



Empowering ERP Asset Management Solutions

Building a Business Case for Managing Warranties

*Guidelines for how asset intensive
companies can achieve payback in
less than one year*

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Too little attention is paid to industrial asset warranties. Their existence is often an afterthought, and actual claims tend to be rare. Even when times are tough and maintenance costs come under scrutiny, warranties are often overlooked. Most companies lack a formal, systematic warranty claims process and it is costing them more than they may realize. This surely must change, because a mere 10% swing in costs can make or break an enterprise.

Premature failure of equipment under warranty leads to costly equipment replacement or repairs with the resultant potential loss of production. Warranty claims can offset some of these costs, but the returns of effective warranty management extend far beyond direct cost recovery. The greater long-term value comes from its indirect benefits. Combined, the immediate and extended benefits can deliver as much as 5% savings to a company's bottom line. Therefore, transitioning warranty management practices from reactive to proactive can help businesses to control costs and mitigate inevitable business tailwinds.

The mining industry provides a fitting example. The recent double blow of suppressed commodities prices and spiraling labor and maintenance costs have caused stiff consequences, including shaft shutdowns and even mine sell-offs. One mining company decided to use warranties to overcome these economic challenges. Few of its sites had attempted to recover warranty costs, and those that did used manual and spreadsheet-driven processes that lacked visibility and were error-prone and difficult to scale.

This paper shares the potential savings from implementing a formal warranty management program, and describes how to build a realistic multi-year business case to motivate rollout of the program within any industrial-type organization. Included, as an example, is the mining company's business case.

The Warranty Management Process

Effective warranty management requires cooperation across multiple business functions and responsibilities within an organization. It spans roles traditionally performed by Supply Chain, Maintenance and Finance personnel, and interfaces with key asset management processes.

Warranty management involves negotiating warranty contracts and terms, entering and activating these in a system, actively monitoring for warrantable work, creating and managing the claims, analyzing warranty performance, and lastly but most importantly, implementing continuous improvements.

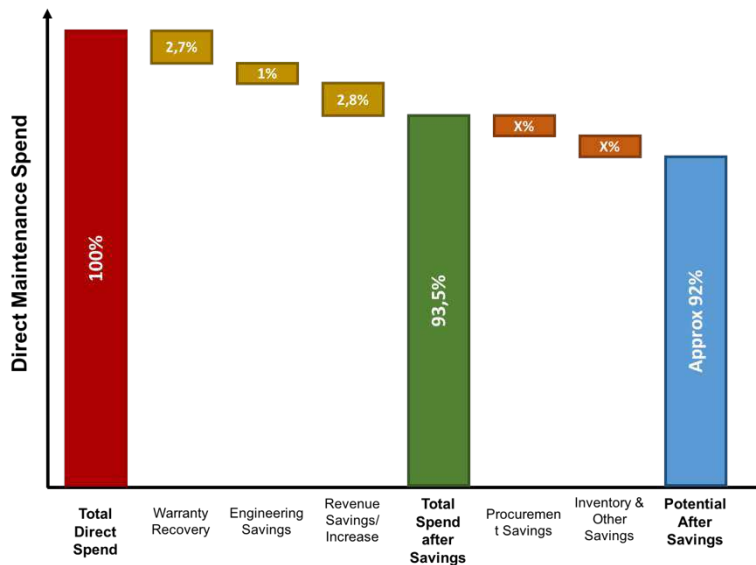


Figure 1 – High Level warranty management process

Effective warranty management is an information-driven process. Consequently, relying on spreadsheets, manual procedures, and memory will not provide sufficient visibility and responsiveness. The limitations of existing enterprise systems may also make warranties too difficult to identify and track. Warranties are therefore best managed within a common, purpose-built information system that is actively integrated with existing maintenance and supply chain solutions.

Warranty Management and Profitability

The savings opportunities afforded by proper warranty management affect the profitability of the organization in a direct and indirect manner. Any asset in service that fails prematurely will not only disrupt the planned maintenance schedule, but it may also reduce the expected production throughput.

Effective warranty management recovers some of the maintenance costs, but also draws attention to deficiencies in areas such as product and supplier quality or business process performance. This enables corrective actions to be implemented to avoid future warranty events, therefore improving plant and equipment availability and reliability, production output, and ultimately the company's profitability.

Understanding the nature of the direct and indirect savings is necessary in order to build the warranty business case.

Direct Savings

A sizeable portion of direct maintenance spend is recoverable through legitimate warranty claims. This immediate revenue opportunity tends to be overlooked when

business is good, which benefits suppliers of warrantable items at the expense of the asset owners.

Each potential warranty claim is a request for compensation from the supplier and therefore a receivable to the asset owner. Claims for new equipment (capital spend), new spares (operational spend), and rebuilt parts (capital or operational spend) represent the low-hanging fruit since the savings are available from day one.

Indirect Savings

Indirect savings from warranties are less apparent but potentially more consequential. The information derived from cohesive warranty management processes improves maintenance effectiveness, which drives equipment and plant reliability improvements that in turn increase production throughput and quality.

Moreover, greater equipment reliability lowers the total maintenance spend; procurement costs are lowered due to more effective strategic sourcing; transportation costs are reduced due to supply consolidation; and stocking levels and associated inventory costs will decrease.

It is important to remember that every warranty claim is the consequence of an undesirable event, and although warranted equipment repair costs can be recovered, the failure of that equipment is a red flag. Tracking such events and learning from them is the key to maximizing profitability.

Better Decisions – Better Results

Armed with evidence that asset performance is lacking, strategic business decisions can be made, whether replacing the vendor, renegotiating the contract, redesigning the equipment, or taking other measures to extend the life of the equipment. The savings potential afforded by the greater knowledge base crosses multiple business functions as described in the savings areas discussed below.

Reliability and engineering

When the focus is on improving reliability rather than solely recovering spent dollars, strategic decisions made over time will improve the likelihood that the equipment and spares will last longer than the stated warranty period. Reliability professionals can use the knowledge gained from tracking warranties to improve equipment maintenance strategies, and design engineers can use it to improve their design criteria and specifications. Improving reliability in this manner reduces direct maintenance spend (capital and operational) by deferring the need to replenish equipment and parts since they have a longer useful life.

Typical reliability improvement initiatives that increase overall equipment reliability by as much as 10% will in turn result in a potential production increase of approximately 1%. Effective warranty management can contribute an estimated 20% of that increase in reliability if conducted in combination with a formal defect elimination and reliability improvement program.

Maintenance spend

Direct maintenance spend is reduced when asset failures are reduced because fewer purchases of equipment, components, and spare parts are required. For instance, if failures are reduced by 15% or reliability increases by 15%, maintenance spend could reduce by up to the same percentage. Although each of the following direct maintenance savings areas could individually save a company up to 3-5%, a more conservative estimate is recommended when building a business case.

- Selection of higher quality equipment or spares will reduce failures and increase equipment reliability, resulting in fewer spares and equipment purchases.
- Selection of higher quality suppliers will reduce failures and increase equipment reliability, resulting in fewer spares and equipment purchases.
- Improvements in plant and equipment design will reduce failures, resulting in fewer spares and equipment purchases.
- Eliminating failures caused by external factors (and therefore not eligible for warranty recovery) will extend equipment life, resulting in lower direct maintenance spend.

Procurement

Combining warranty information with procurement data provides knowledge that was previously lacking on supplier performance, such as exposing which brands or vendors are consistently underperforming or exceeding standards. As a result, better purchasing and contracting choices are possible. Preferred vendors can be rewarded in the form of additional business in return for better warranty terms, coverages, and product and material discounts. Procuring from fewer, higher quality suppliers improves a company's ability to negotiate favorable contracts.

Inventory management

Storeroom inventory can be right-sized to reflect higher equipment reliability and less frequent purchases, and alternative sourcing and stocking models can be negotiated. Consolidation of shipments from fewer vendors results in more economical shipping costs. Service level improvements may be seen in stock availability, on-time deliveries, order and order line fulfillment, and more.

There is a statistical correlation between the equipment failure rate and the quantity of spares required to be stored in inventory. Using the Poisson distribution, one may expect between 5-10% reduction in operating capital required for every 10%

improvement in equipment and spares reliability. The savings potential of 5-10% is based on history obtained through the application of a proven inventory optimization model. In order to conduct a proper calculation of these benefits, one would require accurate failure data, supply lead times, and detailed bill of material (BOM) information.

Supplier relationships

Sharing accurate and comprehensive warranty data with suppliers can increase the level of trust and strength of the partnership. Better supplier relationships encourage the suppliers to improve the quality of products and/or services rendered. They also promote supplier involvement in new plant and equipment designs and in technical “fit-for-purpose” reviews, where the suppliers can assist in ensuring the best equipment selection for a specific application.

Training and compliance

Increasing the degree of standardization on equipment and parts simplifies training requirements, knowledge transfer, and regulatory and statutory compliance (e.g., supplier diversity, localization, inspections, etc.). Training budget savings are possible due to the consolidation and simplification of maintenance strategies, which leads to improved maintenance quality. Organizations can also save on insurance costs due to increased statutory compliance, and reduce the penalties paid for noncompliance.

Additional continuous improvements

Though the goal is to recover 100% of all potential warranty claims, some will be denied due to failures on the part of the asset owner. Identifying and correcting these internal factors will generate savings in the form of increased claim success rates and/or availability improvements due to fewer equipment failures.

Examples of potential weaknesses include poor warehousing and storage practices, improper equipment and material handling procedures and practices, operators not following operating procedures, maintenance crafts not following proper procedures, ineffective maintenance strategies, incorrect cleaning practices, sub-standard design, insufficient skills training, and bad management decision making.

Building the Business Case

Developing a convincing business case for an effective and integrated warranty management system requires some careful analysis and planning. This section discusses how to build a warranty business case, followed by the real life example of a VIZIYA WorkAlign Warranty Tracker business case developed for a mining company.

Best practices for developing a warranty business case include the following six steps:

- 1. Understand the priorities:** Given the savings potential of effective warranty management, it is essential to prioritize the effort. Since 20% of equipment and commodities consume 80% of maintenance spend on average (and therefore will provide 80% of the warranty returns), the first step is to determine which assets will be the primary focus of analysis. This is also where the most effort will ultimately be placed during contract negotiation, supplier rationalization, etc.
- 2. Define who will do what:** Custodians of the warranty management program must be identified early on in the process. Ideally, management of the process should be a function of one or more dedicated resources rather than a part-time responsibility of planners, schedulers, or maintenance supervisors. Someone running a shop or doing preventive and corrective planning will have shifting priorities and little time to effectively manage warranties. One should therefore clarify:
 - Will the responsibility fall on an existing department or individual, or
 - Should it be delegated to a new department or new hire?
- 3. Understand the pitfalls within the data:** It is most likely that warranty data quality will be lacking, and therefore certain assumptions will be required. Implementing a warranty program is an opportunity to improve the underlying data, and the benefits of correction will ripple throughout the organization.

For instance, if the procurement system is missing data fields, integration with the warranty system may help to fill these gaps. If material types are too general, it can make the collection of data and the eventual warranty management a struggle. If the quality and consistency of work order feedback is poor, or materials are not ordered through work orders, then the necessary data to determine potential warranties may not be available.

Cleaning the data during implementation will lead to better warranty management as well as improvements to work planning, scheduling, lifecycle costing, and more.

- 4. Decide upon and build a framework for the business case:** Centering the business case on key opportunities with quantifiable savings is a more efficient process that will produce more compelling results. Decide upfront what to include and exclude, and how the savings will be calculated.

For example, how easy will it be to relate improved equipment reliability to any increases in production output, and will the organization be able to sell any additional products produced? If the company is in a capped market environment where it is difficult to increase market share, then increased

equipment reliability will not result in increased revenue, and therefore one can exclude this from the calculation.

Another example could be the level of strategic sourcing in place at the company. If strategic sourcing has been extensively rolled out and regular supplier rationalization is conducted, then the savings potential for the warranty initiative will be difficult to claim. However, if strategic sourcing is not already in place, then warranty management presents a significant savings opportunity.

5. **Gather the data and calculate the business case:** Once agreement is reached on what will be included and excluded in the business case, it is time to gather all the necessary data and calculate the savings and return on investment (ROI).
6. **Validate against existing "manual" savings achieved:** Compare the calculated savings of the proposed warranty program against the current warranty process savings, even if the current process is manual or varies between business units or departments. If there is no current warranty process or savings, then that in itself is a validation for the new program. If the calculated savings are more than 5% of the total maintenance spend, they are probably overstated and should be adjusted down to a more conservative number.

Mining Company – Example Business Case

A mining client of VIZIYA was considering implementing the VIZIYA WorkAlign Warranty Tracker solution and associated processes. VIZIYA was asked to assist in developing a business case to justify the capital allocation. The objective was to illustrate how the immediate and ongoing, direct and indirect savings would allow the company to quickly recapture the implementation costs, and in the process drive long-term improvements in reliability, throughput, and profitability.

Mining production is accomplished using complex, mission-critical equipment that is expensive to maintain. Great care is required to ensure maximum asset uptime and reliability in order to meet the maintenance budget and production goals. However, this mining company was putting these goals at risk by not methodically tracking warranties or managing warranty claim-related information. Any warranty claims made were on an ad hoc, manual basis.

To begin building the business case for a formal warranty process and system, the company narrowed its focus to the 15-20% of equipment types that would produce the greatest returns. Since the company's operations cover conventional and trackless underground operations and various processing plants, only key production equipment was considered.

For the prioritized equipment types, the following warranty related information was sought from the existing enterprise resource planning (ERP) system:

- The specific equipment and/or components covered by warranties
- The various terms and conditions covering each of the items under analysis
- When the items were purchased and installed
- If a replacement was performed within the applicable warranty period
- The reason for the replacement (e.g., component failure)

However, since the company had not previously gathered nor tracked all of this information, and since it was found that the quality and consistency of work order feedback was not as originally hoped for, some assumptions were made in order to complete the study. The following elements formed the basis for the business case:

- Eleven material groups were selected, covering components such as motors, engines, shafts, gearboxes and pumps, to name a few.
- Some equipment categories and related material groups were excluded, including items such as agitator spares, crushers, ball mills, compressors, cylinders, conveyor belting, and power transmission.
- Historical spend (2014 and 2015 financial years) on the chosen equipment was downloaded from the ERP, and the evaluation team took into account the timing of the transactions and an average warranty coverage period of one year across the various equipment groups.
- The quality of work order and warranty data was assessed to identify additional gaps and opportunities for improvement.

Next, the responsibility for managing the warranty program was discussed. Rather than adding new positions or appointing additional resources, the company decided to reorganize the Maintenance Planning department and establish a Rotables Department that would manage the rotating equipment and also be custodians of the new warranty processes.

VIZIYA and the client then discussed the potential savings, and the client decided on the following business case framework:

- Direct savings from warranty recovery for the selected material groups based on three scenarios:
 1. Materials drawn or ordered in financial year 2014 against a specific technical object, and drawn or ordered again in financial year 2015 against the same technical object: 100% of these savings were included in the calculation.
 2. Materials drawn or ordered in financial year 2014, and drawn or ordered again in financial year 2015: The total savings obtained from the first calculation were deducted from the 2014 calculated total.

The result was then multiplied with the maximum of 8% savings from warranties.

3. Materials drawn or ordered in financial year 2015 that can be a potential warranty claim should they be drawn or ordered again within a year: A savings percentage of 8% was also applied to this total.
 - Equipment reliability and engineering savings due to better maintenance strategies and improved equipment designs: Only a 1% reduction in maintenance spend was used as a conservative estimate.
 - Increased production due to improvements in equipment reliability and availability: Since production output can be affected by many factors, it was agreed that only a 0.2% increase would be used within the business case.

The client agreed that certain potential savings components would be excluded from the framework due to separate business improvement initiatives already underway. Exclusions from the warranty business case framework included:

- Savings as a result of improved contract negotiations that lead to reduced purchase prices or more favorable warranty terms and conditions
- Savings due to the possible reduction in inventory
- All potential savings from improved supply chain practices such as reduced order processing costs, transportation costs, etc.

In addition, costs for additional resources were excluded from the business case framework since the company's Rotables Department would take responsibility for the warranty process.

Based on the agreed upon framework, the data was analyzed and the results fed into the ROI calculations. Following are the results:

- **Warranty recovery savings of 2.7% of total direct maintenance spend.** Note that this is a conservative estimate, as the analysis does not include all of the possible warrantable asset categories.
- **Engineering-related savings of only 1% of total direct maintenance spend.** Note that these savings are assumed to only kick in after approximately 18 months, since the data required for analysis would not be available from day one.
- **The 0.2% increase in production revenue could result in an equivalent savings of an additional 2.8% of direct maintenance spend.** These savings are also assumed to only kick in approximately 18 months after implementation.
- **The above savings resulted in an ROI of at least 120% over a five-year period with a conservative payback within 12 to 18 months.** This assumes that all costs are paid upfront with no risk-sharing model in place.



Figure 2 – High-level warranty management process

As a last step, the total calculated savings were validated against the current warranty management savings that one of the company’s mining operations had realized within the prior 12 months. (None of the other mines had been submitting warranty claims). This one business unit’s manual and spreadsheet-driven process was focused on LHD Engines and Torque Converters only. Simply by paying attention to when those items were purchased and managing them through a spreadsheet, that business unit was already realizing direct warranty savings of 0.1% of total company direct engineering spend.

The spreadsheet-driven savings at the single business unit served as a very conservative testament to the potential total savings that could be achieved by implementing a formal, automated warranty program across all mines.

Presenting these spreadsheet-based savings compared to the calculated savings and conservative ROI potential of a VIZIYA-supported warranty program cinched the commitment of senior management to proceed with VIZIYA on this engagement.

Choosing the Right Tools

When a decision is made to more effectively track and manage warranty claims, choose a tool that is best for the task in order to maximize the results.

VIZIYA WorkAlign Warranty Tracker is a purpose-built maintenance warranty tracking solution that not only pays for itself in less than one year, but also drives business improvement initiatives. It is tied directly to the equipment and suppliers associated with work orders in the existing corporate asset management system (ERP/EAM), allowing warranty claims to be automatically presented for review. Specifically, VIZIYA WorkAlign Warranty Tracker is able to:

- Capture multiple warranty contracts against suppliers
- Link multiple warranty coverages against a single warranty contract
- Document coverage durations by calendar or by consumption

- Link consumption coverages to the measurement points and document in the ERP/EAM
- Link warranty coverages to equipment, sub-assemblies, and materials without the need to serialize all components
- Track warranty status of equipment, sub-assemblies, and/or material
- Flag existing work orders for warranty eligibility on equipment and component/spare levels
- Create the warranty claim document against the work order and functional location/equipment
- Document reasons why warranties against eligible work orders are not claimed, cancelled, or rejected
- Prioritize warrantable work orders
- Generate a warranty claim document and capture transactions against the warranty claims
- Attach all supporting documents against contracts and warranty claim documents
- Analyze warranty data such as supplier performance, warranty claim success per supplier and equipment type, warranty savings per period, and reasons for non-claims, rejections, and cancellations per supplier
- Share warranty performance information to promote ongoing reliability analysis and equipment selection process improvements
- Provide information needed to drive design and manufacturing quality improvements
- Provide the information needed to improve vendor negotiations and selection

VIZIYA WorkAlign Warranty Tracker is just one component of the VIZIYA WorkAlign product suite, which also includes solutions for maintenance analytics, budgeting, scheduling and mobility, and integrates with all of the leading maintenance systems in real time – including Oracle eAM, JDE CAM, Peoplesoft CAM, SAP PM, IBM Maximo, Infor, and EMPAC. The robust and tightly integrated software portfolio is unique in its functionality and ease of use.

- WorkAlign Analytics calculates and presents crucial metrics, allowing companies to monitor progress against business objectives and optimize their software, processes, and business results.
- WorkAlign Maintenance Budgeting automatically creates budgets based on existing work plans, and supports zero-based budgeting for unplanned work. It has the ability to assure adequate budgets for critical assets and establish tighter limits for lower priority assets.
- WorkAlign Scheduler allows maintenance supervisors and planners to easily filter down to the most urgent jobs for the most critical assets in a particular location, and make better planning and scheduling decisions. It also manages

resource availability for employees and contractors, with or without an HR interface.

- WorkAlign Warranty Tracker flags work orders that have warranty coverage and presents a claim for users to review and submit. It also provides knowledge of critical equipment that routinely fails in early life so that vendor choices and purchasing decisions can be improved.
- WorkAlign Mobile puts essential data in the hands of users in the field to ensure awareness of priorities, and simplifies work execution and data collection, such as entering failure codes, inventory transactions, or new work requests.

Modern day organizations seeking to rein in maintenance costs will realize tremendous value from a formal warranty management program. Building an effective warranty business case as outlined in this paper will help to ensure the vision is fully realized.



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About VIZIYA

Headquartered in Hamilton, ON, with offices in Barcelona, Perth, Atlanta and Dubai, VIZIYA is the industry leader providing bolt-on software products to enhance ERP-based asset maintenance systems. VIZIYA's proprietary WorkAlign™ Product Suite delivers seamless integration into existing ERP systems. With over 51,000 users at 850 sites across 6 continents, the world's best companies use VIZIYA products to help them better maintain their assets. Visit viziya.com for more information.