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Measurement for Distribution

Driving Operational Performance

Overview

This is part of MRSI's series on measurement for small and mid-size businesses, which includes white papers on various aspects of measurement in a variety of industries. This paper is focused on measurement of Operations in distribution companies.

Measurement is vital to drive performance and, as the saying goes, "what gets measured gets managed." Measures should be selected carefully and then connected to positions in the organization structure through formal reporting relationships and performance evaluation mechanisms.

Distributors need to select a variety of measures. For most small and mid-size firms, key among these will be measures of labor productivity in the warehouse and truck and driver productivity. In some distributors, customer service measures and measures of quality (on time delivery of what was ordered) are also required. Implementation is key and requires educating staff on the meaning and importance of measures, connecting the measures to root cause issues and acceptance of accountability and their ability to influence the numbers.

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Why Measure Anything?

Many managers in small and medium sized businesses mistakenly believe that measuring is expensive and therefore only for large companies. Others are self-taught and have never had the opportunity to find out what it is possible to measure. Both types of managers can benefit from awareness that knowing how one is doing is a fundamental human need. One reason people enjoy professional sports is that everyone knows the rules and everyone knows the score.

Measures provide a scorecard that people can use to strive to improve against. Measures also allow management to set clear expectations. Consider the difference between “keep the equipment productive” and “Keep the equipment operating at 85% productivity or better.” Clear expectations have been repeatedly shown to improve performance.

Measuring isn’t just about making people work harder. It is also about making people work smarter. With measures in place, people are also likely to get more creative and improve what they are doing. This works on two levels: First, expectations are set and people want to show that they can do better than the expectation, which usually requires working smarter as well as harder. Second, there is a reward for improvement—a significant improvement in process will show in the numbers that are posted and the individuals responsible will know that what they did is having an impact. There is also the belief that this impact will be recognized by others.

Measures also help managers with diagnosing of problems. For example, management may know that labor costs have increased but do they know that labor costs are up because a particular piece of equipment has been breaking down? A recently hired operator may think that the experienced downtime on that equipment is normal as they have not been exposed to any other operating performance. In short, the operator may not bring up the issue on their own but if standards and targets exist, management can target the problem and take action independently.

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Are Financial Measures Enough?

In short, no. In the era of cheap small business accounting systems, most companies have a reasonable idea of monthly and annual profitability. However, these figures are very high level and are focused on the overall outcome rather than the specific processes that may have caused the result. It is much like a football coach that focuses on whether they won or lost the game – the information isn't always actionable enough. The football coach is also going to want to know about passing yardage, fumbles, quarterback sacks, first downs, kick-off return yardage, and so on. These figures help the coach focus energy where it can best be utilized. If the problem is quarterback sacks, the coach knows to focus energy on the quarterback throwing more quickly, getting receivers open, or tightening the offensive line. Time spent with the place kicker would be largely wasted.

Team vs. Individual Measures

Generally speaking, individual measures are more effective in driving individual performance than team measures because the individual contribution is diluted in the numbers posted by the team. However, team measures are also effective in driving the performance of the individual. From the earliest times, humans have always gathered in groups. We all have a strong desire to please the other members of our team and to secure our social standing within the group. Peer pressure has a strong impact on performance.

It is also important to consider the dilutive effect as teams become larger. A team on a manufacturing line may be motivated to improve their productivity figures, but in a large factory, the effects of individual effort would be difficult to see in factory-wide productivity. Generally speaking the effect starts to become negligible once it is covered by about 100 people. Of course, if those people report into, say, a Production Manager, that manager can be held accountable as an individual.

In some instances, individual measures can lead people to perform less than optimally. If their performance requires a great deal of group interaction and cooperation, it may be necessary to emphasize group measures or give them

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group measures exclusively. Most companies have experienced someone who focuses on getting their “real work” done, while ignoring their paperwork, creating problems for the next person in the in the process. In some instances, including that next person in the team’s key measures can help refocus people on the broader impact of their actions.

In summary, individual measures are best at driving individual performance if teamwork is not a major element of the position, but team measures can also be effective at driving individual performance.

Accountability and Measures

It is crucial to identify which measures are important but unless staff accepts accountability for performance against those measures, they can simply become an academic exercise. All staff should know who is accountable for performance against which measure (this is supported through a properly designed organization chart). These measures should be reviewed regularly with senior management to create ongoing accountability. Regular informal reviews should then be augmented by a formal performance evaluation process that includes setting goals for performance against measures. At each review or each time processes are changed significantly, the goals should be reviewed. An organization that sets goals and follows up on variances is more likely to be perceived as fair and objective while at the same time improving its performance.

Do People Need Total Control Over Results?

No, they don’t. However, it helps if they can at least see that they can influence the measure. Most people accept that sales people should be measured on sales. But even sales people don’t have full control; they are impacted by product availability, competitor activity, pricing policies, manufacturing and delivery issues, and so on. People need to see that the number is not completely outside of their control. Similarly, people must have the authority to take the actions that they need to in order to perform against the measure.

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Risks in Measurement

One problem with setting measurable targets is that if they are not designed well, they can become too effective at driving performance against the measure to the exclusion of other important variables. In 1937, a paleo-anthropologist with the regal-sounding name Gustav Heinrich Ralph von Koenigswald was searching for the bones of early hominids in Java, present-day Indonesia. Since the bones are exceedingly rare (even now, the entirety of the bones of early man that have been found would barely fill the bed of a pickup truck) and because it is difficult to know where to look, he hit upon the idea of using low-paid locals to aid in the search and make his team able to cover a larger area. He offered 10 cents for each piece of bone they could bring him. To his horror, he found his labor force was smashing priceless bones into fragments in order to increase their incomes. Perhaps he could have paid per pound, or paid more for larger segments, or paid by the hour. Regardless, Koenigswald discovered how painful the results of measuring the wrong things can be.

In distribution, symptoms of getting it wrong can often be seen. Customers are screaming about late deliveries while productivity numbers are up or customers are ecstatic but costs are spiraling out of control, or efficiency and customer satisfaction are both up but inventory levels are rising and cash flow is tightening.

The right measures attempt to capture all of the appropriate things that result in success in a given company's unique context.

Does that mean you cannot move ahead with measures even if you do not yet have all of the measures you want? No! Start with the most valuable measures and make sure everyone is aware of any potential unintended consequences. Ensure that people know that, even though there may not be a measure yet for, say, quality, it is still something that they are going to be evaluated on and that management is paying attention to it.

Major Categories of Measure for Distribution

There are numerous measures that can be implemented in a distribution environment. A selection of these is shown below. The importance of each individual measure will vary for a particular company. For example, if customer complaints are an issue, measures of customer satisfaction are probably central. The abbreviations in the following table are:

- PU = Purchasing
- CS = Customer Service
- WH = Warehouse
- DL = Delivery / Trucks

Category	PU	CS	WH	DL	Description
Delivered Quality	✓	✓	✓	✓	Are customers getting what they ordered and when it was promised?
Error Rates	✓	✓	✓	✓	Is each group passing on an accurate reflection of what the customer asked for?
Labour Productivity	✓	✓	✓	✓	How many orders or deliveries are completed per person-hour or per truck? Is the pick path efficient?
Route Design				✓	How many stops are there per day? How many miles per route?
Inventory Accuracy	✓		✓		Does the system show correct inventory figures?
Inventory Efficiency	✓				How are inventory turns? Are backorders minimized?
Inventory Aging	✓				Are you buying more than you should? Are these



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Order Profitability		✓			buying patterns eroding cash flow? What about opportunity costs? Is there enough GM per order to justify a delivery or are customer service and growth objectives encourage taking on unprofitable customers and orders
Charges Waived		✓			Is customer service eroding margins and training customers in bad behavior by constantly waiving minimum order and rush charges?

Delivered Quality & Error Rates

Errors in taking and delivering customer orders very quickly erode profits. The time required to handle an order with even a single error that reaches the customer can often be several times the cost to take, pick, and deliver the order in the first place. Although it varies with the particular distributor and error, these costs can include: taking a customer service call, re-picking the order, applying a credit to the account, making a special delivery off schedule, restocking wrongly delivered product into the warehouse, restocking into the inventory system, and so on. Of course, this does not include the top-line impact of poor customer service.

MRSI typically recommends creation of a strict definition of an error, which is usually that any order that reaches the customer with any error (quantity or SKU) is wrong. Then errors can be tracked and expressed as a percentage of the total number of purchase orders or customer invoices. The key is consistency in applying these measures so that a baseline can be established.

A clear process for identifying these errors and tracking them must be created. This is not trivial since it requires recording information that many distributor's information systems do not currently maintain.

Labor Productivity

Obviously, great customer service is worthless without it being delivered at adequately low cost. This is primarily a function margins, wage rates and productivity. There are several ways to do this. Often, the easiest way is to use the number of orders processed per labor hour or per truck/driver.

With distributors that handle their own deliveries, a key aspect of productivity is the time that trucks leave in the morning. This can be vital to maximize the number of business hours that the truck spends on the road and to clear out the loading docks so that another truck can be loaded or deliveries received. Tracking the average time that each truck spends in the dock or the time that each truck leaves relative to schedule can increase the number of deliveries made by each truck, increasing the leverage from both the capital invested in trucks and the expense of the driver's wages.

One factor that can make focusing on the number of orders handled more difficult is the varying size of the orders. Some distributors are working to increase their average order size and others face seasonality that leads to larger orders at particular times of the year. In these cases, measuring productivity in terms of the number of SKUs or items delivered can make sense in addition to (or instead of) the number of orders handled.

Another area for improving and increasing the productivity is in the "Pick Path Design" of the warehouse. A properly designed picking route within the warehouse can increase labor productivity by 10% - 20%. It also helps in reducing labor fatigue and in improving service levels.

Route Design

Many distributors are sloppy in the creation and development of their routes. Over time, routes tend to get inefficient as new customers are added piecemeal. A good measure of this over time is the number of miles traveled per day or per drop. This will often increase in routes that are becoming

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inefficient. A side benefit of tracking this figure is that it can be used to hold drivers accountable for following the intended route.

After a ground-up redesign of routes, it is quite common to see the average number of miles driven across all trucks drop significantly (commonly 10-20%).

Inventory Accuracy

Inaccurate inventory leads to several problems. First, it can result in excessive search time for product in the warehouse when locations are wrong, which can reduce productivity in the warehouse and lead to trucks leaving late while pickers rush to find missing product. Additionally, material that simply “disappears” can lead to purchasing ordering the wrong product, leading to underutilized inventory dollars that would be better spent paying off debts, financing expansion, or reducing backorders and stock outs.

Inventory accuracy is best measured during annual audits, with spot-checks, or by having staff track accuracy issues as they run into them; the first two options are generally preferred since it is better not to have been measure themselves. A strict measure is easiest to implement where inventory is only considered accurate if both location and count are 100% correct.

Inventory Efficiency

It is usually impossible to offer customers a 100% guarantee of in-stock position on all products unless only a few SKUs are carried. Since customers generally demand quick delivery of some or all of the products in a distributor’s catalog, some inventory needs to be carried. Not having product in stock can lead to customer’s seeking another distributor for that product and possibly making that distributor their primary provider; other times it just means a lost sale or an annoying backorder. To control these costs, it can be helpful to track the number of backorders that are resulting, usually against some sort of baseline. So, for example, a company might track the percentage of orders that included a backorder or the total value of products currently on backorder (relatively to an average).

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Additionally, purchasing agents should be held to an overall measure of efficiency. This is the standard measure of inventory turns. This is calculated as follows. COGS is the cost of goods sold or total dollar cost of the product sold:

$$\text{Inventory Turns} = \$ \text{COGS} / \$ \text{Average Inventory}$$

There are a number of problems with implementing inventory turns in practice for some distributors. For example, in seasonal businesses, inventory levels are expected to vary by season, but the COGS figure is annual which results in a fluctuating turns figure. In some companies, this can be mitigated by using a 3 month trailing average COGS figure and multiplying by 4. Other times, a target inventory figure can be set by season based on forecasted volume, and staff can be measured as a percentage of this target.

Inventory Aging

For a successful distributor it is not only important to meet inventory turns target, it is also essential to not have “dead stock” in the warehouse. In order to get lower prices from the manufacturers, many distributors end up buying quantities that are significantly in excess of what they can sell. As market scenarios and consumer needs change, many such items become dead stock that cannot be sold. Such stock not only captures space in the warehouse, but also erodes cash flow. Distributors are advised not to fall into this very common trap. Regularly measure the amount of stock that has been in stock for an excessive period of time (this time varies by industries served).

Order Profitability

Many customers are simply not profitable. Many orders are also not profitable. Until the calculations are done to assess what the minimum size for an order is to provide contribution, many distributors simply do not know what their minimum order and customer sizes should be. Once these calculations are done, they can inform decisions about sales, minimums, and other charges. Growth in the dollars of gross margin generated in an average

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order is a key long-term driver of profitability in distribution and this figure must be managed.

Charges Waived

Waiving fees and minimums is a significant source of profit leakage for two reasons. First there is the fee itself that is lost. Second, the customer is “trained” to expect it to be waived and place unprofitable orders. This can be tracked in most systems by creating a product number associated with waived charges. Or if you have the luxury of a high-end or custom system, you may be able to force the entry of these figures by customer service people.

Next Steps

All the top distributors in their industries have implemented measures to make staff accountable and to drive improvement. As larger competitors continue to consolidate, small and mid-size companies must be certain to continually refine their operation to maintain their competitiveness. Consider the following questions before embarking your endeavor to install new process measures in your distribution facility.

- How will we prioritize the right measures?
- How will accountability for performance against the measures be created?
- How processes be changed to support tracking measures?
- Will our staff resist the measures or suggest that other staff are actually responsible? What will we do about it?
- Are there risks in implementing this in our company culture or with our union?
- Do we have the resources to proceed with this effort alone?
- What other barriers to implementation will we face?



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Resources

The Balanced Scorecard, Robert S. Kaplan and David P. Norton, Harvard Business School Press, Boston, Massachusetts

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