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Measuring Property Management Risk and Loss: Step One Toward Managing Property on a Foundation of Risk, Cost, and Benefit

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This is a period of ever-tightening defense budgets and continuing pressure on the public sector to be more commercial-like. Property policies, practices, and regulations are increasingly being challenged and changed. In these times, we must be leaders in understanding and defining the value of our profession from a commercial standpoint so that we can provide the right services to our customers and explain and defend the value of those services. To do so, we must step outside current property management practices, regulations, and oversight. We must learn to think and speak in the language of those who fund us--a financial language of risk, cost, and benefit. Regardless of regulation and oversight, our bosses are demanding that we demonstrate (financially) the benefits of current practice, or else. This article is intended to be the beginning of an effort to understand and define our profession in terms of risk, cost, and benefit so that we can meet these new challenges.

The first step in this effort must be defining and measuring risk, cost, and benefit. Our costs, although sometimes difficult to capture, are easy to understand: they are almost exclusively the effort, both within and without the property management organization, involved in managing property. Unfortunately, property risks and benefits are not so simple or so well understood. Generally, risks and benefits are identified and measured through physical inventory results: potential and actual shortages. This paper will explore the weaknesses in the current understanding and use of shortage information as the yardstick for property management risks and performance. It will define a new framework for understanding the purpose and value of property management. And finally, it will set a course for a new method of measuring and valuing physical inventory shortages. This new method will yield accurate and useful measures of property management risk and benefit. Once risk and benefit are accurately understood and measured, it will be possible to evaluate, adjust, and explain property management practices and regulations from a commercial, financial perspective; it will be possible for us to be the leaders in redefining the purpose and value of the property management profession for today's environment.

Our Current Yardstick of Risk and Benefit

One measure every property management organization maintains is the sum of the costs of physical inventory shortages. For historical and regulatory reasons, we almost always use acquisition cost to value property. Shortage figures are consistently used by property managers and their overseers to measure the success or failure of property management efforts. Potential shortage dollars are the most common quantification of property management risk we share with management in order to ensure sufficient funding or management attention. Yet within the property management profession, we are aware that valuation by acquisition cost is misleading and not particularly useful for decisionmaking. We also know that all property listed as a shortage is not necessarily

lost or needed by the organization. So why do we continue to use summed acquisition cost as a yardstick to measure the value of our services and the success of our programs, processes, and people?

As we proceed, we will realize that the inappropriate and misleading nature of this yardstick is a reflection (and a cause) of our own real confusion about our customers, their needs, our purpose, and the value we add to our organizations. It is not surprising that we cannot convince others of our value when we do such a poor job quantifying it for ourselves.

We need an improved yardstick so that we can:

- Determine appropriate professional standards, regulations, and policies;
- Better serve our customers and be valued by them;
- Evaluate the effectiveness of our property systems; and
- Provide information to management and overseers in a form that is useful for financial and strategic decisionmaking.

To develop this yardstick, we must first understand how a company values and thinks about its property and its property management services. We must look at our profession with new eyes—not from our own perspective, but from the perspective of a CEO, a CFO, or a shareholder. We must understand how property management supports our organization's mission and success.

Why an Organization Invests in Property

A purchase of personal property is an investment of organization funds—funds that might have been used, for example, toward a new employee, training, a new building, raw materials, or consulting services. An organization invests its money in property for the same reason it invests any funds—in the expectation that it will profit by the investment (or, in the case of the government or a nonprofit firm, that the property will add value to organization products and services at least equal to the cost of that property).

A simple example is machinery purchased for an assembly line. The machinery will presumably generate revenue by fabricating products throughout its useful life. Products at the finished end of the assembly line will exceed in value the raw materials at the beginning of the line by a sufficient amount to pay for the labor and equipment entailed in fabricating them, with profit leftover. If the life-cycle costs of the property are an appropriate portion of the fabrication cost—and the products are sufficiently profitable—then the investment in property has paid off.

It is more difficult both to imagine and to calculate the manner and extent to which furniture or office or lab equipment adds to the value of an organization's products and services, but the principle remains the same. The organization only wishes to purchase those assets that will maximize the value added to its products and services.

What then is the current value of a property item to the organization owning it? It is the profit yet to be reaped from utilizing the property to improve the value of products

and services or the net return the organization would receive for selling the item, whichever is greater. Only this value accurately reflects the potential impact on organization from losing the property. In short, personal property is an investment of capital intended to add value to products and services, and its current value to the organization is the anticipated profits it will generate.

The Purpose of Property Management

The purpose of managing personal property is to maximize the benefits from the organization's investment in that property. Property management can enable an organization to buy only what it needs, achieve maximum value (or utility) from its current holdings, and receive maximum return when it divests itself of personal property. These aims are accomplished through processes designed to prevent unnecessary purchases, identify and address idle or underutilized property, and ensure that holdings are not lost, stolen, damaged, or otherwise rendered unfit for use. (Excess divestment is also an important property management process but is outside the scope of this article.) Managing property well ensures that the right equipment is available in the right place at the right time with a minimum investment of resources.

The risk of failing to manage property effectively is twofold:

- potential unnecessary purchases the business might make due to poor utilization of current holdings, misplacement or loss of property, or failure to maintain property in usable condition; and
- potential losses in productivity from any of the above.

All failures in property management will result in one or both of the above. These consequences may have ramifications as well, such as loss of credibility and trust with customers, stakeholders, and shareholders.

Property management is a risk management endeavor. The risk being managed is the cost of unnecessary purchases and of losses in productivity that might reasonably result from not having the right property available for use when needed. The investment in property management processes—the cost of property management (both inside and outside the property management organization)—is the premium the organization has chosen to pay to protect that property or, in other words, to reduce the risk. The losses that result despite this investment (e.g., purchases made to replace inventory shortages or one day's downtime in a factory) are the consequence of the remaining risk, the risk the company has chosen to accept—very much like the deductible on an insurance policy.

Having established a framework for understanding property and property management, we can now seek a more appropriate yardstick for property management value and performance.

Property Misconceptions

There are three major misconceptions in our current yardstick that lead to significant confusion regarding the role and value of property management. These misconceptions

concern appropriate property valuation, the nature of inventory shortages, and the utility of property to our organization. Clarity in these areas will enable us to develop a better yardstick.

Appropriate Valuation for Property

There are many acceptable ways to value property and no one way is suitable for all purposes. The critical step in determining an appropriate valuation method is to identify the purpose for which the information will be used and the decisions that will be made based upon it.

Existing Valuations

Acquisition cost is useful for recording purchases and capitalizing costs. It is a sunk cost, meaning that the money is spent and cannot be reclaimed. Sunk costs are identified partly to remind ourselves not to allow them to influence decisionmaking. Our natural tendency is always to try to salvage our work and our investments. This can lead us to "throw good money after bad," to continue down the wrong road because we already have so much invested. The fact that we spent a certain sum on an item of property in the past shouldn't be our motive for spending money in the present trying to find it (or repair it, calibrate it, or use it); instead, we should focus on our present and future needs and take action to meet those needs, regardless of our past expenditures. The acquisition expenditure affected our financial position when we bought the item. That is over and done with. What will affect our finances (and our success) today is whether we have the right property, fit for use, in the right place at the right time, and how much we spend achieving this goal. Whenever we use acquisition cost (for our total holdings or the value of shortages, for example), we encourage management to violate the first rule of sunk costs—we encourage them to use these numbers prospectively.

Depreciation is useful in determining the costs and profitability of our products and services. Depreciated "value" is not really a value at all. Depreciation is a mechanism to allocate the purchase cost of an asset over its anticipated useful life in an attempt to match revenue with the costs that were incurred to generate that revenue. Depreciated "value" is therefore just the part of the purchase price of property that we haven't yet "charged" to any products. While a systematic reduction in value over time, based upon age and anticipated life, is an improvement over using acquisition cost throughout the life of an asset, depreciated value still has a very poor correlation to the current value of property to the organization.

Market value is useful when we are deciding whether to sell an item and when we are considering liquidation of a plant or business. It allows us to compare the price the property would bring on the open market to the value we are currently receiving from retaining the asset. Market value is at least a current valuation, but it does not reflect the value of the item to us in our current business situation.

New Valuation

While the above valuations all have their uses, they will not help us measure or manage property risks. Our new yardstick should help an organization understand its property management risks, measure the effectiveness of its property management systems in managing these risks, and measure the remaining (unmanaged) risk so that it can anticipate expenses associated with unnecessary purchases and lost productivity. We need information useful for setting cost-effective targets for property performance (e.g., physical inventory loss rates), improving property management processes based on cost-benefit analyses, evaluating property management performance, and sizing the property management function.

Therefore it is paramount that our valuation be an accurate measure of risk. The risks associated with property are unnecessary purchases and lost productivity. In other words, risk should be measured in both the cost of lost productivity that might reasonably occur if the item could not be located and in the cost of replacing the item. Thus the correct valuation for property risk or property loss is replacement cost.

We must supplement replacement cost by identifying and measuring significant losses in productivity associated with shortages. It may not be cost-effective or feasible to track lost productivity for all types of property in all environments, but a manufacturing operation will generally track what an hour of downtime costs the company and will record instances of downtime and their causes. Just as shortage lists provide a gauge of loss experience, downtime lists quantify productivity loss experience.

As anticipated, rethinking our valuation has effects well beyond the totals in our reports. We have also redefined the purpose of property management. Today, we value current holdings at acquisition cost, and in consequence, we fail to see them the way our customers do, as tools employed to generate value and profit. Today, we measure risk and value shortages at acquisition cost (and are rewarded and punished by management based on reports using this cost), and so we design, improve, and manage our systems to protect acquisition cost--rather than to ensure that property creates value and profit. Therefore, we cannot just change our reports; we must change our approach, our policies, and our processes. For example, in many environments, it is likely that the cost of productivity losses will far exceed those associated with replacing lost property. This discovery would lead an organization to emphasize the management of items critical to productivity (instead of the most expensive items or items most likely to be lost, stolen, or misused). If we succeed in changing our processes to align with this new valuation, we will achieve improved customer focus and reduce conflicts between overseers and our internal customers. We will also be speaking to management in their own terms—current finances—and giving them appropriate information for decisionmaking.

Shortages: What They Are and What They Aren't

Correcting valuation alone will not provide an acceptable yardstick. We must also examine the validity of summing the value of all shortages.

Shortages are the natural starting point for any quantification of property risk and loss

experience. They are useful for root cause analysis of the failure points of property systems and they provide a good rough gauge of control effectiveness. They are, however, just as great a source of miscommunication and confusion as valuation. In order to understand how to use shortages in our yardstick, we must first agree on what they are.

A shortage is an item whose existence and location are not verified after an organized effort to do so. There are two major sources of uncertainty in shortage data: 1) The size of the shortage list is a function not only of the success of control processes but also of the effort devoted to the physical inventory; and 2) We do not know the true control condition of the items that remain on our shortage list at the end of the inventory; we don't know for certain if they are, indeed, lost or out of control.

We are very familiar with the first source of uncertainty. As property managers, we know that we can atone somewhat for the sins of the past (poor control and poor records) with a fervent and prolonged physical inventory effort. A greater investment of time and effort during physical inventory will generally reduce our shortage list. Within broad limits, we can achieve many different physical inventory results by varying our level of effort. Physical inventory is therefore not an exact science, and the information it produces is only an approximate measure of our current performance in managing property. Physical inventory results are only comparable from year to year and from organization to organization to the extent that the effort devoted to the physical inventories was similar in volume and duration.

The second source of uncertainty is our lack of knowledge regarding the items we failed to locate. We do not know if a shortage is still in our company's possession or not. All we know is that, at the time of the physical inventory, the item was not located. It remains possible that the shortage is fully utilized somewhere at our site but was missed during inventory. It is true that the greater the effort we devote, the more likely it is that the items remaining on our shortage list are truly out of our control (already dispositioned, lost, stolen, cannibalized, etc.), but at no time does a physical inventory tell us whether a particular shortage is truly out of control or the cause of our current inability to locate it.

Shortages fall into three categories: temporary loss of control (those items that are misplaced or misrecorded but still in our possession); permanent loss of control; and paper shortages (those items that were fully in control until the moment of an appropriate dismantlement, cannibalization, destruction, transfer, or other disposal action, which action went unrecorded). The portion of our shortages that were temporary losses of control can be quantified in retrospect as they are found and written back onto our books. It is difficult, if not impossible, to distinguish between the remaining two categories: permanent losses and paper shortages. All we know is that these two categories make up the remainder of shortages: the write-offs that never get written back on.

From our own property management perspective, perhaps these categories are not all that important—as all three cases indicate a failure of property management: either a loss of control or an inaccurate record. We design and improve our systems to prevent

all three. However, from the perspective of quantifying property risks to organization success, there are significant differences among the three categories.

The only risk caused by a paper shortage is the possibility that the organization would make a poor (utilization or purchase) decision based on an inflated figure for its total number of a given item (a temporary inflation that will be corrected by the physical inventory). A CEO would regard this as a very minor risk.

Temporary shortages can include items that were simply missed by the physical inventory though they remained fully utilized. Temporary shortages also include items that are misplaced and might be needed in the meantime. Therefore, temporary shortages can and do result in unnecessary purchases and lost productivity, though only in some cases.

Permanent shortages (that are not paper shortages) are the most likely to result in lost productivity or replacement purchases. These items must have been lost, stolen, or inappropriately dismantled, cannibalized, or destroyed.

In summary, we must acknowledge first that our list of shortages varies with our effort, and second that we do not really know whether any individual item on the list is temporarily misplaced, permanently lost, or was never actually lost. There is no justification for considering each shortage a loss and calculating that loss at replacement value.

Utility

The last consideration for our yardstick is utility. From our corporate vantage, we concluded that the present and future utility of a property item in generating profits is the determinant of the item's value to the organization. It therefore follows that the loss of certain items will have no financial effect on our organization. If the item was idle and unneeded, and its market value was negligible, its loss is insignificant. Many will be quick to point out that idle property should be excessed immediately and that an event such as this is an indication of weaknesses in a property system. While this may be true, it does not change the fact that such property exists in all organizations and is not missed when lost.

While idle property is the exception, not the rule, there is good reason to believe that it makes up a substantial portion of shortages. Organizations do not tend to lose what they need and use on a regular basis. This is analogous to our experience with property in our personal lives. We rarely permanently lose cars, keys, purses, or wallets because we quickly note their absence (before their trail is cold) and will invest significant effort to locate them. We do not need a system of checks and balances or a record to control these items. Our regular use of them and quick investigation when we misplace them keeps them close at hand. On the other hand, we often lose control of items less important to us and infrequently used—a novel, the manual to the TV, a cake stand, or jumper cables. Some of these items are critical when needed, and some are not. The lack of jumper cables could cost us valuable time and an expensive tow, while we may never miss the book, or never replace it even if we do.

Since the value of property to our organization is the future profits it will generate or its market value, whichever is greater, idle and unneeded property with negligible market value is worthless to our organization. In fact, far from being an asset, such property is costing us money in storage, management, and, perhaps, maintenance expenses, with no prospect of generating any revenue; it is a liability. We must therefore conclude that even permanent shortages may not have a negative effect on our financial circumstances.

Review of Conclusions

Property management has been reexamined from a corporate vantage, rather than from within the framework of current property management practices and regulations. From this vantage, property is purchased to add value to organization products and services. Its value to the organization is the future profit stream it will generate. Property management is the reduction of unnecessary purchases and lost productivity using risk management techniques. This involves ensuring that the right property is available at the right time, fit for use, for the minimum investment of resources (comprising acquisition cost and management expenses).

Several weaknesses inherent in using the summed acquisition cost of inventory shortages as a yardstick for property management performance were identified:

- Acquisition cost is not an accurate measure of property risk or the financial impact of property losses on our organization, and it is not an appropriate valuation for financial or strategic decisionmaking;
- Shortages are not always losses, and some shortages have no negative impact on our operations; and
- The impact of a property loss on our operations is dependent upon the utility of that property to our organization; lost property with negligible market value that was idle and unneeded has no negative impact on operations.

These conclusions only highlight what we professionals already knew: just how misleading headlines of "millions of dollars lost" really are. We now know that to return to measuring risk as the sum of the acquisition costs of all physical inventory shortages, claiming this is all money out of company pockets, we have to make several false assumptions:

- Every item not located in inventory was needed by our organization;
- No shortage will ever be found again;
- No shortage ever has an impact on productivity;
- Every shortage causes a purchase; and
- Replacement items always cost the same as the original.

Yet we wonder why our numbers are not considered credible and management does not adequately value our information, our processes, and our people. It is not surprising that our customers complain when we demand that they locate an idle, unneeded, 386 computer; they know that it has no value to them and negligible value to the organization or anyone else, and they are too wise to invest their energy trying to conserve and manage a sunk cost gathering dust on the corporate ledger. We are

using the wrong yardstick.

What's the Right Yardstick?

What we need is a yardstick that will measure the risks we manage and the reduction in risk our systems achieve. When we can tell management that cutting our property management budget in half will likely result in $600,000 in unnecessary purchases and an additional week of unscheduled downtime on the production line, we will have a useful yardstick. When management starts fretting about losing another week on the schedule and finding $600,000 out of their current year's budget, we will have their attention, we will have provided valuable management information, and no one will question our value or our professionalism.

Ideally, the right yardstick is the sum of the cost of unnecessary purchases and the cost of lost productivity due to property management failures (not having the right property in the right place at the right time, fit for use).

The Shortage List

The shortage list remains the best place to start. It is important to note, however, that there are instances of lost productivity and unnecessary purchases that will have no effect on this list. An item can be lost, needed, and found again in the interval between inventories, and it might cause a loss of productivity or even an unnecessary purchase in that time. Or again, an item might be purchased when it would be more cost-effective to locate an idle like item onsite or establish a sharing or pooling arrangement. Events like these will not be captured by a measure based on the shortage list. If the risks of these events is deemed significant, they must be assessed and measured separately.

Lost Productivity

As previously mentioned, lost productivity could be a very significant risk for certain classes of property at certain sites. If there is reason to believe that misplaced property has caused significant productivity losses, it would be invaluable to gather some experience data. Production managers generally record instances of downtime, their causes, and their duration and impact in order to measure and improve productivity, so they should be good sources for this data. Ideally, experience over the past few years, adjusted for process/business changes, should be a reasonable guide for the unmanaged risk that exists despite the current property management system.

It may also prove useful to discuss the organization's risk tolerance with senior production management. What event magnitudes are acceptable? At what magnitude do events become catastrophic? At what probability does the production line regard a risk as negligible? Where do property management risks fit within the scope of risks encountered and managed by the program or production line?

A useful figure for our purposes would be the average annual productivity loss incurred due to property failures.

Unnecessary Purchases

As always, the appropriate elements of a measure are much easier said than done. Two basic approaches to measuring unnecessary purchase expenses present themselves. One can survey owning organizations, asking for each shortage: "Did this shortage cause a purchase? If so, what was the amount of the purchase?" Or perhaps more usefully: "Would this item be needed and in use if it were located?"

Alternatively, in many instances, one could work directly from shortage data and draw reasonable conclusions. Shortages could be sorted by age. Items within a year of purchase could be presumed to have been replaced at acquisition value, while items past service life could be presumed either to be idle or to have needed replacement. Common-use items (e.g., computers in any environment or an oscilloscope in a lab environment) within their service lives could be presumed to be needed and in use (and valued at the cost of the service life years lost). Specialty items, more likely to cause lost productivity or to still be in use past service life, might require more thorough analysis.

Sandia National Laboratories, a multiprogram engineering and science laboratory operated by Lockheed Martin for the United States Department of Energy, is initiating a study of recent shortages in an attempt to identify an appropriate valuation tool for them, following the principles identified in this article. The objective is to measure (or approximate) unnecessary purchase expenditures due to property shortages. It is anticipated that a blend of the above approaches will prove most effective. One product of this study will be a broadly applicable valuation method for shortages. If establishing a measure using the model appears resource-intensive, a second product will be a formula for a quick, rough estimate of shortage valuation based on acquisition value and perhaps other characteristics of an organization's shortages (e.g., age).

If Sandia's study results in a useful, cost-effective model, the Laboratories intends to seek other organizations willing to use the model on their recent shortages in order to validate and/or improve it and to gather more diverse data to enhance the accuracy of the "quick formula." It is our intent to publish the results of the study in the Property Professional.

Summary

The purpose and value of property management has been reexamined from a corporate vantage, without regard to current regulatory or oversight restrictions. Property management was determined to be an effort to manage the risks of unnecessary property purchases and lost productivity. This new framework was used to examine the most common property performance measure: the summed acquisition value of physical inventory shortages. This yardstick was demonstrated to be inadequate for assessing property management risk and performance. A path forward to an improved performance measure was developed.

Perhaps more important than redefining measures will be the re-examination and redesign of property management policies and processes based on risk, cost, and benefit. In the age of downsizing, reduced defense budgets, tightening government

budgets, the FAR re-write, acquisition reform, and the National Performance Review, we property managers must redefine our business in value-added terms or allow others, much less knowledgeable of and sympathetic to our profession, to do it for us. As we in the NPMA seek to broaden our constituency, embrace commercial industry, and set universal property standards, we must also broaden our minds and our conception of property management. If this is accomplished, then we, the current, largely public-sector membership of NPMA, will benefit far more from our new members than they will from us.

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