The increasing technological, manufacturing, and operational complexities product companies face take a toll on product quality and subsequently on warranty costs. While organizational investment in the warranty domain has resulted in financial improvement, IDC Manufacturing Insights' research and analyses clearly show that a fundamental and systematic effort has to be undertaken to address the issue. We believe that the industry needs to develop and adopt a maturity capability model to assess warranty operations and outline a road map for continuous improvement. Manufacturers will need to define corporate governance and local rules for their warranty organizations. These efforts should be complemented by plans to invest in warranty governance structures and dedicated warranty management technologies to help control and reduce warranty costs.

Key findings from our analysis include:

- Manufacturers spend anywhere from 0.5% to 7% of product revenue on warranty claims. In the United States alone, this represents approximately $23 billion of opportunity to the industry.

- Warranty cost variability is found across industry as well as within industries, and the difference between best performers and laggards can vary as much as 6 percentage points. Moreover, we often see high variability year over year within a single company.

- Overall, industry's ability to drive warranty improvement is low. The use of benchmarking to assess performance and implement continuous improvement is very low. Similarly, the application of IT tools to manage warranty transactions, perform warranty and quality analysis, and improve financial management is highly inconsistent.
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IN THIS STUDY

This IDC Manufacturing Insights report discusses the findings from an industrywide assessment of warranty operations and offers a maturity model to help product companies assess their warranty management capabilities and implement a strategy for continuous improvement. The report also provides key financial data concerning warranty performance.

SITUATION OVERVIEW

The increasing technological, manufacturing, and operational complexities product companies face take a toll on product quality and, subsequently, warranty costs.

Figure 1 depicts an overview of the warranty economy in the United States. On average, manufacturers spend approximately 1.3% of product revenue on warranty claims, which amounts to approximately $23 billion. In addition to direct payout to honor warranty obligations, these companies are required to hold warranty reserves to back up their legal obligations, locking out working capital.

While Figure 1 depicts a broad industry average, a close examination of different sectors, depicted in Figure 2, reveals significant variations. Manufacturers spend anywhere from 0.5% to 5% of product revenue on warranty claims in industries that include automotive, aerospace, and telecommunications, and up to 6% and 7% in semiconductor fab and high-tech equipment.

Warranty cost variability is also found within industries. A look at warranty claims as a percent of revenue within the same industry shows that the difference between best performers and laggards can vary as much as 6 percentage points. Moreover, we often see high variability year over year within a single company.

While Figures 1 and 2 represent product companies that operate and sell in the United States, the situation in other countries is similar.

IDC Manufacturing Insights research indicates that product companies focus on improving product quality, and Figure 1 seems to indicate that these efforts bear fruits. However, Figure 2 cast doubts on that assertion, as warranty costs seem to be poorly controlled year over year, so the overall average industry improvement trend may be out of reach for many companies and may not be long lasting.

Clearly, most companies are not doing enough in warranty, nor do they know where to begin to fix the problem. To understand the state of industry, IDC Manufacturing insights undertook an industrywide assessment of warranty.
FIGURE 1

U.S. Manufacturing Warranty Claims and Revenue Index, 1Q05–4Q09

Note: The index in 1Q03 is 100.

Source: IDC’s Manufacturing Insights and SEC filings, 2010
Surveyed companies from all multiple geographic regions with varying industries and company sizes participated (see Figures 3–5).

An interesting finding from the demographic information comes from the diverse nature of the titles of respondents depicted in Figure 6, which clearly indicates that warranty events cut across and impact almost every part of an organization, and individuals from different parts of the organization feel compelled to participate in the warranty conversation.
FIGURE 3
Respondents by Industry

Source: IDC's Manufacturing Insights Warranty Survey, 2010

n = 100

FIGURE 4
Respondents by Region

Source: IDC's Manufacturing Insights Warranty Survey, 2010

n = 100
FIGURE 5

Respondents by Company Revenue

Source: IDC's Manufacturing Insights Warranty Survey, 2010
**FIGURE 6**

Respondents by Job Title

![Bar chart showing respondents by job title](image)

- Warranty product/program manager/consultant/analyst
- Senior manager of warranty
- Senior manager of quality
- Quality engineering
- Senior manager of quality, service, engineering
- Warranty administrator/claims processor/specialist/coordinator
- Senior manager of marketing, sales, corporate communications
- Six Sigma
- CEO, president, managing director
- Other

n = 100
Note: Senior manager includes EVP, SVP, VP, and director.
Source: IDC's Manufacturing Insights Warranty Survey, 2010

**Methodology**

The survey included a number of key questions that were designed to identify companies that are more advanced in their view of the importance of investing in a warranty improvement and those that still view warranty as a necessary evil and an afterthought. For each area listed, respondents could indicate whether the activity was in place, whether the activity was currently being implementing (or being implemented within 18 months), if they had plans to invest, or if there was no plan to invest.

We used a cluster analysis to identify the typical responses of companies that indicated warranty improvement initiative. The responses were aligned consistently with two groups (see Figure 7): leaders in these maturity markers, or what we call "Warranty
Warriors," and laggards, or "Warranty Wannabees." The distinct characteristics of these two groups are:

- **Warranty Warriors: Leaders.** Those who are serious about warranty process improvement and have improved processes in place or have a firm plan to put them in place within the next 18 months.

- **Warranty Wannabees: Laggards.** Those who perhaps realize the importance of warranty process improvements but have no budget or timeline commitment to put them in place.

Figure 7 shows the most prominent responses of Warranty Warriors and how significant they are in describing the warriors. For example, implementing analytic tools for warranty fraud detection and early warning are strong indicators. Figure 7 also shows that some attributes, for example, having a part returns policy, are common in both groups.

---

**FIGURE 7**

Cluster Analysis of Key Warranty Improvement Activities

![Cluster Analysis Graph]

*n = 100
Source: IDC's Manufacturing Insights Warranty Survey, 2010

**Study Findings**

Warranty Warriors were consistently ahead of Warranty Wannabees in every single core warranty activity, though as expected, some gaps are larger than others. Figure 8 shows key improvement activities survey respondents engage in.
Nearly all (92%) of the Warranty Warriors companies are pursuing opportunities to improve accrual management, but only 60.5% of laggard companies do.

74% of leading companies look for opportunities to reduce warranty cycle time. Only 23.7% of Warranty Wannabees do. One of the characteristics of laggard companies is the high level of process disruption and inconsistency, which does not allow for process optimization and cycle time reduction.

Some activities show an overall low level of adoption and significant gaps between leaders and laggards.

Less than 70% of Warranty Warriors and only 39.5% of Warranty Wannabees have an active service planning activity coordinated with quality management.

66% of leading companies and 36.8% of laggards are actively engaged in improved supplier collaboration. This is most critical in engineering-oriented value chain (EOVC) industries.

Approximately 60% of leading companies employ proactive means to improve warranty performance through the use of fraud detection methods and early quality warning systems. Less than 20% of laggard companies do.
Low product quality and poor warranty coverage and repair can significantly tarnish a brand. However, only a little over half of the leading companies see warranty management as a key activity to monitor and manage their brand.

The participation in external activities such as professional organizations and standard bodies is equally low: 50% of leaders and 39.5% of laggards. The relatively low participation in standards organizations and best practice sharing communities is surprising, but again, is perhaps another indicator of the lack of attention this industry receives.

**Metrics**

Figure 9 summarizes survey participants responses related to common warranty metrics. Table 1 enumerates a longer list of common warranty metrics.
FIGURE 9

Warranty Metrics Tracked by Group

Cost/Incidents per product
Total warranty repair costs
Claims per day/month/year
Claims processing time
In-warranty product return rate
Claims rejected: policy
Customer satisfaction
Claims rejected: fraud

(% of respondents)

Warranty Warriors
Warranty Wannabees

n = 100
Source: IDC's Manufacturing Insights Warranty Survey, 2010
### TABLE 1

<table>
<thead>
<tr>
<th>Warranty Metrics Tracked</th>
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<tr>
<td>Warranty cost per product</td>
<td>73.5</td>
</tr>
<tr>
<td>Warranty incidents per product</td>
<td>72.4</td>
</tr>
<tr>
<td>Total warranty repair costs</td>
<td>65.3</td>
</tr>
<tr>
<td>Claims per day/month/year</td>
<td>63.3</td>
</tr>
<tr>
<td>Claims processing time</td>
<td>52.0</td>
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<tr>
<td>In-warranty product return rate</td>
<td>54.1</td>
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<tr>
<td>Claims rejected: Procedure</td>
<td>44.9</td>
</tr>
<tr>
<td>Customer satisfaction with warranty program</td>
<td>31.6</td>
</tr>
<tr>
<td>Claims rejected: Fraudulent</td>
<td>27.6</td>
</tr>
<tr>
<td>Supplier recovery*</td>
<td>NA</td>
</tr>
<tr>
<td>Cost per installed base*</td>
<td>NA</td>
</tr>
<tr>
<td>Goodwill*</td>
<td>NA</td>
</tr>
</tbody>
</table>

n = 100

* No data collected

Source: IDC's Manufacturing Insights Warranty Survey, 2010

### Business Rules

One of the most telling behaviors of a mature warranty organization is the level of business disciplines. Figure 10 shows that Warranty Warriors frequently and consistently utilize business rules/procedures and rarely manage by exception. Conversely, Warranty Wannabees manage by exception one-third of the time. Making frequent exceptions typically requires cumbersome and costly manual intervention. Exception management, as the name implies, should be used only on rare occasions, and very mature companies will additionally exploit these opportunities to promote goodwill repair or replacement service for a disgruntled customer.
Coverage

In contrast to process management, which shows a significant gap between leading and lagging companies, flexible warranty policy coverage definition was an area of agreement between Warranty Warriors and Warranty Wannabees (see Figure 11). Both groups offer a similar blend of warranty policies that area tailored, as needed, by product, geographic region, and end user.

Benchmarking is critical for companies to assess their warranty organizations and performance and acts as an information tool to support continuous improvement. However, our recent research shows that very few companies are consistently benchmarking their warranty organizations. Figure 12, showing that industrywide, less than 20% of companies are even benchmarking internally, is a testament to how little attention warranty receives.

Finally, the industry survey looked at the IT tools product companies deploy to support warranty operations and process improvement initiatives (see Figure 13).
FIGURE 11
Warranty Coverage Models by Group

Product, brand, and so forth
Location
Customer
Usage
Supplier

n = 100
Source: IDC’s Manufacturing Insights Warranty Survey, 2010

FIGURE 12
Warranty Operations Benchmarking

Do not benchmark
Against other warranty organizations in company
Against peers/competitors
Against partners (e.g., suppliers/resellers)
Against other industries

n = 100
Source: IDC’s Manufacturing Insights Warranty Survey, 2010
FIGURE 13

IT Tools Implemented by Group

![Graph showing IT tools implemented by group]

n = 100

Source: IDC’s Manufacturing Insights Warranty Survey, 2010

Financial Responsibility

The organizational ownership of the warranty financials is another area in which findings are close between Warranty Warriors and Warranty Wannabees. Both Warriors and Wannabees rate high in operating as part of the quality or service and parts organizations, and a significant number of respondents also claim that warranty is its own dedicated group (see Figure 14).

Although the financial responsibility of both leaders and laggards is similar, Warranty Warriors have more senior-level visibility and accountability than Warrior Wannabees. As Figure 15 shows, nearly 60% of Warriors compared with 45% of Wannabees enjoy the support of a senior manager. Conversely, 8% of Wannabees indicate that an administrator position is the most senior position accountable for warranty at their organization, whereas no leading company reported a warranty organization led by an administrator position. Given the level of investment leading companies make in warranty improvement, a senior position that can garner budget and support is critical.
FIGURE 14

Warranty Management Financial Responsibility

n = 100
Source: IDC's Manufacturing Insights Warranty Survey, 2010

FIGURE 15

Most Senior Accountable Position by Group

n = 100
Source: IDC's Manufacturing Insights Warranty Survey, 2010
Summary and Conclusions

Clearly the field study revealed that the current situation in industry shows imbalance in the adoption of key organizational attributes and maturity markers. This inconsistency indicates that industry would benefit from a framework that would provide direction for both less and more mature companies in prioritizing next steps in their warranty journeys.

While the study did not directly measure financials of participating companies, our preliminary analysis, based on correlations of the field study data with companies' warranty financial reports and our Global Performance Index data of over 900 companies, indicates that there are major financial benefits associated with increasing warranty management maturity. Companies that have made the right investments in technology coupled with warranty, quality, and design process improvements have documented case examples of millions of dollars in savings.

METHOD SPECIFICS

Background

The Capability Maturity Model (CMM) is a process improvement approach that helps organizations improve their performance. CMM was originally developed as a tool for objectively assessing the ability of government contractors' processes to perform a contracted software project. Additional work led by Carnegie Melon Software Engineering Institute (SEI) in the 1980s and 1990s led to the formulation of Capability Maturity Model Integration (CMMI), which integrates several different working models into a unified framework.

CMM has evolved to a general model that can be used as a benchmark for comparison and as an aid to improving organizational business processes in diverse areas and organization types and can be used to guide process improvement across a project, a division, or an entire organization. In particular, it is helpful in understanding those organizations where direct comparison is difficult or meaningless.

Structure

A maturity model is as a set of structured maturity levels that describe how well the behaviors, practices, and processes of an organization can reliably and sustainably produce required outcomes. To use SEI's language: "Predictability, effectiveness, and control of an organization's software processes are believed to improve as the organization moves up these five levels."
Each maturity level uses common features:

- Commitment to perform
- Ability to perform
- Activities performed
- Measurement and analysis
- Verifying implementation

There are typically five maturity levels, often starting at level 0 rather than level 1:

- **Level 0: Ad hoc.** Processes at this level are typically in a state of dynamic change, tending to be driven in an ad hoc, uncontrolled and reactive manner by users or events. The processes are cumbersome, unstructured, and undocumented.

- **Level 1: Standardized and repeatable.** Some but probably not all processes at this level are repeatable, possibly with consistent results. Process discipline is not rigorously enforced, especially during times of stress.

- **Level 2: Managed.** Processes at this level are defined, documented, and executed based on standard metrics and operating procedures. Process discipline is established and subject to some degree of improvement over time. With metrics and process discipline, organizations in this level of maturity start shifting from being highly reactive to proactive. Organizations at this stage typically focus on a defined set of activities in a single business function.

- **Level 3: Integrated.** Organizations at this level focus on integrating processes, tools, and decision-making processes for continuous improvement across an extended set of stakeholders, including quality, service, sales, and so forth. Processes are redefined to support cross-functional needs, and management can identify ways to adjust and adapt the process with minimal loss of productivity.

- **Level 4: Optimized.** Organizations at this level of maturity focus on continually improving performance and on interdisciplinary process optimization.
The Warranty Management Capability Maturity Model

As discussed previously, the manufacturing industry needs a framework to allow companies to assess the maturity and capabilities of their warranty organization, benchmark against peers, and initiate a continuous improvement process.

IDC Manufacturing Insights has initiated and led the development of the Warranty Management CMM to develop standard language, metrics, maturity stages, and a basis for the best practices and technologies, drawing on a vast amount of unorganized information.

This effort was aided by a team of cross-industry experts, the Institute of Warranty Chain Management (IWCM), and the editor of the industry's only standard publication, Warranty Week.

Five stages of maturity have been identified in the Warranty Management Capability Maturity Model (see Figure 16). Each stage typically builds on the foundation of previous stages, or more mature practices replace those of less mature stages.

At the lowest levels of maturity, the warranty organization is purely reactive to quality and warranty events and is focused solely on executing transactions. Processes are unstructured, and exception management is the norm.

When an organization reaches the higher levels of maturity, it proactively uses data from multiple sources to anticipate warranty events and manage financials prudently, and it uses quality and warranty events as a means to improve learning, product quality, and supplier relationships.

As Figure 16 shows, going from maturity levels 0 and 1 to 2 and 3 changes the warranty organization's focus from being transaction focused to quality — both product and process — oriented. As this transition takes place, the organization's behavior is changing from reacting to events to developing the ability to forecast and take actions proactively.

In addition to depicting the maturity levels, Figure 16 also depicts the relative effort that is required to ascend through the maturity levels. As the curve in Figure 16 shows, the organizational transformation effort moving through the initial stages, say, from 0 to 1, is relatively modest, whereas the middle stages require the most effort because they involve multiple stakeholders and the impact of a change traverses multiple business functions. At level 3, the benefits of process optimization are clear and the level of effort is more modest.
Not surprisingly, the IT implementation and modernization investment curve has a similar behavior. Initial investments include implementing basic transaction processing systems, workflow management, and standardizing reports. Integrating multiple business systems and standardizing end-to-end process management is more demanding.

**FIGURE 16**

**Warranty Management Capability Maturity Model**

Source: IDC's Manufacturing Insights, 2011

**Warranty Management Dimensions**

Within each stage of maturity, IDC Manufacturing Insights has identified four key dimensions that must be considered in the assessment of a warranty organization: organization, governance, measurement, and technology:

- **Organization.** What is the structure of the warranty organization? What is the senior most position warranty reports into and that has visibility into warranty operations? How are warranty goals aligned with overall corporate goals?
• **Governance.** How consistently are business rules used and enforced? Is there a structured approach to supplier cost recovery and parts returns? Are processes in place to manage entitlement, suspect claims, and variances?

• **Measurement.** Does the organization utilize specific warranty measurements? What metrics are used, how are they used, and what is frequency of reporting? Is benchmarking pursued?

• **Technology.** What technology is in place to support warranty management and what does it enable? Are technology investments strategic or tactical?

As described, the model we have developed is intended for use as an aid for organizations to develop an assessment framework. The diversity of companies that will use this tool requires that the framework and each of the maturity stages be viewed in the context of industry, starting point, or circumstance. Furthermore, companies should distinguish between an assessment and the ensuing action. For example, we consider warranty fraud detection a good practice. However, mature organizations strive for a balance between enforcing adherence to business rules and rejecting fraudulent claims and the need not to overburden suppliers with layers of bureaucracy and the appearance of penny-pinching.

**Level 0: Ad Hoc**

At the lowest levels of maturity, an organization is reactive to warranty and quality events and focuses solely on executing warranty transactions. Processes are unstructured and exception management is common. The use of software tools is minimal, and process automation is rare (see Table 2).
### Table 2

**Warranty Management Dimensions for Level 0: Ad Hoc**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
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| **Organization** | - The warranty group is focused exclusively on supporting claims processing.  
- The warranty group is usually very small, is staffed to support current claim volume, and is often understaffed to handle unexpected surge in claims. The group is led by a claims processor, a warranty administrator, or a similar entry- to midlevel manager position.  
- The warranty group can reside in any organization based on historical arbitrary decision and does not have a separate operating budget.  
- The warranty group has no or very few regular touch points with other functional groups (e.g., with manufacturing or design); such communication takes place only on an as-needed basis — typically in response to a problem.  
- Corporate senior management has little visibility to warranty operations. |
| **Governance** | - The warranty organization is highly reactionary and focused on managing warranty transactions and fulfilling claims.  
- Few guidelines or fulfillment rules exist, and warranty policies are applied inconsistently. Warranty variances and goodwill approvals are applied arbitrarily.  
- Supplier cost recovery practices, if relevant, are rudimentary. Transactions are negotiated individually and inconsistently.  
- Parts returns, if relevant, are requested ad hoc from the individual repair facility as proof of repair. The repair facility is often responsible for shipping and handling.  
- Exception management is frequent and burdensome. Regular meetings, if any, deal with exceptions rather than routine. |
| **Measurement** | - The organization is familiar with warranty metrics, but only a few are mostly used to track exceptions (e.g., claims rejected).  
- Other warranty measures are investigated but usually reported only in reaction to a crisis. |
| **Technology** | - Warranty transactions are managed by multiple general-purpose informal and disconnected tools, primarily spreadsheets and email.  
- Manual, paper-based transaction processes and markups are common.  
- Data often must be rekeyed, creating errors and untrustworthy reports.  
- Claims submittal and communication with external parties is done via fax and email. |

Source: IDC's Manufacturing Insights, 2011
**Level 1: Standardized**

Warranty processes and business rules are defined with regard to transactions, yet enforcement is inconsistent and difficult; data and report accuracy is problematic. Organizations with multiple business units and locations have independent regional and product-specific warranty operations (see Table 3).

<table>
<thead>
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<th>TABLE 3</th>
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<tr>
<td>Warranty Management Dimensions for Level 1: Standardized</td>
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</table>

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Organization** | • Warranty organization is structured primarily to support claims processing.  
• The warranty group is usually very small, is staffed to support current claim volume, and is often understaffed to respond effectively to unexpected surge in claims. As in level 0, the group is still led by an entry- to midlevel manager.  
• The warranty group can reside in any organization based on historical arbitrary decision and does not control a separate budget.  
• Communication between functional groups about warranty is more common than in level 0 but is still infrequent and mostly reactionary to warranty or quality events.  
• Warranty is starting to gain some visibility with higher-level management, mostly because of the level of financial burden rather than its strategic role. |
| **Governance** | • Process instructions/procedures are in place but are not consistently enforced. The organization still tends to manage exceptions (major quality issues, irate customers, etc.) better than the day-to-day operation.  
• Process standardization allows for some basic reports that are used primarily within the warranty group.  
• Supplier cost recovery practices, if relevant, are rudimentary. Transactions are negotiated individually.  
• Parts returns, if relevant, are requested ad hoc from the individual repair facility as proof of repair. The repair facility is often responsible for shipping and handling. |
| **Measurement** | • A broader set of measurements are tracked against process standards, but the focus remains on transactions. Metrics are often reported to demonstrate work overload to upper management. |
| **Technology** | • Spreadsheets and similar informal tools are still the primary tool. The organization may have developed process macros or deployed a home-developed database, guided by a semistructured process.  
• Business rules are defined and communicated using hard copy flowcharts. There are no tools to monitor adherence.  
• Internal and external communication are still enabled by general-purpose unstructured methods such as email and faxes.  
• Similar to level 0, data is often rekeyed, creating errors and untrustworthy reports. |

Source: IDC's Manufacturing Insights, 2011
**Level 2: Managed**

At level 2, the organization establishes process accountability and capturing of best practices to drive/initiate continuous improvement. Limited benchmarking may take place, albeit infrequently and inconsistently. The focus remains on claims transactions (see Table 4).
### TABLE 4

#### Warranty Management Dimensions for Level 2: Managed

<table>
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<tr>
<th>Dimension</th>
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</table>
| **Organization** | The warranty organization is still structured to support claims processing, but process consistency and quality are emphasized.  
Warranty financial burden is recognized as is the important role of effective and efficient warranty management. The warranty management group is managed by a senior manager. The group is probably staffed adequately and is less subject to disruption.  
Visibility from C-level is higher, regardless of where it resides from an organizational perspective. |
| **Governance** | Highly structured and well-managed processes exist to manage transaction and financial procedures, emphasizing consistency and business rule enforcement.  
Best practices are captured and applied consistently, and the organization is taking a total quality approach to warranty management (Six Sigma, balanced scorecard, etc.).  
Consistency and transparency are foremost when the organization deals with outside entities, managing entitlement, suspect claims, and variance approval. The organization emphasizes enforcement of warranty entitlements and coverage, submission rules, and so forth.  
The approach to supplier cost recovery and parts returns is structured. Returned parts are used to aid in root-cause analysis and as a quality management activity. Consequently, the organization is willing to pay to ship and store parts.  
The mandate of the warranty groups is broader, including managing terms and conditions for warranty, post-warranty, and complementary services contracts, allowing tailoring warranty products for different products, brand segments, and marketplaces. |
| **Measurement** | Strong emphasis is placed on key performance indicators (KPIs) representing a blend of transactional and financial perspectives. KPIs are primarily lagging performance indicators focused on metrics with the direct scope of the group, such as transactions, labor and warranty costs.  
Metrics are tracked against internal improvement targets.  
Warranty measures are tracked and reported consistently with regular frequency with appropriate product segmentation or similar relevant segmentation. |
| **Technology** | The organization is making deliberate investment in information technology for process automation to improve the performance, accuracy, and scalability of the warranty organization. Investments tend to be in warranty transaction management software and in CRM and customer entitlement management.  
Added automation helps in monitoring and measuring process adherence.  
Internal and communication are still mostly informal and unstructured using general tools. Methods for external communication depend largely on the technology maturity/capabilities of partners/suppliers. The warranty organization may allow online access to claim submission system (e.g., a Web portal). |

Source: IDC's Manufacturing Insights, 2011
**Level 3: Integrated**

At level 3, organizations employ a blended set of key performance indicators (KPIs), extending into transactions, finance, quality, customer satisfaction, and so forth. Integrated processes, tools, and decision making exist for continuous improvement across an extended set of stakeholders, including quality, service, sales, and others. Benchmarking, including external benchmarking, is undertaken on a regular basis, emphasizing leading indicators. The organization is shifting from being mostly reactive to events, to managing proactively (see Table 5).

<table>
<thead>
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<th>TABLE 5</th>
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<tr>
<td><strong>Warranty Management Dimensions for Level 3: Integrated</strong></td>
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| Organization | • The warranty organization moves outside the transaction processes boundaries (driving warranty's role as a quality function, influencing customer loyalty, and so forth).  
• Warranty has high level of visibility throughout the organization up to C-level management.  
• The organization resides in a relevant function, such as the quality or service organizations, and may have a separate operating budget.  
• Warranty is engaged in active dialog with other internal stakeholders (e.g., product development, sales, service). Warranty thinking extends into channels, franchises, and so forth.  
• Warranty management's role is actively integrated into corporate long-term planning. |
| Governance | • The organization is shifting from reactive to proactive: sales forecast is used in accrual planning, service planning, inventory planning, and so forth. The notion of implementing processes around early warning signals is strong.  
• The organization is emphasizing cause-effect relationships between factors (warranty costs, warranty enforcement, customer loyalty).  
• Warranty, service contract, and post-warranty are managed together. Billable services such as upgrades or post-warranty services are managed as complementary business processes. These activities share information (e.g., entitlement system) and are managed using shared metrics.  
• Supplier collaboration is regarded as a strategic organizational capability. Equitable recovery practices replace financial haggling. Suppliers' participation in design and quality management is encouraged.  
• External best practices and benchmarking are shared for warranty and services, including service delivery, customer satisfaction, and loyalty to product and services. |
### TABLE 5

**Warranty Management Dimensions for Level 3: Integrated**

<table>
<thead>
<tr>
<th>Dimension</th>
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<tbody>
<tr>
<td>Measurement</td>
<td>• The warranty organization emphasizes KPIs that support the overall company strategy and extend into other aspects of the product life cycle. Leading indicators with and outside warranty operations are tracked.</td>
</tr>
<tr>
<td></td>
<td>• Metrics are tracked and reported periodically against internal and external improvement targets, and many are standardized across business units.</td>
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<tr>
<td></td>
<td>• The organization can perform advanced analyses and data correlations, aggregating warranty, manufacturing, and service information. The organization is often called to support quality analysis and improvement.</td>
</tr>
<tr>
<td>Technology</td>
<td>• Investments in IT are designed to integrate data and processes that span multiple functions. These are larger and more strategic investments that often require a detailed business case in order to gain management approval.</td>
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<td></td>
<td>• Integrated IT systems, likely running on a shared backbone/collaboration platform (e.g., SharePoint), provide better visibility and easy means to cross-reference information. These expedite root-cause analysis and corrective action, and they limit warranty exposure (e.g., by connecting to the MES Historian to identify serial number boundaries).</td>
</tr>
<tr>
<td></td>
<td>• Internal communicating is structured and well managed. A Web portal or similar means exist to manage the entire claim life cycle. However, warranty systems are company and possibly business unit specific, necessitating external partners to work with multiple dissimilar systems.</td>
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<tr>
<td></td>
<td>• The warranty and quality organizations start driving investments in analytics and business intelligence.</td>
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</tbody>
</table>

Source: IDC's Manufacturing Insights, 2011

**Level 4: Optimized**

At the highest levels of maturity, an organization proactively uses data from multiple sources to anticipate warranty events. When a warranty event occurs, reaction and transaction still occur, as in lower levels of maturity; however, these efforts are calculated, structured, and highly visible, internally and externally.

The focus is on interdisciplinary process optimization, improving predictive decision making and agility, and TCO through the aggregation and analytics of enterprisewide information. Warranty data informs quality and design improvement efforts (see Table 6).
<table>
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| **Organization** | • The warranty organization emphasizes collaboration and interdisciplinary process optimization. Warranty/quality/service operations are aligned with a closed feedback loop to engineering, manufacturing, marketing and other stakeholders.  
• The organization actively participates in proactive improvement activities such as service planning, design (for warranty), and so forth. |
| **Governance** | • The organization has the ability to manage warranty reserves based on sales forecasts, failure rates, and past experience.  
• The organization takes a proactive approach to managing warranty, using it for building brand loyalty, (for instance, applying discretionary goodwill repair).  
• Continuous improvement methodology (e.g., Six Sigma) is in place. Closed loop warranty/quality/service decisions are informed by multiple factors such as warranty costs, inventory levels, and impact on customer loyalty.  
• Supplier collaboration is fundamental to warranty as well as other functional groups. Suppliers are active participants in design and quality management. Organizations may participate in industry initiatives to drive common methods and metrics to improve suppliers’ ability to detect and communicate issues.  
• The warranty organization initiates and participates in continuous improvement and total quality efforts that include stakeholders from organizations such as product development, quality, manufacturing, and service delivery.  
• The warranty and quality organizations drive proactive measures to reduce warranty claims and warranty service costs (specifically, improve quality, design for service, self-diagnosis, and self-repair). |
| **Measurement** | • The organization uses a balanced blend of financial and nonfinancial (transactional, quality, etc.) KPIs, with a strong emphasis on leading indicators.  
• The organization focuses on continuous measurement supported by advanced analytic methods for improved forecasting capabilities, expedited issue detection (early warning), and continuous improvement. |
| **Technology** | • Advanced analytics based on aggregation of information sources and unstructured text analytics are deployed to support warranty forecasting, early quality warning, and fraud detection.  
• When applicable, remote monitoring capabilities are utilized to provide an early warning signal and better information in order to accelerate reaction time and limit warranty exposure. |

Source: IDC's Manufacturing Insights, 2011
**FUTURE OUTLOOK**

As product complexity continues to increase to meet the ever-growing demands of globally diverse and increasingly educated consumers, warranty claims and costs will continue to rise. The state of the warranty industry will in fact get worse before it gets better. In more detail:

- The overall warranty economy trend in U.S. manufacturing is likely to continue (refer back to Figure 1). Product companies will improve initial quality and push long-term durability outside the base warranty window, giving an overall impression of improved quality and reduced warranty expenses.

- Companies will continue to exhibit the same level of performance disparity compared with their peers and with other industry sectors.

- Improving initial quality is an expensive process that takes time to take effect. Moreover, it usually has a lesser effect than products sold. Companies will seek ways to improve the overall quality warranty chain and look for opportunities in the extended product life cycle.

- Process improvement and adoption of best practices, especially cross-industry, is hindered by a lack of standards.

With the adoption of such models as the Warranty Management Capability Maturity Model to better understand the capability gaps and needs, we anticipate an increase in awareness and that companies will make significant gains in this area.

This new framework will also allow for the emergence of benchmarking purveyors and commensurate capabilities of warranty organizations. This will enable the industry as a whole to demonstrate more deliberate consistent improvement.

**ESSENTIAL GUIDANCE**

In light of the complexity that accompanies current and emerging technologies in today's products and future configurations, more attention must be given to the overall warranty process. This includes dedicated employees and senior-level management oversight in the organization. Interestingly, we have found that technology investments and organizational visibility go hand in hand to some degree in the area of warranty — this interestingly seems to have less to do with the level of investment and more to do with the accessibility of information, ease of reporting, and trustworthiness of data.
Manufacturers should consider assessment methodologies to evaluate their warranty management organizations and moreover should plan to invest in governance structures and technologies to minimize the impact of warranty events, decreasing reaction time and associated costs, and to have better control over the variability of response.

**Actions to Consider**

**Product Companies**

Product companies should utilize the Warranty Management Capability Maturity Model as a yardstick to appraise current practices and identify areas of future focus. The following guidance should be applied when using this framework:

- **Many organizations will not fit perfectly into a single level of maturity.** If after an assessment, an organization finds inconsistencies in its maturity between dimensions (e.g., measurement appears to be in stage 1, whereas governance appears to be mainly in stage 2), it is likely that the organization needs to address some of the items in measurement stage 1 to be properly equipped for later stage developments. If there are multiple gaps in multiple stages, for example, it is recommended that the company perform an assessment of all gaps and create a prioritized road map based on the company's individual business goals, strategy, and pressures. It should also be noted that companies move through the continuum of stages at their own pace and may not meet all the criteria of a single stage.

- **Maturity levels should not be skipped — each is foundational for the next.** At the same time, however, there are "immature" practices in some of the lower level stages that would be replaced by more mature practices as the organization evolves.

- **The cost and benefits of investments to "move up" in maturity have to be clearly defined.** Just as for any investment, a clear business case should be made and the transformational cost and effort must be considered. Fortunately, assessment using the maturity model can help enable this justification, and benchmarking against others in industry can further provide the rationalization needed.

- **Each company's baseline assessment, findings, and subsequent journey forward will be unique.** Regardless of similarity in suppliers, customers, products, or complexity, each company's organization is unique — from the company's culture and practices to the technologies employed — and therefore each company will need to create its own business-specific road map for warranty improvement.
Continuous improvement is a continuous process. Companies should continually assess their warranty organizations and identify areas for improvement utilizing the Warranty Management Capability Maturity Model. Establishing an appropriate metrics program and benchmarking, whether internally or externally, formally or informally, will help companies continually move forward on their path to improvement.

Software Vendors, Services Providers, and System Integrators

Software vendors, services providers, and system integrators in the business of warranty or even customer management should consider aligning their offerings with the Warranty Management Capability Maturity Model. As end users become more versed in the framework, they will be looking to these providers to be able to substantiate business benefits and quantify the actual stages they will move through in utilizing their products and services.

On Benchmarking

As we emphasized previously, the model described in this report is a process improvement and benchmarking framework, not an actual benchmarking instrument. Companies embarking on a benchmarking process should consult IDC Manufacturing Insights about utilizing benchmarking tools and services available based on this framework.

LEARN MORE

Related Research

- Methods and Practices: Reap Rewards with Customer Self-Repair (IDC Manufacturing Insights #MI226476, January 2011)
- Chrysler Wages War on Warranty (IDC Manufacturing Insights #MI225075, September 2010)
- Camstar Acquires SigmaQuest, Giving Manufacturing Companies a Broader Set of Quality Management Capabilities (IDC Manufacturing Insights #MI224789, September 2010)
● *Advanced Signature Analysis Closes the Quality Loop* (IDC Manufacturing Insights #MI224787, September 2010)

● *Service Information Delivered as a Service Improves Quality, Reduces Costs* (IDC Manufacturing Insights #MI224562, August 2010)


● *What Does Your CEO Know About Warranty, and What Is Being Done About It?* (IDC Manufacturing Insights #MI206249, April 2007)

● *Warranty Spending in U.S. Manufacturing, 3Q06* (IDC Manufacturing Insights #MI205049, January 2007)

● *Warranty Update: Too Much Money on the Table* (IDC Manufacturing Insights #MI202179, June 2006)

**Synopsis**

This IDC Manufacturing Insights report shows that manufacturing organizations need to take significant steps to elevate the significant financial and management burden of warranty operations. But according to Sheila Brennan, IDC Manufacturing Insights program manager, "They do not have a formal structured framework to conduct relevant assessment and implement a continuous improvement program. The Warranty Management Capability Maturity Model we developed can help companies begin an improvement journey and provide insight into what to measure, what to invest in, and how to organize, in order to improve their warranty operation."