best available technology comparison on the label. Treatment 5 is the reverse numeric scale. This treatment allows us to explore the impact of using higher numbers to represent more energy efficient products.

3.3 Product energy ratings

The product energy ratings were selected based on previous research for the European Commission[1], and in consultation with EC DG Energy.

In order to map ratings that currently exist on the market to the frames tested in the experiment we did the following:

- Washing machine took the ratings B to E in the experiment. This meant that rating A+++ became an A rating. Based on previous research for the EC, washing machines on the market currently have a maximum rating of A++ as such we set the highest rating for washing machines at B in the experiment.
- Televisions took the ratings A to D. A++ became an A rating in the experiment. Based on previous research for the EC, currently washing machines on the market have a highest rating of A++, therefore we set the highest rating in the experiment at A for washing machines.
- There was no information on the market ratings for light bulbs. Therefore, based on a targeted websweep for halogen light bulbs and in discussion with EC DG Energy, we elected to set light bulbs between B and E. We assumed the best available light bulb on

[1] ENER/C3/2101-523, September 2013.

the market is a B. This is based on a finding that C class halogen bulbs are easily available, and that B class will soon be available (or are currently available in limited cases).

For treatments 2 to 5, we transposed the alphabetic ratings to numeric ratings in consultation with EC DG Energy. Namely, a B (treatment 1) became 45 (treatment 2 and 3) or 6 (treatment 5).

3.4 Experiment design

The experiment was made up of five parts:

A. Information stage
B. Choice experiment
C. Bidding exercise
D. An interpretation test
E. Questionnaire

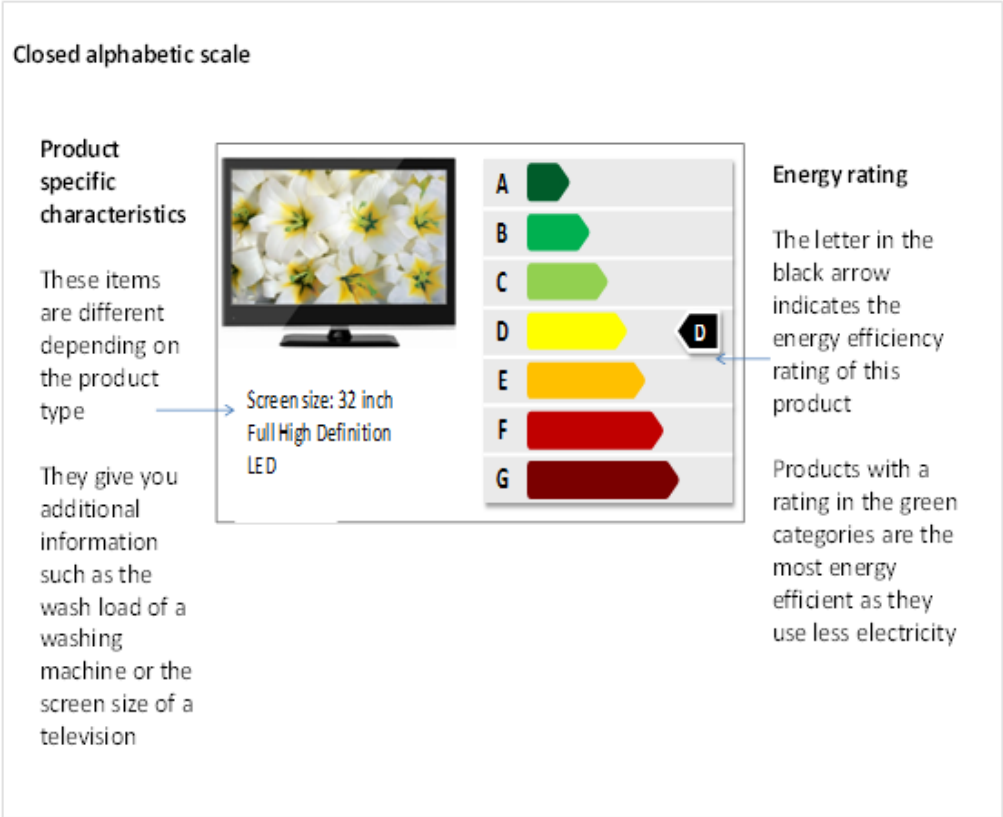
The order in which the respondents completed the choice experiment and bidding exercise was randomised such that half completed the BDM first and half completed the choice experiment first. All participants completed the questionnaire and the interpretation test last.

Participants were divided into five equal treatment groups, one for each of the different label frame treatments. The allocation to each group was random with 20% allocated to each. This corresponds to 100 and 200 respondents from small and large countries, respectively, in each group. Participants remained in the same treatment group throughout the whole behavioural experiment.

3.4.1 Information stage

Before starting the experiment tasks all participants received an information screen that explained the main features of the energy labels. Respondents were presented with the information screen for their specific treatment group, and were required to remain on this screen for at least 30 seconds before moving on. Figure 1 shows the information screens using washing machines as the example product.

Figure 1: Online behavioural experiment information screens



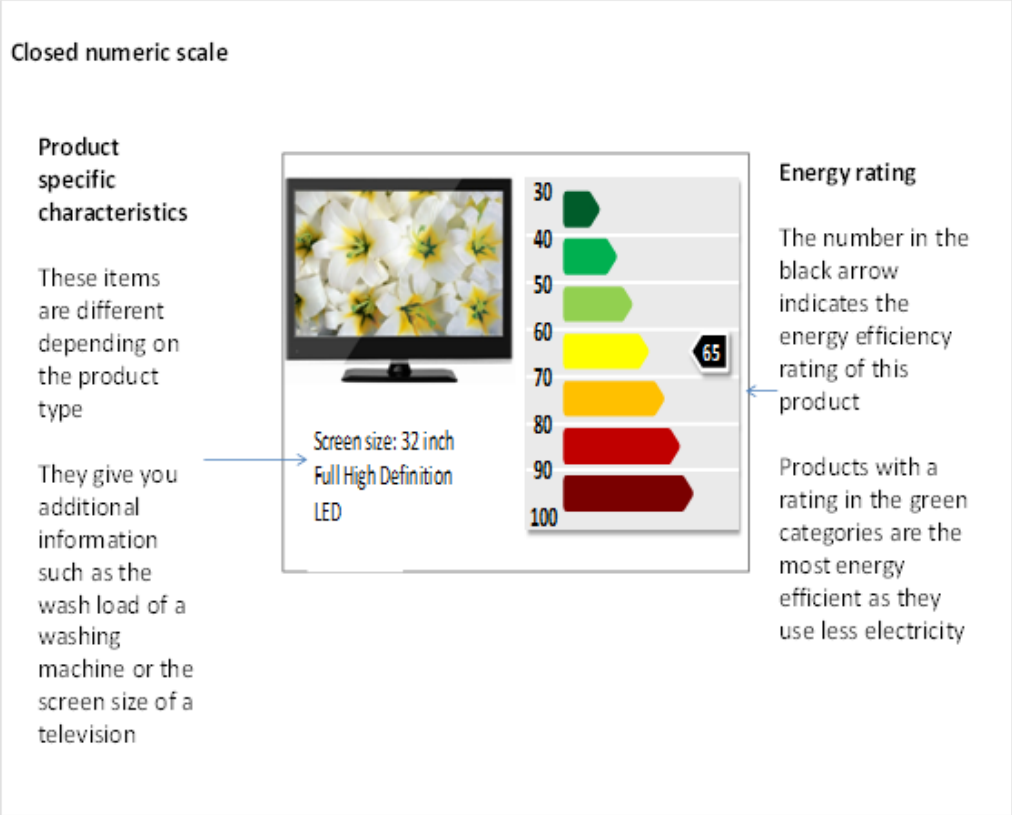
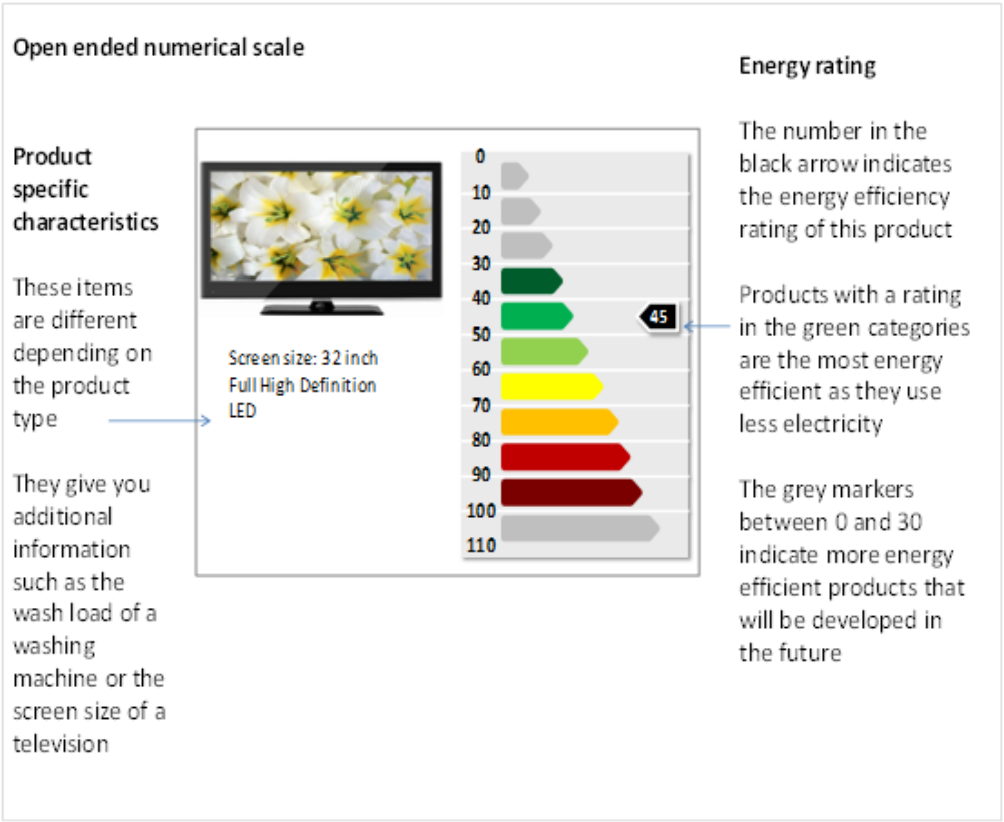


Figure 1: Online behavioural experiment information screens



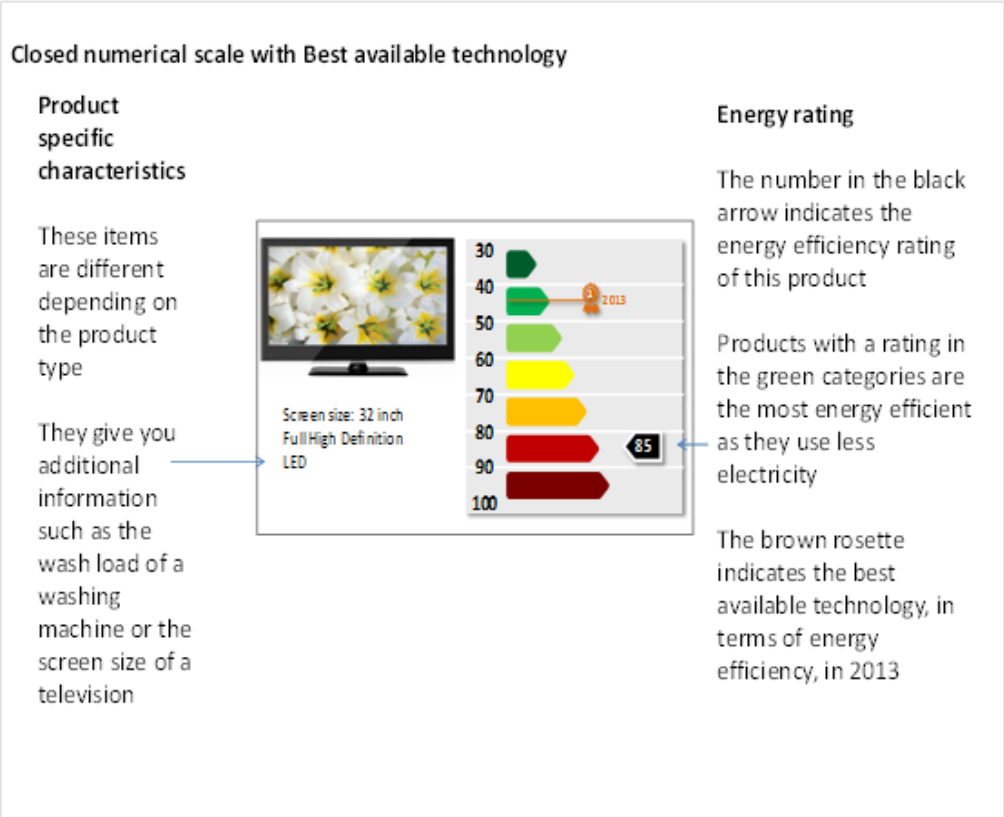
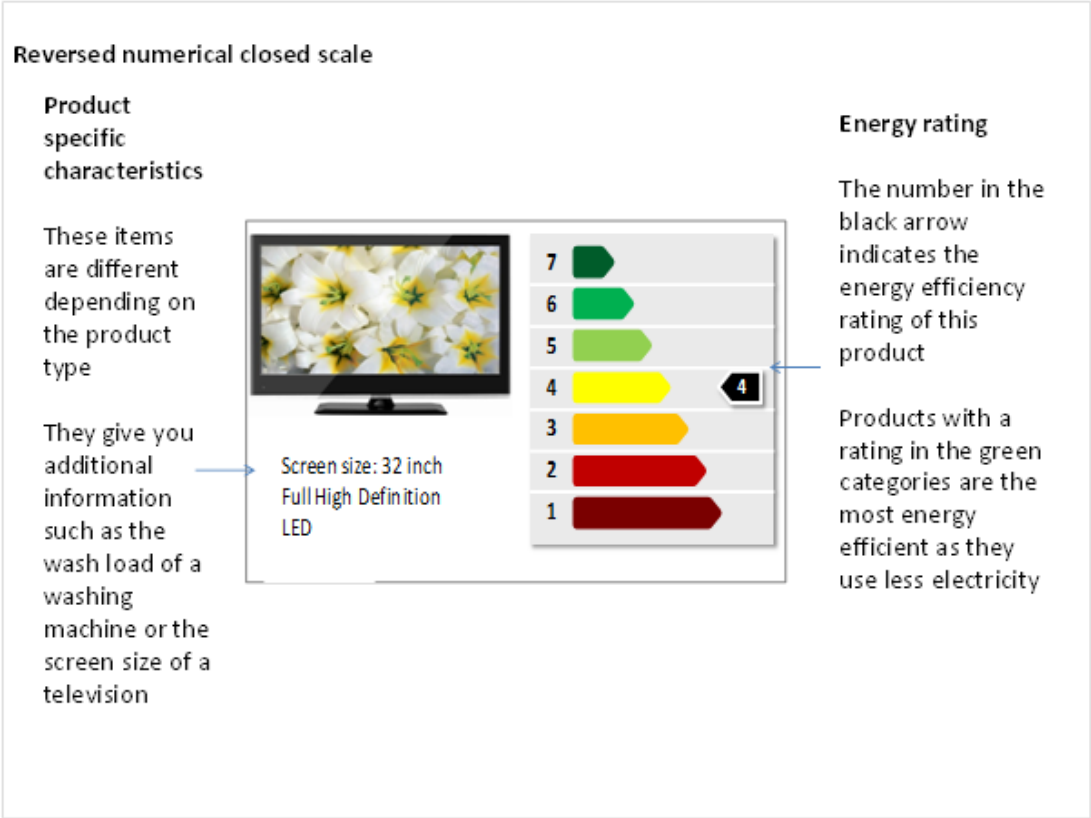


Figure 1: Online behavioural experiment information screens



3.4.2 Choice experiment

The aim of the choice experiment was to isolate the impact of energy rating on consumers' product choices when these ratings are presented in the baseline frame (Treatment 1), and via specific possible variants of the current label (Treatments 2 to 5).

How the choice experiment worked

Respondents were informed that:

1. They were going to be asked to make choices between the hypothetical products washing machines, televisions and light bulbs.
2. The products would have different energy efficiency ratings and different prices, which would vary across the choices offered to them.
3. The price of each option was the hypothetical one-off cost to them of purchasing the product. In this experiment they did not earn any points.
4. They should suppose that they were in the market for these products and, although the choices were hypothetical, they should respond based on their preferences as if the choices were real.
5. They would be asked to make nine choices in total.

For each product type, respondents from each group made three choices (i.e. nine choices in total) between products carrying the particular label design assigned to that group. Respondents in each group were asked to choose between specific pairs of products with differing energy efficiency levels.

Each of the energy efficiency label designs is a seven point scale, which means that in each treatment there are 21 different energy efficiency combinations. Multiplying this across each of the five different treatments and three different products means that there are 315 different combinations of energy efficiency. The sample sizes associated with each of these different combinations would have been very small, if we had included all of these different energy efficiency combinations in the choice experiment.

The vast majority of recent sales for each of these three products were in only four different energy efficiency levels.[2] Therefore we included four different energy efficiency levels for each of the different products in the choice experiment. There were a total of 90 different combinations of energy efficiency labels that participants could face, which can be seen in the table below.

Table 3: Energy efficiency label pair combinations

	Treatment 1		Treatment 2		Treatment 3		Treatment 4		Treatment 5	
Washing machines	B	C	45	55	45	55	45	55	6	5
	B	D	45	65	45	65	45	65	6	4
	B	E	45	75	45	75	45	75	6	3
	C	D	55	65	55	65	55	65	5	4
	C	E	55	75	55	75	55	75	5	3
	D	E	65	75	65	75	65	75	4	3
Televisions	A	B	35	45	35	45	35	45	7	6
	A	C	35	55	35	55	35	55	7	5
	A	D	35	65	35	65	35	65	7	4
	B	C	45	55	45	55	45	55	6	5
	B	D	45	65	45	65	45	65	6	4
	C	D	55	65	55	65	55	65	5	4
Light bulbs	B	C	45	55	45	55	45	55	6	5
	B	D	45	65	45	65	45	65	6	4
	B	E	45	75	45	75	45	75	6	3
	C	D	55	65	55	65	55	65	5	4
	C	E	55	75	55	75	55	75	5	3
	D	E	65	75	65	75	65	75	4	3

These pairs were randomly allocated across respondents, such that each pair appeared an equal number of times for respondents in each country.

Prices were assigned as follows:

[2] ECOFYS (2013) Evaluation of the Energy Labelling Directive and specific aspects of the Ecodesign Directive. ENER/C3/2012-523.

- The price of the product with the lower rating was fixed at the average price for the country (see Table 4)

- The price of the product with the higher rating was randomly assigned one of six levels relative to the price of the other product: 1) 5% more expensive; 2) 10% more expensive; 3) 15% more expensive; 4) 20% more expensive; 5) 25% more expensive; and 6) 30% more expensive.

These are displayed in the table below. Base prices for each product came from a web sweep conducted for a previous EC study in 2010[3] and were adjusted for inflation. The price levels were also based on those used in this previous study.

Table 4: Price levels used in the choice experiment

		Czech Republic	France	Italy	Poland	Romania	Norway	United Kingdom
Washing machine	Base	10000	385	415	1660	1835	2895	335
	+5%	10500	404	436	1743	1927	3040	352
	+10%	11000	424	457	1826	2019	3185	369
	+15%	11500	443	477	1909	2110	3329	385
	+20%	12000	462	498	1992	2202	3474	402
	+25%	12500	481	519	2075	2294	3619	419
	+30%	13000	501	540	2158	2386	3764	436
Television	Base	9000	230	150	880	970	1545	205
	+5%	9450	242	158	924	1019	1622	215
	+10%	9900	253	165	968	1067	1700	226
	+15%	10350	265	173	1012	1116	1777	236
	+20%	10800	276	180	1056	1164	1854	246
	+25%	11250	288	188	1100	1213	1931	256
	+30%	11700	299	195	1144	1261	2009	267
Light bulb	Base	85	3.3	5.7	11.7	5	20.3	1.7
	+5%	89.3	3.5	6.0	12.3	5.3	21.3	1.8
	+10%	93.5	3.6	6.3	12.9	5.5	22.3	1.9
	+15%	97.8	3.8	6.6	13.5	5.8	23.3	2.0
	+20%	102.0	4.0	6.8	14.0	6.0	24.4	2.0
	+25%	106.3	4.1	7.1	14.6	6.3	25.4	2.1
	+30%	110.5	4.3	7.4	15.2	6.5	26.4	2.2

Note: All values are in national currencies.

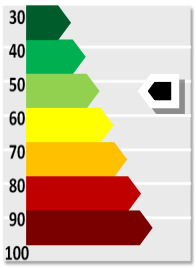
On-screen presentation

The two products were presented side-by-side, and there was a prompt asking respondents to pick their preferred option. The choice cards were randomised so that the better/worse energy efficiency product was swapped from left to right and vice versa.

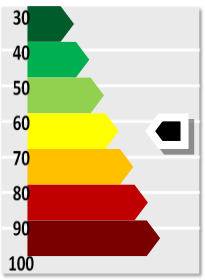
An example of washing machines for the UK is shown below.

[3] Web sweep was conducted for DG Energy Research in EU product label options, October 2012.

Figure 2: Example of on-screen presentation for choice experiment

Spin speed: 1400rpm
Wash load: 7kg
Price: **£352**

Spin speed: 1400rpm
Wash load: 7kg
Price: £**335**

3.4.3 Bidding experiment

In the bidding experiment respondents were informed that:

1. They would be asked to bid for the three consumer products: washing machines, televisions and light bulbs.
2. The experiment would be conducted in real currency units (i.e. €, £), with conversion rates applied to calculate how much they earned in reality.
3. They would be informed of the conversion rate once, at the beginning of the experiment.
4. They could redeem each product that they successfully 'won' (i.e. bought) for a certain amount in currency units (they were told up-front how many currency units they would receive for a washing machine, television and light bulb). This is referred to as their *redemption value*.
5. If the amount they bid for a product was above the *sale price*, they won the product and paid the sale price. The sale price was randomly drawn from a pre-specified interval (they were told what the interval is). The sale price was re-drawn for each new bid, and participants' were told that the sale price would not remain the same across bidding opportunities.
6. Participants' earnings on the products they won were the redemption value *minus* sale price.
7. If participants derived value/utility from goods that are more environmentally friendly, then they would be willing to bid this 'environmental value' above their private benefit.
8. If participants bid above their redemption value, and they won the good and the sale price was greater than their redemption value then they could lose money because earnings were redemption value *minus* sale price.

9. To prevent participants making losses in the experiment we gave participants an endowment for each product they bid on. This endowment then decreased in cases where the participant won the good and the sale price was greater than their redemption value.
10. We incentivised the environmental externalities (higher energy efficiency rating) using the following text:

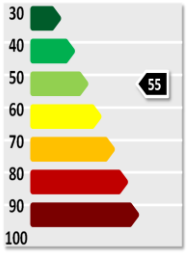
    If you win products that are energy efficient Ipsos will make a financial contribution towards environmental improvements. The size of the contribution will depend on how energy efficient these products are. If you win highly energy efficient products then the contribution will be greater.

This was important to ensure saliency in the experiment. In other words both the private and public benefits are incentivised, which is important for robust design. We carefully worded how the externality was incentivised in the experiment to ensure that we did not overplay the externality relative to a field setting.

At the end of the exercise, respondents received points worth the total (cumulative) redemption value of all the products that they won, minus the total that they paid.

Figure 3: Example screen from the bidding exercise

Washing Machine



Spin speed: 1400rpm
Wash load: 7kg

Sale price range: £318 - £352

Resale value: &335

As discussed in the description of the choice experiment, research has shown that the majority of washing machines, televisions and light bulbs purchased recently across the EU fall into just four different energy efficiency categories. Therefore, as in the choice experiment, only these four levels are included in the bidding exercise.

Ratings were randomly drawn from the range of ratings, with the restriction that each individual rating appeared an equal number of times for respondents in each country. The list of possible energy efficiency ratings are listed below in Table 5.

Table 5: Bidding experiment energy efficiency ratings

	Treatment 1	Treatment 2	Treatment 3	Treatment 4	Treatment 5
Washing machine	B,C,D,E	45,55,65,75	45,55,65,75	45,55,65,75	6,5,4,3
Television	A,B,C,D	35,45,55,65	35,45,55,65	35,45,55,65	7,6,5,4
Light bulbs	B,C,D,E	45,55,65,75	45,55,65,75	45,55,65,75	6,5,4,3

The two most energy efficient ratings in each of the treatments for each product were considered as 'good' and the other two energy ratings were considered 'bad'. We made donations for the good products and not for the bad products. We added text to the instructions so that respondents got feedback on when a donation was made.

Respondents were informed of their redemption values at the start of the bidding process. These were fixed for each product/respondent throughout the exercise.

Redemption values were set similar to market prices in each country. These were based on a previous web sweep conducted for EC DG Energy in 2010[4] and adjusted for inflation. The redemption values are shown in the table below.

Table 6: Redemption values used in the bidding exercise

	Washing machine (1,400 rpm, 7 kg)	Television (LED, 32 inch screen)	Light bulb (Energy Saving Halogen)
Czech Republic (CZK)	10000	9000	85
France (EUR)	385	230	3.3
Italy (EUR)	415	150	5.7
Poland (PLN)	1660	880	11.7
Romania (LEU)	1835	970	5
Norway (NOK)	2895	1545	20.3
United Kingdom (GBP)	335	205	1.7

Note: All values are in national currencies.

Source: London Economics' web sweep conducted during May 2012 and adjusted for national sectoral inflation. Average prices across a set of brands for each product available from a range of online retailers for each Member State.

Sales prices were drawn from a uniform distribution where the minimum possible price was below the redemption value and the maximum possible price was above the redemption value. We set the maximum sales price at 5% above the redemption value and the minimum sales price at 5% below the redemption value for washing machines and televisions. For light bulbs we set the maximum sales price 10% higher than the redemption value with a lower range of 10% below the redemption value.[5]

3.4.4 Incentivised interpretation test

To gauge participants' understanding of the five different label designs used in the different treatments, we implemented an incentivised interpretation test.

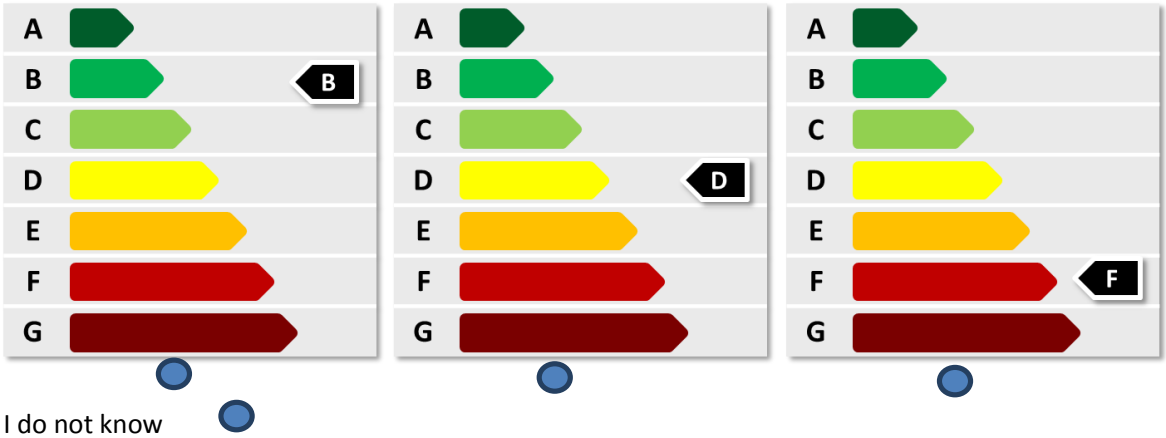
[4] Web sweep was conducted for DG Energy Research in EU product label options, October 2012.

[5] This approach was adopted following an earlier experimental study for DG Energy Research in EU product label options, October 2012.

To test understanding of the designs used in the **alphabetic closed scale**, **numeric closed scale** and **reverse numeric closed scale** framings participants were shown three energy efficiency labels side-by-side for each of the designs and were asked to select the most energy efficient rating. The figure below shows an example for the alphabetic closed scale.

Figure 4: Example understanding question

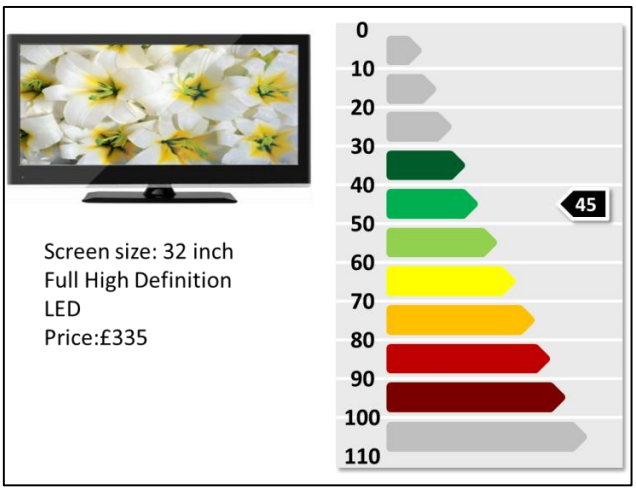
Please select the product you think is the most energy efficient.



Testing the understanding of the design used in the **numeric open scale** framing was undertaken by showing an example product and energy efficiency label with three possible explanations of the meaning of the grey arrows indicating the open-ended scale. The figure below presents this question.

Figure 5: Understanding test numeric open scale

Looking at the grey arrows at the top of the label, please select the appropriate answer.



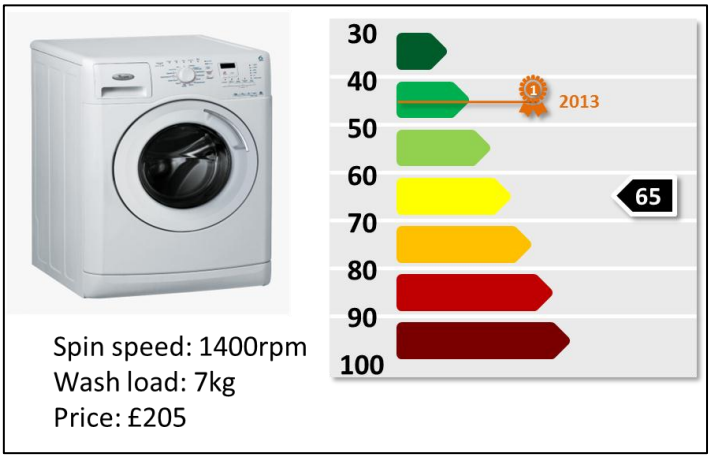
The grey arrows at the top of the label indicate the following:

1. They indicate the energy rating of televisions that are available in other countries
2. They indicate the energy rating of products other than televisions
3. They indicate the energy rating of televisions that will be available on the market in the future
4. I do not know

The test of understanding of the design of the **numeric closed scale with benchmark marker** framing involved participants viewing an example product and energy efficiency label with a three possible explanations for the meaning of the orange label indicating the best energy efficiency product currently available in the market. The figure below shows this question.

Figure 6: Understanding test benchmark marker

Looking at the orange marker, please select the appropriate answer.



The orange marker on the label indicates:

1. The energy efficiency of a washing machine that will be available on the market in the future
2. The best energy efficiency washing machine currently available on the market
3. The energy efficiency of the washing machine shown in the picture above
4. I do not know

All participants were asked to answer all of the interpretation test questions, even if they had not viewed that particular label design in the experiment. Our reason for doing this was to understand whether people who had never seen these alternative energy efficiency label designs could identify the meaning of these labels without additional explanation. This would replicate the experience of consumers being faced with these labels on products in the real world for the first time.

3.5 Understanding of the different energy label framings

This section considers the results of the incentivised interpretation test and hence focuses on consumer understanding of the different energy label framings used in the choice experiment and BDM bidding exercise. To recap, the five different energy label framings are:

- Alphabetic closed scale
- Numeric closed scale
- Numeric open scale
- Numeric closed scale with a benchmark marker
- Reverse numeric closed scale

We may expect to observe differences in the levels of understanding across participants depending on the label design treatment group in which they were in.

The reason for this is that prior to the choice experiment and bidding exercise, once participants had been randomly placed into a specific treatment group, they received an explanation of the particular label design which they would face in these two parts of the behavioural experiment. The four alternative label designs are not explained to them.

Therefore, we may expect participants to have a better understanding of the label design which they receive an explanation of, but not as good an understanding of the alternative label designs.

However, we may also expect participants to have a good understand of the **alphabetic closed scale** framing as it is similar to the current EU energy label. The difference between the two is that the framing we are testing does not include ratings above A (e.g. A+, A++ etc.), as previous research suggests these ratings are not well understood by consumers.[6]

We have tested the understanding of different framings of label designs on participants who do not receive prior explanation of the designs in order to recreate the experience of consumers viewing these labels for the first time when making a purchasing decision.

Therefore, throughout this section we will consider the understanding of each of the different energy label framings by those in that specific label framing group and also by those in the alternative groups.

3.5.1 Ability to identify the most energy efficient product

As discussed in the design section above, there are three questions in the incentivised interpretation test which asked participants to choose the most energy efficient product with each question relating to a different energy label framing. These test participant understanding of the **alphabetic closed scale**, **numeric closed scale** and **reverse numeric closed scale** framings.

We find that consumer understanding of each of these framings is very high. At least 90% of participants were able to identify the most energy efficient product when faced with a choice of three different energy efficient ratings in each of these different framings irrespective of whether they received a prior explanation or not.

The fact that even participants who do not receive prior explanation of the specific energy label framings had a very good understanding of the framings may suggest that they are noticing the similarities between the framings (e.g. colour coding scale) and using these to make their decision.

While overall understanding is high, there is a slight difference in understanding between these two groups (information and no information). In the case of the **numeric closed scale** and **reverse numeric closed scale** framings this difference is statistically significant.[7]

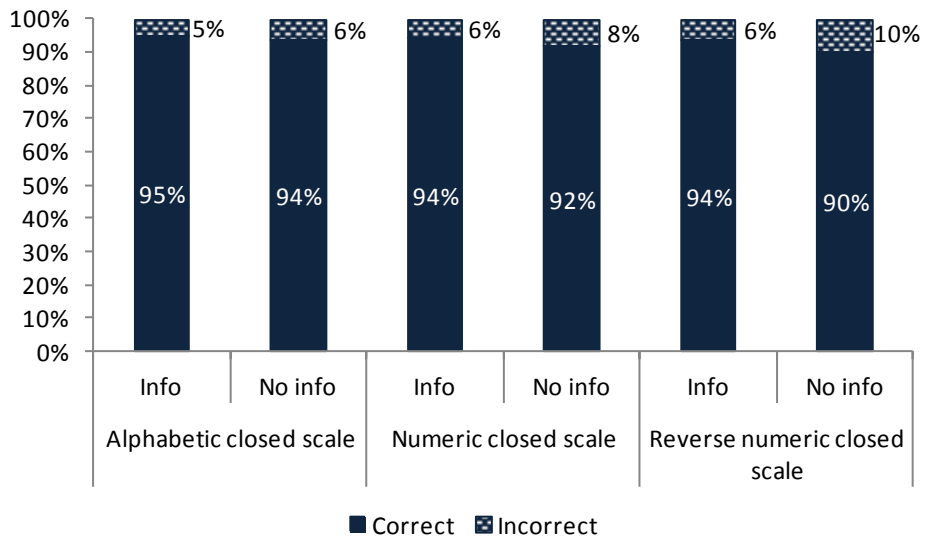
The **alphabetic closed scale** framing had the highest proportion of participants able to correctly identify the most energy efficient product, both those who had received an explanation of the framing design and those who had not. The similarity between the **alphabetic closed scale** framing and the current EU energy label is likely to be the reason for this higher level of understanding.

[6] Consumer Focus, 2012.

[7] Both are statistically significant at the 99% level.

Indeed we find that participants who had seen the current EU energy label on a washing machine, television or light bulb before the experiment are more likely to correctly identify the most energy efficient product when faced with the question relating to the **alphabetic closed scale** framing.[8]

Figure 7: Share of participants that could correctly identify the most energy efficient product when faced with different energy label framings



Note: Results are split between those who received an explanation of the specific energy label framing (Info) and those who did not (No info)Underlying data can be found in Table 20, Annex 5.
Source: Incentivised interpretation test

3.5.2 Understanding of specific elements of different energy label framings

There are two questions in the incentivised interpretation test which ask participants to identify the meaning of specific elements of an energy label framing. These test participant understanding of the grey arrows in the **numeric open scale** framing and the benchmark marker indicating the best available technology in the **numeric closed scale with benchmark marker** framing.

We find that 61% of participants that receive an explanation of the meaning of the grey arrows on the **numeric open scale** framing are able to correctly identify their meaning in the incentivised interpretation test. This finding shows that even with an explanation, over a third of participants cannot correctly understand the meaning of the open ended scale.

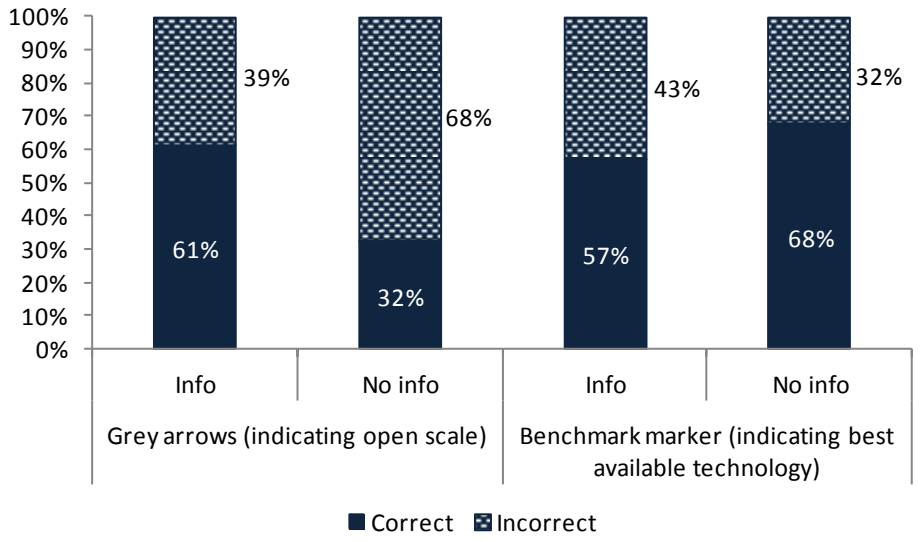
The grey arrows were less well understood by those who did not receive an explanation of their meaning at the beginning of the experiment and this difference is unlikely to have occurred simply by chance.[9] Under a third of these individuals correctly identify the meaning of the grey arrows on the open ended scale.

[8] Statistically significant at 99% level.

[9] Statistically significant at 99% level.

We find that 57% of participants who receive prior explanation of the benchmark marker used in the **numeric closed scale with benchmark marker** framing are able to correctly identify its meaning from the choice of three possible alternatives. Surprisingly however, a higher proportion of those participants that did not receive an explanation are able to correctly identify the meaning of the benchmark marker.[10]

Figure 8: Share of participants that could correctly identify the meaning of specific features of different energy label framings



Note: Results are split between those who received an explanation of the specific energy label framing (Info) and those who did not (No info). The 'Grey arrows indicating open scale' compares the results of those in the numeric open scale framing and those in other framings. The 'Benchmark marker' compares the results of those in the numeric closed scale with benchmark marker framing and those in other framings. Underlying data can be found in Table 21, Annex 5.
Source: Incentivised interpretation test

3.6 Impact of different energy label framings on consumer behaviour

3.6.1 Experiment analysis methodology

The bidding exercise and the choice experiment are designed such that comparisons between product choice and willingness to pay for each of the three products can be made across the 5 alternative energy label framings:

- Alphabetic closed scale
- Numeric closed scale
- Numeric open scale
- Numeric closed scale with a benchmark marker
- Reverse numeric closed scale

[10] We find that the participants in the **numeric closed scale with benchmark marker** framing did significantly worse in the incentivised interpretation test than those in other treatment groups, when we consider responses to each of the five questions.

The baseline framing is the **numeric closed scale** framing. Through a comparison of the behaviour of those participants in alternative framings to the behaviour of those in this framing we are able to elicit the impact of specific changes to energy labels.

We test the impact of the following variations in energy label framing:

- Numeric vs Alphabetic scale
- Closed vs Open scale
- No benchmark marker vs Benchmark marker
- Decreasing vs Increasing scale

We are able to isolate the impact on behaviour of moving from a numeric to an alphabetic scale through comparing the results of those individuals in the **numeric closed scale** framing and those in the **alphabetic closed scale** framing [**Numeric vs Alphabetic scale]**.

A comparison of the results of participants in the **numeric closed scale** framing and those in the **numeric open scale** framing enables us to isolate the effect of moving from a closed scale to an open-ended scale [**Closed vs Open scale]**.

We isolate the impact of adding a benchmark marker indicating the best available technology on the market by comparing the results of participants in the **numeric closed scale** framing and those in the **numeric closed scale with the best available technology marker** framing [**No benchmark marker vs Benchmark marker].**

The effect of moving from a decreasing to an increasing numerical scale is gauged by comparing the results of those individuals in the **numeric closed scale** framing and those in the **reverse numeric closed scale** [**Decreasing vs Increasing scale**]**.**

3.6.2 Impact of different energy label framings on consumer bidding behaviour

In the BDM bidding exercise, there are four energy efficiency ratings in each of the five different framings for each of the three products, so 60 energy efficiency ratings in total. These are grouped into two categories for the purposes of the analysis, 'good' and 'bad'.

The four energy efficiency ratings in each framing for each product are assigned to the two categories with two 'good' and two 'bad' ratings. For example, washing machines in the **alphabetic closed scale** framing could have an energy efficiency rating 'B', 'C', 'D' or 'E'. Therefore 'B' and 'C' are classed as 'good' ratings and 'D' and 'E' are classed as 'bad' ratings.

Our analysis of the BDM bidding experiment consists of three elements

Analysis of the average bids for 'good' and 'bad' products for each of the three products in each of the five different energy label framings

Analysis of whether the differences between these average bids for 'good' and 'bad' products are unlikely to have resulted simply by chance.[11]

[11] Whether the differences were statistically significant.

Analysis of differences in bidding behaviour across the five different energy label framings

Analysis of the average bids for 'good' and 'bad' products

Through grouping the bids made by participants depending on the product, energy rating and energy label framing they were faced with, it is possible to derive average (mean and median) bids.

The results of the bidding experiment show that the average bids for a 'good' product is higher than those of a 'bad' product across each of the products across each framing. Considering televisions, for example, we find that the difference between the mean bid for a 'good' and a 'bad' product in the **alphabetic closed scale** framing is €5.

Table 7: Average bids in BDM bidding experiment under each energy label framings (€)

	Alphabetic closed scale		Numeric closed scale		Numeric open scale		Numeric closed scale with a benchmark marker		Reverse numeric closed scale	
	Good	Bad	Good	Bad	Good	Bad	Good	Bad	Good	Bad
Mean										
Light Bulb	3.22	3.15	3.23	3.16	3.25	3.15	3.27	3.14	3.22	3.18
TV	226	221	226	222	226	222	226	222	225	223
Washing machine	398	393	399	393	399	393	398	394	399	393
Median										
Light Bulb	3.00	2.97	3.00	2.99	3.00	2.99	3.07	2.98	2.99	2.99
TV	227	225	227	225	227	225	228	225	228	225
Washing machine	400	394	400	395	401	395	400	395	401	394

Note: For a comprehensive explanation of 'good' and 'bad' please refer back to the methodology and Table 5 and the subsequent explanation.
Source: Incentivised bidding experiment

Analysis of whether the differences between the average bids for 'good' and 'bad' products are unlikely to have resulted simply by chance

In the above section, we have shown the average bids made for each of the products in each of the five energy label framings for 'good' and 'bad' products. In the table below we calculate the differences in the mean bids for 'good' and 'bad' products in each of the energy label framings.

We find that the difference in mean bids between the 'good' and 'bad' products is always positive. In all but one case, we also find that this difference is very unlikely to have occurred simply by chance.[12]

[12] Also known as being 'statistically significant'.

Table 8: Difference in mean bids for 'good' and 'bad' products across each energy label framing (€)

	Alphabetic closed scale	Numeric closed scale	Numeric open scale	Numeric closed scale with a benchmark marker	Reverse numeric closed scale
Light Bulb	0.07**	0.07***	0.10***	0.12***	0.04
TV	4.99***	4.05***	4.17***	3.80***	2.87**
Washing machine	4.94***	5.91***	6.04***	4.36***	5.77***

Note: *, **, *** indicates the difference is statistically significant at the 90%, 95% and 99% level.
Source: Incentivised bidding experiment

Analysis of differences in bidding behaviour across the five different energy label framings

We can identify differences in bidding behaviour across the different energy label framings through a comparison of the difference in mean bids for 'good' and 'bad' products (shown in Table 8).

We test whether variations in the difference in mean bids for 'good' and 'bad' products across energy label framings are unlikely to have simply resulted by chance and can be said to be 'statistically significant'.

Table 9 which contains the numeric difference in the mean additional amount participants are willing to bid for the 'good' rather than 'bad' products across the framings. The asterisks indicate statistical significance. Each of the differences is calculated by subtracting the mean additional amount participants are willing to bid for the 'good' rather than 'bad' products in a particular energy label framing against the equivalent value from the **numeric closed scale** framing.

For example, the difference between the 'Closed vs Open scale' for a light bulb is - 0.03 and this is calculated as (0.07 – 0.10), which from Table 8 we can see are the mean additional amount participants are willing to bid for a 'good' rather than 'bad' light bulb in the **numeric closed scale** framing and the **numeric open scale** framing, respectively. This illustrates that the average difference in the amount participants are willing to pay between good and bad products is greater in the numeric open scale than in the numeric closed scale.

We find that in the case of washing machines, the difference between the average 'good' and average 'bad' bids is greater in the **numeric closed scale** framing than in the **alphabetic closed scale** framing and this difference is unlikely to have resulted by chance.[13]

This finding suggests the use of a numeric rather than alphabetic framing would be favourable. It is not a conclusive finding though, as it is only true for washing machines and not the other two products.

[13] Statistically significant at the 90% level.

We also identify that there is a difference between 'good' and 'bad' average bids in the **numeric closed scale** framing than in the **numeric closed scale with benchmark marker** framing for washing machines and this difference is unlikely to have resulted by chance.[14]

This finding suggests that the inclusion of a benchmark marker displaying the best available technology would not be beneficial in terms of encouraging participants to pay a greater differential for 'good' rather than 'bad' products. However this result is not conclusive as we do not find it to be the case for light bulbs or televisions.

Table 9: Difference in the mean additional amount participants are willing to bid for 'good' rather than 'bad' products across energy label framings (€)

	Numeric vs Alphabetic scale	Closed vs Open scale	No benchmark marker vs Benchmark marker	Decreasing vs Increasing scale
Light Bulb	0.00	-0.03	-0.05	0.03
TV	-0.94	-0.11	0.25	1.18
Washing machine	0.97*	-0.13	1.55***	0.14

Note: *, **, *** indicates the difference is statistically significant at the 90%, 95% and 99% level. 'Numeric vs Alphabetic scale' is a comparison between the numeric closed scale and alphabetic closed scale framings; 'Closed vs Open scale' is a comparison between the numeric closed scale and the numeric open scale framings; 'No benchmark marker vs Benchmark marker' is a comparison between the numeric closed scale and the numeric closed scale with benchmark marker framings; 'Decreasing vs Increasing scale' is a comparison between the numeric closed scale and the reverse numeric closed scale framings.
Source: Incentivised bidding experiment

3.6.3 Impact of different energy label framings on consumer purchasing behaviour

In the choice experiment, participants were asked to make hypothetical purchasing decisions between two products that varied only by price and energy efficiency rating. The product with the better energy efficiency rating is always more expensive than the less energy efficient product, referred to as a price premium

The more energy efficient product is either 5%, 10%, 15%, 20%, 25% or 30% more expensive than the less energy efficient product. Therefore those participants that choose the more energy efficient product are prepared to hypothetically pay a premium to purchase the more energy efficient product.

In the choice experiment, there are six energy efficiency label pair combinations in each of the five energy label framings for each of the three products, so 90 energy efficiency rating combinations in total (see Table 3). We analyse the results of the choice experiment based on whether the more energy efficient product was chosen or the less efficient product.

Our analysis of the choice experiment consists of three elements

- Analysis of how the energy label framings affect the share of participants willing to pay a higher price for a more energy efficient product, across the different energy label framings.

[14] Statistically significant at 99% level.

- Analysis of how the share of participants willing to pay a higher price for a more energy efficient product changes as the premium increases, across the different energy label framings.
- Analysis of average additional amount that participants are willing to pay for a more energy efficient product, across the different energy label framings.

Analysis of how the energy label framings affect the share of participants willing to pay a higher price for a more energy efficient product

The first aspect of the choice experiment that we consider is the proportion of participants that are willing to pay a premium to purchase the more energy efficient product and whether this varies depending on the energy label framing.

We find that in each of the framings the product for which the highest proportion of participants is willing to pay a premium for the more energy efficient product is light bulbs, followed by televisions and then washing machines.

A possible reason for this ordering is that as light bulbs are the cheapest of the three products, the price differential between the more and less energy efficient product is the smallest in absolute terms. Therefore more participants appear to be content to pay a 5%-30% higher price for the more energy efficient light bulb as in monetary terms this difference is smaller than for televisions and washing machines.

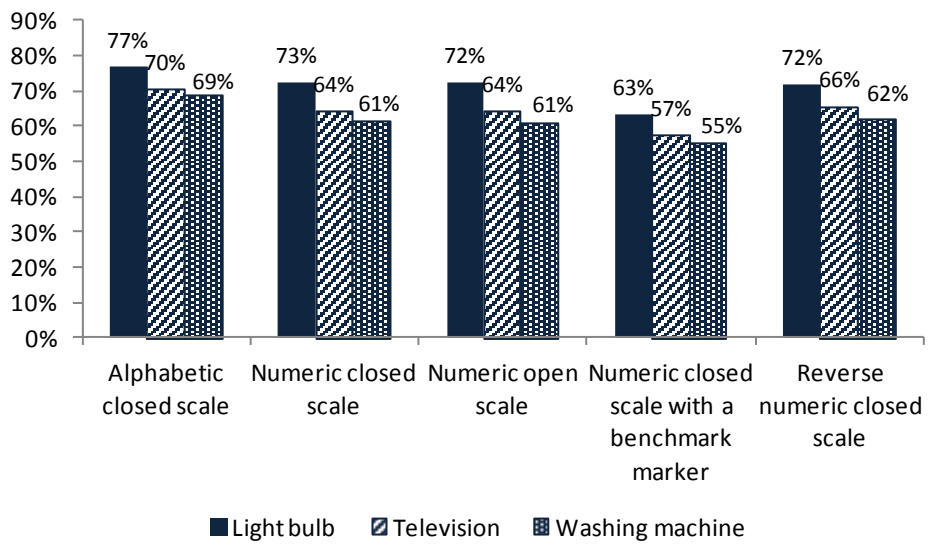
Impact of different energy label framings

We observe that the energy label design which has the highest proportion of participants purchasing the more energy efficient product is the **alphabetic closed scale** framing**.** This is the case for each of the three products.

As with the BDM bidding exercise results, we will analyse the impact of different energy label framings by considering the following comparisons:

- Numeric vs Alphabetic scale
- Closed vs Open scale
- No benchmark marker vs Benchmark marker
- Decreasing vs Increasing scale

Figure 9: Share of participants willing to pay a premium for the more energy efficient product across the different energy label framings



Note: Underlying data can be found in Table 22, Annex 5.
Source: Choice experiment

Numeric vs Alphabetic scale

We find that a higher proportion of respondents faced with the **alphabetic closed scale** label design are willing to pay a premium for the more energy efficient product than in the **numeric closed scale** framing.

A 4% higher proportion of participants in the **alphabetic closed scale** framing (77%) are willing to pay a premium for more energy efficient light bulbs than in the **numeric closed scale** framing (73%). For televisions the difference is 6% and for washing machines the difference is 8%. All of these differences are statistically significant.[15]

Closed vs Open scale

We do not identify any clear differences between closed and open scales on the proportion of participants willing to pay a premium for a more energy efficient product.[16] Figure 9 shows that across the **numeric closed scale** framing and the **numeric open scale** framing the proportion of participants willing to pay a premium for the more energy efficient product is very similar for each of the three products.

[15] Each of these three differences are statistically significant at 99% level.

[16] No differences are statistically significant at the 90% level.

No benchmark marker vs Benchmark marker

We find that the inclusion of a benchmark marker leads to a lower proportion of participants being prepared to pay a premium for a more energy efficient product.

For light bulbs there is a 10% lower proportion of participants willing to pay a premium for a more energy efficient product in the **numeric closed scale with a benchmark marker** framing than in the **numeric closed scale** framing. This difference is 7% for televisions and 6% for washing machines.[17]

Decreasing vs Increasing scale

We do not find a consistent effect of moving from a decreasing to an increasing scale on the share of participants willing to pay a premium for a more energy efficient product.

We observe that a higher proportion of participants in the **numeric closed scale** framing are willing to purchase a more energy efficient light bulb than in the **reverse numeric closed scale** framing. However, for televisions and washing machines we find a higher proportion of participants in the **reverse numeric closed scale** framing are willing to pay such a premium than in the **numeric closed scale** framing.[18]

Share of participants willing to pay a higher price for a more energy efficient product carrying the different energy label framing as the premium increases

In addition to considering the share of participants willing to pay a premium for a more energy efficient product, we can also observe how this share changes as the size of the premium increases.

Figure 10 below shows the share of respondents that chose the more energy efficient product as the price premium charged for the more energy efficient product increases. There are three charts (one for each product) and on each of the charts there are five lines (one for each framing).

We find across all products tested that as the price premium charged for the more energy efficient product increases the share of participants choosing this product decreases. This can be seen by the downward trend in Figure 10.

We observe that there is a higher proportion of participants in the **alphabetic closed scale** framing than in other framings that choose the more energy efficient product at each of the different price premium levels, across the three products. For example, when the price charged for a more energy efficient light bulb is 5% higher than the price charged for the less energy efficient light bulb, 89% of participants choose the more efficient light bulb in the **alphabetic closed scale** framing. In the case of televisions this is 87% and for washing machines it is 86%.

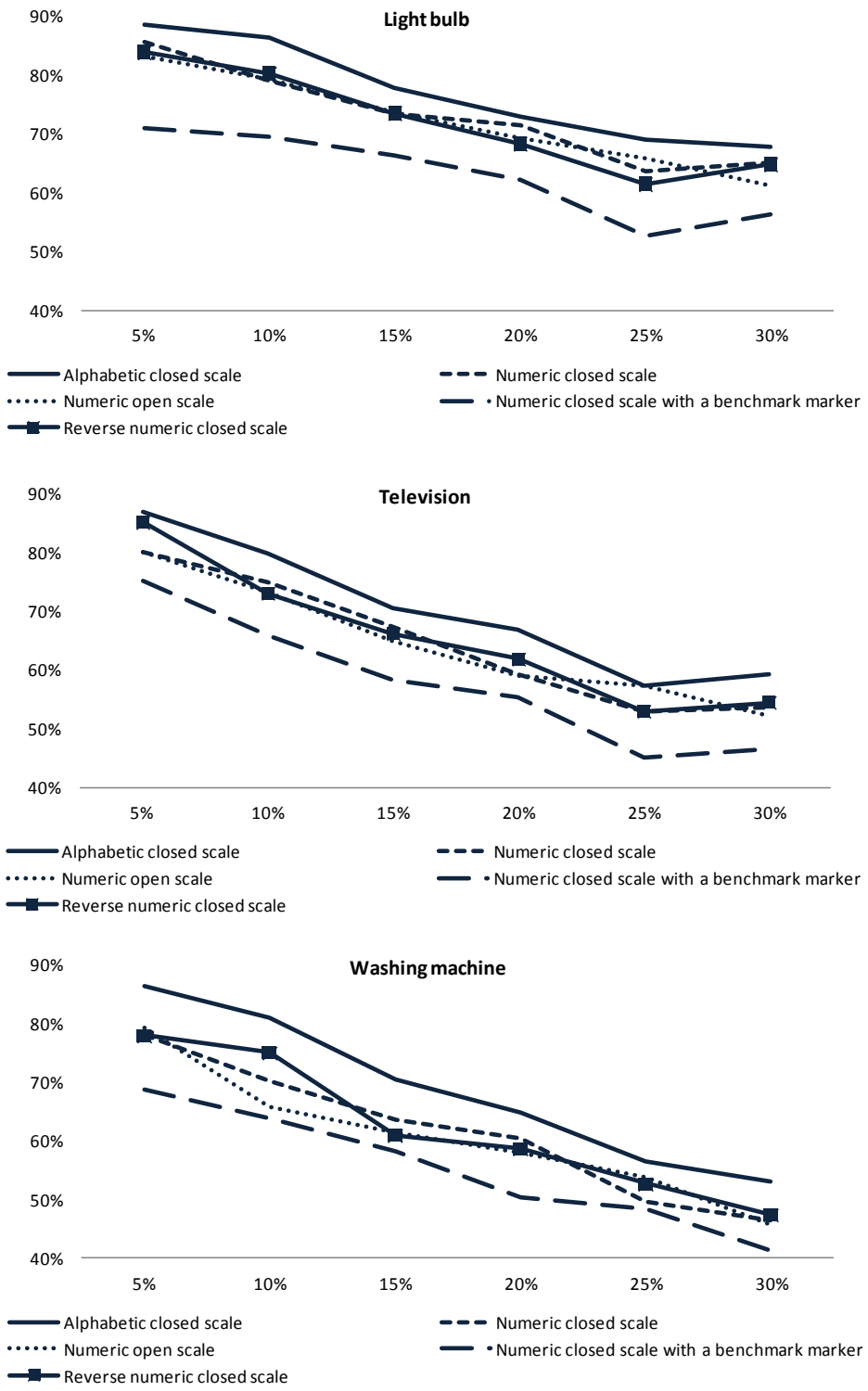
The numeric closed scale, numeric open scale and the reverse numeric scale framings perform relatively similarly. However, we can clearly observe that the share of participants willing to pay a premium for a more energy efficient product in the **numeric closed scale with benchmark marker**

[17] Statistically significant at 99% level.

[18] Not statistically significant at 90% level.

frame, is consistently below that for all other frames. For example, when the price charged for a more energy efficient light bulb is 5% higher than the price charged for the less energy efficient light bulb, 71% of participants choose the more efficient light bulb in the **numeric closed scale with benchmark marker** framing. This proportion is much lower than is found in the other framings.

Figure 10:Share of participants willing to pay a higher price for more energy efficient products as the premium increased



Note: Horizontal axis indicates level of the price premium charged for a 'good' product, Vertical axis indicates share choosing 'good' product. Underlying data can be found in Table 23, Annex 5.
Source: Choice experiment

Average additional amount that participants are willing to pay for a more energy efficient product

In this section, we analyse the average additional amount that participants are willing to pay for a more efficient product and whether this varies depending on the energy label framing, as known as the average minimum premium (See Box 4).

It should be noted that the results from this section are lower bound estimates of the additional amount that participants are willing to pay for a more energy efficient product. This is due to the fact that they are calculated based on the choices made by participants in the choice experiment which does not inform us of the maximum additional amount they would be willing to pay for the more energy efficient product. A more detailed explanation of this can be found in Box 4.

Box 1: Explanation of average minimum premium

To explain this using an example, if a participant from Italy was faced with the following two options for a television:

Price: €150 and Energy efficiency rating: C

Price: €180 and Energy efficiency rating: B

If they choose the second option, this shows that they are prepared to pay at least a €30 premium for the more energy efficient option. However, this participant may have been willing to pay a much higher premium for a television with an energy efficient of 'B' rather than one with an energy efficiency rating of 'C'. However, this potentially higher price premium was not included in the set of choices within the experiment. (Table 4 shows the price premiums included in the choice experiment).

Since the results of the choice experiment do not allow us to know exactly how much of a premium participants are willing to pay for the more energy efficiency product, we say that when a participant chooses the more energy efficient product, the premium they pay is the minimum premium they are willing to pay.

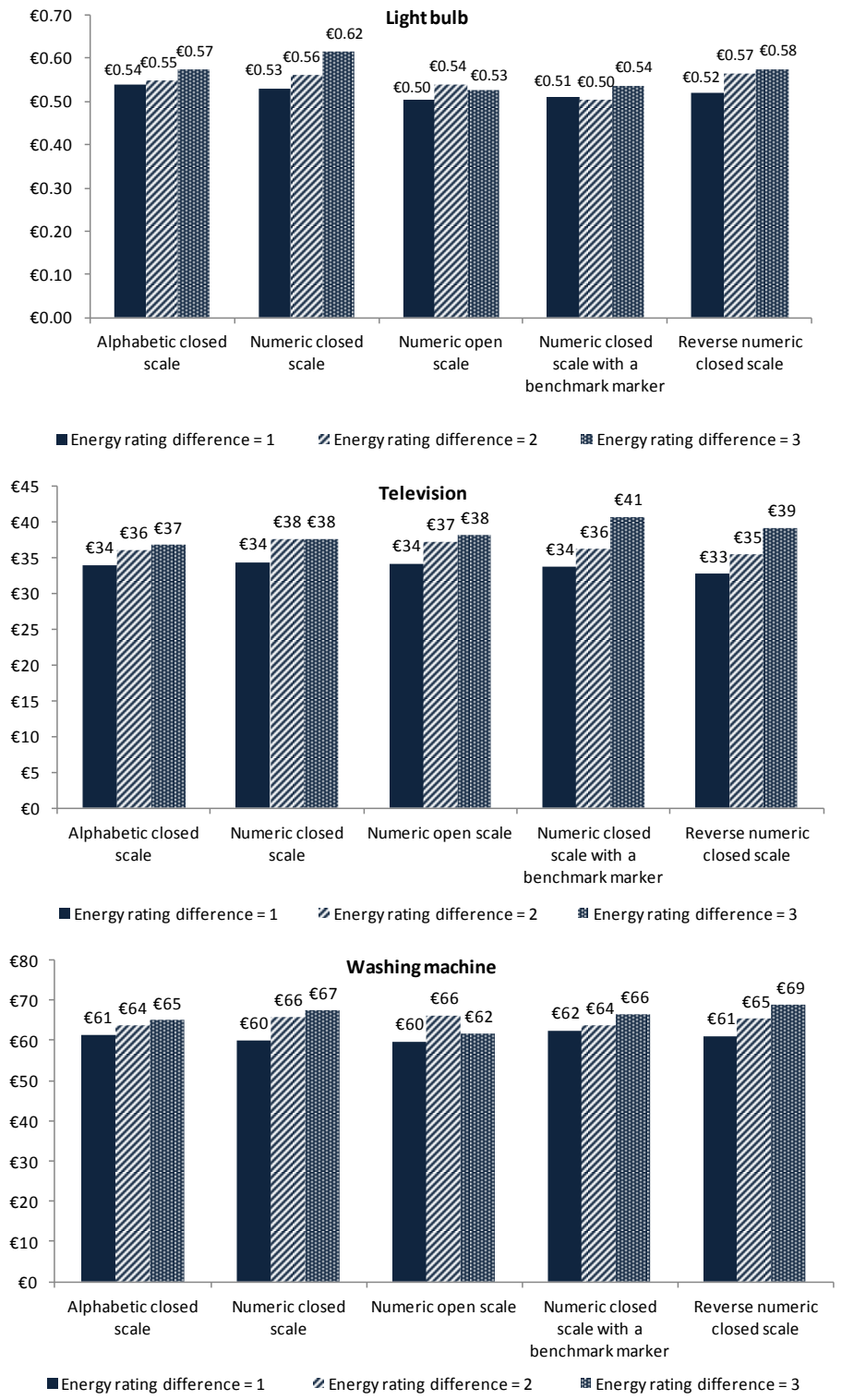
In Figure 11 we show the average minimum amount that participants are willing to pay for a more energy efficient product across each of the different framings and for each product. We divide the results depending on the energy efficiency rating difference between the two products involved in the choice experiment decision. Given the energy efficiency combinations used in the choice experiment the energy efficiency rating difference is either 1, 2 or 3 levels.

For example, if a participant in the **alphabetic closed scale** framing is faced with a decision of choosing between a product with an energy efficiency rating of 'B' and another of 'C', the energy efficiency rating difference is 1. Similarly, if they are faced with a choice between a 'B' rated product and a 'D' rated product, the energy efficiency rating difference is 2. Finally if they are faced with a chose between a 'B' or an 'E' rated product, the energy efficiency rating difference is 3.

We observe in Figure 11 that participants are willing to pay a higher premium for products with a larger energy efficiency rating difference, in the majority of cases. For example, participants in the

numeric closed scale with benchmark marker framing are willing to pay €2 more for a television that is two energy efficiency ratings higher than the alternative product (Energy rating difference = 2) than they would pay for a television that is one energy efficiency rating higher than the alternative (Energy rating difference = 1).

Figure 11:Average minimum premium participants are willing to pay for a more energy efficient product , by energy efficiency rating difference



Note: Horizontal axis indicates level of the price premium charged for 'good' product, Vertical axis indicates share choosing 'good' product. Underlying data can be found in Table 24, Annex 5.

Source: Choice experiment

In Table 10 below, we show the differentials between the average additional amount that participants are willing to pay for the more energy efficient product depending on the energy efficiency rating difference between choices, for each product across each framing.

The 'Energy efficiency rating difference' column in Table 10 describes the particular differential of interest. It details the difference in the energy efficiency rating in each of the choices that are being compared.

For example, the additional amount that participants are willing to pay for the more energy efficient product when the energy efficiency rating differential is 2 (e.g. choosing an 'A' rated product rather than a 'C' rated product) compared to when the energy efficiency rating differential is 1 (e.g. choosing an 'A' rated product rather than a 'B' rated product) would be described as '2 vs 1' in the 'Energy efficiency rating difference' column in Table 10.

In all but two cases, this differential is positive, which means that participants are willing to pay a higher premium for a product when there is a greater difference in the energy efficiency rating between the two products.

In approximately half of all cases we find that the additional premium that participants are willing to pay for a more energy efficient product when the energy efficiency rating differential is larger is statistically significant.

Table 10: Differential between the average additional amount participants are willing to pay for a more energy efficient product depending on the energy efficiency rating difference

Product	Energy efficiency rating difference	Alphabetic closed scale	Numeric closed scale	Numeric open scale	Numeric closed scale with a benchmark marker	Reverse numeric closed scale
Light bulb	2 vs 1	€0.01	€0.03*	€0.04**	-€0.01	€0.05***
Light bulb	3 vs 2	€0.03	€0.06**	-€0.01	€0.03	€0.01
Light bulb	3 vs 1	€0.03***	€0.09***	€0.03	€0.03	€0.06***
Television	2 vs 1	€2**	€3***	€3***	€2**	€3**
Television	3 vs 2	€1	€0	€1	€4***	€4***
Television	3 vs 1	€3**	€3**	€4***	€7***	€6***
Washing machine	2 vs 1	€2	€6***	€6***	€1	€4**
Washing machine	3 vs 2	€1	€1	-€4**	€3	€3
Washing machine	3 vs 1	€4*	€7***	€2	€4*	€8***

Note: *, **, *** indicates the difference is statistically significant at the 90%, 95% and 99% level.
Source: Choice experiment

We did not however identify any clear patterns relating to the impact of different energy label framings on the additional amount that participants were prepared to pay for a more energy efficient product.

4 Phase II bricks and mortar experiment

The Phase II bricks and mortar experiment was conducted in 4 member States. The objective of Phase II, as in Phase I, was to assess how alternative label frames impact upon consumer purchasing decisions and understanding.

The Member States were France, Slovenia, Czech Republic and Portugal. The experiment and questionnaire was conducted in retail stores in France and Slovenia. The stores that participated in the Phase II were:

- MDA Arques (France)
- MDA Marquette lez Lilles (France)
- Mercator Tehnika (Ljubljana,Slovenia)
- Big Bang (Ljubljana,Slovenia)

In the Czech Republic the fieldwork was conducted in a retail testing store owned by our partner Ipsos and located on the mezzanine of the largest Tesco store in Prague. In Portugal the experiment was conducted in a centralised location located on a shopping street where all products were shown but it was not owned by an individual retailer.

Participants in the experiment were asked to make choices about which product from a set of three they would (hypothetically) purchase. The products varied according energy efficiency rating. Details on the products are shown below.[19]

Participants were recruited using in-store/mall recruitment and from outside the store on the street. 125 respondents participated in each country, such that there were 500 respondents in total. Each respondent made 2 choices - one choice regarding TVs and one regarding washing machines. Respondents were randomly allocated across the different label designs such that in total there were just under 130 respondents who made choices for each label design for each of TVs and Washing Machines. A respondent only ever saw one label design to avoid confusion.

[19] The experiment was implemented in retail stores and centralised locations, as is the case with all fieldwork approaches respondents knew they were taking part in a study. In experiment design this is often referred to as the demand effect. This means that respondents may inadvertently pick up signals as to what behaviour is expected of them in the experiment environment, and as such the experiment itself can generate effects which would otherwise not be there. Demand effects do not necessarily have to be problematic. Good experiment design ensures that demand effects are minimised. To do this, the effect must not differ across treatments (so that unbiased treatment effects can be estimated). In this experiment the treatments (the different energy label designs) were implemented under identical conditions ensuring any demand effects are the same across treatments. Further, the strength of experiments is to explore the relative effects on behaviour between treatments. Absolute magnitudes cannot be generally extrapolated to the field setting. In order to extrapolate absolute magnitudes to field settings a more extensive field experiment would need to be implemented where consumers actually bought the products. This was not a feasible option within this study. Therefore, the strength of this controlled field experiment is the comparison of behaviour and understanding between the different label designs.

4.1 Label frames

Following presentation of the phase I findings at the Stakeholder consultation meeting organised by the services of the European Commission on the method to update existing energy label scales to reflect technological progress of the labelled products, 19 February 2014 in Brussels, and feedback from stakeholder and Member State representatives, four label designs were selected for further testing in Phase II. These label designs were:

- A+++ to D label
- A to G label
- Numeric label with ratings for possible future technologies shown in grey
- Reverse numeric 9 to 3

The labels used are shown in Annex 2.

In addition to making choices about which product they would *purchase*, respondents were asked a series of questions on how important alternative product attributes were on their choice; which product they believed was most energy efficient; which product was the least costly to use; what the symbol kWh/annum meant; what the coloured arrows on the energy efficiency scale indicated; in the case of the label indicating possible future technology energy efficiency ratings – what the grey arrows meant; and, a set of socio-demographic questions. The questionnaire for Phase II is shown in Annex 4.

4.2 Summary of the products

The products included in the experiment were washing machines and televisions. The products were selected from a set of products available in the retail stores. The set chosen for testing were selected such that those with better energy efficiency also used less kWh/annum; and, wherever feasible, the more energy efficient products were more expensive than the less energy efficient products.

Three televisions and three washing machines were included in the testing at each location. The products varied such that in each location there was one product that had a 'high' energy efficiency rating (A+++ to A+), a medium energy efficiency rating (A+ to A), and a 'low' energy efficiency rating (A to B).[20] For each alternative energy labelling frame, the corresponding classes were used, i.e. an A++ which is the 2nd class was a B, 50, and 8 in the alphabetic, numeric and reverse numeric respectively.

Table 11 presents the attributes of the TVs used. The average price of the most energy efficient TV across all countries included in the experiment was €570 compared to an average price of the least energy efficient TV at €445. The average energy consumption of the most energy efficient TV, across all countries, was 68kWh/annum compared to 118kWh/annum.

The country specific product characteristics are presented in Annex 5.

[20] Products that carried a rating of C or D were not included in the experiment because these products are generally not found in the market anymore.

Table 11: Attributes of the television sets on display, store averages			
Energy efficiency rating	High (TV1)	Medium (TV2)	Low (TV3)
Price (euro)	**€ 570**	**€ 493**	**€ 445**
Annual energy consumption (kWh)	**68 kWh**	**83 kWh**	**118 kWh**
Screen size (inch)	41”	40”	42”
On-mode power consumption (Watt)	68 W	53 W	71 W

Note: TVs priced in Czech Koruna have been converted to Euro at an exchange rate of 27.5 to 1.

Table 12 presents the attributes of the washing machines used in the experiment. The average price of the most energy efficient washing machine across all countries included in the study was €443 compared to an average price of the least energy efficient TV at €305. The average energy consumption of the most energy efficient TV, across all countries, was 169kWh/annum compared to 217kWh/annum.

Table 12: Mean characteristic of the washing machines on display			
	High (WM1)	Medium (WM2)	Low (WM3)
Price (euro)	**€ 443**	**€ 353**	**€ 305**
Annual energy consumption (kWh)	**169 kWh**	**186 kWh**	**217 kWh**
Annual water consumption (in litres)	9876	9603	10472
Wash capacity (in kg)	6.8 kg	6.8 kg	7.0 kg
Noise washing phase (in dB)	57 dB	58 dB	58 dB
Noise drying phase (in dB)	74 dB	76 dB	75 dB

Note: Washing machines priced in Czech Koruna have been converted to Euro at an exchange rate of 27.5 to 1.

4.3 Impact of different energy label frames on consumer behaviour

4.3.1 TV choice

Respondents in the experiment were asked which TV from the set of three shown they would choose to buy. In general, across all label designs, TV1 and TV2 were chosen by a greater proportion of respondents than TV 3 (37.1% and 34.9% on average compared to 28.0%, Figure 12); where TV1 had the highest energy rating, followed by TV2, and then TV3. The differences in the proportions between TV1 and TV3, and TV2 and TV3, are statistically significant at the 99.9% confidence level.

When we consider respondents' choices across the four different labels tested in the experiment, we find that respondents more frequently chose the most energy efficient TV (TV1) when it was accompanied by the alphabetic label (43.5%). Similarly, respondents less frequently chose the least energy efficient TV (TV3) when it was accompanied by the alphabetic label (21.8%). These proportions are statistically significantly different[21] when compared to the average proportion of respondents that chose the same TV with A+++ to D, numeric and reverse numeric.[22] .

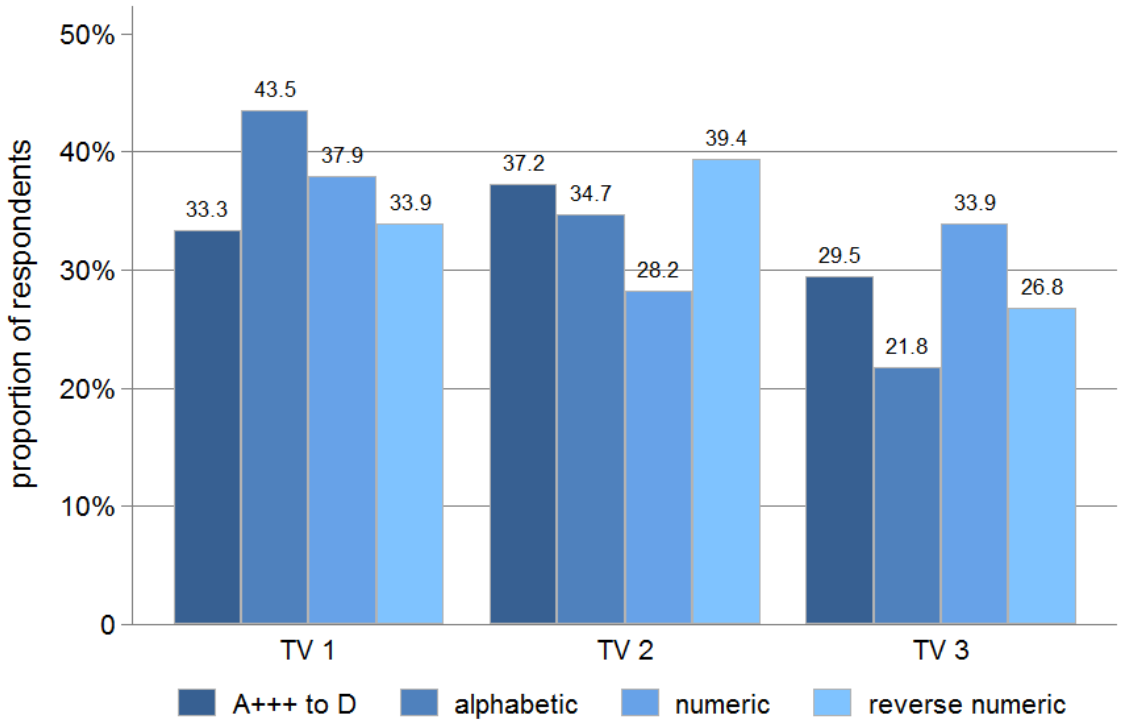
In contrast, the least energy efficient TV (TV3) was chosen more frequently by respondents when it was accompanied by the **numeric label** (33.9% chose TV3 when accompanied by the numeric label).[23]

[21] At the 90% significance level.

[22] For TV1 this average was 35.0%; and, for TV3 it was 30.0%. However, when we compare between individual pairs of label design we find that the proportion that chose TV 1 with the alphabetic label is only statistically different in comparison to the A+++ to D label; but not to numeric label, nor to the reverse numeric label. The proportion that chose TV 3 with the alphabetic label is only statistically different in comparison to the numeric label; but not to the A+++ to D label, nor to the reverse numeric label.

[23] This compares to an average proportion of 26.1% of respondents that chose TV3 when it was accompanied by the A+++ to D, alphabetic or reverse numeric label.

Figure 12:Proportion of respondents that chose the most energy efficient TV



Note: For the A+++ to D, alphabetic, numeric and reverse numeric the base is 129, 124, 124 and 127 respondents respectively. The sampling method was designed to provide at least 120 respondents per country, randomly allocated to one of the four energy labels (to provide at least 30 responses per energy label in each country or 120 responses for each energy label in total). Total TV choices within a label display might not add up to 100% due to rounding. The underlying data can be found in Annex 5, Table 26.

Table 13 provides an overview of the differences-in-proportions shown in Figure 12 and their statistical significance levels.

Table 13: Significant differences in proportions that chose the most and least energy efficient product by energy label, TVs

TV 1 (most energy efficient)	compared to A+++ to D	compared to alphabetic	compared to numeric	compared to reverse numeric	compared to the average of the other labels
A+++ to D	0	-10.2pp*	-4.6pp	-0.6pp	-5.1pp
alphabetic	+10.2pp*	0	+5.6pp	+9.6pp	+8.5pp*
numeric	+4.6pp	-5.6pp	0	+4.0pp	+1.1pp
reverse numeric	+0.6pp	-9.6pp	-4.0pp	0	-4.3pp
TV 3 (least energy efficient)	**A+++ to D**	**alphabetic**	**numeric**	**reverse numeric**	**average of the other labels**
A+++ to D	0	+7.7pp	-4.4pp	+2.7pp	+2.0pp
alphabetic	-7.7pp	0	-12.1pp**	-5.0pp	-8.2pp*
numeric	+4.4pp	+12.1pp**	0	+7.1pp	+7.8pp*
reverse numeric	-2.7pp	+5.0pp	-7.1pp	0	-1.6pp
average (rest)	-2.0pp	+8.2pp*	-7.8pp*	+1.6pp	0

*90%, ** 95% confidence levels. pp stands for percentage point and is the arithmetic difference between two percentages.

These results should however be considered with caution, and interpreted in context with the findings from Phase I and other previous studies. This is because the sample size in the Phase II experiment was 125 respondents per energy label. This therefore means that effects can only be identified with relatively low levels of confidence.[24]

In order to place these results in context with additional research we compare them to the findings in Phase I of this study. We find the Phase II observations are consistent with the Phase I tests. In Phase I we observed that a greater proportion of respondents chose the most energy efficient TV, washing machine and light bulb when it had the alphabetic label compared to the other labels tested in Phase I. Furthermore, in Phase I, respondents were willing to pay more for the most energy efficient TV when it had the alphabetic label compared to when the TV carried the energy label with a closed numeric scale[25].

TV choice and relative importance of energy efficiency

After the choice experiment the respondents were asked a set of follow-up questions, including the influence of different product features on their choice. Respondents were asked to rate on a scale of 1 to 5 the extent to which 9 different products features influenced their choice. These

[24] For instance, if we wanted to detect a 5 percentage point difference in the proportion of respondents that chose a given TV between label type, we would have required a sample of 1,084 respondents for each label. This would mean a total sample of 4,336 respondents which was not feasible for Phase II.

[25] Statistically significant at 90% level.

features were brand, price, energy efficiency, screen size, energy consumption, screen technology, sound, built-in devices, and other features.

In this section we analyse if the relative importance respondents gave to energy efficiency had an effect on whether they chose TV1, TV2, or TV3, across energy labels. We define 'high relative importance' as a case when a respondent ranked energy efficiency among their top four most important features, while 'low relative importance' is when a respondent ranked energy efficiency among their five least influential items. In general, this is a meaningful question as we would like to discover if people who report that energy efficiency is relatively important in their decision making behave differently to those that report it is of low importance across the different label types.

The results show that in general, across all label designs, respondents who reported energy efficiency to be of high relative importance chose TV1 in significantly greater proportions (45.1%) than the respondents who reported energy efficiency to be of low relative importance in their choice (29.6%). This is statistically significant at the 99.9% level. This indicates that consumers' stated preferences in the survey question are consistent with their observed behaviour in the experiment.

When we compare label types (Figure 13), we find that the **A+++ to D label** had by far the smallest proportion of respondents that ranked energy efficiency of low importance choosing TV1 (15%). This difference is statistically different at the 99% level compared to the alphabetic and numeric label; and, 95% for the reverse numeric label.

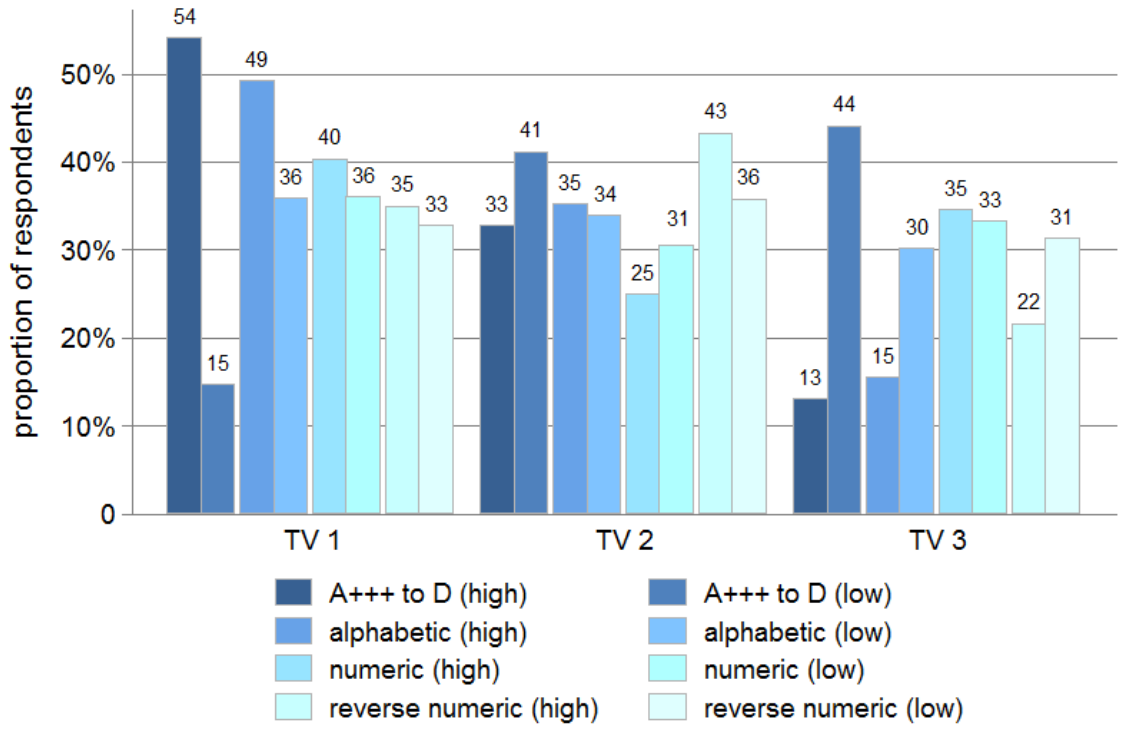
If we consider respondents that ranked energy efficiency with high relative importance, the A+++ to D label lead to the greatest proportion choosing TV1 (54%), which is similar to the proportion choosing TV1 under the alphabetic label (49%).[26] We see the same pattern for TV3, albeit mirrored, where 13% and 15% of these respondents chose TV3 under the A+++ to D and alphabetic label respectively.[27]

This analysis suggests that the **A+++ to D label** is most effective at encouraging respondents who rank energy efficiency as relatively important to choose TV1, but least effective for those that rank energy efficiency as low importance. The **alphabetic label** is the most effective in encouraging all respondents together– those that rank energy efficiency of high and low relative importance combined – to choose TV1, and in discouraging respondents to choose TV3.

[26] Significantly different at the 95% level to the numeric and reverse numeric labels but not the alphabetic label.

[27] Significantly different to numeric label at the 95% confidence level but not the reverse numeric label.

Figure 13:Proportion that chose a TV, by energy label and stated importance of energy efficiency

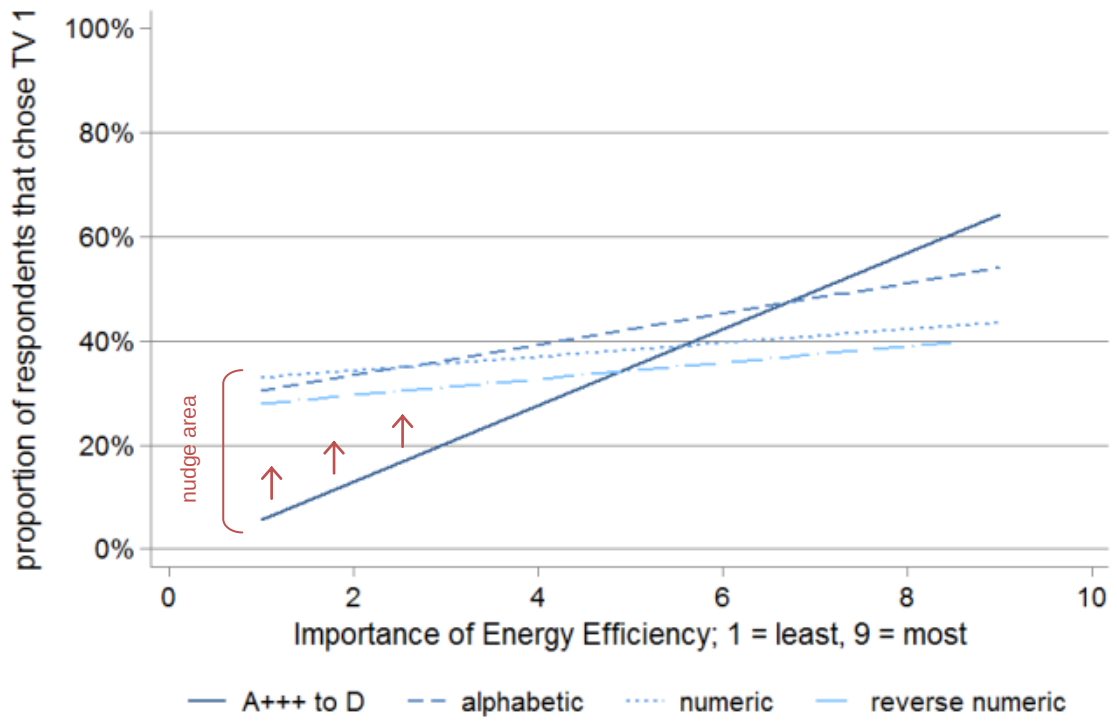


Note: The base for the A+++ to D, alphabetic, numeric, and reverse numeric are 61 (68), 71 (53), 52 (72), 60 (67) respectively for relative high (low) importance energy efficiency rankings. Total TV choices within a label display and importance category might not add up to 100% due to rounding.

This analysis is also performed without categorising respondents into groups of high or low relative importance. In this case instead of creating two groups we instead use a continuous scale of 1 to 9. In Figure 14 the proportion of respondents that chose TV 1 is estimated with a regression. The regression shows the relationship between the importance given to energy efficiency and the proportion of respondents that chose TV1 for each of the labels tested.

The figure shows that respondents who rated energy efficiency of low importance were less likely to choose TV 1 with the A+++ to D label than any other label. We can see this in the difference in the origin of the lines in the figure. We label the area between the lines as the 'nudge area' in the graph. We use this term because the Phase II experiment results indicate that behaviour of the respondents occupying this space could be influenced in by a change of energy label design. That is consumers who consider energy efficiency of low importance in their decision making can be influenced by a change in label design to a greater degree than consumers who consider energy efficiency of high importance.

Figure 14:Proportion of respondents that chose TV 1, by energy label and importance of energy efficiency



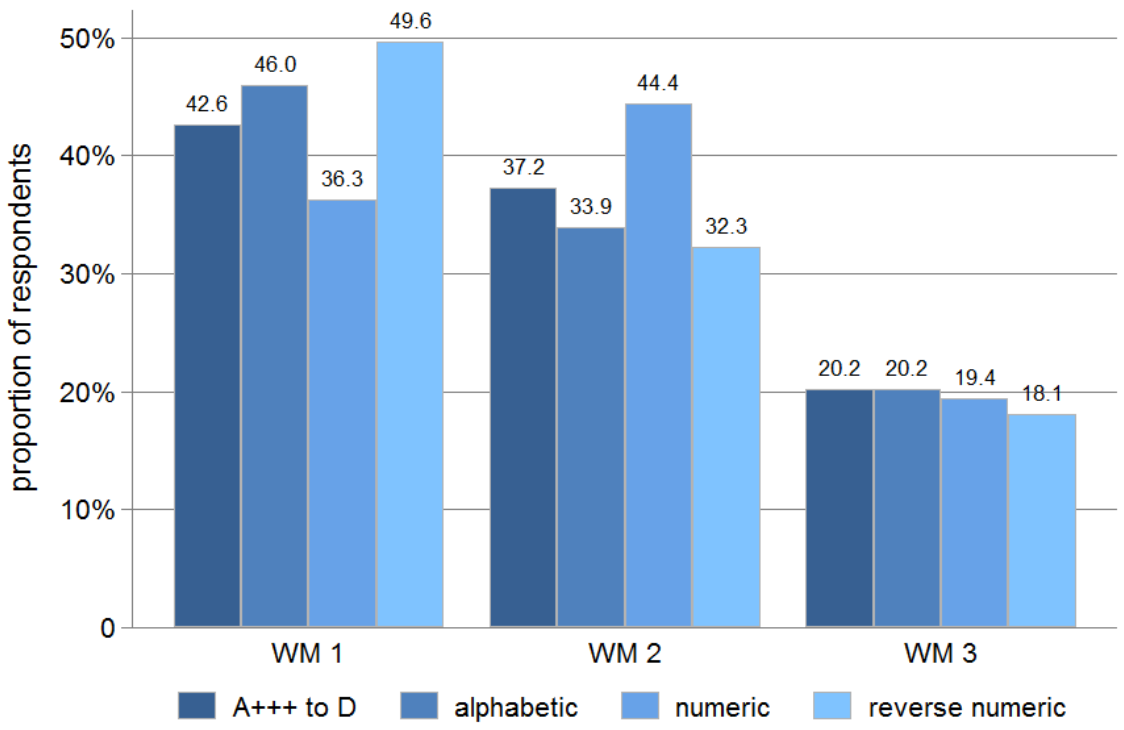
Note. The corresponding regression output is shown in Table 29, Annex 6.

4.4 Washing Machine choice

Turning to washing machine choice, we observe that a greater proportion of respondents chose the more energy efficient WM1 than the medium energy efficient WM2. WM2 was in turn chosen by a greater proportion on average than WM3.

Respondents less frequently chose the most energy efficient washing machine, WM1, when it was accompanied by a **numeric label** (36.3%)[28]. We do not find a statistical difference in the proportion choosing WM1 across any other labels tested. The differences-in-proportions are shown in Table 14.

Figure 15:Proportion that choose the most, middle, and least energy efficient product by energy label, washing machines



Note: For the A+++ to D, alphabetic, numeric and reverse numeric the base is 129, 124, 124 and 127 respondents respectively. The sampling method was designed to provide at least 120 respondents per country, randomly allocated to one of the four energy labels (to provide at least 30 responses per energy label in each country or 120 responses for each energy label in total). Total TV choices within a label display might not add up to 100% due to rounding. Underlying data can be found in Table 26, Annex 6.

[28] This is statistically different compared to the reverse numeric label at the 95% confidence level.

Table 14: Significant differences in proportions that chose the most and least energy efficient product by energy label, washing machines

WM 1	compared to A+++ to D	compared to alphabetic	compared to numeric	compared to reverse numeric	compared to average of the other labels
A+++ to D	0	-3.4pp	+6.3pp	-7.0pp	-1.4pp
alphabetic	+3.4pp	0	+9.7pp	-3.6pp	+3.1pp
numeric	-6.3pp	-9.7pp	0	-13.3pp**	-9.8pp*
reverse numeric	+7.0pp	+3.6pp	+13.3pp**	0	+8.0pp
average (rest)	+1.4pp	-3.1pp	+9.8pp*	-8.0pp	0
WM 3	**A+++ to D**	**alphabetic**	**numeric**	**reverse numeric**	**average of the other labels**
A+++ to D	0	+/-0pp	+0.8pp	+2.1pp	+1.0pp
alphabetic	+/-0pp	0	+0.8pp	+2.1pp	+1.0pp
numeric	-0.8pp	-0.8pp	0	+1.3pp	-0.1pp
reverse numeric	-2.1pp	-2.1pp	-1.3pp	0	-1.8pp
average (rest)	-1.0pp	-1.0pp	+0.1pp	+1.8pp	0

*90%, ** 95% confidence levels. pp stands for percentage point and is the arithmetic difference between two percentages.

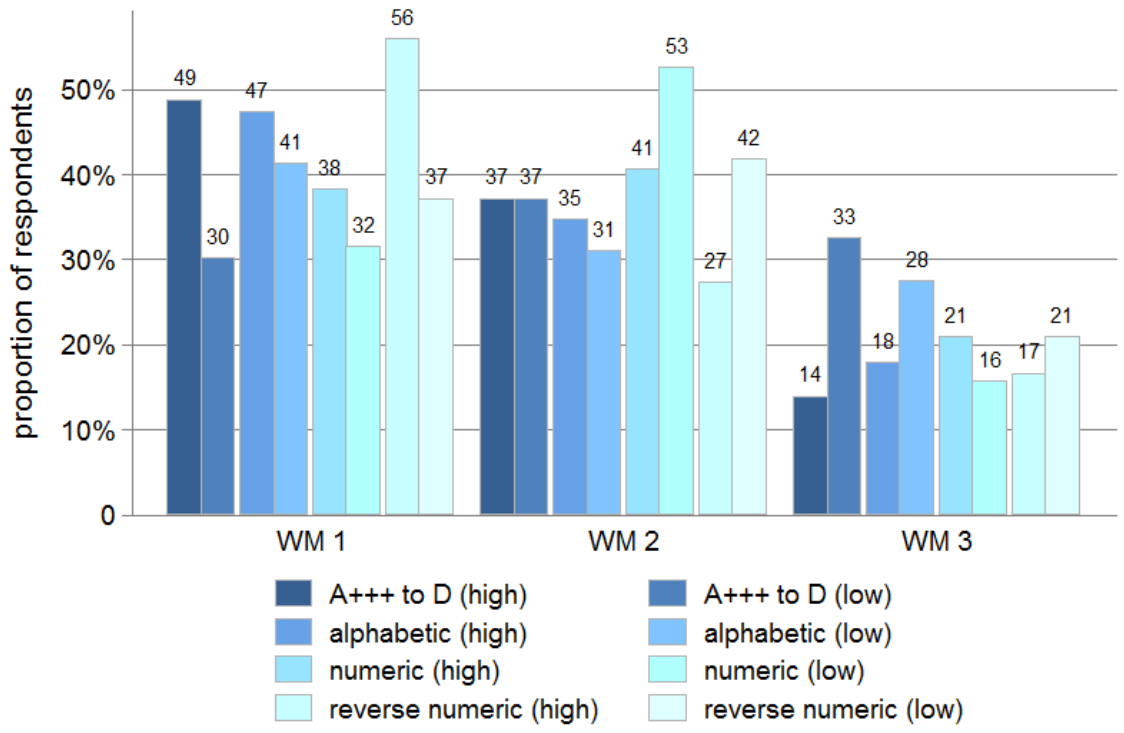
As for TVs, we also investigate for washing machines if the relative importance given to energy efficiency by respondents affected their choice of washing machine. Again we define a respondent as considering energy efficiency of 'relatively high importance' if the respondent ranked energy efficiency among his or her five most important features out of a list of ten features. These features were: brand, price, energy efficiency, load capacity, water consumption, energy consumption, spin speed, wash and spin performance, wash programme and functions, and other features.

As with TVs, the most energy efficient washing machine, WM 1, was chosen more frequently on average across all label types by respondents that ranked energy efficiency as high relative importance (47.6%). This proportion was 34.6% for respondents that ranked energy efficiency of low relative importance. This difference is statistically significant at the 99% level.

We also investigate whether the label type had an effect on the respective groups. Unlike TVs, in the case of washing machines we do not find a statistical significant pattern in behaviour. For respondents that ranked energy efficiency of low importance, we find a similar direction of effects to TVs, but not statistically significant. That is, these respondents tended to choose the most energy efficient TV (TV1) more frequently when it was accompanied by the alphabetic label (41%) compared to the other three labels.

In the case of respondents that ranked energy efficiency of high relative importance, the A+++ to D label lead to a greater proportion choosing TV1 compared to the other labels except the reverse numeric label.

Figure 16:Proportion that chose a washing machine, by energy label and stated importance of energy efficiency

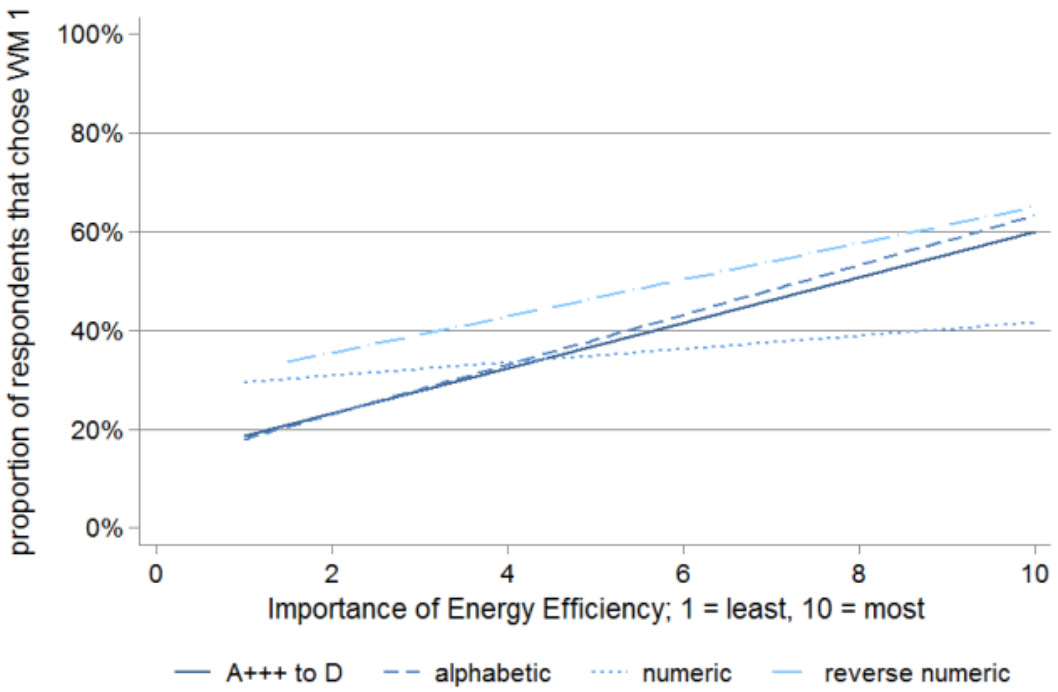


Note: The base for the A+++ to D, alphabetic, numeric, and reverse numeric are 68 (43), 95 (29), 86 (34), 84 (45) respectively for relative high (low) importance energy efficiency rankings. Total WM choices within a label display and importance category might not add up to 100% due to rounding.

Figure 17 presents the same analysis using a continuous scale of 1 to 10 instead of 'high' and 'low' groupings. Again the observations are not as clear as those for TVs, and are not statistically significant. However, we do see some patterns that are in line with the TV findings.

In the case of TVs we observed that the A to D scale was the most effective label in encouraging both types of respondents to select the more energy efficient TV. We observe the same for washing machines. This can be seen by the steep slope for the alphabetic line in Figure 17. This line is steeper than those for all other label types. However, unlike TVs we see little difference between the A+++ to D and alphabetic labels.

Figure 17:Proportion that chose a washing machine, by energy label and stated importance of energy efficiency



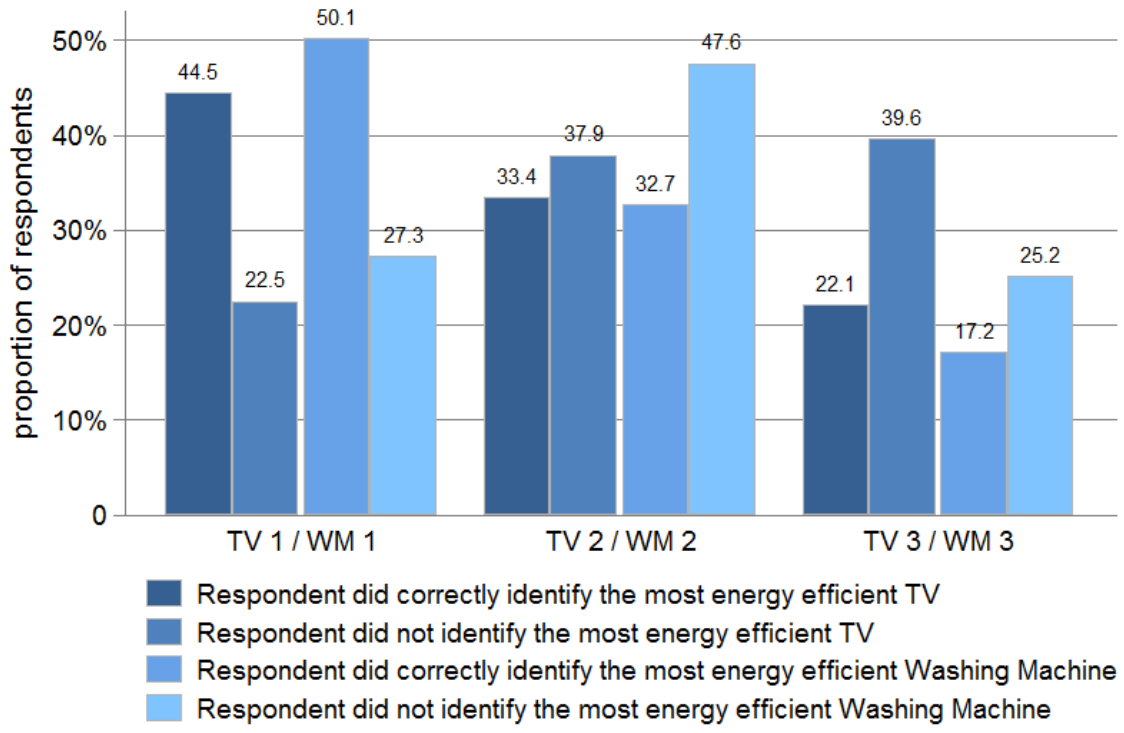
Note. The regression output can be found in Table 29, Annex 6.

4.5 Choice and understanding

When asked in the understanding test, on average 66.5% of respondents were able to correctly identify TV1 as the most energy efficient TV and 71.6% of respondents were correctly able to identify WM1 (section 4.7)

Figure 18 below shows the proportion of respondents that chose the most energy efficient TV or washing machine by whether they correctly identify the most energy product in the understanding test. We observe a large difference between the two groups. The group that was able to identify the most energy efficient product more frequently chose this product: roughly twice as frequently for both TVs (44.5% compared to 22.5%) and washing machines (50.1% compared to 27.3%). These differences are statistically significant at the 99.99% confidence level.

Figure 18:Proportion of respondents that chose the most energy efficient product and correct identification of the most energy efficient option



Note: 335 respondents indentified the most energy efficient TV, while 169 respondents did not identify the most energy efficient TV. 361 respondents indentified the most energy efficient Washing Machine, while 143 respondents did not identify the most energy efficient Washing Machine. TV 1 and Washing Machine 1 were the most energy efficient option.

4.6 Additional information on product choice

Each participant in the experiment was asked eight to nine follow-up questions to find out more about their self-identified drivers of choice and their understanding of various aspects of the energy labels. Respondents that experienced the numeric frame were asked one additional question on their understanding of the grey bars that indicate the energy rating of future technologies.

4.6.1 Importance of product attributes on choice

Importance of energy use in relation to other product attributes

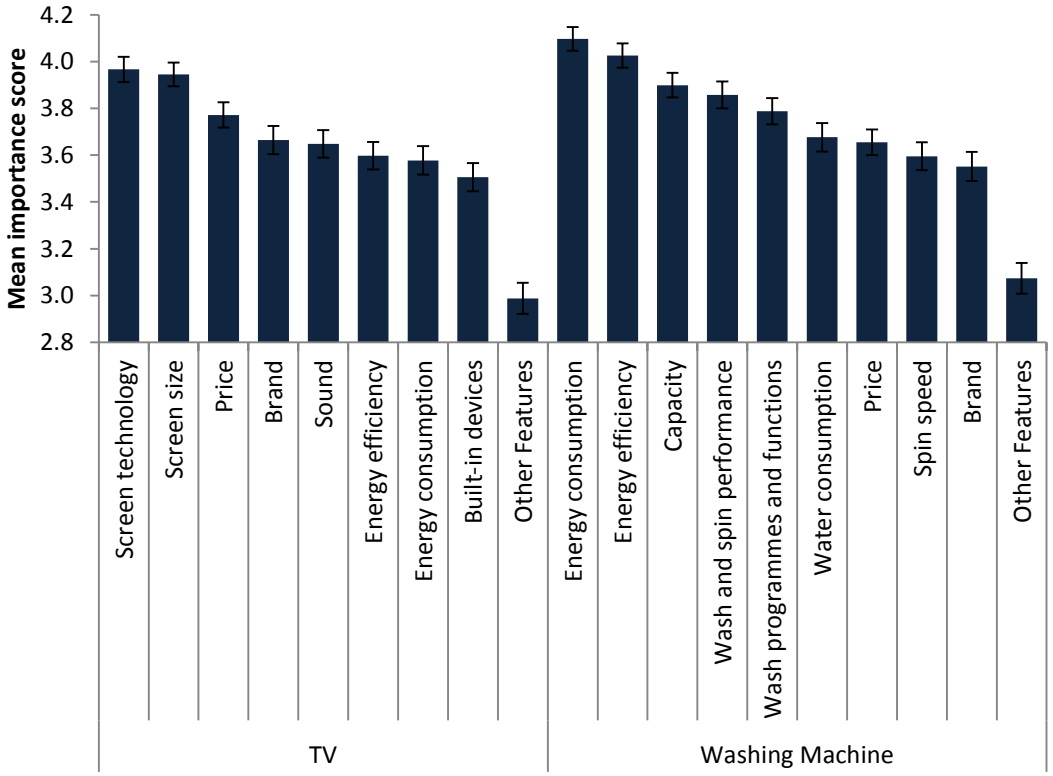
All respondents were asked to rank how influential, on a scale of 1 to 5, alternative product attributes were on the choices they made in the experiment: 1 indicated no influence and 5 indicated high influence.

Overall, energy consumption and energy efficiency was given the highest influence rating of 5 by close to half of the respondents when making their choice about washing machines (48.4% and 45.4% respectively). When considering the television choice, the proportion of respondents that

gave the maximum influence rating to energy consumption and energy efficiency was around a third (33.7% and 33.3% respectively).

Energy efficiency was considered more important for washing machines with an average rating of just over 4 compared to TVs at 3.6 (Figure 19). Indeed, energy consumption in kWh/annum and energy efficiency were the most important factors for Washing Machine decisions. In the case of TVs, screen technology and screen size for TVs were considered most important. Interestingly, in the case of Washing Machines, price and brand were ranked low compared to other performance indicators (capacity, wash and spin performance, wash and programme functions).[29]

Figure 19:Influence of product attributes on choice



Note: Error bars indicate one standard error. Each average is based on 504 respondents.

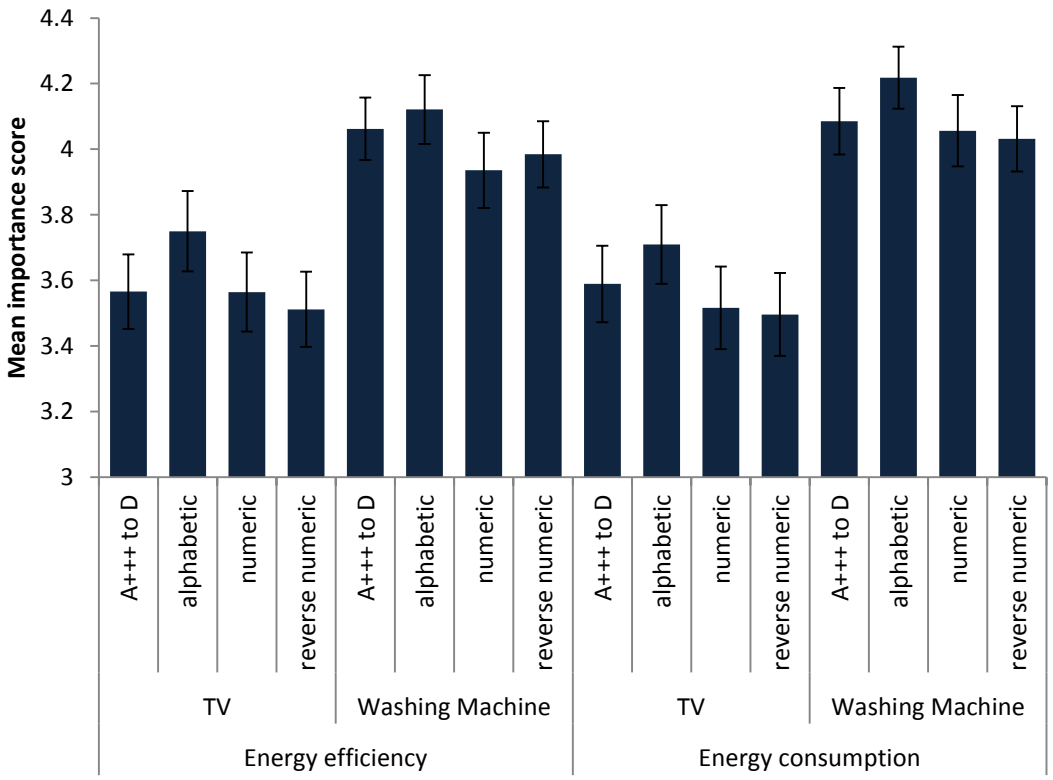
Importance of energy efficiency and energy consumption by energy label

We further investigated the importance of the product's energy efficiency and energy consumption across label frames (Figure 20). The average ratings given to these features across the label frames is relatively similar, however the stated importance of both these features is

[29] We also investigated if relative attribute ranking was different across energy label type. We found this not to be the case. This supports the causal direction of our findings in section 4.3.1 and 4.4. That is, energy label type can have a different impacts on choice based on whether the respondent has a self-reported high or low importance in regard to energy efficiency.

always slightly higher when the scale is alphabetic. However, these differences are not found to be statistically significant.

Figure 20:Influence of energy efficiency and energy consumption on choice



Note: Error bars indicate one standard error. For the A+++ to D, alphabetic, numeric and reverse numeric sets the base is 129, 124, 124 and 127 respondents respectively for each of the product sets and energy influence question.

4.7 Understanding of the energy labels

Energy efficiency understanding

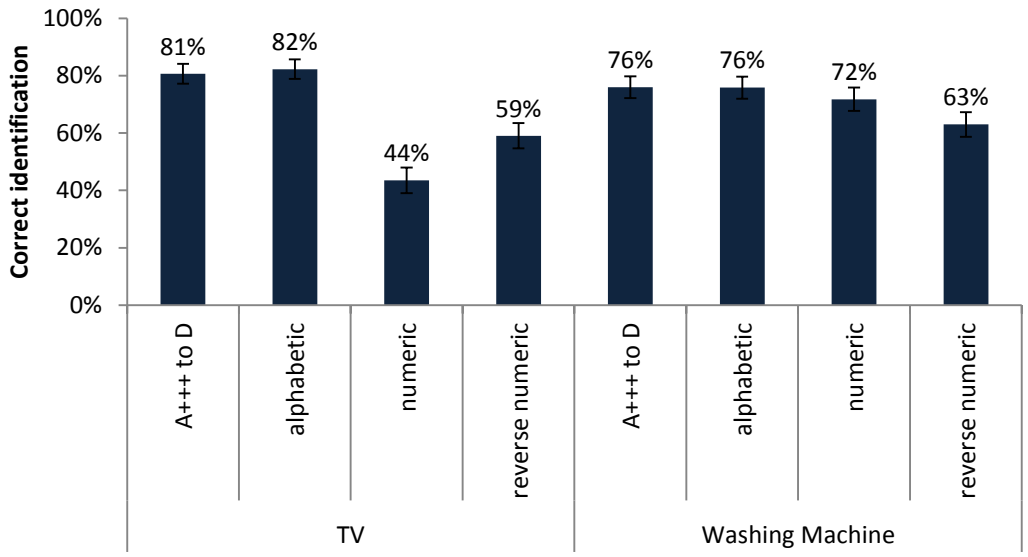
Respondents were also asked to identify which of the products was the most energy efficient. 66.5% of respondents overall (across all label frames) correctly identified TV1 as the most energy efficient and 71.6% correctly identified WM1. This is statistically different at the 95% confidence level.

When we consider the proportion of respondents correctly identifying the most energy efficient product across label frames, respondents in the numeric and reverse numeric frames performed least well. This was particularly the case for TVs (Figure 21), where only 44% of respondents in the numeric frame correctly identified the most energy efficient TV. This is statistically different (lower) than the proportion correctly identifying the energy efficient TV under all other frames (Table 15). Understanding was best in the alphabetic frames. For TVs 81% of respondents in the A+++ to D frame correctly identified the most energy efficient TV, and this was 82% in the alphabetic frame. For Washing Machines these proportions were 76% across both alphabetic frames.

Table 15 presents these differences-in-proportions. We can see that in the case of TVs the differences between the two alphabetic frames and the two numeric frames are statistically at the 99% confidence level. However, the difference between the A+++ to D and alphabetic labels is not statistically significant

In the case of washing machines, the proportion of respondents that identified the most energy efficient washing machine is statistically different in the A+++ to D and alphabetic label frames compared to the reverse numeric frame only.

Figure 21:Please look at the three products again. In your opinion, which of these is most energy efficient?



Note: Error bars indicate one standard error. For the A+++ to D, alphabetic, numeric and reverse numeric sets the base is 129, 124, 124 and 127 respondents.

Table 15: Significant differences in proportions that correctly identified the most energy efficient product, by energy label

TV (correct identification)	compared to A+++ to D	compared to alphabetic	compared to numeric	compared to reverse numeric	compared to average of the other labels
A+++ to D	0	-1.6pp	+37.1pp***	+21.6pp***	+19.0pp***
alphabetic	+1.6pp	0	+38.7pp***	+23.2pp***	+20.9pp***
numeric	-37.1pp***	-38.7pp***	0	-15.5pp**	-30.4pp***
reverse numeric	-21.6pp***	-23.2pp***	+15.5pp**	0	-9.9pp**
average (rest)	-19.0pp***	-20.9pp***	+30.4pp***	9.9pp**	0
WM (correct identification)	**A+++ to D**	**alphabetic**	**numeric**	**reverse numeric**	**average of the other labels**
A+++ to D	0	+0.2pp	+4.2pp	+13.0pp**	+5.8pp
alphabetic	-0.2pp	0	+4.0pp	+12.8pp**	+5.5pp
numeric	-4.2pp	-4.0pp	0	+8.8pp	+0.2pp
reverse numeric	-13.0pp**	-12.8pp**	-8.8pp	0	-11.5pp**
average (rest)	-5.8pp	-5.5pp	-0.2pp	+11.5pp**	0

*90%, ** 95%, ***99% confidence levels. pp stands for percentage point and is the arithmetic difference between two percentages.

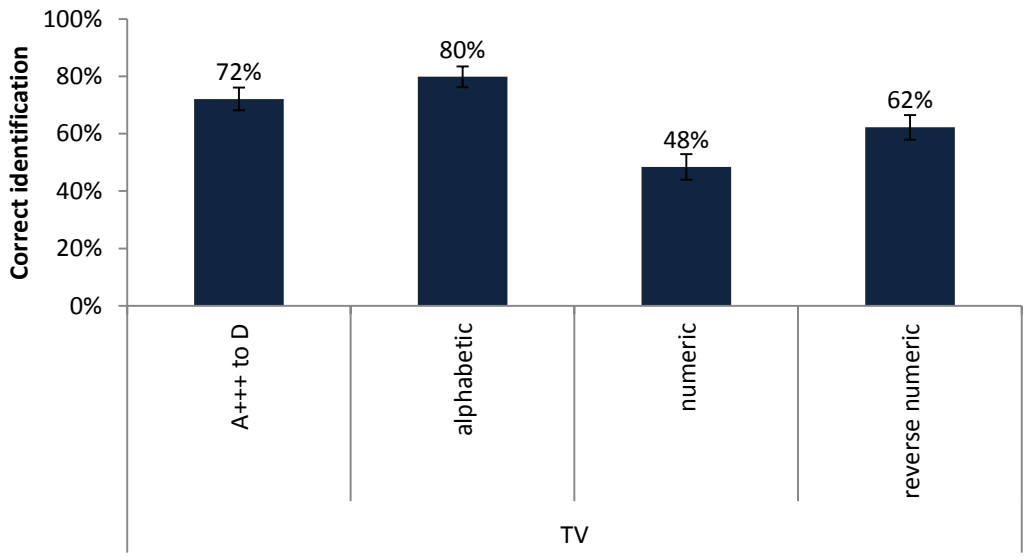
Energy consumption understanding

Respondents were also asked which product they thought was the least costly to use. This question was only asked for TVs.[30] Across all label frames, 65.7% of respondents correctly identified the least costly TV.

As was the case with energy efficiency understanding, the alphabetical scales generally performed best (Figure 21). 80% of respondents correctly identified the least costly TV under the A to G frame, and this was 72% in the A+++ to D frame. In the case of the numeric label frame 48% correctly identified the machine least costly to use. For reverse numeric this was 62%.

The differences in these proportions are shown in Table 16. We observe that the difference between the A+++ to D and the alphabetic label is not statistically significant. The difference between the A+++ to D and alphabetic labels and the numeric label is statistically different both at the 99% confidence level.

Figure 22: Please look at the energy labels on the televisions. In your opinion, which of the three products is the least costly to use? By least costly we mean having the lowest electricity bill.



Note: For the A+++ to D, alphabetic, numeric and reverse numeric sets the base is 129, 124, 124 and 127 respondents respectively. Totals might not add up to 100% due to rounding. Error bars indicate one standard error.

[30] The reasoning here was that the kWh/annum interpretation is the same across TVs and washing machines and as such we could ask one question here allowing time for additional questions in the survey.

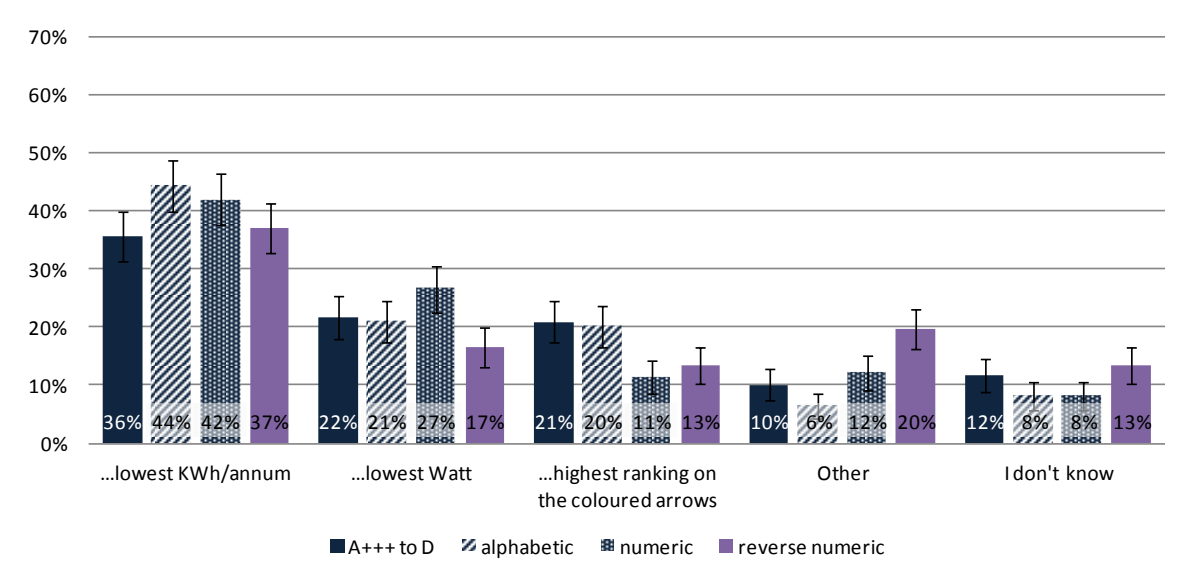
Table 16: Significant differences in proportions that correctly identified the TV that is least costly to use, by energy label

TV (correct identification)	compared to A+++ to D	compared to alphabetic	compared to numeric	compared to reverse numeric	compared to average of the other labels
A+++ to D	0	-7.7pp	+23.7pp***	+9.9pp*	**+8.6pp***
alphabetic	+7.7pp	0	+31.4pp***	+17.6pp	**+18.8pp*****
numeric	-23.7pp***	-31.4pp***	0	-13.8pp	**-22.9pp*****
reverse numeric	-9.9pp*	-17.6pp	13.8pp	0	**-4.6pp**
average (rest)	-8.6pp*	-18.8pp***	+22.9pp***	+4.6pp	0

*90%, ** 95%, ***99% confidence levels. pp stands for percentage point and is the arithmetic difference between two percentages.

Respondents were also asked why they thought the product they had chosen was the least costly to use. Out of the respondents that correctly answered the previous question, 48.9% also correctly identified that the product was least costly to use because it had the lowest kWh/annum (Figure 23). The proportion of respondents that correctly answered this question was very similar across all frames with no statistical difference. The second most common reason was that the product had the lowest watt, however these proportions were much lower than those who correctly answered (indicating kWh/annum).[31]

Figure 23: And why do you think the product you chose is the least costly to use (would have the lowest electricity bill)?



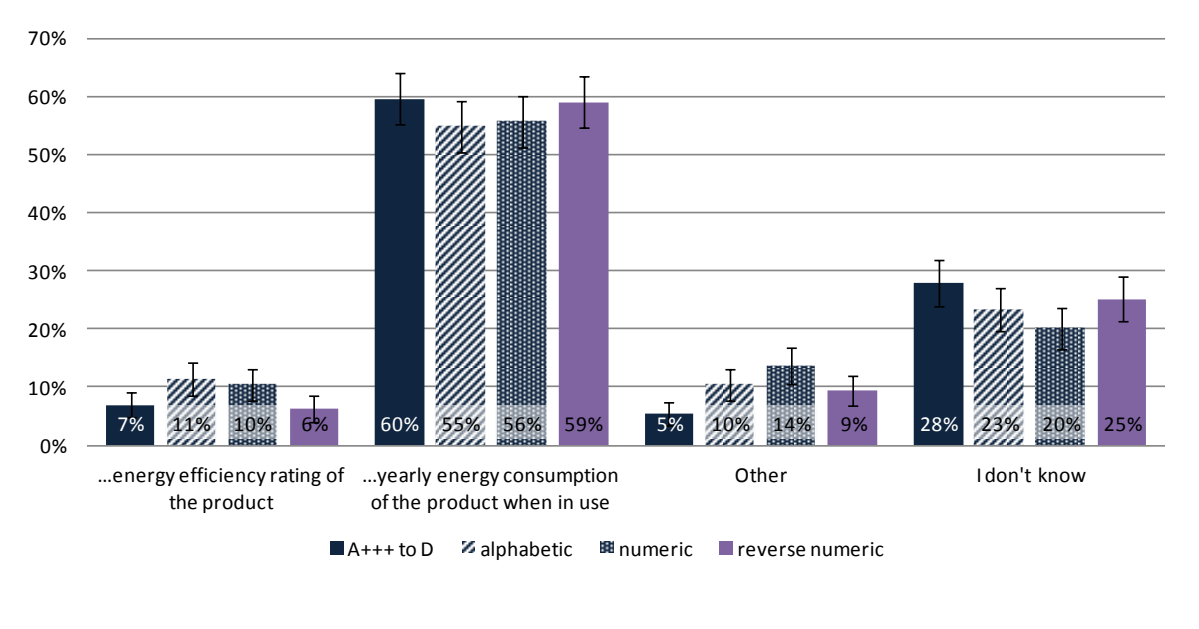
Note: The sample size for the A+++ to D, alphabetic, numeric and reverse numeric labels is 129, 124, 124 and 127 respondents respectively. Error bars indicate one standard error.

Respondents were then asked directly what the symbol kWh/annum meant. For the A+++ to D label 60% of respondents correctly answered this question (yearly energy consumption when the

[31] As previously stated the product with the highest energy efficiency rating also had the lowest kWh/annum in the experiment.

product is in use). For the alphabetic label this proportion was 55%; and for the numeric and reverse numeric it was 56% and 59% respectively. However, these proportions are not statistically significant different across the label frames.

Figure 24:Please look again at the label on the products. In your opinion, what does the symbol kWh/annum mean?



Note: The products would be the TVs or washing machines dependent on which was presented first in the choice experiment. For the A+++ to D, alphabetic, numeric and reverse numeric sets the base is 129, 124, 124 and 127 respondents respectively for each of the product sets and energy influence question. Totals might not add up to 100% due to rounding. Error bars indicate one standard error.

In order to check if respondents' answers to the question 'which TV is least costly to use' (Figure 22) is driven by the label type and/or their understanding of the term kWh/annum we run a regression to check for these relationships across label type. Table 17 presents this regression. We observe that respondents that correctly answered the question why the least costly TV was the lowest cost (Figure 23), were 24.9 percentage points more likely to pick the least costly TV and this is statistically significant at the 99% confidence level. Answering correctly what the meaning of kWh/annum meant (Figure 24) lead to an increase of 9.7 percentage points and this is statistically significant at the 95% level. We also observe a difference across label types in this regression. Under the numeric and reverse numeric frames, respondents were less likely to identify the lowest cost to use TV and these are statistically significant (99% for the numeric and 90% for reverse numeric).[32]

[32] While this regression provides us with some information about what information on the labels respondents are using to identify the least costly product. The R-squared, which is a measure of the explanatory power of this regression is low at 0.13. This means that there are other factors which we do not control for in the experiment, such as personal preferences, which are also driving choice. We also ran a Probit regression. Probit regressions are used when there is a dichotomous choice. In this question the choice was dichotomous because the answer was correct or not. The Probit regression provided very similar estimates and the Pseudo R-squared was 0.12 in the Probit compared to a Pseudo R-squared of 0.12 (also) in the OLS. We elect to report the OLS estimation as OLS is more widely understood than a Probit. .

Table 17: Likelihood a respondent correctly identified the least costly TV, by understanding and label type (OLS regression)

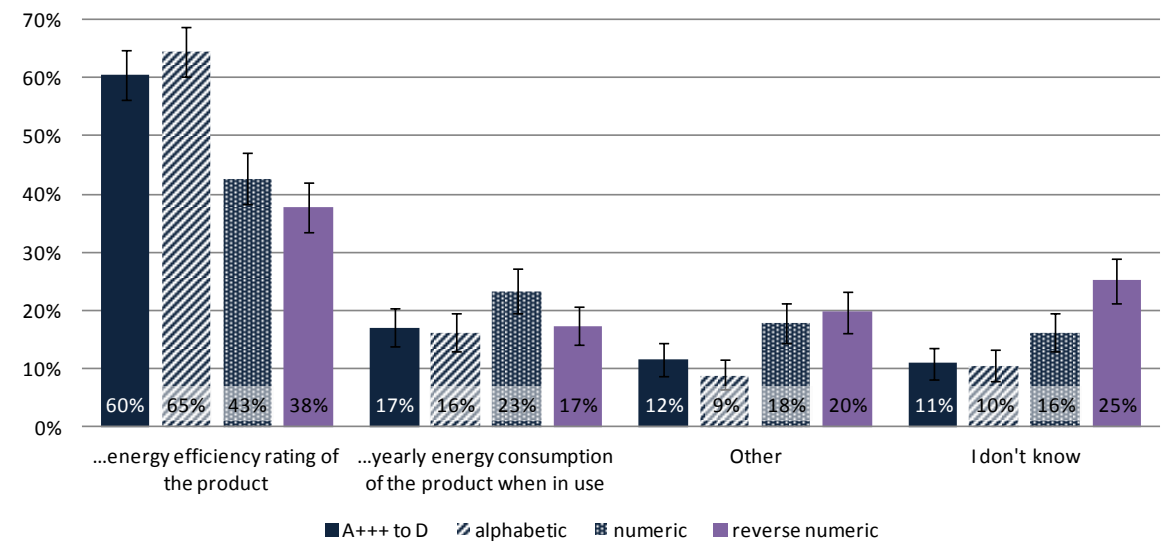
The respondents provided the…	Estimated increase in likelihood to correctly identify the least costly TV
Correct reason least costly TV	+24.9pp***
Correct meaning kWh/annum	+9.7pp**
Correct meaning coloured arrows	+2.2pp
Label type	
A+++ to D	(base)
alphabetic	+6.0pp
numeric	-24.5pp***
reverse numeric	-9.7pp*
Constant	56.1%

*90%, ** 95%, ***99% confidence levels. pp stands for percentage point and is the arithmetic difference between two percentages.

When asked what the coloured arrows on the energy labels meant, between 38% and 65% of respondents correctly answered energy efficiency rating of the product. The proportion correctly answering this question was higher for the labels that use letters rather than numbers. The proportion correctly answering this question in the A+++to D frame was 60% compared to 65% in the A to D frame; and, 43% and 38% for the numeric and reverse numeric frames respectively.

Table 18 presents these differences-in-proportions and their statistical significance. We observe that the proportion of respondents correctly answering this question is statistically greater at the 99% confidence level in the A+++ to D and alphabetic label frames compared to the two numeric frames. The difference between the A+++ to D and alphabetic frame is not significant.

Figure 25:Please look again at the products. In your opinion, what do the coloured arrows mean?



Note: The products would be the TVs or washing machines dependent on which was presented first in the choice experiment. For the A+++ to D, alphabetic, numeric and reverse numeric sets the base is 129, 124, 124 and 127 respondents respectively for each of the product sets and energy influence question. Totals might not add up to 100% due to rounding. Error bars indicate one standard error.

Table 18: Significant differences in proportions that provided the correct meaning of the coloured arrows, by energy label

...energy efficiency rating of the product (correct meaning)	compared to A+++ to D	compared to alphabetic	compared to numeric	compared to reverse numeric	compared to average of the other labels
A+++ to D	0	-4.1pp	17.7pp***	22.7pp***	**+12.2pp****
alphabetic	4.1pp	0	21.8pp***	26.7pp***	**+17.4pp*****
numeric	-17.7pp***	-21.8pp***	0	4.9pp	**-11.5pp****
reverse numeric	-22.7pp***	-26.7pp***	-4.9pp	0	**-18.2pp*****
average (rest)	-12.2pp**	-17.4pp***	+11.5pp**	+18.2pp***	0

*90%, ** 95%, ***99% confidence levels. pp stands for percentage point and is the arithmetic difference between two percentages.

Respondents that completed the experiment within the numeric frame also answered a question that tested their understanding of the grey arrows included on the energy efficiency scale (Figure 26). Understanding of the grey arrows was poor with only 10% of respondents correctly identifying that the grey arrows indicated the energy efficiency of products that would be available on the market in the future. 49% of respondents answered don't know to this question.

Figure 26:Please look at the energy labels on the products. Looking at the grey arrow at the top of each label, what do you think these arrows indicate?

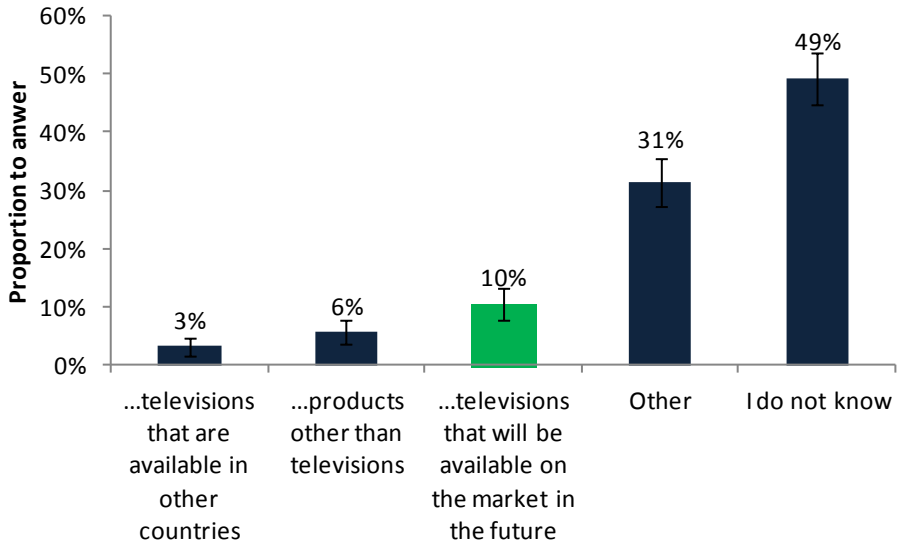


Table 19 presents these differences-in-proportions and their statistical significance.

Table 19: Significant differences in proportions by meaning of the grey arrows provided

...televisions on the market in the future (correct meaning)	compared to ...televisions in other countries	compared to ...products other than televisions	compared to ...televisions on the market in the future	compared to other	compared to "I don't know"
...televisions in other countries	0	-2.4pp	-7.3pp*	-28.2pp***	-46.0pp***
...products other than televisions	2.4pp	0	-4.8pp	-25.8pp***	-43.5pp***
...televisions on the market in the future	**7.3pp***	**4.8pp**	**0**	**-21.0pp*****	**-38.7pp*****
Other	28.2pp***	25.8pp***	21.0pp***	0	-17.7pp***
I don't know	46.0pp***	43.5pp***	38.7pp***	17.7pp***	0

*90%, ** 95%, ***99% confidence levels. pp stands for percentage point and is the arithmetic difference between two percentages.

5 Conclusions

This study implemented an online behavioural experiment and a bricks and mortar experiment to explore consumer understanding of individual elements of the energy label and how the design influences consumer purchase decisions. The fieldwork was complemented by a targeted literature review on existing knowledge of consumer behaviour and understanding under alternative energy labelling frames.

These three strands of work provide the following overall conclusions in regard to the impact of label frame on consumer understanding and product choice.

Consumer understanding

- The energy efficiency scale on label frames that include letters as opposed to numbers are generally better understood by consumers.
  - In the online experiment (Phase I) understanding was high across all label frames tested with no statistical difference in the proportion of consumers correctly answering the understanding question.[33]
  - In the bricks and mortar experiment (Phase II) consumer understanding of the A-G and the A+++ to D label tested was statistically significantly greater than for the numeric frames.[34] This is also supported by previous studies that found alphabetic frames are generally well understood by consumers; and, that they are better understood than numeric frames.
- Consumer understanding of the energy efficiency scale does not vary between the A-G and the A+++ to D label.
  - The understanding tests in Phase II provide no statistical difference in the proportion of respondents that correctly identified the most energy efficient product between the A-G and the A+++ to D label tested.[35]
- The differences in understanding between the alternate numeric scales tested is mixed and provides no clear indication as to which numeric scale may be best understood by consumers in the market.
  - In Phase I, there was no statistical difference in the shares of respondents correctly identifying the most energy efficient product between the numeric closed scale and the reverse numeric closed scales.
  - In Phase II, the proportion of respondents that correctly answered the understanding question for TVs was significantly greater under the reverse numeric than the numeric frame (95% confidence level). For washing machines the difference-in-proportion was not statistically significant.
- When asked what the grey open scale meant in the numeric label frames (0 to 110 in Phase I and 0 to 100 in Phase II), a small proportion of respondents could correctly identify

[33] The understanding question in both Phase I and II required respondents to correctly identify the most energy efficient product from a set of three.

[34] The difference is statistically significant at the 99% confidence level for TVs when the A+++ to D and alphabetic frames are compared to the numeric and reverse numeric frames. In the case of washing machines, the A+++ to D and alphabetic frames are statistically different to the reverse numeric frame at the 95% confidence level, but are not statistically different to the numeric frame.

[35] The A+++ to D label frame was not tested in Phase I.

that these indicated the energy efficiency ratings of products that will available in the future.

- In Phase II, in an unprompted question, only 10% of respondents provided the correct answer. In Phase I, in a prompted question, this figure was 67% for those who had received a prior explanation and 32% for those who had not received prior information on the label meaning.

- The majority of consumers understood that the benchmark marker indicated best available technology
  - Phase I of the study tested a reverse numeric label with a benchmark marker indicating the current best available technology. 57% of respondents that had received a prior explanation of the label meaning correctly responded that the marker indicated the best energy efficient product currently available on the market. This coincides with findings by a previous study that consumers rarely understood and used benchmarkers on US labels.

- The provision of prior information can improve consumer understanding of the energy efficiency scale.
  - Phase I specifically tested the impact of prior information provision on consumer understanding. This was included to simulate an information programme that coincides with any change in label design. Providing an explanation on the frame meanings lead to statistically significant improvements in the level of understanding in the case of the open ended scale. It did not lead any statistical change in the level of understanding across the alphabetic closed, numeric closed and reverse numeric closed scale. An information campaign was not tested in Phase II due to sample size limitations in this phase.

- The majority of consumers correctly identified the product that was least costly to use indicating that they understand the meaning of kWh/annum.
  - Between 55% and 59% of consumers in the Phase II experiment correctly understood what kWh/annum meant on the labels. There was no statistical difference in the level of understanding across label frames.
  - When asked to identify the product that was least costly to use (having the lowest electricity bill) 65.7% of respondents in Phase II could correctly answer this question. The proportion that correctly answered was significantly greater at the 99% confidence level for the two alphabetic frames (A+++ to D and A to G) compared to the numeric frame but not the reverse numeric.
  - Consumers in Phase II that understood the meaning of kWh/annum were more likely to correctly identify the product that was least costly to run (a 9.7 percentage point difference, statistically significant at the 95% confidence level).
  - In Phase II consumers that could correctly explain why a product is least costly to use were 24.9 percentage points more likely to be able to identify the least costly to use product (statistically significant at the 99% confidence level).

- In Phase II consumers were less likely to identify the least costly product to use when the product was affixed with a numeric or reverse numeric label compared to the A+++ to D label and the alphabetic label.[36]

- Understanding the energy efficiency scale is an important determinate in whether the consumer chose the most energy efficient product in Phase II.
  - Consumers that correctly identified the most energy efficient TV in the understanding test were twice as likely to choose the most energy efficient TV in the choice experiment. 44.5% compared to 22.5% for TVs; and, 50.1% compared to 27.3% for washing machines (statistically significant at the 99% confidence level).
  - As stated above, understanding is higher for A+++ to D and alphabetic scale than the numeric and reverse numeric scales.

Consumer choice

- There is some evidence that label frames which use alphabetic scales lead to more consumers choosing energy efficient products compared numeric scales.
  - In Phase I these proportions are statistically different at the 95% confidence level for all products tested in the choice experiment (washing machines, TVs and light bulbs). In Phase II these proportions are found not to be statistically different for either TVs or washing machines.
- There is some evidence that labels with an A to G scale lead to more consumers choosing energy efficient products compared to the A+++-D scales.
  - In Phase II 43.5% of respondents chose the most energy efficient TV when accompanied by the A-G label, while only 33.3% chose it when accompanied by the A+++ to D label (statistically significant at the 90% confidence level). This is in line with earlier studies, although for washing machines in Phase II the difference was smaller and not statistically significant.
- The choice between one and another label design has a greater difference in impact on behaviour when consumers rank energy efficiency of low importance in their purchasing decision.
  - In Phase II, respondents that ranked energy efficiency as a low priority in their product choice relative to other product attributes (e.g. brand, price, TV screen size, screen technology, washing machine capacity, spin speed) where influenced to a greater degree by the choice between one and another label frame compared to consumers that ranked energy efficiency as high priority.

    This observation was particularly strong in the case of TVs. Consumers in the experiment that rated energy efficiency of low importance were less likely to choose the most energy efficient TV when the TV was affixed with the A+++ to D label than any other label design (statistically significant at the 95% level).

[36] The differences between the numeric and the A+++ to D and alphabetic labels is statistically significant at the 99% confidence level. The difference between the reverse numeric and the A+++ to D label is statistically significant at the 90% confidence level. The difference between the reverse numeric and the alphabetic is not statistically significant.

- Respondents that rated energy efficiency of high importance in their TV choice, the A+++ to D label was most effective at encouraging these respondents to choose the most energy efficient TV (significant at the 95% level to the numeric and reverse numeric labels, but not statistically different to the alphabetic label).

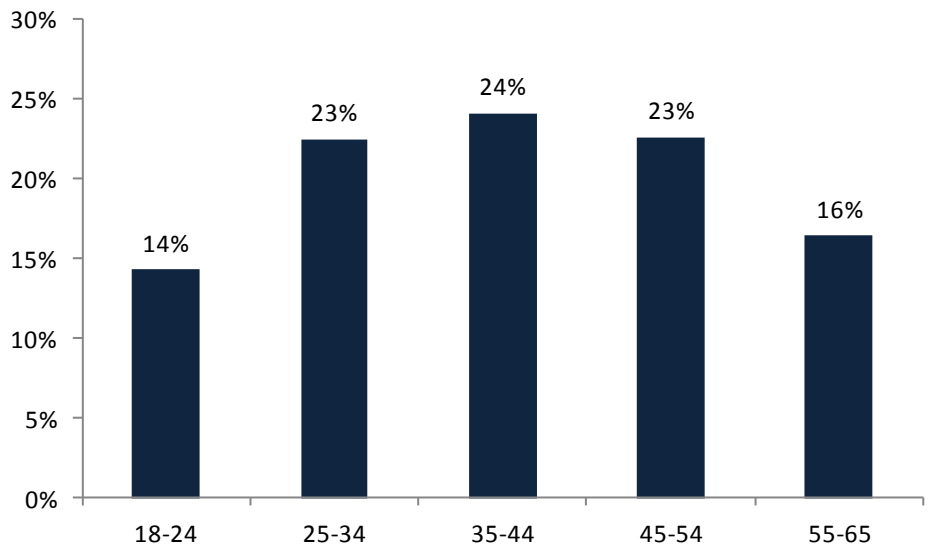
- The alphabetic label was the most effective in encouraging all respondents together – those that rank energy efficiency of high and low relative importance combined – to choose the most energy efficient TV, and in discouraging respondents to choose the least energy efficient TV.

- The above patterns for the A+++ to D and A-G labels were not observed for washing machines, where the A-G label was most effective for all respondents, though with little difference with the A+++ to D label. This difference for TVs and washing machines may be because respondents overall considered energy efficiency to be of relatively high importance for washing machines (an essential product) but of low relative importance for TVs (a leisure good). This suggests that the choice of label design may be of greater importance in influencing behaviour for products where energy efficiency is not of key importance to consumers when selecting a product.

Annex 1 Socio-demographics

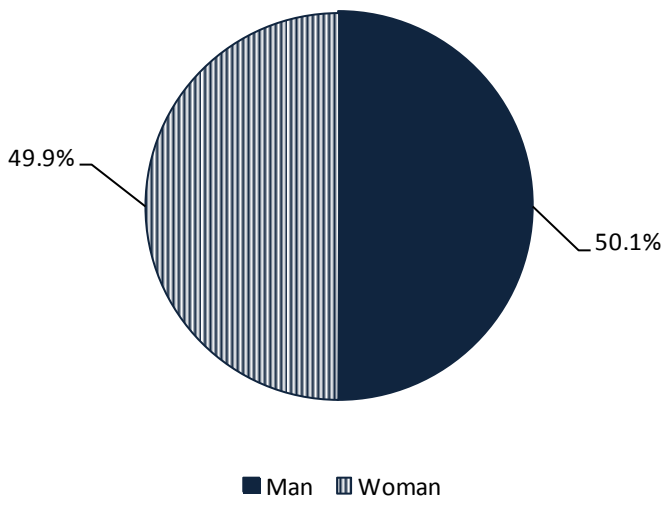
A1.1 Phase I sample demographics

Figure 27: Age



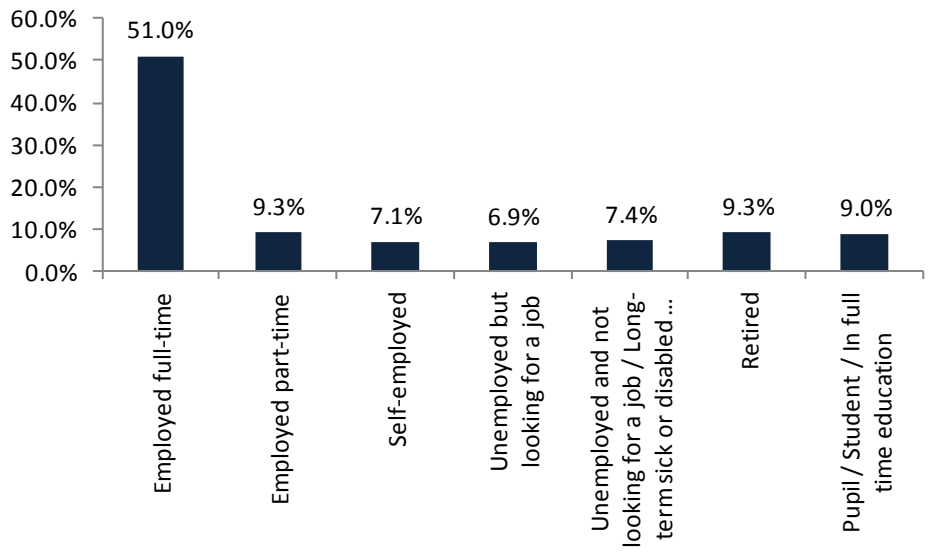
Note: Total participants – 5012
Source: Behavioural experiment

Figure 28:Gender



Note: Total participants – 5012
Source: Behavioural experiment

Figure 29:Working status



Note: Total participants – 5012
Source: Behavioural experiment

Figure 30:Q1A. Before this survey had you ever seen the following type of label [current EU energy label] on washing machines?

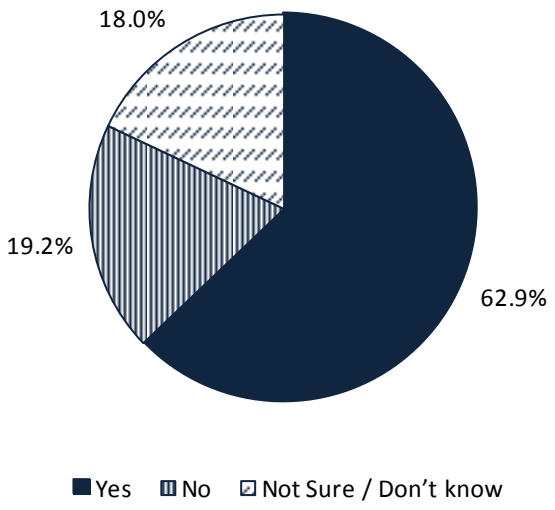


Figure 31:Q1B. Before this survey had you ever seen the following type of label [current EU energy label] on televisions?

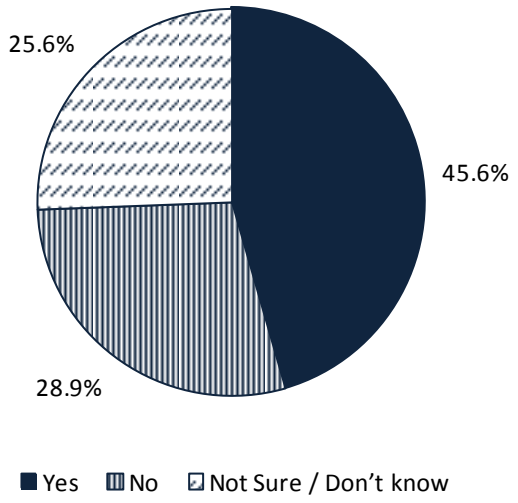


Figure 32:Q1C. Before this survey had you ever seen the following type of label [current EU energy label] on light bulbs?

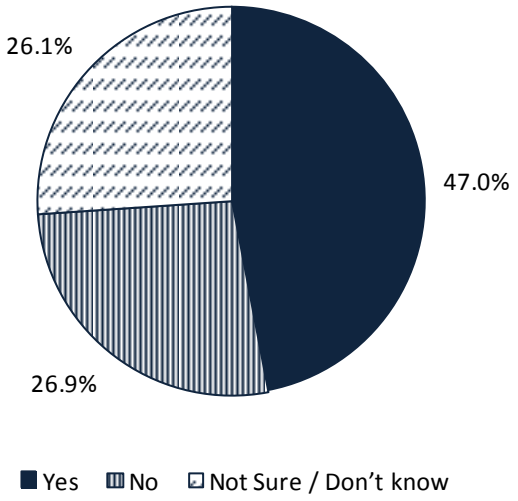


Figure 33:Q1ABC. Proportion fo respondents whi had seen the current EU energy label on any of the three products

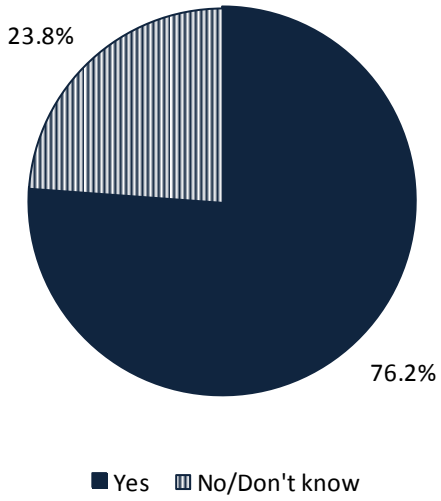


Figure 34:Q2. Which of the following products have you bought in the last 24 months?

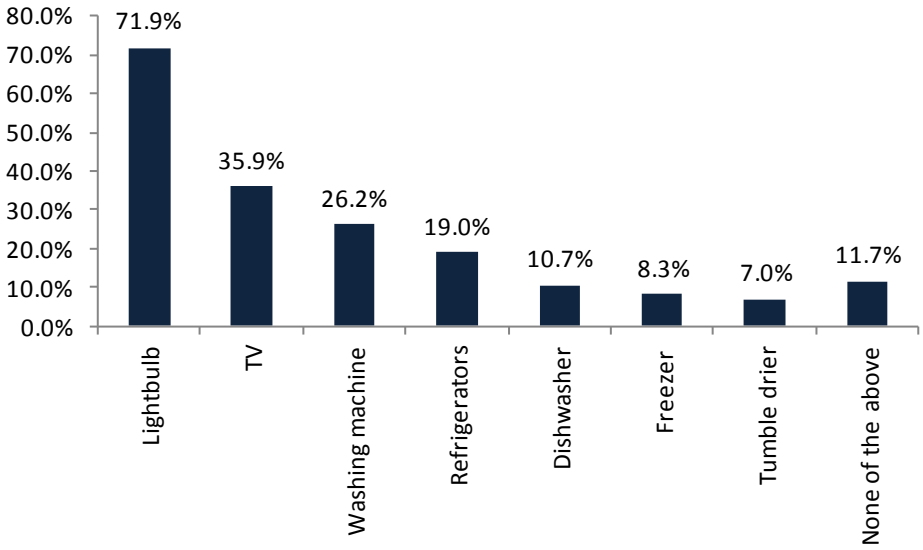


Figure 35:Q3. When buying the following product(s), which of the following did you take into consideration?

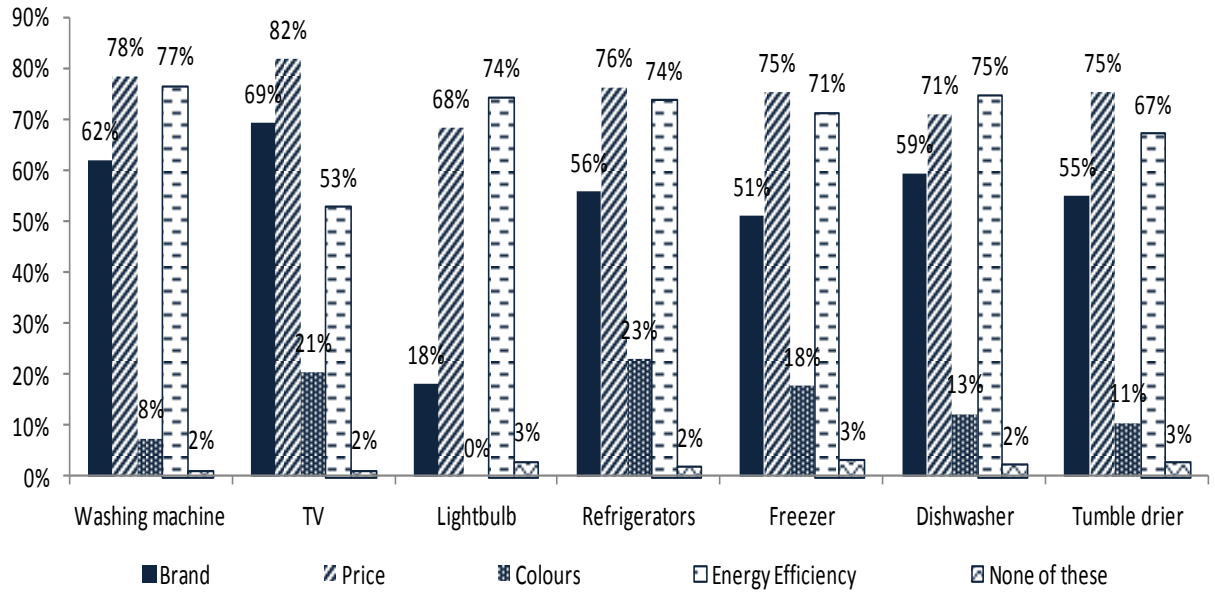


Figure 36:Q4. And which of the following was the most important when buying the following product(s)?

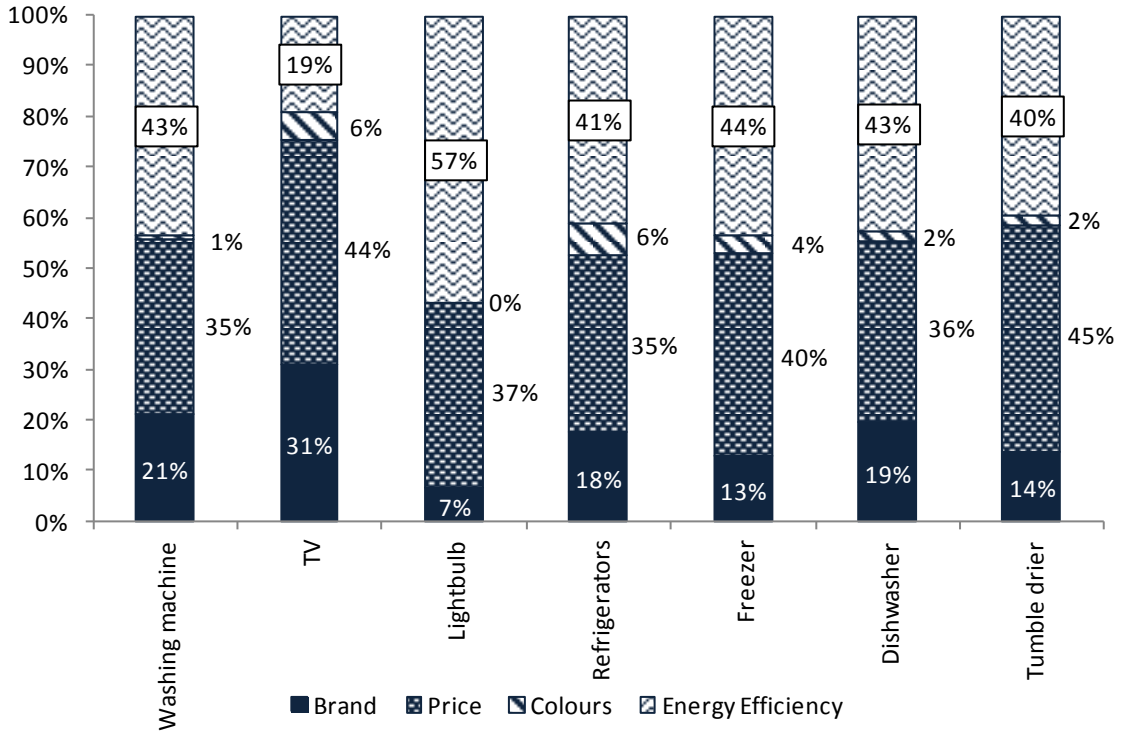
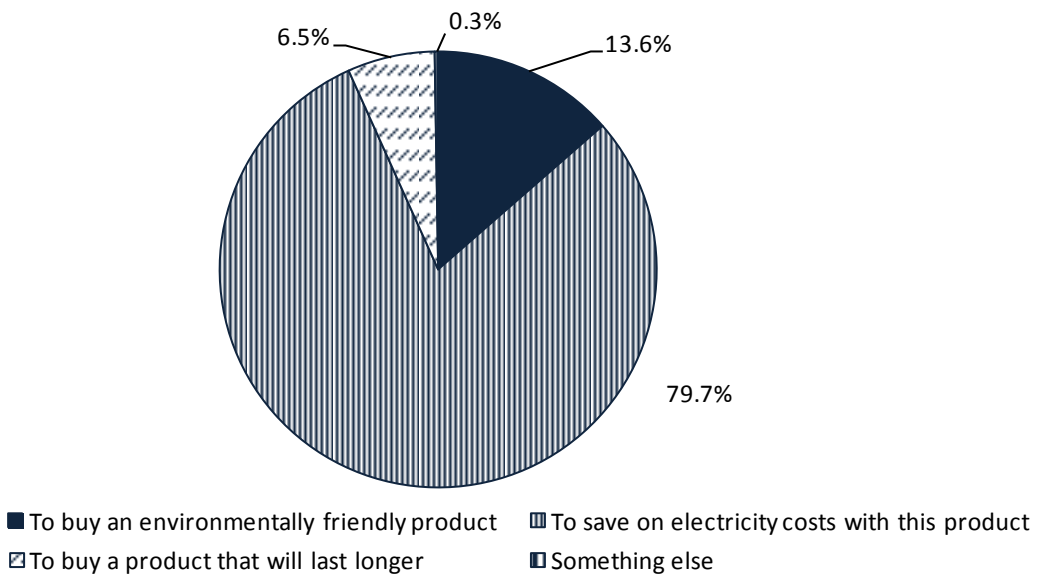
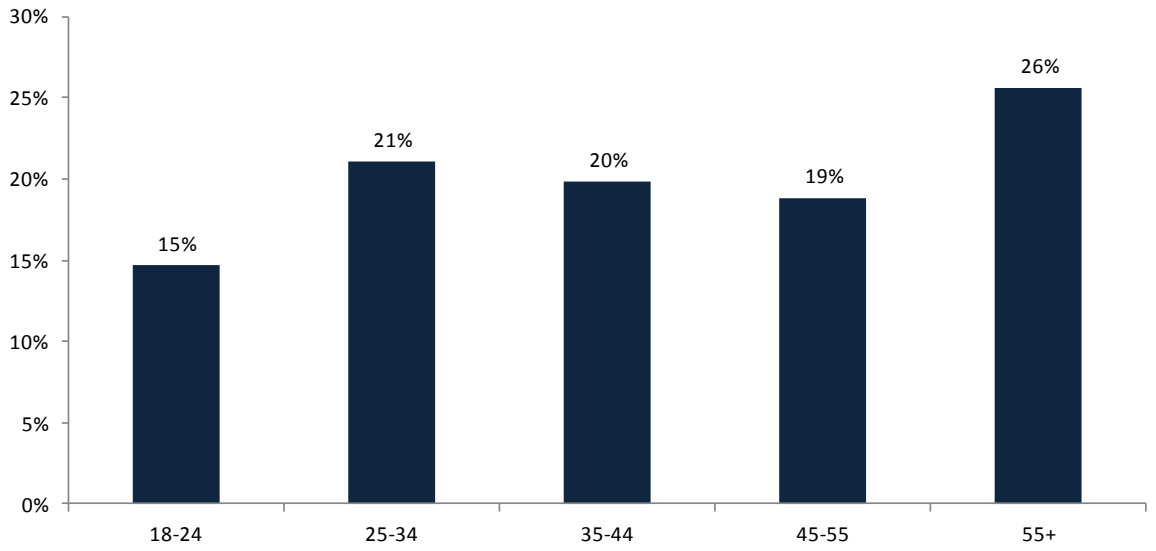


Figure 37:Q5. You said you took energy efficiency into account when buying your household appliance(s). What was the main reason you considered energy efficiency?



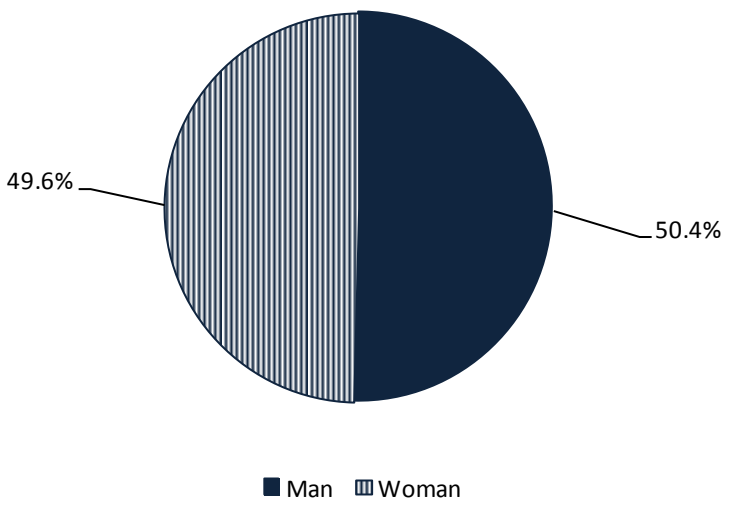
A1.2 Phase II sample demographics

Figure 38:Age



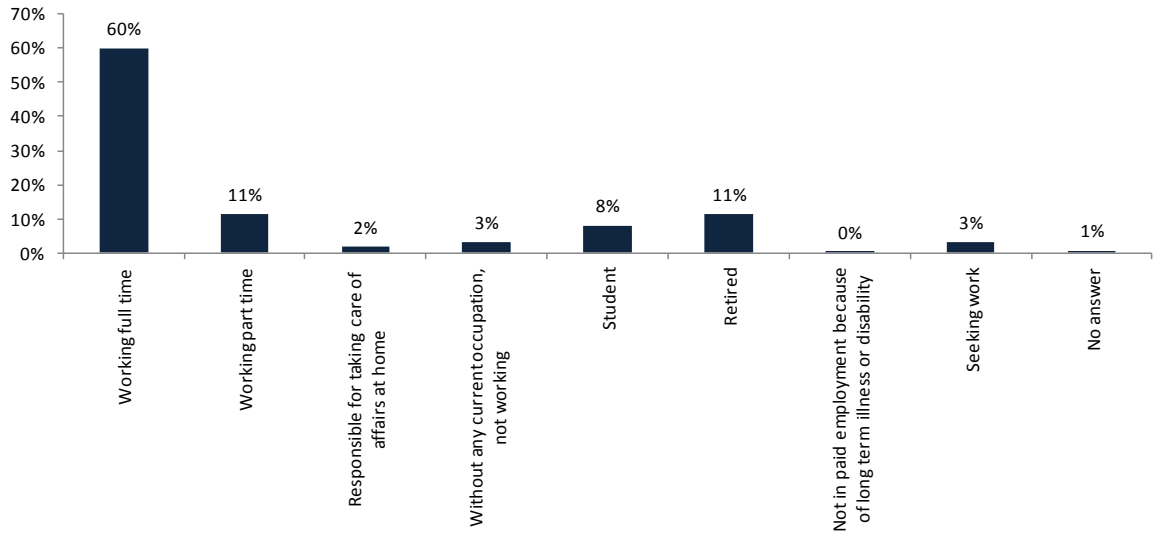
Note: Total participants – 504.
Source: Brick-and-mortar experiment

Figure 39:Gender



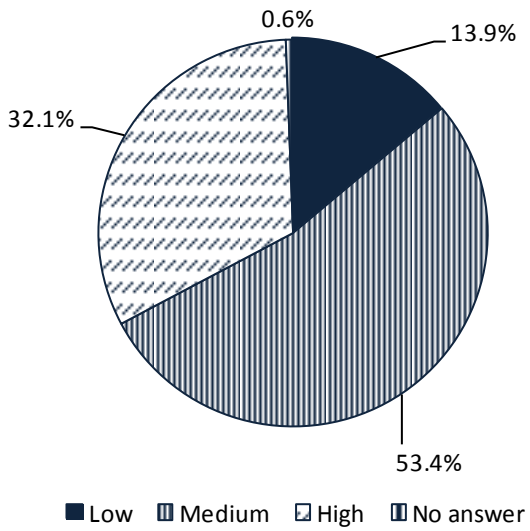
Note: Total participants – 504.
Source: Brick-and-mortar experiment

Figure 40:Working status



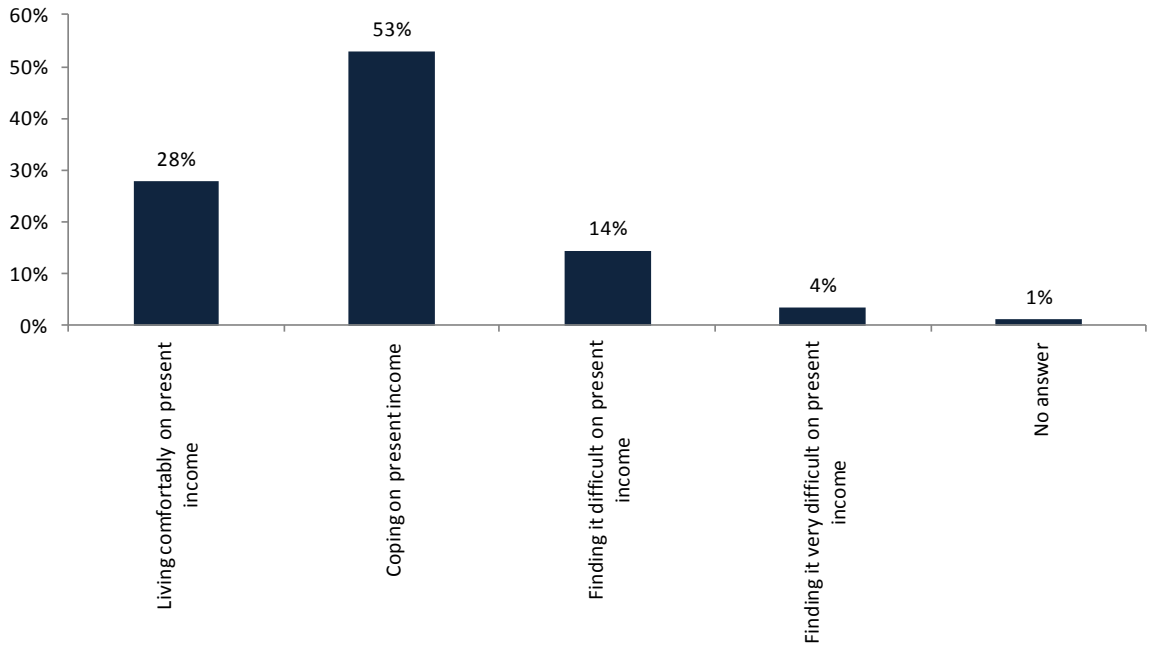
Note: Total participants – 504.
Source: Brick-and-mortar experiment

Figure 41:Education Level



Note: Low corresponds to 'not completed primary education' to 'primary or first stage of basic education'; Medium corresponds to 'upper secondary' or 'post upper secondary, non tertiary'; High corresponds to 'First stage of tertiary' or 'Second stage of tertiary'. Total participants – 504.
Source: Brick-and-mortar experiment

Figure 42:Household income

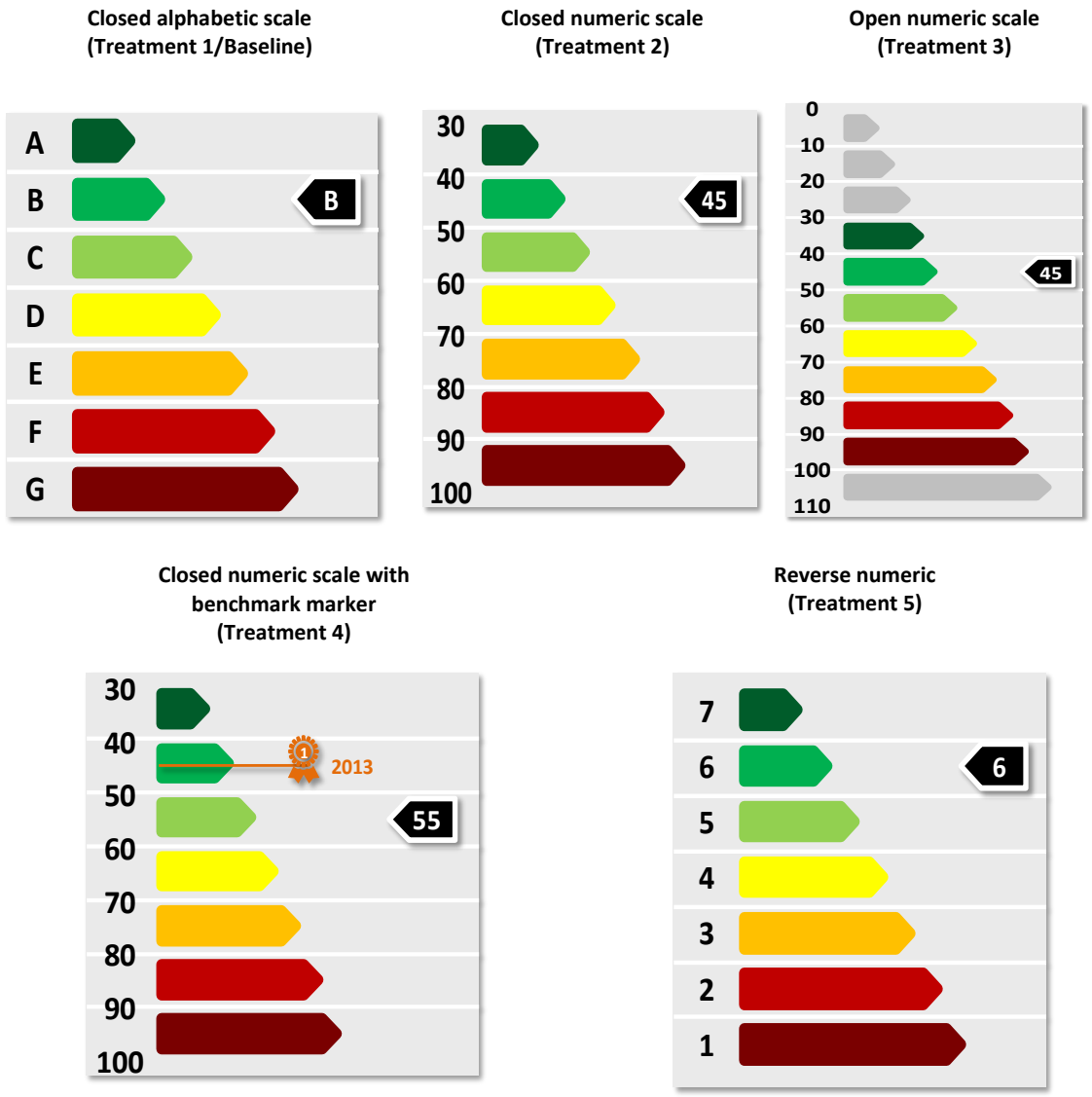


Note: Total participants – 504.
Source: Brick-and-mortar experiment

Annex 2 Energy efficiency labels tested in the study

A2.1 Phase I energy labels

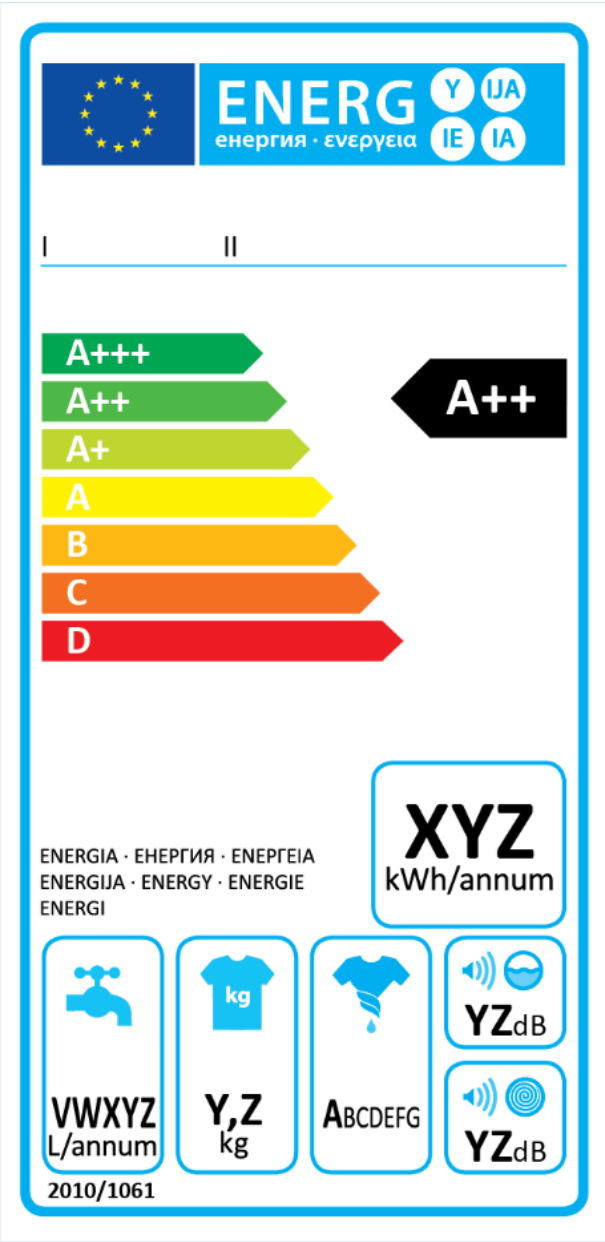
Figure 43:Online behavioural experiment label frames



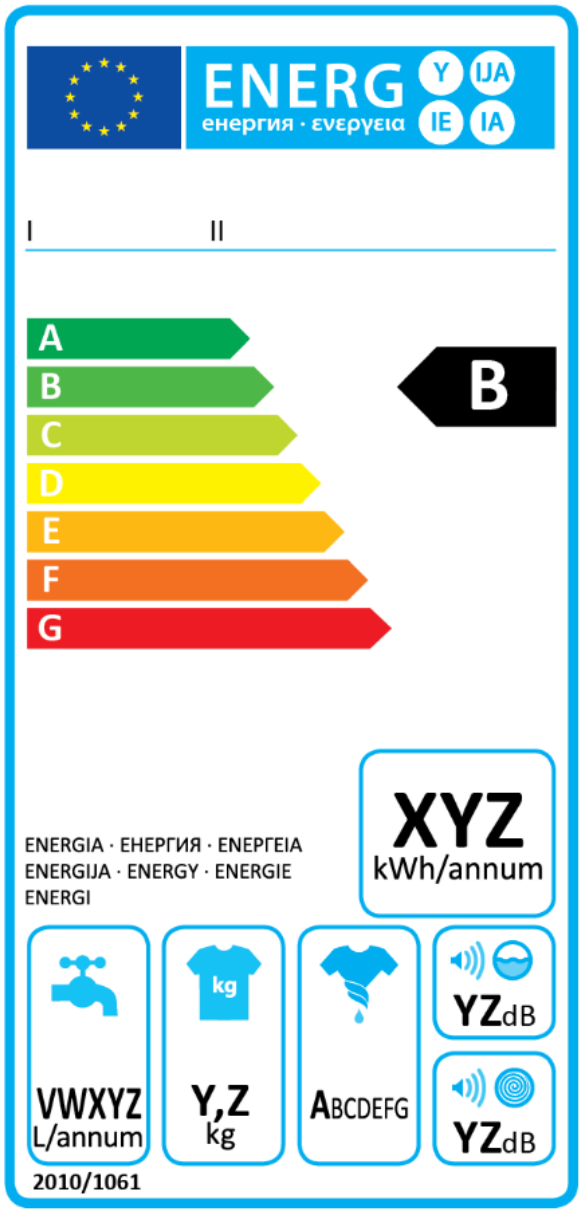
Source: London Economics/Ipsos behavioural experiment

A2.2 Phase II: Energy efficiency labels and product description cards

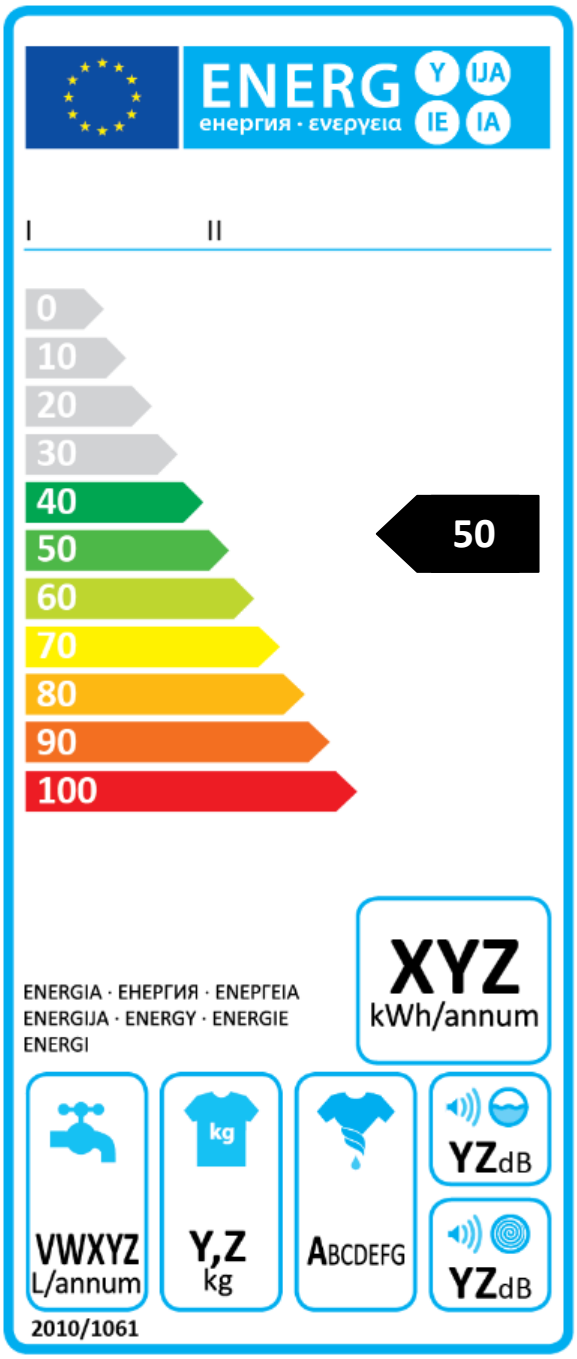
A+++ to D label



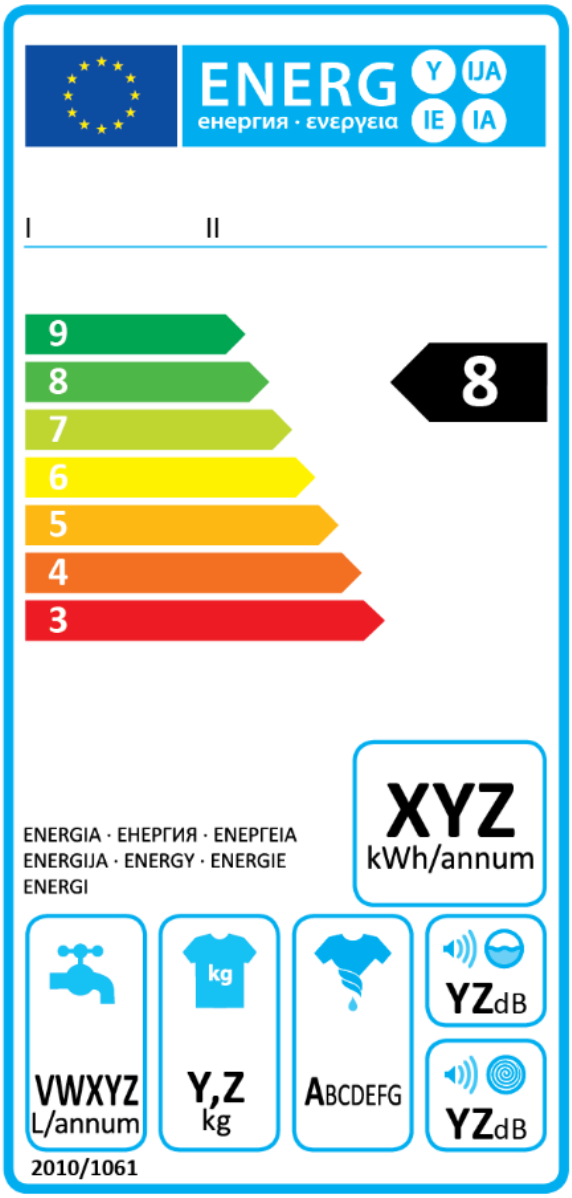
Alphabetic label



Numeric label



Reverse numeric label



Product description card television

Brand/Model	Brand name and model number
Price	Price in domestic currency
Screen size	Inches and centimetres
Screen technology	e.g., features such as Plasma, HD Ready
Resolution	e.g. 1024 x 768
Sound	e.g. Dolby Digital (2 x 10W speakers)
Built-in devices	e.g. Wi-Fi
Other features	e.g. Flat screen, USB Port, Wall-mountable

Product description card washing machine

Brand/Model	Brand name and model
Price	Price in domestic currency
Capacity	Kilograms

Spin speed	**Revolutions per minute**
Wash/spin performance	**Letter rating**
Programmes and functions	**e.g. eco, express, delicate**
Dimensions	**Height, width, depth, weight**
Other features	**Any other features not listed above**

Annex 3 Phase I questionnaire and experiment

STANDARD PANEL INTRO

Thank you for your participation in our Ipsos Access Panels online surveys. Your opinions are very important to us.

This survey will take you about 20 minutes and you'll earn up to XX reward points upon completing it.

It is very important that xxxxx completes the survey. If that person is not you please do not answer the survey in his/her name.

PROG : HIDDEN VARIABLES

Qcountry:

1. Czech Republic
2. France
3. Great Britain
4. Italy
5. Norway
6. Poland
7. Romania

Qlanguage:

1. Czech
2. French
3. English
4. Italian
5. Norwegian
6. Polish
7. Romanian

QSAMPLE

1. Ipsos panel
2. External panel

PROG: QINCENTIVE= CODE 1 (POINTS) FOR ALL EXCEPT FOR [QCOUNTRY= CODE 1 AND QSAMPLE= CODE 1 (Czech Republic Ipsos panel)] OR FOR [Q_COUNTRY= CODE 5 AND QSAMPLE= CODE 1 (Norway Ipsos panel)] PROG : INCENTIVE = CODE 2 (VOUCHER) .

QINCENTIVE .

1. POINTS
2. VOUCHER

INTRO SCREEN

Thank you for taking part in this important study for the European Commission. The survey is about energy labels and will ask you to compare different household products and to consider which ones you would choose to buy and how much you would be willing to pay.

This survey includes some exercises where you will be asked to make 'virtual' purchases and go through a specific purchase process. These exercises will not actually involve purchasing real goods or services, nor will you be asked to provide any form of payment.

PRG: IF QINCENTIVE =1 (point) SHOW:
In these exercises you will have a chance to win extra survey points. You will receive your survey points for participating in the survey as usual after completing it. Any additional points you may win in the exercises will be added to your account after the survey closes. It can take up to 8 weeks for you to receive your additional points.

PRG: IF QINCENTIVE =2 (Voucher) SHOW:
In these experiments you will have a chance to win 'Survey points'. At the end of the survey your 'Survey points' will be redeemed for a voucher of a value that will depend on the number of points you would have won. The value of the voucher corresponds to the following number of points:

PRG: QCOUNTRY= CODE 1 AND QSAMPLE= CODE 1 (CZ Ipsos panel) SHOW:

- 0-100 points= 100 Kč Ticket Compliments Darkový voucher
- 101-200 points= 200 Kč Ticket Compliments Darkový voucher
- More than 200 points = 300Kč Ticket Compliments Darkový voucher

PRG: QCOUNTRY= CODE 5 AND QSAMPLE= CODE 1 (NORWAY Ipsos panel) SHOW:

- 0-100points= 100 NOK Supergavekortet voucher
- 101-200 points= 200 NOK Supergavekortet voucher
- More than 200 points = 300 NOK Supergavekortet voucher

You will still enter the standard quarterly IIS prize draw for participating in the survey. But in addition, you will receive a voucher corresponding to the number of points you won in the survey. It can take up to 8 weeks for you to receive this voucher.

SCREENING QUESTIONS

Firstly please tell us a few details about yourself. This is to ensure we are including a wide range of people in this research.

PROG: ASK ALL UNLESS SPECIFIED

D1. How old were you at your last birthday? *Please enter your age* - PRG: NUMERIC QUESTION – RANGE 1 – 99 – SCREEN OUT IF LESS THAN 18 OR OVER 65;

RECODE INTO:

1) 18 - 24
2) 25 - 34
3) 35 - 44
4) 45 - 54
5) 55 - 65

D2. Are you a...

Please select one answer - PRG: SINGLE ANSWER

1. Man
2. Woman

D3. REGION PRG: USE STANDARD REGION QUESTION FROM PANEL

D4. Which of the following best describes your current work status? *Please select one answer* - PRG: SINGLE ANSWER

	PRG: RECODE AS
1. Employed full-time	1. ACTIVE
2. Employed part-time	
3. Self-employed	
4. Unemployed but looking for a job	
5. Unemployed and not looking for a job / Long-term sick or disabled / Housewife / Househusband	2. INACTIVE
6. Retired	
7. Pupil / Student / In full time education	

INTRO EXPERIMENTS

PRG: SPLIT ALL RESPONDENTS INTO 5 GROUPS. THESE GROUPS WILL BE HELD CONSTANT THROUGHOUT SURVEY. EACH GROUP CORRESPONDS TO ONE LABEL TREATMENT. RESPONDENTS WILL BE ALWAYS BE SHOWN THE SAME LABEL TREATMENT THROUGH MODULE 1 AND 2.

PRG: SHOW FOR TESTING PURPOSE

Qtreatment

1. Treatment 1
2. Treatment 2
3. Treatment 3
4. Treatment 4
5. Treatment 5

You will now take part in two exercises where you will be asked to compare different household products and to consider which ones you would choose to buy and how much you would be willing to pay.

Before you move on to these exercises please read the following information. This explains the energy efficiency label that will be shown to you in the exercises.

PRG: SHOW LABEL TREATMENT EXPLANATION SCREENS CORRESPONDING TO GROUP OF RESPONDENTS. REFER TO POWER POINT file 'LABEL TREATMENT EXPLANATIONS'.

EXPLANATION to LABEL TREATMENT 1 TO GROUP 1

EXPLANATION to LABEL TREATMENT 2 TO GROUP 2

EXPLANATION to LABEL TREATMENT 3 TO GROUP 3

EXPLANATION to LABEL TREATMENT 4 TO GROUP 4

EXPLANATION to LABEL TREATMENT 5 TO GROUP 5

PRG: ROTATE 50% OF RESPONDENTS TO START WITH MODULE 1 AND 50% WITH MODULE 2.

MODULE 1: CHOICE EXPERIMENT

For this part of the survey we would like to find out which product you would choose to purchase. You will not actually be able to buy anything, but we would like you to imagine that you are currently shopping for the products you see on the screen.

You will always be offered a choice between two slightly different products and we want to find out which one of the two you prefer. The products only differ in terms of price and energy efficiency. There is no money at stake in this part of the experiment, so you can simply give your opinion about the two products offered.

Overall we are going to ask you to make 9 choices.

NEW SCREEN

PRG: THERE ARE 540 COMBINATIONS (6 PRICE COMBINATIONS X 6 RATINGS X 5 TREATMENTS X 3 PRODUCTS) PLEASE REFER TO CHOICE EXPERIMENT EXCEL FILE 'MATRIX OF CHOICE EXPERIMENT'.

PRG: RANDOMLY ALLOCATE NINE COMBINATIONS PER RESPONDENT.

PRG: CAN NOT SHOW TWICE THE SAME RATING COMBINATION FOR THE SAME PRODUCT.

PRG: EACH RESPONDENT SHOULD SEE 3 COMBINATIONS FOR EACH PRODUCT (WASHING MACHINE, TV, LIGHT BULB)

THE PRODUCT TYPES NEED TO BE HELD TOGETHER I.E. 3 WASHING MACHINES SHOWN IN A ROW, 3 LIGHTBULBS SHOWN IN A ROW.

THE PRODUCT TYPES SHOULD BE ROTATED I.E. SOME SEE 3 WASHING MACHINES, THEN 3 TELEVISIONS, THEN 3 LIGHTBULBS, OTHERS SEE 3 TELEVISIONS, THEN 3 LIGHTBULBS, THEN 3 WASHING MACHINES ETC.

PRG: RESPONDENTS SHOULD ONLY BE SHOWN COMBINATIONS OF LABELS CORRESPONDING TO THE TREATMENT OF THEIR GROUP (GROUP 1 = TREATMENT 1 ETC..)

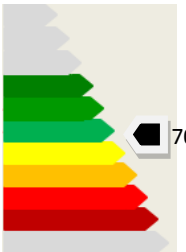
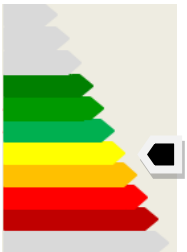
PRG: EACH COMBINATION SHOULD BE SHOWN THE SAME NUMBER OF TIMES IN EACH COUNTRY

PRG: FOR TESTING PURPOSE SHOW LIST OF COMBINATIONS TO CHOOSE FROM

PRG: SHOW THE QUESTION FOR EACH COMBINATION

C1 - C9. Please indicate which of the two products shown below you would be most likely to purchase. PRG: SINGLE ANSWER

PRG: EXAMPLE OF SCREEN TO BE SHOWN ONLY THE LABEL AND THE PRICE WILL VARY - PLEASE REFER TO POWER POINT FILE 'EXPERIMENT LABELS'

 	 
Spin speed: 1400rpm Wash load: 7kg Price: **£369**	Spin speed: 1400rpm Wash load: 7kg Price: £**335**

PRG: SHOW COMBINATION – ROTATE COMBINATIONS ON LEFT AND RIGHT SIDE OF SCREEN
PRG: REPEAT NINE TIMES

PRG: ROTATE 50% OF RESPONDENTS TO START WITH MODULE 1 AND 50% WITH MODULE 2.

MODULE 2: MULTIPLE PERIOD AUCTION EXPERIMENT

INSTRUCTION PAGE

This section of the survey will ask you to complete an exercise that is different to standard survey questions. It is essential that you read the instructions carefully to understand how to complete the exercise.

PRG: BRING UP A WARNING MESSAGE SAYING "Please ensure you read these instructions in full before moving on" IF THEY TRY TO CLICK THROUGH TO THE NEXT PAGE WITHIN 30SECONDS

You are now going to be shown a range of washing machines, televisions and light bulbs. You will be asked how much you would be prepared to offer for each product if it was on sale at an auction. This will be your 'bid'.

This is a hypothetical auction so you will not receive real products or pay with real money. You are also not bidding against other people.

PRG: ALL COUNTRIES EXCEPT QCOUNTRY= CODE 1 OR CODE 5 AND QSAMPLE= CODE 1 This is in addition to the points you will receive for taking part in this survey.

PRG: [QCOUNTRY= CODE 1 OR CODE 5 AND QSAMPLE= CODE 1 (Czech Republic AND NORWAY Ipsos panel)] At the end of the survey, your 'Survey points' will be redeemed for a voucher of a value that will depend on the number of points you won. The value of the voucher corresponds to the following number of points:

PRG: QCOUNTRY= CODE 1 AND QSAMPLE= CODE 1 (CZ Ipsos panel) SHOW:

- 0-100 points= 100 Kč Ticket Compliments Darkový voucher
- 101-200 points= 200 Kč Ticket Compliments Darkový voucher
- More than 200 points = 300Kč Ticket Compliments Darkový voucher

PRG: QCOUNTRY= CODE 5 AND QSAMPLE= CODE 1 (NORWAY Ipsos panel) SHOW:

- 0-100points= 100 NOK Supergavekortet voucher
- 101-200 points= 200 NOK Supergavekortet voucher
- More than 200 points = 300 NOK Supergavekortet voucher

You will still enter the standard quarterly IIS prize draw for participating in the survey. But in addition, you will receive a voucher corresponding to the number of points you would have won in the survey. It can take up to 8 weeks for you to receive this voucher.

Please read the following instructions carefully.

- You will be given a small amount of 'money' at the start of each bid. This will be called an endowment. The bids you make will determine how much of this endowment you receive in survey points at the end of the exercise.
- You will be told the re-sale value of the product i.e. how much you could get for the product if you re-sold it.
- You will be asked to state how much you would offer for the product (your 'bid'). You are free to bid any amount.
- You will not be told the exact sale price of the product before you make your bid, but you will be told the price range for the product.
- If the amount you bid for the product is above the actual sale price, you will 'win' the product.
- If the amount you bid is below the sale price you will not win the product.
- For each product that you win, you may receive additional survey points. The number of points you win will be calculated from the difference between the re-sale value and the sale price of the product plus your endowment money.
- If you win a product with a higher sale price than its re-sale value, you will lose money from your endowment.
- PRG: ALL COUNTRIES EXCEPT QCOUNTRY= CODE 1 OR CODE 5 AND QSAMPLE= CODE 1
  During this exercise you may lose some or all of the endowment but you will always receive your initial survey points for taking part in the survey.
  PRG: [QCOUNTRY= CODE 1 OR CODE 5 AND QSAMPLE= CODE 1 (Czech Republic AND NORWAY Ipsos panel)]
- During this exercise you may lose some or all of the endowment. If you do not win any survey point you will not receive any voucher however you will still enter the standard quarterly IIS prize draw for participating in the survey.

- PRG: TO ALL: If you win products that are energy efficient then Ipsos will make a financial donation to a fund designed to protect the environment.

Next you will see a few examples to show you how it works

PRG: SHOW LINK TO TERMS AND CONDITIONS

NEXT SCREEN

PRG: BRING UP A WARNING MESSAGE SAYING "Please ensure you read these instructions in full before moving on" IF THEY TRY TO CLICK THROUGH TO THE NEXT PAGE WITHIN 15 SECONDS

PGR: REFER TO 'BDM' EXCEL FILE FOR INSERTION OF VALUES

PRG: FOR TESTING PURPOSE SHOW LIST OF COMBINATIONS AND PRICE LIST TO CHOOSE FROM

Example 1: You win the product and win additional survey points

PRG: INSERT VALUES FROM EXAMPLE 1 TABLE OF BDM EXCEL FILE

- You are given an endowment of [PRG: INSERT ENDOWMENT]. You are told that the re-sale value of a washing machine is [PRG: INSERT RESALE VALUE]. You are told the sale price range is between [PRG: INSERT MINIMUM RANGE] and [PRG: INSERT MAXIMUM RANGE].
- You decide to bid [PRG: INSERT BID].
- The sale price for the washing machine is actually [PRG: INSERT SALE PRICE]
- You win the product as you were willing to offer more for the washing machine than the sale price. For this bid you would win [PRG: INSERT WIN] (re-sale price of [PRG: INSERT RESALE VALUE] minus sale price of [PRG: INSERT SALE PRICE] plus [PRG: INSERT ENDOWMENT] endowment). This is converted into [PRG: INSERT WIN IN POINTS] additional survey points.

Example 2: You win the product but lose some of your endowment
PRG: INSERT VALUES FROM EXAMPLE 2 TABLE OF BDM EXCEL FILE

- You are given an endowment of [PRG: INSERT ENDOWMENT]. You are told that the re-sale value of a washing machine is [PRG: INSERT RESALE VALUE]. You are told the sale price range is between [PRG: INSERT MINIMUM RANGE] and [PRG: INSERT MAXIMUM RANGE].
- You decide to bid [PRG: INSERT BID].
- The sale price for the washing machine is actually [PRG: INSERT SALE PRICE].
- You win the product as you were willing to offer more for the washing machine than the sale price. For this bid you lose [PRG: INSERT LOSE] from your endowment (re-sale price of [PRG: INSERT RESALE VALUE] minus sale price of [PRG: INSERT SALE PRICE]). You are left with [PRG: INSERT WIN] from your endowment. This is converted into [PRG: INSERT WIN IN POINTS] additional survey points. The product you won was energy efficient so a financial donation is made by Ipsos to a fund designed to protect the environment.

Example 3: You do not win the product and do not win any additional survey points

PRG: INSERT VALUES FROM TABLE EXAMPLE 3 OF BDM EXCEL FILE

- You are given an endowment of [PRG: INSERT ENDOWMENT]. You are told that the re-sale value of a washing machine is [PRG: INSERT RESALE VALUE]. You are told the sale price range is between [PRG: INSERT MINIMUM RANGE] and [PRG: INSERT MAXIMUM RANGE].
- You decide to bid [PRG: INSERT BID].
- The sale price for the washing machine is actually [PRG: INSERT SALE PRICE].
- You do not win the product as you were not willing to offer more for the washing machine than the sale price.

- You keep your endowment of [PRG: INSERT ENDOWMENT] which is converted into [PRG: INSERT WIN IN POINTS] additional survey points.

NEXT SCREEN

PRACTICE1: WASHING MACHINE

This is a practice go before the real survey starts. This will not affect how many additional survey points you win. Please refer back to the instructions if you need to by clicking here. [PRG: INSERT LINK TO BRING UP INSTRUCTION PAGE]

Please look at the information provided about this washing machine. Imagine that you have been given an endowment of [PRG: INSERT ENDOWMENT FOR WASHING MACHINE].

Please state how much you would offer for this product. You are free to bid any amount that you would be prepared to pay for this product.

PRG: SHOW PRODUCT SCREEN –

EXAMPLE SCREEN – REFER TO BDM EXCEL FILE FOR LABEL AND RESALE VALUE TO INSERT.

PGR: INSERT LABEL TREATMENT CORRESPONDING TO RESPONDENT GROUP

PRG: CHOOSE A RATING RANDOMLY FROM THOSE AVAILABLE FOR THIS TREATMENT AND THIS PRODUCT – SEE TABLE RATING COMBINATION BDM EXCEL FILE –

PRG: THE LABELS NEED TO BE RANDOMISED SO THAT THEY APPEAR AN EQUAL NUMBER OF TIMES IN EACH COUNTRY.

Washing Machine

PRG : INSERT LABEL AND RATING

Spin speed: 1400rpm

Wash load: 7kg

Sale price range: [PRG: ENTER MINIMUM PRICE RANGE] - [PRG: ENTER MAXIMUM PRICE RANGE]

Resale value: [PRG: INSERT RESALE VALUE]

P1. Please enter your bid for this product: [PRG: NUMERIC QUESTION – ALLOW ONLY SALE PRICE RANGE OF THE PRODUCT INDICATED ABOVE] *Please insert amount* [ ] PRG: INSERT CURRENCY SYMBOL BEFORE PRICE FOR UK, AFTER PRICE FOR OTHER COUNTRIES.

NEXT SCREEN

The sale price for this product was actually [PRG: RANDOMLY SELECT SALE **PRICE BELOW RESALE VALUE** FROM PRICE LIST OF EXECL FILE]. Your bid was [PRG: ENTER BID VALUE FROM P1].

PRG: IF BID VALUE IS HIGHER THAN SALE PRICE This means you have won this product as your bid was higher than the sale price.

PRG: IF BID EQUAL SALE PRICE: This means you have won this product as your bid was equal to the sale price.

PRG: IF WON PRODUCT: As this was a practice bid you have not won any additional survey points. However, if this was the real survey you would have won [PRG: INSERT AMOUNT WON FROM CALCULATION= RESALE VALUE MINUS SALE PRICE PLUS ENDOWMENT] which would convert into [PRG: CONVERT WIN AMOUNT INTO POINTS FOLLOWING 'CONVERSION' TABLE FROM BDM EXCEL FILE] survey points.

You would have won [PRG: INSERT AMOUNT WON FROM CALCULATION ABOVE] as the resale price of [PRG: INSERT RESALE PRICE FOR WASHING MACHINE] minus the product price of [PRG: INSERT RANDOMLY GENERATE SALE PRICE FROM ABOVE], plus your endowment of [PRG: INSERT ENDOWMENT FOR WASHING MACHINE] equal [INSERT AMOUNT WON].

PRG: IF RESPONDENT HAS WON ON PRODUCTS FROM TABLE 6 OF BDM FILE (product generating a donation) THEN SHOW: You won the energy efficient product so in the real survey a financial contribution would have been made by Ipsos to a fund designed to protect the environment.

PRG: IF BID VALUE IS LOWER THAN SALE PRICE This means you have not won this product as your bid was lower than the sale price. You keep your endowment of [PRG: INSERT ENDOWMENT] which is converted into [PRG: INSERT WIN IN POINTS] additional survey points.

PRACTICE 2

This is another practice go before the real survey starts. This will not affect how many additional survey points you win. Please refer back to the instructions if you need to by clicking here. [PRG: INSERT LINK TO BRING UP INSTRUCTION PAGE]

Please look at the information provided about this television. Imagine that you have been given an endowment of [PRG: INSERT ENDOWMENT FOR TV].

PRG: SHOW PRODUCT SCREEN

P2. Please enter your bid for this product: [PRG: NUMERIC QUESTION – ALLOW ONLY SALE PRICE RANGE OF THE PRODUCT INDICATED ABOVE] *Please insert amount* [ ] PRG: INSERT CURRENCY SYMBOL BEFORE PRICE FOR UK, AFTER PRICE FOR OTHER COUNTRIES

NEXT SCREEN

The sale price for this product was actually [PRG: RANDOMLY SELECT SALE PRICE **HIGHER THAN THE RESALE VALUE** FROM PRICE LIST OF EXECL FILE]. Your bid was [PRG: ENTER BID VALUE FROM P2].

PRG: IF BID VALUE IS HIGHER THAN SALE PRICE This means you have won this product as your bid was higher than the sale price.

PRG: IF BID EQUAL SALE PRICE: This means you have won this product as your bid was equal to the sale price.

PRG: SHOW BELOW TEXT AS WON PRODUCT BUT SALE PRICE HIGHER THAN RE-SALE VALUE (I.E. VALUE OF BID WAS HIGHER THAN SALE PRICE BUT SALE PRICE HIGHER THAN RE-SALE VALUE):

As the sale price for the product is higher than the re-sale value, [PRG: INSERT SALE PRICE MINUS RE-SALE VALUE] will be taken away from your [PRG: INSERT ENDOWMENT AMOUNT] endowment. This leaves you with [PRG: INSERT ENDOWMENT MINUS LOSS] from your endowment which will be converted into [PRG: CONVERT WIN AMOUNT INTO POINTS FOLLOWING 'CONVERSION' TABLE FROM BDM EXCEL FILE] survey points.

PRG IF WINNINGS ARE 0 POINT - This leaves you with [PRG: INSERT 0 with RELEVANT CURRENCY] from your endowment which will not be converted into any additional survey points.

PRG: IF RESPONDENT HAS WON ON PRODUCTS FROM TABLE 6 OB BDM FILE (product generating a donation) THEN SHOW: You won the energy efficient product so in the real survey a financial contribution would have been made by Ipsos to a fund designed to protect the environment.

PRG: IF BID VALUE IS LOWER THAN SALE PRICE This means you have not won this product as your bid was lower than the sale price. You keep your endowment of [PRG: INSERT ENDOWMENT] which is converted into [PRG: INSERT WIN IN POINTS] additional survey points.

NEXT SCREEN

This is now the real survey and you may win additional points depending on the bids you make. You may also make choices which lead to financial donations being made by Ipsos to a fund designed to protect the environment.

PRG: ONLY INCLUDE ON FIRST REAL BID SCREEN: You will be asked to make nine bids in total. There will be three bids for washing machines, three bids for televisions and three bids for light bulbs. Please refer back to the instructions if you need to by clicking here. [PRG: INSERT LINK TO BRING UP INSTRUCTION PAGE]

Please look at the information provided about this [PRG: INSERT PRODUCT NAME]

You have been given an endowment of [PRG: INSERT ENDOWMENT VALUE]

EXAMPLE SCREEN – REFER TO BDM EXCEL FILE FOR LABEL AND RESALE VALUE TO INSERT.

PGR: INSERT LABEL TREATMENT CORRESPONDING TO RESPONDENT GROUP

PRG: CHOOSE A RATING COMBINATION RANDOMLY FROM THOSE AVAILABLE FOR THIS TREATMENT AND THIS PRODUCT – SEE TABLE RATING COMBINATION BDM EXCEL FILE –

PRG: EACH RATING COMBINATION NEEDS TO APPEAR AN EQUAL NUMBER OF TIMES IN EACH COUNTRY.

PRG: EACH SALE PRICE SHOULD BE SEEN THE SAME NUMBER OF TIMES

PRG: RESPONDENT SHOULD SEE DIFFERENT SALE PRICE EACH TIME

EXAMPLE SCREEN

Washing Machine

PRG : INSERT LABEL AND RATING

Spin speed: 1400rpm

Wash load: 7kg

Sale price range: [PRG: ENTER MINIMUM PRICE RANGE] - [PRG: ENTER MAXIMUM PRICE RANGE]

Resale value: [PRG: INSERT RESALE VALUE]

B1-B9 Please enter your bid for this product: [PRG: NUMERIC QUESTION – ALLOW ONLY SALE PRICE RANGE OF THE PRODUCT INDICATED ABOVE] *Please insert amount* [ ] PRG: INSERT CURRENCY SYMBOL BEFORE PRICE FOR UK, AFTER PRICE FOR OTHER COUNTRIES

NEXT SCREEN

The sale price for this product was actually [PRG: RANDOMLY GENERATE SALE PRICE BETWEEN MINIMUM AND MAXIMUM RANGE FOR PRODUCT FROM PRICE LIST OF EXCEL FILE]. Your bid was [PRG: ENTER BID VALUE FROM B1-B9].

PRG: IF BID VALUE IS HIGHER THAN SALE PRICE. This means you have won this product as your bid was higher than the sale price.

PRG: IF BID EQUAL SALE PRICE: This means you have won this product as your bid was equal to the sale price.

PRG: IF WON PRODUCT AND SALE PRICE LOWER THAN OR EQUAL TO RESALE VALUE You have won [PRG: INSERT AMOUNT WON FROM CALCULATION= RESALE VALUE MINUS SALE PRICE PLUS ENDOWMENT] which would convert into [PRG: CONVERT WIN AMOUNT INTO POINTS FOLLOWING 'CONVERSION' TABLE FROM BDM EXCEL FILE] survey points.

PRG: IF WON PRODUCT AND SALE PRICE HIGHER THAN RE-SALE VALUE As the sale price for the product is higher than the re-sale value, [PRG: INSERT SALE PRICE MINUS RE-SALE VALUE] will be taken away from your [PRG: INSERT ENDOWMENT AMOUNT] endowment. This leaves you with [PRG: INSERT ENDOWMENT MINUS LOSS] from your endowment which will be converted into an additional [PRG: INSERT CONVERSION CALCULATION] Survey points. [PRG IF WINNINGS ARE 0 POINT - This leaves you with [PRG: INSERT 0 with RELEVANT CURRENCY] from your endowment which will not be converted into any additional survey points.

PRG: IF RESPONDENT HAS WON ON PRODUCTS FROM TABLE 6 OF BDM FILE (product generating a donation) THEN SHOW: You won the energy efficient product so a financial contribution will be made by Ipsos to a fund designed to protect the environment.

PRG: IF BID VALUE IS LOWER THAN SALE PRICE This means you have not won this product as your bid was lower than the sale price. You keep your endowment of [PRG: INSERT ENDOWMENT] which is converted into [PRG: INSERT WIN IN POINTS] additional survey points.

PRG: REPEAT NINE TIMES - EACH RESPONDENT WILL BE SHOWN 3 DIFFERENT LABELS X 3 PRODUCTS I.E. 9 SCREENS IN TOTAL.

THE PRODUCT TYPES NEED TO BE HELD TOGETHER I.E. 3 WASHING MACHINES SHOWN IN A ROW, 3 LIGHTBULBS SHOWN IN A ROW.

THE PRODUCT TYPES SHOULD BE ROTATED I.E. SOME SEE 3 WASHING MACHINES, THEN 3 TELEVISIONS, THEN 3 LIGHTBULBS, OTHERS SEE 3 TELEVISIONS, THEN 3 LIGHTBULBS, THEN 3 WASHING MACHINES ETC.

NEXT SCREEN –

PRG: AT END OF NINE BIDS

You have now completed this section of the survey. The total value you have won is [PRG: INSERT TOTAL WON ACROSS NINE BIDS] For the purpose of this exercise, this will be converted into [PRG: INSERT POINTS CONVERSION] survey points.

IF WINNINGS ARE 0 POINTS – This will not be converted into any additional survey points.

MODULE 3: INTERPRETATION EXPERIMENT

The next question asks about your opinions and interpretations of potential energy labels you may see on household products.

You will see a selection of energy labels and these will be followed by a set of four possible answers. Please indicate the appropriate answer.

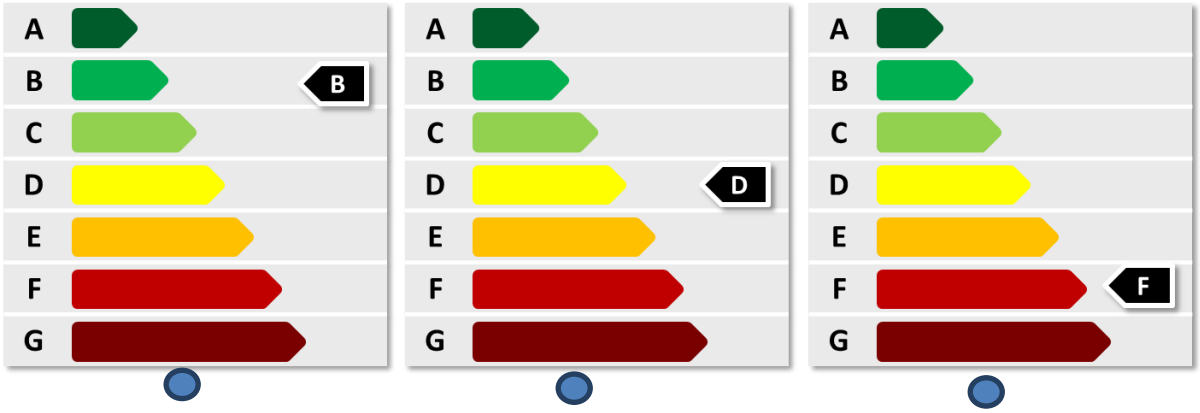
5.1.1 NEW SCREEN

PRG: ALL RESPONDENTS ANSWER ALL 5 QUESTIONS.

PRG: ROTATE ORDER OF THE 5 QUESTIONS

T1. Please select the product you think is the most energy efficient. PRG: SINGLE ANSWER

PRG: ROTATE ORDER OF PRODUCT ON SCREEN



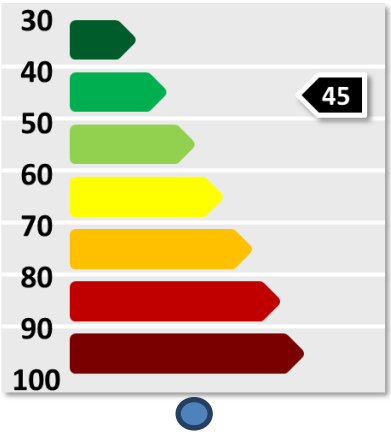
PRG: CODE 1 = PRODUCT B PRG: CODE 2 = PRODUCT D PRG: CODE 3 = PRODUCT F

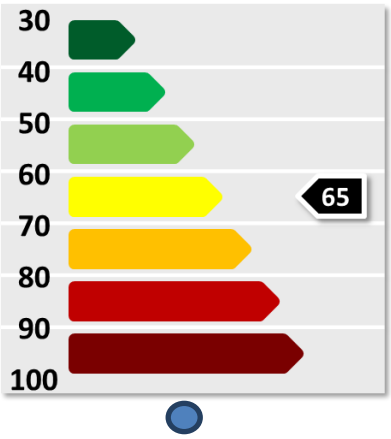
PRG: USE RADIO BUTTONS FOR CODE 1, 2, 3 – SHOW CODE 4 BELOW

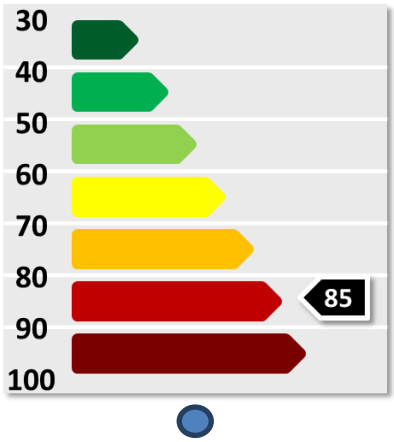
4. I do not know

NEW SCREEN

T2. Please select the product you think is the most energy efficient. PRG: SINGLE ANSWER PRG: ROTATE ORDER OF PRODUCT ON SCREEN







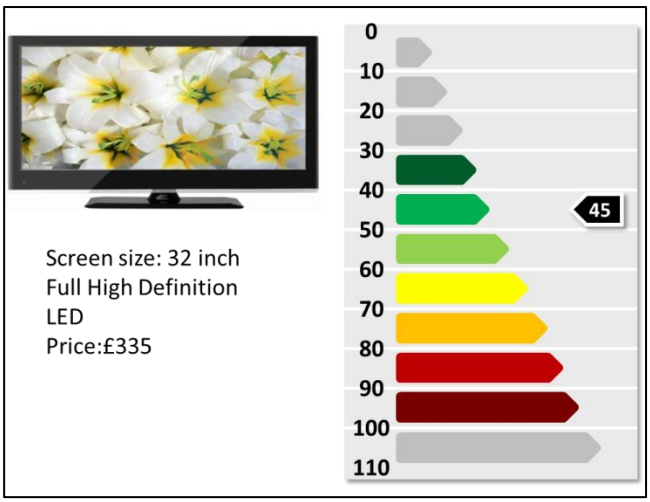
PRG: CODE 1 = PRODUCT 45 PRG: CODE 2 = PRODUCT 65 PRG: CODE 3 = PRODUCT 85

PRG: USE RADIO BUTTONS FOR CODE 1,2,3 – SHOW CODE 4 BELOW

4. I do not know

NEW SCREEN

T3. Looking at the grey arrows at the top of the label, please select the appropriate answer. PRG: SINGLE ANSWER
PRG : INSERT RELEVANT PICTURE FOR EACH COUNTRY



The grey arrows at the top of the label indicate the following:

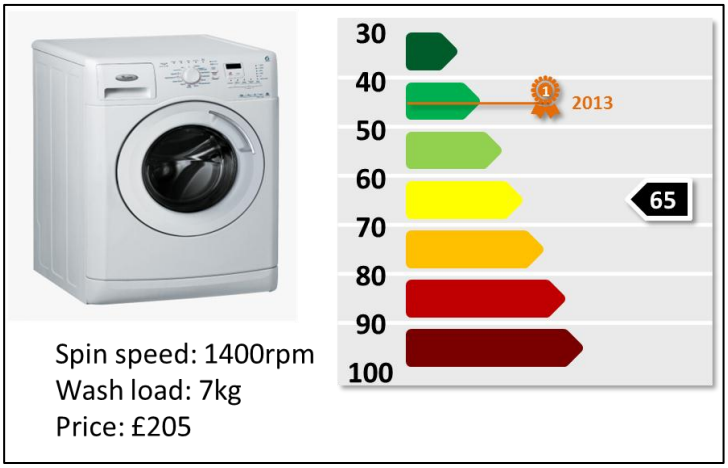
1. They indicate the energy rating of televisions that are available in other countries
2. They indicate the energy rating of products other than televisions

3. They indicate the energy rating of televisions that will be available on the market in the future
4. I do not know

NEW SCREEN

T4. Looking at the orange marker, please select the appropriate answer. PRG: SINGLE ANSWER

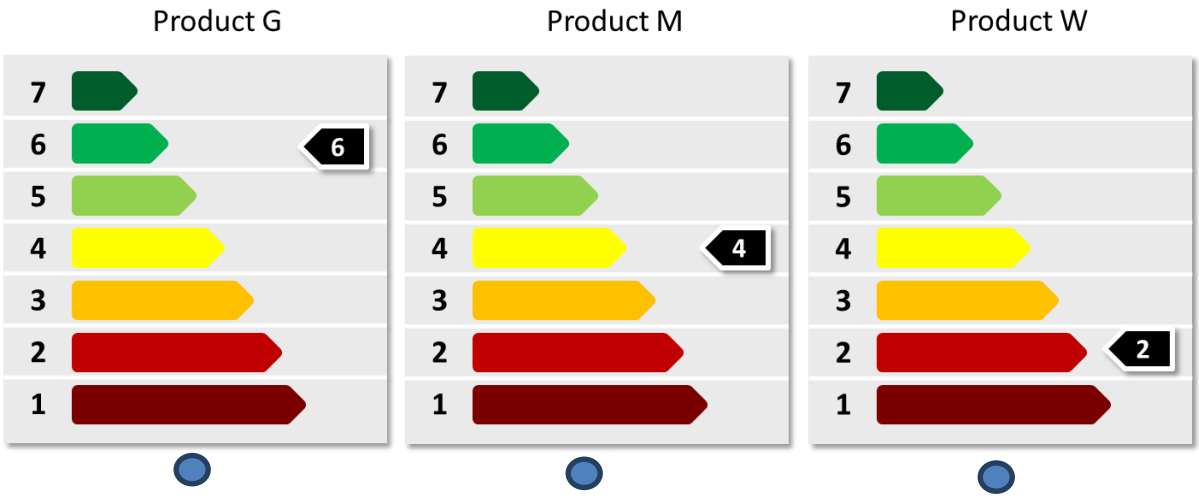
PRG : INSERT RELEVANT PICTURE FOR EACH COUNTRY



The orange marker on the label indicates:

1. The energy efficiency of a washing machine that will be available on the market in the future
2. The best energy efficiency washing machine currently available on the market
3. The energy efficiency of the washing machine shown in the picture above
4. I do not know

T5. Please select the product you think is the most energy efficient. PRG: SINGLE ANSWER PRG: ROTATE ORDER OF PRODUCT ON SCREEN



PRG: CODE 1 = PRODUCT 6 PRG: CODE 2 = PRODUCT 4 PRG: CODE 3 = PRODUCT 2

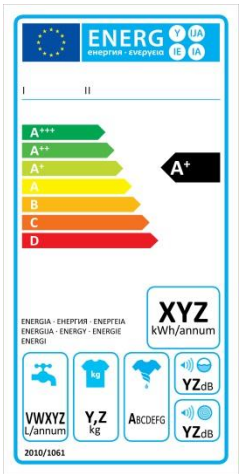
4. I do not know

GENERAL SECTION ABOUT ENERGY LABELS

The last few questions are about your past experience of buying household products.

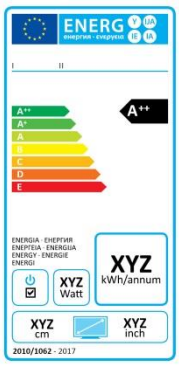
PRG: PLEASE ROTATE ORDER OF Q1a, Q1b, Q1c

Q1a. Before this survey had you ever seen the following type of label on washing machines? *Please select one answer* - PRG: SINGLE ANSWER



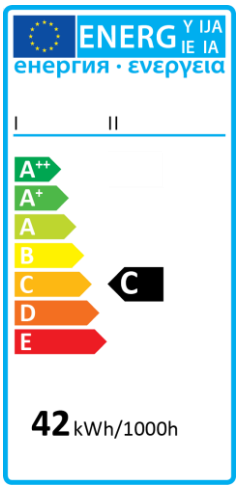
1. Yes
2. No
3. Not Sure / Don't know

Q1b. Before this survey had you ever seen the following type of label on televisions? *Please select one answer* - PRG: SINGLE ANSWER



1. Yes
2. No
3. Not Sure / Don't know

Q1c. Before this survey had you ever seen the following type of label on light bulbs? *Please select one answer* - PRG: SINGLE ANSWER



1. Yes
2. No
3. Not Sure / Don't know

Q2. Which of the following products have you bought in the last 24 months?

Please select all that apply - PRG: MULTIPLE ANSWERS

1. Washing machine
2. TV
3. Lightbulb
4. Refrigerators
5. Freezer

6. Dishwasher
7. Tumble drier
8. None of the above [SINGLE CODE]

PRG: SHOW IF CODES 1 TO 7 SELECTED AT Q2

Q3. When buying the following product(s), which of the following did you take into consideration? *Please select all that apply for each type of product*- PRG: MULTIPLE ANSWERS PER ROW

SHOW IN SCALE: COLUMNS

1. Brand

2. Price

3. Colours [PRG: DON'T SHOW FOR ITEM 3 LIGHTBULB]

4. Energy Efficiency

5. None of these [SINGLE CODE]

SHOW IN ROW: ITEMS (PRODUCTS) SELECTED AT Q2

1. Washing machine

2. TV

3. Lightbulb

4. Refrigerators

5. Freezer

6. Dishwasher

7. Tumble drier

PRG: ONLY SHOW IF MORE THAN ONE CODE SELECTED PER PRODUCT AT Q3

Q4. And which of the following was the most important when buying the following product(s)? *Please select one answer*- PRG: SINGLE ANSWER PER ROW

SHOW IN SCALE: COLUMNS SELECTED AT Q3 FOR EACH PRODUCT (IF MORE THAN ONE)

1. Brand

2. Price

3. Colours

4. Energy Efficiency

SHOW IN ROW : ITEMS (PRODUCTS) SELECTED AT Q2

1.Washing machine

2. TV

3. Lightbulb

4. Refrigerators

5. Freezer

6. Dishwasher

7. Tumble drier

PRG: SHOW ONLY IF SCALE CODE 4 SELECTED FOR ANY OF THE ITEMS AT Q3 OR Q4

Q5. You said you took energy efficiency into account when buying your household appliance(s). What was the main reason you considered energy efficiency'? *Please select one answer-* PRG: SINGLE ANSWER

1. To buy an environmentally friendly product
2. To save on electricity costs with this product
3. To buy a product that will last longer
4. Something else

Thank you for taking part in this survey. Finally, we would like to ask you a few questions about your household. This is to make sure we include a wide range of people in this research.

DEMOGRAPHICS

ASK ALL

D5. Which of the following statements best describes how you feel about your current level of household income?
Please select one answer- PRG: SINGLE ANSWER

1. Living comfortably on present income
2. Coping on present income
3. Finding it difficult on present income
4. Finding it very difficult on present income

5. No answer

D6. What is the highest level of education you have achieved? *Please select one answer*- PRG: SINGLE ANSWER

PRG: INSERT LIST PER COUNTRY – BASED ON THE EXCEL FILE PROVIDED ALL COUNTRIES RECODED INTO

1. Low
2. Medium
3. High

D7. Do you have any children aged 15 years or younger currently living in your household? *Please select one answer*- PRG: SINGLE ANSWER

1. Yes
2. No

D8. Which of the following best describes your household situation?
Please select one answer- PRG: SINGLE ANSWER
1. Single (never married)
2. Married or living with partner
3. Divorced or separated
4. Widowed

ON FINAL SCREEN

Thank you for taking part in this survey. These are all the questions we had for you today.

PRG: SHOW IF WON AT LEAST 1 POINT AND IF QINCENTIVE = CODE 1 (POINTS) SHOW

You have won a total of [PRG: ENTER TOTAL NUMBER OF POINTS WON] additional survey points in the exercises.

You will receive your survey points for participating in this survey as usual. Any additional survey points you have won in the exercises will be added to your account after the survey will close. It can take up to eight weeks. Please refer to the terms and conditions for more details.

PRG: SHOW LINK TO TERMS AND CONDITIONS

PRG: SHOW IF WON 0 POINT AND IF QINCENTIVE = CODE 1 (POINTS) SHOW

You have not won any additional survey points in the exercises but you will receive your survey points for participating in this survey as usual.

PRG: SHOW IF QINCENTIVE = CODE 2 (VOUCHERS) AND WON AT LEAST 1 POINT

You have won a total of [PRG: ENTER TOTAL NUMBER OF POINTS WON] survey points in the exercises.

The survey points you have won will be converted to a voucher that will be sent to you in the next eight weeks. Please refer to the terms and conditions for more details. You will still enter the standard quarterly IIS prize draw for participating in the survey. The voucher you will receive will be in addition to entering the prize draw.

PRG: SHOW LINK TO TERMS AND CONDITIONS

PRG: [QCOUNTRY= CODE 1 AND QSAMPLE= CODE 1 (Czech Republic Ipsos panel)] SHOW:

In order to ensure that your voucher is delivered without any issue, we kindly ask you to enter your postal information below. This information will remain confidential, and will not be communicated to third parties for other purposes than the delivery of your incentive.

5.1.1.1.1.1 First name /_____/

5.1.1.1.1.2 Surname /_____/

Address 1 /_____/

Address 2 /_____/

City /_____/

County /_____/

Postcode /_____/

No thanks ☐

PRG: [QCOUNTRY= CODE 5 AND QSAMPLE= CODE 1 (NORWAY Ipsos panel)] SHOW:

Please confirm the email address we should use to send your voucher.

Email: _____

No thanks ☐

PRG: SHOW IF QINCENTIVE = CODE 2 (VOUCHERS) AND WON 0 POINT

You have not won any survey points in the exercises but you will you will still enter the standard quarterly IIS prize draw for participating in the survey.

Annex 4 Phase II questionnaire

Below we present the questionnaire in which TVs were asked first. An identical questionnaire was also included in which washing machines were asked first.

ENERGY LABELLING: IN STORE EXPERIMENT QUESTIONNAIRE

Version TV

Questionnaire ID	
Interviewer ID	
Date	
Questionnaire version	
Label tested	
Country/City	
Postcode	
Name of store	

INTERVIEWER, READ OUT:

Thank you very much for taking part in the study. We will only require 10 minutes of your time.

First, I will ask you a few questions about yourself:

S1. DO NOT READ OUT: Respondent's gender (interviewer: code information). SINGLE ANSWER

1. Man
2. Woman

S2. How old are you? SINGLE ANSWER

…….. Years old

INTERVIEWER, READ OUT:

Thank you very much.

During this interview you will be asked to compare different household products and to consider which ones you would choose to buy. You will not actually be able to buy anything during this exercise, but we would like you to imagine that you are currently shopping for the products you are shown. Please follow me and I will show you the first set of products.

INTERVIEWER, SHOW RESPONDENT THE SET OF TELEVISIONS. READ OUT:

Firstly, please imagine you are shopping for a television. Please look at the three televisions on display here, as if you were looking at these products in a shop.

Q1_TV. Which one of these would you be most likely to purchase, if you were shopping for a television? SINGLE ANSWER. INTERVIEWER, READ OUT:

1. TV1
2. TV2
3. TV3

INTERVIEWER, READ OUT:

Thank you, that's very useful. I'll show you the next set of products.

INTERVIEWER, SHOW RESPONDENT THE SET OF WASHING MACHINES.

INTERVIEWER, READ OUT:

Now, please imagine you are shopping for a washing machine. Please look at the three washing machines on display here, as if you were looking at these products in a shop.

Q1_WM. Which one of these three would you be most likely to purchase, if you were shopping for a washing machine?

SINGLE ANSWER. INTERVIEWER, READ OUT:

1. Washing machine 1
2. Washing machine 2
3. Washing machine 3

INTERVIEWER, READ OUT:

Thank you. That's the end of that exercise. Now I just have a few questions about the choices you made.

Q2_TV. Please look at the televisions again. Thinking about the choice you just made, to what extent did each of the following factors influence your choice of television? Please answer using a scale of 1 to 5, where 1 means "no influence", while 5 means "high influence".

SINGLE ANSWER FOR EACH. INTERVIEWER, READ OUT.

INTERVIEWER: PLEASE NOTE THAT THE ORDER NEEDS TO BE RANDOMISED (START WITH A DIFFERENT ITEM EACH TIME, AND THAN ASK FOLLOWING ITEMS IN ORDER)

PLEASE MARK THE ITEM YOU HAVE STARTED WITH

ITEM "OTHER FEATURES" SHOULD BE ASKED LAST

	No influence				High influence
	1	2	3	4	5
1. Brand	☐	☐	☐	☐	☐
2. Price	☐	☐	☐	☐	☐
3. Energy efficiency	☐	☐	☐	☐	☐
4. Screen size	☐	☐	☐	☐	☐
5. Energy consumption	☐	☐	☐	☐	☐
6. Screen technology (e.g. LED, LCD, Plasma, HD Ready, Full HD)	☐	☐	☐	☐	☐
7. Sound (e.g. Dolby Digital, Stereo, Mono, number of speakers)	☐	☐	☐	☐	☐
8. Built-in devices (e.g. Blu-ray, DVD, Freeview, Freesat, iPad Dock, VCR)	☐	☐	☐	☐	☐
9. Other features	☐	☐	☐	☐	☐

Q2_WM. Please look at the washing machines again. Thinking about the choice you just made, to what extent did the following factors influence your choice of washing machine? Please answer using a scale of 1 to 5, where 1 means “no influence”, while 5 means “high influence”.

SINGLE ANSWER FOR EACH. INTERVIEWER, READ OUT.

INTERVIEWER: PLEASE NOTE THAT THE ORDER NEEDS TO BE RANDOMISED (START WITH A DIFFERENT ITEM EACH TIME, AND THAN ASK FOLLOWING ITEMS IN ORDER)

PLEASE MARK THE ITEM YOU HAVE STARTED WITH

ITEM “OTHER FEATURES” SHOULD BE ASKED LAST

	No influence				High influence
	1	2	3	4	5
Brand	☐	☐	☐	☐	☐
Price	☐	☐	☐	☐	☐
Energy efficiency	☐	☐	☐	☐	☐
Capacity	☐	☐	☐	☐	☐
Water consumption	☐	☐	☐	☐	☐
Energy consumption	☐	☐	☐	☐	☐
Spin speed	☐	☐	☐	☐	☐
Wash and spin performance	☐	☐	☐	☐	☐
Wash programmes and functions	☐	☐	☐	☐	☐
Other features	☐	☐	☐	☐	☐

Q3_TV. Please look at the three televisions again. In your opinion, which of these is most energy efficient?

SINGLE ANSWER. INTERVIEWER, READ OUT:

1. TV 1
2. TV 2
3. TV 3
4. Don't know (do not read out)

Q3_WM. Please look at the washing machines again. In your opinion, which of these is most energy efficient?

SINGLE ANSWER. INTERVIEWER, READ OUT:

1. WM 1
2. WM 2
3. WM 3
4. Don't know (do not read out)

Q4. Please look at the energy labels on the televisions. In your opinion, which of the three televisions is the least costly to use? By least costly we mean having the lowest electricity bill.

SINGLE ANSWER. INTERVIEWER, READ OUT:

1. TV 1
2. TV 2
3. TV 3
4. I don't know

Q5. And why do you think the television you chose is the least costly to use (would have the lowest electricity bill)?

SINGLE ANSWER. INTERVIEWER, DO NOT READ OUT:

1. It has the lowest Kwh/annum
2. It has the lowest WATT
3. It has the highest ranking on the coloured arrows
4. Other
5. I don't know

Q6. Please look again at the label on the televisions. In your opinion, what does the symbol kWh/annum mean?

SINGLE ANSWER. INTERVIEWER, DO NOT READ OUT:

1. It is the energy efficiency rating of the product
2. It is the yearly energy consumption of the product when in use
3. Other
4. I don't know

Q7. Please look again at the televisions. In your opinion, what do the coloured arrows mean?

SINGLE ANSWER. INTERVIEWER, DO NOT READ OUT:

1. It is the energy efficiency rating of the product
2. It is the yearly energy consumption of the product when in use
3. Other
4. I don't know

Ask only if respondent saw Label-type 3.

Q8. Please look at the energy labels on the televisions. Looking at the grey arrows at the top of each label, what do you think these arrows indicate?

SINGLE ANSWER. INTERVIEWER, DO NOT READ OUT:

1. They indicate the energy efficiency ratings of televisions that are available in other countries
2. They indicate the energy efficiency ratings of products other than televisions
3. They indicate the energy efficiency ratings of televisions that will be available on the market in the future
4. Other
5. I don't know

INTERVIEWER, READ OUT:

Thank you again for participating in this study. I will now ask you a few more questions about yourself.

S3. Which of the following best describes your current work status?

INTERVIEWER READ OUT

4. Working full time
5. Working part time
6. Responsible for taking care of affairs at home
7. Without any current occupation, not working
8. Student
9. Retired

10. Not in paid employment because of long term illness or disability
11. Seeking work
12. No answer (do not read out)

S4. What is the highest level of education you have achieved?

INTERVIEWER READ OUT. ONLY ONE ANSWER POSSIBLE

1. Not completed primary education
2. Primary or first stage of basic
3. Upper secondary
4. Post secondary, non tertiary
5. First stage of tertiary
6. Second stage of tertiary
7. No answer (do not read out)

S5. Which of the following statements best describes how you feel about your current level of household income?

INTERVIEWER READ OUT. ONLY ONE ANSWER POSSIBLE

1. Living comfortably on present income
2. Coping on present income
3. Finding it difficult on present income
4. Finding it very difficult on present income
5. No answer (do not read out)

Annex 5 Phase I data tables

Table 20: Share of participants that could correctly identify the most energy efficient product when faced with different energy label framings (Figure 7)

	Alphabetic closed scale		Numeric closed scale		Reverse numeric closed scale	
	Info	No info	Info	No info	Info	No info
Correct	949	3,770	947	3,685	938	3,626
(pct)	(95.1%)	(93.9%)	(94.4%)	(91.9%)	(93.7%)	(90.4%)
Incorrect	49	244	56	324	63	385
(pct)	(4.9%)	(6.1%)	(5.6%)	(8.1%)	(6.3%)	(9.6%)
Total (base)	998	4,014	1,003	4,009	1,001	4,011

Note: Total participants – 5012
Source: Online behavioural experiment

Table 21: Share of participants that could correctly identify the meaning of specific features of different energy label framings (Figure 8)

	Grey arrows (indicating open scale)		Benchmark marker (indicating best available technology)	
	Info	No info	Info	No info
Correct	613	1,297	578	2,708
(pct)	(61.2%)	(32.3%)	(57.3%)	(67.6%)
Incorrect	389	2,713	430	1,296
(pct)	(38.8%)	(47.7%)	(42.7%)	(32.4%)
Total (base)	1,002	4,010	1,008	4,004

Note: Total participants – 5012
Source: Online behavioural experiment

Table 22: Share of participants willing to pay a premium for the more energy efficient product across the different energy label framings (Figure 9)

	Alphabetic closed scale	Numeric closed scale	Numeric open scale	Numeric closed scale with benchmark marker	Reverse numeric closed scale
Light bulb					
Premium paid	2,300	2,184	2,175	1,917	2,156
(pct)	(76.8%)	(72.6%)	(72.4%)	(63.4%)	(71.8%)
No premium	694	825	831	1,107	847
(pct)	(23.2%)	(27.4%)	(27.6%)	(36.6%)	(28.2%)
Television					
Premium paid	2,110	1,935	1,928	1,737	1,971
(pct)	(70.5%)	(64.3%)	(64.1%)	(57.4%)	(65.6%)
No premium	884	1,074	1,078	1,287	1,032
(pct)	(29.5%)	(35.7%)	(35.9%)	(42.6%)	(34.4%)
Washing machine					
Premium paid	2,060	1,843	1,831	1,665	1,855
(pct)	(68.8%)	(61.3%)	(60.9%)	(55.1%)	(61.8%)
No premium	934	1,166	1,175	1,359	1,148
(pct)	(31.2%)	(38.8%)	(39.1%)	(44.9%)	(38.2%)
Total (base)	2,994	3,009	3,006	3,024	3,003

Note: Total participants – 5012

Source: Online behavioural experiment

Table 23: Share of participants willing to pay a premium for the more energy efficient product as the premium increased (Figure 10)					
	Alphabetic closed scale	Numeric closed scale	Numeric open scale	Numeric closed scale with benchmark marker	Reverse numeric closed scale
Light bulb					
5% premium paid	421	369	461	377	385
(pct)	(88.6%)	(85.6%)	(83.2%)	(71.0%)	(83.9%)
premium not paid	54	62	93	154	74
(pct)	(11.4%)	(14.4%)	(16.8%)	(29.0%)	(16.1%)
Total (base)	475	431	554	531	459
10% premium paid	416	398	388	363	390
(pct)	(86.3%)	(79.1%)	(79.4%)	(69.7%)	(80.3%)
premium not paid	66	105	101	158	96
(pct)	(13.7%)	(20.9%)	(20.7%)	(30.3%)	(19.8%)
Total (base)	482	503	489	521	486
15% premium paid	371	378	353	361	367
(pct)	(77.8%)	(73.4%)	(73.7%)	(66.4%)	(73.6%)
premium not paid	106	137	126	183	132
(pct)	(22.2%)	(26.6%)	(26.3%)	(33.6%)	(26.5%)
Total (base)	477	515	479	544	499
25% premium paid	383	352	370	306	391
(pct)	(73.1%)	(71.4%)	(69.3%)	(62.2%)	(68.4%)
premium not paid	141	141	164	186	181
(pct)	(26.9%)	(28.6%)	(30.7%)	(37.8%)	(31.6%)
Total (base)	524	493	534	492	572
30% premium paid	352	348	312	249	306
(pct)	(69.0%)	(63.6%)	(65.8%)	(52.6%)	(61.5%)
premium not paid	158	199	162	224	192
(pct)	(31.0%)	(36.4%)	(34.2%)	(47.4%)	(38.6%)
Total (base)	510	547	474	473	498
Televisions	357	339	291	261	317
5% premium paid	(67.9%)	(65.2%)	(61.1%)	(56.4%)	(64.8%)
(pct)	169	181	185	202	172
premium not paid	(32.1%)	(34.8%)	(38.9%)	(43.6%)	(35.2%)
(pct)	526	520	476	463	489
Total (base)					
	472	380	401	352	449
10% premium paid	(86.8%)	(80.0%)	(80.0%)	(75.1%)	(85.0%)
(pct)	72	95		117	79
premium not paid	(13.2%)	(20.0%)	(20.0%)	(25.0%)	(15.0%)
(pct)	544	475	501	469	528
Total (base)					
	414	377	343	324	371

15% premium paid	(79.8%)	(75.0%)	(73.3%)	(65.9%)	(73.0%)
(pct)	105	126	125	168	137
premium not paid	(20.2%)	(25.1%)	(26.7%)	(34.2%)	(27.0%)
(pct)	519	503	468	492	508
Total (base)					
	339	326	329	309	297
25% premium paid	(70.5%)	(67.4%)	(64.8%)	(58.2%)	(66.2%)
(pct)	142	158	179	222	152
premium not paid	(29.5%)	(32.6%)	(35.2%)	(41.8%)	(33.9%)
(pct)	481	484	508	531	449
Total (base)					
	315	280	297	295	298
30% premium paid	(66.9%)	(59.2%)	(58.9%)	(55.2%)	(61.8%)
(pct)	156	193	207	239	184
premium not paid	(33.1%)	(40.8%)	(41.1%)	(44.8%)	(38.2%)
(pct)	471	473	504	534	482
Total (base)					
	271	287	270	232	287
Washing Machines	(57.2%)	(52.9%)	(57.2%)	(45.1%)	(53.0%)
5% premium paid	203	256	202	283	255
(pct)	(42.8%)	(47.2%)	(42.8%)	(55.0%)	(47.1%)
premium not paid	474	543	472	515	542
(pct)					
Total (base)	299	285	288	225	269
	(59.2%)	(53.7%)	(52.1%)	(46.6%)	(54.5%)
10% premium paid	206	246	265	258	225
(pct)	(40.8%)	(46.3%)	(47.9%)	(53.4%)	(45.6%)
premium not paid	505	531	553	483	494
(pct)					
Total (base)	427	366	432	321	373
	(86.3%)	(78.0%)	(79.1%)	(68.6%)	(77.9%)
15% premium paid	68	103	114	147	106
(pct)	(13.7%)	(22.0%)	(20.9%)	(31.4%)	(22.1%)
premium not paid	495	469	546	468	479
(pct)					
Total (base)	419	365	335	351	351
	(80.9%)	(70.1%)	(65.8%)	(63.7%)	(75.0%)
25% premium paid	99	156	174	200	117
(pct)	(19.1%)	(29.9%)	(34.2%)	(36.3%)	(25.0%)
premium not paid	518	521	509	551	468
(pct)					
Total (base)	352	318	299	295	320
	(70.3%)	(63.6%)	(61.3%)	(58.1%)	(61.0%)
30% premium paid	149	182	189	213	205
(pct)	(29.7%)	(36.4%)	(38.7%)	(41.9%)	(39.1%)
premium not paid	501	500	488	508	525
(pct)					
Total (base)	345	318	263	234	304

Note: Total choices made – 45,108.

Source: Online behavioural experiment

Table 24: Average minimum premium participants are willing to pay for a more energy efficient product, by energy efficiency rating difference (Figure 11)					
(€)	Alphabetic closed scale	Numeric closed scale	Numeric open scale	Numeric closed scale with benchmark marker	Reverse numeric closed scale
Light bulb					
Energy rating difference = 1	0. 54	0.53	0.50	0.51	0.52
Energy rating difference = 2	0.55	0.56	0.54	0.50	0.57
Energy rating difference = 3	0.57	0.62	0.53	0.54	0.58
Television					
Energy rating difference = 1	34	34	34	34	33
Energy rating difference = 2	36	38	37	36	35
Energy rating difference = 3	37	38	38	41	39
Washing machine					
Energy rating difference = 1	61	60	60	62	61
Energy rating difference = 2	64	66	66	64	65
Energy rating difference = 3	65	67	62	66	69

Note: Total choices made – 45,108.
Source: Behavioural experiment

Annex 6 Phase II data tables

Table 25: Product characteristics – country level						
Feature	**TV 1**	**TV 2**	**TV 3**	**WM 1**	**WM 2**	**WM 3**
Czech Republic (CLT)						
Price (CZK)	10490	13999	11990	11990	8990	6999
Energy efficiency rating	A+	A	B	A+++	A++	A+
Annual energy consumption	76 kWh	100 kWh	123 kWh	160 kWh	170 kWh	195 kWh
Screen size (centimetres)	99	99	109			
Availability of a hard switch off position (Y/N)	Yes	Yes	Yes			
On-mode power consumption in Watt	44 Watt	52 Watt	89 Watt			
Capacity				6kg	6kg	6kg
Annual water consumption in litres				9500	8580	9900
Spin drying efficiency class				B	B	C
Noise emissions washing phase				54	61	58
Noise emissions spinning phase				72	77	77
France (Arques)						
Brand	LG	PANASONIC	SHARP	SIEMENS	LG	BEKO
Model	47LA740S	TX50A400	LC46LD265	WM14K260FF	F84882WH	WMB91442L
Price (€)	799.99	599.99	499.99	449.99	399.99	379.99
Energy efficiency rating	A++	A+	A	A+++	A++	A++
Annual energy consumption	80 kWh	93 kWh	101 kWh	175 kWh	196 kWh	275 kWh
Screen size (centimetres)	119.38	126	116.84			
Availability of a hard switch off position (Y/N)	-	-	-			
On-mode power consumption (Watt)	64 Watt	58 Watt	69 Watt			
Capacity (kg)				8kg	8kg	9kg
Annual water consumption (litres)				11220	11000	12760
Spin drying efficiency class				B	A	B
Noise emissions washing phase (dB)				56	54	52
Noise emissions spinning phase (dB)				75	75	73
France (Marquette)						
Price (€)	479.99	429.99	349.99	499.99	399.99	349.99
Energy efficiency rating	A++	A+	A	A+++	A++	A+
Annual energy consumption	64kWh	66 kWh	83kWh	194 kWh	195kWh	205 kWh
Screen size (centimetres)	102	102	102			
Availability of a hard switch off position (Y/N)	Yes	Yes	Yes			

On-mode power consumption (Watt)	44 Watt	58 Watt	45 Watt			
Capacity (kg)				8 kg	8 kg	8 kg
Annual water consumption (litres)				9240	10500	11425
Spin drying efficiency class				B	B	B
Noise emissions washing phase (dB)				58	62	58
Noise emissions spinning phase (dB)				76	79	78
Portugal (CLT)						
Price (€)	379	329	280	420	360	320
Energy efficiency rating	A++	A+	A	A+++	A++	A+
Annual energy consumption	54 kWh	76 kWh	110 kWh	186 kWh	210 kWh	224 kWh
Screen size (centimetres)	81	81	81			
Availability of a hard switch off position (Y/N)	-	-	-			
On-mode power consumption (Watt)	100	52	37			
Capacity (kg)				7 kg	7 kg	7 kg
Annual water consumption (litres)				9994	9800	9900
Spin drying efficiency class				C	B	B
Noise emissions washing phase (dB)				60	54	60
Noise emissions spinning phase (dB)				76	74	70
Slovenia (Big Bang)						
Price (€)	749.99	629.99	599.99	419	349.99	249.9
Energy efficiency rating	A++	A+	B	A+++	A++	A+
Annual energy consumption	66 kWh	74 kWh	187 kWh	152 kWh	170 kWh	195 kWh
Screen size (centimetres)	121	119	127			
Availability of a hard switch off position (Y/N)	Yes	Yes	Yes			
On-mode power consumption (Watt)	45 Watt	51 Watt	128 Watt			
Capacity (kg)				6 kg	6 kg	6 kg
Annual water consumption (litres)				10372	9275	10340
Spin drying efficiency class				B	B	B
Noise emissions washing phase (dB)				57	59	60
Noise emissions spinning phase (dB)				77	75	78
Slovenia (Mercator)						
Price (€)	999.99	599.99	669.00	459.9	299.9	309.9
Energy efficiency rating	A++	A+	A	A+++	A++	A+
Annual energy consumption	71 kWh	76 kWh	110 kWh	140 kWh	170 kWh	224 kWh
Screen size (centimetres)	127	107	117			
Availability of a hard switch	-	-	No			

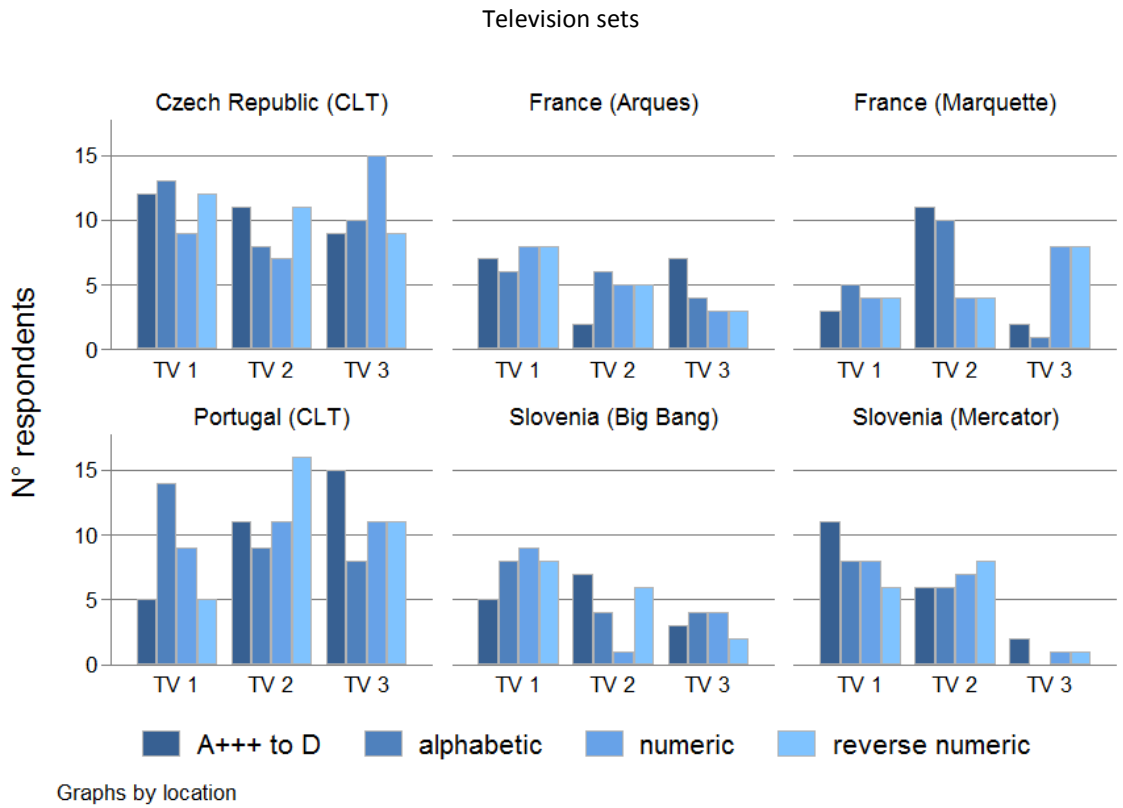
off position (Y/N)						
On-mode power consumption (Watt)	100 Watt	52 Watt	75 Watt			
Capacity (kg)				6 kg	6 kg	7 kg
Annual water consumption (litres)				9209	9272	9600
Spin drying efficiency class				B	B	B
Noise emissions washing phase (dB)				56	59	58
Noise emissions spinning phase (dB)				70	75	77

Table 26: Proportion of respondents that chose a TV/WM, by energy label and store location

Treatment	TV 1	TV 2	TV 3	WM 1	WM 2	WM 3	Total
Total (as presented in Figure 12 and Figure 15)							
A+++ to D	43	48	38	55	48	26	129
(pct)	(33.3%)	(37.2%)	(29.5%)	(42.6%)	(37.2%)	(20.2%)	
alphabetic	54	43	27	57	42	25	124
(pct)	(43.5%)	(34.7%)	(21.8%)	(46.0%)	(33.9%)	(20.2%)	
numeric	47	35	42	45	55	24	124
(pct)	(37.9%)	(28.2%)	(33.9%)	(36.3%)	(44.4%)	(19.4%)	
reverse numeric	43	50	34	63	41	23	127
(pct)	(33.9%)	(39.4%)	(26.8%)	(49.6%)	(32.3%)	(18.1%)	
total	187	176	141	220	186	98	504
(pct)	(37.1%)	(34.9%)	(28.0%)	(43.7%)	(36.9%)	(19.4%)	
Country level							
Czech Republic (CLT)							
A+++ to D	12	11	9	17	9	6	32
(pct)	(37.5%)	(34.4%)	(28.1%)	(53.1%)	(28.1%)	(18.8%)	
alphabetic	13	8	10	13	13	5	31
(pct)	(41.9%)	(25.8%)	(32.3%)	(41.9%)	(41.9%)	(16.1%)	
numeric	9	7	15	12	14	5	31
(pct)	(29.0%)	(22.6%)	(48.4%)	(38.7%)	(45.2%)	(16.1%)	
reverse numeric	12	11	9	22	6	4	32
(pct)	(37.5%)	(34.4%)	(28.1%)	(68.8%)	(18.8%)	(12.5%)	
total	46	37	43	64	42	20	126
(pct)	(36.5%)	(29.4%)	(34.1%)	(50.8%)	(33.3%)	(15.9%)	
France (Arques)							
A+++ to D	7	2	7	5	5	6	16
(pct)	(43.8%)	(12.5%)	(43.8%)	(31.3%)	(31.3%)	(37.5%)	
alphabetic	6	6	4	8	4	4	16
(pct)	(37.5%)	(37.5%)	(25.0%)	(50.0%)	(25.0%)	(25.0%)	
numeric	8	5	3	6	10	0	16
(pct)	(50.0%)	(31.3%)	(18.8%)	(37.5%)	(62.5%)	(0.0%)	
reverse numeric	8	5	3	9	7	0	16
(pct)	(50.0%)	(31.3%)	(18.8%)	(56.3%)	(43.8%)	(0.0%)	

total	29	18	17	28	26	10	64
(pct)	(45.3%)	(28.1%)	(26.6%)	(43.8%)	(40.6%)	(15.6%)	
France (Marquette)							
A+++ to D	3	11	2	5	11	0	16
(pct)	(18.8%)	(68.8%)	(12.5%)	(31.3%)	(68.8%)	(0.0%)	
alphabetic	5	10	1	5	7	4	16
(pct)	(31.3%)	(62.5%)	(6.3%)	(31.3%)	(43.8%)	(25.0%)	
numeric	4	4	8	3	8	5	16
(pct)	(25.0%)	(25.0%)	(50.0%)	(18.8%)	(50.0%)	(31.3%)	
reverse numeric	4	4	8	4	11	1	16
(pct)	(25.0%)	(25.0%)	(50.0%)	(25.0%)	(68.8%)	(6.3%)	
total	16	29	19	17	37	10	64
(pct)	(25.0%)	(45.3%)	(26.7%)	(67.2%)	(19.7%)	(13.1%)	
Portugal (CLT)							
A+++ to D	5	11	15	5	17	9	31
(pct)	(16.1%)	(35.5%)	(48.4%)	(16.1%)	(54.8%)	(29.0%)	
alphabetic	14	9	8	10	14	7	31
(pct)	(45.2%)	(29.0%)	(25.8%)	(32.3%)	(45.2%)	(22.6%)	
numeric	9	11	11	6	17	8	31
(pct)	(29.0%)	(35.5%)	(35.5%)	(19.4%)	(54.8%)	(25.8%)	
reverse numeric	5	16	11	8	14	10	32
(pct)	(15.6%)	(50.0%)	(34.4%)	(25.0%)	(43.8%)	(31.3%)	
total	33	47	45	29	62	34	125
(pct)	(26.4%)	(37.6%)	(36.0%)	(23.2%)	(49.6%)	(27.2%)	
Slovenia (Big Bang)							
A+++ to D	5	7	3	11	3	1	15
(pct)	(33.3%)	(46.7%)	(20.0%)	(73.3%)	(20.0%)	(6.7%)	
alphabetic	8	4	4	13	2	1	16
(pct)	(50.0%)	(25.0%)	(25.0%)	(81.3%)	(12.5%)	(6.3%)	
numeric	9	1	4	7	4	3	14
(pct)	(64.3%)	(7.1%)	(28.6%)	(50.0%)	(28.6%)	(21.4%)	
reverse numeric	8	6	2	10	3	3	16
(pct)	(50.0%)	(37.5%)	(12.5%)	(62.5%)	(18.8%)	(18.8%)	
total	30	18	13	41	12	8	61
(pct)	(49.2%)	(29.5%)	(21.3%)	(67.2%)	(19.7%)	(13.1%)	
Slovenia (Mercator)							
A+++ to D	11	6	2	12	3	4	19
(pct)	(57.9%)	(31.6%)	(10.5%)	(63.2%)	(15.8%)	(21.1%)	
alphabetic	8	6	0	8	2	4	14
(pct)	(57.1%)	(42.9%)	(0.0%)	(57.1%)	(14.3%)	(28.6%)	
numeric	8	7	1	11	2	3	16
(pct)	(50.0%)	(43.8%)	(6.3%)	(68.8%)	(12.5%)	(18.8%)	
reverse numeric	6	8	1	10	5	0	15
(pct)	(40.0%)	(53.3%)	(6.7%)	(66.7%)	(33.3%)	(0.0%)	
total	33	27	4	41	7	16	64
(pct)	(51.6%)	(42.2%)	(6.3%)	(64.1%)	(10.9%)	(25.0%)	

Figure 44: Number of respondents that chose a TV set, by energy label and store location



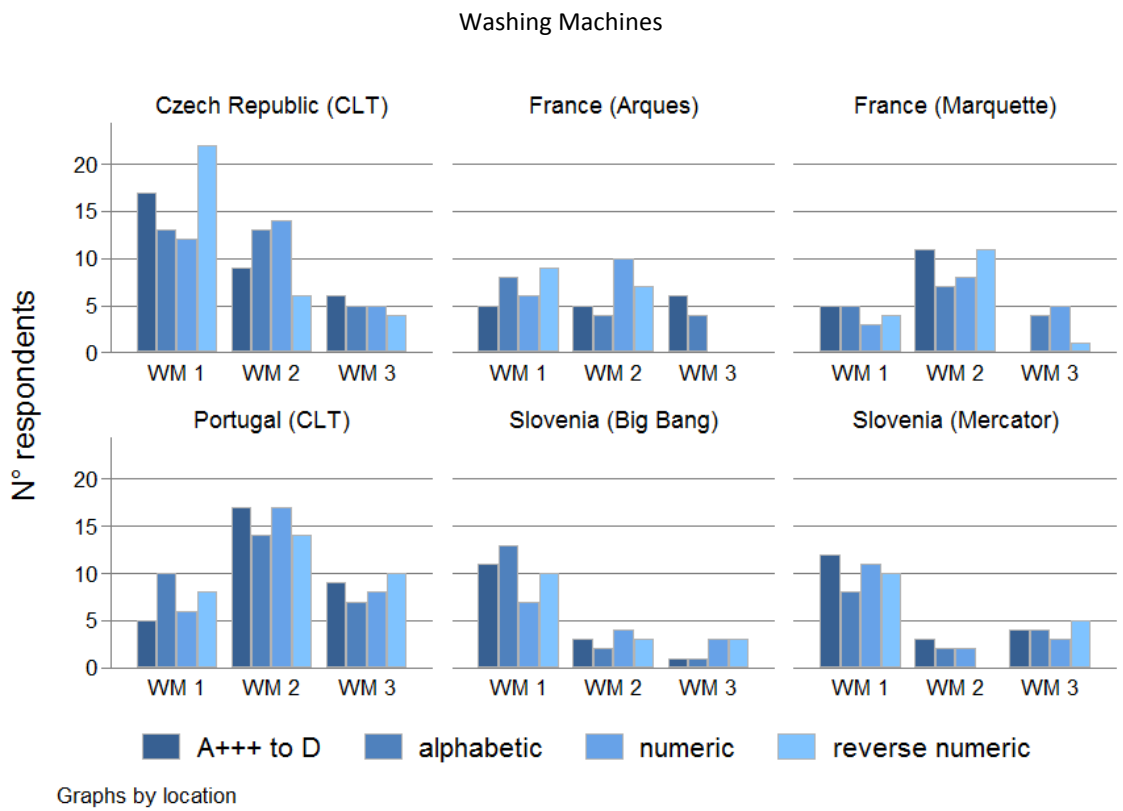


Table 27: Choice of the most energy efficient TV and Washing Machine controlling for countries and stores, logit regression estimates		
Variables	**Choice of TV 1**	**Choice of Washing Machine 1**
Labels		
A+++ to D	0	0
	(base)	(base)
alphabetic	0.475*	0.184
	(0.267)	(0.269)
numeric	0.228	-0.265
	(0.269)	(0.273)
reverse numeric	0.0450	0.346
	(0.271)	(0.268)
Controls		
Czech Republic (CLT)	0	0
	(base)	(base)
France (Acques)	0.366	-0.285
	(0.313)	(0.311)
France (Marquette)	-0.552	-1.059***
	(0.344)	(0.336)
Portugal (CLT)	-0.477*	-1.243***
	(0.276)	(0.279)
Slovenia (Big Bang)	0.521	0.684**
	(0.317)	(0.328)
Slovenia (Mercator)	0.634**	0.566*
	(0.313)	(0.318)
Constant	-0.742***	-0.0362
	(0.250)	(0.242)
Number of observations	504	504

*** 99%, ** 95%, * 90% confidence levels respectively, standard errors indicated in brackets.

Table 28: Number of respondents that chose a TV/WM, by energy label and stated importance of energy efficiency (Figure 13 and Figure 16)								
Treatment	**TV 1**	**TV 2**	**TV 3**	**Total**	**WM 1**	**WM 2**	**WM 3**	**Total**
High importance of energy efficiency								
A+++ to D	33	20	8	61	42	32	12	86
(pct)	(54.1%)	(32.8%)	(13.1%)		(48.8%)	(32.7%)	(17.2%)	
alphabetic	35	25	11	71	45	33	17	95
(pct)	(49.3%)	(35.2%)	(15.5%)		(47.4%)	(32.7%)	(17.2%)	
numeric	21	13	18	52	33	35	18	86
(pct)	(40.4%)	(25.0%)	(34.6%)		(38.4%)	(32.7%)	(17.2%)	
reverse numeric	21	26	13	60	47	23	14	84
(pct)	(35.0%)	(43.3%)	(21.7%)		(56.0%)	(32.7%)	(17.2%)	
total	110	84	50	244	167	118	61	361
(pct)	(45.1%)	(34.4%)	(20.5%)		(46.3%)	(32.7%)	(16.9%)	
Low importance of energy efficiency								
A+++ to D	10	28	30	68	13	16	14	43
(pct)	(14.7%)	(41.2%)	(44.1%)		(30.2%)	(37.2%)	(32.6%)	
alphabetic	19	18	16	53	12	9	8	29
(pct)	(35.9%)	(34.0%)	(30.2%)		(41.4%)	(31.0%)	(27.6%)	
numeric	26	22	24	72	12	16	6	34
(pct)	(36.1%)	(30.6%)	(33.3%)		(31.6%)	(52.6%)	(15.8%)	
reverse numeric	22	24	21	67	16	20	9	45
(pct)	(32.8%)	(35.8%)	(31.3%)		(37.2%)	(41.9%)	(20.9%)	
total	77	92	91	260	53	61	37	151
(pct)	(29.6%)	(35.4%)	(35.0%)		(35.1%)	(40.4%)	(24.5%)	

Table 29: Logit regression on the choice of option 1 by energy label and importance of energy efficiency (Figure 14 and Figure 17)		
Variables	**Choice of TV 1**	**Choice of Washing Machine 1**
A+++ to D	0	0
	(base)	(base)
alphabetic	1.600**	-0.0767
	(0.749)	(0.853)
numeric	1.769**	0.601
	(0.722)	(0.831)
reverse numeric	1.525**	0.625
	(0.726)	(0.782)
Importance	0.363***	0.194**
	(0.0989)	(0.0867)
Importance*A+++ to D	0	0
	(base)	(base)
Importance*alphabetic	-0.240*	0.0223
	(0.129)	(0.124)
Importance*numeric	-0.307**	-0.136
	(0.130)	(0.126)
Importance*reverse numeric	-0.293**	-0.0433
	(0.131)	(0.121)
Constant	-2.534***	-1.522***
	(0.564)	(0.583)
Number of observations	504	504

Note: Importance is the rank of energy efficiency among the 10 features of the TV / washing machine. Where 1 = lowest importance and 10 is the highest item of importance.

Table 30: Number of respondents that chose a TV/WM, by correct identification of most energy efficient product (Figure 18)								
Treatment	**TV 1**	**TV 2**	**TV 3**	**Total**	**WM 1**	**WM 2**	**WM 3**	**Total**
Correctly identified the most energy efficient								
N° respondents	149	112	74	335	181	118	62	361
(pct)	(44.5%)	(33.4%)	(22.1%)		(50.1%)	(32.7%)	(17.2%)	
Did not identify the most energy efficient								
N° respondents	38	64	67	169	39	68	36	143
(pct)	(22.5%)	(37.9%)	(39.6%)		(27.3%)	(47.6%)	(25.2%)	

Table 31: Please look at the products again. Thinking about the choice you just made, to what extent did the following factors influence your choice of the product. Please answer using a scale of 1 to 5, where 1 means "no influence", while 5 means "high influence (Figure 19)

	1 = no influence	2	3	4	5 = high influence	Total	Mean
TV Brand	56	47	89	130	182	504	3.66
(pct)	(11.1%)	(9.3%)	(17.7%)	(25.8%)	(36.1%)		
TV Price	39	36	98	159	172	504	3.77
(pct)	(7.7%)	(7.1%)	(19.4%)	(31.5%)	(34.1%)		
TV Energy Efficiency	52	55	105	124	168	504	3.60
(pct)	(10.3%)	(10.9%)	(20.8%)	(24.6%)	(33.3%)		
TV Screen Size	27	30	89	156	202	504	3.94
(pct)	(5.4%)	(6.0%)	(17.7%)	(31.0%)	(40.1%)		
TV Energy Consumption	66	43	99	126	170	504	3.58
(pct)	(13.1%)	(8.5%)	(19.6%)	(25.0%)	(33.7%)		
TV Screen Technology	38	23	75	150	218	504	3.97
(pct)	(7.5%)	(4.6%)	(14.9%)	(29.8%)	(43.3%)		
TV Sound	60	31	105	138	170	504	3.65
(pct)	(11.9%)	(6.2%)	(20.8%)	(27.4%)	(33.7%)		
TV Built-in Devices	72	43	94	148	147	504	3.51
(pct)	(14.3%)	(8.5%)	(18.7%)	(29.4%)	(29.2%)		
TV Other Features	144	31	110	125	94	504	2.99
(pct)	(28.6%)	(6.2%)	(21.8%)	(24.8%)	(18.7%)		
WM Brand	73	44	88	130	169	504	3.55
(pct)	(14.5%)	(8.7%)	(17.5%)	(25.8%)	(33.5%)		
WM Price	48	32	117	156	151	504	3.65
(pct)	(9.5%)	(6.3%)	(23.2%)	(31.0%)	(30.0%)		
WM Energy Efficiency	31	25	73	146	229	504	4.03
(pct)	(6.2%)	(5.0%)	(14.5%)	(29.0%)	(45.4%)		
WM Capacity	37	21	93	158	195	504	3.90
(pct)	(7.3%)	(4.2%)	(18.5%)	(31.3%)	(38.7%)		
WM Water Consumption	59	47	84	122	192	504	3.68
(pct)	(11.7%)	(9.3%)	(16.7%)	(24.2%)	(38.1%)		
WM Energy Consumption	31	14	74	141	244	504	4.10
(pct)	(6.2%)	(2.8%)	(14.7%)	(28.0%)	(48.4%)		
WM Spin Speed	63	40	97	142	162	504	3.60
(pct)	(12.5%)	(7.9%)	(19.2%)	(28.2%)	(32.1%)		
WM Wash and Spin	52	23	78	143	208	504	3.86
(pct)	(10.3%)	(4.6%)	(15.5%)	(28.4%)	(41.3%)		
WM Wash Programme and functions	44	39	78	162	181	504	3.79
(pct)	(8.7%)	(7.7%)	(15.5%)	(32.1%)	(35.9%)		
WM Other Features	130	42	94	137	101	504	3.07
(pct)	(25.8%)	(8.3%)	(18.7%)	(27.2%)	(20.0%)		

Table 32: Influence of energy efficiency and energy consumption on choice (Figure 19)							
	1 = no influence	2	3	4	5 = high influence	Total	Mean
TV Energy Efficiency							
A+++ to D	14	9	36	30	40	129	3.57
(pct)	(10.9%)	(7.0%)	(27.9%)	(23.3%)	(31.0%)		
alphabetic	10	19	16	26	53	124	3.75
(pct)	(8.1%)	(15.3%)	(12.9%)	(21.0%)	(42.7%)		
numeric	13	16	24	30	41	124	3.56
(pct)	(10.5%)	(12.9%)	(19.4%)	(24.2%)	(33.1%)		
reverse numeric	15	11	29	38	34	127	3.51
(pct)	(11.8%)	(8.7%)	(22.8%)	(29.9%)	(26.8%)		
total	52	55	105	124	168	504	3.60
(pct)	(10.3%)	(10.9%)	(20.8%)	(24.6%)	(33.3%)		
TV Energy Consumption							
A+++ to D	15	9	33	29	43	129	3.59
(pct)	(11.6%)	(7.0%)	(25.6%)	(22.5%)	(33.3%)		
alphabetic	12	12	25	26	49	124	3.71
(pct)	(9.7%)	(9.7%)	(20.2%)	(21.0%)	(39.5%)		
numeric	17	15	18	35	39	124	3.52
(pct)	(13.7%)	(12.1%)	(14.5%)	(28.2%)	(31.5%)		
reverse numeric	22	7	23	36	39	127	3.50
(pct)	(17.3%)	(5.5%)	(18.1%)	(28.3%)	(30.7%)		
total	66	43	99	126	170	504	3.58
(pct)	(13.1%)	(8.5%)	(19.6%)	(25.0%)	(33.7%)		
WM Energy Efficiency							
A+++ to D	6	4	23	39	57	129	4.06
(pct)	(4.7%)	(3.1%)	(17.8%)	(30.2%)	(44.2%)		
alphabetic	6	9	14	30	65	124	4.12
(pct)	(4.8%)	(7.3%)	(11.3%)	(24.2%)	(52.4%)		
numeric	11	8	14	36	55	124	3.94
(pct)	(8.9%)	(6.5%)	(11.3%)	(29.0%)	(44.4%)		
reverse numeric	8	4	22	41	52	127	3.98
(pct)	(6.3%)	(3.1%)	(17.3%)	(32.3%)	(40.9%)		
total	31	25	73	146	229	504	4.03
(pct)	(6.2%)	(5.0%)	(14.5%)	(29.0%)	(45.4%)		
WM Energy Consumption							
A+++ to D	7	6	20	32	64	129	4.09
(pct)	(5.4%)	(4.7%)	(15.5%)	(24.8%)	(49.6%)		
alphabetic	5	3	19	30	67	124	4.22
(pct)	(4.0%)	(2.4%)	(15.3%)	(24.2%)	(54.0%)		
numeric	10	3	18	32	61	124	4.06
(pct)	(8.1%)	(2.4%)	(14.5%)	(25.8%)	(49.2%)		
reverse numeric	9	2	17	47	52	127	4.03
(pct)	(7.1%)	(1.6%)	(13.4%)	(37.0%)	(40.9%)		
total	31	14	74	141	244	504	4.10
(pct)	(6.2%)	(2.8%)	(14.7%)	(28.0%)	(48.4%)		

Table 33: Please look at the three products again, in your opinion, which of these is most energy efficient? (Figure 21)				
	Correct identification	Incorrect identification	Don't Know	Total
Televisions				
A+++ to D	104	17	8	129
(pct)	(80.6%)	(13.2%)	(6.2%)	
alphabetic	102	18	4	124
(pct)	(82.3%)	(14.5%)	(3.2%)	
numeric	54	62	8	124
(pct)	(43.5%)	(50.0%)	(6.5%)	
reverse numeric	75	42	10	127
(pct)	(59.1%)	(33.1%)	(7.9%)	
total	335	139	30	504
(pct)	(66.5%)	(27.5%)	(6.0%)	
Washing Machines				
A+++ to D	98	23	8	129
(pct)	(76.0%)	(17.8%)	(6.2%)	
alphabetic	94	26	4	124
(pct)	(75.8%)	(21.0%)	(3.2%)	
numeric	89	30	5	124
(pct)	(71.8%)	(24.2%)	(4.0%)	
reverse numeric	80	38	9	127
(pct)	(63.0%)	(29.9%)	(7.1%)	
total	361	117	26	504
(pct)	(71.6%)	(23.2%)	(5.2%)	

:

Table 34: Please look at the energy labels on the televisions. In your opinion, which of the three products is the least costly to use? By least costly we mean having the lowest electricity bill (Figure 22)				
	Correct identification	Incorrect identification	Don't Know	Total
Televisions				
A+++ to D	93	26	10	129
(pct)	(72.1%)	(20.1%)	(7.8%)	
alphabetic	99	22	3	124
(pct)	(79.8%)	(17.8%)	(2.4%)	
numeric	60	59	5	124
(pct)	(48.4%)	(47.6%)	(4.0%)	
reverse numeric	79	37	11	127
(pct)	(62.2%)	(29.1%)	(8.7%)	
total	331	144	29	504
(pct)	(65.7%)	(28.5%)	(5.8%)	

Table 35: And why do you think the television you chose is the least costly to use (would have the lowest electricity bill)? (Figure 23)						
	...lowest kWh/annum	...lowest Watt	...highest ranking on the coloured arrows	Other	I don't know	total
A+++ to D	46	28	27	13	15	129
(pct)	(35.7%)	(21.7%)	(20.9%)	(10.1%)	(11.6%)	
alphabetic	55	26	25	8	10	124
(pct)	(44.4%)	(21.0%)	(20.2%)	(6.5%)	(8.1%)	
numeric	52	33	14	15	10	124
(pct)	(41.9%)	(26.6%)	(11.3%)	(12.1%)	(8.1%)	
reverse numeric	47	21	17	25	17	127
(pct)	(37.0%)	(16.5%)	(13.4%)	(19.7%)	(13.4%)	
total	200	108	83	61	52	504
(pct)	(39.7%)	(21.4%)	(16.5%)	(12.1%)	(10.3%)	

Note: The grey column indicates the correct answer

Table 36: Please look again at the label on the products. In your opinion, what does the symbol kWh/annum mean? (Figure 24)					
	...energy efficiency of the product	...yearly energy consumption of the product when in use	Other	I don't know	total
A+++ to D	9	77	7	36	129
(pct)	(7.0%)	(59.7%)	(5.4%)	(27.9%)	
alphabetic	14	68	13	29	124
(pct)	(11.3%)	(54.8%)	(10.5%)	(23.4%)	
numeric	13	69	17	25	124
(pct)	(10.5%)	(55.6%)	(13.7%)	(20.2%)	
reverse numeric	8	75	12	32	127
(pct)	(6.3%)	(59.1%)	(9.4%)	(25.2%)	
total	44	289	49	122	504
(pct)	(8.7%)	(57.3%)	(9.7%)	(24.2%)	

Note: The grey column indicates the correct answer

Table 37: Please look again at the products. In your opinion, what do the coloured arrows mean? (Figure 25)					
	...energy efficiency of the product	...yearly energy consumption of the product when in use	Other	I don't know	total
A+++ to D	78	22	15	14	129
(pct)	(60.5%)	(17.1%)	(11.6%)	(10.9%)	
alphabetic	80	20	11	13	124
(pct)	(64.5%)	(16.1%)	(8.9%)	(10.5%)	
numeric	53	29	22	20	124
(pct)	(42.7%)	(23.4%)	(17.7%)	(16.1%)	
reverse numeric	48	22	25	32	127

(pct)	(37.8%)	(17.3%)	(19.7%)	(25.2%)	
total	259	93	73	79	504
(pct)	(51.4%)	(18.5%)	(14.5%)	(15.7%)	

Note: The grey column indicates the correct answer

Source:

Table 38: Please look at the energy labels on the products. Looking at the grey arrow at the top of each label, what do you think these arrows indicate? (Figure 26)

	...televisions that are available in other countries	...products other than televisions	...televisions that will be available on the market in the future	Other	I don't know	total
numeric	4	7	13	39	61	124
(pct)	(3.2%)	(5.6%)	(10.5%)	(31.5%)	(49.2%)	

Note: The grey column indicates the correct answer

Somerset House, New Wing, Strand
London WC2R 1LA United Kingdom
www.londoneconomics.co.uk
@LondonEconomics
+44 (0)20 3701 7700