Wiley BEST PRACTICES

INVENTORY Best Practices

SECOND EDITION

Steven M. Bragg

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Second Edition

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Preface

This book contains more than 200 best practices related to every phase of a company's activities involving inventory—its purchase, receipt, storage, picking, and shipment—and includes 29 new best practices that are unique to this second edition.

Special functions related to inventory contain so many best practices that they deserve their own chapters—production, transaction processing, planning, warehouse layout, cost accounting, and even bills of material. Further, you need to measure a company's progress in achieving best practices, so a comprehensive list of inventory-related measurements has been added to a separate chapter (including new metrics in this second edition). Also, a number of the inventory chapters refer to specific inventory procedures, which are helpfully detailed in yet another chapter. Further, an entirely new chapter describes the impact of constraint management systems on how you should deal with inventory. Given the large number of best practices presented, the Appendix summarizes them for you. If there are any concerns about the meaning of any inventory-specific terms, the glossary contains an inventory dictionary. In short, this book is the go-to source for inventory improvements.

Inventory Best Practices is designed for people in many parts of a company. The controller can use the cost accounting, inventory transactions, inventory measurements, and policies and procedures chapters to increase the efficiency of inventory accounting. The CFO can use virtually all the chapters to determine what options are available for reducing a company's investment in inventory, while the purchasing manager can use the purchasing chapter as well as the planning and management chapter to increase that department's effectiveness in procuring inventory. The warehouse manager is a particular beneficiary, with the inventory receiving and shipping, storage, picking, transactions, and warehouse layout chapters devoted to that area of expertise. The engineering manager can also benefit from the inventory planning and management and bill of materials chapters. Finally,

the CEO can use the entire book to gain a sweeping view of the scope of inventory best practices on all aspects of a company.

This book is intended to be a buffet table of ideas from which one can sample. There is no clear set of inventory best practices recommended for all companies, all the time. Instead, given the wide array of industry-specific issues and inventory flow concepts in use, you should skim through the book and select only those best practices resulting in the most obvious improvements. The Appendix, which summarizes all the best practices, is a good place to conduct this review. However, a company's business plan will likely change over time, so it is worthwhile to refer back to the book from time to time to see what other best practices may have become applicable as a result of those changes.

Finally, you do not install a best practice merely by ordering that it be done. The "Make it so!" approach of Captain Picard of the *Enterprise* does not always work. Instead, read Chapter 1, "Success or Failure with Best Practices," to learn what factors will impact a best practices implementation and how you can increase your odds of success.

In short, use *Inventory Best Practices* to improve all aspects of your company's business that relate to inventory. This can result in far less time spent recording inventory transactions, reducing the company investment in inventory, shrinking its scrap and obsolete inventory expense, improving the efficiency of the warehouse, and shortening order cycle time. Enjoy!

Steven M. Bragg
Centennial, Colorado
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Success or Failure with Best Practices

This chapter is about implementing best practices. It begins by describing the various kinds of best practices and goes on to cover those situations where best practices are most likely to be installed successfully. The key components of a successful best practice installation are also noted, as well as how to duplicate best practices throughout an organization. When planning to add a best practice, it is also useful to know the ways in which the implementation can fail, so there is a lengthy list of reasons for failure. The chapter also addresses a number of planning issues related to the implementation of inventory best practices. Only by carefully considering all of these issues in advance can one hope to achieve a successful best practice implementation that will result in increased levels of efficiency.

Types of Best Practices

This section describes the two main types of best practices, each one requiring considerably different implementation approaches.

The first type of best practice is an incremental one. This usually involves either a small modification to an existing procedure or a replacement of a procedure that is so minor in effect that it has only a minimal impact on the organization, or indeed, on the person who performs the procedure. The increased level of efficiency contributed by a single best practice of this type is modest at best, but this type is also the easiest to install, since there is little resistance from the organization. Only when this type of best practice is used in large numbers is there a significant improvement in the handling of inventory and the investment in inventory.

The second type of best practice involves a considerable degree of reengineering. This requires the complete reorganization or replacement of an existing function. The level of change is massive, resulting in employees either being laid off or receiving vastly different job descriptions. The level of improvement in the handling or investment in inventory can be several times greater than the old methods being replaced. However, the level of risk matches the reward, for this type of best practice meets with enormous resistance and consequently is at great risk of failure. A single best practice implementation of this sort can reap major improvements.

Thus, given the considerable number and size of the differences between the incremental and reengineering best practices, it is necessary to first determine which category a best practice falls into before designing a plan for implementing it. Given the difficulty of implementation for a reengineering project, it may even be necessary to delay implementation or intersperse a series of such projects with easier incremental projects in order to allow employees to recover from the reengineering projects.

Most Fertile Ground for Best Practices

Before installing any best practice, it is useful to review the existing environment to see if there is a reasonable chance for the implementation to succeed. The following points note the best environments in which best practices not only can be installed but also have a fair chance of continuing to succeed:

- *If benchmarking shows a problem.* Some organizations regularly compare their performance levels against those of other companies, especially those with a reputation for having extremely high levels of performance. If there is a significant difference in the performance levels of these other organizations and the company doing the benchmarking, this can serve as a reminder that continuous change is necessary in order to survive. If management sees and heeds this warning, the environment in which best practices will be accepted is greatly improved.
- *If management has a change orientation.* Some managers have a seemingly genetic disposition toward change. If a department has such a person in charge, there will certainly be a drive toward many changes. If anything, this type of person can go too far, implementing too many

projects with not enough preparation, resulting in a confused operations group whose newly revised systems may take a considerable amount of time to untangle. The presence of a detail-oriented second-in-command is very helpful for preserving order and channeling the energies of such a manager into the most productive directions.

- *If the company is experiencing poor financial results.* If there is a significant loss, or a trend in that direction, this serves as a wake-up call to management, which, in turn, results in the creation of a multitude of best practices projects. In this case, the situation may even go too far, with so many improvement projects going on at once that there are not enough resources to go around, resulting in the ultimate completion of few, if any, of the best practices.
- *If there is new management.* Most people who are newly installed as managers want to make changes in order to leave their marks on the organization. Though this can involve less-effective best practice items such as organizational changes or a new strategic direction, it is possible that there will be a renewed focus on efficiency that will result in the implementation of new best practices.

In short, as long as there is willingness by management to change and a good reason for doing so, then there is fertile ground for the implementation of a multitude of best practices.

Planning for Best Practices

A critical issue for the success of any best practices implementation project is an adequate degree of advance planning. The following list describes the key components of a typical best practices implementation plan.

- *Capacity requirements.* Any project plan must account for the amount of capacity needed to ensure success. Capacity can include the number of people, computers, or floor space that is needed. For example, if the project team requires 20 people, then there must be a planning item to find and equip a sufficient amount of space for this group. Also, a project that requires a considerable amount of programming time should reserve that time in advance with the programming staff to ensure that the programming is completed on time. Further, the management team must

have a sufficient amount of time available to properly oversee the project team's activities. If any of these issues are not addressed in advance, there can be a major impact on the success of the implementation.

- *Common change calendar*. If there are many best practices being implemented at the same time, there is a high risk that resources scheduled for one project will not be available for other projects. To avoid this, use a single-change calendar, so that planned changes can be seen in the context of other changes being planned. You should examine the calendar for conflicts every time you make a change to it. Also, make it available for general review by all of the project teams.
- *Contingencies*. Murphy's Law always applies, so build contingencies into the project plan to cover any issues where you think there is a reasonable chance of failure.
- *Dependencies*. Properly sequence the steps required to complete a project, so that any bottleneck steps are clearly defined and have sufficient resources allocated to them to ensure that they are completed on time.
- *Funding requirements*. Any project requires some funding, such as the purchase of equipment for the project team or software licenses or employee training. Consequently, include in the project plan the dates on which funding is expected, so that dependent tasks involving the expenditure of those funds can be properly positioned.
- *Review points*. For all but the smallest projects, there must be control points at which the project manager has a formal review meeting with those people who are responsible for certain deliverables. You should build these review points into the plan, along with a sufficient amount of time for follow-up meetings to resolve any issues that may arise during the initial review meetings.
- *Risk levels*. Some best practices, especially those involving a large proportion of reengineering activities, run a considerable risk of failure. In these cases, it is necessary to conduct a careful review of what will happen if the project fails. For example, can the existing system be reinstituted if the new system does not work? What if funding runs out? What if management support for the project falters? The answers to these questions may result in additional project steps to safeguard the project, or to at least back it up with a contingency plan in case the project cannot reach a successful conclusion.

- *Total time required.* All of the previous planning steps are influenced by one of the most important considerations of all—how much time is allocated to the project. Though there may be some play in the final project due date, it is always unacceptable to let a project run too long, since it ties up the time of project team members and will probably accumulate extra costs until it is completed. Consequently, you should continually revise the existing project plan to account for new contingencies and problems as they arise, given the overriding restriction of the amount of time available.

The elements of planning that have just been described will all go for naught if there is not an additional linkage to corporate strategy at the highest levels. The reason is that although an implementation may be completely successful, it may not make any difference, and even be rendered unusable, if corporate strategy calls for a shift that will render the best practice obsolete. Thus, the proper integration of low-level best practices planning with high-level corporate planning is required to ensure that the correct projects are completed.

Given the large number of issues to resolve in order to give an implementation project a reasonable chance of success, it is apparent that the presence of a manager who is very experienced in the intricacies of project planning is a key component of an effective project team. Consequently, acquiring such a person should be one of the first steps to include in a project plan.

This section described in general terms the key components of a project plan that must be considered in order to foresee where problems may arise in the course of an implementation. We now turn to a discussion of the impact of time on the success of a best practices implementation.

Timing of Best Practices

The timing of a best practice implementation, the time it takes to complete it, and the pacing of installations have a major impact on the likelihood of success.

The timing of an implementation project is critical. For example, an installation that comes at the same time as a major deliverable in another area will receive scant attention from the person who is most responsible for using the best practice, since it takes a distant second place to the

deliverable. Also, any project that comes on the heels of a disastrous implementation will not be expected to succeed, though this problem can be overcome by targeting a quick and easy project that results in a rapid success—and that overcomes the stigma of the earlier failure. Further, proper implementation timing must take into account other project implementations going on elsewhere in the company or even in the same department, so there is no conflict over project resources. Only by carefully considering these issues prior to scheduling a project will a best practice implementation not be impacted by timing issues.

In addition to timing, the *time* required to complete a project is of major importance. A quick project brings with it the aura of success, a reputation for completion, and a much better chance of being allowed to take on a more difficult and expensive project. Alternatively, a project that impacts lots of departments or people, or that involves the liberal application of cutting-edge technology, runs a major risk of running for a long time; and the longer the project, the greater the risk that something will go wrong, objections will arise, or funding will run out. Thus, close attention to project duration will increase the odds of success.

Also, the concept of pacing is important. This means that a best practices implementation will be more likely to succeed if only a certain number of implementations are scheduled for a specific area. For example, if corporate management wants to install several dozen different types of best practices in five different departments, the best implementation approach is to install one best practice in a single department and then move to a different department. By doing so, the staff of each department has a chance to assimilate a single best practice, which involves staff training, adjustments to policies and procedures, and modifications of work schedules. Otherwise, if they are bombarded with multiple best practices at the same time or one after another, there is more likelihood that all of the best practices will fail or at least not achieve high levels of performance for some time. In addition, the staff may rebel at the constant stream of changes and refuse to cooperate with further implementations.

Implementing Best Practices

The implementation of any best practice requires a great deal of careful planning. However, planning is not enough. The implementation process

itself requires a number of key components in order to ensure a successful conclusion. This section discusses those components.

One of the first implementation steps for all but the simplest best practice improvements is to *study and flowchart the existing system* about to be improved. By doing so, one can ascertain any unusual requirements that are not readily apparent and that must be included in the planning for the upcoming implementation. Though some reengineering efforts do not spend much time on this task (on the grounds that the entire system is about to be replaced), the same issue still applies—there are usually special requirements, unique to any company, that must be addressed in a new system. Accordingly, nearly all implementation projects must include this critical step.

Another issue is the *cost-benefit analysis*. This is a compilation of all the costs required to both install and maintain a best practice, which is offset against the benefits of doing so. These costs must include project team payroll and related expenses, outside services, programming costs, training, travel, and capital expenditures. This step is worth a great deal of attention, for a wise manager will not undertake a new project, no matter how cutting-edge and high-profile it may be, if there is not a sound analysis in place that clearly shows the benefit of moving forward with it.

Yet another implementation issue is the *use of new technology*. Though there may be new devices or software on the market that can clearly improve the efficiency of a company's operations, and perhaps even make a demonstrative impact on a company's competitive situation, it still may be more prudent to wait until the technology has been tested in the marketplace for a short time before proceeding with an implementation. This is a particular problem if there is only one supplier available offering the technology, especially if that supplier is a small one or with inadequate funding, with the attendant risk of going out of business. In most cases, the prudent manager will elect to use technology that has proven itself in the marketplace, rather than using the most cutting-edge applications.

Of great importance to most best practice implementations is *system testing*. Any new application, unless it is astoundingly simple, carries with it the risk of failure. This risk must be tested repeatedly to ensure that it will not occur under actual use. The type of testing can take a variety of forms. One is volume testing, to ensure that a large number of employees using the system at the same time will not result in failure. Another is feature testing, in which sample transactions that test the boundaries of the possible

information to be used are run through the system. Yet another possibility is recovery testing—bringing down a computer system suddenly to see how easy it is to restart the system. All of these approaches, or others, depending on the type of best practice, should be completed before unleashing a new application on employees.

One of the last implementation steps before firing up a new best practice is to *provide training* to employees in how to run the new system. This must be done as late as possible, since employee retention of this information will dwindle rapidly if not reinforced by actual practice. In addition, this training should be hands-on whenever possible, since employees retain the most information when training is conducted in this manner. It is important to identify in advance all possible users of a new system for training, since a few untrained employees can result in the failure of a new best practice.

A key element of any training class is procedures. These must be completed, reviewed, and made available for employee use not only at the time of training, but also at all times thereafter, which requires a good manager to oversee the procedure creation and distribution phases. Procedure writing is a special skill that may require the hiring of technical writers, interviewers, and systems analysts to ensure that procedures are properly crafted. The input of users into the accuracy of all procedures is also an integral step in this process.

Even after the new system has been installed, it is necessary to conduct a *post-implementation review*. This analysis determines if the cost savings or efficiency improvements are in the expected range, what problems arose during the implementation that should be avoided during future projects, and what issues are still unresolved from the current implementation. This last point is particularly important, for many managers do not follow through completely on all the stray implementation issues that inevitably arise after a new system is put in place. Only by carefully listing these issues and working through them will the employees using the new system be completely satisfied with how a best practice has been installed.

An issue that arises during all phases of a project implementation is *communication*. Since there may be a wide range of activities going on, many of them dependent on each other, it is important that the status of all project steps be continually communicated to the entire project team, as well as all affected employees. By doing so, a project manager can avoid such gaffes as having one task proceed without knowing that, due to

changes elsewhere in the project, the entire task has been rendered unnecessary. These communications should not just be limited to project plan updates, but should also include all meeting minutes in which changes are decided on, documented, and approved by team leaders. By paying attention to this important item at every step of an implementation, the entire process will be completed much more smoothly.

As described in this section, a successful best practice implementation nearly always includes a review of the current system, a cost-benefit analysis, responsible use of new technology, system testing, training, and a post-implementation review, with a generous dash of communications at every step.

How to Use Best Practices: Best Practice Duplication

It can be a particularly difficult challenge to duplicate a successful best practice when opening a new company facility, especially if expansion is contemplated in many locations over a short time period. The difficulty with best practice duplication is that employees in the new locations are typically given a brief overview of a best practice and told to "go do it." Under this scenario, they have only a sketchy idea of what they are supposed to do, and so create a process that varies in some key details from the baseline situation. To make matters worse, managers at the new location may feel that they can create a better best practice from the start, and so create something that differs in key respects from the baseline. For both reasons, the incidence of best practice duplication failure is high.

To avoid these problems, a company should first be certain that it has accumulated all possible knowledge about a functioning best practice—the forms, policies, procedures, equipment, and special knowledge required to make it work properly—and then transfer this information into a concise document that can be shared with new locations. Second, a roving team of expert users must be commissioned to visit all new company locations and personally install the new systems, thereby ensuring that the proper level of experience with a best practice is brought to bear on a duplication activity. Finally, a company should transfer the practitioners of best practices to new locations on a semi-permanent basis to ensure that the necessary knowledge required to make a best practice effective over

the long term remains on site. By taking these steps, a company can increase its odds of spreading best practices throughout all of its locations.

A special issue is the tendency of a new company location to attempt to enhance a copied best practice at the earliest opportunity. This tendency frequently arises from the belief that one can always improve on something that was created elsewhere. However, these changes may negatively impact other parts of the company's systems, resulting in an overall reduction in performance. Consequently, it is better to insist that new locations duplicate a best practice in all respects and use it to match the performance levels of the baseline location before they are allowed to make any changes to it. By doing so, the new locations must take the time to fully utilize the best practice and learn its intricacies before they can modify it.

Why Best Practices Fail

There is a lengthy list of reasons why a best practice installation may not succeed, as noted in the following points. The various reasons for failure can be grouped into a relatively small cluster of primary reasons. The first is the lack of planning, which can include inadequate budgeting for time, money, or personnel. Another is the lack of cooperation by other entities, such as the programming staff or other departments that will be impacted by any changes. The final, and most important, problem is that there is little or no effort made to prepare the organization for change. This last item tends to build up over time as more and more best practices are implemented, eventually resulting in the total resistance by the organization to any further change. At its root, this problem involves a fundamental lack of communication, especially with those people who are most impacted by change. When a single implementation is completed without informing all employees of the change, this may be tolerated, but a continuous stream of them will encourage a revolt. In alphabetical order, the various causes of failure follow:

- *Alterations to packaged software.* A very common cause of failure is that a best practice requires changes to a software package provided by a software supplier. After the changes are made, the company finds that the newest release of the software contains features that it must have and so it updates the software—wiping out the programming

changes that were made to accommodate the best practice. This problem can also arise even if there is only a custom interface between the packaged software and some other application needed for a best practice, because a software upgrade may alter the data accessed through the interface. Thus, alterations to packaged software are doomed to failure unless there is absolutely no way that the company will ever update the software package.

- *Custom programming*. A major cause of implementation failure is that the programming required to make it a reality either does not have the requested specifications, costs more than expected, arrives too late, is unreliable—or all of the above! Since many best practices are closely linked to the latest advances in technology, this is an increasingly common cause of failure. To keep from being a victim of programming problems, one should never attempt to implement the most "bleeding-edge" technology, because it is the most subject to failure. Instead, wait for some other company to work out all of the bugs and make it a reliable concept, and then proceed with the implementation. Also, it is useful to interview other people who have gone through a complete installation to see what tips they can give that will result in a smoother implementation. Finally, one should always interview any other employees who have had programming work done for them by the in-house staff. If the results of these previous efforts were not acceptable, it may be better to look outside the company for more competent programming assistance.
- *Inadequate preparation of the organization*. Communication is the key to a successful implementation. Alternatively, lack of communication keeps an organization from understanding what is happening; this increases the rumors about a project, builds resistance to it, and reduces the level of cooperation that people are likely to give it. Avoiding this effect requires a considerable amount of up-front communication about the intents and likely impacts of any project, with that communication targeted not just at the impacted managers but also at all impacted employees, and to some extent even the corporation or department as a whole.
- *Intransigent personnel*. A major cause of failure is the employee who either refuses to use a best practice or who actively tries to sabotage it. This person may have a vested interest in using the old system, does not

like change in general, or has a personality clash with someone on the implementation team. In any of these cases, the person must either be won over through good communication (especially if the employee is in a controlling position) or removed to a position that has no impact on the project. If neither of these actions is successful, the project will almost certainly fail.

- *Lack of control points*. One of the best ways to maintain control over any project is to set up regular review meetings, as well as additional meetings to review the situation when preset milestone targets are reached. These meetings are designed to see how a project is progressing, to discuss any problems that have occurred or are anticipated, and to determine how current or potential problems can best be avoided. Without the benefit of these regular meetings, it is much more likely that unexpected problems will arise, or that existing ones will be exacerbated.
- *Lack of funding*. A project can be canceled either because it has a significant cost overrun exceeding the original funding request or because it was initiated without any funding request in the first place. Either approach results in failure. Besides the obvious platitude of "don't go over budget," the best way to avoid this problem is to build a cushion into the original funding request that should see the project through, barring any unusually large extra expenditures.
- *Lack of planning*. A critical aspect of any project is the planning that goes into it. If there is no plan, there is no way to determine the cost, number of employees, or time requirements, nor is there any formal review of the inherent project risks. Without this formal planning process, a project is very likely to hit a snag or be stopped cold at some point prior to its timely completion. On the contrary, using proper planning results in a smooth implementation process that builds a good reputation for the project manager and thereby leads to more funding for additional projects.
- *Lack of post-implementation review*. Though it is not a criterion for the successful implementation of any single project, a missing post-implementation review can cause the failure of later projects. For example, if such a review reveals that a project was completed despite the inadequate project planning skills of a specific manager, it might be best to use a different person in the future for new projects, thereby increasing his or her chances of success.