MASTER PRODUCTION SCHEDULE – THE PATH TO PERFECT PERFORMANCE!

Those of you running a business know that you have a lean organisation that gives wonderful customer service – apart from the odd exception! There are no panics – except sometimes, and the purchase flow into the factory, are worked upon, and are despatched within a short time to happy customers. Is it possible to make it work better?

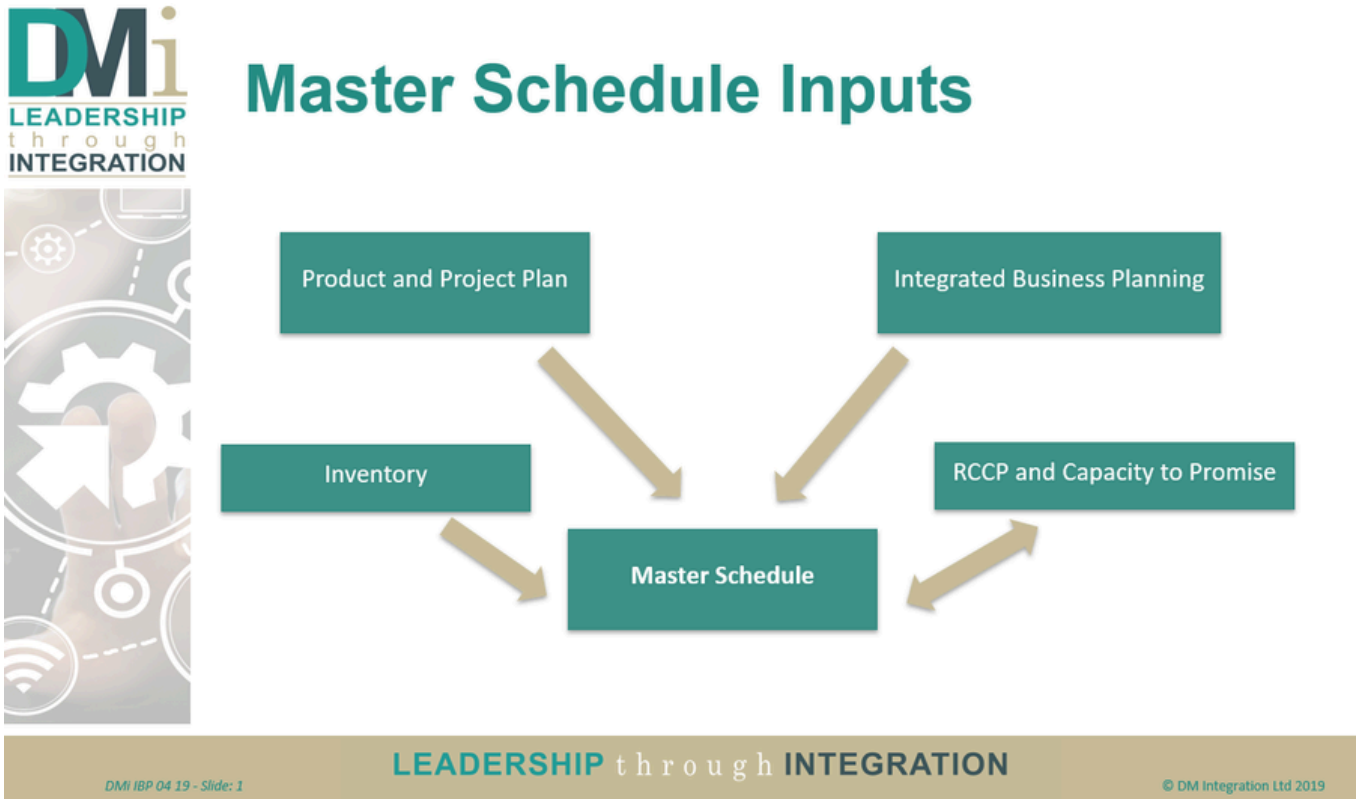
Let's see why it is so good and how it could be even better. The key to effective manufacturing is getting the Master Production Schedule right. This plan, if created carefully and used properly, will ensure that performance is effective, profits are improved, and customers satisfied.

Let's start with the basic concept: The Master Schedule is a "list of what we really expect to get out of the manufacturing week by week over the foreseeable future" (although week may be too coarse a timescale for those in the food or other fast moving industries). "foreseeable" implies that forecasting is necessary. And good product and project forecasting is the first essential element of Master Scheduling. In fact, the Master Schedule originates from two main sources:-

·The IBP process and forecast

·The Product and Project plans

The IBP plan stems from the Business Plan where the limitations of processes, materials and capacity are considered. Of course, if there are materials in stock then these don't need making and so the balance of material inventory is also taken into account. The Master Schedule should include stock build to anticipate a future excessive demand and to discount the demand where there is excess existing inventory.



Having taken this first step, then the next step is to make it achievable. Figure 1 Rough-cut-Capacity planning. If the potential bottleneck processes can cope with the forecast variability, then there is a good chance of success. The planner has to balance the real priorities to optimise the Schedule. A key rule of planning is only to plan up to the maximum capacity and no more! (Of course, but when management see the planner repeatedly pulling rabbits out of hats, they don't realise the supply of rabbits is unreliable!). It could be better to air on the realism side when assessing capacity.

REQUIREMENTS FOR A USEFUL MASTER SCHEDULE

If the Master Schedule is going to work, it needs to have special characteristics:

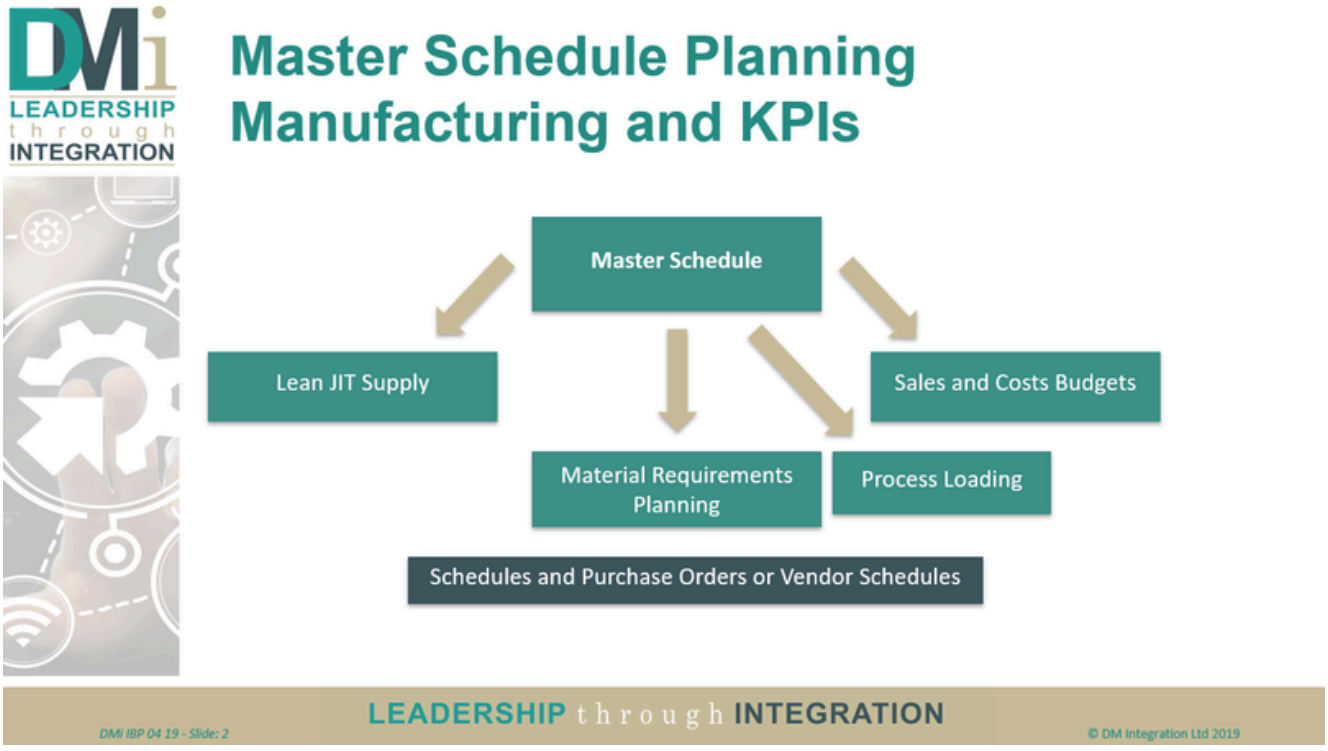
- Specific to individual products or projects
- Takes into account the real situation
- Doesn't keep altering
- Contributed to and used by all departments
- Covers cumulative and supply lead times
- Drives manufacturing and financial systems

The purpose of the master schedule is to separate the (unreasonable and fluctuating) demands of the customers, and produce a stable production plan, enabling there to be efficient and achievable customer service. The Master Schedule is a plan for running all the departments of a business, and many companies don't take advantage of this and so are continuously re-planning.

It is key that all departments work to the master schedule:

- Production work to the plan
- Purchasing agree materials are available to meet the requirements
- Management agree the Master Schedule and then use it for KPIs
- Technical/Engineering department brings new products/projects on line at the right time and don't change the plans
- Sales use "Capable to Promise" so that they do not overcommit capacity
- Accounts use it to predict cash flow and profits, and avoid creating inefficiencies through "overhead recovery"

It is particularly important that the manufacturing and procurement activities adhere to he results of the plan whether it is a simple process shop load, a continuous JIT operation or a traditional MRP plan (Figure 2)



FLEXIBILITY

Many companies waste a lot of money and effort by continuously re-planning their Master Schedules. This results from a combination of poor control and forward thinking. Businesses making to stock should be able to have effective schedules since they are insulated from the vagaries of customer demand by a heap of stock, and only have problems when they or their supplier have messed up. Businesses making to order have a greater challenge, especially providing unique products where the best they can do is generic product planning, or master planning the modules or materials.

Lead time is the big problem. If the components come from China on 8 weeks delivery and the production process takes another 2 weeks, then the Master Schedule needs to be firm for a total of 10 weeks. If there is a change of Master Schedule within the next 10 weeks, then the wrong materials are arriving. Sometimes this is not a problem as the materials can be used elsewhere, but this usually results is higher stockholding. Of course, it can also result in panic supply of the alternative materials. To avoid this the Master Schedule should also include “time fences”. Management should defend the Master Schedule against short term alteration. The “firm time fence” should be set within which the Master Schedule is set in stone (say 3 weeks ahead – not 3 minutes). Then there is the “Planning time fence” (maybe a further 7 weeks ahead in the example to cover the lead time). Within this time fence some flexibility for substitution is allowed, and it is up to the sales team to negotiate with customers or accept that lead time is outside this time fence.

People suggest that having the constraint of time fences means not responding to customer requirements. Quite the opposite is true! It is the poor forecasting of demand that causes the problem. Having a time fence ensures consistency of supply and meeting delivery promises.

The Master Schedule covers at a minimum, the longest time to buy and make products, but there is no real limit to how far ahead the scheduling goes, further the better. The forecast becomes less reliable further ahead, but there are often advantages in letting suppliers know about the level of ongoing demand, but not committing to it, hence the use of Vendor Scheduling versus purchase orders.

BUSINESSES WHO FIND THEY WANT TO IMPROVE PERFORMANCE MAY LIKE TO CONSIDER THE FOLLOWING POINTS:

1. **Spend more time forecasting so that when the sales orders arise, there is no need to change the plan**
2. **Ensure that sales people only offer customers lead times that agree with the Master Schedule or stock which already exists**
3. **Persuade Senior Management that people not sticking to the Master Schedule are damaging the company (profits and reputation)**
4. **Make the key production KPI "Adherence to Master Schedule" not output**
5. **Ensure that the Master Schedule is really achievable – and don't change it inside the time fences.**

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