

QUICK RESPONSE (QR) CODE AND GREEN PRODUCT PURCHASES: EVIDENCE FROM JORDANIAN CONSUMERS

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ABSTRACT

Information pertaining to green products can significantly impact purchase behaviors. The listing of QR codes can significantly enhance the worth and value of green products' information. In this regard, we have assessed the placement of QR codes that offers such product information. On the premise of innovation diffusion theory, the current study has attempted to establish a model for better comprehension of the role and influence of QR codes on their purchase by perspective consumers. The findings outlined that effective usage of QR codes can significantly boost consumers' purchasing the green products. This is due to the fact that QR codes offers numerous benefits to the users to help make a better informed purchase decision. For example, QR codes provides information pertaining to cost and related components.

INTRODUCTION

According to Majid and Russell (2015) that the global demand for green products has tremendously gone up. It's been four decades when environmental concerns started gaining attention in the civic policy and commercial discourses in 1960s. As per survey conducted in USA, nearly 72 percent of its citizens believe the purchase of green products to be important (Green Brands Global Insights, 2011). Consequently with regards to purchase decisions, 17 percent of its adult population are conscious buyers and have a great deal of care, ensuring that they buy green, healthy and environmental friendly products (National Marketing Institute, 2008). Despite the fact that people are actually willing to help contribute in protecting the environment through green purchases (Cleveland, Kalamas, & Laroche, 2012), yet they are still not confident about the potential benefits and prospects of green products (Polonsky, Vocino, Grau, Garma, & Ferdous, 2012).

Over the past few years, a lot of empirical attention is given towards how consumers behave and react towards green products (Koller et al., 2011). Scholars have debated over the definition of green product, particularly in academic literatures (Baumann et al., 2002; Durif et al., 2010). According to Dangelico and Pontrandolfo's (2010) green products are the ones that collectively have strategic environmental features and perks across the life cycles that they go through (before usage, during usage, and after usage). The author has further explained that green

products influence environment far less compared to conventional products and also offer somehow the same competitive performance. In this regard, consumers should be facilitated to be able to access such information about the products prior to making any purchase. Technology can be a big help in this regard, helping to avoid any problems such as limited availability of space on the product packaging (GSI, 2009).

Alternatively, two approaches can be viewed as feasible (da Silva et al., 2010). The first one is providing ID or a combination of numbers for every product for customers to access product relevant information through machines at the Kiosk or through using internet via smartphones or other mobile devices (Chen et al., 2008). On the contrary, consumers may be provided with ID or an identification number such as the one listed on the bar code to act as a 'Quick Response' code. Customers may access the information through using their own mobile devices by scanning the retailer's printed QR code. This can be a more responsive option hence, providing more prompt and effective information to consumers. Out of the several types of codes used in the market these days, QR-codes have been the most significant and highly used technology when it comes to mobile tagging. This is mainly due to their notable features such as efficiency, functioning and time responsiveness (Kan et al., 2009). QR scanning helps users to access product information on a more reliable manner. Although QR code is a new technology and therefore may incur some barriers when it comes to their implementation as majority of people prefer accessing web sources to obtain information pertaining to their purchases and thus rely less on other such sources. This is merely due to the reason that technology and its usage has become an essential part of people's lives (Kanchanapibul et al., 2014).

Despite the fact that the market share of green products has remained significantly low, popular research studies on the topic have indicated consumers' interest towards green products (Rousseau & Vranken, 2013; Eneizan & Wahab, 2016). Accordingly, regardless of their interest in green products, consumers' purchases of these products have also remain minimal compared to conventionally sold commodities. Sadly, there are some categories of green products that have a very little market share such as food and house hold items. According to a study conducted in United States, only 3 percent of the total food bought in the country in 2006 comprised of green products. Similarly, only 2 percent of the household items purchased by consumers during the same year were organic and environmental friendly. The report also outlined that hardly 2 percent of the vehicles sold in USA in 2007 had hybrid technology. Sheth et al., (2007) have blamed inappropriate marketing behind the low sales of green products. The authors have said that marketing campaigns need to highlight the prospects and perks of green products.

Henceforth, the current attempt will help to better comprehend with the role of QR codes in enhancing the market of green products. Information disseminated through using QR codes can help reduce market barriers because of the lack of information.

LITERATURE REVIEW

QR or quick response codes at present have become more of a marketing strategy and tactical product tool rather than a supply chain component. Dozens of smartphone applications have been developed for scanning and reading QR codes such as Quick Scan by iHandy, TapMedia by Dedoware, RedLaser by eBay and so on. Though majority of the QR applications are available free of cost to people globally yet, some are available with a little charges ranging between \$1.99 to \$4.99 (Higgins, Wolf, & Wolf, 2014).

Questions can be easily taken for debate by people that marketers may get in more habitual of the tools rather than consumers. Even then, the significance of QR codes cannot be avoided as it

has taken the transformed conventional marketing into highly interactive one (Shin et al., 2012). Information about the products is of core significance for consumers to make informed decision and QR codes can be of great support and facilitation in this regard (Raju et al., 1993).

Empirical research on the topic of mobile marketing is still in its initial stages. Researchers have outlined that age has been considerably influencing in this regard as there is a variation among people who are responsive towards digital media and vice versa (Persaud & Azhar, 2012). According to Persaud and Azhar (2012), through mobile marketing, companies can significantly create value for their products across the different consumer segments. According to Comscore (2012), the usage of quick reference (QR) codes went up to nearly 90 percent during 2011-12. On an average 3 out of every 4 consumers were noticed to be using QR codes for product information retrieval. Notably, around 20 million people in USA used their own smartphones to scan and access information from the QR codes (Comscore, 2012). QR have become an important and interesting area of further research and development particularly in the retail business across the globe (Okazaki & Barwise, 2011). Bellman et al. (2011) reported that mobile application can be of great value and importance in connection to making it more attractive and appealing. Such applications can also help companies to alter purchase decisions through providing appropriate and timely information about the products.

Research model

The present research study developed the model to examine the role and application of QR codes for providing green product information through Innovation Diffusion Theory (IDT) (Rogers, 2003). Under the perspective of this theory, QR codes entail an innovative feature through which consumers can retrieve green product information to make informed purchase choices.

Perceived usefulness is therefore tested in this study which according to Davis (1989) denotes to the extent to which a person perceives that using any specific technology or system will enhance performance. In the context of current study perceived usefulness refers to the extent to which consumers believe that the QR codes will help them to enhance their potential in attaining right information regarding green product purchasing.

QR codes can significantly help consumers to acquire relevant information about the green products and therefore with greater availability of green product information, there are chances that purchases of such commodities will go up. Thus, consumer intentions towards buying green products can be influenced through this channel. Studies including Kamis et al., (2008) and Tellis and Gaeth (1990) have supported this explanation in the context of marketing and information system research. Hence the following statement/relationship was hypothesized in the current study:

H1: Perceived usefulness of QR will be significantly related to green products' purchase intentions, after the retrieval of relevant information.

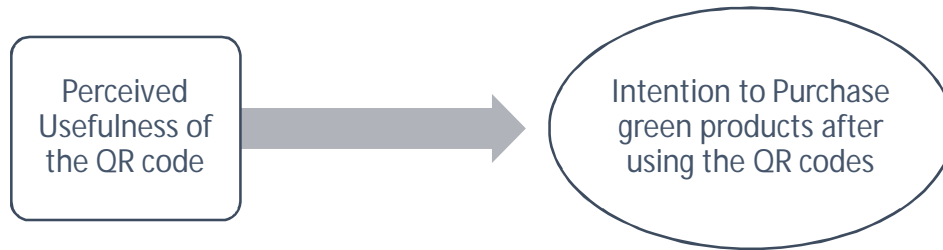


Figure 1: Research model. Note: QR code stands for Smartphones.

METHODOLOGY

Questionnaire technique was deployed to acquire first hand primary information for the study. Items developed by Kowatsch and Mass (2010) were adapted for examining perceived usefulness. Accordingly, one item related to green product purchase intention was used (Kowatsch & Mass, 2010). 7 point likert scale was used where, 1 ranked as extremely disagree and 7 as extremely agree. 150 customers were randomly sampled for this study in Jordan out of which, 107 questionnaires were received back responsively.

Table 1 Questionnaire instrument

Construct and items	References
<p>Perceived usefulness of the QR code</p> <p>PU1 Using this QR code can improve my performance to acquire green product information.</p> <p>PU2 Using this QR code can improve my productivity to acquire green product information.</p> <p>PU3 Using this QR code can improve my effectiveness to acquire green product information.</p> <p>PU4 I find using this QR code useful to acquire green product information</p>	Kowatsch and Maass, 2010
<p>Intention to purchase after using the QR code</p> <p>IP I would purchase a green product after I was using the QR code for green product information acquisition</p>	Kowatsch and Maass, 2010

RESULTS AND DISCUSSION

This section describes the data analysis of this study. First the description of the respondents such as their gender and age. Next, the regression analysis is conducted to test the hypothesis of this study.

Descriptive analysis

Gender

Table 2 illustrates that the majority of participants are males, with a percentage of 60.5% which equals 89 male and the female percentage 39.5% which equals 58 female respondents.

Table 2 Gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Male	89	60.5	60.5	60.5
Female	58	39.5	39.5	100.0
Total	147	100.0	100.0	

Age

Table 3 shows that the respondent age is divided into four main sets. The dominant set expresses the age between 36 to 45 years, which is accounted to 61 frequencies or 41.5%. The second largest set represents participants 26 to 35 years and accounted to 42 frequencies or 28.6%. The minority goes to customer who is less than 25 years with a frequency of 21 or 14.3 %.

Table 3 Age

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid less than 25	21	14.3	14.3	14.3
26-35	42	28.6	28.6	42.9
36-45	61	41.5	41.5	84.4
46 and above	23	15.6	15.6	100.0
Total	147	100.0	100.0	

Regression Analysis

The purpose of conducting regression analysis is to know the exploratory power of the model and to test the hypothesis of this study. First the R square presented in Table 4 is .297 which indicates that the model is able to explain 29.7%. In other words, the usefulness is able to explain 29.7% of the variation in the purchase.

Table 4 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.545 ^a	.297	.292	1.15042

a. Predictors: (Constant), Usefulness

The results of the analysis can be seen in table 4, the coefficient between perceived usefulness and the intention to purchase a green product after using the QR ($b = .545$, $p < .000$) is positive and significant. Therefore H1 is supported. The result of this study is also in consonance with past research (Kowatsch and Maass, 2010). The lack of information about green products could be effect negatively on the purchasing intention of customers this is because the green product will be a new and opaque.

Table 5 Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	3.706	.128		28.946	.000
Usefulness	2.257	.289	.545	7.820	.000

a. Dependent Variable: purchase

Contribution

The study has forwarded numerous contributions; first of all, customers can be influenced to purchase green products through motivating them to access QR codes for relevant information. This will potentially help to eliminate the fear and skeptics about the green products amongst people in both developed as well as developing economies regarding green products and their viability. In order to address this issue, the current study recommends the frequent use of QR codes by the perspective customers for accessing information about the products. In such a situation, customers will be more confident and willing to purchase green products since they will be well aware of their features and benefits.

Conclusion and future work

It has been empirically proved that significant availability of information on products pertaining to the green products especially can help boost the purchases. This becomes more important when we talk about online purchases. The value and worth of information provided through QR can be of great significance which customers can access through using specific mobile apps to help customers learn about the product in detail.

The current study has outlined towards the viability of product information in acquiring more customers through facilitating the information process via QR codes. Accordingly, businesses trading in green products can obtain a significant value by increasing sales in this regard. QR codes can make a considerable impact on harnessing the impact of positive information availability and access on customers thus, building their confidence to buy more green products. Potential researchers in the area may focus on investigating the issue across the borders in different cultural and organizational settings to see how this relationship results. Similarly, future studies may also consider other factors in order to help smoothen the quality of services.

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