Energy labelling for the digital age: presenting a possible solution and consumer reactions

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Abstract

This paper provides an update on the progress made so far in the Digi-Label project including consumer feedback on the concept and initial research and development activities. The project's aim is to accelerate the market adoption of energy-efficient products across Europe by developing and initiating the roll-out of an extended digital version of the European energy label. The proposed solution, branded *PocketWatt,* is both an internet-based tool for online use as well as a smartphone app optimised for use while shopping at local retail stores selling electrical appliances. The rationale behind this approach is to provide easy access for consumers to energy-efficiency information at the point of purchase, and to improve their understanding of the benefits of more energy-efficient products. The tool includes features like (1) an option that allows comparisons of different models available from the same retailer; (2) the possibility to customise information, e.g. to calculate running costs according to the frequency of use; and (3) a clearly presented and easily accessible/user-friendly graphical interface.

Two workshops secured the early participation and input of consumers (22 in Germany and Spain). This paper provides a summary of the findings; for example, that consumers appreciate the approach taken, and value several of the features provided. Participants also gave feedback on the draft version of the *PocketWatt* tool. In addition, they pointed to the need to find more ways to persuade consumers (and retailers) to make energy efficiency a higher priority when making purchasing decisions about energy-using products. This feedback was considered in the pilot phase for *PocketWatt,* which took place in late 2016 and early 2017.

Introduction

It is widely assumed that informed consumers make better purchasing decisions. This principle is applied by the European energy label to promote more energy-efficient appliances. The label was introduced in 1992 to contribute to the overall goal of reaching the climate targets of the Council of Communities (Directive 92/75/EEC). The label is intended to attract consumers' attention at the point of sale with the aim to increase energy efficiency in private households. The label is not only beneficial for the climate but provides consumers with better information and thus helps to cut energy costs. Furthermore, the label was supposed to encourage manufacturers to invest in the development of energy-efficient products due to increased consumer interest in such products. The energy label has been quite a success story, with over 80 % of consumers recognising it (Ecofys 2014; Stieß and Birzle-Harder 2013). Consumers also claim that the energy label is generally comprehensive and that they use it for their purchase decisions. Further studies have shown that the energy label is seen as a sign of quality and that consumers are willing to pay more for the products labelled in this way (Sammer and Wüstenhagen 2006; Rennings, Rammer and Oberndorfer 2008).

But does the label really still give the right incentives? Statistics show that absolute energy consumption in households has increased in recent years, and that while the general efficiency of products has increased, absolute consumption of products

has continued to rise as well (Lapillonne, Pollier and Samci 2015; vzbv and VZ RLP 2015). Several studies have shown that the energy label in its current form does not seem to be enough to increase energy efficiency in the expected way (Gillingham and Palmer 2013; Waechter, Sütterlin and Siegrist 2015). There may be manifold reasons for this but, besides unforeseen market developments, they probably include shortcomings of the current energy label: Consumers do not always understand the efficiency scale, the variety of best classes, the average annual consumption, the fiche and the pictograms as they require further explanations, information on individual running costs and a connection to their own behaviour and needs. Furthermore, in this age of instant messaging, real-time streaming and readily accessible information, passive paper stickers like the energy label are probably no longer particularly attractive. We therefore postulate that a different approach is now required to promote energy efficiency and catch consumers' attention when making purchasing decisions.

Against this background, this paper presents a proposition for such an approach to support consumers with information on energy efficiency issues when purchasing appliances. We report on outcomes from the *Digi-Label* project, which seeks to develop an interactive solution for the energy label that provides easy to understand product information, accessed in a format suitable for the Information Generation. *Digi-Label* will create a comprehensive information hub accessible to consumers at the point of sale, in stores and online in five EU countries. Links will be offered via a website, mobile app or scannable technology. Consumers can obtain easy to understand product information, annual running cost figures, and comparison options. So far, the concept for this approach has been developed and implemented. An early version of the programmed solution, which is called *PocketWatt,* has been evaluated by two consumer workshops held in Spain and Germany. Currently, the pilot phase to introduce *PocketWatt* at the point of sale in local retailers and in online stores is about to be implemented. This paper focuses on the description of the *PocketWatt* approach and reports valuable insights from the consumer workshops.

The PocketWatt approach to an extended energy efficiency label

PocketWatt is a digital consumer tool developed as part of the *Digi-Label* project and available as an online resource, mobile app and via retailer websites. The main purpose behind the tool is to empower consumers across Europe by providing them with the impartial information they need to make informed choices when purchasing electrical goods. *PocketWatt* delivers this by placing tailored, high quality energy performance information into the hands of consumers at the point of sale via a simple scan-and-learn in-store smartphone experience or a single click for those shopping online.

PocketWatt utilises QR codes placed on electrical goods alongside the existing energy label and a dedicated Java applet embedded within retailer websites. Both the QR codes and the applet have encoded URLs acting as instant access gateways to the *Digi-Label* products database, giving consumers consistent information regardless of where they choose to shop. As such, *PocketWatt* is part of the wider *Digi-Label* online resource, an enterprise level end-to-end solution where product data is securely managed, product performance calculated and all QR codes and Java applet inserts generated. The following figure summarises the *Digi-Label* resource, highlighting the central database and interactions around the *PocketWatt* tool. These

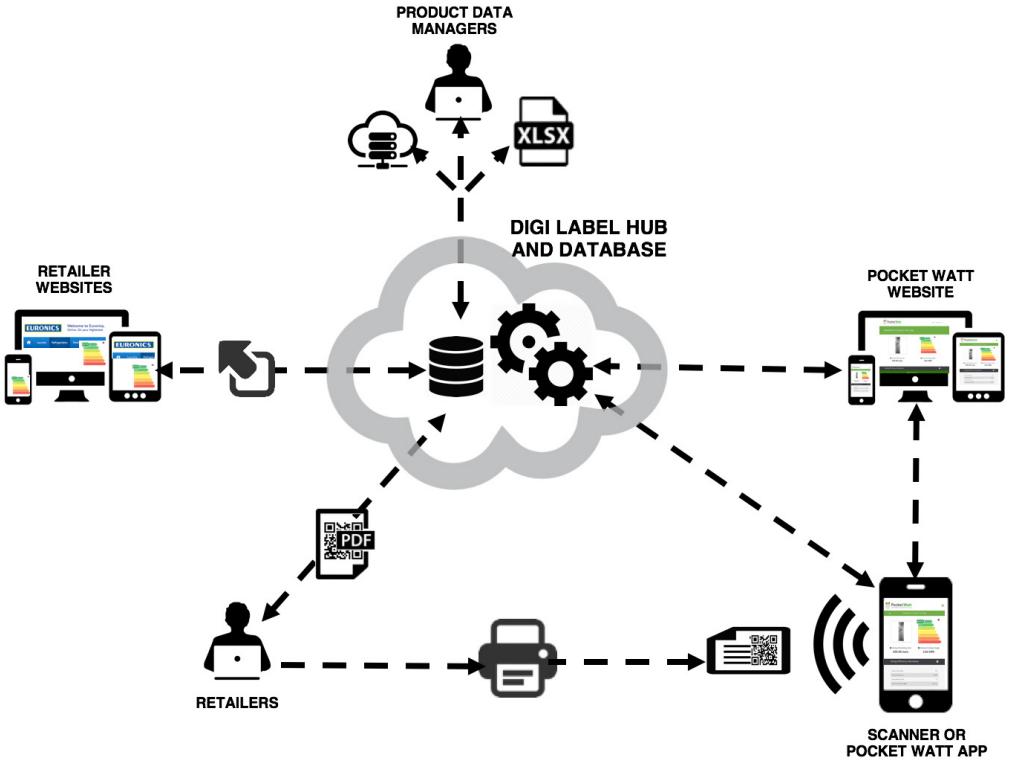

Figure 1. Overview of the Digi-Label resource, including the central database and interactions around the PocketWatt tool.

include data managers with the ability to submit products manually, via automated feed or bulk upload, and secure retailer access where QR codes can be downloaded and Java applets managed.

To ensure access and usability for consumers across Europe, *PocketWatt* has full multi-language functionality with language selectors presented on the web tool, mobile app and Java applet. This is achieved by driving all content including menus, navigation, tips and product details from the central database. Each time the tool is used, the display is dynamically generated with the appropriate language, content and data. This approach has been adopted to ensure consistency without compromising the flexibility of *PocketWatt* to accommodate changes and updates.

The in-store experience is characterised by a simple scan-and-learn process utilising the QR codes, the *PocketWatt* app or any general QR scanner. Here, the consumer scans a code and is directed to an at-a-glance information page providing summary performance data, and efficiency ranking of the product compared to similar products within the database. Additional details are provided to expand the summary and consumers can instantly recalculate the annual running costs for categories of products such as washing machines, where number of uses is an important factor. To help inform consumer choices, products can be added to a compare list, shared with others via email or social media and saved for later review. The entire products database can also be searched and reviewed. Figures 2 and 3 summarise the in-store experience.

For online shopping, the embedded Java applet provides the same functions and information as the in-store experience and is accessed by clicking on a *PocketWatt* smart link displayed on the retailer website alongside the product details. A pop-up window then provides the consumer with all the information and functions. The following images show an example retail page displaying the embedded *PocketWatt* logo and *PocketWatt* window.

Consumer feedback on the PocketWatt approach

This section summarises consumer feedback on the *PocketWatt* approach. A more extensive description of the study and its results is available as a report (Dütschke and Schneider 2017).

RESEARCH QUESTION AND APPROACH

In order to monitor the success and impact of the project and develop a digital solution that really supports consumers, the project also foresees an evaluation process. Part of this evaluation was an early exchange with consumers about a draft version of the developed digital tool. A qualitative approach was chosen to elicit consumer feedback; structured group discussions were conducted in Germany and Spain, two of the five participating countries. A workshop approach is especially suitable if the subject of interest is new, as in this case, because the group process supports participants in forming an opinion and exchanging ideas (Marshall and Rossman 1999; Morgan 1988). Another advantage is that the researchers also have the possibility to react flexibly to feedback and, e.g. expand explanations if issues are not well understood.

The main aim of the workshops was to receive feedback and recommendations from the participants about the draft (alpha) version of the *PocketWatt* tool. This was done by combining questionnaires with group discussions. The questionnaire had the goal of ensuring that feedback was collected from every participant, while the group discussions had an open format where participants could freely exchange and develop their views by interacting with each other. The questions around the *PocketWatt* tool were embedded in a discussion of purchasing appliances in general as well as of the European energy label.

SAMPLE AND PROCEDURE

To collect broad perspectives on the tool, the aim was to recruit a heterogeneous group of participants with regard to demographic attributes. Furthermore, to receive valid feedback, individuals were preferred who had recently purchased one or more of the relevant appliances. In the end, 22 individuals took part in the group discussions (10 in Germany, 12 in Spain). Participants in Germany were recruited from the directories of a market research company, while those in Spain were contacted through consumer organisations. The sample comprised younger and older (29–68 years) men and women with different levels of education, with and without children. Most of them (18 of 22) had purchased one or more appliances in the twelve months preceding the group discussions. The Spanish group had a higher level of education and several of them worked in fields related to energy or consumer issues. This difference in group composition needs to be taken into account when interpreting the findings.

The group discussions were audio recorded and transcribed. The qualitative data was coded with the software ATLAS.ti. Coding is an important technique in qualitative research and content analysis; while coding, each segment is labelled with a certain code, i.e. a word or short phrase describing the content. Some of the codes were pre-determined, i.e. derived from the topics in the discussion guideline. However, new codes were also developed based on the collected data. In the following section, selected literal quotations of the participants are included in the text to illustrate the results.

FINDINGS

The questionnaires as well as the group discussions indicated that most participants were aware of the energy label and recognised it. In line with earlier research (Ecofys 2014), most found it useful in terms of providing guidance for their purchasing decisions. However, previous findings about misperceptions concerning some of the label elements were also confirmed (Kardel 2016).

Participants also reported their habits when purchasing appliances and many are highly compatible with the *PocketWatt* approach: Participants typically buy appliances in big retail stores and usually search for information before making a decision. Online sources are used most regularly to obtain information and most participants are also regular smartphone users. Thus the possibility to access the *PocketWatt* tool easily in stores via the QR code was appreciated even though most participants were not frequent QR code users. The strategy to offer *PocketWatt* for use on mobile devices during shopping but also as an internet application for use at home is also in line with consumer preferences:

> Spanish participant: Information via the smartphone and internet will be very useful.

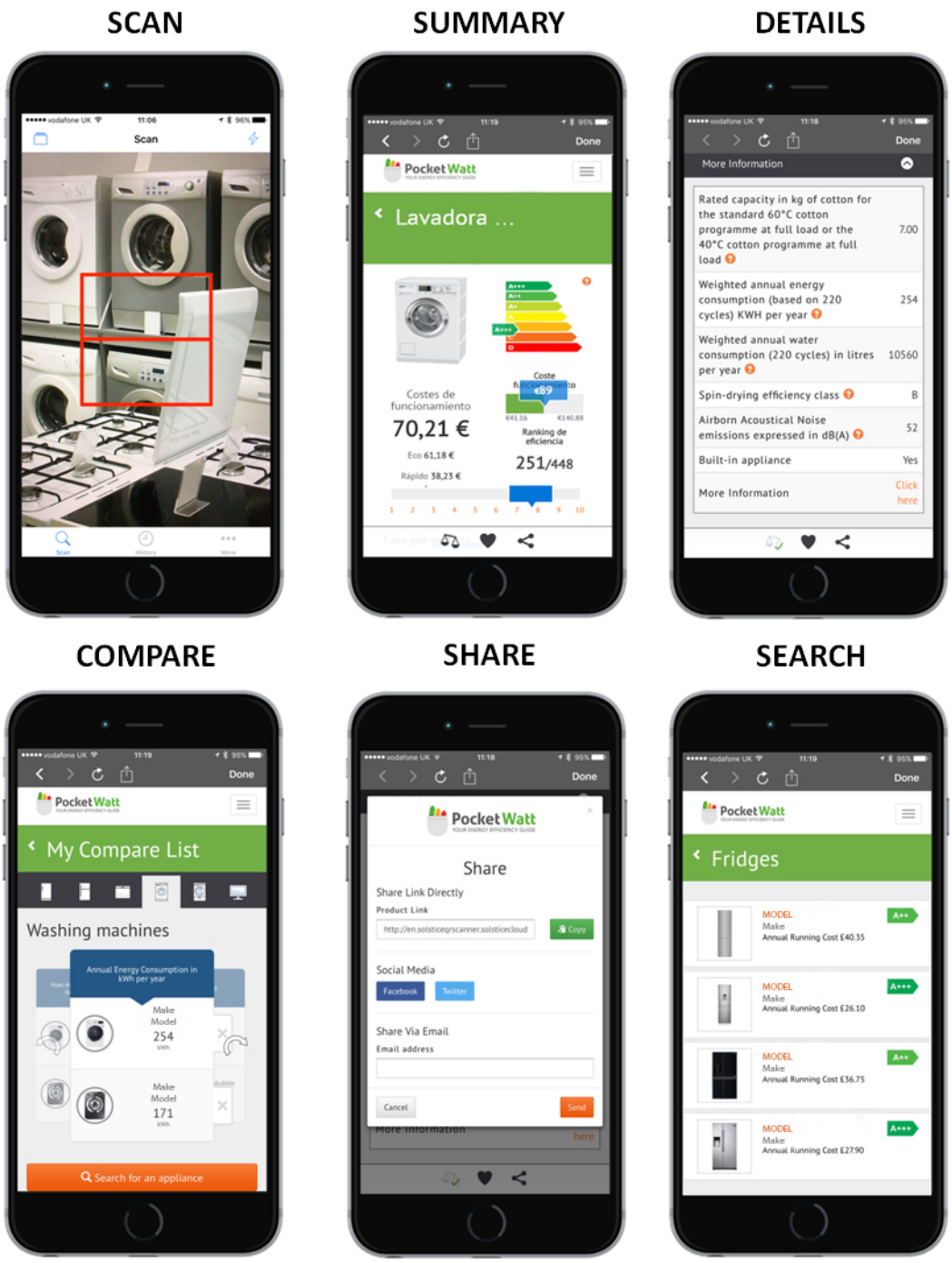

Figure 2. Illustrations of the in-store experience with PocketWatt.

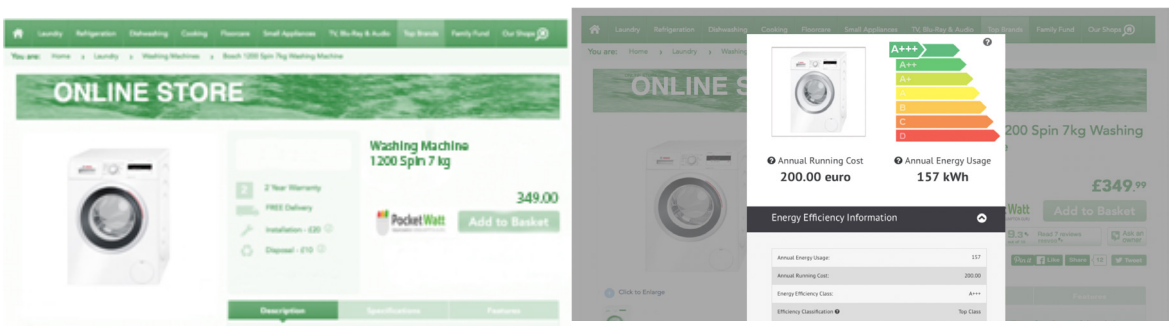

Figure 3. Possible implementation of PocketWatt in an online retail store.

A few participants had doubts whether processing the information on a smartphone might turn out to be difficult due to the phone's small screen. Thus, the possibility to use the tool at home and elsewhere and maybe save or share the findings to have them at hand when shopping was seen as a helpful feature.

Many of the features included in the *PocketWatt* tool were appreciated by the participants. These included the offer to access up-to-date information in a consistent format on the products considered; information about energy costs, especially running costs; the ability to compile a comparison list of products; and that a product search function (incl. filter function) is supplied.

> German participant: The compare list, this is actually crucial for me, because I can compare; I have for example two appliances, this [make A] and [make B]. The [make A] costs 800 euros, the [make B] costs 1,000 euros.

Regarding further refinement of the features, participants stated a preference for customised information, e.g. energy consumption in relation to household size or usage patterns, which has since been implemented as described above. Furthermore, a challenge emerged from the discussion: On the one hand, participants wanted to have much more information included in the tool, e.g. an appliance's full range of features; advice on usage patterns; product price. As prices vary at different retailers, some Spanish participants suggested consumers could add the purchase price themselves. On the other hand, they were also concerned that the tool is already overloaded with too much input.

> German participant 1: That's what I said before, the tool must even be scaled down.
>
> German participant 2: Simple and concise.

The overall evaluations of the tool and the stated intentions to use it for future shopping were mixed: Evaluations ranged from very useful to not useful at all with a slight majority rating it as useful. A relationship to the type of appliance was observed in this context, e.g. participants said that aspects other than energy consumption play a greater role for televisions, for example, than for white goods. In line with this, around half the participants stated they intend to use it in the future, while the other half does not intend to do so. The German participants were less enthusiastic than the Spanish ones. This is probably related to the different composition of the two groups. The intention to not use the tool was usually linked to a general disinterest in energy issues, not to a negative evaluation of the tool itself. However, some of the participants perceived the tool as too complex whereas those with an interest in technology did not share this opinion. Several participants emphasised that the tool needs to be trustworthy. Providers considered trustworthy include research institutions, government ministries or consumer organisations.

Discussion and conclusions

The *Digi-Label* project was triggered by the fact that, while technology has become increasingly more efficient, household energy consumption is still not decreasing. Shortcomings of the existing energy efficiency label have been identified as one factor among many contributing to this discrepancy. Studies have repeatedly pointed out that consumers feel the current label does not completely fulfil their needs. Furthermore, a more innovative approach to present the relevant information for well-informed decision-making seemed due given today's technological possibilities.

The project team also considered already existing apps and tools and building on these, e.g. TopTen. However, a review of the existing market showed that none of the existing solutions met all the current and potential future needs of consumers from the perspective of the project team. For example the TopTen project only refers to the best products on the market, but DigiLabel aims at a full market overview. Thus, the project has developed and started to implement *PocketWatt* as an innovative solution that is adaptive to consumer needs and accessible 'everywhere' – in stores while shopping but also at home when gathering information or shopping online. An analysis of consumer evaluations gathered in two workshops revealed that consumers appreciated many features of the proposed tool, e.g. the possibility to compare attributes like running costs for several appliances; they also contributed further ideas for the tool's refinement, e.g. for customising information.

The flexibility of easily accessing the tool while shopping was confirmed as valuable. The necessity to have an installed QR reader turned out to be a possible barrier. Therefore *PocketWatt* will feature a built-in QR scanner. *PocketWatt* can also be used to support communication during the sales process, e.g. with retailer staff guiding customers through the tool face-to-face using in-store mobile devices (i.e. tablets). This is an opportunity that was also proposed by consumers during the workshops and supported in discussions with retailers.

While several issues have been identified that can be tackled by further refinement of the tool, two major challenges remain: *PocketWatt* is only able to unfold its full potential to support an increase in energy-efficient choices if it is implemented by retailers in their stores and if consumers use it and put what they learn from it into practice when buying appliances. Again, the engagement of retailers could play a crucial role in this as their efforts are needed to direct consumers' attention to the tool or even guide them when using it. Nevertheless, as known from earlier research but also confirmed in our study, not all consumers are interested in energy issues or willing to take them into account. And for those that are interested, the energy efficiency of a product is usually still only one attribute among many others (Gaspar & Antunes 2016).

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