



Consumer liability and firm responsiveness: evidence from automobile recalls

Kashef Abdul Majid¹ · Hari Bapuji²

Received: 12 December 2022 / Revised: 8 April 2024 / Accepted: 26 April 2024
© The Author(s) 2024

Abstract

Regulations for product recalls differ internationally. In some countries, the responsibility rests entirely with manufacturers to quickly take corrective measures to ensure consumer safety. In other countries, penalties may also be imposed on consumers who persist in using products that have been recalled. We hypothesize that firm responsiveness (as measured by the time between the product release and the recall) will be higher in markets where product safety regulations that include consumer liability than in markets where product safety regulations focus solely on firms, and that firms that standardize their vehicles across such markets become more responsive in both those markets. We test our hypotheses using data on 569 automobile recalls issued during 2003 to 2019 in four different markets (the US, Australia, Germany, and the UK) that differ in their regulatory focus. Our empirical examination using survival analysis techniques with an accelerated failure time model confirms that the time to recall is shorter in countries that include consumer liability and for standardized vehicles that are sold across countries that include and exclude consumer liability.

Keywords Regulations · Consumer liability · Responsiveness · Product recalls · Hazard modeling

Introduction

Businesses that operate internationally are exposed to regulations to address market failures caused by gaps in the market (Mudambi & Navarra, 2002). In other words, regulations are intended to strengthen a well-functioning market and the firms within it (Mudambi & Navarra, 2002). These regulations often face a philosophical dilemma, such as preventing collective harm or to protect individual rights. For example, the recent debates of COVID-19 vaccine mandates highlighted the contrast in philosophies between collective

harm reduction and the rights of individuals to make their own decisions (Gostin et al., 2020). The balance between individual freedoms and collective responsibility has been an issue of great debate in the realm of economics (Friedman & Friedman, 1990), public health (Gostin et al., 2020; Hafner-Eaton & Pearce, 1994), law (Blum & Talib, 2006), and consumer affairs (Asher, 1998).

Individual freedoms are the basis of a well-functioning free market (Friedman & Friedman, 1990) but the degree to which regulations in different countries restricts individual freedoms vary considerably. For example, in the U.S., most consumers 18 years of age or older with no criminal record can easily purchase a gun, while in Japan the process can take months and involve multiple steps to demonstrate competency (Denzer, 2017). As a result, gun ownership in Japan is much lower than it is in the U.S. (Carlsen & Chinoy, 2019). From a consumer perspective, a buyer has the right to do with their person and property as they wish within the confines of the law. However, collective responsibility limits individual freedoms for the good of the whole, such as in the case of traffic laws, which place speed limits to protect people from the harm that speeding cars could cause. In short, the extent to which consumers are liable for the actions of others versus individual freedoms varies

Accepted by Ram Mudambi, Area Editor, 26 April 2024. This article has been with the authors for three revisions.

✉ Kashef Abdul Majid
kmajid@umw.edu
Hari Bapuji
hari.bapuji@unimelb.edu.au

¹ College of Business, University of Mary Washington, 1301 College Ave, Fredericksburg, VA 22401, USA

² Department of Management and Marketing, University of Melbourne, 198 Berkeley Street, Parkville, VIC 3010, Australia

across countries. For example, in some parts of the United States, an individual gun owner can be held responsible if another person were to use that gun in the commission of a crime while in other jurisdictions in the United States the gun owner cannot be liable unless he/she took part in the crime (Debusmann Jr., 2024). Thus, laws pertaining to guns may or may not include consumer liability when a crime is committed by others. Studying the effect of these differing regulatory environments (i.e., consumer liability vs. non) on the operations of businesses provide a unique policy-relevant insight and further impetus for policymakers to pursue one approach over another (Van Assche, 2018).

The purpose of our work is to examine the balance between individual freedoms and collective responsibility from the perspective of how it impacts businesses. Specifically, we ask: how do regulatory environments that include consumer liability impact how the business operates? Our context comes from the realm of product-harm, specifically product recalls where the onus is on consumers to seek the remedy for a problem that they did not cause. We argue that product safety regulations which focus only on the firm create a situation where the firms may take longer to issue a recall (Davidson II & Worrell, 1992; Hora et al., 2011). This is because product safety regulations that do not contain consumer liability only allow consumers to determine whether they want to continue using the product or not, and to have their products repaired if they choose to. A lack of consumer liability reduces the engagement and urgency in consumers, which then allows the firm more time to debate whether to issue the recall or continue investigating it and determine whether a recall needs to be issued (thereby reducing responsiveness). However, extending product safety regulations to compel consumers to act as well would increase the engagement and urgency in consumers and accordingly, the costs that the firm faces with a product recall, prompting firms to issue a necessary recall as soon as they can. Additionally, we argue that product standardization across international markets increases firm responsiveness in product-harm crises.

Operationalizing firm responsiveness as time to recall (Hora et al., 2011; Muralidharan et al., 2022), we tested our hypotheses on 569 recalls issued in four different countries (U.S., UK, Germany, and Australia) during the period. Two of these contexts (UK and Germany) represent regulatory environments that targets customers, in addition to firms, to have recalled cars fixed, while the other two (US and Australia) only target the firms. We found support for our hypotheses.

Our study makes three contributions. First, by showing the positive impact of product safety regulations on firm responsiveness, our study nuances prior research on international business, which has commonly examined the negative consequences of product safety regulations on firms. Further, by examining the wider issue of regulatory

environments that favor either individual rights or collective safety, our study opens up avenues to examine similar dilemmas that exist with respect to regulations. Second, our study contributes to the research on product-harm crises by examining firm actions before a recall, an area that is receiving increasing attention from organizational research and practice (Bapuji & Beamish, 2019; Chen et al., 2009; Eilert et al., 2017), as well as enhanced scrutiny from regulators (Bae & Benitez-Silva, 2010; Li et al., 2022). Third, our findings offer important implications with respect to international business policy at the firm and societal levels.

Theoretical background

Public safety and consumer choice: policy dilemmas

Regulations, in an open market, are designed to reduce opportunism on the part of firms by holding them accountable for what they produce. As such, regulations become a form of multilateral reputation creation by allowing firms who can abide by the regulation to signal their quality (Mudambi & Navarra, 2002). In this study, we compare product safety regulations that make the consumer liable for action as well as the firm with regulations that target the firm only. In the context of product recalls product safety regulations that penalize consumers for not having their vehicles fixed would be considered a regulation that focuses on the firm and includes consumer liability. By including consumer liability, policymakers have taken away a consumer's choice to act (or not act) and imposed a cost on to consumers. The rationale for compelling consumers to act is often rooted in the duty policymakers have to protect the public. A fundamental outcome of consumption is the creation of negative externalities (Kotler, 2011). For example, an automobile manufacturer sells cars, but the cost of pollution is a negative externality that increases with each additional car sold. Therefore, public policy seeks to balance the negative externalities while allowing for private enterprise to flourish. If regulations are too constraining on businesses, they may increase costs for consumers and limit their choice, and subsequently, reduce demand (Kostova et al., 2008).

The challenge that policymakers face when reducing the freedoms of consumers is to establish that the gains to public safety would outweigh the costs imposed on consumers. In 1984, the minimum drinking age was increased to 21 years of age nationally in the U.S. Previously, many states had set the minimum drinking age at 18 years. The impetus for the change was the rising number of alcohol-related car crashes, which was then considered a public health crisis (Voas et al., 2003). Policymakers at that time argued that intoxicated drivers were not only a danger to themselves but to others on the road, which made intoxication a public health crisis.

Once intoxicated driving was viewed as a public health crisis, the public at large supported imposing increased restrictions (Voas et al., 2003).

Further complicating the debate between consumer freedom and public safety is where regulations should be directed. Limitations on consumer freedom can occur when regulators target the manufacturers and/or consumers. In the case of gun regulations, restrictions on the types of firearms that are permitted to be sold are focused on manufacturers, while restrictions pertaining to the registration of firearms are imposed on consumers. When regulations are imposed on manufacturers, they are often met with relatively less resistance because of their uniform distribution (Sperling et al., 2004). However, when regulations target consumers and cause consumers to act, they are often met with consumer resistance, as evidenced when a nationwide ban on plastic bags was enacted in Chile in 2019 (Sandberg, 2021).

The theoretical explanation for why consumers were angered by a regulation that targeted them directly is psychological reactance, the discomfort individuals feel when their freedoms are threatened or reduced (Clee & Wicklund, 1980; Laurin et al., 2013; Sandberg, 2021). Based on the theory of psychological reactance, consumers feel an aversion when their freedoms are threatened or reduced even if it is done for their benefit (Laurin et al., 2013). In terms of consumption, consumers generally feel freedom to use their products as they see fit (Clee & Wicklund, 1980). Therefore, when regulations limit the ability of consumers to enjoy their products or as in the above example, and require them to take additional steps before they can enjoy their cars, a negative state of motivational arousal is created, and the response is to act in order to restore one's freedom (Clee & Wicklund, 1980).

Product recalls

Each year, millions of units of products ranging from toys to automobiles are recalled around the world when flaws in the operation of products threaten consumer safety (Gao et al., 2015; Hora et al., 2011; Van Heerde et al., 2007). Consumers have an expectation of performance with each product they purchase, and when that product fails to perform as intended, the consumer can be put into harm's way. For example, in 2014, General Motors' vehicles having faulty ignition switches had to be recalled after they were linked to 124 deaths and numerous injuries (Burrows, 2018). Further compounding matters, products that are suspected to pose potential harm to consumers are often not recalled immediately after a report of failure (Bae & Benitez-Lopez, 2010). Firms must investigate the recall and determine if it is necessary to issue a recall. In the case of the General Motors recall, the firm was aware of the issue with its ignition switch as early as 7 years prior to issuing a full-scale recall (Basu,

2014). If the recall had been issued earlier, then a fix could have been applied and dozens of deaths could have been averted. The case of the General Motors recall highlights the importance of issuing prompt product recalls.

However, firms are often hesitant to issue a product recall out of fear that they be overreacting to a few isolated problems (Eilert et al., 2017). In fact, as revealed by Dennis Gioia based on his experience as a recall coordinator at Ford, automobile firms have a hundred active recall campaigns and many more being considered as potential candidates for recalls, besides even more issues on which reports of failures are being accumulated to examine whether they are potential candidates for a recall. Given this, firms make a cost-benefit analysis of a recall by comparing the cost of recalling all involved cars, in many cases millions of them, and fixing them with the costs of not recalling and fixing the problem. To estimate the costs of not fixing the problem, firms assign a dollar value for each injury, death, and loss of property from a failure (Gioia, 1992).

Given the intricacies involved in recalls and their potential consequences for firms and consumers, the topic of product recalls has garnered a large amount of attention in the business literature (Li et al., 2022). It has been studied from the perspective of reducing the negative impact on the firm (Chen et al., 2009; Eilert et al., 2017; Rhee & Haunschild, 2006) as well as how firms can organize to limit product recalls (Hora et al., 2011) and prevent future ones (Kalaig-naman et al., 2013). This body of work has predominantly examined the product recalls from the perspective of the firm, specifically how they affect firms and how the firm can manage product recalls (Li et al., 2022). However, equally important in the management of the product recall is the role of policymakers and the regulatory environment (Jackson & Morgan, 1988; Siomkos & Kurzbard, 1994). Yet, prior research has not examined the role of stakeholders, such as consumers and policymakers in managing product recalls (Li et al., 2022).

In the present study, we focus on the product safety regulations governing product recalls, which influences when and how the firm must issue a product recall (Bae & Benitez-Lopez, 2010). Specifically, we contrast the regulatory environments in four countries: the U.S., the UK, Germany, and Australia. An outline of the recall process in the four markets is provided in Table 1. In all four markets, if manufacturers are found to have violated laws that govern product recalls, they can be penalized. But, in the UK and Germany, the penalties can extend to consumers who continue to use recalled automobiles whereas in the U.S. and Australia, consumers are not compelled to stop driving recalled cars or have them fixed if they choose not to. In the UK and Germany, the concern that a recalled automobile may harm others motivates product safety regulations that impose a cost on consumers and compels them to have their automobiles fixed.

Table 1 Vehicle recall process in the U.S., UK, Germany, and Australia

	U.S.*	UK**	Germany***	Australia****
Before the recall	<ul style="list-style-type: none"> o Consumers and partners (dealerships) initiate the complaint with the manufacturer and the National Highway Traffic Safety Administration (NHTSA). o NHTSA conducts an investigation from reported complaints. o The manufacturer also investigates the complaints simultaneously 	<ul style="list-style-type: none"> o Consumers and partners (dealerships) initiate the complaint with the manufacturer and/or the Driver and Vehicle Standards Agency (DVSA). o DVSA conducts an investigation from reported complaints. o The manufacturer also investigates the complaints simultaneously. 	<ul style="list-style-type: none"> o Consumers and partners (dealerships) initiate the complaint with the manufacturer and/or the Kraftfahrt-Bundesamt (KBA) o KBA conducts an investigation from reported complaints. o The manufacturer also investigates the complaints simultaneously. 	<ul style="list-style-type: none"> o Consumers and partners (dealerships) initiate the complaint with the manufacturer and/or the Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDA) o DITRDA conducts an investigation from reported complaints. o The manufacturer also investigates the complaints simultaneously.
Recall decision	<ul style="list-style-type: none"> o Manufacturer issues the recall voluntarily (most recalls are voluntary). o The NHTSA can compel the manufacturer to issue the recall. o Consumers are notified that their vehicle is under recall and the vehicle will be fixed free of charge. 	<ul style="list-style-type: none"> o Manufacturer issues the recall voluntarily. o THE DVSA can compel the manufacturer to issue the recall. o There are two recall levels: (1) Safety recall, this is for issues that do not render the vehicle inoperable or too dangerous to drive; (2) Stop Drive Recall, far more serious than a safety recall, vehicle should not be driven until the issue is rectified. 	<ul style="list-style-type: none"> o KBA compels the manufacturer to issue the recall. o The KBA is obligated to compel the recall if it feels that the flaw is widespread. o Consumers are notified via a Central Vehicle Register. o Vehicle must be repaired free of charge at a specialist shop. 	<ul style="list-style-type: none"> o Manufacturer issues the recall voluntarily (most recalls are voluntary). o The DITRDA can compel the manufacturer to issue the recall. o Consumers are notified that their vehicle is under recall and the vehicle will be fixed free of charge.
Post recall	<ul style="list-style-type: none"> o Consumers are not compelled to have their recalled cars fixed. o A manufacturer can be fined up to \$22,000 for each violation and up to \$111 million total for a series of related violations. o Manufacturers can face class-action lawsuits if they are found to have been negligent or misleading in issuing the recall. o The largest settlement was a \$1.1 billion settlement in 2017 that resolved claims that Toyota knew about a defect in its accelerator pedals that could cause unintended acceleration. The settlement covered owners of 2.3 million Toyota and Lexus vehicles. 	<ul style="list-style-type: none"> o The manufacturer issues a recall notice to consumers. o Under a Stop Drive Recall, drivers that do not have their cars repaired can be fined up to 2,500 pounds, be banned from driving, and receive three penalty points. Vehicles can also be impounded. o Manufacturers can face an unlimited fine. o The most an automobile manufacturer was fined in the UK for a car recall was £10 million. This fine was imposed on General Motors in 2014 for a recall that affected over 1.2 million cars in the UK. 	<ul style="list-style-type: none"> o KBA monitors the recall process and can compel the manufacturer to issue the recall again. o If vehicle owners do not comply with the recall, even after repeated requests, KBA informs the locally responsible registration authority, which can issue an operating ban and withdraw the vehicle's registration. 	<ul style="list-style-type: none"> o Consumers are not compelled to have their recalled cars fixed. o Manufacturers can face class-action lawsuits if they are found to have been negligent or misleading in issuing the recall. o The largest settlement was a \$2 billion (AUD) settlement from Toyota in 2016.

*Adapted from the National Highway Traffic Safety Administration, <https://www.nhtsa.gov/resources-investigations-recalls#recalls>

**Adapted from the Driver and Vehicle Standards Agency, <https://www.assets.publishing.service.gov.uk>

***Adapted from Kraftfahrt-Bundesamt, https://www.kba.de/EN/Themen_en/Marktueberwachung_en/Rueckrufe_en/Rueckrufe_node_en.html

****Adapted from Department of Infrastructure, Transport, Regional Development, Communications and the Arts, <https://www.vehiclecalls.gov.au/>

Responsiveness to product-harm crises

In cases of product-harm crises that involve physical danger to users, products are recalled, eliminating the viable threat of harm. However, a product-harm crisis or a recall does not necessarily indicate poor manufacturing or poor management practices on the part of the firm but may in fact be an unintended consequence of innovative design and manufacturing (Majid & Rhee, 2018). Despite advances in product design and testing, real-life conditions of usage can rarely be replicated during the product-testing phase. Therefore, some flaws are revealed only after the item has been released into the marketplace, necessitating a recall at that stage in the product's life cycle (Bapuji, 2011).

A product recall represents a crisis for the firm since the financial and reputational consequences of such events can be very high. Product recalls can cost a firm millions of dollars in expenses (Jarrell & Peltzman, 1985) in addition to resulting in decreased market share (Rhee & Haunschild, 2006), lost market capitalization (Chen et al., 2009), and negative consumer perceptions towards the firm (Dawar & Pillutla, 2000). For these reasons, a firm is unlikely to recall a product unless it can determine that the product flaw poses serious danger to consumers and that reports of the flaw are not merely isolated cases of product failure due to consumer misuse. The recall decision-making process is further complicated by the fact that a delay in recalling a product will increase the potential for harm because it not only raises the potential for product failure due to wear and tear but also increases the length of time the product is sold on the market, and thus the number of products that must eventually be recalled (Hora et al., 2011). Delays in recalling a product can reflect negatively on the firm's reputation, since firms can be viewed as unresponsive and/or untrustworthy if they do not respond to consumer-safety issues in an appropriate—and swift—manner (Dawar & Pillutla, 2000; Mowen et al., 1981). Product recalls, particularly those in which a firm fails to respond quickly, can prove damaging to them.

Our focus is on the responsiveness of firms, also referred to as speed to recall and time to recall (Li et al., 2022). Responsiveness of a firm in a recall can benefit both the competitiveness of the firm in a foreign market (Miocevic et al., 2022) and the welfare of consumers by limiting harm to them (Li et al., 2022). Responsiveness is key to a market orientation (Smirnova et al., 2018) and firms that display greater degrees of responsiveness benefit when they are in competitive markets because it signals a strong ability to respond to changing conditions (Miocevic et al., 2022). From a societal point of view, increased responsiveness limits harm to consumers and minimizes threats to public health (Li et al., 2022; Park et al., 2022).

It is important to note that firm responsiveness in the context of recalls is different from firm responsiveness in other contexts, where optimal responsiveness is studied (Gerchewski et al., 2015). From a purely economic perspective, firms must be careful not to act too fast and unnecessarily recall a product when a recall is not needed. At the same time, prior research shows that firms face several negative consequences (e.g., loss of shareholder wealth, erosion of consumer confidence) when recalls are delayed (please see Li et al., 2022 for a review). Additionally, automobile recalls pose a significant amount of consumer harm (Miocevic et al., 2022). Given the consequences to firms and consumers due to product recalls, the most detrimental scenario is acting too slowly when a recall was necessary (Li et al., 2022).

In sum, prior research on product recalls has highlighted the complexities of product recalls and their consequences. This research has underscored the importance of firm responsiveness, which can be improved by designing policy and regulations with an appropriate focus.

Hypotheses

Focus of product safety regulations and firm responsiveness

A country's regulatory environment plays an important role in firm responsiveness, as firms adjust their operations to deal with different institutional arrangements across their various operations (Dunning & Lundan, 2008; Peng, 2003). Firm responses in a crisis are motivated to limit the subsequent damage (Chen et al., 2009), and a firm will therefore position its resources to react quickly if the damages of delayed response are high (Rupp, 2004). Thus, if the regulatory environment increases the damage that the firm could incur, the firm becomes incentivized to act expediently.

In the U.S. and Australia, once a vehicle recall is issued, the onus is on the consumer to get the fix; the company and the government have no power to penalize the consumer. Thus, the U.S. and Australian markets represent markets where the regulatory focus is on the manufacturer to fix the product after it has been recalled. In comparison, the product-safety regulations governing auto recalls in the UK and Germany place greater regulatory focus on consumers to have their cars fixed once a recall has been issued, which results in consumer liability for the repairs to their vehicles. In the UK, regulatory authorities have the power to impound cars that have not been fixed, while in Germany, vehicles can be denied their registration renewal if the recall was not corrected. The regulatory focus we have outlined in the four markets pertains to product recalls only.

When product-safety regulations create consumer liability, they are more onerous and expanded, involving multiple stakeholders who plan and direct operations on the scale that would be needed to reach thousands of consumers. The agencies responsible for the response (DVSA in the UK and KBA in Germany) must deem the product flaw severe enough for it to be a significant threat to public safety. It then communicates that threat to law enforcement and co-ordinates the response by law enforcement personnel. Targeting consumers with penalties is a massive undertaking that is viewed as a last resort (Attwell et al., 2018). Authorities and policymakers risk the negative reaction of a perceived loss of freedom (Attwell et al., 2018; Cohen & Einav, 2003). For example, when seat belts were first introduced, they were optional in most US states (Shults et al., 2004). Drivers were encouraged to wear them but there was no penalty for non-usage. Over time, as road fatalities continued to rise, 18 states and the District of Columbia made enforcement of seat belt laws a primary offence, meaning that motorists could be stopped solely for being unbelted (Shults et al., 2004). A further 31 states created secondary laws that allowed law enforcement to fine an unbelted motorist if the motorist had been stopped for another violation (Shults et al., 2004). Consumer rights groups pushed back on the proposed mandates, which they viewed as a loss of freedom and burdensome (Roos, 2020). After lengthy battles in state legislatures and courts, the act of mandating seat belt usage (as a primary or secondary offence) for the purpose of public safety was accomplished in 49 of the 50 States (Roos, 2020).

In markets where the regulatory focus is on the manufacturer, the cost of recalls (monetary, punitive, reputational) increases linearly over time as more and more reports of product failures are accumulated and more products are also sold during that time. Firms will have to incur more costs for a recall as more products are released into the market because delaying action increases legal liability for the firm and increases the negative publicity (Chen et al., 2009).

In addition to the recall costs faced by firms in markets where the regulatory focus is on the manufacturer (i.e., monetary, punitive, reputational), firms in markets where consumer liability is created face additional costs, such as a backlash from consumers. It is well established that firms expend considerable resources to build relationships with customers (Reinartz et al., 2005; Thomas, 2001). Imposing a cost on consumers after the product is purchased risks violating that relationship. When consumers become the target of the regulatory action, it represents a significant increase of the cost for firms because it adds a viable threat to consumer relationships due to consumer psychological reactance (Clee & Wicklund, 1980). In short, when consumers are targeted, the recall costs increase for firms. Therefore, firms will be motivated to act before the cost is imposed on consumers as well as the firm. Thus, firms operating in markets that

include consumer liability are likely to be more responsive in a product-harm crisis. Accordingly, we hypothesize:

Hypothesis 1 The inclusion of consumer liability in product recall regulation increases firms' speed to recall.

Product standardization across different regulatory environments

Firm responsiveness is a function of how quickly and accurately a firm can distinguish between those product features that cause harm to consumers and thus merit a product recall versus those that do not. Firms regularly receive reports of incidents and injuries associated with products; however, these issues are often caused by consumer misuse, and thus it is easy to dismiss them as being idiosyncratic to a consumer or a context (Bapuji, 2011). Within the process of absorbing incoming information regarding product flaws, one of the greatest obstacles encountered by firms arises from trying to ascertain the scope and significance of the product flaw (Hora et al., 2011).

Product standardization provides an opportunity to gain a broad range of information that provides nuanced insights about the product. Toyota's success with the Prius in the U.S. and in Europe aptly illustrates this point. In the U.S., a focus by domestic automakers to increase fuel efficiency prompted Toyota to introduce the Toyota Prius into the US market (German, 2004). When the Prius was first introduced, its battery lasted only a few years, which made the car more expensive than its non-hybrid alternatives, though still better than its hybrid competitors. Over time, Toyota improved on the mechanics of the Prius and used this knowledge to design the Toyota Auris for the European market. In a market where diesel was the dominant fuel-saving option, Auris became the best-selling hybrid vehicle in Europe in 2014 (Gibbs, 2014).

Releasing the same standardized product in multiple markets allows firms to gather product-quality feedback from a diverse range of sources. If a product-failure report is received in one market, then, by virtue of the product being standardized across markets, the same product flaw is also likely to exist in multiple markets. Firms benefit from extracting unique information from multiple markets and transferring it throughout the organization to make the firm more responsive in multiple markets (Lee et al., 2009). Therefore, by introducing a standardized product in multiple markets, the firm improves its chances of receiving feedback from a larger and more diverse consumer base than a single market could provide (Lord & Ranft, 2000). Having access to a high range of diverse information facilitates problem clarification and enables exploration of solutions (Beckman & Haunschild, 2002).

In sum, product standardization across markets helps a firm to acquire larger and more diverse information of the kind that is necessary to fully understand the problem. It also helps focus a firm's attention on the root cause of the problem, facilitating deployment of the resources needed to address the same. Therefore, we hypothesize:

Hypothesis 2 A firm's speed to recall increases when it sells a standardized product across multiple markets.

Methods

Research context: automobile sectors in the U.S., UK, Germany, and Australia

The automobile industry offers an ideal context for our study due to the global nature of its production and efforts to pursue integration at the expense of local responsiveness (Grein et al., 2001; Kotabe et al., 2007). Automobile firms are part of an ecosystem of interconnected firms that are led by keystone players who form a common strategic vision for all players (Kim & Mudambi, 2020). An interconnected network ensures that once a keystone player acts, then other firms are likely to see the actions and act accordingly. Our focus is on such keystone players, and we examine recalls where no external supplier besides the original manufacturer is listed as the responsible party.¹

Sample

We collected data on all passenger vehicle models introduced into the U.S., UK, Germany, and Australia from the years 2003 to 2019. During this period, over 180 million cars were sold in the U.S. (The Automotive News, 2003–2019), 50 million were sold in the UK (Ward's Automotive Database, 2003–2019), over 40 million were sold in Germany (Marklines, 2019), and approximately 10 million were sold in Australia (Australian Bureau of Statistics, 2000). We included only those vehicles released after 2002 to coincide with the enactment of the legislation in the UK that gave enforcement officers the power to stop vehicles that are under a recall. In Germany, legislation introduced in 1990 gave regulatory authorities the power to refuse vehicle registrations to vehicles that did not fix a severe² vehicle

recall. The year 2002 represented a point where the regulatory focus was on consumers in both the UK and Germany.

Information on the recalls was obtained from the NHTSA (US), DVSA (UK), KBA (Germany), and the Department of Infrastructure, Transport, Regional Development, Communications and the Arts (Australia)³. Specific information related to a recall varies by the agency that publishes it, but all the respective agencies publish information on the date of the recall, as well as a description of the problem. Germany does not publish the number of potentially affected vehicles while regulatory agencies in the other three countries do. Similar to previous work involving product recalls (Haunschild & Rhee, 2004; Rhee & Haunschild, 2006), the unit of analysis in our study was the automaker (e.g., Lexus) rather than the parent firm (e.g., Toyota).

In order to study the factors that would affect a firm's responsiveness, we focused on new products. By their very nature, new products often contain novel aspects in their design, which makes them susceptible to recall after their release (Clark et al., 1987). For example, in 2011, Jaguar issued a recall of its new X-Type model after discovering that the off-switch for the cruise control feature may not work. This issue came to light only after users had accumulated enough mileage on the automobile to wear out the connection between the cruise-control button and the main control panel (The Daily Mail, October 2011). In contrast, established products tend to benefit from the learning accumulated through various models (Argote, 1999; Argote et al., 1990). Consequently, older models tend to have fewer flaws. By focusing on new vehicles only, we eliminated the possibility of the learning accumulated by established models confounding the responsiveness being examined.

We took two steps to verify our assertion that, compared to more established models, new models are more likely to contain flaws. First, we used the Consumer Reports website (consumereports.org) to track expert ratings of the US cars within our sample. These expert ratings identified eight major trouble areas associated with a car and rated these areas on a five-point scale, anchored by "better" and "worse." We found that automobile models consistently received lower ratings in the 2 years following their release compared to the later versions of the model, thus demonstrating that a model improves over time. Second, using a discrete hazard model, we compared the time it took to recall new cars (i.e., sold in the market for 1 year) against

¹ Including external suppliers would have slowed down responsiveness. We found that external suppliers made up a minority of recalls but there were several high-profile large scale (volume) recalls including Takata airbags (70 million)

² Recalls are categorized based on urgency. Urgent recalls (dringende Ruckrufe) highlight a safety risk requiring immediate action from owners due to the number of vehicles recalled or critical safety defect,

Footnote 2 (continued)

https://www.thomas-krenn.com/redx/tools/mb_download.php/mid.x5430417636374753346b3d/ADAC-auto-club-profile-en.pdf

³ NHTSA (National Highway Traffic Safety Administration), DVSA (Driver and Vehicle Standards Agency), KBA (Kraftfahrt-Bundesamt)

Table 2 List of variables, measures, and data sources

Variable	Measure	Type	Sources
T_i	Responsiveness, measured by the time between the release of the product to the time that it was recalled	Dependent	<ul style="list-style-type: none"> • National Highway Traffic and Safety Association in the U.S. (NHTSA) • Driver and Vehicle Standards Agency—UK (DVSA) • Kraftfahrt-Bundesamt—Germany (KBA) • Department of Infrastructure, Transport, Regional Development, Communications and the Arts—Australia (DITRDA)
EN	Regulatory environment in which the vehicle is sold (1—High consumer engagement, i.e., inclusion of consumer liability for recall (UK & Germany); 0—otherwise (US & Australia))	Independent	<ul style="list-style-type: none"> • NHTSA • DVSA • KBA • DITRDA
S	The standardization of the vehicle across markets	Independent	<ul style="list-style-type: none"> • Car and Driver Magazine (US) • Parker's Automotive (UK) • Company Sources
G	Level of generalism for the automaker in a given marketplace (Rhee & Haunschild, 2006)	Control	<ul style="list-style-type: none"> • Car and Driver Magazine (US) • Parker's Automotive (UK) • Company Sources
D	The headquarters of the parent firm are located in Germany	Control	
J	The headquarters of the parent firm are located in Japan	Control	
SK	The headquarters of the parent firm are located in South Korea	Control	
U	The headquarters of the parent firm are located in the U.S.	Control	
R	Reputation of the automaker (Rhee & Haunschild, 2006)	Control	<ul style="list-style-type: none"> • National Automobile Dealers Association (NADA) • J.D Power and Associates • Consumer Reports
A	The total number of vehicles potentially impacted by the product recall	Control	<ul style="list-style-type: none"> • NHTSA • DVSA
SV	The severity of the recall as coded from the recall announcement	Control	<ul style="list-style-type: none"> • NHTSA and DVSA recall announcements coded by independent coders

the time it took to recall the established models. We found that new cars were recalled faster than their established counterparts. Specifically, both a log-rank test (chi-square = 7.0499) and the Wilcoxon test (chi-square = 13.5576) revealed significant differences between the two groups ($p < 0.01$).

We constructed our sample of new vehicles in all four markets following a systematic multi-step process. First, we created a list of new vehicles sold between 2003 and 2019 with the help of sales data compiled from the *Automotive News*, *Ward's Automotive Encyclopedia*, *Parker's Automotive Guidebook*, and *Marklines*. We did not collect data after 2019 because this was the onset of the COVID-19 pandemic, which resulted in mass supply-chain bottlenecks, which had an impact on the ability of firms to serve the market. Second, we read reviews for each vehicle in *Car and Driver Magazine*, *Parker's Automotive*, or *Carsurvey.org* and eliminated those vehicles that had previously been sold in a different marketplace for more than 2 years. This elimination was made to ensure that vehicles in our sample were truly new and did not have the benefit of experiential learning in a different marketplace.

During the period of our study, 454 new car models were introduced into the four markets. The greatest proportion of these new models was introduced into the U.S. (166) followed by the UK (139), Australia (90), and Germany (59). When we refer to new cars released into the marketplace, these are cars released into the respective market first.

Variable operationalization

A full listing of all variables and their data sources is provided in Table 2 and elaborated in the following paragraphs.

Responsiveness

Following prior research (Hora et al., 2011; Muralidharan & Sundararaman, 2015), we operationalized responsiveness as the time between the product release and the recall, calculated in months. Ideally, responsiveness should be measured as the time taken by a company to recall a product after it became aware of the problem, but, given the legal liabilities, firms do not reveal when they first became aware of the problem. In a few highly publicized and scrutinized

cases, this information might become available as a result of media investigations or regulatory penalties, but firms often contest—and rarely confirm—such information. Given these constraints, we used the best proxy available to researchers at this point who study recalls using archival data, which is the date that the product was released and the date on which it was recalled.

To calculate this measure, we required the time the automobile was first introduced and the time it was recalled (if it was ever recalled). Only in the UK was the market release date publicly available. For models sold in the United States, only the recall date was available from the NHTSA. Hence, in order to obtain the date the US models were first released, we conducted a search through the following sources: *Car and Driver Magazine*, *The Automotive News*, *Ward's Automotive Database*, and, in one case (Ford), from the manufacturer itself. This information was available largely because the automakers announced their production plans before the product launches. For both the German and Australian markets, we were unable to find the time that the vehicles were first released into the marketplace. Therefore, we used the date of the largest auto-show in Germany (Munich Auto-Show, September) as the date that the car was first introduced into Germany. We used the Sydney Auto-Show (October) as the date that the vehicle was introduced into the Australian market. The usage of major auto shows as the first point of introduction for vehicles was based on the industry practice of using auto-shows to introduce new models and new technology to the public (Kane, 2013). It must be noted that we also researched the date that the right-censored vehicles in our analysis were first released in each country. Right censoring refers to a situation where the vehicle was manufactured within our timeline (2003–2019) but information on whether it was recalled or not was not available because we ended our data collection before the recall may have occurred. For example, a vehicle may have been introduced in the UK in 2018 but since our data collection ended in 2019, we would not have captured any recalls that occurred after 2019. The hazard model provided a weighting to a product that was included in our analysis but was only added to our sample close to the end. The weighting would give these vehicles less credence during the period of analysis because they did not have enough time to experience the event. In the UK, information on which cars were introduced into the marketplace was available through *Parker's Automotive*, and in the U.S., this information was obtained from one or more of the sources listed above.

Standardization

We created a measure of standardization by comparing the specifications of each model for sale in each country. In doing so, we followed prior research (Dobrev, Kim, &

Table 3 Number of times standardized versus customized new vehicles were recalled

Country	Standardized	Customized
UK	76	96
U.S.		133

The table above indicates how many times vehicles were recalled during our study period; some vehicles were recalled multiple times.

Carroll, 2002) and compared two critical components: (1) the physical size of the vehicle, and (2) its engine capacity. Differences in the size of the vehicle or in its engine capacity would indicate that the vehicle was designed differently and may even occupy a different sales category. This was only done for vehicles in the U.S. and UK marketplace. We were unable to verify the physical size of the vehicles in the German and Australian markets due to data limitations. Therefore, we did not compare standardization in these two markets and thus tested Hypothesis 2 on only two markets.

To verify that the models were unique to each marketplace and did not benefit from learning by operating in countries not in our sample, we analyzed the reviews of each model in both *Car and Driver* magazine and *Parker's Automotive*, looking for mention of the automobile being released in additional markets under a different name. In several instances, we found that the automobile had been released in a market other than the two under investigation, but that the release occurred no further than a year in advance of its release in the UK or the U.S. and therefore was unlikely to affect our analysis.

Of the remaining 76 automobile models that were common to both marketplaces, we compared the specifications of each model for sale in both countries and coded a vehicle as a *standardized automobile* if the specifications were similar across the two markets. In coding for standardization, we only focused on the model specifications and ignored idiosyncratic features of models that make them suitable to different markets due to institutional norms (e.g., whether the driver's seat was on the left side of the right side). Please see Table 3 for the number of standardized and customized automobiles recalled in each of the US and UK markets.

Regulatory environment

We captured the regulatory environment with the help of a binary variable. As discussed earlier, both the UK and Germany place a higher emphasis on consumer engagement in product safety, while the U.S. and Australia place emphasis on regulating the firms only. Accordingly, for regulatory environment, we compared countries in pairs. One country in the pair placed greater emphasis on regulating firms (United States or Australia) and the other half of the pair

included a country that placed a greater emphasis on consumer engagement (UK or Germany).

Control variables

Our control variables included the automaker's country of origin, reputation, severity of the problem reported in recall notices, the number of vehicles recalled, and generalism. We controlled for the automaker's country of origin because prior research has shown that automobile manufacturers have historically employed different strategies depending upon their country of origin. For example, Japanese manufacturers may not exert the same formal control over their operations as do their Western counterparts, instead relying on a type of "cultural control" (Johansson & Yip, 1994). Japanese firms are also known to set prices based on those of their local rivals, thereby indicating their willingness to reduce costs rather than enhance the value of the product (Ohmae, 1990). The majority of firms in our sample originated from one of the following four countries: Germany, Japan, South Korea, or the U.S. Each country of origin was controlled for with a binary variable: a score of 1 if the manufacturer was headquartered within that country, and a score of 0 if it was not. To avoid over-parameterizing the model, we did not add a dummy variable for Volvo (headquartered in Sweden and owned by a Chinese conglomerate), which had only six recalls during our study period.

Firm reputation influences a firm's actions in a product recall situation as well as the response of market to the recall actions of the firm (Dawar & Parker, 1994; Rhee & Haunschild, 2006; Wheatley & Chiu, 1977). Accordingly, we controlled for firm reputation using the measure developed by Rhee and Haunschild (2006), which relied on third-party ratings given by technical experts and published by J.D. Power and Associates; these ratings also included consumer feedback obtained from *Consumer Reports*.

Product flaws associated with a new vehicle can be trivial (e.g., an incorrect label on the vehicle, subject of NHTSA Recall Campaign Number 10V036000) or severe (e.g., an accelerator pedal that fails to decompress, subject of NHTSA Campaign Number 10V017000). Severe recalls have the potential to not only make the vehicle inoperable but also to cause accidents that can cause injury or even death. Accordingly, severe recalls capture the attention of consumers and the news media, often translating into lost sales for the automobile manufacturer (Rhee & Haunschild, 2006). Therefore, firms are more likely to act quickly when a severe recall is suspected. We read each recall notice in our sample and coded the severity of the recall by examining the description of the flaw that caused the recall and the potential consequences of such flaw. Specifically, we developed a system of classification based on a codification of keywords to capture the severity of each recall on a three-point

scale (1 to denote least severe, and 3 to denote most severe). Recalls that involved the possibility of death were given the highest score (3) in our classification, while those with the possibility of injury or fire were given a score of 2. If the recall notice did not make any mention of personal injury that could result from the recall, then it was given a score of 1.⁴ One of the authors of this paper coded each recall notice for its severity, using the above scheme. A research assistant who was blind to the hypotheses and research question of the present paper independently evaluated each recall notice as well. Both classifications were then compared, and any discrepancies between the separate evaluations were resolved through discussion.

Similar to the severity of the recall, the size of a recall is likely to affect a firm's responsiveness, given the need to mobilize resources towards communicating the recall, repairing the vehicles, and managing stakeholder reactions. Therefore, we controlled for the size of the recall, measured as the number of vehicles recalled. This information was captured from the recall notices given by the respective agencies in each of the four countries.⁵ The number of vehicles subject to a recall ranged from a low of 16 cars to a high of 4.4 million cars. To enhance comparability, we rescaled the size of the recall by calculating the natural logarithm of the size of each recall. This process enabled a smoothing of the survival curve.

Generalism refers to the number of product categories that the firm operates in (Rhee & Haunschild, 2006). Prior work has indicated that generalist firms find their responsiveness inhibited through bureaucratic structures (Carroll & Swaminathan, 2000). In the case of automobile recalls, generalist firms may take longer to mobilize resources to deal with a product-harm crisis and thus, may take longer to respond (Rhee & Haunschild, 2006). We measured the generalism of firms in our samples of the U.S. and UK only. These two markets had the greatest availability of data that would allow us to calculate the generalism and each represented a market that either focused product safety regulations on the firm (U.S.) or created consumer liability (UK). We followed the same procedure as Rhee and Haunschild (2006) by taking into account both engine capacity and product categories. We first calculated the spread of engine capacity for each firm in our sample. For example, in the UK, the automaker Audi sells the A2 (~ 1.4 liter), the S3 (~ 1.8 liter), the

⁴ In one instance (NHTSA Campaign Number 10V036000), Toyota recalled versions of its Scion XB because the label on the driver's-side door provided an incorrect load capacity, but no mention was made of personal injury due to that fault. Therefore, this recall was coded as a 1.

⁵ In Germany the KBA (German regulatory authority) does not publish the affected number of vehicles.

Table 4 Level of generalism of automakers in the study sample

Automaker	Level of generalism	
	UK	U.S.
Audi	0.0853	- 0.1907
BMW	0.3876	- 0.6112
Cadillac		- 0.8161
Chrysler	0.4927	0.913236
Daewoo ¹	0.7095	
Dodge	- 0.7492	- 0.4732
Fiat	- 0.6501	- 0.8249
Ford	1.7412	2.3062
Honda	2.3391	1.9579
Hyundai	1.1234	0.7752
Kia	1.13	- 0.6112
Lexus	- 1.1081	- 0.9030
Mazda	0.2825	0.4648
Mercedes	- 0.184196	- 0.2813
Mitsubishi	0.5715	- 0.8214
Nissan	0.7817	0.2562
Porsche	0.7030	- 1.7874
Skoda ²	0.0722	
Subaru	- 0.2948	- 0.1972
Suzuki	- 0.8872	- 0.0592
Tesla		
Toyota	2.2404	2.3850
Vauxhall ³	0.3613	
Volkswagen	0.9855	- 0.4667
Volvo	0.2233	0.4303

Only automakers which released new products into either the U.S. or UK marketplace during our period of investigation were included

¹Daewoo was acquired by General Motors in 2002

²The Skoda automobile (Skoda Octavia) is based on the Volkswagen Jetta

³Vauxhall models are branded as Chevrolet in the U.S.

A3 (~ 2.0 liter), the Allroad Quattro (~ 2.7 liter), the A8 (~ 4.2 liter), and the S8 (~ 4.2 liter). The spread of vehicle capacity is therefore 2.8 (4.2–1.4). An index was created for each automaker using the spread of vehicle capacity. To arrive at a measure of generalism, this index was then combined with another index comprised of the automobile categories that the automaker occupied within that marketplace. This approach assigned each automaker a different score on generalism for each year in each market, depending on the models it introduced in that year. In 2005, for example, Honda in the UK received a generalism score of 2.582, while it received a score of 1.958 for the U.S., thus indicating that the automaker was more generalized in the UK compared to the U.S. Alternatively, Honda was more specialized in the U.S. compared to the UK. A listing of generalism scores is presented in Table 4.

Analysis and results

To test our hypotheses, we conducted a survival analysis using an accelerated failure time model with an exponential distribution. Previous work on product recalls has commonly employed ordinary least squares (OLS) regression techniques (e.g., Cheah et al., 2007; Chen et al., 2009; Hora et al., 2011; Muralidharan et al., 2022), a method that limits the analysis to only those products that were recalled and does not take into consideration the fact that some members of the sample may never experience the event.

Of the available survival analysis techniques, we chose to develop multiple accelerated failure time model because we expected our covariates to have a disproportionate impact on the probability of the hazard earlier rather than later. All countries were contrasted against each other in paired format. For example, the U.S. was contrasted with the UK, Australia was contrasted with the UK, and the UK was contrasted with Germany. We developed a model with an exponential distribution, which was deemed to provide the best fit for our data, as indicated by the scale variables for each model (which was close to 1) and a visual representation of the hazard plots. We used the Lagrange multiplier to ascertain the model significance for each pair. The parameter estimates for each covariate in our models are presented in Table 5.

We found a significant and negative coefficient for both countries where the regulatory environment focused on consumers (UK vs. U.S. and Germany vs. U.S.). Specifically, vehicles were recalled at a faster rate in the UK compared to the U.S. ($\beta = -0.2224$, $p < 0.05$) and in Germany compared to the U.S. ($\beta = -0.7365$, $p < 0.05$). Countries that had similar type of regulatory environment showed no significant differences between them (UK vs. Germany and U.S. vs. Australia). All significant coefficients were in the direction we expected, displaying greater responsiveness for product safety environments that included consumer liability and standardized products (Table 5).

It should be noted that we only tested the standardization variable between the U.S. and the UK because of the lack of availability on vehicle specifications in Germany and Australia. We found that vehicles which were standardized across markets were more likely to be recalled faster ($\beta = -0.4727$, $p < 0.05$).

The estimate for both the Scale and the Weibull Shape was 1, which indicated a constantly increasing hazard in our model. A plot of the Weibull hazard function showed a sudden increase early on, followed by a constant increase over the remaining time. Based on the significance of the parameter estimates, both of our hypotheses were supported. As predicted in H1, products were recalled faster

Table 5 Probability of a recall over time based on regulatory environment UK and Germany regulations target consumers/ U.S. and Australia regulations target firms

Predictor	UK vs. U.S.		Germany vs. U.S		Australia vs. U.S		UK vs. Germany		UK vs. Australia		Germany vs. Australia	
	PE ^a (SE)	Chi-Sq.	PE (SE)	Chi-Sq.	PE (SE)	Chi-Sq.	PE (SE)	Chi-Sq.	PE (SE)	Chi-Sq.	PE (SE)	Chi-Sq.
Intercept	5.3761*** (0.2704)	395.18	6.6965*** (0.7023)	90.93	5.0861*** (0.6130)	427.54	5.5750*** (0.2690)	429.39	6.8781*** (0.8957)	58.96	6.2153*** (0.9396)	43.75
Regulatory Environment (Hypothesis 1)	-0.2224* (0.1922)	1.34	-0.7365* (0.3152)	5.46	0.3978 (0.2512)	2.51	0.2913 (0.3705)	0.62	-0.6696* (0.2720)	6.06	-0.6236† (0.3624)	2.96
Standardized ^b (Hypothesis 2)	-0.4727* (0.2078)	5.18										
Reputation	0.0975 (0.3543)	0.08	-0.3547 (0.6833)	0.27	0.0701 (0.4045)	0.03	-0.6467 (0.4388)	2.17	-1.2472 (0.9279)	1.81	-0.2592 (1.0949)	0.06
Log of Potential Affected	0.3261* (0.3129)	2.53			0.2499 (0.0451)	0.00			0.4077 (1.3885)	0.09		
Generalism	0.0222 (0.1015)	0.05										
Severity	21.7231 (121612.4)	0.00	24.7357 (83245.47)	0.00	25.1093 (131465.8)	0.00	25.5709 (140955.2)	0.00	22.9812 (113556.4)	0.00	22.8258 (174776.9)	0.00
Germany	24.6676 (160183.1)	0.00	-0.1750 (0.4017)	0.19	-0.1660 (0.4668)	0.13	0.3503 (0.6142)	0.33	0.1320 (0.5289)	0.06	-0.3255 (1.0465)	0.10
Japan	24.4363 (121066.5)	0.00	-0.0851 (0.4525)	0.04	-0.1604 (0.4554)	0.12	0.3219 (0.6856)	0.22	0.1638 (0.5553)	0.09	-0.1745 (1.0507)	0.03
Korea	25.0346 (250657.6)	0.00	-0.3839 (0.7363)	0.27	-0.5256 (0.7773)	0.46	-0.0687 (1.6051)	0.00	-0.6333 (1.0503)	0.36	-0.5131 (1.4834)	0.12
USA	24.4690 (140751.6)	0.00	-0.2664 (0.5024)	0.28	-0.3494 (0.5139)	0.46						
-2LL	1441.740		852.954		142.717		442.863		783.942			
N	172 vs. 209		98 vs. 209		90 vs. 209		172 vs. 98		172 vs. 90		98 vs. 90	

^aPE parameter estimates^bDue to lack of data for Australia and Germany on standardization, we tested H2 only on the data pertaining to the U.S. and the UK† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The results of both hypotheses are in bold

Fig. 1 Probability of recall over time in the UK above the U.S.

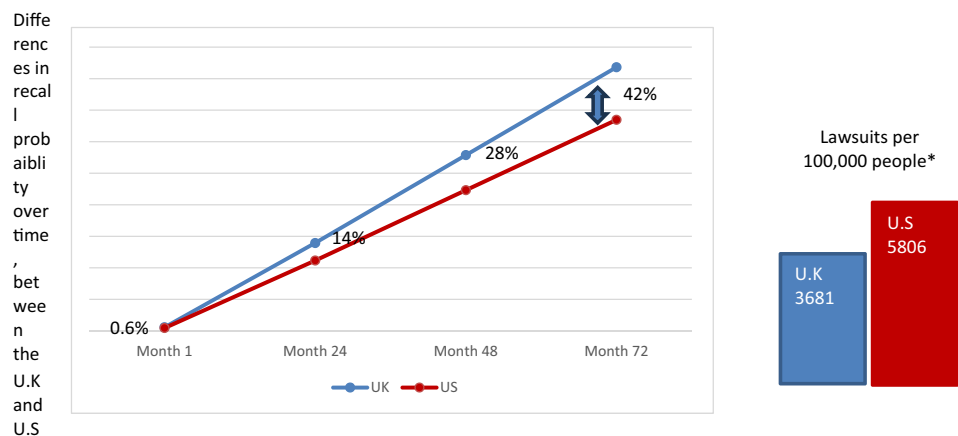
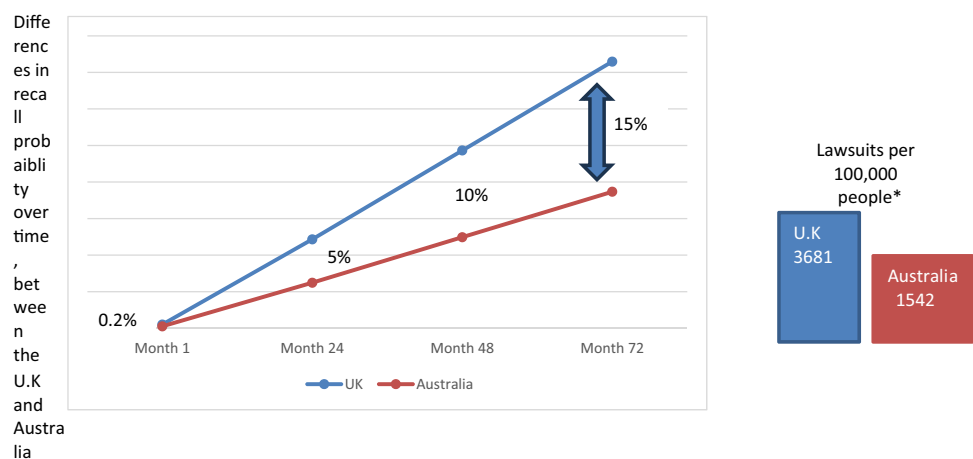


Fig. 2 Probability of recall over time in the UK above Australia



in markets that engaged consumers in product safety (the UK and Germany) compared with markets where the regulatory authorities did not engage consumers (the U.S. and Australia). Vehicles that were standardized across the two markets where data was available (i.e., U.S. and UK) were recalled faster than those that were not standardized (H2). Among our control variables, only the *number of vehicles recalled* and *generalism* had a significant effect, indicating that firms take longer to issue a recall if they have a greater range of vehicles (high generalism) or if a recall involves a larger number of vehicles. The home-country effects were all found to be insignificant. This is likely due to the global nature of supply chains and dispersion of the decision-making for the automakers. Prior work has demonstrated that firms may be headquartered in one country but manufacture the majority of their cars in countries outside of the home market. Furthermore, manufacturing in the foreign market may make the automaker more responsive in that market above their home market (Majid and Bapuji, 2018). This may have resulted in the home-country effect being insignificant in our model.

Robustness test

To validate our findings related to consumer liability and responsiveness, we had to rule out litigiousness as a confound. It can be argued that countries with higher litigiousness create a more responsive environment because manufacturers are fearful of engaging in litigation over a product safety issue. Using prior work that compared the degree of litigiousness between countries (Ramseyer & Rasmusen, 2010) and examined the relationship between regulation and corporate social responsibility (Knudsen, 2018), we extracted a measure of comparative litigation for Australia, UK, and the U.S: lawsuits filed (per 100,000 people), which was 5806 for the U.S., 3681 for the UK, and 1542 for Australia. Litigation information was not available for Germany.

We charted the probability of recall over time above the comparison country (see Figs. 1 and 2). We compared the probability of auto recall in the UK over the U.S. and the probability of auto recall in the UK over Australia. For example, after 6 years in the market, a vehicle has an approximate 66% chance of being recalled in the UK while

the same vehicle in the U.S. only has a 46% approximate likelihood of being recalled. In other words, a given vehicle is 42% more likely to be recalled in the UK than it is in the U.S. If responsiveness was positively correlated with litigiousness, we would expect that the U.S. would have the highest probability of recall over time, but it was significantly less than the UK which has a lower rate of litigiousness. We found that the UK, which has a higher rate of litigiousness than Australia, had a higher probability of recalls over time than Australia. However, the inconsistency in the relationship between litigiousness and responsiveness is evident in non-significant differences in responsiveness between the U.S. and Australia despite the U.S. having a much higher rate of litigiousness.

Discussion

Consumer product safety is an important public health and safety issue (Montiel et al., 2022; Park et al., 2022). International business scholars have engaged with this topic to provide important insights and achieve impact on practice and policy (Bapuji & Beamish, 2019). Further, the effect of regulations (and more broadly, institutions) on firms and firm responses to institutions is a vibrant area of inquiry. Drawing on insights from these streams of research, we examined how firms respond to regulatory differences with respect to public health and safety.

Analyzing 569 automobile recalls during 2003–2019 in four different markets that differed in their regulatory focus (i.e., whether consumer liability is included to improve product safety), we found that a firm's responsiveness during a product-harm crisis will be higher in markets where the product safety regulations include consumer liability, than in markets where the regulations focus only on firms. We also found that products which were standardized across these two types of markets were recalled faster. Our findings make contributions to research on international business and product safety and offer important implications for international business policy.

Contributions to IB research

Prior research on international business has recognized that institutions fill an important gap by addressing market failures and emphasized the importance of incorporating institutions into IB research so that firms can contribute fully to the creation of wealth and prosperity (Mudambi & Navarra, 2002). However, prior IB research has predominantly considered the relationship between regulations and responsiveness as negative, such that enhanced regulations in an industry will reduce the competitiveness and responsiveness of firms (see Kostova et al., 2008 for a review).

In contrast, our results show that product safety regulations that actively engage consumers and make them responsible for arranging a fix in the event of a product recall will lead to firms showing greater responsiveness in a product-harm crisis. Further, our finding related to higher responsiveness in case of standardized products demonstrates that greater product safety regulations in one market can have spillover effects that increase responsiveness in other markets. Together, these findings bring some nuance to the role of institutions in international business and point to the need to examine aspects that can benefit from stronger and wide-ranging regulations.

Research in international business has emphasized the information benefits that firms can gain from operating in different markets (Simonin, 2004). Multinational enterprises structure their operations in markets around the world so that they can gain explicit and implicit knowledge. Our findings demonstrate that the regulatory environment can give the firm valuable information about product flaws and that regulations focused on consumers can enhance the responsiveness of an already connected ecosystem. This finding points to the possibility that some regulatory features, and more broadly, institutional features can provide unintended information benefits to firms. The context of our study was the auto sector which is an interconnected ecosystem that contains a few keystone players (Kim & Mudambi, 2020). Given this, it is possible that such information benefits are disseminated to the rest of the industry. As such, future research can examine these possibilities and study how institutional features and industry characteristics interact to provide informational benefits to firms (or not).

Our examination of firm responsiveness in product-harm crisis speaks to increasing calls within IB field to engage with issues of concern to the world, including product safety (Bapuji & Beamish, 2019), public health (Montiel et al., 2022; Park et al., 2022), sustainable development goals (Montiel et al., 2021), and more broadly, grand challenges (Buckley et al., 2017). More generally, it speaks to calls for responsible research in management and international business scholarship to aim for societal impact (Doh et al., 2023).

Contributions to research on product-harm crises

Product safety is a vibrant area of research, reflected in the research on product-harm crisis in marketing (Cleeren et al., 2017) and the research on firm responses to such crises via product recalls, studied in operations research (Wowak & Boone, 2015), and management more broadly (Li et al., 2022). This research has revealed many useful insights about the antecedents and consequences of product recalls to stakeholders across various stages of recall, before, during and after (please see Li et al., 2022 for a review).

Firm responsiveness, often studied as time to recall has been an important area of work in this research stream (e.g., Eilert et al., 2017; Hora et al., 2011; Muralidharan et al., 2022). These studies have typically examined firm-level factors (e.g., board characteristics) influencing firm responsiveness, but have rarely examined the influence of institutions (Li et al., 2022). By examining the role of product safety regulations on firm responsiveness, our study extends this stream of work. Further, by examining our hypotheses in four different markets, we add in a small way to the rigor of this research, which is an important consideration given the substantial implications the research findings on this topic hold.

Contributions to IB policy

Our findings offer implications to IB policy at the level of firms and regulators. At the firm level, recognizing that markets in which product safety regulations include consumer liability can be a potential source of new information and greater firm responsiveness related to product safety issues, firms can design their policies to leverage the benefits of such markets. For example, MNEs could look to markets that include consumer liability as markets where the products should be released first. These markets engage consumers and compel them to take a more active role when products contain flaws, which helps organizations to identify product errors and improve upon the product before it is released into larger and/or more profitable markets. When a product recall occurs then the negative impact on equity and reputation would be compounded by the size and severity of the recall (Rhee & Haunschild, 2006). If firms release new products in markets where consumers are liable, then the firm will be more likely to identify the errors earlier than if it was released into a market where the regulations focused on firms. Receiving information quickly would potentially limit the size/severity of the recall and limit damage to the equity as well as the reputation of the firm.

Another policy implication for international managers is the insight related to standardization and regulatory focus. New products that are not released in a timely manner in the most lucrative markets miss the benefits that accrue from a first mover advantage. Therefore, organizations may not have the luxury of releasing products in one market and waiting for feedback before they release them into another market. In this case, MNEs can standardize the product and release it into multiple markets, including in at least one market where consumer liability is included so that MNEs can take advantage of the feedback given by those markets. For example, releasing a standardized new product simultaneously in the U.S. and Australia would not give the same expedited product feedback as the organization would receive if the product was released into the U.S. and the UK. The UK

makes consumers liable for correcting the error, which gives valuable product feedback regarding flaws that can be used to improve products that are simultaneously available in the US marketplace.

For regulators and policymakers, our study demonstrated that by expanding regulations and making consumers liable for repairs, firms will become more responsive with their product recalls. The purpose of product safety laws and their enforcement is to protect consumers, which, in the process, imposes costs on the producers. To achieve this, agencies responsible for product safety (e.g., the Consumer Product Safety Commission (CPSC)) collaborate and partner with their counterparts in other countries. Given our study's findings, product safety agencies can partner with agencies operating in countries that have a focus on consumers to benefit from the insights from those contexts. Similarly, the European Commission can pay closer attention to information from its member countries that target consumers for product safety. More generally, our findings underscore the benefits of including consumers in the ambit of product safety regulations related to consumer product safety, which can be attempted for similar product, i.e., high-priced products that are purchased infrequently but used frequently. The present study illustrated the greater responsiveness that can result when consumers are liable for having their vehicles repaired. Penalizing consumers by preventing them from using their legally purchased products is a significant punishment for consumers and may motivate them to act. However, from a policy-creation perspective, policymakers may be hesitant to impose such a cost on their constituents even though it would benefit the collective. We return to the earlier debate of individual freedoms and collective responsibility. Some markets view themselves as part of a collective and framing consumer liability for product safety may not be a difficult sell. However, in markets that have higher levels of individualism, a more nuanced approach may be necessary. Consumer liability in markets high in individualistic tendencies may be more receptive to a gradient form of punishment (i.e., fines), which would ideally cause some consumers to act and thereby increasing the benefits to the market (and firms) from consumer liability.

Limitations

Potential contributions of our study outlined above should be considered in the context of its limitations. First, our study was aimed at understanding the responsiveness of a firm, but our measure captures the responsiveness of the firm only in a coarse manner. Specifically, in line with prior work (Hora et al., 2011; Muralidharan & Sundararaman, 2015), we computed firm responsiveness using product release date instead of the date on which the organization first became aware of the problem in their product. Our choice of measure was

due to a lack of data availability, i.e., when firms actually learned about the problem is not available due to the manner in which data are collected and the reservations firms have to share that data due to legal liabilities. When consumers are liable, they may be more motivated to inform the company of the recall compared to a market where they are not liable. The information given by consumers to firms was not something we were able to capture. Future work may be able to employ an experimental approach involving consumers that measured their willingness to inform the firm. In the experimental approach, factors such as the potential of liability or the perceived severity of the recall can be isolated and tested accordingly.

Although recall data do not often provide fine-grained measures, many scholars have used it to address important questions related to firms. Further, scholars advocated for using recall data to make reasonable inferences given the substantial implications that recalls have for firms, international business, and societies (Bapuji & Beamish, 2019). Such inferences can form the basis for better discourse in the industry and regulatory spheres. Additionally, as has been evidenced in the U.S. Consumer Product Safety Commission (CPSC) data, usage of recall data would help improve the data quality and availability, which will enable future researchers to capture responsiveness in a more fine-grained manner (Bapuji & Beamish, 2019).

Second, we used the context of automobile recalls to examine firm responsiveness and advance upon theory. The primary argument we used to develop hypotheses about differences in firm responsiveness between markets was consumer reactance. However, we conducted our analysis using only secondary data, and could not capture the level of reactance to test it as a theoretical mechanism. As a result, we could not provide support for this mechanism and rule out alternative explanations. For example, it is possible that consumers may not get their recalled vehicles repaired fully knowing the consequences, such as seizure of their vehicle by transport authorities. In other words, consumers may not entirely direct their negative reaction to firms and may accept their own responsibility. It is also possible that firms and consumers act differently in each market due to the regulatory differences. Also, it is possible that other institutional factors that are unknown to us might have influenced the results. All of these factors can be explored in future research.

Third, the validity of our findings should be assessed within the context of limitations with respect to measurement of independent variables. For example, although product-safety regulations in the UK and Germany create consumer liability, our dummy measure is a coarse proxy and does not capture the extent to which consumers are actually targeted in practice.

Finally, the generalizability of our study is limited due to the empirical context as well as sample characteristics. For example, relative to many other industries, auto industry is characterized by keystone players (Kim & Mudambi, 2020), fewer products, and intense competition. Further, an automobile represents an infrequent but important investment for consumers, one that they tend to use frequently. Therefore, the dynamics of company–consumer interaction are different in the auto industry than in other consumer-product industries. Further, we included only new products in our analysis, which also limits the generalizability of our findings by limiting the extent to which implications can be drawn for all products.

Conclusion

Policymakers are often hesitant to impose liability on consumers when the alternative is to focus on firms instead. However, increased product safety regulations which target both firms and create consumer liability can enhance the responsiveness of firms. The negative consequences imposed on consumers due to actions of firms can provide the necessary impetus for the firms to act. Further, by standardizing products across markets that differ in their regulatory focus, firms can improve their responsiveness. These findings contribute to international business and policy research and practice.

Acknowledgements The authors would like to thank the anonymous reviewers, Ari Van Assche, Jonathan Doh, Ram Mudambi, Kendall Roth, Keith Brothers, Manpreet Hora, Jane Lu, and Andrew Delios for helpful comments on earlier versions of the manuscript.

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

References

- Argote, L. 1999. *Organizational learning: Creating, retaining, and transferring knowledge*. Kluwer Academic.
- Argote, L., Beckman, S. L., & Epple, D. 1990. The persistence and transfer of learning in industrial settings. *Management Science*, 36(2), 140–154.

- Asher, A. 1998. Going global: A new paradigm for consumer protection. *The Journal of Consumer Affairs*, 32(2), 183–203.
- Attwell, K., Navin, M. C., Lopalco, P. L., Jestin, C., Reiter, S., & Omer, S. B. 2018. Recent vaccine mandates in the U.S., Europe and Australia: a comparative study. *Vaccine*, 36(48), 7377–7384.
- Australian Bureau of Statistics. 2000. Motor Vehicle Registrations, Australia. Retrieved from <https://www.abs.gov.au/AUSSTATS/abs@.nsf/Previousproducts/8111.0Feature%20Article12009>
- Bae, Y.-K., & Benitez-Silva, H. 2010. The effects of automobile recalls on the severity of accidents. *Economic Inquiry*, 51(2), 1232–1250.
- Bapuji, H. 2011. *Not just China: The rise of recalls in the age of global business*. Palgrave Macmillan.
- Bapuji, H., & Beamish, P. W. 2019. Impacting practice through IB scholarship: Toy recalls and the product safety crisis. *Journal of International Business Studies*, 50(9), 1636–1643.
- Basu, T. 2014. Timeline: A History of GM's Ignition Switch Defect," NPR 31. Retrieved from <https://www.npr.org/2014/03/31/297158876/timeline-a-history-of-gms-ignition-switch-defect>
- Beckman, C.M., & Haunschild, P.R. 2002. Network learning: The effects of partners' heterogeneity of experience on corporate acquisitions. *Administrative Science Quarterly*, 47(1), 92–124.
- Blum, J. D., & Talib, N. 2006. Balancing individual rights versus collective good in public health enforcement. *Med. & l.*, 25, 273.
- Buckley, P. J., Doh, J. P., & Benischke, M. H. 2017. Towards a renaissance in international business research? Big questions, grand challenges, and the future of IB scholarship. *Journal of International Business Studies*, 48, 1045–1064.
- Burrows, D. 2018. 10 Biggest Product Recalls of All Time. *Kiplinger* (March 26). Retrieved from <https://www.kiplinger.com/slideshow/investing/T052-S000-10-biggest-product-recalls-of-all-time/index.html>
- Carlsen, A., & Chinoy, S. 2019. How to buy a gun in 16 countries. *The New York Times*, 6
- Carroll, G. R., & Swaminathan, A. 2000. Why the microbrewery movement? Organizational dynamics of resource partitioning in the U.S. brewing industry. *Journal of Sociology*, 106(3), 715–762.
- Cheah, E. T., Chan, W. L., & Chieng, C. L. 2007. The corporate social responsibility of pharmaceutical recalls: An empirical examination of US and UK markets. *Journal of Business Ethics*, 76(4), 427–449.
- Chen, Y., Ganesan, S., & Liu, Y. 2009. Does a firm's product-recall strategy affect its financial value? An examination of strategic alternatives during product-harm crises. *Journal of Marketing*, 73(11), 214–226.
- Clark, K. B., Chew, W. B., Fujimoto, T., Meyer, J., & Scherer, F. M. 1987. Product development in the world auto industry. *Brookings Papers on Economic Activity*, 729–781.
- Clee, M. A., & Wicklund, R. A. 1980. Consumer behavior and psychological reactance. *Journal of Consumer Research*, 6(4), 389–405.
- Cleeren, K., Dekimpe, M. G., & Van Heerde, H. J. 2017. Marketing research on product-harm crises: A review, managerial implications, and an agenda for future research. *Journal of the Academy of Marketing Science*, 45, 593–615.
- Cohen, A., & Einav, L. 2003. The effects of mandatory seat belt laws on driving behavior and traffic fatalities. *Review of Economics and Statistics*, 85(4), 828–843.
- Davidson, W. N., III., & Worrell, D. L. 1992. Research notes and communications: The effect of product recall announcements on shareholder wealth. *Strategic Management Journal*, 13(6), 467–473.
- Dawar, N., & Parker, P. 1994. Marketing universals: Consumers' use of brand name, price, physical appearance, and retailer reputation as signals of product quality. *Journal of Marketing*, 58(2), 81–95.
- Dawar, N., & Pillutla, M. M. 2000. Impact of product-harm crises on brand equity: The moderating role of consumer expectations. *Journal of Marketing Research*, 37(5), 215–226.
- Debusmann Jr., B. 2024. James Crumbley: Father of Michigan school gunman convicted of manslaughter. BBC News Online, Accessed: March 28, 2024. Retrieved from <https://www.bbc.com/news/world-us-canada-68572112>
- Denzer, K. 2017. Behold the four-month process of buying a gun in Japan. The Washington Post. Retrieved November 20, 2022, from https://www.washingtonpost.com/opinions/behold-the-four-month-process-of-buying-a-gun-in-japan/2017/10/05/72283fea-2375-11e7-b503-9d616bd5a305_story.html
- Dobrev, S. D., Kim, T.-K., & Carroll, G. R. 2002. The evolution of organizational niches: U.S. automobile manufacturers 1885–1981. *Administrative Sciences Quarterly*, 47(2), 233–264.
- Doh, J. P., Eden, L., Tsui, A. S. et al. 2023. Developing international business scholarship for global societal impact. *Journal of International Business Studies*, 54, 757–767.
- Dunning, J. H., & Lundan, S. M. 2008. *Multinational enterprises and the global economy* (2nd ed.). Elgar.
- Eilert, M., Jayachandran, S., Kalaiganam, K., & Swartz, T. A. 2017. Does it pay to recall your product early? An empirical investigation in the automobile industry. *Journal of Marketing*, 81(May), 111–129.
- Friedman, M., & Friedman, R. 1990. *Free to choose: A personal statement*. Mariner Books.
- Gao, H., Xie, J., Wang, Q., & Wilbur, K. C. 2015. Should ad spending increase or decrease before a recall announcement? The marketing–finance interface in product harm crisis management. *Journal of Marketing*, 79(5), 80–99.
- German, J. M. 2004. Hybrid Electric Vehicles. *Encyclopedia of Energy*, 3, 197–213.
- Gerschewski, S., Rose, E. L., & Lindsay, V. J. 2015. Understanding the drivers of international performance for born global firms: An integrated perspective. *Journal of World Business*, 50(3), 558–575.
- Gibbs, N. 2014. Toyota, PSA benefit from rising European demand for hybrids. *Automotive News Europe*, Retrieved September 30, 2015.
- Gioia, D. A. 1992. Pinto fires and personal ethics: A script analysis of missed opportunities. *Journal of Business Ethics*, 11, 379–389.
- Gostin, L. O., Cohen, I. G., & Koplan, J. P. 2020. Universal masking in the U.S: The role of mandates, health education, and the CDC. *JAMA*, 324(9), 837–838.
- Grein, A., Craig, S., & Takada, H. 2001. Integration and responsiveness: Marketing strategies of Japanese and European automobile manufacturers. *Journal of International Marketing*, 9(2), 19–50.
- Hafner-Eaton, C., & Pearce, L. K. 1994. Birth choices, the law, and medicine: Balancing individual freedoms and protection of the public's health. *Journal of Health Politics, Policy and Law*, 19(4), 813–835.
- Haunschild, P. R., & Rhee, M. 2004. The role of volition in organizational learning: The case of automotive product recalls. *Management Science*, 50(11), 1545–1560.
- Hora, M., Bapuji, H., & Roth, A. V. 2011. Safety hazard and time to recall: The role of recall strategy, product defect type, and supply chain player in the U.S. toy industry. *Journal of Operations Management*, 29(November), 766–777.
- Jackson, G. C., & Morgan, F. W. 1988. Responding to recall requests: A strategy for managing goods withdrawal. *Journal of Public Policy & Marketing*, 7(Special Issue on the FTC), 152–165.
- Jarrell, G., & Peltzman, S. 1985. The impact of product recalls on the wealth of sellers. *The Journal of Political Economy*, 93(June), 512–536.
- Johansson, J. K., & Yip, G. S. 1994. Exploiting globalization potential: U.S. and Japanese strategies. *Strategic Management Journal*, 15(8), 579–601.

- Kalaigannam, K., Kushwaha, T., & Eilert, M. 2013. The impact of product recalls on future product reliability and future accidents: Evidence from the automobile industry. *Journal of Marketing*, 77(2), 41–57.
- Kane, S. 2013. What happens at Auto Shows? *The Car Connection*. Retrieved December 8, 2013, from https://www.thecarconnection.com/tips-article/1088810_what-happens-at-auto-shows
- Kim, J. K., & Mudambi, R. 2020. An ecosystem-based analysis of design innovation infringements: South Korea and China in the global tire industry. *Journal of International Business Policy*, 3, 38–57.
- Knudsen, J. S. 2018. Government regulation of international corporate social responsibility in the US and the UK: How domestic institutions shape mandatory and supportive initiatives. *British Journal of Industrial Relations*, 56(1), 164–188.
- Kostova, T., Roth, K., & Dacin, M. T. 2008. Institutional theory in the study of multinational corporations: A critique and new directions. *Academy of Management Review*, 33(4), 994–1006.
- Kotabe, M., Parente, R., & Murray, J. Y. 2007. Antecedents and outcomes of modular production in the Brazilian automobile industry: A grounded theory approach. *Journal of International Business Studies*, 38(1), 84–106.
- Kotler, P. 2011. Reinventing marketing to manage the environmental imperative. *Journal of Marketing*, 75(4), 132–135.
- Laurin, K., Kay, A. C., Proudfoot, D., & Fitzsimmons, G. J. 2013. Response to restrictive policies: Reconciling system justification and psychological resistance. *Behavior and Human Decision Processes*, 122(2), 152–162.
- Lee, R. P., Chen, Q., & Lu, Q. 2009. In search of platforms to increase market responsiveness—Evidence from foreign subsidiaries. *Journal of International Marketing*, 17(2), 59–73.
- Li, H., Bapuji, H., Talluri, S., & Singh, P. J. 2022. A Cross-disciplinary review of product recall research: A stakeholder-stage framework. *Transportation Research Part E*, 163, 102732.
- Lord, M. D., & Ranft, A. L. 2000. Organizational learning about new international markets: Exploring the internal transfer of local market knowledge. *Journal of International Business Studies*, 31(4), 573–589.
- Loriggio, P. 2018. Ontario to scrap Drive Clean emissions test, target heavy duty vehicles instead. *Financial Post*, 28 (2018). Retrieved from <https://business.financialpost.com/transportation/autos/ontario-to-scrap-drive-clean-emissions-test-target-heavy-duty-vehicles-instead>
- Majid, K. A., & Rhee, M. 2018. Firm/product reputation and new-product recalls. *Marketing Intelligence & Planning*, 36(5), 572–84. Retrieved from https://www.marklines.com/en/statistics/flash_sales/salesfig_germany
- Miocevic, D., Gnizy, I., & Cadogan, J. W. 2022. When does export customer responsiveness strategy contribute to export market competitive advantage? *International Marketing Review*, 40(3), 497–527.
- Montiel, I., Cuervo-Cazurra, A., Park, J., Antolín-López, R., & Husted, B. W. 2021. Implementing the United Nations’ sustainable development goals in international business. *Journal of International Business Studies*, 52(5), 999–1030.
- Montiel, I., Park, J., Husted, B. W., & Velez-Calle, A. 2022. Tracing the connections between international business and communicable diseases. *Journal of International Business Studies*, 53(8), 1785–1804.
- Mowen, J. C., Jolly, D., & Nickell, G. S. 1981. Factors influencing consumer responses to product recalls: A Regression analysis approach. *Advances in Consumer Research*, 405–07.
- Mudambi, R., & Navarra, P. 2002. Institutions and international business: A theoretical overview. *International Business Review*, 11, 635–646.
- Muralidharan, E., Hora, M., & Bapuji, H. 2022. Hazard severity and time to recall: Evidence from the toy industry. *Journal of Business Research*, 139, 954–963.
- Muralidharan, K. & Sundararaman, V. 2015. The aggregate effect of school choice: Evidence from a two-stage experiment in India. *The Quarterly Journal of Economics*, 130(3), 1011–1066.
- Ohmae, K. 1990. The borderless world. *McKinsey Quarterly*, 3, 3–19.
- Park, J., Montiel, I., Husted, B. W., & Balarezo, R. 2022. The grand challenge of human health: A review and an urgent call for business-health research. *Business & Society*, 61(5), 1353–1415.
- Peng, M. W. 2003. Institutional transitions and strategic choices. *Academy of Management Review*, 28(2), 275–296.
- Ramseyer, J. M., & Rasmusen, E. B. 2010. Comparative Litigation Rates. *John M. Olin Center for Law, Economics, and Business—Harvard Law School*, Discussion Paper No. 681.
- Reinartz, W., Thomas, J. S., & Kumar, V. 2005. Balancing acquisition and retention resources to maximize customer profitability. *Journal of Marketing*, 69(1), 63–79.
- Rhee, M., & Haunschild, P. R. 2006. The liability of good reputation: A study of product recalls in the U.S. Automobile Industry. *Organization Science*, 17(1), 101–117.
- Roos, D. 2020. When new seat belt laws drew fire as a violation of personal freedom. *History*. Retrieved from <https://www.history.com/news/seat-belt-laws-resistance>
- Rupp, N. G. 2004. The attributes of a costly recall: Evidence from the automotive industry. *Review of Industrial Organization*, 25(1), 21–44.
- Sandberg, J. 2021. “How do I carry all this now?”: Understanding consumer resistance to sustainability interventions. *Journal of Marketing*, 85(3), 44–61.
- Shults, R. A., Elder, R. W., Sleet, D. A., Thompson, R. S., & Nichols, J. L. 2004. Primary enforcement seat belt laws are effective even in the face of rising belt use rates. *Accident Analysis & Prevention*, 36(3), 491–493.
- Simonin, B. 2004. An empirical investigation of the process of knowledge transfer in international strategic alliances. *Journal of International Business Studies*, 35, 407–427.
- Siomkos, G. J., & Kurzbard, G. 1994. The hidden crisis in product-harm crisis management. *European Journal of Marketing*, 28(2), 30–41.
- Smirnova, M. M., Rebiyazina, V. A., & Frosen, J. 2018. Customer orientation as a multidimensional construct: Evidence from the Russian markets. *Journal of Business Research*, 86(May), 457–467.
- Sperling, D., Bunch, D., Burke, A., Abeles, E., Chen, B., Kurani, K., & Turrentine, T. 2004. Analysis of auto industry and consumer response to regulations and technological change, and customization of consumer response models in support of AB 1493 rulemaking. prepared for the California Air Resources Board and the California Environmental Protection Agency, Prepared By: Institute of Transportation Studies, University of California, Davis.
- Thomas, J. S. 2001. A methodology for linking customer acquisition to customer retention. *Journal of Marketing Research*, 38(2), 262–268.
- Van Assche, A. 2018. From the Editor: Steering a policy turn in international business—Opportunities and challenges. *Journal of International Business Policy*, 1, 117–127.
- Van Heerde, H., Helsen, K., & Dekimpe, M. G. 2007. The impact of a product-harm crisis on marketing effectiveness. *Marketing Science*, 26(2), 230–245.
- Voas, R. B., Tippetts, A. S., & Fell, J. C. 2003. Assessing the effectiveness of minimum legal drinking age and zero tolerance laws in the U.S. *Accident Analysis & Prevention*, 35(4), 579–587.

Wheatley, J. J., & Chiu, J. S. Y. 1977. The effects of price, store image, and product and respondent characteristics on perceptions of quality. *Journal of Marketing Research*, 14(May), 181–186.

Wowak, K. D., & Boone, C. A. 2015. So many recalls, so little research: A review of the literature and road map for future research. *Journal of Supply Chain Management*, 51(4), 54–72.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Kashef Abdul Majid is Associate Professor of Marketing, College of Business, University of Mary Washington, Virginia, USA. His teaching and research areas include customer relationship management,

international marketing, business & society, and interactive advertising. He has published in the *Journal of Business Research*, *International Marketing Review*, *Marketing Intelligence and Planning*, as well as the *Journal of Product and Brand Management*.

Hari Bapuji is a Professor in the Department of Management and Marketing, Faculty of Business and Economics, The University of Melbourne, Australia. His research interests lie at the intersection of business and society, with a particular focus on how economic inequality affects businesses and vice versa. His research has appeared in leading management journals and has also been noted for its impact on practice and policy. He serves as a co-editor of *Business & Society* and is a co-founder of *Action to Improve Representation*.