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Most e-tailers offer money-back guarantees (MBGs) on product returns, but coverage and durations of different policies vary significantly across e-tailers (taking into account restocking fees, shipping and handling fees, and coverage duration). To help consumers and e-tailers evaluate MBG policies, we developed three different "MBGQual" (money-back guarantee quality) indexes that measure the insurance protection, costs, and attractiveness of the MBGs to consumers. The usefulness of these indexes is illustrated by examining MBGs offered by electronic product e-tailers.

Keywords: *money-back guarantee; return policy; partial refund; restocking fee; nonrefundable shipping and handling fee*

Product returns are a major concern for retailers and consumers. The Boston Consulting Group and the e-tail trade association Shop.org estimated that about 5% of all goods bought online are returned (Grover 2001), and Stock, Speh, and Shear (2006) estimated an average return rate of 5.4% for online retail sales. Based on retail e-commerce sales of more than 114 billion dollars in 2006,[1] a return rate of 5% implies a sales value of product returns of about 5.7 billion dollars. Some of these returns are due to broken products, but others are the result of poor matches between products and customer needs. The rate of returns of the latter type can be high, as illustrated by Sciarrotta (2003), who found that for a big electronics manufacturer, the rate of products returned with no defects averaged more than 70% of all product returns. When considering all retail sales in the United States, it was reported that the value of returned products each year exceeds 100 billion dollars (Stock, Speh, and Shear 2002).

To protect customers from the risk of ordering unsuitable products, most e-tailers offer money-back guarantee policies (MBGs) that promise refunds on product returns. A close examination of their fine print, however, shows that not all policies are created equal. The variation in the quality of these policies is illustrated in Table 1 for four e-tailers that sell the same digital camera brand (Canon GL2) through MySimon.com. The four major factors that affect the quality of their MBG policies are (a) the restocking fee e-tailers charge for returns, (b) the nonrefundable shipping and handling fee, (c) the MBG's duration (days to return the product), and (d) whether the e-tailer pays for shipping the returned product back.

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TABLE 1
MBG Polices for a Digital Camera (Canon GL2)

E-Tailer	*Retail Price (US$)*	*Restocking Fee (%)*	*Nonrefundable S&H Fees (US$)*	*Days to Return Product*	*E-Tailer Pays for Product Return*
IbuyDigital	1,989	10	39.89	10	No
Vann's	2,461	25	None	7	No
DigitalEtailer	1,749	15	24.95	10	No
Office Depot	2,609	None	None	30	Yes

NOTE: MBG = money-back guarantee; S&H = shipping and handling.

Each MBG policy imposes different rules regarding these four factors, and therefore, it is difficult to compare the quality of MBG policies across e-tailers. Poor-quality MBG policies may prevent customers from returning unsatisfactory products because of the nonrefundable shipping expenses, restocking fees, or missed deadlines for returning the product. The two key factors determining the protection customers receive from an MBG are (a) coverage, the percentage of the total expenses that will be reimbursed on product return; and (b) duration, how many days the MBG is valid. Comparing MBG policies based on these factors could help consumers with different risk tolerances select e-tailers optimally.

This article offers three different "MBGQual" (money-back guarantee quality) indexes that are useful for consumers (who may use them as criteria for the selection of a particular e-tailer's offer) and for e-tailers (who may use them for the purpose of differentiating their offers from other e-tailers). Policy makers can use these indexes for evaluating customer complaints about high restocking fees and shipping fees that exceed the actual shipping expenses. For example, in 2005, the New York City Department of Consumer Affairs settled violations with a number of retailers for charging customers restocking fees without disclosure.[2]

The first index (the Objective MBGQual) is based on the perspective that MBGs are insurance policies aimed at protecting customers against poor product fit. The underlying assumption made in constructing this index is that both components of an MBG policy—coverage and duration—are equally important as is the case with ordinary insurance. Therefore, the index allows us to determine the extent of insurance an e-tailer offers to customers. In the construction of the second index (the Market MBGQual), we use weights based on hedonic price estimations in which the estimated impacts of the MBG components on the market product price are taken into account. Since this index is based on the information inherent in e-tailers' offers, it allows comparisons of MBG policies based on the impact of their components on price. This index, however, does not take into account customers' individual preferences regarding the components of an MBG. To reveal these preferences, we constructed the third index (the Subjective MBGQual), which helps evaluate MBGs based on customer preferences. Conjoint analysis was used to measure customer trade-offs among the different components of the MBG policies. The estimated relative subjective impacts of the different MBG components were used as a weighting scheme in constructing this index.

The remainder of the article is organized as follows: First, we discuss related research. Next, we derive the three MBGQual indexes, and finally, we use these indexes to rate the MBGs of e-tailers that sell electronic products.

RELATED RESEARCH

Previous research investigated when MBGs can increase profit and when buyers can benefit from an MBG (the last question is not trivial, as those retailers who offer generous MBGs may also charge higher prices). Wood (2001) used experimental research to show that a lenient return policy (a generous MBG) is likely to increase the probability of customer purchases. A generous MBG reduces the cost of reversing a bad decision and thus enables consumers to make decisions while maintaining flexibility.

MBGs can signal sellers' confidence in the quality of their products (Moorthy and Srinivasan 1995; Shieh 1996; Wirtz 1998) and allow them to charge higher prices (Fruchter and Gerstner 1999). MBGs are valuable to consumers because they reduce the purchase risk of finding a good product match and good quality (Mann and Wissink 1988). Davis, Gerstner, and Hagerty (1995) showed that when there is uncertainty regarding the product's fit, offering an MBG can help increase profit if the seller can salvage an unsatisfactory product better than the buyer can; that is, the seller can obtain a higher salvage price for it. Heiman et al. (2002) investigated conditions under which MBG should be offered as an optional service that customers can purchase when they buy a product.

Many e-tailers do not offer full MBGs because they fear that some opportunistic customers will buy products with the intention of using them for a limited time before returning them for a full refund. Retailers can discourage such "free renting" by imposing hassle costs on customers who return products (Davis, Hagerty, and Gerstner 1998) or by offering partial refunds on product returns instead of full refunds (Chu, Gerstner, and Hess 1998). The nonrefundable portion can be viewed as a fee for renting the product until it is returned. Direct marketers can discourage opportunistic returns by imposing nonrefundable shipping and handling charges (Hess, Chu, and Gerstner 1996). The duration of an MBG is also an important dimension of its overall quality and may affect the rate of product returns (Hess and Mayhew 1997; Menezes and Currim 1992). Shortening the duration is another way to discourage free renting by opportunistic customers. These studies explain theoretically why MBGs may come with partial refunds instead of full refunds and why the qualities of MBGs may vary across retailers.

Another stream of research involves studies aimed at understanding the effects of service guarantees on customers' quality perception and buying behavior (Boshoff 2002; Fabien 2005; Hart 1988; McDougall, Levesque, and VanderPlaat 1998; Ostrom and Iacobucci 1998; Tucci and Talaga 1997; Wirtz 2001). None of these studies, however, examined the quality of MBGs, which is the objective of this article.

The usefulness of constructing indexes to measure service quality such as SERVQUAL was demonstrated in numerous studies (Parasuraman 2000; Parasuraman, Berry, and Zeithaml 1991; Parasuraman and Zeithaml 1994; Parasuraman, Zeithaml, and Berry 1988; Parasuraman, Zeithaml, and Malhotra 2005). In particular, the importance of measuring the quality of MBGs was emphasized in Voss, Parasuraman, and Grewal (1998) and in Posselt and Gerstner (2005). This stream of research, however, did not include studies aimed at measuring empirically the quality of MBG policies, which is the objective of this article.

In the following section we describe the components that define the qualities of MBG policies and explain how we measured them.

COMPONENTS OF MBGs

MBG policies offer insurance protection against customer dissatisfaction with purchases. Just as with any insurance, one would characterize an MBG policy that offers a larger refund on product return and that is honored for a longer time period as superior to one with a lower refund and/or duration. Therefore, the two key factors that determine the quality of each policy are (a) coverage, the percentage of the total expenses reimbursed in case of a product return; and (b) duration, the number of days the MBG is valid. Comparisons between the different policies are not obvious, however, because of the different factors that determine the coverage of the MBGs and also their duration, as discussed next.

Coverage

Three factors determine the actual coverage of an MBG: (a) the amount of restocking fee, (b) the amount of nonrefundable shipping and handling fee, and (c) the amount reimbursed for shipping a product back to the e-tailer in case of a return.

Restocking fees. Many e-tailers deduct a percentage of the price (a restocking fee) when they refund customers on product returns (Chu, Gerstner, and Hess 1998). Restocking fees are "hated by customers" (*The PC Guide* 2001). Table 2 in the data section below gives the distribution of the restocking fee (as percentage of price) for our sample described in the next section.

Shipping and handling charges. Retailers charge shipping and handling fees that do not necessarily reflect the actual costs of these activities (Hess, Chu, and Gerstner 1996; Lewis, Singh, and Fay 2006). Bizrate.com reports that 40% of shopping carts are abandoned primarily because of expensive shipping and handling fees (Suman 2002). Typically, these fees are nonrefundable if a customer returns a product. They vary widely across e-tailers that sell the same brand (see Table 3 in the data section below), and they account for a large proportion of the total price when orders are small.

Reimbursing shipping expenses for returning product. The large majority of e-tailers do not cover the cost of shipping returned products back (in our sample, only 5% of all policies offered such coverage). In the data section below, we explain how we estimated product-return costs.

Duration

E-tailers allow for a certain number of days for product returns. Menezes and Currim (1992) discuss factors that affect the length of time for warranties. Table 4 in the data section below shows the distribution of days to return the product, as observed in our sample.

The data used to measure the components of a MBG and to rate the MBG policies offered by the e-tailers in our sample are described next.

THE DATA

The data were collected in February 2004 from mySimon.com. This Web site posts information on different

brand offers by e-tailers, such as prices, shipping and handling fees, restocking fees, and MBGs' durations (the number of days during which a customer can return the product under the MBG offered). To compare MBGs across e-tailers and also across product categories, we selected 11 product categories. Each category included a minimum of 10 brands, and each brand was sold by at least 3 e-tailers. All product categories consisted of electronics goods, and within each product category, we selected the 10 most popular brands, as indicated by MySimon.com (measured as the number of customer inquiries about a specific brand at the Web page). Less popular brands did not have sufficient information on the relevant variables mentioned above, so we excluded them from our sample. The following criteria determined data entry: If a brand was offered by fewer than 3 e-tailers, it was skipped and we continued with the next brand until we had entered the 10 most popular brands with at least 3 e-tailers. The data set includes 1,423 policies by 56 e-tailers representing 110 brands. Most e-tailers sell several of the 11 product categories and also several brands within each product category. To determine the quality of the MBG offered by a certain e-tailer, we computed the average quality across all its offers.

The shipping and handling costs depended on the location of the customer, and a customer had to enter a zip code to find the exact charge. We entered different zip codes for the same brand and found that for most e-tailers' shipping and handling fees did not change. Therefore, we drew zip codes randomly from a list of 50 state capitals and entered them to estimate the actual shipping and handling fee charged by each e-tailer for a specific brand.

The data set we used contains the following variables on e-tailers' offers (the variable names are included in parentheses):

- Price (*Price*)
- Shipping and handling fee (*ShipFee*)
- Whether shipping and handling fees are refundable (*ShipReimb* = 1 if yes; 0 otherwise)
- Whether product-return costs are reimbursed (*ReturnReimb* = 1 if yes; 0 otherwise)
- Restocking fee as a proportion of price (*RestockFee*)
- Duration for which the MBG is valid (*DaysTo Return*)

The distribution of these variables for our sample is given in Tables 2 through 4. Table 2 shows that about two thirds of the policies came with restocking fees (ranging from 10% to 30%). Table 3 shows that about 63% of all policies came with shipping and handling fees that were nonrefundable (on average ranging between 2.5% to 6% of price). Table 4 shows the distribution of days to return (ranging from 5 to 30 days).

TABLE 2
Distribution of Restocking Fees

Restocking Fee (%)	*Average Restocking Fee (US$)*	*Percentage of Policies*
0	0.00	33.0
10	66.19	16.3
14	203.23	2.3
15	125.19	40.9
20	380.65	0.4
25	552.93	2.2
30	237.20	4.9

Estimation of Product-Return Costs

We estimated this cost as follows: For each brand, we calculated the average shipping and handling fee and used it as an estimate of customers' return shipping costs. The estimated product-return costs vary substantially within product categories because of weight differences and because some e-tailers cover the cost of shipping back products. For example, the estimates for digital cameras, computer monitors, and televisions are shown in Table 5 below.

CONSTRUCTING AN MBGQUAL INDEX

Next, we describe how we constructed the MBGQual indexes following three approaches that differ in the weights attached to the components of an MBG. We start with an Objective MBGQual index.

Objective MBGQual Index

An MBG policy offers insurance against customer dissatisfaction with a purchase. As is the case with any insurance policy, better protection is obtained if (a) more losses are covered and (b) if the coverage lasts a longer period. Just as with insurance, the Objective MBGQual Index we construct reflects the protection offered by an MBG, as measured by the variables *MBGCoverage* (measures the percentage of price that would be refunded in case of product dissatisfaction) and *RelativeDuration* (i.e., the length of coverage in days relative to the competition).

Calculating coverage of MBG. The percentage of customer expenses refunded under e-tailers' policies (*MBGCoverage*) is obtained by (a) deducting restocking fee (*RestockFee*), shipping fees (*ShipFee*), and the expenses of returning the product (*ReturnCost*) from the total expenditure of buying the brand (*Price + ShipFee*); (b) dividing the result by the total expenditure; and (c) multiplying the ratio by 100 to obtain the percentage of

TABLE 3
Distribution of Shipping and Handling Fees

Nonrefundable Shipping Fee (US$)	*Average Fee (US$)*	*Fee as Percentage of Price (Average)*	*Percentage of Policies*
0.00	0.00	0	37.3
0.01-9.99	6.98	2.49	10.1
10.00-19.99	15.96	5.05	25.2
20.00-29.99	25.31	5.81	15.0
30.00-49.99	39.94	3.68	6.0
50.00-99.99	67.06	4.06	2.2
100.00-399.99	206.03	6.12	4.2

TABLE 4
Distribution of Days to Return

Days to Return	Percentage of Policies
5	2.0
7	7.8
10	10.3
14	26.2
15	7.9
20	1.0
30	44.7

expenditure that is reimbursed by the return policy. The formula for *MBGCoverage* is

$$MBGCoverage = 100 * \frac{Price * (1\text{-}RestockFee) + ShipReimb * ShipFee - (1\text{-}ReturnReimb) * ReturnCost}{Price + ShipFee}$$

The policy coverage increases when the nonrefundable fees decrease. An e-tailer gets a 100% coverage score if there are no restocking fees (*RestockFee* = 0) and all fees and customer expenses are covered by the return policy (*ShipReimb* = 1, and *ReturnReimb* = 1). In our sample, all shipping and handling fees were nonrefundable (*ShipReimb* = 0). Thus, in the following sections, we will not consider them any longer.

Calculating duration of MBG. Table 4 shows the distribution of days to return the product, as observed in our sample. Since the maximum number of days to return a product is 30 days, we define relative duration (*RelativeDuration*) as the number of days to return a product (*DaysToReturn*) divided by 30. That is,

$$RelativeDuration = \frac{Days\ To\ Return}{30}.$$

A higher coverage or a higher relative duration implies a higher Objective MBGQual score and thus better MBG protection. When comparing two policies with the same coverage, a policy with a longer duration should be more valuable to consumers and therefore should have a higher MBGQual score. The Objective MBGQual Index we construct reflects these properties. It is defined as

$$Objective\ MBGQual = MBGCoverage * Relative\ Duration. \quad (1)$$

The Objective MBGQual score combines important information that can help consumers select e-tailers with good MBG protection, based on a scale of 0% to 100%. An MBG offers the best protection among the group of e-tailers when the MBG score is 100% (a full reimbursement of price and shipping with no restocking fee) and when the relative duration of the policy equals 30 / 30 = 1. The lowest protection is obtained when the MBGQual score is 0 (meaning that MBG is not offered so the relative duration is 0 / 30). An index value between 0 and 100% reflects either a partial coverage and/or a short duration.

Market MBGQual Index

The Objective MBGQual in Equation 1 is based on the perspective that MBGs are in effect insurance policies aimed at protecting customers against poor product fit. One shortcoming of this approach is the underlying assumption that both components of an MBG policy, coverage and duration, are equally important. In the construction of the Market MBGQual Index, we relax this assumption by estimating a weighting scheme using the data set described previously. The weights are based on hedonic price regressions in which the estimated impacts of the MBG components on the product price are taken into account, as explained next. Consequently, the weights reflect the relative importance of the MBG components from the market perspective, as reflected in the price.

TABLE 5
Estimated Product Return Costs

Product	*Average Product Return Cost (US$)*	*Range of Average Product Return Cost (US$)*	*SD of Product Return Costs (US$)*	*Percentage of Policies Covering Product Return*
Digital cameras	9.35	0.00-13.62	2.65	5.9
Monitors	11.66	0.00-21.82	5.59	1.1
TVs	120.03	0.00-217.84	63.40	14.3

To construct the appropriate weights, we estimated the following regression equation across all e-tailers and offers:

$$Price_{ij} = a_0 + a_1 * PriceAverage + a_2 * ShipFee + a_3 * RestockFee + a_4 * ReturnReimb + a_5 * DaysToReturn + u_{ij}, \quad (2)$$

with *i* indicating the *i*th e-tailer, *j* indicating the *j*th offer, *PriceAverage* denoting the average price of the *j*th item for all e-tailers other than the *i*th one, and *ShipFee*, *RestockFee*, *ReturnReimb*, and *DaysToReturn* being the relevant components of an MBG policy.

Equation 2 models linearly the deviation of an e-tailer's price offer from the average price offer of all other e-tailers for a given item. The implied hypothesis is that a superior MBG will command a price premium (because of the possible lower shipping and restocking fees, better reimbursement of shipping costs, or a longer return period). We therefore expect $a_2 < 0$, $a_3 < 0$, $a_4 > 0$, and $a_5 > 0$. Testing the hypothesis $a_2 = a_3 = a_4 = a_5 = 0$ will indicate whether all MBGQual components have no impact on price premium. Table 6 contains the estimation results. We also report standardized coefficients to calculate the relative importance of each variable. All coefficients have the expected sign; that is, higher shipping and handling fees as well as higher restocking fees come with lower prices, while e-tailers who reimburse product returns charge price premiums. Thus, MBG coverage and MBG duration are significant drivers of price premium (F test = 34.58, p value = .00). MBG's coverage accounts for more than 80% of the price premium, with shipping and handling fee being the most important single component (relative importance of 60%) followed by getting reimbursed when shipping the product back (18%), duration of an MBG (17%), and restocking fee (6%).[3]

Using the estimation results, we construct an MBGQual index based on market data (*Market MBGQual* in short) by weighting the components of an MBG policy with the estimated coefficients and applying an exponential transformation:

$$Market\ MBGQual = 100 / (1 + exp(-\hat{a}_2 * ShipFee - \hat{a}_3 * RestockFee - \hat{a}_4 * ReturnReimb - \hat{a}_5 * DaysToReturn)). \quad (3)$$

The theoretical Market MBGQual Index is bounded between 0% and 100%. Increasing shipping and handling as well as restocking fees will reduce the index, while reimbursing product return costs and increasing days to return will increase the Market MBGQual. Thus, an e-tailer receives a Market MBGQual score that approaches 100% if shipping and handling fees or restocking fees are not imposed and if customers who return products within 30 days are fully reimbursed not only for the full price but also for the costs of shipping the product back. Such a superior MBG policy ceteris paribus may allow the e-tailer to charge price premiums compared to competitors. On the other hand, an e-tailer is receiving a Market MBGQual that approaches 0% if very high shipping and handling fees and restocking fees are imposed and if customers who return products are not reimbursed the costs for shipping the product back and receive a partial refund for price only if they ship back products within a few days after receiving the product. Such an inferior MBG policy puts pressure on the e-tailer to reduce prices significantly below competitors' prices with average MBGs. A customer can use the Market MBGQual Index to find low prices for any desired quality of MBG; for example, if the customer does not care for a lenient return policy, he or she can choose an offer with a low price and a low Market MBGQual Index.

Next, we derive another MBGQual index that takes into account explicitly the trade-offs customers make between the components of the MBG policies. We call this index the Subjective MBGQual Index.

Subjective MBGQual Index

The Objective MBGQual attaches equal weights to coverage and duration of an MBG policy, whereas the weights of the Market MBGQual were derived from price regressions using market data. Customers, however, could have different preferences regarding the components of an

TABLE 6
Price Regression Including MBG Coverage and MBG Duration

Variable	*Estimate*	*SE*	*t Value*	*p Value*	*Standardized Coefficients*	*Relative Importance*
Intercept	–28.57	11.13	–2.57	.01	—	—
Price average	1.03	0.01	168.33	.00	1.03	—
S&H fee (US$)	–1.32	0.14	–9.60	.00	–0.06	59%
Restocking fee (%)	–0.66	0.48	–1.37	.17	–0.01	6%
E-tailer reimburses product return costs (yes/no)	65.69	16.72	3.93	.00	0.02	18%
Days to return	1.56	0.41	3.77	.00	0.02	17%

NOTE: Number of observations = 952; F value = 9.870 (p value = .00); adj. R^2 = .98. All coefficients rounded to two decimal places. MBG = money-back guarantee; S&H = shipping and handling; SE = standard error.

MBG. To reveal these preferences, we conducted a conjoint analysis (Green and Srinivasan 1990) to measure customer trade-offs among the different components of MBG policies. The estimated relative subjective impacts of the different MBG components were used as a weighting scheme in constructing the Subjective MBGQual Index.

First we specified the relevant attributes and attribute levels for the MBG policies. The attributes are the MBG components, as discussed above: (a) restocking fees (*RestockFee*), (b) nonrefundable shipping and handling fees (*ShipFee*), (c) whether the e-tailer pays for product returns (*ReturnReimb*), and (d) days to return the product (*DaysToReturn*). The range of attributes was chosen to reflect the actual range of attributes in our data set. To keep the orthogonal design as simple as possible and to mitigate any number-of-level effects (Steenkamp and Wittnik 1994), we balanced the number of levels for all attributes except for the attribute *ReturnReimb*. Three levels are assigned to each attribute: the lowest, the intermediate, and the highest level, as observed in the sample according to Tables 2 through 4. *ReturnReimb* takes on two levels: Either the e-tailer reimburses for shipping the product back, or the customer bears the costs. In the latter case, average product return costs were given to the respondents.

Trade-offs between different components of an MBG might be moderated by the value of the product; for example, customers might place more importance on a longer MBG duration when ordering a more expensive item. Therefore, in the conjoint analysis study, we considered two products taken from our sample: a handheld (Palm TX) and a TV (Sharp Aquos flat panel LCD). The average price was $190 for the handheld and $1,950 for the TV, with average product return costs of $8 and $130, respectively. Table 7 contains a list of the attributes and attribute levels.

We employed a full profile model because it provides a more realistic description of the decision task and reduces the number of required judgments (Green and Srinivasan 1978). Each profile presented to the respondents is characterized by a combination of different attribute levels. Respondents were asked to state their preferences for each profile on an 8-point Likert-type scale ranging from 1 (*dislike very much*) to 8 (*like very much*). An orthogonal design with eight profiles for each product was derived, which allows us to estimate the main effects of the considered attributes. Additionally, we included one holdout profile for each product for later model validation.

The questionnaire consisted of three sections. In the first part, each respondent was told that he or she would be presented with a series of hypothetical profiles describing offers from different online retailers for two electronic products. Definitions of terms used in the questionnaire and instructions on how to rate the profiles were given. In the second part, respondents rated nine profiles for the handheld and nine profiles for the TV. Two versions of the questionnaire were used that differed only in the order of the hypothetical profiles. Since the results do not change significantly for different orders, there is no cause for concern about a possible ordering effect. In the last part of the questionnaire, we included demographic questions (age and gender) and asked respondents how frequently they order products online, if they ever returned an ordered product, and if so, for what reasons. The questionnaire was pretested with eight university students. Answering took them about 15 minutes, and none of them reported comprehension difficulties.

We obtained complete responses from 78 daytime and executive MBA students as well as employees from a university in northern California. Table 8 contains descriptive results for the sample of respondents, while part-worths and relative importance of the attributes estimated at an aggregate level are shown in Table 9.[4]

TABLE 7
List of Attributes and Attribute Levels Used in Conjoint Analysis

Attribute	*Description*	*Attribute Levels*
Product	Type of product	Handheld Palm TX Average price: $190 Sharp Aquos flat panel LCD TV Average price: $1,950
ShipFee	Nonrefundable shipping fee (percentage of price)	S&H fees for Palm TX/Sharp Aquos $0/$0 (0% of the price) $4.75/$103.75 (2.5% of the price) $9.50/$207.50 (5% of the price)
RestockFee	Restocking fee	0% 15% 30%
ReturnReimb	E-tailer reimburses product-return costs	Yes No (average shipping costs: $8/$130)
DaysToReturn	Duration for which the MBG is valid	7 days 14 days 30 days

NOTE: MBG = money-back guarantee; S&H = shipping and handling.

TABLE 8
Sample Characteristics

Characteristic	*Mean*	*SD*
Age	33.18	6.42
Gender (1 = *male*; 0 = *female*)	0.63	—
How often have you ordered an item online in the last six months?	8.56	17.63
Have you ever returned an item which you have ordered online? (1 = *yes*; 0 = *no*)	0.74	—
If yes, what were the reasons?		
Product was defective (1 = *yes*; 0 = *no*)	0.52	—
Product differed from description (1 = *yes*, 0 = *no*)	0.57	—
Product did not matched my needs (1 = *yes*; 0 = *no*)	0.71	—
I just wanted to try the product (1 = *yes*; 0 = *no*)	0.09	—

NOTE: SD = standard deviation.

TABLE 9
Results of the Conjoint Analysis

	Handheld		
Variable	*Part-Worths*	*SE*	*Relative Importance*
ShipFee	–0.11	0.03	14%
RestockFee	–0.13	0.01	53%
ReturnReimb	1.91	0.13	26%
DaysToReturn	0.03	0.01	8%
Variable	*TV Set Part-Worths*	*SE*	*Relative Importance*
ShipFee	–0.02	0.00	31%
RestockFee	–0.11	0.01	42%
ReturnReimb	0.86	0.13	11%
DaysToReturn	0.05	0.01	16%

NOTE: SE = standard error.

All attributes are highly significant and have the expected sign. The positive part-worths are associated with a longer duration period of an MBG and getting reimbursed for shipping the product back. The negative part-worths are associated with higher nonrefundable shipping and handling fees and higher restocking fees. The most important attribute is the restocking fee, with a relative importance of 53% in the case of the handheld and 42% for the TV. For the more expensive TV, the relative importance of nonrefundable shipping and handling fees and days to return is higher, while the relative importance of restocking fees is lower. The reason might be that the hassle costs of returning a TV are higher than those for the PDA, so customers are less likely to return it for opportunistic reasons. Instead, respondents put much more importance on a longer MBG duration.

Internal validity of the conjoint model was tested by calculating Pearson correlation coefficients between respondents' input ratings and the predicted ratings for the holdout profile based on the estimated part-worths of the conjoint model. We find a correlation coefficient of .74 for the handheld and .75 for the TV, suggesting that the model fits the data well. The average input ratings for the two holdout profiles were 4.19 for the handheld and 2.19 for the TV, while our model predicts 4.65 and 2.71, indicating the model's predictive power.

Green and Srinivasan (1978) proposed to compare the predictive capability of the conjoint model against a

"naïve" model that does not involve any additional data and where all explanatory variables enter with the same weight (unit weighting model). Such a weighting scheme is equivalent to the Objective MBGQual introduced in one of the previous sections. Applying it to predict the input ratings of respondents yields Pearson correlation coefficients between actual and predicted ratings of –.26 for the handheld and –.18 for the TV set, which is therefore a much worse fit to the data than the conjoint model.

Constructing the Subjective MBGQual Index. Next, we explain how the estimation results of the conjoint model were used to construct an MBGQual index based on subjective preference data (*Subjective MBGQual* in short). The conjoint model yields predicted preference ratings for different MBG policies ranging from 1 (*dislike very much*) to 8 (*like very much*) according to

$$\hat{y} = b_0 + b_1 * ShipFee + b_2 * RestockFee + b_3 * ReturnReimb + b_4 * DaysToReturn, \quad (4)$$

with $\hat{y}$ as the predicted rating for a specific MBG policy, b_0 as the baseline utility, b_i as the estimated part-worth of the ith attribute and *ShipFee*, *RestockFee*, *ReturnReimb*, and *DaysToReturn* as the components characterizing a specific MBG policy. We rescaled $\hat{y}$ to a range between 0% and 100% to allow for easy comparisons across the MBGQual indexes.[5]

The estimation results show that part-worths differ across products. We suspect that these differences are primarily driven by the price of the product and the hassle costs of returning it. Therefore, we constructed two groups of products: one consisting of products similar to the handheld in terms of price and weight and the other similar to the TV. We applied the estimated part-worths for handhelds ($b_{handheld}$) to the first group, and the estimated part-worths for the TV set ($b_{TV\ set}$) to the second group to calculate the Subjective MBGQual Index. Table 10 shows the assignment of estimated part-worths to product categories.

Again, the better the protection of an MBG as perceived by customers, the higher the Subjective MBGQual Index. A score of 100% is one that maximizes the perceived utility of customers for that MBG policy, while lower scores correspond to lower customer utility.

COMPARING THE MBGQUAL INDEXES

Most e-tailers sell different products and brands with different MBG policies, and therefore, it is difficult for customers, e-tailers, and policy makers to evaluate the qualities of the MBGs. Since one index would be insufficient to serve different purposes, we suggest three different indexes to evaluate the quality of MBGs from the following perspectives: (a) MBG as an insurance policy, (b) MBG and price premiums, and (c) MBG quality from the customer perspective.

TABLE 10
Assignment of Weights to Different Product Categories

Category	*Mean Price (US$)*	*Weights*
Scanners	253.48	$b_{handheld}$
Printers	309.52	$b_{handheld}$
MP3 players	306.54	$b_{handheld}$
Handhelds	341.64	$b_{handheld}$
Digital cameras	441.79	$b_{handheld}$
DVD players	434.43	$b_{handheld}$
Camcorders	778.51	$b_{handheld}$
Monitors	1,068.07	$b_{TV\ set}$
Desktops	1,553.24	$b_{TV\ set}$
Notebooks	1,678.83	$b_{TV\ set}$
TV sets	3723.95	$b_{TV\ set}$

First, MBGs may be considered as an insurance that is characterized by coverage and duration of the insurance (Objective MBGQual). To measure insurance quality, we construct the Objective MBGQual Index as the product of coverage and duration (increases in these factors make the insurance more attractive).

The Objective MBGQual Index excludes the values of MBG attributes, as reflected in the market price, and it does not take into account consumers' trade-offs between the relevant MBG attributes. To address the first limitation, we develop a measure based on the market price premiums that a given MBG policy offer commands relative to other MBG offers (Market MBGQual). We computed this index by estimating the impact of the MBG attributes (shipping fee, restocking fee, return reimbursement, days to return) on prices and using these as weights for constructing the Market MBGQual Index. Therefore, the index captures the influence of the MBG components on price and the price premium the market is willing to put on MBGs with higher qualities.

To address the second limitation of the Objective MBGQual Index (capturing the attractiveness of an MBG from the point of view of the customers), we computed the Subjective MBGQual Index based on MBG component weights derived from a conjoint analysis using customer preference data.

To rate an e-tailer's MBG offerings in the sample, we first calculated MBGQual scores for each policy offered by that e-tailer according to Equations 1, 3, and 4, and then averaged the e-tailer's MBGQual scores. The average MBGQual scores were then used to rate the e-tailer.

TABLE 11
Top 10 E-Tailers

Top 10 E-Tailers Objective MBGQual	*Top 10 E-Tailers Market MBGQual*	*Top 10 E-Tailers Subjective MBGQual*
www.crutchfield.com	www.databazaar.com	www.kaanza.com
www.sony.com	www.shoplet.com	www.atomicpark.com
www.hp.com	www.sony.com	www.pchardware4u.com
www.circuitcity.com	www.bestbuy.com	www.palm.com
www.shoplet.com	www.chiefvalue.com	www.inoax.com
www.needsoftware.com	www.macmall.com	www.absolutehometheater.net
www.computers4sure.com	www.6ave.com	www.usa.canon.com
www.abesofmaine.com	www.epson.com	www.gateway.com
www.familyphotoandvideo.com	www.superwarehouse.com	www.crutchfield.com
www.compuplus.com	www.thinkpaddepot.com	www.shoplet.com

NOTE: MBGQual = money-back guarantee quality.

FIGURE 1
Distribution of MBGQual Indexes

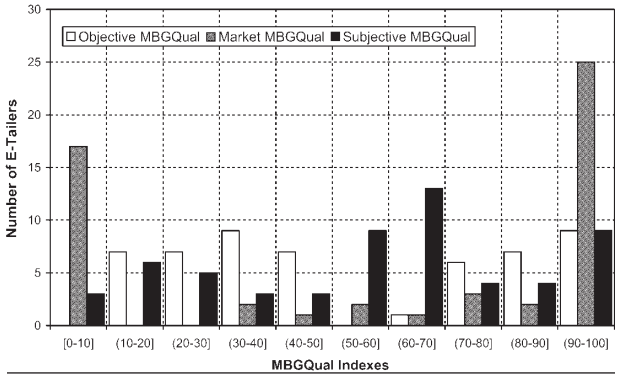

Table 11 lists the top ten e-tailers based on different MBGQual indexes. The average scores across all e-tailers and the correlations between the scores are given in Table 12. Figure 1 shows the distribution of the e-tailers' overall MBGQual scores. The average Objective MBGQual is 54.55, the average Market MBGQual is 60.56, and the average Subjective MBGQual amounts to 56.84. The correlations between the different MBGQual scores are all positive and significant.

Because MBGQuals vary substantially across e-tailers, consumers should examine the quality of an e-tailer's MBG policy before purchasing from that e-tailer at a low price. Our findings show that MBGs as insurance policies offer limited protection against customer dissatisfaction with product purchases since Objective MBGQual scores of 100 are rare. The same holds true for the Subjective MBGQual: Only 9 out of 61 e-tailers offer MBG policies that satisfy customers at the highest level. Regarding the Market MBGQual Index, two groups of e-tailers seem to exist. The first one offers MBGs of low quality and lower prices, while the other group charges a price premium for high-quality MBGs.

CONCLUSION

This article offers three indexes to help consumers, retailers, and policy makers assess the quality of MBGs. The indexes measure the quality of the MBG as insurance (Objective MBGQual), the cost of the MBG in terms of an increase in price relative to the market (Market MBGQual) and the attractiveness of an MBG for customers (Subjective MBGQual). Assessing the quality of MBG policies is important for several reasons.

First, MBGs can be viewed as insurance policies, so consumers can use the indexes to self-select the insurance level they desire when ordering products online. The relative importance of different MBG components (Subjective MBGQual) could be used to optimize the MBG policy of an e-tailer to increase customer satisfaction. If an e-tailer identifies different segments of customers who value MBG policies in a different way, it can tailor special offers. Costs involved with a change in the MBG policy could be compared with expected changes in price premiums, as indicated by the Market MBGQual. For example, consumers who are not familiar with the products they order can buy a higher level of insurance by self-selecting an MBG policy with a high coverage and duration, as reflected in a high MBG score (even if the offer is more expensive). Customers who are familiar with the products may prefer to select an offer with a lower price, even if the MBGQual score is lower). More generally, consumers can use the MBGQual indexes to categorize retailers into different quality segments. Used periodically, the indexes can reveal service trends.

TABLE 12
Descriptive Results on MBGQual Indexes and Correlations

Index	*Mean*	*SD*	*Min*	*Max*
Objective MBGQual	54.55	28.98	13.25	100
Market MBGQual	60.56	44.27	0	100
Subjective MBGQual	56.84	28.88	0	100

Pearson Correlation Coefficients	Objective MBGQual	Market MBGQual	Subjective MBGQual
Objective MBGQual	1 (—)		
Market MBGQual	0.74 (.00)	1 (—)	
Subjective MBGQual	0.66 (.00)	0.67 (.00)	1 (—)

NOTE: *p* values in parentheses; minimum and maximum values for the Market MBGQual Index were rounded. MBGQual = money-back guarantee quality; SD = standard deviation.

Second, e-tailers can use the MBGQual indexes as a basis for service differentiation by studying MBGs offered by competitors for different products and identifying gaps that can be filled. For example, customers familiar with the products they order may prefer to pay a lower price and receive an MBG with a low duration (consumer tradeoffs between MBGs features are captured by the Subjective MBGQual Index.). In this case, offering MBGs with low duration and low prices may present an opportunity for e-tailers if other e-tailers offer high duration and high prices. The Subjective MBGQual Index helps to impart a better understanding of customer expectations and thus strengthens the market orientation of e-tailers. Additionally, the indexes could be combined with more general service quality indexes such as SERVQUAL.

Finally, the indexes can be used by policy makers who review customer complaints about excessive shipping and handling fees or about restocking fees. A look at the index can reveal MBG standards used in different industries and any offers that deviate from the standards. The indexes can also be used to compare MBG standards for different product categories. Low MBG standards in some product categories (such as computer software) may suggest that there could be consumer abuse of returns in the product category. Policy makers must take such considerations into account when making policy decisions on restocking and shipping and handling charges.

All three indexes are based on the following two key factors: (a) coverage, the percentage of total expenses reimbursed in case of a product return, and (b) duration, for how long the insurance is valid.

The first index (the Objective MBGQual) is based on the perspective that MBGs are in effect insurance policies aimed at protecting customers against poor product fit. The underlying assumption made in constructing this index is that both components of an MBG policy—coverage and duration—are equally important. For the construction of the second index (the Market MBGQual), we used weights based on hedonic price estimations in which the estimated impacts of the MBG components on the market product price were taken into account. This index, however, does not take into account that customers could have different preferences regarding the components of an MBG. To reveal these preferences, we constructed a third index (the Subjective MBGQual) in which conjoint analysis was used to measure customer trade-offs among the different components of the MBG policies. The estimated relative subjective impacts of the different MBG components were used as a weighting scheme in constructing this index.

As an illustration, the indexes were used to measure the MBGQual of 56 e-tailers that sell electronic products. The application shows that (a) customers are not fully insured under MBGs, (b) costs of MBGs as captured by price premiums vary significantly across e-tailers and product offers, and (c) MBGs can be used to differentiate customer service based on consumer preferences toward the different features of the MBGs.

Future studies should track how the quality of MBG policies changes over time and what motivates e-tailers to offer different policies. On one hand, concerns about consumer opportunistic behavior can motivate e-tailers to lower MBGQual. On the other hand, a lower MBGQual may motivate well-behaved consumers to seek other retailers with higher MBGQual scores, even if they come with higher prices. These forces may create more extreme variation in the MBGQual index and product prices.

Future studies are needed to investigate how MBGQual scores affect consumer buying decisions. What is the relationship between MBGQual and customer acquisition and retention? What combination of price premiums and MBGQual scores is appealing for certain customer segments? Can MBGQual help create a competitive advantage? Answering these research questions will help e-tailers optimize product return policies and will help consumers make better purchasing decisions.

NOTES

1. www.census.gov/mrts/www/ecomm.html (accessed June 21, 2007).
2. www.nyc.gov (accessed June 22, 2007).
3. Restocking fees are only weakly significant, which does not justify including them in the MBGQual (money-back guarantee quality) index. Including them, however, does not change the results. In fact, the correlation coefficient between the Market MBGQual Index with and without restocking fees amounts to 0.99. We therefore decided to include them in the following analysis.
4. We repeated the estimation for different subgroups, that is, males and females, younger and older respondents, light, and heavy users of online retailers, and respondents who never/ever returned an item. Since the order of the attributes regarding relative importance does not change for different subgroups, we will not report the results in this article. The results are, however, available from the authors by request.
5. We rescaled $\hat{y}$ according to $((\hat{y} - 1) / 7) * 100\%$. In less than 4% of all cases, the predicted ratings fell outside the range [1, 8]. For these cases, the values were set to 1 if $\hat{y} < 1$ and to 8 if $\hat{y} > 8$.

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