

# **KANT VS ARISTOTLE: EVALUATING CONSUMER RESPONSES TO A PRODUCT RECALL**

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*The raison d'être of this study was to understand how consumer perceptions of an image damaging event such as a product recall can differ based on their philosophical proclivities. Towards this end, the paper contrasts responses from two groups of consumers, one which was trained in Aristotelean Ethics, and another which was not. The authors felt that the latter group's response presented a more Kantian perspective to the issues involved and was distinctly different from the group representing Aristotelean Ethics (Nichomachean). For the purpose of this study, the authors develop and validate an instrument to measure consumers' perceptions about product recalls. The resultant Product Recall Confidence Survey (PRCS) measures the perceptions of possible Toyota consumers in light of the recalls of Toyota vehicles due to acceleration problems.*

*The instrument also measures consumer confidence in the firm in terms of a future purchase. The ethical systems of Kant and Aristotle provide a theoretical underpinning in terms of understanding the complex issue of product recalls. The authors have used statistical tools like factor analysis (PCA – Varimax Rotation) and scale statistics (internal consistency) for determining the initial psychometric properties of the PRCS. Response differences were then measured and evaluated based on an Independent Samples T-Test thus verifying Known-Groups Validity (Spector, 1992) and also confirming the initial hypothesis suggested above.*

## **INTRODUCTION**

Recalls of products, whether they are cars, cell phones, or pharmaceuticals, have serious consequences on the reputation of the firm. These recalls can sometimes lead to prolonged litigation and in a few instances, recalls can lead to the ultimate dissolution of the firm. Product recalls have direct costs and indirect costs associated with legal liabilities, erosion of consumer confidence, and reluctance of

consumers to purchase the firm's products in the future (Carvalho, et. al., 2015; Cheah et. al., 2007; Rhee and Haunschild 2006).

If there are associated heavy direct and indirect costs with recalls, do firms make dubious or even unethical decisions when it comes to a recall situation? Past research indicates that some firms may have made unethical decisions during a recall crisis (Laufer et al. 2005). Could decisions that are unethical, or perceived as unethical by consumers, lead to loss of reputation for the firm involved in the recalls? Christensen and Kohls (2003) suggest that unethical decision making during recall situations have led to the disgrace and sometimes near financial ruin of the firms. For example, the recent Volkswagen emissions scandal further underlines the continuation of questionable ethical decisions during crises (Lynch et al., 2016).

To make matters even more complicated, apart from dubious decision making, firms seem to indulge in blame shifting in a crisis like recalls. Again, past research indicates that some firms have shifted the blame on suppliers, while others have blamed manufacturers. When Mattel had to recall toys due to defects in design, they shifted the blame by claiming that their Chinese suppliers gave substandard materials and used lead paint (Carvalho, et. al., 2015; Bapuji and Beamish, 2007). Considering the repercussions of ethical mismanagement on firm image and revenues as a result of lowered consumer confidence, this paper proposes to test whether the relationship between consumer confidence and ethical mismanagement is contingent upon consumers' philosophical orientation. We do this in the context of the Toyota recall of 2011.

### ***Toyota Vehicle Recalls***

Allegations that serious accidents that resulted from the unintended acceleration of Toyota vehicles between 2009 and 2011 caused a blow to the corporation's decades-old reputation for engineering excellence. The focus on engineering excellence may have led to a lack of focus on the human aspect of the engineering process. Some authors have suggested that the very engineering excellence, as put forth as "lean manufacturing," could have led to the acceleration issue (Coetzee, et. al., 2016). Others have suggested that embedded software problems could have led to the acceleration issues (Cumming, 2016).

The acceleration situation led Toyota to recall approximately seven million cars in the United States. Did this debacle of Toyota signify that Toyota's legendary lean manufacturing practices were not as effective as they seemed? Did it also mean that the company had grown too quickly without due regard to quality issues (Heskett, 2011)?

Given its exceptional history of engineering excellence and customer service; customers, consumer advocates, competitors, and government agencies were all stunned when Toyota responded in a defensive manner to accident reports that suggested a defect with accelerators in Toyota vehicles. Only after hundreds of accidents, thousands of complaints, and the filing of class-action lawsuits did Toyota respond with multiple recalls of millions of vehicles in an effort to isolate and correct the problem and or placate the consumers' hue and cry. Unfortunately for Toyota, American consumers felt betrayed by the company whose name was once synonymous with engineering excellence and exemplary business ethics (Stock, 2014). Eventually, the CEO of Toyota was compelled to testify before Congress and issued an apology to the company's customers. Even though we cannot assume the intention of Toyota's management team, it is obvious that the company faced a public crisis of trust and criticism by the U.S. government (Bowen & Zheng, 2015).

Previous researchers have pointed out that Toyota's culture may have led to its delay in addressing ethical issues (Liker, 2004; Liker & Hoseus, 2008; Liker & Ogden, 2011; Karunakaran, 2014; James & Jones, 2014). In this context, the question looms – Will all consumers react to such a situation in a homogeneously negative response, or is it possible that consumer responses are less monolithic and more nuanced? We suggest that individuals trained in an ethical system such as Aristotelean Ethics which focuses more on individual development as suggested by Aristotle's emphasis on "how to be" rather than the deontological or teleological perspectives, which are more geared towards "what to do," will be more tolerant and patient towards a company with a history of high quality service and products.

As such, in addition to proactively addressing the ethical issues that arise during product recalls, we suggest that corporate response to consumer reactions during times of crises should keep in mind that consumers are rarely uniform in their perception of ethical issues and that corporate response should be designed in a more cognizant manner. This is further exacerbated by the cultural differences that might be prevalent under the circumstances faced by a multinational firm as it strives to achieve competitive advantage in a place that might be far from its origins.

Automotive industry observers speculated that Toyota's initial mishandling of the accelerator crisis was due in large measure to Toyota's corporate structure, as it was not "designed" to respond to problems and perceptions created by such a controversy (Heskett, 2011). Specifically, the North American operations of the company were unable to respond more efficiently to the problem due to its lack of independence requiring a complete reliance on upper management in Tokyo for direction and resolution of the allegations. American consumers expect a timely and comprehensive response to their complaints; instead, "Toyota had responded to identified quality problems in a top-down and reactive approach; they treated these problems as potential threats to their public images and bottom lines, and tried to find a low-cost way out. Such an approach led to unethical decisions..." (Asgari & Li, 2014: 214). Toyota's chain of command, combined with the cultural influences created a situation which impeded resolution of the complaints and compounded negative perceptions of the company.

Toyota was possibly perceived by many Americans as unethical because of its unwillingness to respond to, acknowledge and correct a serious mechanical defect (Asgari & Li, 2014). An ethical responsibility to customers and other stakeholders was a part of the crisis faced by Toyota. When lives and trust are at stake, it is imperative that an organization should conduct methodological and systematic ethical analyses (Bowen & Zheng, 2015). Consumers could have felt disappointed in Toyota, a corporation they had supported and emulated. By contrast, the ethics of the Japanese business culture, ordinarily quick to respond to customer dissatisfaction, refused to be stampeded into actions not necessarily warranted by the available facts and maintained its perceived integrity in the face of litigation, regulation, and popular pressure.

Despite the number of studies which show the rather unfortunate ubiquity of unethical decision making in a recall crisis, few studies concentrate on the response strategies based on ethical frameworks. The present paper hopes to address this lacuna by comparing consumer responses to ethically charged events from the perspectives of modern Kantian and classical Aristotelean points of view.

## **THEORY**

### **A Kantian Approach to the Toyota Recall**

Immanuel Kant proposed a logical process on which to base moral maxims known as the categorical imperative process (CI process), which can be used to assess the value and ethicality of a particular mode of action or inaction. Using a series of three interrelated and mutually dependent logical specifications (or formulae), Kant provides a tool for conceptualizing moral maxims that are both logically sound and practical for an individual, and for an organization.

Kant's first specification, "*formula of universal law*" (Robinson, 2016: 9), states that a moral law should only be imposed on oneself if it can be universally accepted and applicable, requiring it to be first assessed from an objective standpoint. For example, the maxim "stealing is wrong" would have clear and objective beneficent results if it were to be adopted universally. An opposing maxim to the example would be undoubtedly disavowed by the majority due to its negative consequences, rendering it universally inapplicable.

The second formulation, "*formula of respect for the dignity of others*" (Ibid), specifies that moral motivation should be the grounds for acting toward others, offering a more subjective and empathetic perspective. Rather than being driven by one's egoistic ambition and "using" others conditionally as a mere means to one's own end, Kant indicates that one should treat others as an end in themselves (Robinson, 2016). In simpler terms, this implies that one acts not necessarily without self-interest, but

always with the recognition and cognizance of another's individuality and freedom. Others are not merely a tool to be used, but a free-thinking and acting individual who also has personal ends.

The third and final formula, or "*legislation for a moral community*" (Robinson, 2016: 9) is somewhat of a synthesis of the first two: with the universality of the moral maxim coinciding with the consideration of others' individuality, Kant concludes that "All maxims that proceed from our own making of law ought to harmonize with a possible kingdom of ends" (Ibid). This "Kingdom of Ends" is a moral community/society and "the reason for moral law's existence" (Robinson, 2016:3). As previously mentioned, its pursuit necessitates the first two formulations of the CI process, as the adoption of universally applicable maxims and a sense of "duty" toward others should harmonize with a community that acts in ways both mutually beneficial and considerate.

When producers are faced with an ethical crisis that may harm consumers, the CI process can be used as an incentive and justification for an active response to the situation. Factors such as reputation and potential overreaction/overcompensation may have sway in producers' decisions, but if the consumers are viewed as an individual (or end in themselves) rather than a means to an end (profit or other self-concerned motivation), the ethical responsibility of recalling a potentially harmful product without hesitation becomes apparent. Acting toward a harmonious "Kingdom of Ends" acknowledges the long-term benefits of ethical action which, though possibly costly in the case of a product recall, will eventually provide a mutually beneficial and trusting relationship between consumers and producers.

The example of Toyota's handling of its vehicles' issues lacked alignment with Kantian ethics. Hesitation in addressing and responding to customers' complaints exemplifies a compromise of the second formula in the CI Process. Although we cannot assume Toyota was unconcerned with customers' safety (as ends in themselves), the self-concerned company had itself in the foreground in this scenario, marginalizing customers as "means to an end" in the ethical hierarchy. With this compromise of the CI process's second formula, the third formula and ideal "Kingdom of Ends" becomes unattainable.

In view of the CI process and its above application to the Toyota crisis, it becomes evident that consumers from a Kantian perspective will evaluate this situation as an ethical negative based on the exigencies of the situation.

### **An Aristotelean Approach to the Toyota Recall**

The ancient Greek philosopher, Aristotle is well known for formulating a system of ethics in ten volumes, called Nichomachean Ethics around 350 B.C. Unlike his earlier treatise (Eudemian Ethics), Nichomachean Ethics, also called a subset of Virtue Ethics, is deeply centered on practical application of virtue. In this system, Aristotle is primarily concerned with the individual's relationship to society through the habitual application of virtue. Over the ages, Nichomachean Ethics has been regarded as one of the most influential ethical treatises ever written, with great lessons for mankind across time and culture (Lear, 2004).

In this system, Aristotle characteristically looks at the individual and the situation being faced by said person from a holistic viewpoint in that he considers one's response to a given situation, not so much as a result of the exigencies of the moment, but more as a result of the habitual practices inculcated by the person in her or his life up until that moment of decision. In other words, Aristotle keenly understood the importance of habit in human decision making, especially as related to ethical decisions wherein he stressed the cultivation of virtue, practicality and moderation as the key elements that go into ethical decisions. In this respect, the Aristotelean view greatly differs from that of the deontological or teleological (utilitarian) viewpoints of Kant and Mill, which emphasize more upon the issue at hand, and its consequences. The nature of the person involved is hardly given as much importance by the latter, more recent ethical philosophers.

Nichomachean Ethics suggests that individual virtue in any given situation should be eminently practical and refined by moderation. Any virtue that is practiced in excess, will result in poor ethical judgement. Thus, bravado on the one hand, and cowardice on the other are both a result of immoderation or excess; courage, which is truly a virtue therefore is a happy medium between these extremes. How

might this difference play out in terms of recall events and specifically, the Toyota recall episode under scrutiny in this paper?

From an Aristotelean viewpoint, Toyota's decision making when faced with the unintended acceleration crisis might be considered with a look at Toyota's habitual actions as related to customer care and product quality. From a brief look at Toyota's past in this industry, it becomes evident that this was a company that prided itself on quality products and customer satisfaction, and it was recognized as such over the past two decades. This is amply evident not only from Toyota's mission statement, which emphasizes customer care and valuable products but also from its logo, which is made up of two ovals circling each other in a representation of, "the hearts of the customers and the company united in respect, and trust... and the space between the ovals is meant to symbolize the infinite values, cherished by Toyota. Excellent quality, reliability, environmental concern and innovative technologies are among them." ("Ideas Behind the Ovals", 2016). Of course apart from the obvious intent made clear by the company via its mission statements, logo and other publicly available materials, the company also emphasizes product safety as seen from its claim that it spends one million dollars every hour in research and development ("Let's Go Places Safely", 2016).

All of this seems to be further corroborated by the numerous quality and safety related awards and ratings the company and its products have received over the years. In a multi-year study conducted by consumerreports.org, Toyota vehicles took pole position in 9 out of 14 vehicle categories ranging from sub-compact cars to large SUVs. The study looks at 17 trouble areas most commonly identified in consumer complaints ("The Most and Least Reliable", 2016). Based on this history of Toyota's consumer and safety ratings along with its purported mission that emphasizes quality and customer service, it might be fair to say that Toyota as a company would qualify as a company in the habitual practice of providing quality products taking into mind consumer requirements. This is also evident in Toyota's pioneering emphasis on the Total Quality Management philosophy of production, which highlights the same aspects of quality and customer satisfaction.

### **Understanding Consumer Confidence**

For the purpose of this study, we define consumer confidence mainly in terms of the consumer's reaction to an event that may be perceived as unethical, in this case Toyota's recall and the various associated aspects such as the public scrutiny, the investigation by the NHTSA and the company's response to the event and its aftermath. We measure these reactions and perceptions - be they cognition based or affect based (Dick & Basu, 1994), in terms of consumer's reactions to the event in question (Toyota recall), their perception of the company in general, their reaction to the company's response to and handling of the event, and finally, their perceptions about their future relationship with the company.

We base this framework on the normally and generally understood meaning of consumer confidence as the optimism felt by consumers towards a particular event in terms of the current situation and the possible future situation (Garner, 1991). Garner notes that most consumer confidence measures such as large scale surveys of US households carried out by the University of Michigan and The Conference Board's Consumer Confidence Index (now commonly known as the Consumer Conference Index) generally divide their questions based on current consumer perceptions of a given situation and future possibilities. Given this precedent, we tailor our understanding of consumer confidence as related to the specificities of a product recall situation based on the similar, present and future dichotomy. Thus, we define consumer confidence after a recall as, "the consumer's sentiment regarding the company and product involved in terms of its perceived reputation, its perceived response to the situation, the event's perception, and finally, their perception of the future of the product and company". Thus, we theoretically postulate four dimensions to consumer confidence in response to a recall (based on their perceptions):

*Perception regarding reputation*, which includes their assessment of the quality and value provided by the company's product.

*Perception regarding company response*, which includes cognition of the proactive and (non-government mandated) and the reactive nature (post government intervention) of the company's response.

*Perception regarding the exigencies surrounding the event*, that is the perceived issues and problems related to the recall.

*Perception regarding the future relationship* with the company in terms of whether the consumer is comfortable in making future purchases with the company.

### **Deriving Hypotheses**

Keeping in mind the above definition and the four suggested facets of consumer confidence as well as the theoretical underpinnings provided by Kant and Aristotle, we believe that while Toyota's handling of the situation was less than satisfactory as suggested by previous studies, consumers' reactions to this would vary based on whether they maintained a Kantian viewpoint or an Aristotelean one. Towards this end, we tested two groups of participants which included students from a small Midwestern university. While one group was made familiar with Kant's system, the other was taught from an Aristotelean viewpoint. The first group was expected to respond from a Kantian perspective to this issue and have a severe negative reaction to the situation. This reaction is captured by the following hypotheses:

H1 – Consumers who are familiar and follow a Kantian system of ethics will have lower overall consumer confidence in reaction to issues such as the Toyota recall episode than consumers with an ethical system that lays emphasis on Aristotelean ethics,

H2 – Consumers who are familiar and follow a Kantian system of ethics will have a less favorable perception of the reputation of a company involved in a recall situation such as the Toyota recall episode than consumers with an ethical system that lays emphasis on Aristotelean ethics,

H3 - Consumers who are familiar and follow a Kantian system of ethics will have a less favorable perception of a company's handling of the situation in reaction to issues such as the Toyota recall episode than consumers with an ethical system that lays emphasis on Aristotelean ethics,

H4 - Consumers who are familiar and follow a Kantian system of ethics will have a less favorable perception of their future relationship with a company in reaction to issues such as the Toyota recall episode than consumers with an ethical system that lays emphasis on Aristotelean ethics,

### **METHODOLOGY AND RESULTS**

To test the hypotheses above, we first needed to develop an instrument to measure consumer confidence in the company issuing the recall, in this case, Toyota. With this objective in mind, it was decided to develop and validate the Product Recall Confidence Survey (PRCS) based on the Toyota recall scenario, and administer the survey to students as a proxy for consumers who own cars. Again, the instrument is using the case of Toyota to check consumer perceptions, but it can be used for any product recalls. Thus, the goal of this process was to psychometrically test an instrument using a particular firm real-world scenario and then help future researchers to use this tool for other product recalls.

The process of constructing the proper instrument followed a flow chart approach adapted from Benson and Clark (1982), Cote & Buckley (1987), Crampton and Wagner (1994), and Spector (1979). Figure 1 graphically depicts the methodology used to develop and validate this instrument.

**FIGURE 1**  
**METHODOLOGY TO DEVELOP AND VALIDATE:**  
**FLOWCHART OF QUALITATIVE EVALUATION**  
 (Adapted from Benson & Clark, 1982, and Spector, 1992)



The first survey instrument (to check Kantian responses) was presented to 132 business students at a small Midwestern university in the US. The main purpose of the first survey was to actually develop the instrument of measurement while at the same time collecting consumer responses from a Kantian perspective. The response rate was 100%. The second sample (for Aristotelean responses) was collected from 92 students with a response rate of 93%. This data was collected mainly for the purpose of understanding Aristotelean responses to the issue and as a comparative data set to the first. It was not used for instrument development. The students were given extra credit points towards their final grade. The fact that there was an incentive towards increasing the final grade and that it was a convenient sample administered by two “well-liked” faculty members may have contributed towards the response rate being so high.

**Instrument Validity and Reliability**

Amongst the greatest concerns faced by researchers while developing an instrument to measure subjective phenomena such as consumer confidence, are those of validity and reliability. In terms of validity, the primary apprehension relates to whether the instrument actually measures what it purports to. In the process of checking for validity, researchers need to pay special attention to construct validity (discriminant and convergent), common methods variance and finally the internal – consistency (reliability) of the scale.

**Common Methods Variance**

Common Method Variance (CMV) looks at whether the survey is actually measuring the concept which it is supposed to measure, which can get diluted as a result of researcher and participant bias. There are various CMV biases like selection bias, social desirability bias, etc. that have been pointed out by previous researchers (Doty & Glick, 1998; Harrison, et. al., 1996; Lindell & Whitney, 2001; Malhotra, et. al., 2006; Podsakoff & Organ, 1986, Podsakoff, 2003; Spector, 2006). Using the well accepted research of Podsakoff et al. (2003), the authors carefully considered the various aspects of CMV to make sure that it was not a factor in terms of development of this instrument. For example social desirability

bias was controlled by ensuring that participants were well informed that their responses would remain anonymous. Item context bias was accounted for by ensuring that item order was changed for survey respondents.

### Reliability

Internal consistency reliability was measured using Cronbach's Alpha. Cronbach's Alpha for the final administration totaled .751 (Table 1). No items were deleted from the scale, as the Cronbach's Alpha if Item #1 (Quality) would have been .760 if deleted, which is very little improvement in reliability. In consultation with Expert Panel of two candidates with doctorate degrees, it was decided to keep Item #1 (Quality) as it adds to content validity of the instrument (Table 2).

**TABLE 1  
RELIABILITY STATISTICS**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.751	.758	11

**TABLE 2  
ITEM TOTAL STATISTICS**

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Quality	39.9242	35.246	.241	.462	.760
Safety	39.3561	35.010	.456	.554	.727
Value	39.2803	34.585	.447	.873	.727
Problems	39.0682	35.346	.356	.820	.739
Response	39.2955	33.263	.446	.786	.727
Govt	39.3409	32.593	.525	.521	.715
BeforeGovt	38.9697	35.114	.401	.490	.733
AfterGovt	38.7348	34.944	.420	.693	.731
Future	38.7803	34.967	.415	.756	.731
Purchase	38.7576	34.384	.478	.718	.724
Confidence	38.7197	36.677	.261	.395	.750

For further confirmation, we used a split form to check the reliability. Split form reliability is also used to test internal consistency reliability. In split half reliability, the total number of items on the instrument is split in half. This results in two sets of questions (or, rather two sets of item pools). Thus, the entire instrument was administered to the respondents and the total score for each set of responses was determined. Finally, the correlation between the two sets was determined. The reliability on the first 6 questions was .761 and on the last 5 questions was .802 (Table 3).

**TABLE 3  
RELIABILITY STATISTICS USING SPLIT HALF FORM**

Cronbach's Alpha	Part 1	Value	.761
		N of Items	6 <sup>a</sup>
	Part 2	Value	.802
		N of Items	5 <sup>b</sup>
	Total N of Items		11
Correlation Between Forms			.148

### Construct Validity

Construct validity of the survey was measured by performing a Principal Component Analysis (PCA) using the Varimax rotation method with the Kaiser normalization. PCA is a common technique that has been used by researchers (academic and practitioners) to find the underlying dimensions of a construct, which is typically used (particularly micro items like cross loadings, etc.) to test the validity of a survey. This method of factor analysis was considered suitable for our purposes based on sample size (n = 132) criteria because a) the number of respondents per item were more than 10 and b) the overall sample size was greater than 100. Although researchers' opinions regarding these criteria for suitability differ, there is considerable agreement on the abovementioned criteria (Hair et al., 2010; Tabachnick & Fidell, 2007). The factor rotation process converged in 5 iterations, and indicated four underlying dimensions to the construct of Toyota Confidence (Table 4). An instrument is said to have convergent validity if items load (group) with high factor scores (above 0.45) under a particular dimension. Discriminant validity is achieved when items that converge under a particular dimension do not have high factor loadings in any other dimension (cross-loadings). In other words, there should be a minimum of 0.10 factor score difference between items on separate dimensions. Only those items that meet the above criteria should be retained. Furthermore, in the scree-plot solution of the PCA, only eigenvalues above 1.0 are to be selected. Lastly, only a solution with factors above 60% variance are to be retained (Hair et al., 2010; Tabachnick & Fidell, 2007; Karau & Elsaid, 2009). As seen from tables 4 and 5, and Figure 2, these conditions were fulfilled in the present study. The results of the PCA will be discussed in detail in the next (discussion) section.

**TABLE 4**  
**FACTOR ANALYSIS (PCA)**

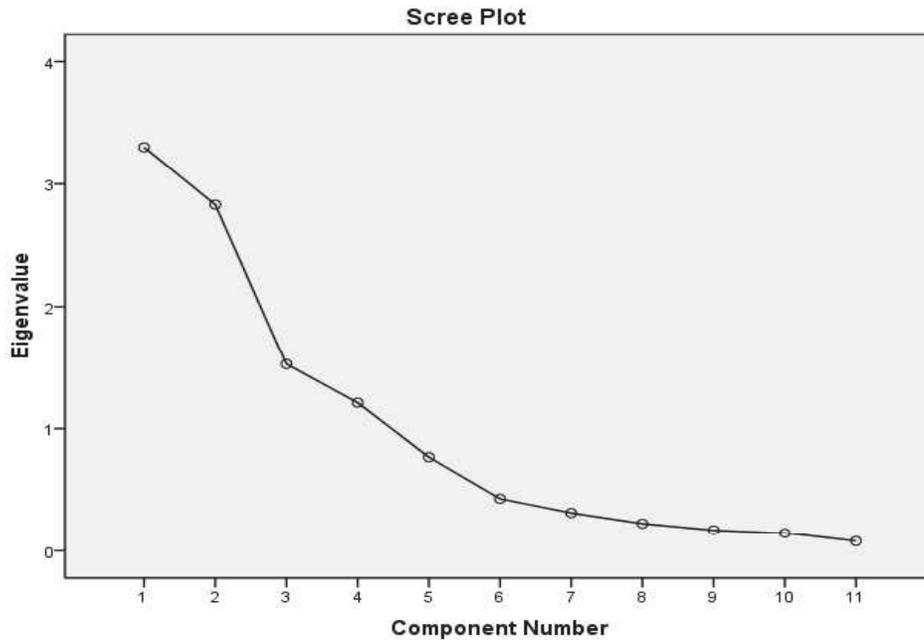
	Component			
	Reputation	Event Perception	Future Relation	Response Perception
Value	<b>.945</b>	-.058	.131	-.019
Quality	<b>.929</b>	.019	.066	.033
Safety	<b>.908</b>	-.089	-.025	.052
Confidence	.0372	.234	<b>.042</b>	.335
Problems	-.053	<b>.929</b>	.087	.088
Response	-.028	<b>.906</b>	.102	.095
Govt	.003	<b>.891</b>	.055	.229
Purchase	.057	.003	<b>.901</b>	-.095
Relationship	.072	.172	<b>.874</b>	.118
BeforeGovt	.126	.159	.046	<b>.876</b>
AfterGovt	-.054	.139	-.017	<b>.853</b>

**TABLE 5**  
**TOTAL VARIANCE EXPLAINED**

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	2.786	25.326	25.326
2	2.617	23.790	49.116
3	1.760	15.997	65.113
4	1.704	15.489	80.602

Extraction Method: Principal Component Analysis.

**FIGURE 2**  
**SCREE PLOT OF DIMENSIONALITY**



### **Independent Samples T-Test**

In order to test the hypotheses delineated in the previous section, we used an Independent Samples T-Test by administering the PRCS to a second sample of students ( $n=92$ ). This will allow us to see whether the responses of participants to the Toyota recall event change based on their ethical systems. To quickly recall the earlier discussion, we estimated that consumer confidence in Toyota after the recall event, will differ for consumers with an Aristotelean background compared to those with a Kantian background for all the components of consumer confidence (H1 – H4).

Quite importantly, this test allows us to refine the PRCS even further by testing for known groups validity (Spector, 1992), which tests an instrument's ability to distinguish between groups (sensitivity) – in this case those with an Aristotelean background and those with a Kantian background on a given variable (consumer confidence after an ethical issue).

Furthermore, to test the magnitude of these differences between the two groups, we used the Cohen's D statistic, which tests for effect size, i.e. the magnitude of difference in the set of responses. In general, effect sizes are judged by Cohen's D scores ranging from small (0.2), to medium (0.5) and large (0.8) (Cohen, 1977). The results of the Independent Samples T-Test along with Effect Size differences are given in table 6 and discussed in the next section.

**TABLE 6**  
**INDEPENDENT SAMPLES T-TEST STATISTICS & EFFECT SIZE**

Group Statistics	Inclination	N	Mean	Std. Deviation	Std. Error Mean
Reputation Perceptions Cohen' D = 0.77	Kantian	132	1.25	0.63	0.05
	Aristotelean	92	1.95	0.88	0.08
Event Perceptions Cohen's D = 0.81	Kantian	132	1.13	0.62	0.05
	Aristotelean	92	1.46	0.79	0.07
Response Perceptions Cohen's D = 1.05	Kantian	132	1.29	0.61	0.05
	Aristotelean	92	2.01	0.96	0.09
Future Relationship Cohen's D = 0.94	Kantian	132	1.69	0.72	0.06
	Aristotelean	92	2.37	1.11	0.08
Overall Confidence Cohen's D = 0.84	Kantian	132	1.61	0.57	0.04
	Aristotelean	92	2.05	0.82	0.07

**TABLE 7**  
**INDEPENDENT SAMPLES T-TEST STATISTICS**

		F	Sig.	t	Sig. (2-tailed)	Std. Error Difference
Reputation Perceptions	Equal variances assumed	83.10	0.03	-12.94	0.00	0.09
	Equal variances not assumed			-12.41	0.00	0.09
Event Perceptions	Equal variances assumed	19.49	0.01	-9.55	0.00	0.09
	No equal variances assumed			-9.77	0.00	0.09
Response Perceptions	Equal variances assumed	128.43	0.02	-13.33	0.00	0.09
	No equal variance assumed			-11.63	0.00	0.10
Future Relationship	Equal variances assumed	25.17	0.02	-11.16	0.00	0.10
	Equal variances not assumed			-10.94	0.00	0.10
Overall Confidence	Equal variances assumed	90.73	0.00	-10.02	0.00	0.08
	Equal variances not assumed			-9.43	0.00	0.08

## DISCUSSION

### Dimensionality of the Construct

In terms of dimensionality, factor analysis (PCA) confirmed our theoretical premise that there are four distinct dimensions of consumer confidence based on consumer perceptions about product reputation, event exigencies, company response, and future relationship. For the most part, the factors loaded very cleanly under each of these dimensions thereby satisfying the conditions (factor scores greater than 0.45 and differences of greater than 0.10) put forth by the researchers mentioned earlier. The only factor that did not meet these criteria was factor "overall confidence" (item number 11 in the scale), which scored lower than the accepted minimum and also had a slight cross-loading (0.37 vs 0.42) on two dimensions – consumer perceptions and future relationship. We still retained this item in the scale because a) some researchers consider scores above .30 as meaningful in explaining variance (Tabachnick & Fidell, 2007), and b) the concerned factor loaded with a higher score on the correct dimension suggesting that it explained variance in the right direction.

The PRCS is not only validated through the PCA but also through an independent samples t-test to measure the sensitivity of instrument in terms of its ability to find differences between groups (Known Groups Validity), which further adds to the construct validity of the scale (Spector, 1992). The mean

score differences between the two groups (Kantian and Aristotelean) in terms of their responses in consumer confidence to the Toyota recall crisis are significant for every dimension. For the Kantian respondents, mean scores ranged from 1.13 to 1.69, Standard Deviation scores varied from 0.57 to 0.72; for Aristotelean respondents, mean scores ranged from 1.46 to 2.37 and standard deviation ranged from 0.79 to 1.11. These dimensions within which each of the items fall can be listed as under product reputation, consumer perceptions of the event, consumer perception of company response, and consumer perception of future relationship. The first three items fall under Product Reputation such as safety, quality and value, the next three items fall under consumer perceptions of the company based on the issue(s) under scrutiny, and finally the next five items fall under the consumer's perception of the company's response to the situation (two items) and the consumer's possible future relationship with the firm (three items). This methodology was similar to that which has been suggested by previous researchers like Spector (1987) and Nunnally (1978).

The total variance explained by these four underlying dimensions was 80% (Table 5). This suggests strong reliability and goodness of fit for the instrument. As Lorenzo-Seva (2013: 6) indicates: "...using the percentage of common variance as goodness of fit index helps to correctly assess the most suitable factor model for our dataset."

The Scree Plot (figure 2) confirms the dimensions suggested by factor analysis. A scree plot displays the eigenvalues associated with the dimensions in factor analysis in a descending order. The scree plot makes it easy to visually understand which dimensions explain most variability in a data set. Thus for our data set, four underlying dimensions are reported having eigenvalues of more than 1 (Figure 2).

Based on the criteria specified earlier, and as per the flow chart method recommended by Benson and Clark (1982) and Spector (1979), the PRCS meets the requirements of face and construct validity, that is, the PRCS is a reliable and valid instrument. As per Nunnally (1978), the PRCS meets the criteria for reliability (Cronbach's Alpha). Nunnally (1978) indicated that an instrument should have a Cronbach's Alpha of .70 or better to be considered a reliable instrument. In terms of internal consistency, the factor analysis shows very little cross loading – which is also an indication that the survey has internal consistency (Spector, 1992). Also, moderately high scores on the split-form reliability test further indicate the strength of the PRCS measure.

Thus, the psychometric properties of the Products Recall Confidence Survey (PRCS) were developed and validated. The validated final scale of the PRCS is listed in Appendix 1.

### **Hypotheses Verification**

The Independent Samples T-Test conducted on the second sample of participants (n = 92) further allows us to test the differences between the two groups with regard to the variable of consumer confidence in the case of a recall event. From the above differences in means (tables 6 and 7) it becomes evident that each of the hypotheses (H1 – H4) is met at acceptable levels of significance ( $p < 0.05$ ). Negative t-values indicate that the second group of respondents (Aristotelean) had higher scores on each of the dimensions of consumer confidence. The t-statistic scores ranged from 9.4 to 12.4 at statistically significant levels ( $p < 0.01$ , 2-tailed)

### **CONCLUSIONS & FUTURE POSSIBILITIES**

In terms of an underlying theory in developing this instrument, the authors used the ethical theories elucidated by Kant and Aristotle. Other theories like Gandhian Ethics, and Utilitarian Ethics were examined and considered in terms of their applicability to this instrument, but Kantian and Nichomachean Ethics seemed to have the best fit. The ethical dilemma faced by firms in terms of recalling products seemed to lend itself particularly well to the Categorical Imperative (CI) process as well the holistic and nuanced reasoning provided by Aristotle. Using these time tested paradigms assures that the instrument is well anchored. It also makes it easily transferable in terms of looking at the ethical behavior of firms during the time of product recalls.

The advantage of developing and validating the PRCS for future business researchers is in the fact that this psychometrically tested instrument can be used for any product recalls. So even though in this study we used Toyota vehicle recalls to develop the PRCS, there is no reason that it cannot be used to measure consumer perceptions about pharmaceutical products or electronic products like the Samsung Galaxy 7 recall in 2016. The paper (through the independent samples test) further confirms the sensitivity of the instrument in that it could detect the finer differences in user responses based on their differing ethical backgrounds, which suggests that firms would do well to tailor their responses to ethical issues by considering, in addition to culture, the varying ethical backgrounds of the consumer. However, considering the slight cross-loading of the item of overall confidence on two dimension, future researchers should confirm the properties of the scale on other sample participants.

If used before the detrimental non-financial impact of product recalls, firms can contain some of the negative repercussions of a product recall. Firms can also design their responses after adequately understanding their consumers' ethical proclivities, which would allow for a customized approach rather than a "shotgun" type one for all solution. In conclusion, this pilot study confirmed the hypothesis that Toyota's response, while defensive and perhaps even, negative, was not altogether poorly received. This is further corroborated by the fact that Toyota's revenues and numbers continued to grow after the dip in 2011. Even though Toyota was slow in resolving the issues with its vehicles, once the firm got over its initial reaction, it moved with strong determination and speed. Another confirmation perhaps, that an Aristotelean, holistic viewpoint that takes into consideration more than just the immediate aftermath of a product recall, tends to pay off in the long run. Thus, the authors hope that this instrument will enable firms in being proactive and nuanced in terms of their responses to product recalls.

The study further illustrates the power of consumer perceptions about products and services. Further research will be conducted in order to determine whether the perceptions persist among members of the two groups sampled.

## REFERENCES

- Asgari, N. & Li, G. (2014). Corporate Social Responsibility: Its Economic Impact and Link to the Bullwhip Effect, *Journal of Business Ethics*. Retrieved December 30, 2014 from <http://link.springer.com/article/10.1007/s10551-014-2492-1/fulltext.html>.
- Bapuji, H., & Beamish, P. (2007). Toy recalls: Is China really the problem? *Canada-Asia Commentary*, 45, 1–9.
- Benson, J., Clark, F., 1982. A guide for instrument development and validation. *American Journal of Occupational Therapy*. Official. Publ. Am. Occup. Ther. Assoc. 36, 789e800.
- Bowen, S. A., & Zheng, Y. (2015). Auto recall crisis, framing, and ethical response: Toyota's missteps. *Public Relations Review*, 41(1), 40-49.
- Business Line. (2006). Trade unions form body to support Toyota workers. Retrieved April 17, 2014 from <http://www.thehindubusinessline.com/>.
- Business Standard. (2008). Infrastructure hurdles delaying Prius launch. Retrieved Jan 7, 2014 from [http://www.business-standard.com/article/companies/-infrastructure-hurdles-delaying-prius-launch-108090701039\\_1.html](http://www.business-standard.com/article/companies/-infrastructure-hurdles-delaying-prius-launch-108090701039_1.html).
- Business Standard. (2014). Car production comes to a halt at Toyota's Bidadi plants. Retrieved Jun 19, 2014 from <http://www.business-standard.com/>.
- Carvalho, S.W., Muralidharan, E. & Bapuji, H. (2015). Corporate Social 'Irresponsibility': Are Consumers' Biases in Attribution of Blame Helping Companies in Product-Harm Crises Involving Hybrid Products? *Journal of Business Ethics*, 130: 651-663.
- Cheah, E. T., Chan, W. L., & Chieng, C. L. L. (2007). The corporate social responsibility of pharmaceutical product recalls: An empirical examination of US and UK markets. *Journal of Business Ethics*, 76(4), 427–449.

- Christensen, S. L., & Kohls, J. (2003). Ethical decision making in times of organizational crisis: A framework for analysis. *Business and Society*, 42(3), 328–358.
- Coetzee, R., Van der Merwe, K., & Van Dyk, L. (2016). Lean implementation strategies: how are the Toyota Way principles addressed? *South African Journal of Industrial Engineering*, 27(3), 79–91.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112, 155–159.
- Consumer Reports (2017). The Most and Least Reliable Cars by Class, Retrieved on December 12, 2016 from <http://www.consumerreports.org/car-reliability/the-most-and-least-reliable-cars-by-class/>
- Cote, J. A., & Buckley, M. R. 1987. Estimating trait, method, and error variance: Generalizing across 70 construct validation studies. *Journal of Marketing Research*, 24(3): 315–318.
- Crompton, S., & Wagner, J. 1994. Percept–percept inflation in micro-organizational research: An investigation of prevalence and effect. *Journal of Applied Psychology*, 79(1): 67–76.
- Dick, A. S., & Basu, K. (1994). Customer loyalty: toward an integrated conceptual framework. *Journal of the academy of marketing science*, 22(2), 99–113.
- Doty, D. H., & Glick, W. H. 1998. Common methods bias: Does common methods variance really bias results? *Organizational Research Methods*, 1(4): 374–406.
- Garner, C. A. (1991). Forecasting consumer spending: Should economists pay attention to consumer confidence surveys? *Economic Review-Federal Reserve Bank of Kansas City*, 76(3), 57.
- Hair, J. F., Black, W., Babin, B., & Anderson, R. (2010). *Multivariate Data Analysis*. Upper Saddle River, NJ: Prentice Hall.
- Harrison, D. A., McLaughlin, M. E., & Coalter, T. M. 1996. Context, cognition, and common method variance: Psychometric and verbal protocol evidence. *Organizational Behavior and Human Decision Processes*, 68(3): 246–261.
- Karau, S. J., & Elsaid, A. M. M. K. (2009). Individual differences in beliefs about groups. *Group Dynamics: Theory, Research, and Practice*, 13, 1–13.
- Lear, G. (2004). *Happy Lives and the Highest Good: An Essay on Aristotle’s “Nicomachean Ethics.”* Princeton, NJ: Princeton University Press, 2004.
- Lindell, M. K., & Whitney, D. J. 2001. Accounting for common method variance in cross-sectional research designs. *Journal of Applied Psychology*, 86(1): 114–121.
- Malhotra, N. K., Kim, S. S., & Patil, A. 2006. Common method variance in IS research: A comparison of alternative approaches and a reanalysis of past research. *Management Science*, 52(12): 1865–1883.
- Heskett, J. (2011). *The culture cycle: How to shape the unseen force that transforms performance*. Upper Saddle River, NJ: FT Press.
- James, R., & Jones, R. (2014). Transferring the Toyota lean cultural paradigm into India: Implications for human resource management. *The International Journal of Human Resource Management*, 25(15), 2174–2191.
- Karunakaran, N. (2014). After Honda and Maruti Suzuki, Toyota faces labor unrest in India; are Japanese cos insensitive? *The Economic Times*. Retrieved July 7, 2014 from <http://economictimes.indiatimes.com/configspace/ads/defaultinterstitial.html>.
- Laufer, D., Gillespie, K., McBride, B., & Gonzalez, S. (2005a). The role of severity in consumer attributions of blame: Defensive attributions in product–harm crises in Mexico. *Journal of International Consumer Marketing*, 17(3), 33–48.
- Liker, J. (2004). *The Toyota Way*. New York: McGraw-Hill.
- Liker, J., & Hoseus, M. (2008). *Toyota culture*. New York: McGraw-Hill.
- Liker, J., & Ogden, T. (2011). *Toyota under fire*. New York: McGraw-Hill.
- Lorenzo-Seva, U. (2013). How to report the percentage of explained common variance in exploratory factor analysis. Technical Report. Department of Psychology, Universitat Rovira i Virgili, Tarragona.
- New Indian Express. (2014). Toyota employees stay away, refuse to sign undertaking. Retrieved July 27, 2014 from <http://www.newindianexpress.com/>.
- Nunnally, J. *Psychometric Theory*, 2nd Edition. McGraw-Hill, New York, 1978.

- Podsakoff, P. M., & Organ, D. W. (1986). Self-reports in organizational research: Problems and prospects. *Journal of Management*, 12(4): 531–544.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. 2003. Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5): 879–903.
- Spector, P. E. (1987). Method variance as an artifact in self-reported affect and perceptions at work: Myth or significant problem? *Journal of Applied Psychology*, 72(3): 438–443.
- Spector, P.E. (1992). *Summated Rating Scale Construction: An Introduction*. Newbury Park, CA: Sage Publications.
- Spector, P. E. (2006). Method variance in organizational research: Truth or urban legend? *Organizational Research Methods*, 9(2): 221–232.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics*. Boston, MA: Allyn & Bacon
- Rhee, M., & Haunschild, P. R. (2006). The liability of a good reputation: A study of product recalls in the US automotive industry. *Organization Science*, 17(1), 101–117.
- Robinson, R.M. (2016). Friendships of Virtue, Pursuit of Moral Community, and the Ends of Business. *Journal of Business Ethics*. doi:10.1007/s10551-016-3277-5
- Stock, K. (2014). Toyota’s reputation takes 6.4 million fresh dents with its latest sweeping recall. *The Businessweek*. Retrieved Jun 25, 2014 from <http://www.businessweek.com/>.
- Toyota (2016). Ideas behind the Ovals. Retrieved December 6, 2016 from <http://www.toyota-global.com/showroom/emblem/passion/>
- Toyota (2016). Let’s Go Places, Safely. Retrieved December 6, 2016 from <http://www.toyota.com/usa/safety/index.html>

**APPENDIX I**

**PRODUCT RECALL CONFIDENCE SURVEY (Toyota Scenario)**

**Please circle:** Sex: M      F

**Age:** 0-20 years      21-30 yrs.      31-40yrs.      41-50yrs.      51-60yrs.      60+

**Education:** *High School*      *Associates*      *Bachelors*      *Masters or Above*

Do you own/have previously owned a Toyota vehicle?      Yes      No

Are you aware of the recent acceleration problems with Toyota vehicles?      Yes      No

If you own/have previously owned a Toyota, please list: \_\_\_\_\_

***Please answer the following questions regarding the recent product recall by Toyota:***

***Why did/would you purchase a Toyota? (Reputation)***

- |   |   |         |   |                  |   |
|---|---|---------|---|------------------|---|
| 1. Due to Toyota's reputation for quality | 1 | 2       | 3 | 4                | 5 |
| Absolutely Disagree                       |   | Neutral |   | Absolutely Agree |   |
| 2. Due to Toyota's reputation for safety  | 1 | 2       | 3 | 4                | 5 |
| Absolutely Disagree                       |   | Neutral |   | Absolutely Agree |   |
| 3. Due to Toyota's reputation for value   | 1 | 2       | 3 | 4                | 5 |
| Absolutely Disagree                       |   | Neutral |   | Absolutely Agree |   |

***Have any recent events changed your perception of Toyota positively? (Event Perception)***

- |  |   |         |   |                  |   |
|--|---|---------|---|------------------|---|
| 4. Acceleration problems with Toyota vehicles.   | 1 | 2       | 3 | 4                | 5 |
| Absolutely Disagree                              |   | Neutral |   | Absolutely Agree |   |
| 5. Toyota's response to acceleration problems.   | 1 | 2       | 3 | 4                | 5 |
| Absolutely Disagree                              |   | Neutral |   | Absolutely Agree |   |
| 6. Government ordered recall of Toyota vehicles. | 1 | 2       | 3 | 4                | 5 |
| Absolutely Disagree                              |   | Neutral |   | Absolutely Agree |   |

***How would you rate Toyota's response to the acceleration problems? (Response Perception)***

- |  |   |         |   |                  |   |
|--|---|---------|---|------------------|---|
| 7. Excellent before government intervention. | 1 | 2       | 3 | 4                | 5 |
| Absolutely Disagree                          |   | Neutral |   | Absolutely Agree |   |
| 8. Excellent after government intervention.  | 1 | 2       | 3 | 4                | 5 |
| Absolutely Disagree                          |   | Neutral |   | Absolutely Agree |   |

***What is your current perception of Toyota? (Relationship)***

- |  |   |         |   |            |   |
|--|---|---------|---|------------|---|
| 9. I am optimistic about my future relationship with Toyota. | 1 | 2       | 3 | 4          | 5 |
| Abs. Disagree  |   | Neutral |   | Abs. Agree |   |
| 10. I would encourage others to purchase a Toyota vehicle.   | 1 | 2       | 3 | 4          | 5 |
| Abs. Disagree  |   | Neutral |   | Abs. Agree |   |
| 11. My overall confidence in Toyota is restored.             | 1 | 2       | 3 | 4          | 5 |
| Abs. Disagree  |   | Neutral |   | Abs. Agree |   |