MANUFACTURERS' CONCERN FOR PRODUCT RISKS AFTER THE SALE: DO PRODUCT RECALLS REALLY CAUSE CONSUMERS' DISSATISFACTION?

Dirk Standop, Universität Osnabrück

ABSTRACT

This paper intends to contribute to the empirical analysis of dissatisfaction and image-shifts after product recalls. We analyze hypotheses on consumer reactions to product recalls and try to trace some factors shaping this consumer behavior.

INTRODUCTION

Product recalls have become almost a familiar phenomenon in a consumer's daily life. One reason is the introduction of various forms of strict liability in the US and Western Europe. This liability allows a person suffering harm due to a defective product to recover damages without having to prove negligence.

Products involved in recalls more frequently have been automobiles and related equipment, drugs and pharmaceuticals, electric household appliances and food articles. Recall decisions are made mostly by manufacturers and less often by independent agencies. The decisions are based sometimes on strong and undeniable evidence of defects, accidents and injuries, but more often the evidence is ambiguous and fuzzy.

Thinking of the recall decision as an economic calculus comparing the costs and benefits has not found general acceptance by the public so far, but it seems hard to imagine how to reach a decision without such a comparison. While parts of the costs may be estimated quite easily, this will, clearly, not be the case with other consequences: How will consumers perceive and evaluate the product recall? Will there be dissatisfaction and image-shifts to the negative side causing losses in market share and market value of the manufacturer's equity? These image-effects form the very type of consequences this paper is aiming at. We do not have valid answers to these questions yet and, therefore, the recall decisions in real life are performed on most insecure grounds so far.

The paper starts with a brief presentation of the state of the art. The main part to follow is our empirical analysis based on recently collected German data (Standop 1989; Asche 1990). This research has been supported by Deutsche Forschungsgemein-schaft (DFG, Bonn, Germany).

PREVIOUS WORK

The academic literature - in obvious accordance with business practice - argues in almost identical manner in favor of negative effects. There seems to be an almost universal agreement that consumers perceive product recalls as a piece of negative information with all consequences for information processing, satisfaction/dissatisfaction, attitude formation, and future buying behavior.

While the direction of the effects, thus, is clearly taken as being negative, the envisaged consequences of a product recall may differ in size depending on various circumstances, as the kind and size of damage/injury resulting from the product defect, the time span between the first detection of the defect and the recall, and the frequency of recent recalls both by the single manufacturer and within the industry as a whole. Other factors include reputation of the firm and familiarity with the firm's brands, the comfort/discomfort of changing the defect product into a good one, and whether the product recall is performed voluntarily or in consequence of irresistible pressure by some government agency.

The empirical research has been performed, so far, mainly on a macro basis. The analysis asked for the consequences that product recalls might have on market shares (Wynne and Hoffer 1976; Crafton, Hoffer and Reilly 1981) and/or on the market value of the equity (Jarrell and Peltzman 1986). The results confirmed essentially the

negative sign and shed some light upon the relevant factors.

The results in both cases, though, are not very convincing and have been seriously challenged. Bromiley and Marcus (1989) have re-analyzed the Jarrell/Peltzman data and reached, after some proper modifications of the data set, quite different conclusions, e.g., recalls seem to push equity value upwards in some situations which seems as a general result hardly acceptable.

Empirical evidence may be analyzed further on a micro basis, i.e., regarding the individual consumer and his reactions to product recalls, followed by some kind of aggregation in order to arrive at the overall company or product image. Work of this type has been performed by John Mowen and others (Mowen 1979a; Mowen 1979b; Mowen, Jolly and Nickell 1980; Mowen and Ellis 1981).

Mowen's results are based on American data and, thus, may not describe the reality in Western Europe. Mowen's analysis, too, raises doubts concerning size and randomness of his sample. This paper is a new attempt to contribute to the problem by a micro approach similar to that of Mowen.

METHODOLOGY

The hypotheses of our research concern two main factors to govern the consumers' reaction to product recalls. The first factor is familiarity of the consumer with the manufacturer's brand (branding factor): We expect less (negative) effects the more familiar the consumers are with the manufacturer's brand. The second factor marks the time span between the first injury (detection of a defect) and the recall (timing factor). The length of time is closely connected with the number of injuries/accidents which will the manufacturer finally urge to a recall, and we expect more negative image effects the longer this time span is.

With regard to both factors we discern just two states: Familiar vs. unfamiliar brand and long vs. short time span.

We, thus, test our hypotheses in a full factorial design with four quasi-experiments which are part of a larger survey on consumer behavior towards product risks. The here relevant part of the survey relates to bicycles and was performed in structured personal interviews in summer 1988. The sample contained 487 persons older than 14 years and is representative for the Western part of Germany.

Table 1
Factorial Design with Four Quasi-Experiments

Bicycle (n=487)	
Survey related to consumer behavior towards product risks (n=487)	
Familiar brand and time span of two weeks (n=120)	Familiar brand and time span of one year (n=119)
Unfamiliar brand and time span of two weeks (n=116)	Unfamiliar brand and time span of two weeks (n=132)

Following Mowen we choose four operationalizations of the manufacturer's image: sympathy, probability of buying the brand next time, the firm's engagement for consumer values and, finally, its demonstration of responsible conduct towards the customers' physical and financial welfare. The image factors were measured on a six point rating scale.

The tests of the hypotheses were performed by analysis of variance.

ANALYSIS AND RESULTS

The analysis of variance explains the effect of independent variables upon one or more dependent variables. Does variation of the branding and timing factor exert significant influence upon the four image-items? Are there any significant differences between the four sub-samples?
Table 2 presents the results of the analysis of variance. The table analysis is general for it does not make use of available demographic and psychographic information. This will be done in a later paper.

Table 2
Analysis of Variance

Independent Variable	Branding Factor		Timing Factor		Interactions	
Dependent Variable	F	$\dot{\alpha}$	F	$\dot{\alpha}$	F	$\dot{\alpha}$
Sympathy (R^2=0,105) (y=3,07)	0,152	0,697	56,335	0,0	0,002	0,961
Buying Probability (R^2=0,056) (y=3,79)	1,842	0,175	26,823	0,0	0,177	0,674
Consumer Protection (R^2=0,116) (y=2,99)	2,153	0,143	61,173	0,0	0,719	0,797
Responsibility (R^2=0,018) (y=4,14)	0,026	0,873	8,758	0,003	5,026	0,025

The table shows for each factor - branding factor, timing factor, and the interactions formally taken as a third factor - and each image-item the F-value, i.e., explained variation divided by not-explained variation. The reader will notice at once the high F-values of the timing factor and the comparably low F-values of the branding factor and for the interactions in the third column.

Testing the F-values we assume that the factor exerts no influence at all. Accepting this null hypothesis in case it is wrong, leads to an error of type α. A high α means that accepting a false null hypothesis is very probable. A low α presents the opposite inference: The probability of accepting a false null-hypothesis is very low. We, thus, will not believe in the null-hypothesis, tend to the opposite inference, and conclude that this factor exerts significant influence.

Table 2 shows that the timing factor with its α-Values below .05 exerts such a significant influence, but the branding factor does not.

These principal findings differ fundamentally from Mowen's results and lead to speculations about the reasons for those differences.

In his analyses of 1979 Mowen detected for branding as well as for timing significant effects upon the first 3 image items, i.e., sympathy, buying probability, and consumer protection, but no significance for responsibility.

In another analysis Mowen, Jolly and Nickell (1980) used a stepwise regression approach. They asked consumers, with respect to four well-known manufacturers with recent recalls, for their "perception of the company" and found no significant effects of the timing factor.

Another difference seems even more important. The branding factor has no significance in my analysis, but seems to be significant in US data. Specifically, Mowen demonstrates for US data that consumers grade the responsibility for product defects in case of well-known brands higher than in cases of unknown manufacturers. There is no corresponding observation in German data.

MANAGERIAL IMPLICATIONS AND FURTHER RESEARCH

Further research is needed to settle the dispute about relevant factors and to explore the obvious differences between US and German data. We expect insights by a more detailed analysis of variance for different consumer segments formed along demographic and psychographic variables. We, thus, might examine both the branding factor and the timing factor for consumers with different

risk perception and/or strive for safety. Without those insights, the outlook to managerial implications of our analysis must be of a preliminary kind.

First, the familiarity and reputation of the recalled product or the recalling firm does not seem to be that important for image effects as the marketeers used to think. Our analysis leads to the conclusion: A high reputation does not insure against image-losses. We may even go further: If well-known and less-known manufacturers are equally involved, then the highly reputed firm is struck even harder. This firm has something to loose!

Second, we may have to point to the central importance of the timing factor. The time span between first detection of defects and injuries and the recall can hardly be overrated. This finding indicates the rather special type of the recall decision. Obviously, the recall must be arranged at once (or, at least, very fast) or not at all. A late decision in favor of a recall is - at least with respect to the manufacturer's image - devastating. Recall decisions, thus, are typically decisions under extreme time pressure. A deferral tends to increase the image costs of a later recall dramatically. The recall decision, thus, turns out to belong to the type of "now-or-never" decisions without ample time for a thorough consideration of all aspects of the decision.

A final remark pertains to the negative sign of the image-shift. There is some speculation in marketing management about positive shifts due to a recall. Reference is made to people who confronted with a product recall develop feelings of satisfaction and gratefulness towards a manufacturer taking so much care for his products after all these years. Unfortunately, there was no statistically significant evidence for this kind of feeling in our data.

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Send correspondence regarding this article to:
Dirk Standop
Betriebswirtschaftslehre/Marketing
Universität Osnabrück
D-4500 Osnabrück
GERMANY