The Business Value of Green IT in Price Premiums

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While there are many business and ethical reasons to employ Green IT practices, our study looks at this issue from the consumer's point of view. Specifically, it asks whether online consumers will pay more to purchase from a company that they perceive to be socially responsible for environmental causes. Our findings have practical implications for Green IT as companies look for ways to differentiate themselves from competitors.

INTRODUCTION

Every business tries to position itself to be able to attract potential customers and command price premiums in the open market. In the highly competitive online marketplace, building a sustainable competitive advantage is the Holy Grail of every e-business. Several companies have achieved a competitive advantage because of their environmental practices. The Body Shop has been recognized for its consistent support for environmental responsibility. Making biodegradable products, The Body Shop supports self-actualizing communities in the Third World, good causes for environmental awareness, and social responsibility. The company champions these values, which in turn help increase its sales and develop strong customer relations (Hartman & Beck-Dudley, 1999 and Sillanpaa, 1998). Ben & Jerry's Ice Cream also advocates what it calls environmental stewardship and has attracted many loyal customers that agree with the company's values. Likewise, Interface Inc.—a billion-dollar international carpet manufacturer—has introduced a number of environment-friendly processes that not only save money but also help it win new business. The Gap, Inc. invited Interface to bid on its carpeting services specifically because of Interface's environmental initiatives (Daviss, 1999).

Each of these companies has been able to build a niche market with a group of customers where both parties share certain values. The sharing of values can engender trust by the customers in the company. The increase in trust enhances a customer's willingness to purchase goods from the company, pay price premiums, or get involved in other cause-related activities. In other words, these companies make an effort to appeal to their customers by supporting common values and cultivating the ensuing trust and loyalty.

Price premiums are a highly sought-after goal for businesses. They refer to the willingness of customers to pay more for a given product offered by one company than for the same or a similar product offered by its competitors. Businesses strive for price premiums because they increase their profitability

and economic rents. The ability to charge price premiums typically relates to a differentiation strategy, where the product offered is perceived to possess unique features or benefits that provide customers with superior value added. Since customers consider the product unequaled, its price elasticity of demand tends to be reduced and customers are more likely to be loyal. Among the means to implement a differentiation strategy, and hence to charge price premiums, is "incentives based on subjective measures" (Porter, 1985). We intend to examine the subjective measure of environmental stewardship for e-business.

People are known to donate their time and money to various causes they strongly believe in. Religious and non-profit organizations oftentimes depend on the goodwill of individuals and their voluntary contributions to the common cause. Whether online or in person, the effect of value congruence on fund raising is critical for the survival of such organizations. Online donations to non-profit organizations were estimated at $100 million by Higgins (2002).

More recently, this type of practice has been extended to the realm of cause-related marketing. It is reported that almost half of non-profit organizations in the United States have started business ventures to generate revenues (Brancaccio & Cole, 2003). Many businesses also have been using cause-related marketing to appeal to their customers. Corporate support of social causes exceeds $1 billion annually (Barone, et.al., 2000). Cause-related marketing is now regarded as an effective means to differentiate companies from their competitors.

In this study, we explore the degree to which value congruence based on environmental stewardship can enhance the ability of an e-business to charge price premiums. We argue that if an individual and an organization have congruent views for what is environmentally best for society, and if the individual believes the organization helps to advance those views, then the individual is likely willing to pay more for the organization's products and services (i.e., they value the increase in social welfare over the economic utility gained from lower prices). We formulate the following three hypotheses to study this phenomenon.

H1 (Environmentally Friendly → Price Premium): *Higher levels of perceived environmental stewardship increase the price premiums consumers are willing to pay.*

H2a (Environmentally Unfriendly → Refusal to Purchase): *Higher levels of perceived environmental negligence decrease the intention of consumers to purchase from a company.*

H2b (Environmentally Unfriendly → Price Penalties): *Higher levels of perceived environmental negligence increase the price discount that consumers will demand if they are willing to purchase.*

RESEARCH DESIGN

In order to test the proposed hypotheses, we conducted an experiment in which participants were presented with three scenarios designed to elicit different responses regarding a fictional online retailer of digital goods. It is important to present a realistic but fictional company to keep the scenario plausible and avoid the possible distorted responses from subjects who might already have exposure to, and hence an existing perception about, an actual company. It is also important to present a company that appeals to our subjects and that they can relate to. Therefore, we created a fictional company Media Magic—a manufacturer and retailer of MP3 players and a seller of downloadable digital songs and movies that can be played on their devices. There are several established companies that resemble certain aspects of Media Magic's business, including Apple (iPod and iTunes), Microsoft (Zune), and Amazon (digital downloads). The digital goods used in this research are IT relevant, as they are either downloaded digitally or electronic products sold over the Internet.

To avoid a response bias due to complete unfamiliarity with and possible fears from dealing with a totally unknown company, respondents were given some basic facts about Media Magic. This is consistent with what one might expect from a company of this nature. This treatment allows us to focus on the impact of environmental practices and control for both prior exposure to a known company and the risk of dealing with an unknown company with no track record. The basic facts provided to our subjects stated that Media Magic was founded in 2001, has over $100 million in annual sales, has products that are consistently rated very high by consumers, and has products that are reasonably priced.

After the presentation of basic facts and some product information, subjects were told that they are looking for a gift for a close friend, and that they have decided to buy an MP3 player along with a downloaded song and a downloaded movie as their gift. After a brief description of the features they want for the gift, they are asked to list the highest dollar amount they would be willing to pay for each of the described products (i.e., MP3 player, downloaded song, and movie), or to record a zero if they would not buy at any price. We called this baseline scenario the neutral group, because subjects at this point have no knowledge of the environmental practices of Media Magic.

Next, respondents who had been randomly assigned to group A were told that their favorite magazine had written an article about Media Magic's environmental practices. In this case, the article praised the company for sound environmental practices such as: Media Magic avoids the use of toxic elements in its products; it supplements its energy needs with renewable power; it has a major initiative to be "good stewards" of the environment; it conducts independent audits of its environmental practices; and it donates a share of its profits to help green causes. Subjects were then asked to answer the same price questions as previously.

Then subjects in group A were told that instead of the article praising Media Magic's environmental practices, their favorite magazine had written a very different story illustrating how the company damages the environment. Its harmful practices include: Media Magic uses toxic elements in its products; it recklessly dumps the waste; it lobbies Congress to lower environmental standards; and it builds its factories in the Third World to avoid stringent environmental laws. The article also notes that Media Magic has been repeatedly fined for violations of environmental regulations and it has often been the target of protests led by environmental groups. Subjects were then asked the same questions regarding their perceptions of Media Magic and their willingness to buy the gift from Media Magic. For the subjects randomly assigned to group B, the order of supporting and opposing magazine articles was reversed to rule out any possible order effect.

Environmental values are a suitable topic to study for several reasons. First, it is on the mind of many consumers today, with growing concerns about global warming, pollution, animal extinction, and other tragedies looming large in society, science, politics and press. Unlike other values a company could project (e.g., abortion, equal rights, and morality), the environmental issue is expected to be less divisive with recent evidence indicating the dire consequences of ignoring this issue. While there has been some debate about how much regulation is needed to protect the environment, few people would argue that they want to destroy the environment and most would agree that some measures are required to limit harmful environmental impacts. This makes it easier and more practical for companies to take a positive stance on this issue.

Second, while there are differences in the degree of concerns and passion among people for environmental causes, it is possible to foresee which companies are likely to be perceived as value positive or value negative by the majority of our subjects. This makes it possible to measure effect strengths and directions for different groups. Environment-related causes also make for a "safer" value for an e-business to employ in the marketplace, compared with other more controversial values that might drive away as many customers as they attract (e.g., abortion and same-sex marriage). Thus good environmental practices are more likely to be adopted by companies searching for a competitive advantage, making it relevant to study for an e-commerce setting.

Third, environmental values at the present time have a strong appeal to young people who are also more likely to purchase MP3 players and download digital movies and music. This potential fit makes it especially salient to use environmental causes for our fictional company Media Magic. There has been a significant amount of discussion and movement regarding environmental values in the technology sector these days. For example, Apple had to defend its environmental record at a shareholder meeting where protestors picketed their "toxic trash", while HP and Dell cut the cost of recycling their computers for customers in response to Earth Day Campaigns (Fried, 2005). In its corporate philosophy, Google also claims to be a major supporter of clean renewable energy and works to reduce its carbon footprint. All of these cases make perceptions about the environment a good choice for this study where we try to understand if, and to what degree, these perceptions about Green IT matter.

DATA ANALYSIS AND RESULTS

The experiment was conducted online at two large comprehensive public universities in the United States, one on the east coast and the other on the west coast. The sample includes masters, undergraduate, and professional development students, as well as both business and non-business majors. In this experiment, subjects composed of undergraduate, masters, and professional development students are considered an ideal target group. This age group is one of the largest users of MP3 players and is also more likely to download music and movies compared with other demographic groups (Ipsos Research, 2006). Since subjects were asked to behave in their normal capacity, the use of students is considered appropriate (Gordon, et.al., 2002). Several prior studies have also used students as subjects (Galletta, et.al., 2006 and McKnight, et.al., 2002).

In all, there were 255 respondents (63% males and 37% females) who completed surveys that were usable. The average age was 24 with a range from 18 to 66. The average annual household income was 3.45 on our scale, which corresponds to the range of $40,000 to $80,000 and is inclusive of the median U.S. family income of $46,326 (Walt, et.al., 2006).

Table 1 contains information from *t*-tests to check if there is a significant difference between the groups.

Since a large number of respondents said they would not buy from an environmental unfriendly organization at any price, the differences in the means reported in Table 1 involving those organization are difficult to interpret . In Table 2, only nonzero prices are used to calculate the means. This provides a more realistic estimate of the price discount that must be offered to overcome the perception of being environmentally unfriendly.

TABLE 1
PAIRED *T*-TEST FOR DIFFERENT ENVIRONMENTAL STANCES
(ZERO PRICES INCLUDED)

Var Name	Item	Mean #1	Mean #2	Mean Dif	*t*	Sig
Friendly to Neutral		*Friendly*	*Neutral*			
Price1	Song	1.22	0.95	0.26	4.720	0.000
Price2	Movie	6.41	5.56	0.85	5.686	0.000
Price3	MP3 Player	142.18	133.14	9.04	3.538	0.000
Friendly to Unfriendly		*Friendly*	*Unfriendly*			
Price1	Song	1.22	0.48	0.74	8.605	0.000
Price2	Movie	6.41	2.85	3.55	12.038	0.000
Price3	MP3 Player	142.18	53.47	88.71	14.802	0.000
Neutral to Unfriendly		*Neutral*	*Unfriendly*			
Price1	Song	0.95	0.48	0.47	9.088	0.000
Price2	Movie	5.56	2.85	2.71	10.548	0.000
Price3	MP3 Player	133.14	53.47	79.68	13.805	0.000
Number of observations = 255						

TABLE 2
PAIRED *T*-TEST FOR DIFFERENT ENVIRONMENTAL STANCES
(NONZERO PRICES ONLY)

Var Name	Item	Mean #1	Mean #2	Mean Dif	*t*	Sig
Friendly to Neutral		*Friendly*	*Neutral*			
Price1	Song	1.36	1.07	0.29	4.821	0.000
Price2	Movie	7.01	6.14	0.87	6.274	0.000
Price3	MP3 Player	153.63	142.65	10.98	6.559	0.000
Friendly to Unfriendly		*Friendly*	*Unfriendly*			
Price1	Song	1.36	0.90	0.46	5.653	0.000
Price2	Movie	7.01	5.43	1.58	7.226	0.000
Price3	MP3 Player	153.63	104.87	48.76	8.476	0.000
Neutral to Unfriendly		*Neutral*	*Unfriendly*			
Price1	Song	1.07	0.90	0.17	3.620	0.000
Price2	Movie	6.14	5.43	0.71	4.005	0.000
Price3	MP3 Player	142.65	104.87	37.78	7.065	0.000
Number of observations varies from 130 to 238.						

The *t*-tests show a significant difference (at the 0.000 level) between every two scenarios for each type of product. For example, the environmentally friendly scenario shows an increase of $0.29, $0.87, and $10.98 over the neutral scenario for the song, movie, and MP3 player, respectively. These correspond to average increases of 27%, 14% and 8%. Note that while the percentage increase of the friendly scenario over the neutral scenario drops as the absolute price goes up, the total dollar amount of the price premium continues to go up.

We see an even larger difference between the friendly and unfriendly scenarios, where respondents were willing to pay $0.46, $1.58 and $48.76 more for the song, movie, and MP3 player, respectively, in the friendly scenario than in the unfriendly scenario. These correspond to 51%, 29% and 46% increases in the prices consumers are willing to pay for the friendly scenario when compared to the unfriendly scenario.

In addition, the data show that there is a substantial decrease in the price that consumers are willing to pay for a product from the environmentally neutral scenario versus the environmentally unfriendly scenario, with drops of $0.17 (16%), $0.71 (12%) and $37.78 (26%). In an industry that generally has low margins, this represents a very significant penalty.

It is also interesting to look at the number of respondents that said they would not purchase from environmentally friendly, environmentally neutral, and environmentally unfriendly companies. Table 3 shows the number of persons that said they would not purchase from our online company under the three scenarios, and tests the differences in those numbers for significance.

Table 3 shows that although there are no significant differences in the number of refusals between the environmentally friendly and environmentally neutral scenarios, the differences are both statistically significant and particularly important for comparisons involving the environmentally unfriendly scenario. For the environmentally friendly versus environmentally unfriendly comparison, the increases in the percentages of potential customers that refuse to purchase are 36, 38, and 42 percentage points, respectively, for the song, movie, and MP3 Player. The numbers are similar for the neutral versus unfriendly comparison.

TABLE 3
DIFFERENCES IN THE NUMBER OF PERSONS THAT REFUSED TO PURCHASE

Var Name	Item	Refusals	Refusals	Diff	*t*	Sig
Friendly to Neutral		*Friendly*	*Neutral*			
Price1	Song	26	27	-1	-0.377	0.706
Price2	Movie	22	24	-2	-0.706	0.481
Price3	MP3 Player	19	17	2	0.706	0.481
Neutral to Unfriendly		*Neutral*	*Unfriendly*			
Price1	Song	26	119	-93	-11.332	0.000
Price2	Movie	22	121	-99	-11.932	0.000
Price3	MP3 Player	19	125	-106	-13.028	0.000
Friendly to Unfriendly		*Friendly*	*Unfriendly*			
Price1	Song	27	119	-92	-11.586	0.000
Price2	Movie	24	121	-97	-12.285	0.000
Price3	MP3 Player	17	125	-108	-13.446	0.000
Number of observations =255						

Taken together, the data support our hypotheses that a friendly environmental stance can lead to online price premiums, and that an unfriendly environmental stance can lead to refusals to purchase and price penalties.

DISCUSSION

Our study suggests that there is a tangible monetary reward for "going green" for online businesses. Many consumers indicated that they would be willing to pay sizeable price premiums to purchase products from companies that they perceive to be environmentally friendly versus environmentally neutral (Hypothesis H1).

Conversely, there is an even larger price penalty for companies that consumers perceive to be doing harm to the environment. The average price penalty imposed on the most expensive item (the MP3 player) was over three times as large as the average premium ($37.78 versus $10.98). Our results suggest that a company's environmental stance can help them when consumers perceive them to be supportive of the environment or punish them when consumers perceive them to be damaging to the environment.

It is important to note that this study was conducted for online companies. It is likely that this effect is stronger in the online economy than it is in the offline venue. Offline consumers tend to buy products from companies for many reasons, including convenience of location, face-to-face interaction with a salesperson, and habit. Thus some consumers may still purchase from a company that is perceived to harm the environment because of convenience or limited choices. On the Internet, the choices are virtually unlimited as another store is just a click away; this makes it easier for environmental perceptions to play a significant role on the Internet.

This study uses environmental values due to their timeliness, wide appeal, and relevance to the technology sector. Global warming, environmental damage, and high energy prices are bringing this concern to the forefront for many individuals and groups. However, it is possible that values other than the environment might also be relevant, as suggested by Cazier, et.al. (2007). Future research should explore a range of values, and how particular values impact behaviors.

In addition, companies should avoid green washing and employ real change. Eventually consumers will hear about a company's true practices and react accordingly. Our data suggests that there is a modest

increase over the neutral group for companies that embrace these environmental ideas, but a much more significant price penalty if they are perceived to harm the environment.

It should also be noted that this study measures planned behavior, and people do not always do what they say they will. Still, planned behavior is one of the best predictors of future behavior Fishbein & Ajzen, 1975). The magnitude of both price penalties and the percent of refusals are noticeably large. It is difficult to say whether this is because planned behavior does not reflect actual behavior, or because our current understanding understates the penalties associated with being perceived as being environmentally unfriendly. This study furthers our understanding of the penalty associated with engaging in environmentally unfriendly practices, but also points out the need for future research to look at actions rather than intentions.

NOTE

An earlier version of this paper, published in a conference, also discussed the role of trust and value congruence in green IT context and took a more theoretical approach.

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