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Global Automotive Warranty Survey Report



Partner organizations



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Foreword

As the automotive industry's second century unfolds, its key players are confronted by a wide range of challenges. Fuel prices are at an all-time high. The green agenda is highly prominent, with increasing regulatory focus on emissions and fuel efficiency. And against the backdrop of a global credit crisis, the fight for customer spend and loyalty remains fiercely competitive.

Along with these challenges, warranty management remains one of the industry's most important and pressing issues. Car manufacturers and their dealers use warranties to win and retain customers. Those customers, in turn, expect to be given or be able to negotiate longer warranty coverage. Suppliers are often caught in the middle — pressed to match the bumper-to-bumper warranties offered by original equipment manufacturers (OEMs), but often the recipients of these longer warranties' resulting cost burdens.

In late 2007 we at BearingPoint decided that the time was right for a major primary research effort on the subject of warranty management. How are companies around the world rising to the warranty challenge? What responses are considered most critical and most feasible? And of paramount importance, how can all of the key stakeholders work together to create a warranty environment in which OEMs, dealers, suppliers and customers all come out ahead?

BearingPoint is a world leader in helping the automotive industry address its most burning imperatives; and as such was well positioned to launch such a study. Our professionals work closely with most of the world's major car and truck manufacturers, as well as numerous first- and second-tier suppliers. However, we recognized that our analysis would be strengthened by a collaborative research effort with the world's foremost automotive industry organizations. We are therefore delighted that the following report has been enhanced by the insights and assistance of the Original Equipment Suppliers Association (OESA), Automotive Industry Action Group (AIAG), European Association of Automotive Suppliers (CLEPA) and *Warranty Week* magazine.

It is a measure of the importance that the automotive industry places on the issue of warranty management that responses to our survey were strong. Most came from senior executives. About one third of our respondents said they are their organization's top warranty executive. And virtually all have primary warranty responsibility either for the entire company or for a specific division or regional entity.

From this highly qualified group of respondents, we learned a great deal — that responsibility for warranty management is fragmented across departmental silos and OEM/ supplier organizations, that there are divergent views as to the key barriers to success, and that strong financial underpinnings such as specific cost targets and total cost of ownership calculations are often lacking. Yet we also detected strong consensus in many vital areas. Most importantly, there was a clear desire amongst OEMs and suppliers to work together to make warranty management the kind of proposition that can help both sides weather current and future storms.

We hope you find the following report both informative and helpful, and that you'll feel free to contact us with questions, comments or additional insights.

James Rodger

Vice president, Global Automotive leader
BearingPoint

Winning through collaboration: Observations and insights on warranty management in the automotive industry

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Lagging sales in North America and Europe. Stricter regulations. Industry restructuring. Increased competition. More product complexity. These are the auto industry's stark realities — conditions that present vehicle manufacturers and their supply chain partners with dramatic opportunities and challenges. Each reality also affects and complicates the task of warranty management. Now more than ever, warranty management has a direct impact on the profitability of an original equipment manufacturer (OEM), its dealer network and other supply chain partners.

Further increasing the complexity of warranty management is its broadening scope. Warranties reflect far more than an OEM's or supplier's confidence in its product. They are also a selling strategy, a vital collaboration point, a cornerstone of customer retention, a data management hot spot, and a key contributor to risk and risk analysis. OEMs extend warranties to emphasize product quality and combat competitors. Suppliers work across tiers to keep increased complexity from compromising reliability and raising warranty costs. Both sides seek better ways to leverage diagnostic data.

Estimates of global spend on warranty claims frequently run between \$45 billion and \$50 billion. In the United States, automotive manufacturers and their suppliers spent almost \$13 billion on warranty claims in 2006, according to *Warranty Week*.¹ This represents a modest increase from 2005, about 1.6 percent. However, the small rise masks a variety of growing concerns that OEMs and suppliers at all tiers have about warranty

management. For example, warranty costs are not dropping even though the number of claims has been going down. This clearly implies higher repair costs and/or increased labor rates. Moreover, there are many complicated, big-picture questions: Whose involvement and leadership are needed to increase collaboration? What more can or should companies be doing to improve warranty cost-effectiveness? Where do collaboration breakdowns occur most frequently? Why do they happen? When should new analytics be invoked? How can we use warranty management to improve the overall quality and reliability of parts, systems and vehicles?

BearingPoint's Automotive practice recently teamed with the Original Equipment Suppliers Association (OESA), Automotive Industry Action Group (AIAG), European Association of Automotive Suppliers (CLEPA) and *Warranty Week* magazine to address the above concerns. Via an online survey, our goal was to find out how OEMs and suppliers at all tiers and from all geographies perceive the warranty challenge, and what solutions they are using or investigating to improve warranty programs and reduce costs. We also expected survey input from OEMs and suppliers to stimulate new discussions about, and insights into, how these groups can expand their working relationship to increase value for consumers, raise returns for stakeholders, and deliver lower costs and profitable growth for themselves. That feedback — enriched by insights from BearingPoint, OESA, AIAG, CLEPA and key industry executives — is interwoven throughout this report's six sections.

¹ "Automotive Warranties," *Warranty Week*, May 15, 2007, <http://www.warrantyweek.com/archive/ww20070515.html>

1. Key findings

The picture emerging from our research is both positive and negative. On the plus side, OEMs and suppliers have made measurable warranty-related improvements over the past three years. Warranty incidents are down. J.D. Power ratings are up. Increased product complexity and more stringent customer demands have been met with new tools and well-focused initiatives. Moreover, respondents are largely united in their view of what further changes are most needed and how important it is to work together earlier in the warranty management process. Generally speaking, the watchword is collaboration. Virtually all respondents look forward to working more closely within and across organizations.

The not-unexpected downside is the industry's operational shortcomings. Respondents' own assessments point to a warranty management process with room for significant and ongoing improvement. Numerous factors contribute to this appraisal:

Responsibility for warranty management is fragmented across departmental silos and between OEM and supplier organizations. Among survey respondents, 45 percent of OEMs and 25 percent of suppliers have discrete warranty organizations. Cross-functional processes are limited, and resources are often strained. The industry recognizes the barriers to warranty improvement that this approach creates. Many initiatives are underway to improve the effectiveness of the current

system. However, partners still are not included as often or early as needed, and usable information rarely flows freely enough to support dramatic process improvements or significant cost reductions. We believe that a more holistic, cross-functional infrastructure is needed at most enterprises.

Perspectives on key issues vary dramatically. OEMs and suppliers have vastly different views about the largest obstacles their organizations face in improving warranty performance. OEMs' top issues are "resource shortages," "purchase cost versus total cost of ownership" and "lack of product design involvement." Suppliers' top issues are "collaboration with the OEM/supplier," "lack of diagnostic data" and "lack of product design involvement."

Along these same lines, when suppliers were asked, "Do your OEMs provide enough information on service events, returned parts, and diagnostic and warranty data for you to perform effective root cause analysis?" Seventy-five percent of suppliers answered "no." In addition, 77 percent of suppliers said that it takes one month or longer to receive parts and/or data. Seven percent never receive parts, and eight percent never receive data. A more ingrained culture of collaboration at the design and troubleshooting stages is clearly needed, as are the introduction and adoption of standard templates or mechanisms for sharing service event data (including the components that would be found in a typical warranty claim).

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The “collaboration dichotomy” (low levels of collaboration despite widespread agreement that more collaboration is critical) poses a significant challenge. Suppliers simply are not getting the data they need quickly enough. Survey results do show that data-sharing initiatives have been launched, but significant and measurable impact has not been widely observed.

Win-win approaches are lacking. Our research notes a progressive transfer of design/release responsibility from OEMs

to suppliers. In the past, OEMs assumed most design/release responsibilities. However, 66 percent of responding suppliers now have design/release responsibility for at least some parts. Since that practice is usually accompanied by the introduction or enhancement of a warranty cost-sharing program, one result of this shift is that many OEMs are seeing their warranty costs fall, while many suppliers are seeing or predicting increased costs. There are many missing

Point of view

“The reason collaboration is critical is that it is the only way we can gain access to the data necessary to correct issues and then build this new knowledge into our future products.”



Daniel Paterra
Vice president,
Manufacturing
and Quality,
Transmission Systems
Business Unit,
BorgWarner, Inc.

We are fortunate that warranty professionals in the automotive industry are willing to objectively rate the reality of the situation. This research project has done a good job of revealing the insights of our automotive warranty colleagues for the benefit of improving warranty management. They have provided a frank assessment and this document identifies where opportunity for improvement exists.

In general, the study reveals we need more collaboration. The reason collaboration is critical is that it is the only way we can gain access to the data necessary to correct issues and then build this new knowledge into our future products. The survey indicates that the necessary information doesn’t flow in the most efficient manner. Different formats, insufficient sample sizes, long lead times and partial data sets are impeding the efficient flow of solutions. The open collaboration of all participants in the chain is required to surface the information and develop speedy solutions towards the goal of improving consumer vehicle experiences.

Take the issue of No Trouble Found— “the designation for a part replaced during a service event that, when analyzed by the maker, meets all the requirements of a good part.” The survey indicates that, among suppliers, the most frequent classification given to warranty parts associated with an incident is NTF. However, NTF is not the problem; it is the beacon that points to the need for more diagnostic data and system expertise in root cause determination. NTF is basically an information problem, not a part or system problem.

The bottom line is that collaboration— from consumers and dealers to suppliers and OEMs— is the common denominator for all warranty-related improvements. A shared approach to solving problems, increasing knowledge and ensuring continuous improvement benefits everyone.

BearingPoint's message to OEM and supplier executives

The picture emerging from the research is that, by the industry's own assessments, the current state of warranty management is often ineffective. This appears to be compounded by a number of factors:

- Responsibility for warranty management is distributed across OEM and supplier organizations.
- OEMs and suppliers recognize that there have been improvements in warranty-related collaboration, yet there is a clear and urgent need to raise levels of collaboration further and support them with reliable processes and systems infrastructures.
- Suppliers are hamstrung by a lack of vital data from OEMs or protracted delays in receiving that data. Where this information is provided, it often appears too late in the cycle to be effectively utilized.

If the “as-is” picture painted by the research seems gloomy, there are also indications that, if left unchecked, the situation could get worse—particularly for suppliers. The research highlights a progressive transfer of design/release responsibility from OEMs to suppliers. As a result OEMs are seeing their warranty costs fall, while suppliers predict their costs will increase.

Yet there are encouraging signs. OEMs and suppliers largely agree on the imperatives that must be addressed to move forward productively:

- Increase communication and collaboration between the OEM and its suppliers.
- Provide more (and timelier) diagnostic data to suppliers for root cause analysis.
- Increase collaboration among product design teams.
- Accelerate development of early warning systems.
- Assign sufficient resources to manage warranty.
- Ensure the timely and efficient communication of warranty claims, parts and data among partners.

We hope that this report will remind industry leaders and key stakeholders in the warranty management process that they must work together to improve collaboration and increase timely sharing of critical data.

links in this equation, but the four most prominent may be lack of early warning systems, untimely data sharing, few standardized warranty metrics and an insufficient focus on total cost of ownership. Each of these is critical to replacing zero-sum politics with win-win relationships.

Clear warranty cost targets are rare.

Setting absolute cost targets is very difficult, particularly for suppliers, which have limited ability to influence “noise” in the process. That noise (issues such as data integrity, limited information, misdiagnoses, inability to send mating

components or the supposedly failed component back for analysis, and variance in repair procedures) can seriously impact costs. More control on the part of suppliers could significantly change the dynamic, as could agreements on shared analysis strategies and models.

No Trouble Found (NTF) is a big issue.

The top contributors to warranty incidents for OEMs are “product design” (cited by 58 percent) and “assembly process capability at supplier” (50 percent). For suppliers, it's “NTF” (cited by 61 percent), “manufacturing process capability” (53 percent) and “product design” (50 percent). On the

one hand, high NTF levels reflect an increased number of complex vehicle subsystems since, as the complexity of these subsystems increases, so does the difficulty of determining problems' root causes. The aforementioned "noise" in the warranty process also contributes to NTF problems. Even though NTF often means different things to different organizations (see the sidebar, "Getting to the Heart of NTF," on page 18), there is little disagreement that more collaboration among OEMs, suppliers and dealers is needed to reduce NTF levels. It is typically easier to determine the cause of a problem if it is flagged early by highly qualified people. New end-to-end approaches to diagnostics and communication can help make that happen. New forms of advanced training in diagnostics and quality improvement at the dealer level could also reduce NTF levels, while increasing contextual information about incidents.

Detection-to-correction cycles are a thorny issue. By nearly identical margins (3.5 to 1) OEMs and suppliers feel that their overall detection-to-correction cycles have improved over the past three years. Still, more progress is clearly called for in areas such as:

Problem definition: There is no industry-wide definition of what constitutes the detection-to-correction cycle. Some companies start at the point that an issue has been prioritized and assigned for further analysis/resolution. Others include the time from the first report of a particular issue. While the latter would seem to be better, it is usually the case that issues encountered within the service process do not become evident to anyone other than the dealer until at least several days have passed and multiple claims have been logged.

Problem identification: Among suppliers, 53 percent complete the problem identification phase within seven days, another 19 percent within 21 days and another six percent within a month. OEMs fared less well: 29 percent within seven days, and the remainder in one to two months or more. This, too, may reflect a lack of close collaboration with suppliers.

Problem Diagnosis: Among suppliers, 29 percent complete the diagnosis phase within seven days, another 49 percent within 21 days and another nine percent within a month. OEM performance is a bit longer: 28 percent within 14 days, and the remainder in one to two months or more.

Problem resolution: Among suppliers, six percent complete the problem resolution phase within seven days, another 23 percent within 21 days and another 18 percent within a month. No OEM completes problem resolution in less than one to two months.

As noted earlier, both suppliers and OEMs believe that collaboration between partners has become more effective over the previous three years. Still, the issue of how to work together to share data and apply knowledge to support continuous improvement could be the auto industry's most pressing warranty-related problem. Adoption of standardized terms, methodologies and tools—backed by appropriate contract language—also is needed to improve the situation. Becoming "customer-focused" and "incident rate-focused" (rather than "responsibility- and cost-focused") will help drive increased collaboration. In addition, joint support teams, improved systems and more open access to data and parts will contribute to a faster, more effective and less costly warranty management process.

Survey demographics

In late 2007, researchers at BearingPoint, OESA, AIAG, CLEPA and *Warranty Week* developed and posted an online survey on warranty management practices and invited participation from automotive and truck OEMs and suppliers at all levels, including Tier 1 systems and parts suppliers, Tier 2+ suppliers and aftermarket suppliers.

Responses were candid and revealing. More than 200 quality and warranty management professionals weighed in, the great majority representing suppliers. This is not surprising since the industry has many more suppliers than OEMs. Some OEMs indicated that they also serve in supplier roles. For example, an OEM engine, transmission or axle plant would be considered a supplier to the vehicle assembly plant. Because OEM is usually their preeminent role, such companies are characterized as OEMs for this analysis.

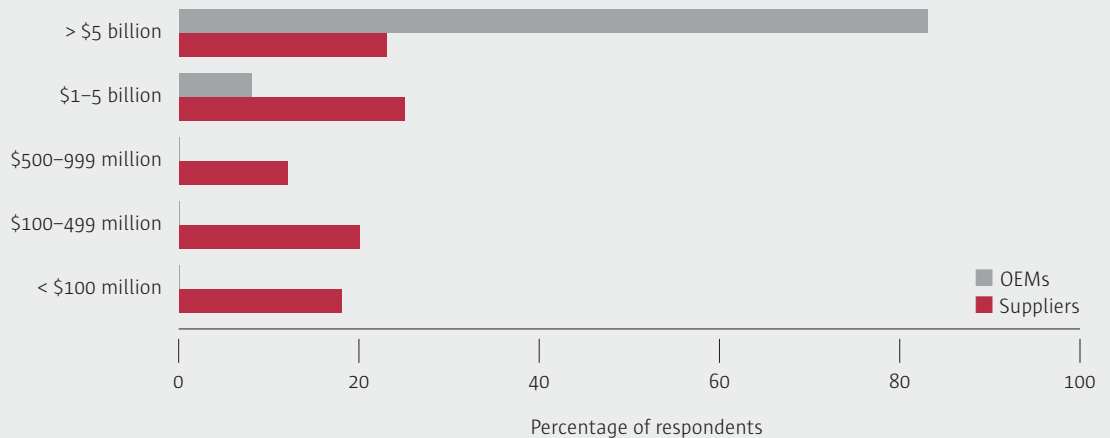
Among OEMs, the primary segment served is “auto” (50 percent) followed by “medium/heavy-duty truck” (33 percent). The most frequently cited secondary segment is “light truck.” Among suppliers, most are Tier 1 parts and Tier 1 systems providers (47 percent and 32 percent, respectively). The most frequently cited secondary segments for suppliers are (in order) Tier 1 parts suppliers, Tier 2+ suppliers and aftermarket suppliers. Not surprisingly, responding OEM organizations tend to be significantly larger than suppliers’ organizations.

Many respondents’ companies are members of more than one industry association. Of responding OEM organizations, 75 percent are members of AIAG. Among suppliers, 61 percent are affiliated with AIAG, while 53 percent are represented in OESA. Another 21 percent are affiliated with CLEPA.

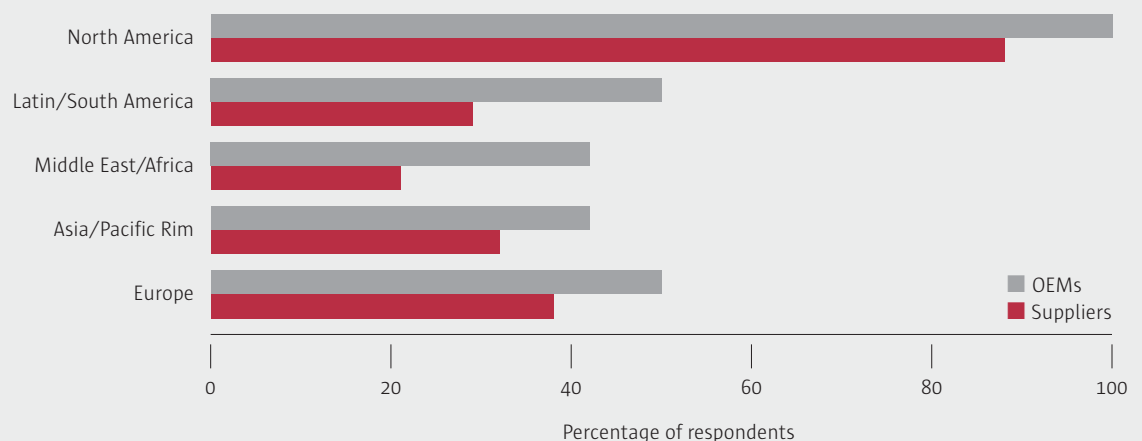
North America is the region most respondents represent. It also is the location of the parent companies of most respondents. A high percentage of respondents are decision makers, and about one-third said they are their organization’s top warranty executive. Among top executives, almost half (47 percent) have warranty responsibility for the entire company. The rest have responsibility for a specific division or regional entity.

Throughout the report, survey responses from OEMs and suppliers generally are separated. In all cases, the response denominator represents the number of people who answered a particular question, as opposed to the sum of all those who returned the survey. Denominators exceed 100 percent whenever recipients were asked to give multiple answers to a question, such as “cite all that apply.”

Survey recipients were asked, “What is the size of your parent company (annual revenue) stated in U.S. dollars?”



Survey recipients were asked, “Please specify the region(s) that your responses represent.”



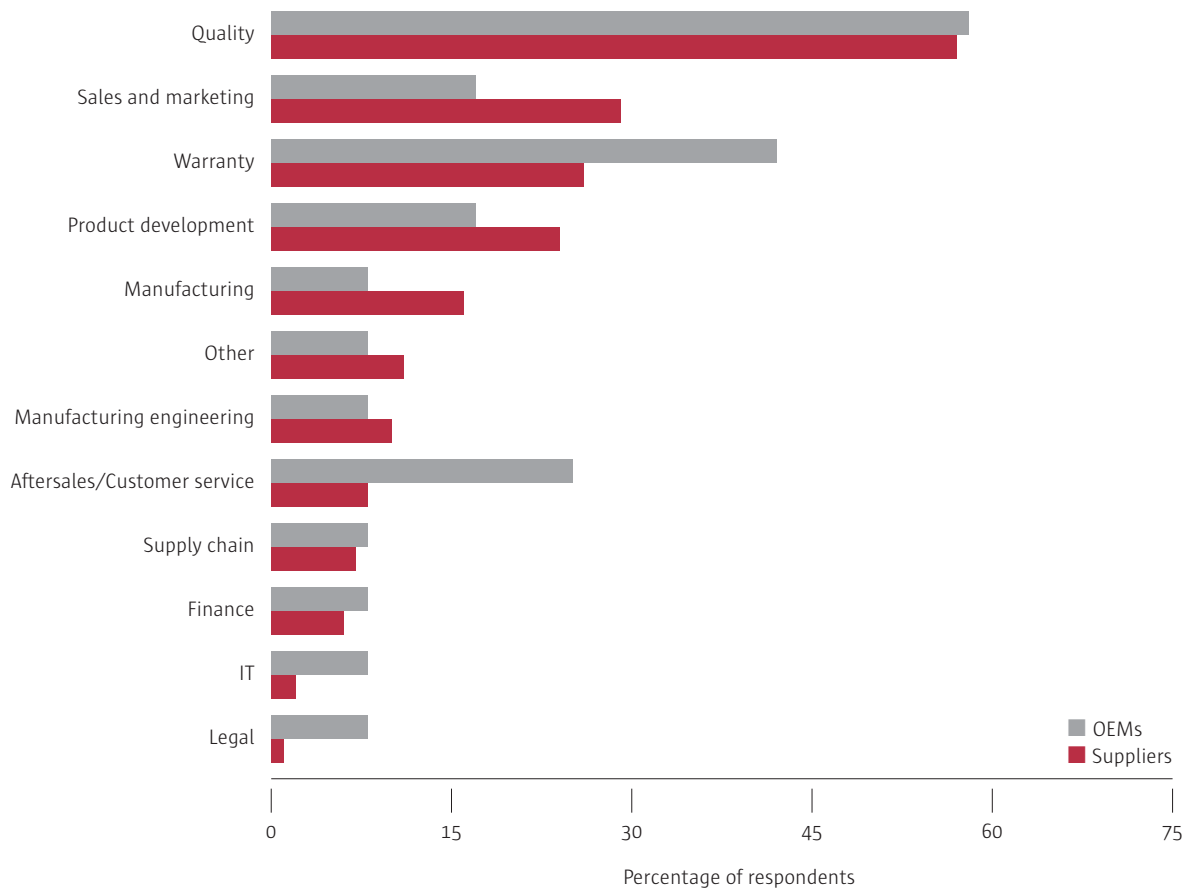
2. The warranty organization

Across the response base, stand-alone warranty departments are not the norm. More often, warranty responsibilities are scattered throughout the company. Among survey respondents, 45 percent of OEMs and 25 percent of suppliers have distinct warranty organizations. Because company size is a key determinant, the above distinction is not surprising: A discrete organization to administer claims is more necessary for OEMs and large Tier 1s and less critical for smaller organizations (most of which are suppliers). On both sides, warranty responsibilities are concentrated most often within warranty and quality

management departments. Among suppliers, a sales and marketing affiliation is more prevalent than a formal warranty organization. This, too, is not surprising, since suppliers' sales and marketing and quality organizations are common communication channels with the OEM. The key is whether the supplier is cross-functionally engaged with its counterparts at the OEM (as opposed to just sales and marketing and quality). Departmental affiliations are profiled in Figure 1.

Figure 2 underscores the dispersed nature of warranty management. The quality organization is most likely to own responsibility for warranty management and the warranty budget among OEMs

Figure 1. Survey recipients were asked, "What organization are you and your team a part of? (Please cite all that apply.)"



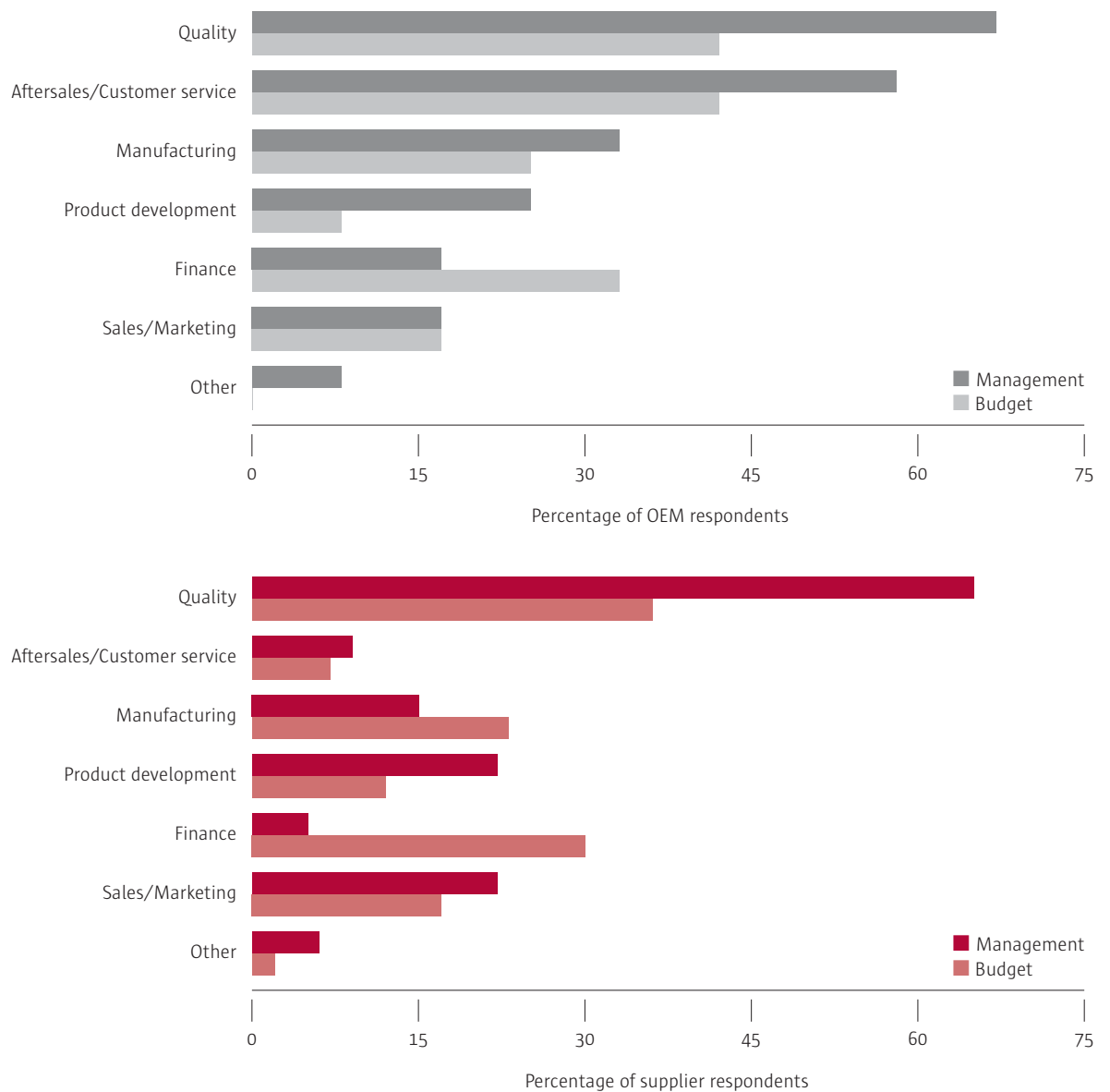


Figure 2. Survey recipients were asked, “Who owns the responsibility for warranty management and the warranty budget in your organization? (Check all that apply.)”

and suppliers. However, the functions of warranty budget and warrant management are often split. Among suppliers, for example, 30 percent noted that the finance organization oversees warranty budgets, but only four percent said that finance controls warranty management. Disparities of a similar magnitude were also visible on the OEM side. It is true that

the expertise of multiple people and organizations is needed to design and maintain warranty programs. However, it is clear that many companies do not have a comprehensive (management and budget) approach to the warranty challenge. Disconnects between financial and quality departments often impede warranty reduction and forecasting.

The disconnect problem suggests that warranty processes are frequently viewed as cost centers, rather than sources of potential intelligence and revenue. It should also be noted that many non-auto companies do a better job of using warranty and standard maintenance experiences to build goodwill, sell new services and satisfy customers continu-

ously. These practices are most effective in companies where there is a fully cross-functional, executive-led team whose members share common objectives associated with both customer- and warranty-related issues.

Warranty management and budget functions report to executive management at 80 percent of OEMs and 75 percent of suppliers. Mid-level management (as opposed to plant-level management) holds jurisdiction for most of the remainder. This is an admittedly soft area since budgets to administer claims are often established at the departmental level (the plant, for example) while chargebacks are addressed corporately (for example, applied against reserves or to the bottom line as a variance). Nevertheless, executive-level reporting relationships are still key to

resolving problems expediently. Decision-making processes cannot help but be compromised by fragmented organizational approaches to warranty management. Also, this distribution of jurisdiction makes it more difficult for manufacturers to analyze current spend comprehensively, let alone to try and predict future spend or develop new accrual models.

BearingPoint’s view is that organizational alignment is critical to efficiently managing the warranty process. A coordinated strategy for implementing and executing consistent processes at all levels and across departments needs to be deployed. The resulting organization should have largely unimpeded influence and budgetary control in order to administer the warranty function effectively.

Point of view

“In our view, it is critical that the principal goal of warranty defect analysis be continuous improvement, rather than justification for cost recovery.”



Jorge Santos
Vice president,
Corporate Quality,
Inergy Automotive
Systems

As noted throughout this report, much warranty-related progress has been made in recent years. A key shortcoming, however, continues to be most OEMs’ insistence on a cost recovery approach. In our view, it is critical that the principal goal of warranty defect analysis be continuous improvement, rather than justification for cost recovery.

This issue is frequently reflected in the return of allegedly failed parts. These items often arrive damaged and/or incomplete. Accompanying descriptions of symptoms and failures are extremely rare. The net effect, of course, is a default “no trouble found” situation. Faced with the absence of meaningful information with which to perform root cause analysis, we and other suppliers have little choice but to absorb unnecessary costs or enter into protracted and confrontational negotiations. And regardless of who wins that battle, warranty trend data is “polluted.”

I can confirm that the above problem is Inergy’s most serious warranty-related issue. Our position is that absent, untimely or incomplete data are concerns that more OEMs must take seriously. Virtually every supplier is being pressed to improve efficiencies and then pass its cost improvements on to the OEM. However, that cannot continue to happen without a concerted effort to consistently provide us with physical product and comprehensive information. Suppliers, of course, are part of the cooperation equation: Both parties must work together to make the warranty-management process a seamless, two-way process in which both sides share the effort and the spoils.

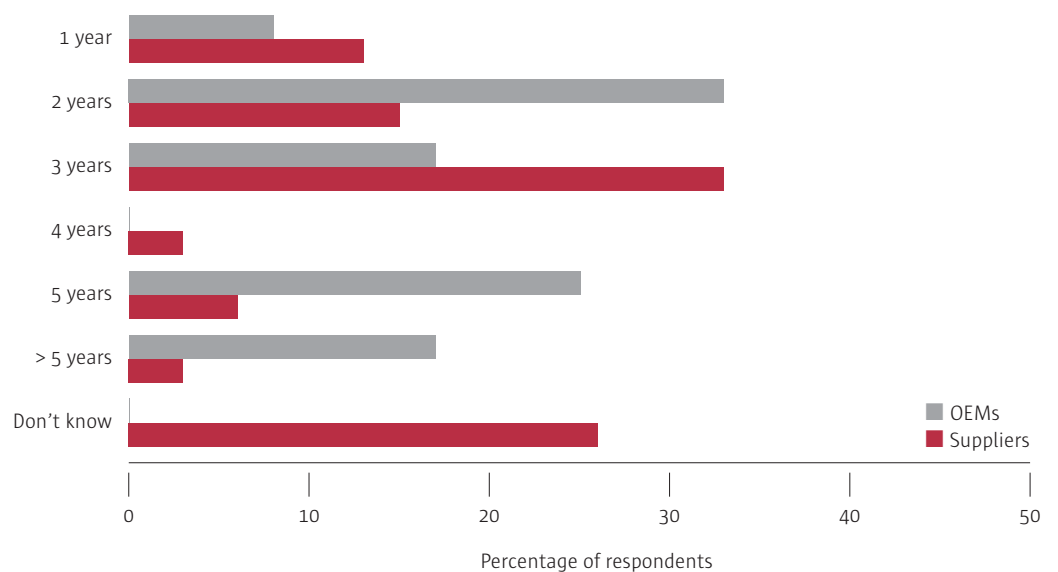
3. Warranty duration, costs and incidents

Few issues raise more questions and encourage more discussion than the length of warranties. On the one hand, longer warranties have become one of OEMs' most important selling tools. But to keep that strategy from backfiring in the long term, higher part/system quality and shorter detection-to-correction cycles must accompany longer warranties. The bottom line is that complete buy-in and support from suppliers, along with a shared philosophy about quality and data analysis, are essential to making longer warranty periods viable and profitable. However, OEMs are prone to fall short when it comes to providing the data suppliers need to improve the quality of their parts. This makes it far more difficult for suppliers to provide the quality that OEMs need. As noted, suppliers most frequently cited "collaboration" and "lack of diagnostic data" as obstacles to improving warranty performance.

Complicating matters further, the two sides are rarely aligned on warranty duration: OEMs offering longer warranties may not have negotiated part warranties of comparable length with their suppliers. This leaves OEMs financially vulnerable. As shown in Figure 3, OEMs are increasing their warranty periods (63 percent are now three years or longer). But suppliers are not increasing their warranty coverage periods as quickly: 62 percent of their warranties are three years or less. This growing warranty gap may also be contributing to a burgeoning information gap: With OEMs implementing a longer warranty period, they're potentially gathering more knowledge that is not necessarily shared with suppliers.

One positive note is that OEMs and suppliers generally agree on how best to minimize risks associated with longer warranty periods. As shown in Figure 4, the key is working more closely to review specifications, make changes to the design process, modify test criteria and

Figure 3. Survey recipients were asked, "What is the current average warranty period offered by your company?"



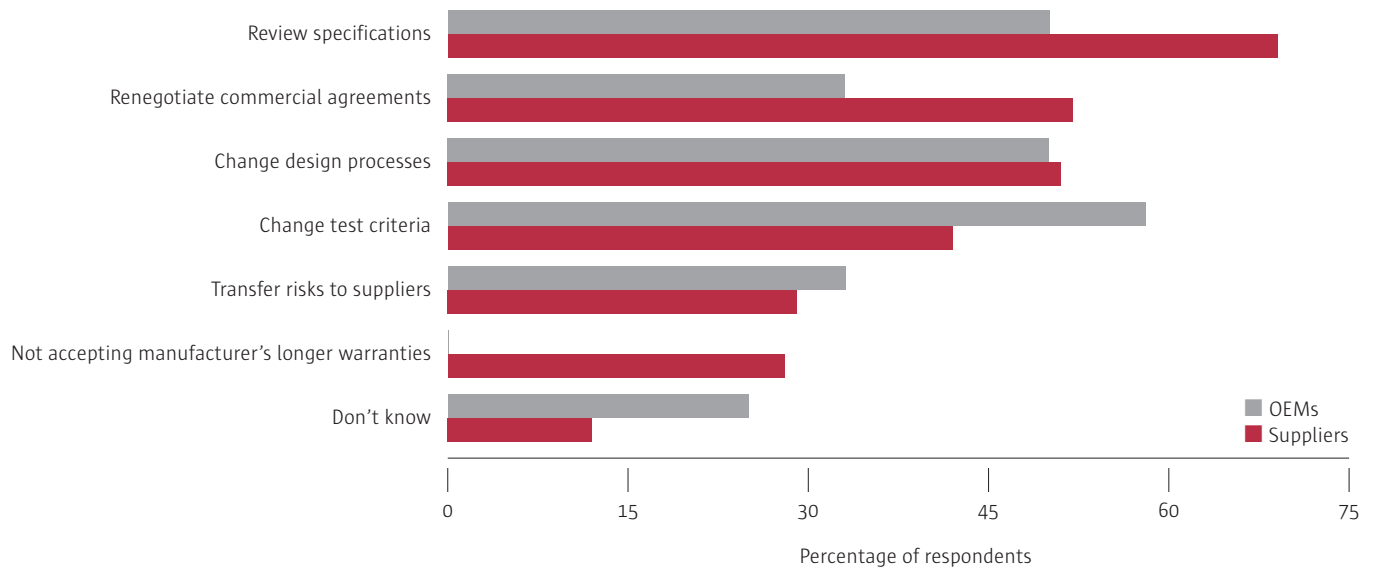


Figure 4. Survey recipients were asked, “What is the company doing to minimize risks associated with longer automotive warranty periods? (Check all that apply.)”

share data. Not surprisingly, suppliers feel more strongly that commercial agreements often need to be modified to accommodate changes in warranty duration. Without changes, more suppliers may refuse to accept responsibility for warranty costs. Twenty-five percent of responding suppliers stated that this is a viable option for minimizing warranty risk.

Fortunately, collaboration in this area is already strong: About 70 percent of OEMs and suppliers use cross-functional teams to evaluate and approve warranty-related commercial agreements. However, it is not the same story when collaboration in other warranty-related areas is assessed. As OEMs look to increase the length of their warranty coverage, they must also align the warranty period and level of collaboration with suppliers.

Insights on incidents

An interesting relationship exists between warranty costs and warranty incidents. For OEMs, both costs and incidents are trending somewhat flat or lower (Figures 5 and 6). For suppliers, costs are higher, while incident rates are generally flat. According to *Warranty Week*, incident rates have remained generally flat for several years.

The implication is that OEMs are better positioned to offer longer warranty periods as a buyer incentive because they are less burdened by warranty costs and incidents. Suppliers, on the other hand, are more reticent about longer warranty periods because their costs are rising—even though warranty incidents are not. In other words, for suppliers, the cost per incident appears to be increasing. Much of this could be the result of transferred liability from OEMs to suppliers, as well as suppliers’ assumption of more design/release responsibility. However, since

current levels of OEM-supplier collaboration are frequently inadequate, this shift of responsibility seems likely to exacerbate matters. It should also be noted that terms and conditions frequently specify transferring costs to suppliers — not just when a supplier makes a quality mistake, but also for design/release weaknesses and NTFs. However, there is rarely a price risk offset allowed. OEMs and suppliers must ask themselves if this is really the best model to drive improvement. When OEMs focus on specific systems/models and tighten their involvement with suppliers at all stages of the life cycle from design through post-production, they seem to do better.

As shown in Figure 7, the top contributors to warranty incidents for OEMs are “product design” and “assembly process capability at supplier.” Many also cited “unauthorized changes by supplier.” In short, OEMs seem to feel that many of their warranty burdens are exacerbated by supplier behaviors. As noted earlier, however, more and more OEMs are transferring costs to suppliers, which are increasingly responsible for design/release. This could be one reason why OEM costs seem to be under control while suppliers’ costs are trending higher. Another could be the fact that so many suppliers are now located in different regions and time zones from their OEM

customers. Suppliers tend to be more guarded: Many believe that the prime contributors to warranty incidents are their own manufacturing process capabilities and product designs. This further explains why better access to parts and data is so important to suppliers. Still, the fact that OEMs and suppliers answered differently suggests that they may not all be on the same page with respect to warranty drivers. An effective business process built on collaboration would go a long way toward remedying this problem. Other noteworthy points related to Figure 7 include:

Figure 5. Survey recipients were asked, “Over the past three years, which way have your annual warranty costs trended?”

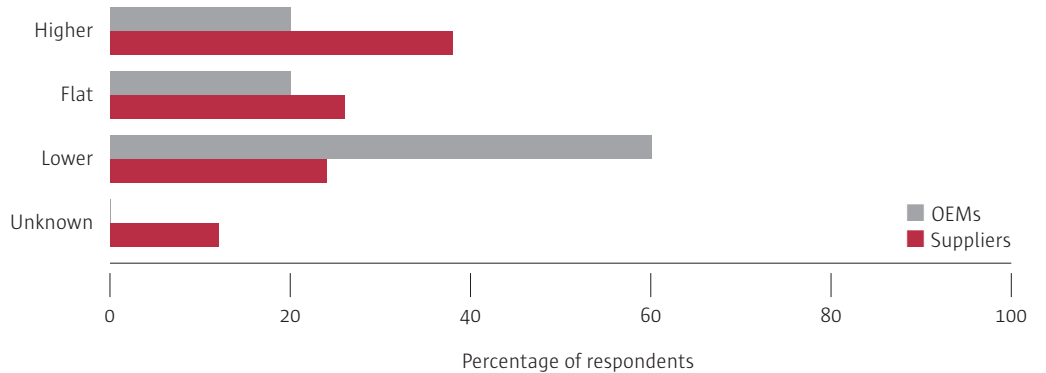
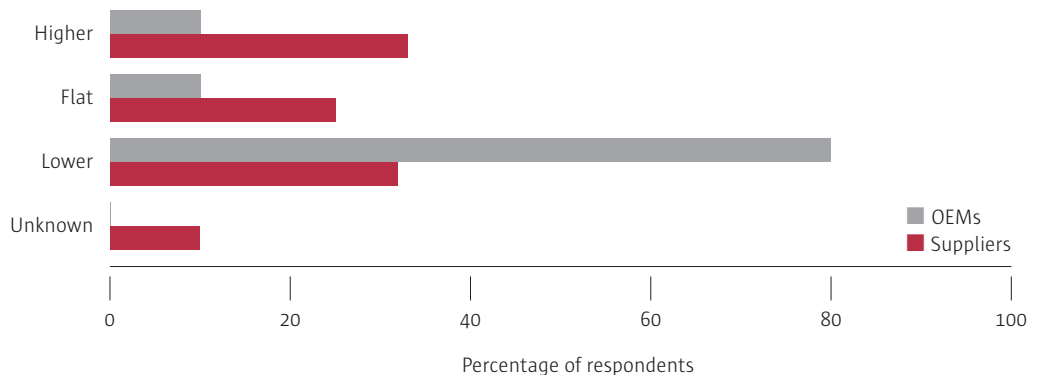


Figure 6. Survey recipients were asked, “Over the past three years, which way have your annual warranty incident rates trended?”



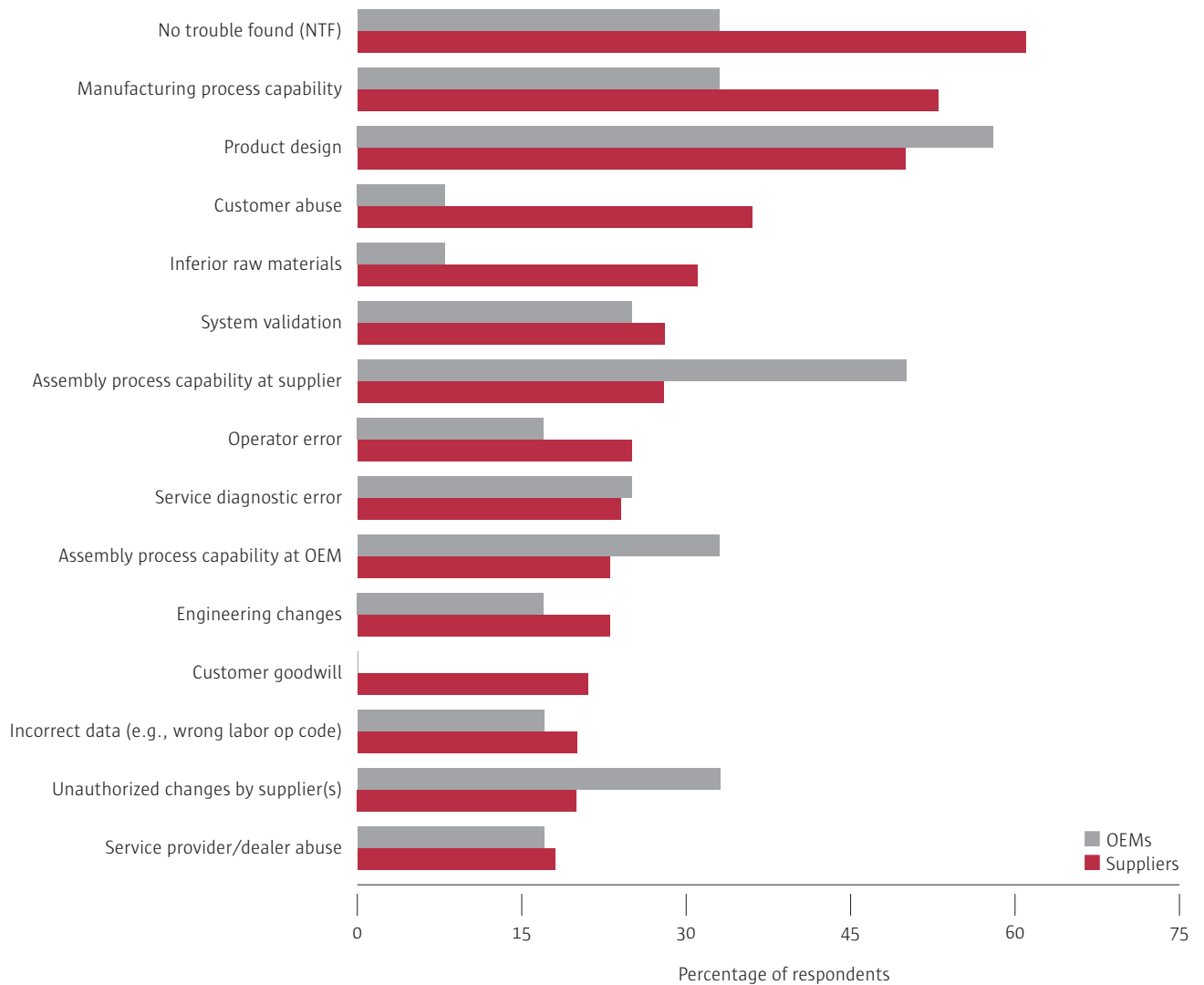


Figure 7. Survey recipients were asked, “What are the top contributors to your warranty incidents? (Check all that apply.)”

There can be little doubt that more collaboration between OEMs and suppliers at all stages of the product life cycle can reduce the number and severity of incidents and that input from dealers can also accelerate the detection of an issue.

Product design: Do high design-related incident levels imply a missed improvement opportunity to leverage lessons learned?

Manufacturing and assembly: Should more effort be spent to validate manufacturing/assembly approaches? Do OEMs' change authorization processes allow suppliers to work efficiently?

Customer abuse: Does this imply a high level of goodwill extended by OEMs to customers as compensation for the inconvenience of a damaged part? Could it also suggest increased transfer of some or all costs to suppliers, as well as a chronic shortage of failed parts or failure information that prove to the supplier that its product truly is at fault?

System validation: Could more testing help ensure that the system works in production?

There can be little doubt that more collaboration between OEMs and suppliers at all stages of the product life cycle can reduce the number and severity of incidents and that input from dealers can also accelerate the detection of an issue. This implies a need for increased availability of parts, data and diagnostic information flowing quickly to the supplier for problem identification and root cause analysis. OEMs that hoard data or do not seek ways to gather and share more comprehensive data early in the service cycle can only hamper improvement.

The trouble with No Trouble Found

A frequent sticking point for both sides is NTF issues—the top cause of incidents (actually non-incidents) for suppliers and the third highest for OEMs. When there is no clear diagnostic conclusion to an intermittent problem, what often happens is that parts are simply replaced. For example, a customer complains about intermittent “no starts.” Because the technician cannot find a problem, he or she may feel that replacing the control module is the only service-friendly option. The module is subsequently returned to the vendor, but with very little contextual data to help determine the problem (no diagnostics, little vehicle data and few, if any, mating parts). The supplier may test

ZF Statement

“The survey results confirm the ZF and CLEPA position, whereby warranty practices should focus on the elimination of warranty problems and not primarily on cost settlement.”



Thomas Buda
Quality director,
ZF Lemforder GmbH

ZF Lemforder GmbH is a member of CLEPA and I am a member of the CLEPA Warranty Working Group. The Warranty WG provides a forum for senior executives or functional managers responsible for warranty or the warranty process to define positions and promote best practices and standards on all aspects of the warranty management relationship between suppliers and vehicle manufacturers.

The survey results confirm the ZF and CLEPA position, whereby warranty practices should focus on the elimination of warranty problems and not primarily on cost settlement.

Underlying this, there has to be open communication among all parties to deliver effective root cause analysis and timely implementation of solutions.

The results also show that for suppliers, “No Trouble Found” is the top contributor to warranty incidents. ZF supports the need for improved collaboration among OEMs, suppliers and dealers—in particular, improved and more timely information from the dealers. Dealers have a significant role in the warranty process. Proper and correct diagnosis is most important in order to achieve a “first-time fix,” minimize warranty repair costs, reduce unnecessary removals and minimize “No Trouble Found.”

Also key is that product field experience within the warranty period must be captured and utilised to improve current service and future product designs. Warranty parts must be returned regularly, in a timely manner and in sufficient quantities to form a statistically representative sample.

Getting to the Heart of NTF

There are many ways to look at and define NTF. A dealer may label a situation as NTF if it cannot replicate the condition or if the customer concern cannot be duplicated. An OEM may consider an issue as NTF if the condition cannot be replicated or if the root cause cannot be determined. However, using a supplier's vocabulary, NTF is generally used when a returned product from the field (which is assumed to be the problem component) is found to meet functional and dimensional requirements per standard validation tests.

Beyond varying definitions, NTFs are daunting because the root cause can be so difficult to determine. An "event" may happen only intermittently. It may only be visible under certain conditions in the actual vehicle with the reported issue. Also, the NTF may reflect a combination of variables that together cause an unexpected problem, or the particular component may not be the root cause at all, but was replaced in the process of attempting to eliminate the consumer's concern.

In one sense, the fact that 80 percent of responding suppliers know their NTF levels simply demonstrates that a large percentage of components are sourced from suppliers. More often than not, verification of a returned component's function is the responsibility of the supplier. However, the task is inevitably compromised when requests for timely and accurate service data cannot be met. Without comprehensive data, it is doubly difficult to establish areas of focus (for example, component, subsystem, neighboring subsystem, variation with assembly or the quality of upstream components that make up the subsystem).

A considerable opportunity exists to better understand root causes and thus reduce NTFs. All parties (OEMs, suppliers and dealers) must work together to improve validation methods, leverage warranty data to drive future design and process improvements, and enact leading-edge diagnostic and repair procedures.

the part and determine that it's okay, but the fact remains that it was still replaced and that a claim was logged. Without additional information, the problem's root cause may never be found. It could have been nothing more than a loose connection.

An interesting side note: 80 percent of responding suppliers know their NTF levels, compared to only 37 percent of OEMs. This could be because suppliers have a smaller set of parts to manage. However, because they don't always receive comprehensive data about the service event, they are often in the dark about why a part failed. OEMs, on the other hand, have easier access to at least some service data via dealers, claims and fleets. They are somewhat better positioned to identify or explain issues and thus reduce overall NTF levels. It is not a stretch, in fact, to suggest that NTFs at the supplier level may often be the result

of diagnostic shortcomings at OEMs and dealers. Increased training in diagnostics and quality improvement awareness at OEMs and dealers would certainly reduce NTF levels, while creating more contextual information about incidents.

Lastly, 20 percent of suppliers noted NTF levels of 50 percent or higher. Frequent NTFs do more than cause customer dissatisfaction when they are not fixed the first time. They also skew warranty data, frustrate dealers and complicate repair schedules. They may even become drivers of fraud.

In short, NTFs are a clear indicator that current diagnostic systems and data are not sufficient to identify the great majority of problems. But the bigger issue is that data are not being captured and used effectively for root cause analysis. The broad use of diagnostic trouble codes (DTCs) is growing at OEMs, but findings

and data must be shared with suppliers and vice versa. Investment in, and adoption of, effective tools for communication, storage, analysis and management of all relevant data (including numeric, narrative text and graphical components) are vital.

BearingPoint's view is that OEMs and suppliers generally want the same thing: To reduce the risks associated with longer warranty periods and to reduce NTF incidents dramatically. Making this happen will require that all sides work together. By implementing cross-functional teams to evaluate and approve warranty-related commercial agreements, most OEMs and suppliers have demonstrated that they're on the right track. However, with so many OEMs implementing longer warranty periods, it's critical that they readily share the insights gained throughout the extended warranty period.

4. Gauging the effectiveness of warranty management practices

Insights pertaining to warranty lengths, costs and number of incidents have more potential value if they are balanced against self-assessments—queries into how well representative OEMs and suppliers feel they are doing with respect to warranty management. This section looks more closely at how respondents view the warranty-related effectiveness of their industry, their companies, their data and their business processes.

A noteworthy starting point is that neither OEMs nor suppliers have a particularly positive view of their industry's or their individual company's warranty-related performance. As noted in Figure 8, more than 40 percent of supplier industry assessments and almost 30 percent of OEM assessments were deemed “barely effective” or “not at all effective.” OEMs were somewhat more upbeat than suppliers. However, the fact remains that appraisals of industrywide performance—particularly among suppliers—are tepid at best. Our feeling is that such marginal views could have many causes, including:

Point of view

“... commitment, collaboration and continuous improvement are necessary to truly make a difference; and consumers, dealers, suppliers and OEMs will all benefit.”



Dave Sakata
Vice president,
Technology,
Freudenberg-NOK
General Partnership

The global warranty survey has given us many insights into the issues and concerns that confront our industry. However, there are several key messages that bear repeating or elaborating. One is to recognize that the automotive industry has made meaningful improvements in warranty management over the past ten years. Freudenberg-NOK General Partnership, an automotive supplier of sealing and NVH technology, has worked extensively in this area, guided in part by field performance feedback such as warranty information.

Another message worth reiterating involves purchase cost versus total cost of ownership. Cost is obviously critical to all stakeholders. But too narrow an emphasis on purchase cost or cost recovery can lead to incorrect decisions, less-collaborative activities and (ultimately) degradation in warranty performance. The problem is compounded when a “low cost at any cost” philosophy prevails throughout the supply chain. As a lower-tier supplier, Freudenberg-NOK is often confronted with these false choices.

Reviewers and survey contributors at Freudenberg-NOK were also struck by the importance of developing an “incident rate focus” (as opposed to a “responsibility and recovery cost focus”). This shift in philosophy will help drive decisions and actions that create a more collaborative process that ultimately benefits everyone—but particularly the consumer. The AIAG-OESA Consumer-Centric Warranty Management Project, which seeks to provide guidelines for an organization's warranty management process with emphasis on NTFs, is a good example of assuming an incident rate focus.

Scores of initiatives at the company and industry level are currently aimed at the above issues. In a relatively short time, many of them could bear significant fruit. However, commitment, collaboration and continuous improvement are necessary to truly make a difference; and consumers, dealers, suppliers and OEMs will all benefit.

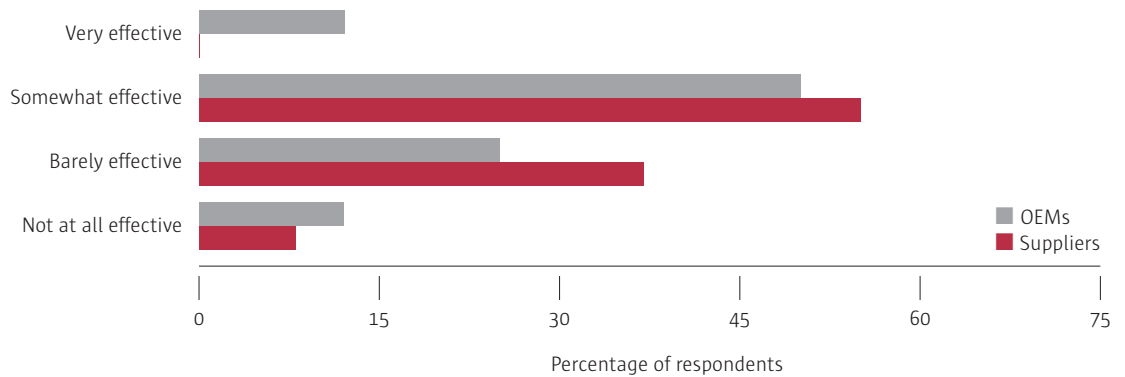


Figure 8. Survey recipients were asked, “How effective do you think the industry is in dealing with warranty issues today?”

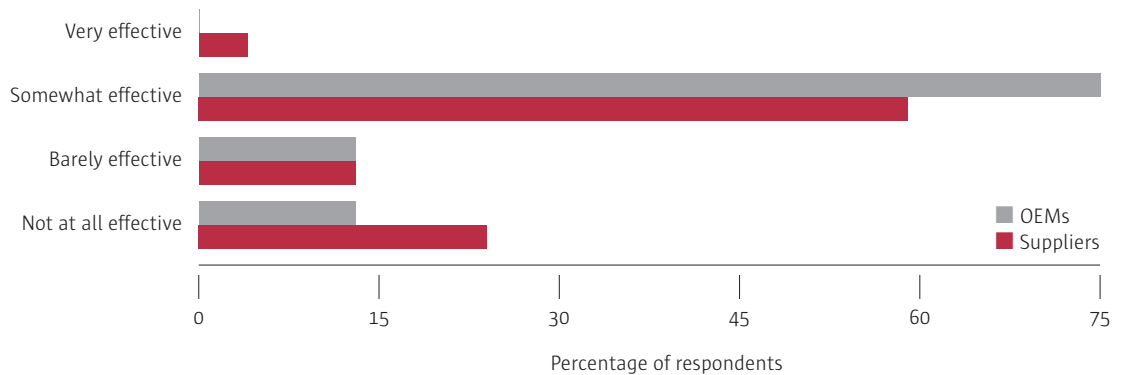


Figure 9. Survey recipients were asked, “How effective are your current warranty management processes when it comes to facilitating design quality and reducing financial risk?”

- Recent (and often dramatic) shifts in the degree to which warranty responsibility is being passed to suppliers.
- Both groups’ lack of an integrated and comprehensive warranty organization. Few integrated views exist because warranty processes and jurisdiction are often scattered across multiple departments and geographic regions.
- Current OEM warranty systems focusing mostly on claims processing and dealer reimbursement, rather than on problem solving and collaboration.
- Varying abilities among the players when it comes to controlling the repair process.

- Lack of operation and entity-wide transparency, causing longer lead times.
- Lack of effective collaboration.

Respondents’ perspectives on internal processes relating to warranty management were similarly negative (Figure 9). Neither side is inclined to think in “very effective” terms. Barely half of all suppliers were even willing to assign “somewhat effective” ratings. Were their responses influenced by the seemingly limited control they have over the entire process as it exists today? After all, the OEM controls claims and parts data, as well as most information from the dealer.

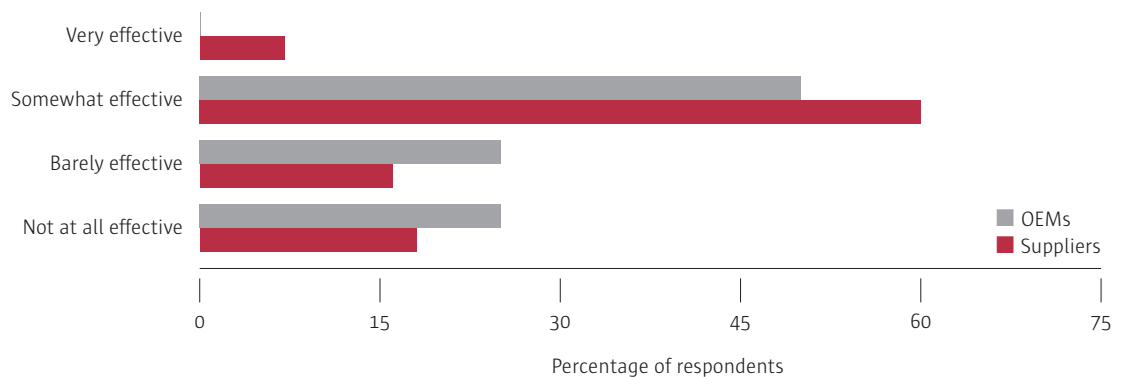
The dealer controls the repair process, but the OEM controls the payment. The OEM also defines application needs at the outset of development. And lastly, final systems validation frequently resides with the OEM. Small wonder that the OEM views in this area were somewhat more positive, despite a near complete lack of “very effective” ratings.

Assessments of companies’ ability to leverage historical warranty data to improve product and process design follow a similar response pattern: Neither suppliers nor OEMs are inclined to think in “very effective” terms (Figure 10). Moreover, 30-40 percent of responses fall into the “barely effective” or “not at all effective” categories. Apparently, systems use warranty data more to calculate

metrics and less to help deliver the problem and diagnostic detail engineers need to improve the product.

Looking closely at several additional responses, we can begin to divine why performance ratings are rarely positive. First, consider both organizations’ views of the key obstacles to better warranty performance (Figure 11). Suppliers’ top concerns are: “collaboration with the OEM,” “lack of diagnostic data” and “communication with partners” (that is, OEMs). Given suppliers’ limited control of the warranty process, it shouldn’t be surprising that they crave additional collaboration. Put another way, it is difficult to feel positive if you don’t have access to the data you need, or if you are unable to communicate or collaborate effectively with your partner.

Figure 10. Survey recipients were asked, “How effective is your organization at using historical warranty data and building it into new product and process designs?”



Assessments of companies’ ability to leverage historical warranty data to improve product and process design follow a similar response pattern: Neither suppliers nor OEMs are inclined to think in “very effective” terms.

On the other side, OEMs are often burdened with resource shortages that limit their collaboration and data-sharing capabilities. Component purchase costs further hamstring their flexibility, and lack of product design involvement restrains their access to useful data. Perhaps most important, a lack of measures for total cost of ownership frequently causes them to make less-astute sourcing and pricing decisions. Still, OEMs have only recently begun leveraging DTC data for their own analytical purposes and may be reluctant to share that information with suppliers (note the OEM responses to “lack of diagnostic data” in Figure 11). Underperforming legacy systems, counterproductive contracts and non-standardized warranty data may also slow their efforts.

Further illustrating the data management problem are responses to a series of supplier-only questions, beginning with “Do your OEMs provide enough information on service, diagnostic and warranty data, and returned parts for you to perform effective root cause analysis?” Seventy three percent of suppliers said “no.” Nor do the data they receive reach them in a timely fashion. As noted in Figure 12, two-thirds of parts data require more than a month to arrive (9 percent of the time, parts never arrive). Delays in communicating claims data are nearly as long. More than 40 percent of claims data arrive more than a month after processing, or not at all.

Figure 11. Survey recipients were asked, “What are the largest obstacles your organization faces in improving warranty performance? (Rank the top three.)”



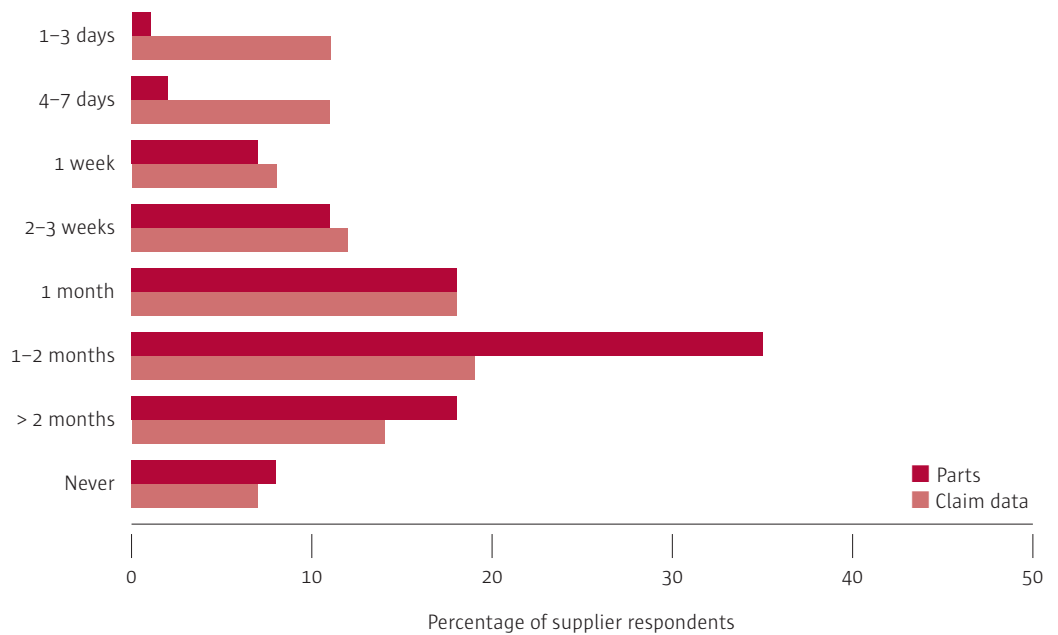


Figure 12. Suppliers were asked, “How quickly are individual claim data and parts available from most of your OEM customers?”

Point of view

“Improvements in warranty management must be every company’s cause. But we should focus on areas with the most potentially significant and beneficial impact.”



Mike Roberts
Warranty Strategy
Manager,
Ford Motor Company

Much of the value associated with “Winning through collaboration: Observations and insights on warranty management in the automotive industry” is the wide range of warranty issues and imperatives it presents. All OEMs and suppliers want to reduce warranty incidents and warranty spending by improving quality. The \$64,000 question is how to pick the right initiatives to target for improvement and the right organizations with which to partner.

Ford Motor Company is involved in a variety of projects that seek to simplify warranty administration for our dealers, while improving the quality and timeliness of warranty data. Separate, but obviously related, initiatives focus on leveraging warranty data to drive quality improvements in our vehicles and plants. And like all contributors to this report, we enthusiastically support the work of AIAG, OESA and CLEPA to perfect early warning systems, develop consumer-centric warranty models and create warranty information standards.

Improvements in warranty management must be every company’s cause. But we should focus on areas with the most potentially significant and beneficial impact. This report can help because it lays a wide array of problems and potential responses on the table and provides a barometer for helping us gauge our efforts against those of other OEMs. More and better work gets done when we can accurately benchmark the correctness of our improvement work streams and the validity of our own research and assumptions.

Figure 13 demonstrates how long suppliers say it takes to convert data received from their OEMs into usable information. For example, if they receive a printout of a warranty claim, they may first have to key in the data and then translate the information, which can markedly delay the process. This is the focus of AIAG’s Early Warning Standards (EWS) Project — developing an industry standard for service event data (including warranty claims) and processes between OEMs and suppliers. This initiative could decrease the time required to move parts and accurate and comprehensive data among partners, thus encouraging collaboration, facilitating faster analysis and expediting both organizations’ ability to respond to issues. CLEPA has launched a similar initiative focused on European warranty information standards. Its goal is to accelerate problem detection to minimize warranty burdens and align

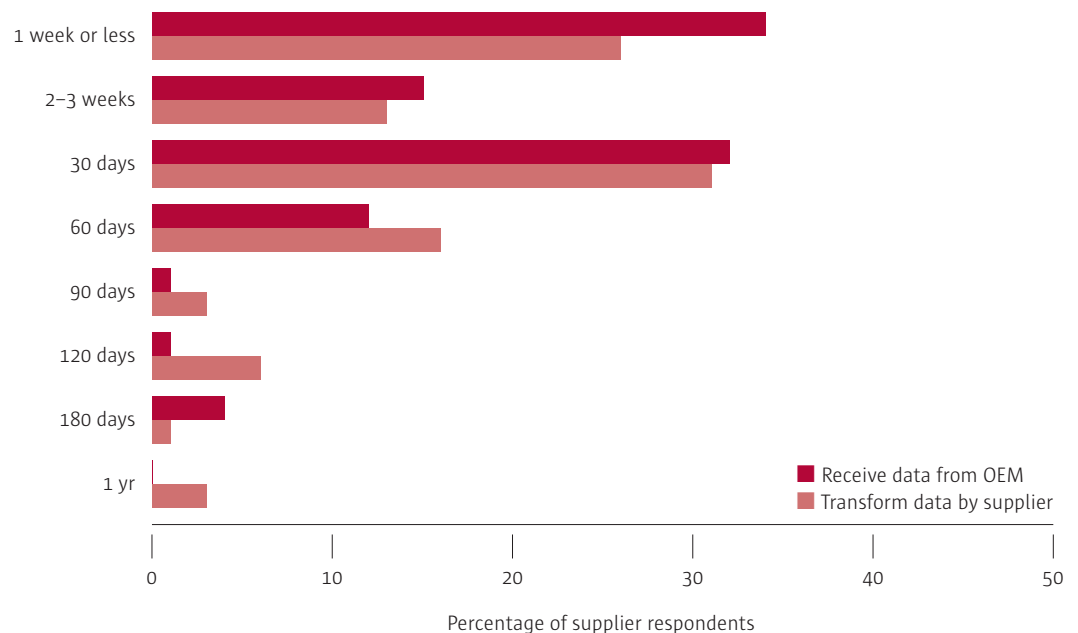
standardization efforts with those of AIAG. (See page 25, “Industrywide improvement initiatives are underway,” for more details.)

All in all, both OEMs and suppliers believe that collaboration has improved over the previous three years (OEMs: 71 percent “more effective,” 14 percent “unchanged;” suppliers: 41 percent “more effective,” 43 percent “unchanged”). Many OEMs also are working with suppliers to provide more and better warranty data. Responding suppliers identified (in order) Ford, General Motors, Chrysler, Toyota and Honda as companies focused on eliminating warranty problems versus resorting to cost settlements. This same group was singled out by suppliers as most equitable in assigning costs (in order: Ford, Chrysler, General Motors, Toyota and Honda).

The view of BearingPoint is that several carefully planned and executed initiatives could dramatically improve the overall performance of warranty management. These include:

- Increasing organizational alignment and staffing to meet warranty needs.
- Increasing the comprehensiveness and timeliness of service data (including warranty and diagnostics) and leveraging it more effectively across the company and with partners.
- Developing early warning systems with DTC data to help identify issues and create signals.
- Pushing for and adopting industry standards to facilitate the timely and smooth movement of information among partners.
- Instituting or advancing product development processes that leverage warranty data and lessons learned.

Figure 13. Suppliers were asked to “Estimate (in number of days) the average total elapsed time between 1) your organization’s receipt of raw warranty claim data from an OEM and 2) the point at which data are available in an appropriate format for your organization to begin preliminary warranty expense projection analysis across multiple OEM(s), part(s) and/or vehicle model(s).”



Industrywide improvement initiatives are underway

Industry associations have not been standing still when it comes to warranty issues. They have initiated a number of projects to improve the overall warranty process, establish standards, facilitate data exchange, and define leading practices for collaboration and analysis. OEMs and suppliers need to embrace the work of these teams to accelerate the development and implementation of jointly defined programs and processes.

Early Warning Standards (EWS) Project. This initiative by AIAG seeks to develop standards among all partners for the definition and communication of service event data (including warranty data) and the design of new or improved processes throughout the service and analysis chains. The EWS Project provides a great framework for significantly improving collaboration, communication, data sharing and accuracy, as well as a major reduction in data latency. It is already generating valuable solutions, leading practices and standards (some of which are being employed now by OEMs and suppliers). However, it is very complex and, partly as a consequence, has been in development for more than two years. Nor can deployment be fully achieved without the active support and participation of key stakeholders and without investments of time and other resources. With billions of dollars at stake annually, accelerating the pace of this program (and socializing it among other manufacturers that are not yet participating) is essential. Since this report illustrates so clearly many of the major issues already being addressed by the EWS team, there is new potential for senior executives to acknowledge that 1) they are not alone in facing these challenges and 2) they and others must take the opportunity to address the issues in an industry context. The good news is that there are tools available to help make this happen.

Consumer-Centric Warranty Initiative. This initiative involving OEMs and suppliers has been launched by OESA and AIAG. The project, which looks at warranty issues from the consumer's point of view, has a claim rate-reduction focus: Aligning the supply chain organizations of OEMs, dealers and suppliers using guidelines, best practices, tools and the inculcation of a root-cause culture. An assessment tool will help users compare and identify improvement areas for warranty management. Case studies also are being developed to support the best practices identified by project members.

No Trouble Found (NTF) is a particularly key focal point. Project members recognize that consumer satisfaction is driven by reduced incident rates, and that when an incident does occur, timely and accurate repairs are necessary. Emphasizing incident rate reductions can remove barriers among supply chain partners and reduce the frequency of NTFs through collaborative problem solving and preventive steps. The group (three OEMs and 15 OESA member companies) has been meeting since February 2007. Project completion is expected by the third quarter of 2008.

European Programs. In Europe CLEPA has several activities on warranty underway, including:

- Monitoring the development of OEM warranty terms and conditions.
- Updating and revision of the CLEPA Position Paper on Warranty.
- Further discussions with OEMs on the Joint OESA-CLEPA Warranty Position Paper.
- Development of European Warranty Information Standards.

Harmonizing warranty data exchange between suppliers and OEMs is felt to be important, as warranty data is often too limited to support early detection activities within the supply chain. Benefits include:

- Improved customer satisfaction through enhanced early detection/resolution.
- Reduction of warranty incidence/cost.
- Reduction in data management time.
- Data compatibility for cross-company/cross-supply chain use.
- Forms basis for global standard via ODETTE/AIAG.

5. Making warranty management improvements

OEMs and suppliers have not been negligent in their pursuit of higher quality. Some could be accused of not doing enough, but even that is relative. Every company assigns priorities based on finite resources and the perceived best interests of its customers and shareholders. Still, good work and good intentions are obvious throughout the survey results. For example, by a margin of about five to one, OEMs and suppliers have put systems in place to manage quality issues effectively (for example, standardizing and transforming data used for warranty management). AIAG research also confirms that more dealers are

looking to assist with warranty-related issues because current processes are burdensome and the desire to improve customer satisfaction levels and loyalties is strong.

Figure 14 identifies the relative success that OEMs and suppliers have had with warranty initiatives implemented to support their efforts to improve quality. Figure 15 then depicts the wide variety of programs that are underway—particularly those associated with visibility (that is, increasing management’s understanding of issues and problems). Improved visibility and collaboration may not be silver-bullet solutions to all the concerns identified in this report, but they are definitely giant steps in the right direction. A good example is the increased

Point of view

“Becoming ‘incident rate-focused’ instead of ‘responsibility- and cost-focused’ is what will change a win-win paradigm (OEMs and suppliers) to a win-win-win situation shared by OEMs, suppliers and customers.”



Dave Mimms
General manager,
Product Quality
Assurance,
Toyota Motor
Engineering and
Manufacturing
North America, Inc.

When looking at warranty management, it’s important to consider two elements: Early detection and early resolution:

- Early detection is realized through improved data acquisition and analysis— processes and tools that amplify the voice of the customer and, thereby, help ensure that we see the problem and give it the priority it deserves.
- Early resolution requires us to go beyond the raw data, first to understand the experiences of the individual customer and the dealer technician, and then to fully analyze the parts or vehicle itself.

A premium should always be placed on investigation of the parts themselves, as well as vehicle condition simulations and field vehicle observations when possible. These hands-on studies are essential steps toward finding the real root cause of a customer’s problem. A collaborative entity that cross-functionally spans departments (design, manufacturing, quality and sales/service) and businesses (supplier, OEM and dealer) is equally vital. Once a root cause is found, discipline and customer-centric motivation are the keys to designing out defects and ensuring no recurrence of the incident.

As noted in the report, “adoption of standardized terms, methodologies and tools is needed.” Clearly this is true. However, these are only tools. Becoming “incident rate-focused” instead of “responsibility- and cost-focused” is what will change a win-win paradigm (OEMs and suppliers) to a win-win-win situation shared by OEMs, suppliers and customers.

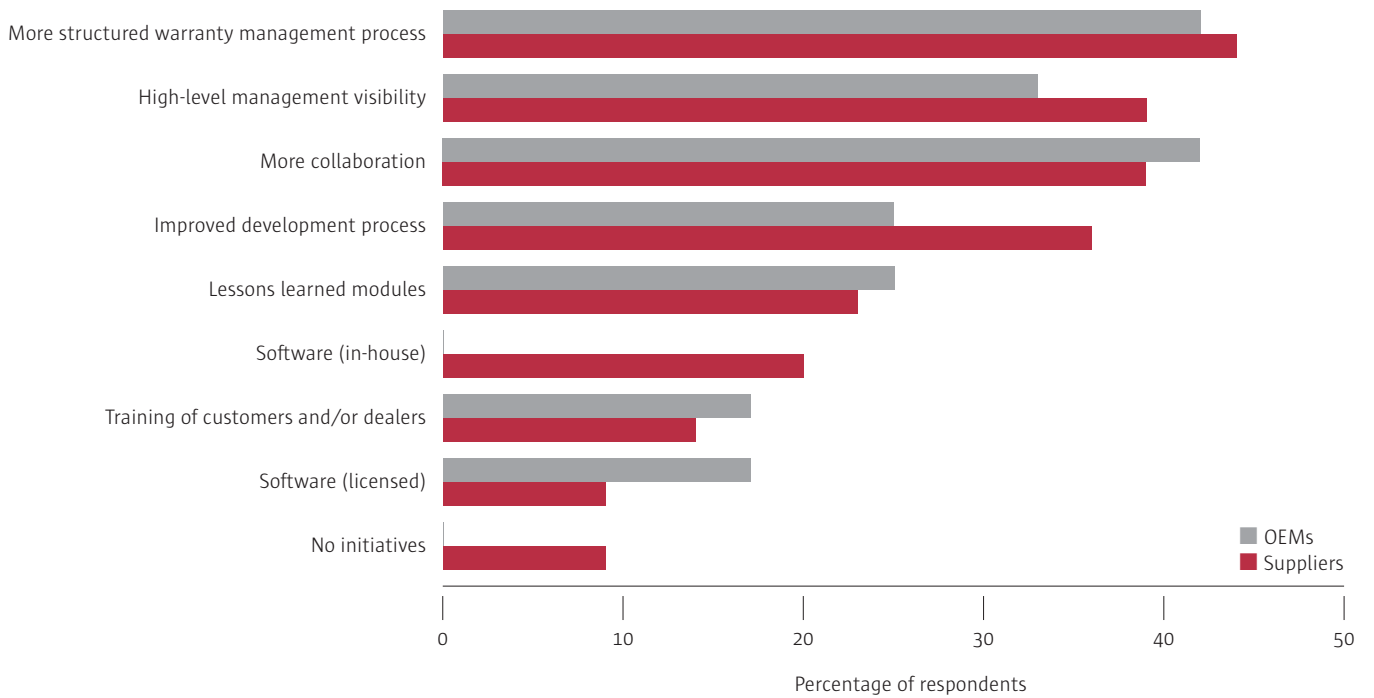


Figure 14. Survey recipients were asked, “What type(s) of warranty improvement initiatives have been most successful for you during the past three years? (Check all that apply.)”

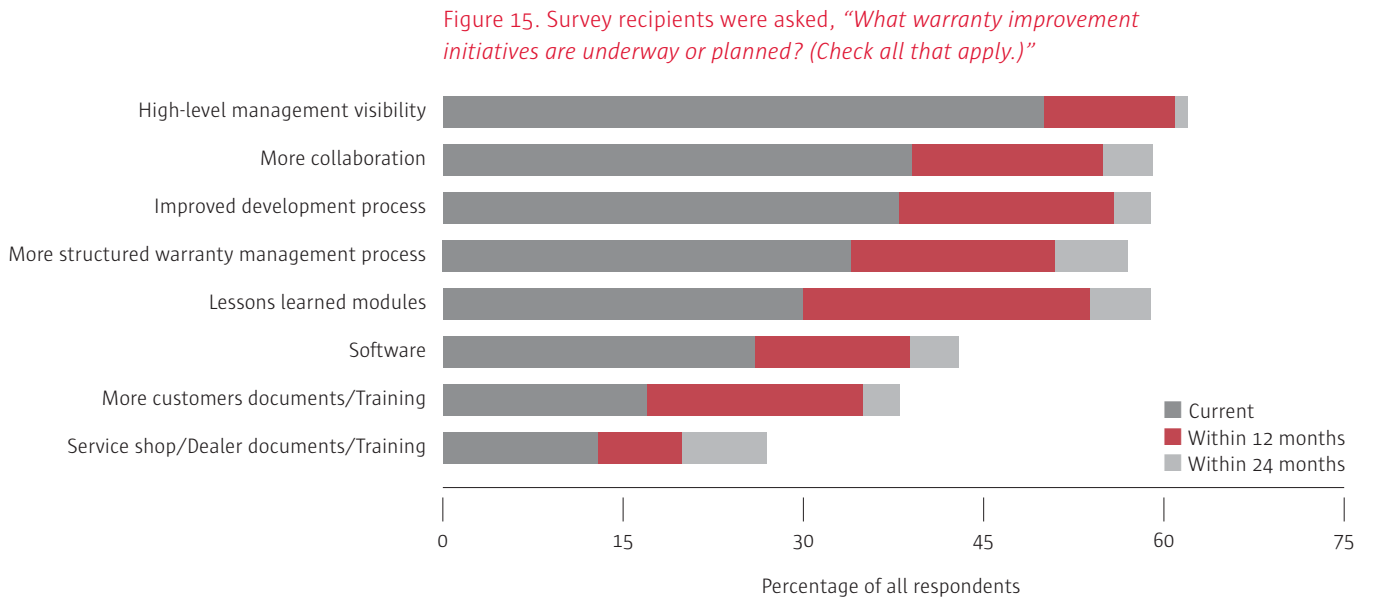


Figure 15. Survey recipients were asked, “What warranty improvement initiatives are underway or planned? (Check all that apply.)”

Not surprisingly, initiatives that have proven most successful for companies over the past three years are the same ones upon which OEMs and suppliers are still concentrating but have not yet completed. Moreover, improvement initiatives are paying off: By nearly identical margins (roughly 3.5 to 1), OEMs and suppliers say that their overall detection-to-correction cycles have improved over the past three years.

use of warranty websites for the submission, management and analysis of warranty incident information. Another is leveraging lessons learned in product development. These and other steps point directly at the need for proactive (preventive) measures and better problem solving (processes, data, speed and accuracy), rather than simply finding new ways to move costs around.

Still, it is one thing to inform management about warranty costs, causes and issues, and another to manage them. As part of the aforementioned EWS Project, AIAG has learned that most companies maintain lists of priority issues that are tracked and addressed aggressively. However, because there is usually more focus on larger incident rates and costs and an understanding that the “top-XX” issues are addressed most fervently, there is little confidence that all the right items are on that list.

The low number of planned or implemented software projects is also noteworthy. This could reflect a perceived lack of specialized solutions or the recognition that size and global scope make most application initiatives extremely daunting. In addition, the fact remains that OEMs and suppliers are not investing heavily enough in systems that store, process, analyze and share information or that identify problems of mutual concern. Some OEMs have already “gone there” and ended up compromising scope in some areas in order to meet objectives elsewhere.

Not surprisingly, initiatives that have proven most successful for companies over the past three years are the same ones upon which OEMs and suppliers are still concentrating but have not yet completed. Moreover, improvement initiatives are paying off: By nearly identical margins (roughly 3.5 to 1), OEMs and suppliers say that their overall detection-to-correction cycles have improved over the past three years. Key areas where room for improvement is clearly called for include:

Problem definition: There is no industry-wide definition of what constitutes the detection-to-correction cycle. Some companies start at the point that an issue has been prioritized and assigned for further analysis/resolution. Others include the time from the first report of a particular issue. While the latter would seem to be better, it is usually the case that issues encountered within the service process do not become evident to anyone other than the dealer until at least several days have passed.

Problem identification: Among suppliers, 53 percent complete the problem identification phase within seven days, another 19 percent within 21 days and another six percent within a month. OEMs fared less well: 29 percent within seven days, and the remainder in one to two months or more. This could indicate that it takes an OEM longer to identify a problem since it has to manage all the parts and systems. Once the OEM has narrowed down the issue, the supplier is

contacted and need only focus on its part(s) or system(s). Moreover, supplier data has been prescreened and has a much narrower scope for resolving the problem. Still, overall timetables can be seriously elongated when suppliers are not brought into the process early.

Problem Diagnosis: Among suppliers, 29 percent complete the diagnosis phase within seven days, another 49 percent within 21 days and another nine percent within a month. OEM performance is a bit longer: 28 percent within 14 days, and the remainder in one to two months or more.

Problem resolution: Among suppliers, six percent complete the problem resolution phase within seven days, another 23 percent within 21 days and another 18 percent within a month.

No OEMs complete problem resolution in less than one to two months. Although disconcerting, this timetable might not be surprising, since events so often vary in complexity and ease of implementation. Having the right claim data and/or parts helps, but even these don't necessarily or immediately reveal root causes. Once a solution has been identified, full validation may take a year or longer to implement if the problem is design-based or material-based.

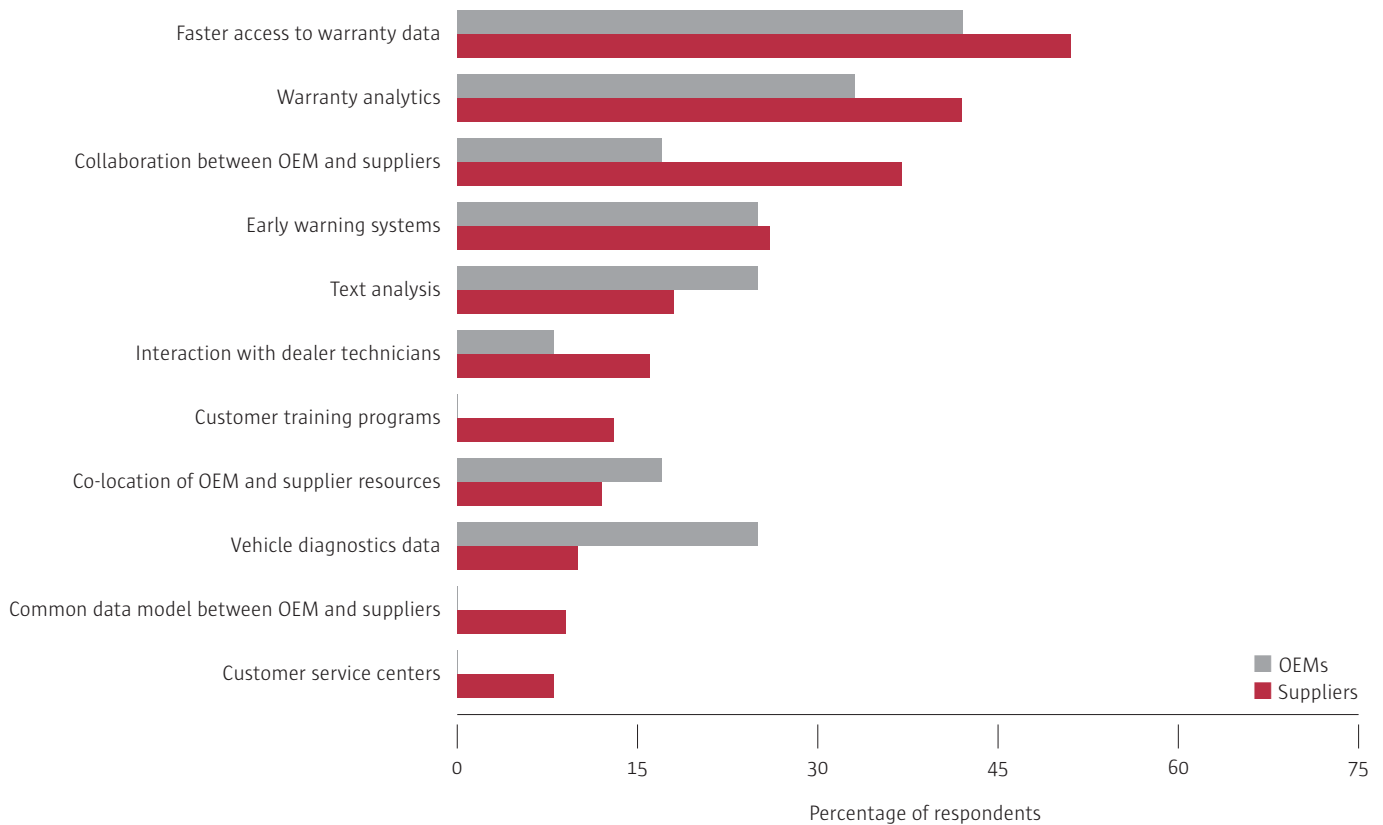
Figure 16 profiles some of the tools and processes that respondents have implemented to reduce their detection-to-correction cycles. Note the priority that both sides have given to "faster access to warranty data" and "warranty analytics." Neither of these improvements is the same as early warning systems and

processes, which identify emerging problems using multiple sources of data and analytics. But both are necessary components of any manufacturer's continuous improvement program.

BearingPoint's view is that several key initiatives can significantly improve the overall performance of warranty management:

- Focus on the capture of critical data and the delivery of information.
- Adopt new tools for storage, analysis and management of all relevant data (including numeric and structured, narrative text, and graphical components).
- Develop early warning systems that leverage diagnostic data to help identify issues and create signals.

Figure 16. Survey recipients were asked, "What tools or processes have been implemented to reduce the detection-to-correction cycle for warranty issues? (Check all that apply.)"



6. The road ahead

The responses and insights gleaned from this report clearly show that, despite their perceived shortcomings, OEMs and suppliers understand that their top priority is working more closely with each other to share and analyze data. Building on (and largely reflecting) that theme, they also cited specific initiatives that “would most improve warranty-related collaboration between OEMs and suppliers” (Figure 17) and provided their views on the top five overall weaknesses in their companies’ warranty management processes (Figure 18).

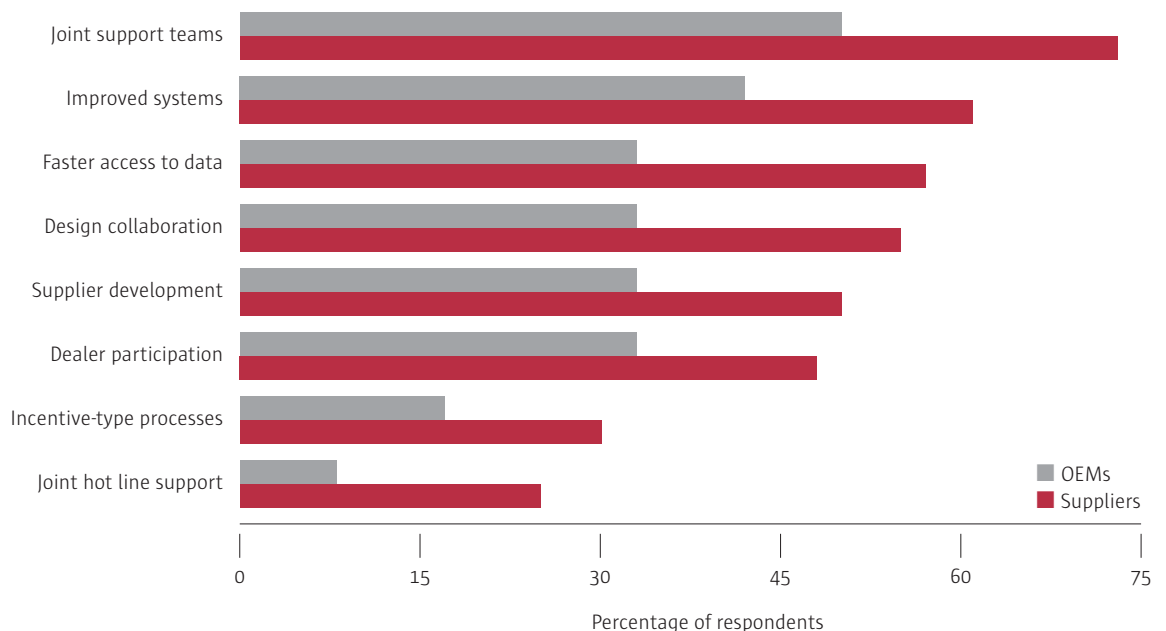
Building on these observations, BearingPoint has posited the following ten recommendations, most of which apply equally to OEMs and suppliers:

1. Increase communication and collaboration. The key is “information partnerships”—combining greater openness with improved data gathering and analysis initiatives. Here, for example, the collaborative process

model designed by the AIAG EWS work team could be helpful.

- 2. Make standardization an across-the-board priority.** To date, there are no industrywide standards for warranty communication or warranty management processes among OEMs and suppliers.
- 3. Insist on timely and efficient communication of warranty claims, parts and diagnostic data.** In a more timely fashion, OEMs must provide suppliers with meaningful, accurate, standardized information, accompanied by salient insights. The faster that meaningful and actionable data and service documentation can be supplied to all parties, the quicker root causes can be identified and problems engineered out.
- 4. Increase collaboration among product design teams.** Numerous OEMs and suppliers cited the need for more joint support teams to leverage lessons learned.

Figure 17. Survey recipients were asked, “What, in your view, are the five initiatives that would most improve warranty-related collaboration between OEMs and suppliers?”



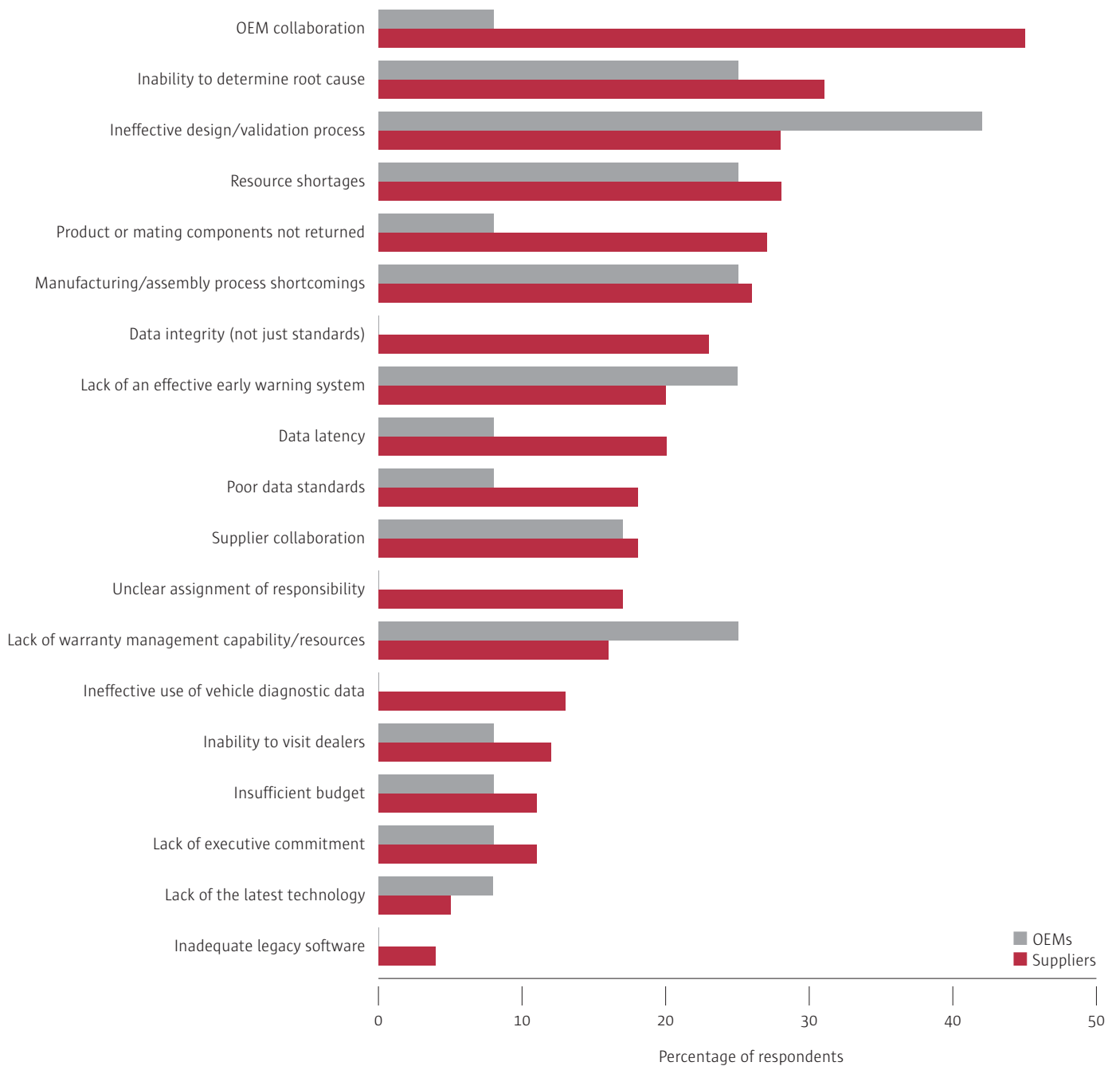


Figure 18. Survey recipients were asked, “What do you see as the top five overall weaknesses in the warranty management process? (Check all that apply.)”

- 5. **Develop more and better early warning systems.** Efforts such as those underway at AIAG and CLEPA have broad potential to reduce the time needed to move parts and data, and thus accelerate both groups' ability to anticipate, reduce and respond to warranty-related incidents. The use of diagnostic and DTC data is also key to early warning on quality issues.
- 6. **Provide more diagnostic data to suppliers.** DTC data are needed to help ensure early visibility of an emerging problem. They also are a principal means of finding root causes. OEMs must have a strategy for harvesting and leveraging diagnostic data, making the

resulting information accessible to suppliers, and communicating earlier in the process to avoid losing access to key information.

- 7. **Assign sufficient resources to the warranty management process.** OEMs must foster fully staffed, cross-functional teams that are aligned with an enterprisewide warranty strategy. An appropriate infrastructure must be in place to make the most of data currently available, including readily sharing data with the right suppliers.
- 8. **Demand early intervention.** A great deal of valuable information is lost or convoluted as problems cycle through parts collection, hotlines and warranty

Point of view

“Some OEMs have built systems to leverage diagnostics and are being rewarded with reductions in incident rates, costs and warranty reserves.”



Bob Baxendale
Senior manager
and Warranty Survey
director,
BearingPoint

As director of this study, I've had a unique opportunity to scrutinize the survey results and collaborate extensively with all of the team members. In many cases, the insights we've garnered confirm what warranty management leaders and insiders have been saying for some time — that collaboration, standardization and liberal information sharing are the pillars upon which all warranty advancements must stand.

There is one area, however, that has been less embraced and publicized: The use of vehicle diagnostic data for early warning and root cause analysis. Basically, OEMs must do more with the information they capture from the vehicles. It's key not only to fast, first-time repair, but to the development of future, glitch-free vehicles.

Admittedly, diagnostic data is hard to compile, and its in-depth analysis has thus far been limited mostly to engineers. Little or none of it typically reaches suppliers. But the additional effort and technology are becoming essential. DTCs can be early indicators of current and future warranty issues. And unlike claims, they can be rapidly shared — from the dealer, on the road through telematics, in an engineering garage or a plant. Leveraging that information with tools for analytics and reporting accelerates the identification of issues, while turbo-charging the root cause analysis process.

Some OEMs have built systems to leverage diagnostics and are being rewarded with reductions in incident rates, costs and warranty reserves. More companies must now get on board. And, to significantly improve detection-to-correction times, everyone should engage more of their suppliers in the process.

claims. For this reason, warranty detection must begin in earnest at the OEM, customer and dealer levels. This could involve:

- Better systems for collecting data.
- Initiatives to improve dealers' diagnostic skills.
- Provision of more OEM information to dealers.
- Greater communication between dealers and suppliers (preferably along with the OEM).

9. **Do more to calculate and understand total cost of ownership.** Win-win decisions about sourcing, pricing and warranty formulation cannot be made responsibly without a solid handle on total cost of ownership. For example, high-cost awards to low-cost suppliers are often the result of inadequate total cost of ownership calculations and poor communication across companies' sourcing, procurement, finance and warranty organizations.

10. **Identify and remediate systems shortcomings.** Strategies for increased data sharing can't help but fall short when company systems have inadequate record-holding capacities or are not taking advantage of the best tools for storage, analysis, data sharing and management of data.

Plenty to consider

Many significant and far-reaching concerns have been noted in this report, and many readers will logically conclude that the warranty management situation is hazy, if not downright gloomy. For this reason, BearingPoint wishes to emphasize several final points. First, we fully understand just how complex the problem is. Significantly improving the warranty management process is a Herculean endeavor that cannot help but take years of hard work, cooperation and patience. Even more important, however, we must acknowledge how far the industry has come. No one disagrees that there is much more to be done. But our confidence that the auto industry *will* surmount the warranty management challenge is undiminished.

The overwhelming majority of OEMs and suppliers are not standing still: Their insights and diligence already have moved them closer than ever to the resolution of countless warranty-related problems. One need only look to the remarkable gains in product quality to see that companies are gaining — not losing ground.

About the BearingPoint Automotive Practice

BearingPoint is an independent management and technology consultancy. Owned and operated by its Partners throughout Europe, BearingPoint provides its clients with the best possible value in terms of tangible, measurable results by leveraging business and technology expertise. The company currently employs 3,250 people in 14 European countries and serves commercial, financial and public services clients.

In the automotive industry, we help companies gain efficiencies and performance improvement across the full value chain. We work with most of the world's major car manufacturers and some of the leading first-tier suppliers, supporting our clients in the roles of both management and technology consultants. Our capabilities span the entire automotive value chain. BearingPoint consultants have helped automotive companies improve their production and supply chain operations, reduce warranty costs through the development and implementation of innovative diagnostic-driven early-warning quality systems, set up the systems and processes for new production plants, optimize their spare parts management operations, and develop and execute strategies for effective multi-channel customer relationship management.

We have a genuine passion for this work and for the industry as a whole, and it comes through in our everyday approach and in the spirit of our people. We're proud of a number of attributes that keep us at the top of our field:

- **Industry experience:** We know our clients' business problems, the trends that impact the industry and the processes required to achieve results. Many of our consultants join us with years of experience, working with some of the top companies in the automotive industry.
- **Experienced workforce:** We believe we have one of the most experienced workforces in our industry. Our extensive business and technology experience and commitment to our clients drive our success. Our automotive practice has more than 15 years of experience serving as business advisors and systems integrators to the industry.
- **Enduring relationships with world-class clients:** Each year, virtually all of our most significant clients renew their relationship with us by asking us to assist them in deploying innovative solutions to address new business challenges.
- **Innovative, results-focused solutions:** We combine our industry knowledge with technological experience to create solutions that bring real, tangible and innovative business value to our clients.
- **Global presence:** We support our clients' operations around the world, seamlessly delivering the same results-driven solutions wherever they do business. We are constantly aligning these advantages with the needs of the industry. We know these needs can change over time, which is why we stay locked into the pulse of the marketplace — standing at the ready to apply our extensive experience on behalf of our clients.



Management
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Helping our clients get sustainable, measurable results

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BearingPoint offers its clients a seamless cross-border approach, strong focus on results, an entrepreneurial culture, profound industry and functional knowledge, as well as solutions customised to clients' specific needs. The firm ranks high in client satisfaction, has long-standing relationships with reputable organisations and is seen as a trusted adviser. BearingPoint has European roots, but operates with a global reach.

For more information, please visit: www.bearingpointconsulting.com

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