

IS RECALLING GOOD? LEARNING FROM TOY RECALLS

HARI BAPUJI
I.H. Asper School of Business
University of Manitoba

MARY CROSSAN
Richard Ivey School of Business
University of Western Ontario

MANPREET HORA
Richard Ivey School of Business
University of Western Ontario

~~~~~

The authors would like to thank Andre Laplume for his research assistance.

## **Is recalling good? Learning from toy recalls**

### ***ABSTRACT***

Current research on product recalls suggests that recalls present significant challenges to managers and affect organizational performance. However, very little is known about the effect of product recalls on organizational learning. In this paper, we argue that product recalls help organizational learning and reduces future recalls. Specifically, we contend that product recall experience of various types is associated with reduced future recalls. We test our contentions on the toy recalls initiated by 192 unique firms over an 11-year period and found broad support for our hypothesis. Our findings have important implications for the research and practice on organizational learning and product recalls.

## ***INTRODUCTION***

Consumer product recalls, particularly the recall of toys, have gained considerable attention across the world and raised concern about consumer product safety. In the U.S. alone, 22 toy-related deaths and an estimated 220,500 toy-related injuries occurred in 2006 (Chowdhury, 2007). According to the U.S. Consumer Product Safety Commission, the deaths, injuries, and property damage arising from faulty products is estimated to cost the U.S. more than \$800 billion annually. However, very little research attention has been directed toward product recalls (Beamish & Bapuji, 2008).

Existing literature on product recalls largely focused on examining the effect of recalls on organizational performance and found that recalls decrease performance (Bromiley & Marcus, 1989; Hoffer, Pruitt, & Reilly, 1988). This research has not, however, examined how product recalls may be reduced. Some researchers argued that product recalls can be reduced by learning from recalls (Bapuji & Beamish, 2008). However, very rarely did researchers examine the plausibility of learning from recalls and reducing future recalls (for an exception see Haunschild & Rhee, 2004). In this paper we examine the effect of experience with different types of product recalls on the decrease in product recalls through organizational learning.

Our central thesis is that recall experience of firms facilitates learning from recalls to reduce future recalls. In particular, we hypothesize that: (i) recall experience is associated with reduced recalls in the future; (ii) experience with severe recalls is associated with reduced recalls in the future; and (iii) recall experience with products involving design flaws is associated with reduced recalls caused by design flaws. We test our hypotheses on the population of 192 firms that recalled toy products during 1997-2007.

The remainder of this paper is organized as follows. First, we provide the theoretical background on product recalls and organizational learning. Next, we develop hypotheses and describe the research methods. Then, we present the results and discuss the implications for research and practice.

## ***PRODUCT RECALLS, EXPERIENCE AND ORGANIZATIONAL LEARNING***

Product recall is a request by a firm to stop using the product it sold in the manner it was sold. A recall occurs when a product poses a danger to consumers or violates a consumer product safety regulation (Chu, Lin, & Prather, 2005). Depending on the nature of the hazard posed and the logistics involved, the firm may ask customers to discard the product, or offer a remedy in the form of a repair, replacement, or a refund.

A recall may occur because the danger posed by a product is not often foreseen or the knowledge related to that issue may not have been available to the organization. For example, many toy companies used magnets in their toys, but did not secure them, which made the magnets a possible hazard for children when they played with the toys. Although the possible danger of children swallowing a small component of a toy was known, the conventional wisdom in the toy industry was that a small object swallowed by a child would pass through the intestines. Unfortunately, when children swallowed more than one magnet, the swallowing ruptured the intestines of the children and posed a serious danger, including at least one death. Although this knowledge was available

to the medical community as early as 1996, it was not available to the toy industry until the first recall for magnet hazard in March, 2006 (Bapuji & Beamish, 2008).

A recall may also occur when organizations overlook the concerns arising in the design or testing phase, often because they are in a hurry to introduce the product into the market. For example, Graco produced a cradle, the Converta-Cradle, in 1989 without a restraint belt to prevent babies from sliding to a corner and suffocating, despite engineers' recommendations to the contrary. After several infant deaths, Graco recalled all 169,000 of the units sold (Felcher, 2001).

Recalls have serious consequences not only for consumers but for the companies involved all along the affected supply chain. In a recall situation, firm reputation is threatened, product quality is questioned, management systems come under scrutiny, and negative sentiments are generated (Cheah, Chan, & Chieng, 2007; Rhee & Haunschild, 2006). In particular, a recall can have negative performance consequences for firms (Bromiley & Marcus, 1989; Davidson & Worrell, 1992; Jarrell & Peltzman, 1985; Pruitt & Peterson, 1986). Further, the indirect costs of recalls, such as damage to firm reputation, may outweigh the direct costs (Rupp, 2004).

On average, over 400 consumer product recalls are announced each year in the U.S alone. In the recent past, product recalls have increased steadily, even after controlling for the growth in consumption (Bapuji & Beamish, 2007; Bapuji, Beamish, & Laplume, 2007). Some researchers argued that product recalls can be reduced through organizational learning (Bapuji & Beamish, 2008). Evidence of this was provided by researchers who studied automotive product recalls and found that organizational learning occurred when the recalls are initiated voluntarily rather than mandated<sup>1</sup> (Haunschild & Rhee, 2004). Besides the notable exception of Haunschild and Rhee, the sparse research on product recalls has not examined the issue of organizational learning surrounding product recalls (Beamish & Bapuji, 2008).

Organizational learning is the “development of insights, knowledge, and associations between past actions, the effectiveness of these actions, and future actions” (Fiol & Lyles, 1985:511). Organizational learning occurs when individuals in an organization act as members of the organization (Argyris & Schon, 1978) to share their intuitions and insights with groups in the organization. The intuitions so shared are interpreted, integrated, and institutionalized with the help of a number of organizational systems and processes (Crossan, Lane, & White, 1999). While it is possible to examine organizational learning processes with in-depth case studies (Crossan & Berdrow, 2003), in large sample studies the learning is typically inferred from improved performance or reduced costs.

Researchers have argued that experience is a vital component of organizational learning (Levitt & March, 1988). This is evident in the literature on learning curves, which suggested that accumulated experience helps organizations to improve productivity and reduce failures (Argote, Beckman, & Epple, 1990; Darr, Argote, & Epple, 1995; Levin, 2000). While experience facilitates learning in general, certain characteristics of

---

<sup>1</sup> While the issue of volition is an important factor in learning, the same cannot be examined in the case of consumer product recalls, which are initiated by the U.S. Consumer Product Safety Commission in cooperation with the companies involved. As a result, all the recalls are termed voluntary.

experience such as similarity and recency are more salient for organizational learning. Some researchers argued that organizations learn better from more recent and similar experience (Miller, 2002). Consequently, researchers found that organizations improve their performance only when they apply learning from one context in a situation from a similar context (Finkelstein & Haleblan, 2002; Hayward, 2002). Further, researchers found that recent experience is more salient for organizational learning than distant experience (Darr et al., 1995; Ingram & Baum, 1997).

Organizations not only learn from their experience, but also learn vicariously from the experience of other organizations in the industry (Huber, 1991). Evidence of vicarious learning was found by many researchers in industries such as banking (Greve, 1998; Greve, 2000), healthcare (Baum, Li, & Usher, 2000), and university colleges (Kraatz, 1998).

As discussed above, the extant research has examined the effect of experience in general on organizational learning. It also examined the effect of the characteristics of experience such as recency and similarity on organizational learning. Further, it has also examined the effect of experience of other organizations on organizational learning. However, the research has not examined the effect of different types of experience on organizational learning.

Organizational experience can be viewed at an aggregate or a conceptual level such as a generalized experience reflected in production experience or acquisition experience. The experience can also be categorized depending on the content and context of the experience. For example, production experience can be categorized further to examine experience with different types of production such as batch production or assembly production. Similarly, acquisition experience can be categorized in terms of related or unrelated acquisitions or friendly or hostile acquisitions. Considering that experience in one context may not be applicable in other contexts, it is possible that experience of one type may not be relevant for learning of a different type. As discussed below, the product recalls provide the appropriate context to examine the effect of different types of experience on organizational learning, to generate a nuanced understanding of the relationship between experience and learning.

### **Recall Experience Types**

Recalls present a rich experience for organizations. The recalls act as a crisis or a shock that facilitates questioning of the existing assumptions and routines. While a recall in general can provide experience at a general level, the experience of recalls can vary depending on a number of factors such as the reason for the recall, severity of the harm caused by the product recalled (injuries to consumers), compensation offered (repair or refund), size of the recall (small or large), breadth of the recall (global or local), locations where the recall was announced (subsidiary or headquarters), the variety of consumer complaints, and the rigidity of the organizational systems (length of time the product was made by the organization and sold on the market). However, for the purposes of this paper, we focus on three different types of experience, as elaborated in the following paragraphs.

***Overall Recall Experience.*** At a general level, any recall provides an experience. The recalls can be helpful in reviewing the systems in an organization so that they may be more flexible and responsive as they manage the recall.

***Design-Recall Experience.*** A recall could be initiated because of a design or a manufacturing flaw in the products. A design defect is inherent to the product and includes such things as the use of small detachable parts, like button-eyes and beads as well as the use of strings and awkward spaces that can lead to strangulation or entrapment. Manufacturing defects occur because of the use of toxic chemicals (such as the high lead content found in some toys), faulty assembly, or substandard parts (Bapuji & Beamish, 2007; Bapuji et al., 2007). Design-recalls would call for a change in the overall design and structure of the product and possibly overhauling of the entire value chain of the product. In contrast, a manufacturing recall would call for a change in the raw material or fixing some machinery. Therefore, depending on the nature of the flaw, the experience could differ. In this paper, we focus on design flaws because a vast majority of flaws that result in recalls are design flaws (Bapuji & Beamish, 2007; Bapuji et al., 2007).

***Severe-Recall Experience.*** A recall is issued when a firm or CPSC finds out that a problem exists with the products sold. Typically, these are based on complaints about products failing (incidents), failure resulting in injuries to the consumer (injuries), or failure causing the death of the user (deaths). The recalls following deaths and injuries are often immediate and comprehensive. On the other hand, the recalls involving failure of products require investigations to find out if the incidents could be prevented or they were dangerous enough to initiate a recall. As a result, the experience arising from severe recalls is different from the experience arising from non-severe recalls.

As the experience differs based on the content and type of recall, the learning arising from those experiences can also differ and reflects in a decrease in recalls in general, design-recalls, or severe-recalls.

In sum, the product recalls literature has not examined the plausibility of organizational learning occurring from recalls. On the other hand, the literature on organizational learning has examined the effect of experience and its various characteristics on learning, but has not examined the effect of different types of experience on organizational learning. Depending on the type of recall, the experience arising from recalls can be categorized into overall recall experience, design-recall experience, and severe-recall experience. These different types of experience will have a different type of effect on organizational learning from recalls. The following section presents hypotheses linking experience types and organizational learning.

## ***HYPOTHESES DEVELOPMENT***

In this section, we present three hypotheses linking overall recall experience, and severe-recall experience with organizational learning. We argue that overall recall experience is associated with organizational learning reflected in two different types of learning: a reduction in overall recalls and a reduction in design-related recalls. We also argue that severe-recall experience is associated with a reduction in overall recalls.

### **Overall Recall Experience and Learning**

A recall situation presents a learning opportunity for companies issuing the recall. As recalls arise because of negative and harmful consequences to consumers, the organization is necessarily exposed to this new information. As the consequences of organizational actions become evident, the systems and processes leading to those actions will be questioned and changed (Cyert & March, 1963). For example, in 2007

Mattel recalled a number of toys due to excess lead on the surface paint. They found that the paint with excessive lead was used by one of their suppliers, which had gone unnoticed. Prior to this recall, Mattel asked the suppliers to test and certify that the paint used met the U.S. safety standards. Following the recall, Mattel instituted a three-point inspection system in which each batch of the paint was tested at three different stages in the production cycle (Eckert, 2007).

A firm that is involved in more recalls has more opportunities to learn from them. The literature on learning curves suggests that firms reduce defects and increase productivity with accumulated production experience (Argote et al., 1990; Darr et al., 1995; Epple, Argote, & Devadas, 1991). Research on experiential learning also found that with increased experience, firms learn to improve their performance through better actions (Haleblian & Finkelstein, 1999; Shaver, Mitchell, & Yeung, 1997). Extending this logic to product recalls we hypothesize:

*H1: Experience of an organization with product recalls will be positively associated with organizational learning, reflected in a reduction in subsequent product recalls by the firm.*

Recalls present opportunities for learning, but the extent to which the opportunities can be utilized by organizations depends on the problem that prompted the recall. If a product has been recalled due to manufacturing flaws, the firm can strengthen control and monitoring. However, manufacturing flaws can occur during production despite the best control and monitoring systems. Particularly, in situations where the manufacturing is outsourced, the organizations have limited opportunities to learn and improve. This is particularly relevant in the context of the toy industry in which manufacturing is done in low-cost Asian countries, largely through suppliers. For example, toy industry leader Mattel manufactures all of its toys in Asian countries. Further, about half of the toys are made in the factories owned by Mattel whereas the rest are made in the factories of suppliers. Similarly, Hasbro the second largest toy company manufactures all of its toys in Asian countries, largely in the factories owned by suppliers. As a result of the manufacturing occurring in Asian countries, largely through suppliers, the toy companies have been specializing in design and development of toys.

In contrast to the manufacturing flaws that originate in the production process, a design flaw originates in the organization issuing the recall and typically the organization has full control over the design process (Bapuji & Beamish, 2007). Consequently, the recall experience is more likely to help in improving the design process. Design flaws are typically in the control of organization and are often easier to modify. Further, organizations have more incentives to improve the designs because the savings arising from small design modifications can be higher. Finally, as toy companies specialize more on designs than manufacturing, it is likely that they try to improve designs as a result of recalls. Therefore, we hypothesize:

*H2: Experience of an organization with product recalls will be positively associated with organizational learning, reflected in a reduction in subsequent product recalls by the firm due to design flaws.*

### **Severe Recall Experience and Learning**

Recalls can vary depending on the severity of the harm caused to the consumers. When a firm learns of the harm to consumers such as injuries or deaths related to its products,

the firm will be required to take action immediately to avoid further harm to more consumers. For example, when a child died because of ingesting magnets in their toys, Mega Brands issued an immediate recall. Later, they worked with Intertek, a leading design and testing company, to redesign their toys containing magnets. Similarly, a number of other companies that recalled toys for the magnet problem also redesigned their toys and strengthened their systems.

When organizations face a severe recall, it presents a crisis situation for them. In a crisis situation, organizational routines are questioned more vigorously (Kim, 1998). Consequently, firms review their systems and strengthen their design and manufacturing processes to reduce recalls in the future. For example, when Mattel recalled a number of toys for excess lead paint, they strengthened their systems of testing their toys. Such actions are expected to reduce future recalls. Therefore, we hypothesize:

*H3: Experience of an organization with severe product recalls will be positively associated with organizational learning, reflected in a reduction in subsequent product recalls by the firm.*

## **METHODOLOGY**

### **Sample and Data**

Our research setting is the U.S. toy industry, which represented USD 22.3 billion in sales in 2006. Our sample includes all firms that issued at least one product recall, in cooperation with the CPSC between 1997 and 2007. The CPSC is an independent federal agency created in 1972 to protect U.S. consumers “against unreasonable risks of injuries associated with consumer products” (CPSC). The CPSC has the authority to regulate the manufacture and sale of over 15,000 different types of consumer products, excluding automobiles, food, firearms, tobacco and alcohol, which are all regulated by other agencies. CPSC fulfills its mandate through voluntary and mandatory standards, bans on dangerous goods, and recalls of products already on the market.

The CPSC learns of potentially unsafe products via a consumer hotline and website for consumer complaints, from companies that manufactured the products, and by sampling hospital emergency room cases. Based on the information it receives, the CPSC initiates a dialogue with the companies involved to minimize the damage to consumers by recalling the products. The recall notices published by CPSC constitute the source of data for this study.

During our study period (1997-2007), 192 companies issued toy recalls in cooperation with the CPSC. We restricted the study period for the latest decade because a number of firms in the period prior to 1997 were small firms who ceased to exist or were acquired by other firms. Also, a number of recalls during this period pertained to the product sold for a long time, often to the period before CPSC was established. Therefore, we focused on the period during which the recalls data was more representative of the phenomenon under investigation. Although we studied the recalls for the period 1997-2007, we computed the recall experience of firms from 1974, from the date of first recall. This enabled us to capture the recall experience more accurately.

Our data source differs from previous management research using product recalls, which has largely relied on automotive recall notices published by a newspaper of record (e.g., Barber & Darrough, 1996; Davidson & Worrell, 1992; Jarrell & Peltzman,



1985; Pruitt & Peterson, 1986). However, by relying on the data from CPSC, we have not only ensured completeness of the data, but also obtained a sample size larger than what may be available in newspapers, which tend to publish only high-profile recalls.

### **Dependent Variable**

*Organizational Learning.* The dependent variable for our hypotheses is organizational learning. Following prior research (Baum et al., 2000; Haunschild & Rhee, 2004), we operationalized organizational learning as the number of recalls issued by a firm in a given year. This dependent variable was used to test H1 and H3. To examine learning specific to design-related recalls, we computed a measure as the proportion of recalls due to design flaws relative to all the recalls issued by the firm in a given year. This measure was used to test H2.

### **Independent Variables**

*Overall Recall Experience.* In order to test hypotheses H1 and H2, we computed overall recall experience based on recalls issued by a firm. We assigned a value of zero until a firm issued a recall and assigned a value of one in the year in which a firm issued a recall. If a firm issued multiple recalls in a year, the value was assigned to reflect the number of recalls. For example, a firm issuing four recalls in a given year would receive a value of four for recall experience in that year. Following prior research (Baum & Ingram, 1998; Haunschild & Rhee, 2004), we discounted this value by ten percent each year and assigned it as the recall experience in the subsequent years. When a firm issued another recall in the subsequent years, a value of one was added to the discounted experience from previous recalls. As a result, our measure of experience provides more weight to the recent experience and less to the distant experience.

*Severe Recall Experience.* To test hypothesis H3, we computed severe recall experience based on severe recalls issued by a firm. We assigned a value of zero until a firm issued a severe recall and assigned a value in the year in which a firm issued a recall, computed based on incidents, injuries and deaths, provided on the recall notices. An incident is a case of the product failing but an injury is a case where the failure injured the consumer, while death is case where such failure resulted in a fatality. Reported incidents (near-injuries) outnumbered reported injuries, which are more severe. The cases where death occurred are rare, but signify a higher level of severity. Consequently, we multiplied injuries by five and deaths by ten to give them more weight in our measure of severe-recall experience. Similar to the measure of overall recall experience, we discounted the value by 10 percent to provide more weight to the recent experience than distant experience.

### **Data Analysis and Results**

We present the descriptive statistics and correlations pertaining to the study variables in Table 1.

**Table 1: Descriptive Statistics and Correlations**

| No. | Variable                          | Mean | Std. Dvn. | Min. | Max.   | N    | 1     | 2     | 3   | 4 |
|-----|-----------------------------------|------|-----------|------|--------|------|-------|-------|-----|---|
| 1   | Organizational learning – overall | 0.70 | .37       | 0    | 13     | 4532 | 1     |       |     |   |
| 2   | Organizational learning – design  | .74  | .44       | 0    | 1      | 244  | -0.06 | 1     |     |   |
| 3   | Overall recall experience         | .52  | .94       | 0    | 24.7   | 4532 | .11   | 0.08  | 1   |   |
| 4   | Severe recall experience          | 8.5  | 82.7      | 0    | 2551.7 | 4499 | .11   | -0.01 | .47 | 1 |

The nature of our two dependent variables necessitated us to run two separate models using different analytical techniques. Since Hypotheses 1 and 3 estimate the number of recall as a DV, the specification equation is:

$$RECALL_{it} = \beta_0 + \beta_1 EXPERIENCE_{i(t-1)} + \beta_2 SEVERITY_{i(t-1)} + \sum_{T=1}^T \beta_3 YEAR_t + \eta_i + \varepsilon_{it}$$

where dependent variable  $RECALL_{it}$ , is the non-negative integer-valued count variable for organizational learning, measured by the number of recalls experienced  $i$  in year  $t$ ,  $EXPERIENCE_{(t-1)}$  is the lagged measure of overall recall experience,  $SEVERITY_{(t-1)}$  is the lagged measure of severe-recall experience,  $YEAR$  are the year dummies to control for possible fixed time effects,  $\eta_i$  captures unobserved heterogeneity in the data and  $\varepsilon_{it}$  is residual error capturing all other effects.

Since the dependent variable is a non-negative count variable, “a linear model might not provide the best fit over all values of the explanatory variable” (Wooldridge, 2003:574). By having a count variable, the assumption of normality is violated. With count as a dependent variable, the distribution may follow either a Poisson or a negative binomial distribution. Poisson distribution assumes that the mean and variance of the counts are equivalent. Since our data does not follow this assumption, we employed the negative binomial model.

Unobserved heterogeneity in the above specification equation is related to the omitted firm-specific variables. For example, Haunschild and Rhee (2004) outline the inherent challenges in measuring failures like product recalls because of unobserved heterogeneity. Although controlling for unobserved heterogeneity is difficult with cross-sectional data, panel data with repeat information on operational failure for each firm provides a robust alternative (Blundell, Griffith, & Reenen, 1995). Therefore, to avoid confounding the association between learning from recalls and experience, we controlled for unobserved heterogeneity. We utilize the conditional approach that rewrites the likelihood function.

Table 2 displays the estimation results of the negative binomial model for learning from recalls. Model 1 includes only the explanatory variables, while Model 2 includes year dummies.

**Table 2: Results for H1 and H3: Negative Binomial Model**

| <b>Variables</b>          | <b>Model 1</b> | <b>Model 2</b> |
|---------------------------|----------------|----------------|
| Overall Recall Experience | -5.26***       | -8.92***       |
| Severe Recall Experience  | 4.31***        | 5.17***        |
| Time Dummies              | No             | Yes            |
| Wald-Statistic            | 27.65***       | 159.86***      |

Notes:

- N= 2112 (Firms =192, Years =11)
- Unstandardized regression coefficients
- \*\*\*p < 0.01, \*\* p < 0.05, \* p < 0.1 (two-tailed significance)

To test the hypothesized association between overall recall experience and the reduction in design recalls (H2), we used the proportion of annual design recalls over total annual recalls as the dependent variable. The values on this measure were closer to the extremes, i.e., closer to 0 or 1, which violated the assumption of normality. Thus, to obtain a normal distribution with uniform variance, the measure was arcsine square-root transformed. Then, we employed fixed-effects regression to test hypothesis 2.

**Table 3: Results for H2: Fixed Effects Regression**

| <b>Variables</b>          | <b>Model 1</b> | <b>Model 2</b> |
|---------------------------|----------------|----------------|
| Overall Recall Experience | -2.47***       | -2.32***       |
| Time Dummies              | No             | Yes            |
| R <sup>2</sup>            | 5.07%          | 8.78%          |

Notes:

- Unstandardized regression coefficients
- \*\*\*p < 0.01, \*\* p < 0.05, \* p < 0.1 (two-tailed significance)

As presented in Table 2, the coefficient of overall experience was negative and significant at  $p < 0.01$ , indicating support for hypothesis 1 that overall experience with recalls results in organizational learning, resulting in a reduction in the future recalls by the firm. The coefficient for severe-recall experience was positive and significant at  $p < 0.01$  indicating that experience with severe recalls would in fact increase future recalls. This is contrary to the hypothesis H2 that severe-recall experience will reduce future recalls. As presented in Table 3, the coefficient of overall recall experience was negative and significant at  $p < 0.01$ , indicating that overall recall experience results in organizational learning, resulting in a reduction in the future recalls for design-related reasons.

In sum, our analysis indicated that overall recall experience is helpful to reduce future recalls in general as well as recalls arising from design flaws. Contrary to our expectation, experience with severe recalls increased future recalls. We discuss these findings and their implications in the following section.

## *DISCUSSION*

Product recalls have increased in the recent past, raising serious concern about consumer product safety. Very little research has examined issues surrounding recalls, particularly organizational learning. Our research sought to examine the effect of recall experience on learning.

Our results indicate that product recalls provide an opportunity for organizational learning, and reduce future recalls by organizations. The effect of recall experience on reducing recalls in general, and recalls arising from design flaws indicates the positive effect of learning due to product recalls. By showing the relationship between different types of recall experience on different types of learning, our results complement the results of Haunschild and Rhee (2004) who found that voluntary product recalls enhance organizational learning.

Contrary to our expectation, experience with severe recalls increased future recalls by firms. There are several factors that may explain this finding, however we cannot conclude whether it is an artifact of the data or whether firms are not learning from severe recalls. When a recall is severe, the organization may engage in defensive behaviour. While most recalls result in litigations by consumers seeking damages, severe recalls involving deaths and injuries can be very damaging to organizations. In those cases, the organization faces a number of law suits. For example, following the recalls in 2007, Mattel faced about 20 different law suits from consumers, and eight law suits from shareholders. As a result of the litigations, the organization may become defensive and maintain that the consumer was at fault. Such defensive behaviour could prohibit organizational learning. However, when a firm faces severe recalls, it learns of the negative consequences and as a result becomes over cautious and issues a recall to avoid injuries and deaths. Finally, the content and wording of recall notices are negotiated between CPSC and the company involved. As a result, only those cases in which the injury/death can be directly and clearly attributed to the company are reported in recall notices. Although there is no systematic pattern in this reporting, the data is less reliable. A different measure of severe-recall experience might provide different results.

Although our results shed useful light on learning from recall, our study is set in the toy industry. As a result, we control for the variation in data that may have been caused by the industry, but the generalizability of our results cannot be claimed. Despite this, our study makes two important contributions. First, although recalls may be increasing in the toy industry, our study points that firms involved in recalls have learned from them to reduce future recalls. This extends the current research on product recalls to examine firm-level variation in recalls. Second, our research examined the effect of an overall, generalized recall experience on organizational learning of two types: reduction in overall recalls and reduction in design-related recalls. In doing so, we raise the question of whether generalized and specific experiences might have a different effect on general and specific learning from recalls.

In conclusion, product recalls present an important opportunity for organizational learning. As a result, the product recalls present a useful context to the researchers interested in examining organizational learning. Considering the increased prevalence of recalls, research on product recalls will be very useful to inform both theory and practice.

## References

- Argote, L., Beckman, S., & Epple, D. 1990. The persistence and transfer of learning in industrial settings. *Management Science*, 36(2): 140-154.
- Argyris, C., & Schon, D. A. 1978. *Organizational learning: A theory of action perspective*. MA: Addison-Wesley.
- Bapuji, H., & Beamish, P. 2007. Toy recalls: Is China really the problem?: 9. Vancouver, Canada: Asia Pacific Foundation of Canada.
- Bapuji, H., & Beamish, P. 2008. Product recalls: Avoid hazardous design flaws. *Harvard Business Review*(March): 23&26.
- Bapuji, H., Beamish, P., & Laplume, A. 2007. Toy import and recall levels: Is there a connection? Vancouver, Canada: Asia Pacific Foundation of Canada.
- Baum, J. A. C., & Ingram, P. 1998. Survival-enhancing learning in the Manhattan hotel industry, 1898-1980. *Management Science*, 44(7): 996-1016.
- Baum, J. A. C., Li, S. X., & Usher, J. M. 2000. Making the next move: How experiential and vicarious learning shape the locations of chains' acquisitions. *Administrative Science Quarterly*, 45(4): 766-801.
- Beamish, P., & Bapuji, H. 2008. Toy recalls and China: Emotion vs. evidence. *Management and Organization Review*, 4(2).
- Blundell, R., Griffith, R., & Reenen, J. V. 1995. Dynamic Count Data Models of Technological Innovation. *The Economic Journal*, 105(429): 333-344.
- Bromiley, P., & Marcus, A. 1989. The deterrent to dubious corporate behavior: Profitability, probability and safety recalls. *Strategic Management Journal*, 10: 233-250.
- Cheah, E., Chan, W., & Chieng, C. 2007. The corporate social responsibility of pharmaceutical product recalls: An empirical examination of U.S. and U.K. markets. *Journal of Business Ethics*, 76(4): 427-449.
- Chowdhury, R. 2007. Toy related deaths and injuries calendar year 2006. Consumer Product Safety Commission.
- Chu, T., Lin, C., & Prather, L. 2005. An extension of security price reactions around product recall announcements. *Quarterly Journal of Business and Economics*, 44(3/4): 33-49., 44(3/4): 33-49.
- Crossan, M., & Berdrow, I. 2003. Organizational learning and strategic renewal. *Strategic Management Journal*, 24(11): 1087-1105.
- Crossan, M. M., Lane, H. W., & White, R. E. 1999. An organizational learning framework: From intuition to institution. *Academy of Management Review*, 24(3): 522-537.
- Cyert, R., & March, J. 1963. *A behavioral theory of the firm*. Englewood Cliffs, NJ: Prentice-Hall Inc.
- Darr, E. D., Argote, L., & Epple, D. 1995. The acquisition, transfer, and depreciation of knowledge in service organizations: Productivity in franchises. *Management Science*, 41(11): 1750-1762.
- Davidson, W. N., & Worrell, D. L. 1992. The Effect of Product Recall Announcements on Shareholder Wealth. *Strategic Management Journal*, 13(6): 467-473.
- Eckert, R. 2007. Import Product Safety, *Sub-committee on Commerce, Trade, and Consumer Protection of the Committee on Energy and Commerce*. Washington DC.
- Epple, D., Argote, L., & Devadas, R. 1991. Organizational learning curves: A method for investigating intra-plant transfer of knowledge acquired through learning by doing. *Organization Science*, 2(1): 58-70.
- Felcher, M. 2001. *It's No Accident: How Corporations Sell Dangerous Baby Products*. Monroe, ME: Common Courage Press.

- Finkelstein, S., & Halebian, J. 2002. Understanding acquisition performance: The role of transfer effects. *Organization Science*, 13(1): 36-47.
- Fiol, M. C., & Lyles, M. 1985. Organizational learning. *Academy of Management Review*: 803-813.
- Greve, H. 1998. Performance, aspirations, and risky organizational change. *Administrative Science Quarterly*, 43: 58-86.
- Greve, H. R. 2000. Market niche entry decisions: Competition, learning, and strategy in Tokyo banking, 1894-1936. *Academy of Management Journal*, 43(5): 816-836.
- Halebian, J., & Finkelstein, S. 1999. The influence of organizational acquisition experience on acquisition performance: A behavioral learning perspective. *Administrative Science Quarterly*, 44(1): 29-56.
- Haunschild, P., & Rhee, M. 2004. The role of volition in organizational learning: The case of automotive product recalls. *Management Science*, 50(11): 1545-1560.
- Hayward, M. L. A. 2002. When do firms learn from their acquisition experience? Evidence from 1990-1995. *Strategic Management Journal*, 23(1): 21-39.
- Hoffer, G., Pruitt, S., & Reilly, R. 1988. The impact of product recalls on the wealth of sellers: A re-examination. *Journal of Political Economy*, 96: 663-670.
- Huber, G. P. 1991. Organizational learning: The contributing processes and the literatures. *Organization Science*, 2: 88-115.
- Ingram, P., & Baum, J. A. C. 1997. Opportunity and constraint: Organizations' learning from the operating and competitive experience of industries. *Strategic Management Journal*, 18: 75-98.
- Jarrell, G., & Peltzman, S. 1985. The impact of product recalls on the wealth of sellers. *Journal of Political Economy*, 93: 512-536.
- Kim, L. 1998. Crisis construction and organizational learning: Capability building in catching-up at Hyundai Motor. *Organization Science*, 9(4): 506-521.
- Kraatz, M. S. 1998. Learning by association? Interorganizational networks and adaptation to environmental change. *Academy of Management Journal*, 41(6): 621-643.
- Levin, D. Z. 2000. Organizational learning and the transfer of knowledge: An investigation of quality improvement. *Organization Science*, 11(6): 630-647.
- Levitt, B., & March, J. 1988. Organizational learning. *Annual Review of Sociology*, 14: 319-340.
- Miller, K. D. 2002. Knowledge inventories and managerial myopia. *Strategic Management Journal*, 23(8): 689-706.
- Pruitt, S., & Peterson, D. 1986. Security price reactions around product recall announcements. *Journal of Financial Research*, 9: 113-122.
- Rhee, M., & Haunschild, P. 2006. The liability of good reputation: A study of product recalls in the U.S. automobile industry. *Organization Science*, 17(1): 101-117.
- Rupp, N. 2004. The attributes of a costly recall: Evidence from the automotive industry. *Review of Industrial Organization*, 25: 21-44.
- Shaver, J. M., Mitchell, W., & Yeung, B. 1997. The effect of own-firm and other-firm experience on foreign direct investment survival in the United States, 1987-92. *Strategic Management Journal*, 18(10): 811-824.
- Wooldridge, J. M. 2003. *Introductory Econometrics: A Modern Approach*. South-Western College Publications.