

The effects of QR delivered content on perceived product value

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THE EFFECTS OF QR DELIVERED CONTENT ON PERCEIVED PRODUCT VALUE

Abstract

QR code is an important pull technology tool that has increased exponentially worldwide. Although its usefulness for marketers has been widely recognised, little is known about the type of message content (i.e. hedonic vs utilitarian) that generates a greater perceived value of products.

Drawing on uses and gratifications theory (UGT), this study investigates the effect of the type of communication (i.e. hedonic vs utilitarian) delivered through two different pull communication tools (i.e. website and QR code) on product value perception in the retail setting.

In the first study, we ran a content analysis on data retrieved from a sample of QR codes of wine bottles. In the second one, we tested our hypotheses through an online experiment.

The findings show that when the contents conveyed are hedonic, the presence of a QR code influences consumers' perceived value of the product positively. The reverse is true when considering the website (without the use of the direct QR code platform). These results provide useful insights for managers for the development of a smart experience in stores.

Keywords: QR code, pull communication, hedonic, utilitarian, perceived value, smart technology, wine industry

Article classification: Research paper

THE EFFECT OF TECHNOLOGY AND CONTENT GRATIFICATION ON A PRODUCT'S PERCEIVED VALUE

INTRODUCTION

Digitalisation represents one of the most relevant ongoing transformations of contemporary society. This transformation is particularly important in the retail context, which is adapting to the use of digital technologies to satisfy new forms of consumption (Hagberg et al., 2016). Digital technologies create value through new consumer experiences and through interaction among consumers (Kannan, 2017; Šimůnková, 2019). Recently, digitalisation has also led to the introduction of smart retail technology (Inman and Nikolova, 2017), considered as “an interactive retail system which delivers retail services to consumers through a network of smart or intelligent objects and devices. These connected devices can sense the surroundings and engage in real-time data collection, communication, interaction, and feedback” (Brodie et al., 2001; Roy et al., 2018, p. 147). The retail setting is characterised by the growing adoption of advanced and interactive smart technologies based on high connectivity and contactless systems that improve consumers’ shopping experience (Pantano and Gandini, 2017).

Thus, consumers are no longer passive receivers of company messages but are now actively involved in interactive online relationships or through social and mobile platforms (Zhu et al., 2009; Thakur, 2016). Therefore, managers and companies at large constantly need to provide technology in the store to create value for consumers (Pantano, 2014). Through smartphones, consumers not only connect to the Internet but also interact with companies and change their practices, including their shopping habits in fixed-store settings (Shankar et al., 2010; Ström et al., 2014). Accordingly, quick response (QR) codes are part of those in-store touchpoints that allow an improvement of the shopping experience. Although consumers are not using QR codes consistently to retrieve product information or other marketing activities (Statista, 2018), this smart technology deserves much more attention, given the increasing use of mobile devices during the shopping experience (Shankar et al., 2016).

Further, given the low investment required for firms to use this form of communication process, research on the correct use of this technology is needed to provide more value to consumers in its use and obtain the most from its potential. Accordingly, the current paper investigates QR codes as a specific smart technology for communication with the scope to examine the best manner to engage consumers in using them. In particular, in this study, we investigate the content delivered through QR codes as a technology that facilitates pull communication defined as a type of communication where consumers pull information from the Internet in general and social media in particular (Šerić, 2017). Hence, this research aims to identify which type of message content (i.e. hedonic vs utilitarian) generates greater perceived value. We look at this phenomenon through the lens of gratifications theory. We first analyse the communication delivered through QR codes by existing wine companies through an investigation of wine bottles' labels in order to identify the type of content involved in wine communication. Second, through an online experiment, we test our hypotheses rooted in uses and gratifications theory proving the most suitable message content to be delivered through QR codes. This study provides insights for managers on how to create value for consumers using technologies to integrate pull communication (QR codes and website) by focusing on the message content (hedonic or utilitarian) to be digitally conveyed to their target audience.

QR codes

QR code is a mobile marketing feature that has recently been attracting marketers' attention (Bamoriya, 2014). A QR code is a 2D (i.e. two-dimensional) code, which, once read by a scanner or a smartphone, connects users to specific online content on a website, which might exhibit an email address, link to e-coupons or require consumers to either provide or deliver useful information (Handley, 2006; Ryu, 2013). As such, this online content is immediately available for users (Shiang-Yen et al., 2011). Because of these features, QR codes are considered a prominent pull-based communication tool that is highly influential in consumers' buying decision-making processes as consumers can proactively retrieve additional information (Trivedi et al., 2019). Pull-based

communication tools allow consumers a free choice of information retrieval contrary to the push-based communication of traditional media that is initiated by the marketer, with consumers largely acting as passive recipients of the message (Atkinson, 2013). The unobtrusive and engaging nature of pull communication makes QR code an attractive tool whose use has increased exponentially worldwide (Bamoriya, 2014). The QR code's ability to link the bricks-and-mortar world to the digital domain has changed how companies operate with their customers, allowing marketers to interact with consumers and involve them with their brand (Cata et al., 2013). The use of a QR code as a mobile marketing tool needs an a priori willingness on the part of consumers to interact with the company. Thus, the information contained in the QR code is sent by the company at the direct request of the consumer (Atkinson, 2013).

Due to their convenience and user-friendliness, multiple fields of application, and customer-driven information provided by mobile tagging, QR codes have become the key smart technology for mobile information searching (Shiang-Yen et al., 2011). The effectiveness of QR codes for marketing discipline is relevant for several reasons. First, product knowledge is a key concept in consumer behaviour and consumer decision-making, and QR codes enable the delivery and sharing of information at the point of need (Raju et al., 1995) and hold more product and brand information than other smart instruments, such as the one-dimensional traditional bar code. Second, the importance of QR codes resides in their ability to enable a superior connectivity level with customers, which can fortify dedication to a specific brand. Finally, they can impact customer satisfaction and purchase intention (Hossain et al., 2018).

Given the increasing use of mobile marketing devices, it is important to understand whether or not consumers make use of QR codes and which kinds of content would influence their shopping behaviour. According to Ryu (2013), many retailers have exercised mobile marketing communications using a QR code to satisfy consumers' hedonic needs. The literature (e.g. Hirschman and Holbrook, 1982; Venkatesh et al. 2012) suggests that innovativeness and novelty-seeking factors contribute to increase consumers' hedonistic attitudes to take up a new technology and such factors

enhance the hedonic motivations to use a product. Arnold and Reynolds (2003) argue that hedonic oriented consumers look for adventure, ideas, and values from shopping, therefore many retailers make use of QR codes in their communication strategies to fulfill consumers' hedonic desires (Ryu 2013). Arguably the adoption of QR codes in a consumer-related context is relatively new (Ozkaya et al. 2015) as retailers and consumers in North America started the implementation of QR codes for commercial use around 2008 (Okazaki et al. 2012). In Italy, its implementation by companies (and usage of consumers) has started rising in 2015 (Amoncode, 2017). It is, therefore, reasonable to deduce that in a shopping context, the usage of QR code provides to consumers a more innovative experience which in turn delivers more hedonistic values than the mere use of web applications (such as web browsers loading a website) which have been available for decades. In this regard, Ryu and Murdock (2013) explain how linking information and entertainment messages in the QR code can be very effective. The authors show how consumers who make use of QR code perceive these services to be fun and exciting. Indeed, QR code enables consumers to engage in entertainment-oriented shopping activities such as connecting to a retailer's social networks or mobile video content providing shopping tips, thus enhancing consumers' enjoyment of shopping experiences. Our research focuses on the wine industry to study how effective a QR code communication is, as it offers a particular benefit to this specific context due to wine being an experiential good that cannot be fully evaluated before its consumption. Thus, in the absence of any sensory experience, the purchase decision is challenging for consumers (Cooper-Martin, 1991; Beverland and Lindgreen, 2004).

Furthermore, wine products include both hedonic and utilitarian dimensions, and consumers, depending on their knowledge, expertise and involvement, need considerable information during their purchase process. Therefore, QR codes can be useful, as they allow consumers to access more information quickly about product characteristics.

Theoretical framework

Perceived value, hedonism and utilitarianism

The concept of perceived value emerged as the defining business issue of the 1990s and has continued to gain increasing prominence in the present century (Parasuraman and Grewal, 2000; Vantrappen, 1992). Organisations are increasingly recognising perceived value as a key factor in strategic management since customer value represents a strategic imperative in building and sustaining a competitive advantage (Wang et al., 2004).

Because of the complex nature of perceived value, there are many definitions in the literature, and there is no consensus with respect to its conceptualisation. Sánchez-Fernández and Iniesta-Bonillo (2007), in their systematic literature review, identified two main approaches to defining perceived value, namely the unidimensional and the multidimensional approach. According to the unidimensional approach, which represents the earlier stage of the construct's conceptualisation, perceived value is a single overall concept conceived from an exclusive utilitarian perspective (Kerin et al., 1992). However, the multidimensional conceptualisation identifies perceived value as a construct reflecting both utilitarian and hedonic values (Williams and Soutar, 2000; Herbeth et al., 2017). In the 1990s, many researchers recognised that product purchase, consumption and usage might not be fully explained by the utilitarian aspects of the product (Babin et al., 1994), and therefore the hedonic aspects of value were introduced. The utilitarian factor alone, principally related to functional attributes and focused on instrumental expectations (Batra and Ahtola, 1991), is inadequate for explaining the whole perceived value phenomenon (Crowley et al., 1992). Thus, scholars have also investigated the hedonic aspects of consumer behaviour (Spangenberg et al., 1997), which is pleasure-oriented and primarily motivated by the desire for sensual pleasure, fantasy, and fun (Hirschman and Holbrook, 1982).

The uses and gratifications theory

The uses and gratifications theory (UGT) is commonly adopted in communication research to examine individual consumers' utilitarian and hedonic needs and motivations regarding the use of certain tools. According to Ryu and Murdock (2013), UGT is particularly beneficial in explaining consumers' use of technology in daily life and their adoption of the Internet- and mobile-based media services (Sultan et al., 2009). It is based on the gratifications or benefits that attract and engage consumers with various types of content that satisfy their social and psychological needs (O'Donohoe, 1994). Individuals distinguish between different forms of media based on their needs through their own use (Smock et al., 2011). According to Xu et al. (2012), utilitarian and hedonic outcomes, together with social outcomes, enhance technology usage. Utilitarian outcomes refer to the effectiveness of individual activities improved by using technology, while hedonic outcomes refer to the pleasure derived from using it (Xu et al., 2012). Both factors reflect the technology's abilities to gratify users' needs (to communicate effectively or to have fun). Gratification, like outcome, is closely associated with the technology's ability to satisfy users' needs (Xu et al., 2012). Therefore, we construe gratifications as being utilitarian, that is, related to enhancing effectiveness and efficiency, and hedonic gratification as being the pleasure and fulfillment of socio-psychological needs derived from using the technology.

Initially, UGT was mainly adopted by scholars to study different mass media phenomena. According to Dunne et al. (2010), media formats used on platforms such as the Internet and, more specifically, social media, due to their interactive nature, can be considered appropriate for examination under the theoretical lens of UGT. Under this perspective, technologies that allow pull communication have generated substantial interest among marketers, primarily because of their high level of user preference and the positive impact of this preference on users' value perception of a product (Higgins et al., 2014). In particular, in the last decade, researchers have applied UGT to understand the factors explaining consumers' perception and behaviour in their new media adoption. Stafford et al. (2004) suggest that people use media either for the simple experience of the media usage process (e.g. playing with the technology) or for the content carried by the medium (e.g. hedonic or utilitarian); these two

broad dimensions are categorised as process gratifications and content gratifications. These authors explain the concept, providing a clear example: Internet users may be motivated by the enjoyment of the usage processes of random browsing and site navigation while users of specific Internet sites might be motivated by the desire for specific site-related informational content, such as product or store/brand information. In light of these two dimensions of UGT, this study focuses both on the technology adopted by users (process gratification) and the content shared through the technology (content gratification).

According to Luo (2002), the basic assumption of UGT is that users are actively involved in media usage and interact with communication media. While the interactive nature of the QR code requires high consumer involvement, it would seem appropriate to use UGT to advance our understanding of consumer perception and behaviour (Narang et al., 2012).

As mentioned previously, the literature shows how several companies have exercised mobile marketing communication using a QR code to satisfy consumers' hedonic needs, explaining how embedding hedonic information in the QR code could be the most useful and effective way to encourage consumers to scan the code (Cotte et al., 2006; Ryu, 2013). Thus, users may expect not only to retrieve some information by using QR codes but also to have an additional experiential value. In this vein, we expect that QR consumers' adoption makes the digital information-seeking experience more pleasant than the company's information-seeking process via the firm's website, thereby enhancing the perceived value of the product. Based on a coherence between the technology usage and the content shared, we argue that emotional content conveyed via a QR code will lead to a higher perceived value of the product than through websites delivering the same type of content. More formally, we propose the following:

H1. Hedonic content leads to a greater perceived value of the product when it is delivered through QR code, compared to a website.

Consumers can also search for functional information about a product in the store, by directly accessing the website of the product's company. In general, consumers can have a hedonic or utilitarian orientation toward the website, because the Internet offers exceptional opportunities and unique features, such as the ability to quickly search for information, but also entertainment through viewing videos and images (Scarpi, 2012). However, websites are traditionally seen by users as enabling the retrieval of technical information about a product, a firm, or a brand in order to support the decision-making process (Close and Kukar-Kinney, 2010). Accordingly, several studies have shown that the utilitarian features of websites are more important than the hedonic ones (Alhudaithy and Kitchen, 2009). Indeed, although consumers can find hedonic contents and cues on websites, the process itself of going on the Internet and accessing a website is utilitarian in nature. This is truer for consumers that are purchasing products at the supermarket that are mainly interested in finding the information they are looking for. Thus, from a UGT perspective, we expect that utilitarian contents are preferred by users who make use of websites to QR codes delivering the same type of content. Therefore, guided according to the theoretical background provided by UGT, we propose the following hypothesis:

H2. Utilitarian content leads to a greater perceived value of the product when it is delivered through website, compared to QR code.

Study 1

Methodology

First, we conducted an exploratory analysis of the use of QR codes in the wine industry, adopting a qualitative approach through a content analysis methodology (Berelson, 1952). This first study aimed to understand the actual types of content communicated via QR codes and use the findings to create realistic scenarios in the second study. The QR code is essentially a tool to convey some information, thus the use of this technology is strictly related to the consumer's perception of the usefulness of the content provided. To this end, it is important to understand what type of content is expected by

consumers, because matching the audience's expectation should lead to a higher perception of the value of the product. Sixty-eight random QR codes of Italian wine brands sold in three stores among the major grocery retailers located in Tuscany (Italy) were scanned. Some of these wine brands belong to the same company, thus the total number of companies included in the sample was 40. We considered all the bottles that had a QR code, and the contents in terms of utilitarianism were then classified (Sheth et al., 1991), as well as the hedonic contents (Alba and Williams, 2013; Hirschman and Holbrook, 1982).

Following the literature on the wine industry, hedonic content was classified as that referring to the traditions (Gade, 2004), the history (Shaw et al., 1999), the *terroir* (Charters, 2006) and the organoleptic characteristics of the wine (Mueller et al., 2010). The utilitarian content, on the other hand, included benefits for health (Guilford and Pezzuto, 2011), production process sustainability (Santini et al., 2013), ingredients, including grape typology (Brunner and Siegrist, 2011), an indication about the wine consumption – temperature or food pairing (Barber et al., 2006) – and a geographical indication, namely IGT (Indicazione Geografica Tipica tr. denotes wine from a specific region within Italy), DOC (Denominazione di Origine Controllata tr. Controlled Denomination of Origin) or DOCG (Denominazione di Origine Controllata e Garantita tr. Controlled and Guaranteed Denomination of Origin), which are three categories of decreasing strictness certifying the origin of the wine (Seghieri et al., 2007). The content analysis was carried out using NVivo software (Bazeley and Jackson, 2013). The content was first codified and retrieved from the QR code links in terms of hedonic and utilitarian aspects. Then nodes were created, and the word frequency within the nodes was estimated to identify the main lemmas used for mobile communication. Two researchers – wine experts – then compared the results with NVivo, carrying out the codification process separately. They developed the intercoded reliability function to assess the consistency of the codification. The average of the intercoded reliability index within various nodes of codification was 98.0%, showing which content is mainly shared through QR codes in the wine industry (Bryman and Bell, 2015).

Results and discussion

Wineries can use QR codes to engage consumers by delivering different types of communication. Within our sample, 19% of wine brands share hedonic contents, 31% utilitarian contents, and 50% mixed contents. Some of the wine brands belong to the same company, so we also observed contents shared by each company. Hedonic contents are conveyed by 25% of companies, the same percentage of companies that share utilitarian contents, 45% convey mixed contents, while 5% of companies adopt a different kind of communication depending on the wine brand: in some cases, they opt for utilitarian contents, in others for hedonic ones. Since the majority of wineries prefer to mix both hedonic and utilitarian information, the descriptive analysis that follows will present percentages of coverage based on the total number of items coded. They communicate either utilitarian (61% of the total number of items coded) or hedonic (39% of all items coded) information, and in most cases, wineries prefer to mix both utilitarian and hedonic information.

In terms of utilitarian information, the explanation of the features of the territory of origin, the typology of grapes and other oenological information, such as the wine-making process, are the favourite contents shared (35% of the total number of items coded). The most frequent words used in the total number of words included in the utilitarian communication are ‘temperature’, ‘grapes’, ‘fermentation’, ‘months’ and ‘years’, confirming that the items coded as utilitarian information are related to the wine-making process.

With regard to the hedonic content, the communications contain the organoleptic characteristics of the wine, such as the flavour, the smell and the colour (11% of the total number of items coded). The hedonic content also included the *terroir* (i.e. a set of all environmental factors that affect a crop’s phenotype) information (9% of all items coded), such as the history of the territory in terms of tradition and heritage in specific wine production. The history of the winery is also a relevant topic communicated via QR codes to enhance the perception of the reputation of the winery. Similarly, the most frequent words within this type of communication are ‘history’, ‘note’, ‘zone’, ‘colour’ and ‘fresh’, confirming that the topics communicated refer to the history of the *terroir* and the winery, as

well as to the organoleptic characteristics of the wine. Table 1 and Table 2 summarise the results of the content analysis of QR code content.

PLACE TABLE 1 ABOUT HERE

PLACE TABLE 2 ABOUT HERE

Study 1 provides a duplex contribution. On the one hand, from a methodological point of view, it offers useful information for the development of the stimuli of the experiment (utilitarian vs hedonic). Accordingly, the utilitarian stimulus should include functional information, such as the geographical indication, the grape typology, the alcohol percentage, the age of production, the area of production and its altitude, a description of the process of vinification, the temperature of consumption and food pairing and, finally, the suggested glasses for the wine. Conversely, the hedonic stimulus should include information such as the description of the production traditions, the history of the winery, the passion of the producers and the *terroir* where the vineyards are located.

On the other hand, Study 1 provides useful guidance for wine managers who want to apply QR code technology to their marketing communication.

Study 2

Methodology and procedure

In the second study, we tested the two hypotheses. Specifically, we demonstrate that when the consumer uses the QR code to seek information, the perceived value of the product is greater if the content shared is hedonic, compared to websites delivering hedonic content. In contrast, when the consumer uses the website to seek information, the perceived value of the product is greater if the content shared is utilitarian compared to QR codes delivering utilitarian content. As explained before, these hypotheses derive from the belief that QR consumers' adoption makes the digital information-seeking experience more pleasant compared to the company's information-seeking process via the

firm's website, thereby enhancing the perceived value of the product. Thus, the information-gathering process itself can influence the perceived value of the product, based on a coherence between the technology usage and the content shared. In this research, we argue that emotional content conveyed with a QR code will lead to a higher perceived value of a product because of the hedonic nature of QR codes; websites, on the other hand, are traditionally conceived by users as enabling the retrieval of technical information about a product.

Study 2 is a 2 (content: utilitarian vs hedonic) x 2 (technology: QR code vs website) inter-subject online experiment. We collected data through the Prolific Academic (ProA), a crowdsourcing online platform, launched in 2014, that produces data quality that is higher than other platforms, such as CrowdFlower and Amazon Mechanical Turk (Peer et al., 2017).

Respondents were pre-screened following three criteria. The first criterion was age: the questionnaire was sent only to people aged between 18 and 45. This selection of respondents allowed them to address the study to the age range that mostly uses QR codes, thereby increasing the possibility of reaching a sample that is familiar with QR code technology (Mendelson and Bergstrom, 2013). Because of the relevance of culture in affecting consumers' behaviour, we found it appropriate to focus on people with a common nationality. Thus, when we pre-screened respondents, we selected only Italian consumers, based on the importance that the wine industry has in Italy and the developed culture of wine in this country (Casini et al., 2009). Furthermore, only respondents that knew what a QR code is and knew of its uses were selected through two pre-screening questions (Do you know what a QR code is? Do you know what it is for?). Respondents who did not respect this requirement were excluded from the experiment and were not allowed to continue. We made this decision in order to include only respondents that could really imagine the scenarios to which they were exposed.

This study was conducted in March 2018. Respondents were asked to imagine themselves at the supermarket looking for a wine to purchase. A fictional brand was developed ad hoc for the experiment to avoid any pre-existing brand association effects. The price of wine was controlled (€10)

in the different scenarios, chosen according to the results of Study 1 on QR code content, and was included below the wine images. The average price of bottles of wine examined in the field study was €10.20, which, according to the literature, belongs to the popular premium wine price range (Cesaretti et al., 2006).

Because the study aimed to examine the influence of QR code content on perceived value, different stimuli were used to simulate a wine-purchasing experience. Respondents were shown a picture of the same bottle of wine, of which they could observe the front and the back. Subjects were exposed to four different scenarios, which were randomly allocated. In two cases (for Group 1 and Group 2), the bottle had a QR code on the back of the bottle. The respondents were informed that by scanning the QR code, they would be directed to a certain content. In the other two cases (for Group 3 and Group 4), the bottle did not have a QR code (see Figure 2 in the appendix). In this case, respondents would have access to content by searching directly on the website from their mobile phones. Subjects were also exposed to utilitarian or hedonic manipulation. Following the previous qualitative analysis (Study 1), the utilitarian stimulus included functional information, such as the geographical indication, the grape typology, the alcohol percentage, the age of production, the area of production and its altitude, a description of the process of vinification, the temperature of consumption and food pairing and, finally, the suggested glasses for the wine (see Figure 3 in the appendix). The hedonic stimulus, conversely, included a description of the production traditions, the history of the winery, the passion of the producers and the *terroir* where the vineyards are located (see Figure 4 in the appendix).

Perceived value (the dependent variable) was measured using the five-item validated scale proposed by Dodds et al. (1991). 1. This product is: (very good value for the money to very poor value for the money); 2. At the price shown the product is: (very economical to very uneconomical); 3. The product is considered to be a good buy (strongly agree to strongly disagree); 4. The price shown for the product is: (very acceptable to very unacceptable); 5. This product appears to be a bargain (strongly

agree to strongly disagree). The reliability of the items reflecting perceived value had a Cronbach's alpha of 0.95.

In Study 2 we actively controlled for wine expertise. It is an important construct to keep constant in the model because it can influence the perceived value of the product (Carsana and Jolibert, 2017). We measured it using four items proposed by Goldsmith and d'Hauteville (1998), which had a Cronbach's alpha value of 0.96 (I don't understand much about wine (R); I am confident in my knowledge of wine; Among my friends, I am the wine expert; I know less about wine than others do (R)).

Pretest

First, we pretested whether a QR code is perceived by consumers as being more hedonic than a website. A sample of 31 respondents ($M_{\text{age}} = 31$; 53% male) assembled through the Prolific Academic platform was asked to indicate the degree to which the instrument (QR code vs website) they were exposed to was hedonic. We measured hedonism through the eight-item Likert scale developed by Childers et al. (2001). The results were deemed to be satisfactory, as the t-tests revealed a significant difference between the hedonism of a QR code and that of a website ($M_{\text{QRcode}} = 4.32$, $M_{\text{website}} = 3.88$, $p < 0.01$).

Second, we pretested the manipulation of the content with a sample of 41 respondents. One group from the sample (20 respondents) was exposed to the utilitarian stimulus, and another group (21 respondents) to the hedonic stimulus. The respondents were asked to indicate, on a seven-point Likert scale, the degree to which the content that they were exposed to was utilitarian and the degree to which it was hedonic. The results were deemed to be satisfactory, as the t-tests revealed a significant difference between the groups' stimuli. The respondents who were exposed to the utilitarian stimuli evaluated the content as being significantly more utilitarian than hedonic ($t = 3.53$; $p < 0.05$). The respondents who were exposed to the hedonic stimuli evaluated the content as being significantly more hedonic than utilitarian ($t = -2.10$; $p < .05$). Hence, this manipulation was adopted in the experiment.

Main findings

Two hundred and fifty-five participants took part in Study 2 (male 46.2%).

In order to test our hypotheses, we performed an analysis of variance (ANOVA), the statistical technique used to check whether the means of groups are significantly different from each other. ANOVA results show a non-significant relationship between the two main effects (which were not hypothesised but nonetheless included in the model), that is, content ($F(1, 249) = .593$, ns) and technology ($F(1, 249) = .394$, ns), indicating that there is no difference between utilitarian and hedonic content or between QR code and website technologies.

However, the model showed a significant interaction effect ($F(1, 249) = 4.048$, $p < .05$), supporting our hypothesis (H1) that when a consumer uses a QR code to seek information, the perceived value of the product is greater if the content shared is hedonic compared to consumers that view hedonic content through a website. Conversely, when a consumer uses a website to seek product information, the perceived value of the product is greater if the content shared is utilitarian compared to consumers that view utilitarian content through a QR code. Thus, H2 is also confirmed. We also checked the effect of wine expertise on perceived value and the results show it is significant ($F(1,249)=41.303$, $p < 0.01$). Table 3 summarizes the result of the analysis. A plot of the interaction is presented in Figure 1, endorsing the directionality of our hypothesis.

PLACE FIGURE 1 ABOUT HERE

PLACE TABLE 3 ABOUT HERE

General discussion

Over the last few years, consumers have had little motivation to engage with technologies that allow pull communication (Atkinson, 2013). However, the introduction of QR codes and other technologies has simplified the information search process (Dou and Li, 2008), making this course much more appealing for consumers (Okazaki and Barwise, 2011). Therefore, new technologies have provided

new opportunities for companies to engage consumers and influence their value perception and purchase decisions. In using QR codes, companies can now communicate regularly and cost-effectively with consumers, as this method requires little or no cost to modify content embedded in the codes as needed (Ryu, 2013). Therefore, firms should strategically implement the codes in order to improve consumers' shopping efficiency.

Both scholars and practitioners have started to investigate how to take full advantage of these new tools (Lamberton and Stephen, 2016; Wang et al., 2016). This study provides empirical evidence endorsing the effect of QR code communication on consumers' perceived value, focusing on the content that can be conveyed by means of this tool

Previous research has largely considered the influence of digital content on consumer behaviour and posited that both utilitarian and hedonic communications play a role in consumers' value perception (Ryu et al., 2010; Sheth et al., 1991). In particular, referring to QR codes, Atkinson (2013) suggested that content should be created carefully to provide meaningful, usable information for consumers and that the tendency of 'market mavens' to share information should be harnessed by providing QR code content that is relevant, interesting and easily passed on to other consumers (Atkinson, 2013, p. 387). Chiu et al. (2014) looked at digital content, focusing on word of mouth as a dimension of commitment, and they found that people are more willing to share marketing messages with others when the message (the 'say what' factor) contains higher degrees of utilitarian (e.g. product quality and useful information) or hedonic (e.g. entertainment and self-expression) content. In the context of online shopping, Overby and Lee (2006) investigated the effect of utilitarian and hedonic content on consumers' preferences and purchase intention and showed that consumers perceive utilitarian value and hedonic value as being important in their preference for online retailers and future intentions. To this end, this study enhances the importance for companies of sharing utilitarian and hedonic content depending on the technology adopted.

Implications, limitations and further research

Traditionally, research on technology innovation has been investigated through the theoretical lens of the technology acceptance model (TAM). The TAM tests the effects of the introduction of a new technology in retail settings by manufacturers or directly by retailers on employees and consumers, focusing on the utilitarian aspects of the technology itself (Saber Chtourou and Souiden, 2010). Thus, the focus of the TAM refers to the specific technology and its implications in terms of processes and behaviours. Recently, several studies have called for the inclusion of hedonic motivations among the predictors of technology adoption (Saber Chtourou and Souiden, 2010), because utilitarian motives are not sufficient to explain consumer behaviour (Childers et al., 2001). The application of UGT acts in this direction, increasing the interest in communication, related to technology. From this perspective, QR codes enable brands to interact with consumers, pulling them into action (e.g. scanning a QR code to retrieve further information about the product and the brand). Hence, this study enriches the literature about mobile marketing in retail settings, adopting UGT theory to study QR codes and website domains. This study suggests that UGT theory can shed light on how the content of technology and the process of using technology can motivate the use of technologies for information seeking and improve the perceived quality of products.

This study also contributes to the literature on consumer value perception calling for research on the relationships between perceived value and other brand- and product-related constructs. Our study provides empirical evidence that the presence of QR codes with the appropriate type of content can affect the perceived value of products (Pansari and Kumar, 2016). Therefore, integrating technologies that allow pull communication, such as QR codes, helps brands to influence shoppers best on their path to purchasing (Shankar et al., 2016).

This study has multiple managerial implications. First, the qualitative analysis provides empirical evidence on the actual use of QR code communication across the wine industry. Although the analysis focused only on the wine industry, it is functional in the exploration of different industries within the food sector because it provides a key interpretation of the main content that food consumers expect to find through QR codes. In particular, wineries that want to convey utilitarian information should

explain the features of the territory of origin, the typology of grapes, and other oenological information, such as the wine-making process. Conversely, wineries that want to share hedonic information should focus on organoleptic characteristics of the product, such as the flavour, the smell, the colour and the *terroir* (i.e. a set of all environmental factors that affect a crop's phenotype) or the history of the territory in terms of tradition and heritage.

Second, the experiment suggests that managers should implement QR codes to increase the perceived value of their products. Given that the analysis shows that consumers rarely scan QR codes, the issue of communication becomes crucial. Brands and products need to interact with consumers to increase the products' value perception among consumers, which in turn affects product choice. In this sense, this study nurtures the discussion arguing that overall useful or useless tools do not exist. Indeed, the utility conferred to tools based on users' expectations and needs is crucial to their effectiveness. Companies that are effectively enhancing their efforts to empower and involve their customers (Harmeling et al., 2017) may consider QR codes to be a useful tool for achieving this goal. Our research helps managers facing the quandary of identifying the best strategies to convey content through QR technologies. This is particularly relevant to wine marketers, who could reduce the risk of unsuccessful communication efforts, creating more appropriate messages (hedonic based) using this digital touchpoint. Managers are now aware that consumers – in order to deepen their knowledge about technical facets of wine products – can choose to use different tools (i.e. website or QR codes) to retrieve information about a firm. Accordingly, the customisation of the communication based on the technology adopted is crucial given that meeting consumers' expectations directly influences the perceived value of a product. Since consumers are influenced differently by the same communication based on the technology adopted, companies need to segment their communication strategies depending not only on consumers, but also on the technology used to deliver the messages. For instance, this study suggests that for premium food products such as wine, it can be worthwhile focusing on hedonic dimensions of communication if the technology adopted is QR code. Given the entertaining nature of QR codes, consumers expect products to be described according to a

storytelling flow that develops more complex meanings and overcomes mere oenological characteristics of the product.

In other words, and assuming a broader perspective, executives, in light of our research, now have new insights that will help them to deal with the following relevant and constant managerial issues:

a) which content (hedonic or utilitarian) should be digitally conveyed to their target audience; b) which instrument should be selected (QR code or otherwise); and c) which consumer response should be expected (levels of perceived value).

Limitations and further research

Despite the relevance of both theoretical and managerial implications, this study has some limitations that suggest new research directions.

The first limitation is related to the contents we tested. In our research, we considered hedonic or utilitarian contents. However, since companies convey also mixed contents of hedonic and utilitarian features, it could be useful also to test the effect of mixed contents on consumers' perceived value. Different effects on consumer behaviour can be also tested considering different contents on the back label, either utilitarian or hedonic, or some mix of both.

The analysis was conducted in Italy, where the culture of wine is widespread even though the wine industry is becoming more global (Campbell and Guibert, 2006). Given that the adoption of QR codes has exploded in Asian countries such as China, it would be relevant to analyse and compare smart consumer behaviour at an international level.

Further investigations could analyse the importance of the introduction of other technologies that allow pull communication, controlling for the types of products and brand names. The wine industry is characterised by product brands with low awareness apart from specific cases (i.e. Sassicaia and Ornellaia), so consumers' expectations of brands' or products' communication may change depending on the power of the brands. Furthermore, future investigations in a broad range of different

industries can increase the generalisability of the results, thereby overcoming the peculiarities of the wine industry.

The study is focused on pull communication tools and their effect on the perceived value of a product. However, there are other sources of information that consumers can consult in store, such as sales assistants, or they can consider other attributes as a proxy of product value (e.g. price, brand or country of origin). New researches could also consider these elements in order to provide a complete overview of consumers' wine value perception in the store.

Since this study underlines the use of QR codes for hedonic purposes, one aspect that could be further researched is the novel aspect of this smart technology. In this study respondents were asked to indicate, on a seven-point scale (1 = never; 7 = always), how often they scan QR codes before and/or after their purchases. The majority of the respondents were not used to scanning QR codes either before (the mean of the answers was 2.07) or after (the mean of the answers was 2.34) they make a purchase. Also, the overall mean of wine expertise was 3.40, a value that defines respondents as being a novice/moderately expert in wine, with a variance of 1.83. Therefore, do consumers simply use these QR codes due to their novelty and the curiosity that lies ahead once they scan? Will they continue to use QR codes in the future or at least have any intention to do so? Does the adoption of QR code depend on the consumer's age? We think these are important questions for marketers and would provide further theoretical and practical implications. A longitudinal perspective may help to find this out.

Finally, we focus on the value perception of products, which literature indicates is a crucial factor that affects consumer intentions (Ponte et al., 2015; Konuk, 2018). However, we do not empirically test whether it actually leads to purchase intent or other behavioural outcomes in the context of pull communication tools. Further research should explore perceived value consequences for consumer intentions and advance the literature in this sense.

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Table 1 – Typology of contents transmitted through QR codes

Typology of contents	Percentage of items coded
Utilitarian contents	
Utilitarian contents/territory of origin	13.5%
Utilitarian contents/others	11.5%
Utilitarian contents/typology of grapes	10.4%
Utilitarian contents/indications for consumption	9.7%
Utilitarian contents/ingredients	7.6%
Utilitarian contents/food pairing	7.6%
Utilitarian contents/sustainability and CSR	1.0%
Total utilitarian contents	61.3%
Hedonic contents	
Hedonic contents/organoleptic characteristics	11.5%
Hedonic contents/terroir	9.2%
Hedonic contents/history of the winery	7.4%
Hedonic contents/traditions	5.3%
Hedonic contents/others	4.8%
Hedonic contents/customers' reviews	0.5%
Total hedonic contents	38.7%

Table 2 – Ten most frequent words in utilitarian and hedonic contents

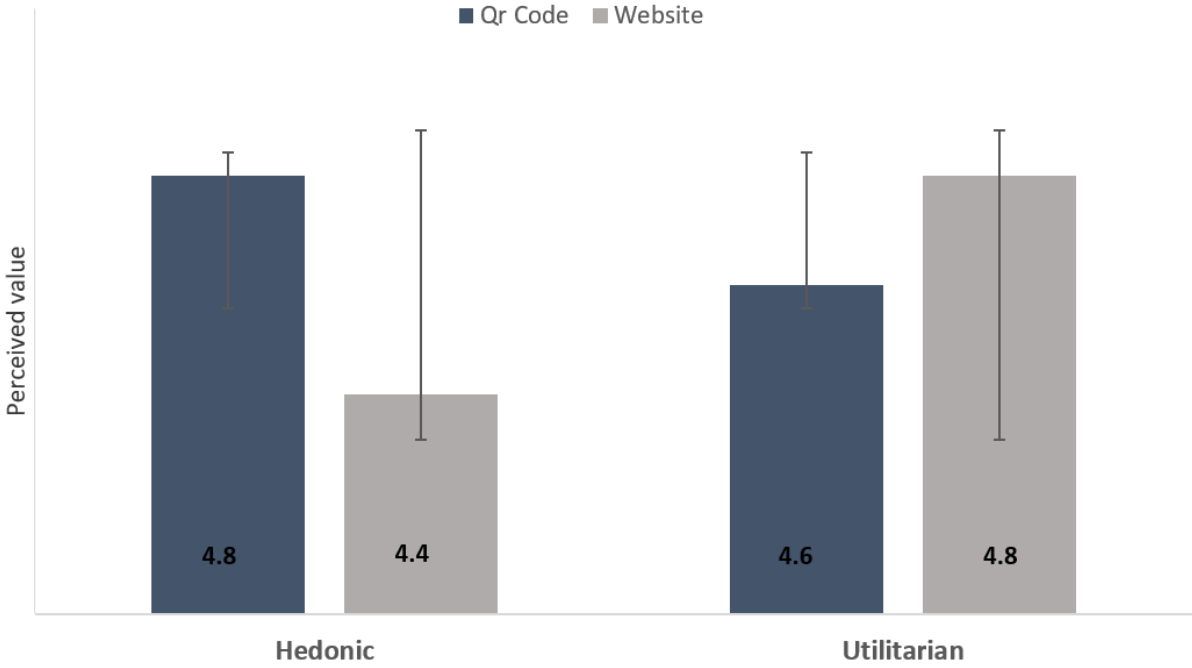
Word	Mentions	Weighted percentage* (%)
Utilitarian		
Temperature	46	1.19
Grapes	37	0.96
Fermentation	35	0.91
Months	26	0.67
Years	22	0.57
Refinement	19	0.49
Grape harvest	19	0.49
Controlled	18	0.47
Sangiovese	18	0.47
Plates	17	0.44
Total		6.66
Hedonic		
History	23	0.57
Note	21	0.52
Zone	19	0.47
Colour	16	0.40
Fresh	16	0.40
Grapes	15	0.37
Terroir	14	0.35
Production	13	0.32
Perfume	13	0.32
Quality	13	0.32
Total		4.04

* The weighted percentage is calculated considering the total amounts of words embedded in hedonic and utilitarian categories.

Table 3. Analysis of variance summary table

Source	df	F	Significance
Wine expertise	1	41.3	0.00
Content	1	0.59	0.44
Technology	1	0.39	0.53
Interaction effect	1	4.05	0.04
Total	254		

Figure 1 – Interaction plot



Appendix

Figure 2 - Bottle presented to respondents



This bottle has been shown to Group 1 and Group 2. Group 3 and Group 4 has been provided with the same bottle without the QR code.

Figure 3 - Stimuli presented to Group 1 and Group 4

CHIANTI CLASSICO VENERE DOCG



Geographical indication: Chianti DOCG

Grapes: 100% San Giovese

Alcohol percentage: 13.5% vol.

Year of production: 2013

Place of origin: Castelnuovo Berardenga

Altitude: 350 mt.

Vinification: After fermentation at 28 ° C / 30 ° C, maceration is done in steel tanks and lasts for 12-15 days. In March the wine is transferred into oak barrels and in a small percentage into a barrique, where it matures for 12 months. Then assembling and bottling will occur. The wine will rest for at least 3 months before getting distributed.

Temperature of consumption: 18° C.

Food pairing: grilled red meats, game and seasoned cheeses, first courses and soups.

Glass: tulip wine glass

Figure 4 - Stimuli presented to Group 2 and Group 3

CHIANTI CLASSICO VENERE DOCG



"Our production today has almost a thousand years behind it.

The history of our wine is born from the deep passion for the earth, passed down for generations"



Our wine is produced in one of the most suggestive corners of Tuscany, surrounded by bright and large hills, where it is easy to get lost among olive trees and vineyards, in search of historical treasures such as the towers of San Gimignano. Our grapes are limpid like the crystals produced by the hands of local craftsmen.