ABCD Self Assessment checklist

The internationally recognised way to benchmark your planning and control methods

Summary Page

The Class "A" Checklist allows companies to benchmark their manufacturing planning and control processes (see www.bpic.co.uk/wcm_checklist.htm for a world class manufacturing checklist). Experience has shown that Class "A" companies achieve significant business benefits, increased market share and profitability. The 20 point checklist does not cover every area of business performance but it is our experience that if these 20 points are covered the other points such as cultural, leadership, customer focus and team working will follow.

- Please read all 20 questions on the checklist and complete the summary page below

No.	Question	A B C or D	Comment
1	Formal SOP Process		
2	Integrated Business Plan		
3	One set of Numbers		
4	Single Database		
5	Daily Planning Buckets		
6a	Stock Record Accuracy	Actual %	
6b	Bill of Material Accuracy	Actual %	
6c	Routing Accuracy	Actual %	
7	MPS is realistic		
8	Valid Material Plans		
9	Valid Capacity plans		
10a	Customer service OTIF/availability	Actual %	
10b	Factory Schedules on time	Actual %	
10c	Vendor Schedules on time	Actual %	
11a	Monthly Forecasts		
11b	Promises based on ATP		
12	Effective NPI & change controls		
13	Lead Time reduction programme		
14	User understanding		
15	Supplier Partnership		
16	Customer Partnership		
17	Monitoring customer service		
18	Complementary performance measures		
19	Monitors competitive position		
20	Continuous Improvement		

ABCD Checklist - the details

1. Company has a formal monthly Sales and Operations planning process chaired by the Managing Director.

A formal Sales and Operations Planning process normally consists of a series of meetings, finishing with a board level meeting at which key long term decisions are taken and the current progress against the Business Plan is reviewed. The plan has to cover at least 15 months so must be at a family level (dividing the product range into less than 20 families of products) and in monthly time periods. A spreadsheet is often used to produce the sales and operations plan.

The Sales and Operations Plan must have sufficient detail to be able to check that the critical resources (i.e. any resource that could limit the ability of the company to take on business) support the sales forecast. The Sales and Operations Plan should be able to be used as the principle tool to evaluate the company's current and future expected financial performance.

Class	Criteria question 1
A	Meets all the above criterion.
B	Plan is by part number not family, financial not units of production, not chaired by the most senior executive or not monthly.
C	Fails on more than one of the above criteria
D	Does not have any recognisable sales and operations planning process.

2. Company has a Business Planning process that is fully integrated with its operating system.

Each year a company will produce a financial business plan and a budget. The business plan typically covers 3 or more year and views the company's profitability based on its strategic position and intentions. It is clearly vital to ensure that this plan is fully supported by the operational capabilities of the company, and does not overstate the company's ability to sell or ability to produce.

Class "A" companies will prepare the budgetary numbers direct from the Sales and Operations plan, hence ensuring integration with the monthly review process. The financial performance will be predicted from the plan and gap analysis used to adjust the plan in the event of a shortfall. Operational performance will therefore be judged against the sales and operations plan and not financial output.

Class	Criteria question 2
A	Financials fully integrated, performance based on schedule achievement not financial output.
B	Annual budget is based on orders and forecast but operational performance is judged by both financial output and schedule achievement.
C	Annual budget is set up based on the financial value of current orders and forecast (without regard to manufacturing capacity) and operational performance is judged principally by financial output.
D	Annual budget not related to plans or current sales forecast.

3. All functions within the company use a common set of numbers to drive the business.

Class "A" companies work as a team because all functions work to a common set of numbers. Sales and marketing departments are working to sales forecasts or targets that are consistent with current production plans and confidently use the common database to make delivery commitments to customers. The

finance department uses the common database for costing, cash flow projections and preparing all financial information. Planning produce a schedule that is realistic and achievable. Manufacturing follow the daily schedule reporting any deviations or anticipated deviations from this plan.

Class	Criteria question 3
A	Fully integrated planning system.
B	Fully integrated planning system but some information extracted to spreadsheets or databases for customer delivery promises, schedules, bills of material or financials.
C	Fully integrated planning system but more than one spreadsheet or database used.
D	Most departments have their own sources of information.

4. There is a single database that drives all material and capacity planning

The basic fundamentals for class "A" planning is that there is a single database that controls all planning processes for materials and which controls capacity planning of people and equipment for the factory. This would be provided by an ERP/MRP II system that conforms to the standard laid down in "MRP II the standard system"*. All routing and/or process instructions are stored on the common database and used for capacity planning. The common database is the master source of bill of material information. If the company has a quality system accreditation such as ISO 9000, the process information and bill of material information with audited change procedures must be that held on the planning system.

Class	Criteria question 4
A	Capacity plans plus all internal and supplier schedules driven by the same data.
B	Either supplier or capacity data not integrated or engineering have their own bills of material.
C	More than one of the above criteria not met.
D	Most departments hold information independently on spreadsheets or databases.

5. System supports daily planning buckets and may be run daily (i.e. MPS, MRP and CRP).

The capacity and material planning system should run a minimum of daily. Technically, this can mean either that the planning system recalculates everything daily (regeneration), or calculates only those products affected by the changes made (net change) daily and regeneration weekly. Daily planning periods and updates are essential to be able to respond rapidly to changes and to be able to deliver on the day required rather than the week.

The system should calculate on the basis of no more than daily time intervals, allowing lead times to be set in days.

Class	Criteria question 5
A	MRP runs daily, daily manufacturing schedules available.
B	Daily schedules available, MRP not run daily but more than once per week
C	Either MRP run less than weekly or weekly schedules issued to operations.
D	No MRP system or MRP not used for planning.

6. Company has the appropriate levels of data accuracy to support business excellence

Stock Records are fundamental to the calculation of MRP, and to the calculation of stock and work in progress. 100 % accuracy is achieved when the actual count of part numbers by location is exactly equal to the quantities recorded on the computer for those part numbers and locations.

Where the method of counting gives some uncertainty (e.g. weigh counted parts or volume measurement), an agreed tolerance may be allowed on the count.

Stock record accuracy is normally established through continuous auditing of stock in each location so that all stock records are checked at least 4 times per year.

Enter the percentage accuracy in the summary page. For guidance:

Class	Criteria question 6a
A	Stock record accuracy 98% or better.
B	Stock record accuracy between 95% and up to 98%.
C	Stock record accuracy between 90% and up to 95%.
D	Stock record accuracy less than 90%.

Bills of Materials are considered 100 % accurate when each Bill of Material checked is correct in respect of:

Complete - everything consumed in the manufacture of the part is on the Bill of Material.
Part Number - the correct, unique, part numbers of all constituents.
Description – meaningful.
Quantity per – the correct amount needed of each constituent.
Unit of Measure – agrees with the quantity per.

Bill of material accuracy is established though a regular check of a sample of Bills of Materials each month, verified by the function responsible for the accuracy of the Bills of Materials when necessary, typically the technical or development department.

Enter the percentage accuracy in the summary page. For guidance:

Class	Criteria question 6b
A	Bill of material accuracy 98% or better.
B	Bill of material accuracy between 95% and up to 98%.
C	Bill of material accuracy between 90% and up to 95%.
D	Bill of material accuracy less than 90%.

Routings are considered 100 % accurate, when each routing or process instruction is correct in respect of operation number, operation description and work centre(s).

Set-up time (standard minutes or hours) and run time per piece (standard minutes or hours) should be included at each step where relevant and should be consistent. Accuracy of standards is not necessary for capacity planning as the historical output achieved (demonstrated capacity) is compared with the required output using the same standards.

Information about work centres in terms of queue and move times must be reviewed, and be reasonable for each work centre.

Enter the percentage accuracy in the summary page. For guidance:

Class	Criteria question 6c
A	Routing accuracy 98% or better.
B	Routing accuracy between 95% and up to 98%.

C	Routing accuracy between 90% and up to 95%.
D	Routing accuracy less than 90%.

7. The master production schedule is realistic in that there are no plans to produce that have dates in the past and there are no overloads against critical resources.

A key feature of the Master Production schedule, typically the daily production schedule of the sales item, is that all due dates on all Master Schedule items should be realistic and achievable. Any due date in the past, for instance, cannot be achieved and so will send incorrect messages about product availability. Due dates in the past will also result in incorrect plans for all related and dependent material. The start dates of order that are not yet released should also be in the future.

The master production schedule quantity should agree with the sales and operations plan (SOP) by family by month within an agreed tolerance.

Class	Criteria question 7
A	All master schedules realistic and achievable and in line with SOP.
B	Less than 5% of planned plus released master schedule works orders have due dates in the past or are unrealistic or not checked with SOP.
C	More than 5% of released master schedule works orders have unrealistic dates.
D	Master production schedule more a wish list than realistic.

8. Valid material plans exist for all components and ingredients of master schedule items.

There should not be any material plans for any materials, components, sub-assemblies or ingredients with requirements in the past.

There should not be any purchase orders or works orders with a release date or due date in the past.

All the action messages generated by the material planning system should be actioned every day. There should not be any re-schedule messages which cannot be actioned or resolved.

Class	Criteria question 8
A	All material plans for components, sub-assemblies, intermediate and purchased material and components are realistic and achievable. All messages actioned daily.
B	Most messages actioned daily and less than 5% of above category of orders have due dates in the past.
C	More than 5% of released orders in the above categories have unrealistic dates or messages not actioned daily
D	Schedules for above categories are more wish lists than realistic. Many messages not actioned.

9. Valid capacity plans exist for all work centres.

Rough cut capacity planning (RCCP) should be used each month to check that critical resources are in place to meet the sales forecast.

Work centres should have been set up for capacity planning purposes. Each work centre, whether a machine, or group of machines, a skill, or groups of people or an assembly line, should have a measured demonstrated capacity.

Each work centre should be regularly checked to ensure the planned capacity is the same as the demonstrated capacity, within an agreed tolerance (e.g. within 20% of the demonstrated capacity measured in standard hours on a week by week basis and within 5% cumulatively), unless an approved action plan exists to alter the demonstrated capacity.

The demonstrated capacity should be monitored for all work centres over a time period of a sufficient number of weeks to smooth out normal fluctuations.

Class	Criteria question 9
A	All work centre schedules within agreed limits and RCCP used.
B	Not more than 5% of work centre schedules outside agreed limits, RCCP used
C	More than 5% of work centre schedules outside agreed limits or RCCP not used.
D	Sales forecasts and/or manufacturing schedules not regularly checked for capacity

10. Company is committed to schedule achievement.

The company should measure achievement against each of the key schedules. For Make to Stock companies the principle customer service measure is the percentage of orders received where stock is available at the time of receipt of the order, one out of stock item is normally only counted once in the time period under consideration and out of stock items not ordered are not counted.. For other companies the measure is the percentage on time in full (OTIF) delivery of complete orders to customers on the promised date. Re-scheduled dates agreed with the customer in advance are allowed for this measure. Enter the percentage achieved. For guidance:

Class	Criteria question 10a
A	Stock availability or OTIF 98% or better
B	Stock availability or OTIF more than 95% and up to 98%
C	Stock availability or OTIF between 90% and 95%
D	Stock availability or OTIF less than 90% or not measured

Work orders completed on time (into stock) both for master schedule items and other parts. Re-scheduled dates agreed between planning and operations in advance are allowed. Enter the percentage achieved. For guidance:

Class	Criteria question 10b
A	Works orders on time 98% or better
B	Works orders on time more than 95% and up to 98%
C	Works orders on time between 90% and 95%
D	Works orders on time less than 90% or not measured

Purchase orders are on time only if the purchased parts are booked into stock, or available for use (if stock is stored at the point of use) on current date shown on the purchase order or schedule. Re-scheduled dates agreed with the supplier in advance are allowed. Enter the percentage achieved. For guidance:

Class	Criteria question 10c
A	Purchase orders on time 98% or better
B	Purchase orders on time more than 95% and up to 98%
C	Purchase orders on time between 90% and 95%

D	Purchase orders on time less than 90% or not measured

11. Forecasts are up dated at least monthly and customer order promising is directly related to the master schedule.

A company should operate some formal system of sales forecasting whether this is forecasting the actual end item sold to the customer, a group or family of products, the capacity that is required, or some mixture of capacity and materials. The forecast should be in units of production not value so that it can be used to drive the planning system through the master scheduling process. The forecast should be updated monthly (or more frequently). The revised forecast should be subject to a formal review process, as part of the Sales and Operations Planning process.

The sales forecast should always be produced by the sales or marketing departments as these departments have the best visibility of the market. The forecast accuracy should be measured monthly by the department responsible for forecasting, with a view to correcting significant deviations. Typically forecast accuracy is the actual orders received compared to the sales that were forecast at the cumulative lead time.

Class	Criteria question 11a
A	Forecast process as above.
B	Either forecast not updated monthly, not in production units, not produced by sales/ marketing or accuracy not monitored.
C	Two of the above criteria not met.
D	More than two criteria above not met.

As orders are received they should be subject to a formal demand management process as follows:

- If any part of the order was forecast, the promise date for the forecasted part of the order should be based on the "available to promise" (ATP) date shown on the planning system for the product (or family of products when forecasting at the family level).

- If the order was not forecast, a promise date should be given that will not effect forecast orders with reference to the planning department. Thus unforecast demand is often given a lead time of the cumulative lead time for the product unless there is product in excess of forecasted orders in the form of safety stock.

- The forecast should be reduced at least daily by the quantity ordered leaving a residual or unconsumed forecast.

The unconsumed part of forecast should be reviewed at least monthly.

Class	Criteria question 11b
A	Customer service base all promise dates on above demand management process.
B	Promise dates managed by master scheduler based on ATP, forecast consumed.
C	Some promise dates based on ATP, others given on an as required basis or forecast not consumed.
D	Promise dates given without regard to ability to deliver.

12. New product introductions (NPI) and engineering changes are managed effectively within the common system.

There should be a formal planning process for new product introduction (NPI). Material and capacity requirements for new products should be planned in the same way as material and capacity for existing products as soon as the new product developments starts.

Whenever changes to products are made, then there should be a formal process, with suitable documentation, to update the planning data.

Class	Criteria question 12
A	Full engineering change process for engineering and BOM changes and NPI planned within the integrated planning system from the start of the project.
B	Either engineering change process does not include BOMs or NPI planned independently and not introduced into the planning system until the design is finalised.
C	Poor engineering change process or NPI not planned until manufacturing due to start.
D	No engineering change process or NPI mostly unplanned and frequently miss scheduled dates

13. Company has a programme to reduce lead times, batch quantities, and inventory to gain competitive advantage. Results are visible.

A class "A" company should continuously be seeking to reduce lead times by reducing queues, waste, etc. and by reducing batch sizes. All of these activities will lead to a reduction in inventory.

There should be a specific programme in place, with various task teams examining and implementing reduction processes such as set-up time reduction, the introduction of kanbans, reduction in materials handling and flow, reduction in queues, and reduction in batch sizes.

The various teams should be co-ordinated by the Manufacturing Director or Manufacturing Manager. Lead time reduction should be backed up by charts or graphs, with a commitment to continue to reduce them. The reduced lead times will be reflected in the part master information on the planning system.

Class	Criteria question 13
A	Active and effective lead time, batch size and inventory reduction projects with published results (where appropriate).
B	At least one of the above reduction projects at all times.
C	Reduction projects from time to time.
D	No effective recent reduction projects.

14. Company has sufficient level of user understanding to support business excellence

Crucial to the development of the concepts of Business Excellence is a programme of comprehensive education in the business principles required to operate with an integrated planning system. The education should be designed to get everyone to understand best practice in planning and control and World Class Manufacturing techniques and, by applying the appropriate techniques, achieve continuous improvement in business performance.

There should have been an initial process where the long term vision of the company was developed (Company II) and this vision and practise communicated by managers to the employees of the company.

There should also have been training in the software for all users.

Records for attendees should indicate that all relevant employees were involved in a formal process of education and training.

There should be an induction programme in Business Excellence and World Class Manufacturing techniques for new employees and anyone asked to take on different duties.

Class	Criteria question 14
A	Initial education and training of at least 80% of all employees and induction programme for all new employees.
B	Initial education and training of at least 50% of employees and induction programme for relevant new recruits.
C	Initial education and training of key employees only plus limited induction programme.
D	Poor or non-existent education and training or no induction for new recruits.

15. Company is working in partnership with its suppliers through use of supplier scheduling and associated techniques.

The improved information provided by the planning system enables a class "A" company to form partnerships with suppliers and so gain further competitive advantages. All key suppliers of repetitively used material should have a supplier schedule to communicate requirements and allow the supplier to anticipate requirements. Many companies have started kanban arrangements with suppliers but these must be supported by supplier schedules to give forward visibility.

Company is working to increase the proportion of suppliers who are qualified to deliver their product directly onto the production line (without goods-in inspection) and reduce the total number of suppliers.

Partnership should include an active programme of helping suppliers to improve quality and shorten lead times. If a supplier is unaware of Business Excellence techniques, then there should be an active process for educating them in the same Business Excellence principles. A Class "A" company need good suppliers.

Class	Criteria question 15
A	Supplier schedules exist for all repetitive materials and active improvement and/or education programmes exist with key suppliers.
B	Supplier schedules exist for all repetitive materials.
C	Supplier schedules exist for some repetitive materials.
D	Material ordered as required.

16. Company is working in partnership with its customers through closer linkage and shares information.

In the same way as your company should be working closely with your suppliers, so your company should be working closely with customers in development of new products, in sharing information on forecasts, promotions etc. Where there are distribution centres involved, you should be making use of techniques such as Distribution Resource Planning in order to determine the true need date and need quantity for your customers.

Class	Criteria question 16
A	Active product improvement programmes and shared new product information with all customers.
B	Active product improvement programmes and shared new product information with some customers.

C	Improvement programmes only when requested by customers and limited information on new products and customer promotions.
D	No product improvement programmes and little or no shared information.

17. Company monitors that it is improving its level of customer service.

A class "A" company will monitor that it is improving customer service through shorter lead times, improved quality and deliveries being made on the day and/or time that the customer needs the product.

Customer service should be measured at least monthly against the date that the customer required the product, and against the date that the customer was promised the product and reported monthly. On time means on the day specified or, where appropriate, the time slot specified on the order.

Class	Criteria question 17
A	Monthly performance measures on delivery performance (see question 10a), customer returns and lead times are actively maintained, monitored and corrective action defined and followed up.
B	At least two of the above three performance measures are active.
C	At least one of the above performance measures are active
D	No customer service performance measures reported at least monthly.

18. Company uses performance measurements as the mechanism for monitoring and improving all business processes.

The Class "A" company uses an integrated set of internal performance measures which are designed to measure and monitor the business processes used by the company as distinct from the results achieved by those processes. In other words the performance measures measure the causes not the effects. In addition, the performance measures are selected so that they will assist the company to achieve its business goals.

Class	Criteria question 18
A	Consistent and complementary performance measures are regularly reported and used to drive a business process improvement programme.
B	There are consistent and complementary performance measures but performance improvement are ad hoc or assumed.
C	Performance measures used to measure people not processes.
D	Performance measures in conflict (e.g. measuring output value and customer service).

19. Company uses such measurements to continually monitor and improve its competitive position in the market place.

A Class "A" company will continuously monitor itself against the competition to determine its success in maintaining it's competitive position. It will benchmark itself on certain key criteria, and determine how it is improving. Those criteria include customer service levels (perhaps through a customer service survey), lead times, quality, data accuracy etc.

Class	Criteria question 19
A	Regular monitoring and reporting of above criteria in relation to both competition and other suppliers in the industry.
B	Regular monitoring done but not communicated or used to drive improvement programmes
C	Monitoring done annually or less

D	No monitoring of competitive position, improvements only when insisted on by customers.

20. Company is committed to continuous improvement to maintain competitive advantage

The Class "A" company recognises that there is a need to encourage a culture of continuous improvement of all its' processes so that the whole company works consistently to the same set of goals.

Class	Criteria question 20
A	Formal continuous improvement programme of activities with regular updates on progress.
B	Some improvement projects from time to time.
C	Ad hoc improvements project not centrally co-ordinated.
D	No current or recent improvement projects.

Glossary of Abbreviations

ATP	Available to promise
BOM	Bill of material
CRP	Capacity requirements planning
MPS	Master production schedule
MRP	Material requirements planning
NPI	New Product Introduction
SOP	Sales and Operations Planning

For more details see BPIC Jargon Buster at www.bpic.co.uk/jargon.htm.

Self-assessment

To self-assess your status, print out your answers and rate yourself (honestly!) against the following criteria.

- A Class 'D' user is typically one where either MRP is not operated or, if it is, nobody believes the MRP figures. Frequently the store room will have a manual record that anyone will refer to if they want to find out what is really in stock. Manual records and schedules are a dead give-away to poor data accuracy and a Class 'D' level of performance. Even if all the MRP II bits were in place, the lack of accurate data would render the output worthless. A Class "D" user uses the MRP/ERP package as a (very expensive) typewriter!

- A Class 'C' user may have a pretty good MRP system as was common in the '50s and '60s. The system will launch orders and progress chasers will expedite them according to which customers shout the loudest. They can never be better than Class 'C' because they do not attempt to manage the schedules according to the resources available. The lack of a managed master schedule and integrated capacity planning are class "C" indicators.

- A Class 'B' user will have capacity resource management in place via a sales and operations plan and a managed master scheduling process but the failure to properly control all the elements of ERP / MRP II will typically be shown up by the necessity to have secondary, "off system" priority information to get the 'hot' jobs through production. To be class "B" a company must have at least 95% customer service (question 10a).

- A Class 'A' user has a class "A" customer service (question 10a), be class "A" on 18 or more out of all the 20 questions on the checklist and will need neither shortage sheets nor progress chasers. Instead, production control and monitoring will typically be carried out using the output from the integrated planning system. The 98% or better customers service will soon become an accepted part of the company's culture. A missed shipment or even a stock error will become a major cause for concern instead of just a way of life.

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