

Effect of adoption the Visual Production Planning and Control System (VPPCS) in Apparel Manufacturing Companies

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Abstract

The Production Planning and Control System (PPCS) in five export oriented apparel companies was analyzed and evaluated to discover the challenges facing these companies during the application of their conventional planning and control approach. Then, an exploratory case study has been done in other similar successful apparel company to provide the best practice of overcoming those challenges by adopting Information Technology (IT) based Visual Production Planning and Control System (VPPCS). The analysis revealed that the common problems in production planning and control in five companies had included lack of visibility, inability to quickly test out different “what if scenarios” when planning, and poor decisions resulting from inability to consider alternatives. In addition, because of using a huge number of spreadsheets in planning and control, the internal information and communication system inside the companies appears as islands of information. On the contrary, the sixth company, which has IT based VPPCS (FR) with a Visual Planning Board, showed success in overcoming all the previously mentioned problems that have been discovered when using conventional PPCS. This case study would be beneficial to practitioners and academics who are interested in implementing VPPCS system in apparel manufacturing companies. The results of this study are also valuable to decision makers and managers in apparel manufacturing companies to make better decisions in production planning and IT adoption.

Keywords:

planning solutions; Apparel Industry; Information Technology; Production Management.

Introduction

Apparel production planning is characterized by labor intensive manual operations, frequent style changes, seasonal demands and shortening production lead time (Dileep, R. S. 2008). With fierce competition worldwide, many manufacturers are switching their production from the mass mode to lean mode to shorten their response time to changes (Hines, P. 2014). In a complex mixed mode production environment, it is very important to allocate job orders to suitable production lines so as to ensure the effective utilization of production resources and on time completion of all job orders (Powell, D. 2011).

PPCS helps in addressing decisions on the acquisition, utilization and allocation of production resources to satisfy customer requirements in the most efficient and effective way. Typical decisions include work force level, production lot sizes, assignment of overtime and sequencing of

production runs. Optimization models are widely applicable for providing decision support in this context (Stein W., 2011).

It is very important to connect production planning with the whole business plan and guarantee that there is always a feedback from applying the capacity and material plans to the main factory plans aiming to control the effectiveness of production plan implementation. Fig.1 shows the manufacturing resource planning concept in Apparel Companies (Mok, P. Y., 2013)

IT Based Visual Production Planning & Control Systems (VPPCS)

Over the past decade, global competition and high levels of IT enablement in business processes changed how the businesses were managed (Hamilton, L. 2008). Introduction of Visual Production Planning and Control Solutions (VPPCS) and rapid adoption of such was a result of increased competition and higher concern on

efficient practices in doing the normal functions of a business (Edwards, H.K. 2007).

For apparel manufacturing companies, to stay in synchronization with the changes taking place in their operational and competitive environments, the use of fast accurate information technology (IT) based Visual Production Planning & Control System is crucial (Chen C., 2009).

In the recent years, many software companies

have developed production planning solutions that could solve many problems the companies would face when using the conventional manual planning system in apparel industry (Bell, S., 2006). **Table 1** lists the main apparel production planning solutions that use visual planning as a tool to enhance the effectiveness of PPCS in apparel industry. It also provides links to the company's website.

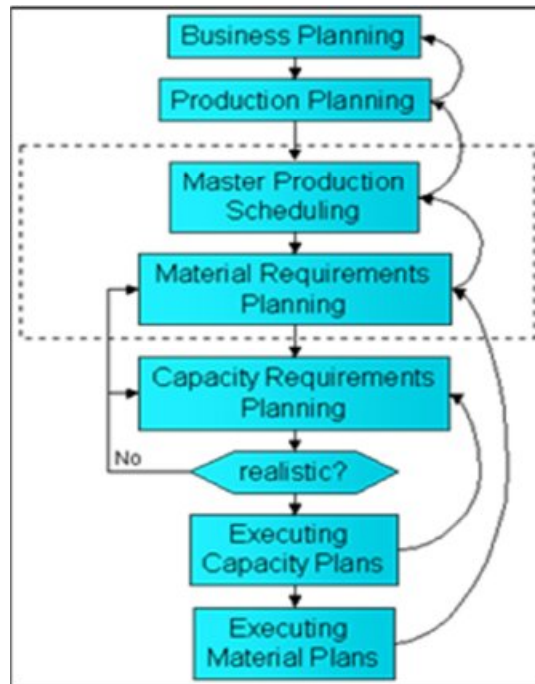


Figure1. Manufacturing Resource Planning

Table 1. Main IT based VPPCS for Apparel in international Market

VPPCS Software	Main characteristics	Website
MAE by Parellax	<ul style="list-style-type: none"> • User uses MAE to plan at the factory and line levels. The number of available workers limits the production capacity of a factory. • MAE calculates how much of the order will fit onto the production line at one time. The objective is to load plan so the production line is never idle. • MAE displays line plans graphically in Excel format so you can easily zoom in for detail and zoom out for a high level overview of the line plan. 	http://www.parellax.com

<p>Fast React (FR)</p>	<ul style="list-style-type: none"> • Visual display of Multi-level planning at both factory and detailed line/machine level • Efficiency profiles & start-up allowances at product changeover • Better scheduling and communication with subcontractors • The plan is dynamic, so it reflects current situation including any slippage • Materials and critical path priorities actively ‘driven’ to support the latest plan 	<p>www.fastreact.com</p>
<p>Plan-IT</p>	<ul style="list-style-type: none"> • It helps merchants and production people to take decision much before in hand by using visual display of the plan on a planning board. Thus it reduces last minute firefighting with order processing. • It brings absolute transparency inside the organization and assigns individual responsibility to the respective personnel. • User can check the critical path of an order to ensure that all development and pre- production activities are included on schedule with the plan with a shortest possible time. 	<p>http://www.gemserp.net/</p>
<p>APPS</p>	<ul style="list-style-type: none"> • Visual Production Line Planning, Vendor Production Monitoring, Raw Material Consumption, • Critical Path Monitoring, Quality Control Reports, Special Cutting and Lot management Screens and Summary Reports. 	<p>http://www.rdplapps.com/product/modules/production-planning-and-control-module.html</p>

Literature Review

Businesses must invest in IT to remain competitive, and must become increasingly sophisticated in the marketplace if they are to survive in the long-term (Huang, S. Y. 2009). A number of researchers have examined IT implementation through case studies. Stein W. et al. (2011) examined how to maximize manufacturing profits through conventional planning and scheduling. Chen C. et al. (2009) considered the daily production scheduling problem in the “make-to-order” apparel manufacturing industry and present a scheduling system for solving the problem. Huang S. Y. (2009) examined key dimensions related to the implementation of an Enterprise Resource Planning (ERP) system and identified, via a case study methodology, some core issues that can affect the successful implementation of an enterprise information system. Edwards (2007) employed a case study methodology to better understand the relationships between system usage, business process change, and system change. Lau et al. (2004), through a case study, proposed an infrastructure framework to support

the design and implementation of a material planning system. Several past research studies have shown that adoption of complete ERP solutions is exposed to significant rates of failures that leads to a large waste of investments and other important resources (George L. (2002), Esteves J. (2009), Stein W. (2011), Rajapakse (2005)). In addition, they are not graphical, not user-friendly, and complex to use.

Based on the above literature review, it is remarkable that no researches have been focused on Implementation of Visual Production Planning in apparel companies, but mainly focused on general enterprise internal information systems, together with the significant failure rate of ERP implementation.

We believe that case studies regarding the implementation of IT based VPPCS can lead to valuable findings and implications; therefore, this study has employed an exploratory case study as its research method.

Objectives

With regard to the potential of IT based VPPCS capability and performance gap of apparel manufacturing process, this study aims to

investigate the effect of the VPPCS adoption decision in solving traditional planning obstacles in the apparel manufacturing industry.

The research reported in this paper is focused on answering the following question: **“is the adopting of IT based Visual Production Planning and Control System could affect and solve the common problems facing the conventional PPCS in Egyptian export oriented apparel manufacturing companies?”** To achieve the main objective, the following sub-objectives were derived:

1. What are the common Production Planning & Control (capacity and material planning) obstacles/ problems when using conventional PPCS in export oriented apparel manufacturing companies?
2. How could we overcome these obstacles by using IT based VPPCS ?
3. What are the most important benefits of adopting IT based VPPCS in apparel manufacturing factories?

This paper attempts to answer these questions by examining the VPPCS implementation experiences of a successful Egyptian apparel company.

Originality/Value – The study of the implementation of visual production planning solutions (capacity and material planning) in Egyptian apparel enterprises is a new area, and limited studies have been conducted in the past. But now, due to the magnitude of the IT implementation phenomenon, the need for such studies has become very important. Furthermore, this will bridge the current vacuum in literature by an exploratory case study of successful implementation of VPPCS systems localized to the Egyptian apparel industry.

Selecting the apparel companies, which are export oriented, and which has mostly the same sort of planning problems in general, allowed discussing the common challenges that could be found in these companies. Adoption and successful implementation of IT based VPPCS in one similar successful company would encourage other companies to solve their planning problems using the resulted best practice, which has been investigated by the presented exploratory case study.

Research Methodology:

Six large scale export oriented apparel manufacturing companies in Egypt have been

selected (A, B, C, D, E, F) These companies were selected due to reasons such as their higher response over other companies by their participation in the research, their relative similarity in export capacity, and their significance in exploring and explaining the aim of the research. The primary data was collected through in depth interviews and on-site observations. The secondary data was collected by the means of past literature studies, journal articles, software companies' web pages, and the brochures of the relevant organizations.

Two principle approaches were followed in the research process. The first involved a series of unstructured and informal one-to-one interviews with factory managers. These interviews were conducted with five senior managers from a range of five apparel companies (A, B, D, E, F). Interviews were chosen on discretionary grounds because of the knowledge and 'privileged information' they possess based on the top hierarchical position they occupy in their companies. Information obtained from the interviews afforded novel insight into a range of issues relating to the common problems, that couldn't be solved optimally using their conventional PPCS, and also the main causes of those problems.

The second involved an exploratory case study method, which centered on the adoption of VPPCS in a successful similar export oriented apparel company (C). That has enabled the researcher to observe and further analyze how the common problems in conventional PPCS have been resolved. This company is the only one from the six companies that use IT based Visual Planning System instead of conventional Production Planning and Control System.

According to Benbasat et al. (1987), three advantages exist to using exploratory case study research within the information management field:

1. The current situation can be understood in a natural, un-manipulated environment, and theories can be derived from actual observations.
2. It is easier to understand the essence and complexity of the process.
3. Facing rapid changes in terms of information management, makes obtaining new insights on the research topic is easier.

The main characteristics of the selected six

export oriented apparel companies

The characteristics of the selected six export oriented apparel companies have been tabulated in Table 2. It includes the company's background,

main customers, existing computer systems -if any-, planning processes, and pains/solution requirements.

Table 2. Main characteristics of the selected Egyptian Apparel Manufacturing Companies

Company	A	B	C	D	E	F
Back-ground	<ul style="list-style-type: none"> Vertical Company o Knit (circular - 20 x M/C) o Dye o Print o Cut o Sew (220 m/c - 6/7 lines) 	<ul style="list-style-type: none"> Vertical Company • Knit (circular) – Dye (subcon) – Garments • 8000 pcs per day • 4 sewing lines • 48 knitting machines (36 circular and 12 warp knit) • Sell Fabric external (around 35%) 	<ul style="list-style-type: none"> vertically integrated underwear manufacturing business • produce an average of around 80,000-85,000 pieces per day. 	<ul style="list-style-type: none"> Vertical integrated production facility (knit – dye – cut – sew) 	<ul style="list-style-type: none"> Knit and Makeup (subcontract dye, print & embroider) • Garment volume 10-20,000 pcs per day • Underwear • 2 sites • 4 lines • 13 x knitting machines 	<ul style="list-style-type: none"> Vertical integrated production facility (knit – dye – cut – sew) • Knits – T-shirts, polo, underwear, • 1m pieces per month • 2 x sewing facilities (13 lines)
Main Customers	<ul style="list-style-type: none"> o Marks & Spenser 	<ul style="list-style-type: none"> USA customers & Holland 	<ul style="list-style-type: none"> M&S, Calvin Klein, Tommy, Hugo Boss, Victoria Secret, Kmart, Wal*Mart, Pierre Cardin, 	<ul style="list-style-type: none"> JCP, CK, Otto, Dunnes 	<ul style="list-style-type: none"> Single customer (ALDI) ,sell to Europe them via agent 	<ul style="list-style-type: none"> Otto (Germany), BabiesRus, Gymboree, JCP, Walmart (USA), New Look
Existing computer System	<ul style="list-style-type: none"> Accounting system • Spreadsheets for planning and control 	<ul style="list-style-type: none"> NO System • Spreadsheets for planning and control 	<ul style="list-style-type: none"> Have ERP called Movex, • Visual PPCS 	<ul style="list-style-type: none"> NO System • Spreadsheets for planning and control 	<ul style="list-style-type: none"> Home developed own systems • Spreadsheets for planning and control 	<ul style="list-style-type: none"> Access based home developed systems • Spreadsheets for planning and control
Planning & Planning processes	<ul style="list-style-type: none"> All Make To Order (MTO) • Plan FOB (ex factory) • Do not plan at Standard minute values (SMV) level 	<ul style="list-style-type: none"> All MTO • Knit to order and dye to order 	<ul style="list-style-type: none"> All MTO • Have a single order through entire production process from garment order back to spinning • Plan in number of garments not SMVs • Have a Capacity Planning (CP) checklist – not time dependent 	<ul style="list-style-type: none"> All MTO • WIP bookings are currently tracked/recorded on spreadsheet • Capacity Planning • Materials Planning 	<ul style="list-style-type: none"> All MTO • Work to an ex factory plan (deliveries are FOB) • Multi style/multi colour/multi size • Split customer orders to single style for production 	<ul style="list-style-type: none"> All MTO • after cut they inspect (check quality) and then track production as first and second quality from this point • Plan in number of garments not SMs • Access system starts by tracking developments and then move to confirm PO stage .
Av. of IT based VPPCS	No	No	Yes	No	No	No
Pains/Potential benefits Identified	<ul style="list-style-type: none"> • NO Visibility • No System 	<ul style="list-style-type: none"> • No Visibility of supply chain • Cannot see actual production and problems with late production 	<ul style="list-style-type: none"> • integration of PPCS with other business systems 	<ul style="list-style-type: none"> • Spreadsheets - = poor visibility 	<ul style="list-style-type: none"> • Late deliveries • Spreadsheets -= poor visibility 	<ul style="list-style-type: none"> • spreadsheets -= poor visibility –

Challenges facing the companies that are using conventional PPCS

New data and information collected from multiple sources and methods were analysed to identify the

typical problems/challenges facing the five companies (A,B,D,E and F), which are using conventional Production Planning and Control System (PPCS). The causes of these problems have also been further investigated. See Table 3.

A series of unstructured and informal one-to-one interviews with factory managers, who are using conventional production planning has led to the investigation of the common disadvantages facing these five companies, regarding the effectiveness of their Production Planning and Control System. Those disadvantages have included:

Lack of Visibility: results from management time wasted in trying to identify priorities.

Problems are often not visible until it is too late to avoid excess costs or late delivery. Staffs are unable to quickly test out different “what if” scenarios when planning. Poor decisions result from not being able to consider alternatives. Much

time is typically wasted in numerous meetings, emails and phone calls to communicate the frequent changes in the plan.

Spreadsheets and Other Conventional Planning obstacles:

As clarified in Fig.2, using spread sheets in planning and control might cause different problems. Spread sheets are difficult to share, communicate and coordinate, not visual, don't highlight problems clearly, do not see 'KNOCK ON EFFECTS', cumbersome and difficult to manage, not 'Best Practice', very difficult to amend when requirements change and therefore, do not give answers quickly

The end result of using spreadsheets in PPCS resulted in Islands of information, which are not accurate, not efficient, not coordinated, and need to work long hours to keep up to date



Figure 2. Many planning excel sheets cause Poor visibility

Through the analysis and the interviews, some other problems/challenges that are facing the conventional planning and control system in five export oriented apparel manufacturing companies have been identified and could be summarized in the following points.

- Fail to see far enough in advance that the factory will have an overload or bottlenecks on some operations or processes.
- Poor Workflow Due to Work In Progress (WIP) Problems For many factories
- Fire fighting leads to unnecessary style and colour changes.
- High costs and poor decision making due to

manual planning methods inevitably result in low efficiency and high overheads. Indirect staff used to manually enter data into numerous spreadsheets.

- Lost time because of waiting for raw materials and accessories.

In summary, with conventional planning system far too much time and effort is spent in simply identifying the problems in the first place, leaving far too little time to solve them. Management time lost on managing and planning all these symptoms could be better spent on analysing and implementing business improvement solutions.

Case Study: Adopting of VPPCS (FR) in on export oriented Apparel Company (C).

Two issues should be considered while employing a case study methodology. The first is whether the case is typical, and the other concerns the feasibility of the data collection. In this paper, the case was deemed to be typical because it is the first Apparel case in Egypt to implement a VPPCS (called Fast React (FR)). Also, the data collection was deemed feasible because the author was familiar with the project leader and two committee members related to this project, and was therefore able to interview these people to acquire more data and information.

Background of the Company

The company (C) is a leading export apparel company in Egypt, which has improved its delivery performance and production efficiency by using Visual IT based PPCS (FR).

As shown in Table. 2 The company is specializing in intimate apparel, men's underwear. The company produces customized, innovative fashion and basic apparel for leading retailers and brands around the world. It is a vertically integrated underwear manufacturing business that manufactures a varied range of different products for customers including: M&S, Calvin Klein, Tommy, Hugo Boss, Victoria's Secret, Kmart, Wal-Mart, Pierre Cardin, Dim, and Target.

The Challenges

The main business system in use at Company (C) is Movex, which had been enhanced through its own development. However, before a new VPPCS (FR) was installed, planning was mainly

performed, like the other 5 companies- on spreadsheets.

These largely manual based systems caused a lack of visibility and proved very difficult to amend when customer requirements changed. Planners were not able to see the knock on effect of any changes made, which meant that much 'fire-fighting' needed to take place to ensure that customer deliveries were made on time. The company had faced all other before mentioned challenges that faced other five companies, before implementing the new VPPCS.

The Solution

The visual IT based PPCS (FR) Evolution planning solution has been installed and has been fully integrated with the Movex business system to provide a centralized and effective planning environment. The installation of VPPCS has removed the reliance on spreadsheet technology and has enabled the planners to focus on issue resolution as opposed to spreadsheet manipulation (**Fig.3**). The key elements of IT based VPPCS are as follow:

- Primary Capacity – (e.g. Sewing/Knitting)
- Secondary Capacity – (e.g. Embroidery/Washing/Dyeing)
- Critical Path / Time & Action - Pre Production
- Materials Requirements & Availability
- Communicate & Coordinate
- Update & Compare Plan vs. Actual
- Revise Plan & Repeat

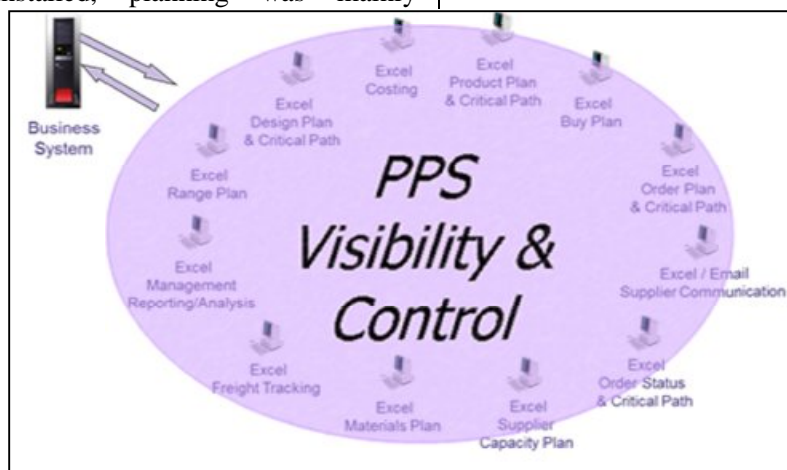


Figure 3. Replacement of planning excel sheets through VPPCS
A phased approach to implementation was undertaken with VPPCS being initially installed in

a single factory with 15 lines. The implementation proved so effective that it was quickly rolled out to the other 3 factories with another 51 lines.

The essential modules that have most of the positive effect on the company performance were low level visual capacity planning, and visual Material requirements planning.

Low Level Visual Capacity Planning

Details of each order have been created (via an interface with the existing business system) and maintained on VPPCS (FR). Users have accessed a full audit trail of all order changes (volume, delivery date, etc.), together with free form user notes. This allowed a complete history to be established for each order, providing valuable information in the event of a later query.

Once orders have been passed across to VPPCS

(FR), they could then be planned in detail at machine level. The planned operation (primary constraint) in FR will be created in sewing. The other operations (e.g. cutting, packing, etc.) will be created as secondary constraints and will be monitored using the secondary bar-chart capability. Planned operation schedules will also be created for the primary and secondary constraints. It is important to appreciate that the operation schedule for sewing (primary constraint) will be driven directly from the planning board, whereas the schedules for the other operations will be driven by standard ‘offsets’ from the sewing schedule (either forwards or backwards).

At a later date it may prove beneficial to independently plan one or more of these secondary constraints (e.g. cutting) on an independent, but linked, planning board.

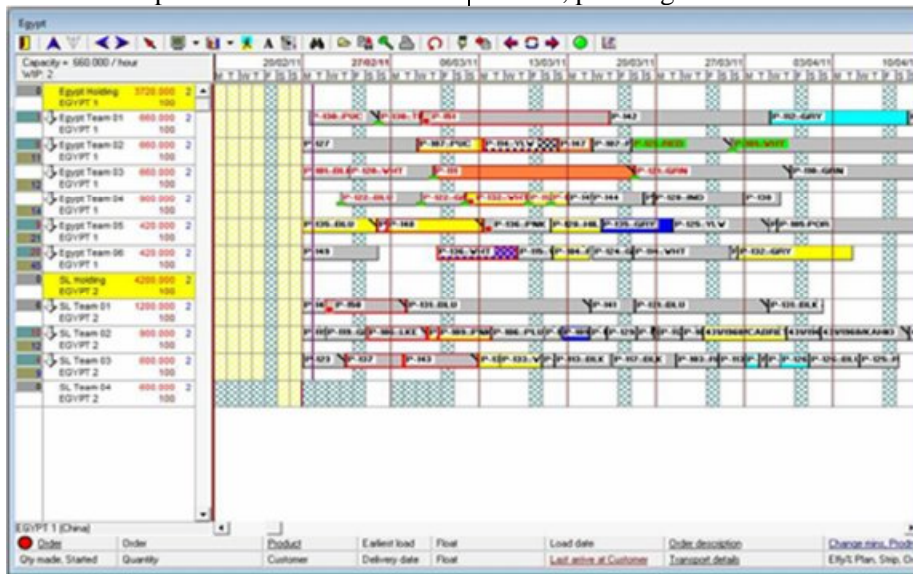


Figure 4. Visual Capacity Planning Board -Example of Low Level Planning Board

order, for example:
Once planned, the FR low level Visual Planning Board will provide immediate visibility of the status of all orders including the current Work in Progress position and will also supply an immediate alert to any potential problems (e.g. WIP behind schedule, late delivery, etc.). As orders are planned on the low level planning boards, individual machine efficiencies and build up efficiencies (learning curves) are applied to calculate the exact time that will be taken to complete each order.

As seen in Visual Planning Board (Fig. 4), the planning of capacity would appear in strip colors. Changes in colors control the delivery time of each

- Grey = on time for delivery, all under control
- Light Blue/Dark Blue = risk of late delivery
- Yellow /Orange = critical path (T&A) problem
- Red border = Work in Progress (WIP) problem

Advantages of using Visual Planning Board have been found as following:

- Highly visual ‘Drag and Drop’ planning at sewing line level
- Rapid ‘what if’ capabilities allow the

planner to look at several options quickly to find the best

- Confirm fast and accurate delivery dates, based on achievable capacity

Visual Material Requirements Planning (VMRP)

In addition to being able to plan around any manufacturing capacity constraints, it is also possible to plan around any material availability constraints. It should be appreciated that due to the dynamic nature of the planning process, it is essential to check that materials are available to satisfy the plan.

Each product has a bill of material defined; this bill of material can be amended at order level (if required). The MRP process will then use this bill of material to calculate the total material requirements for all finished goods orders, calculating what materials are needed, the quantity that is needed, where they are needed and when they are needed – these are known as ‘time phased gross material requirements’.

Once this phase is completed, MRP then considers existing material availability (both in terms of existing stock and purchase deliveries due) to determine what materials are actually required to

satisfy the demands.

The VMRP process clearly identifies by order (and in total) any material shortages and any potential expedite actions (where the shortage can be partially or completely satisfied by earlier purchase order delivery). Reports can be run to give suggested material purchase orders (shortages) and suggested material purchasing actions.

The FR Visual Planning Board (Fig.5) used to examine these material shortages to determine whether these potential material shortages affect the planned delivery dates on the plan, which can result in the plan being adjusted (e.g. plan for later delivery).

Advantages of using Visual Material Planning Board have been found as following:

- Production plan can be rotated to show material cover
- Immediate information for better planning decisions
- Recalculates in seconds during the planning process

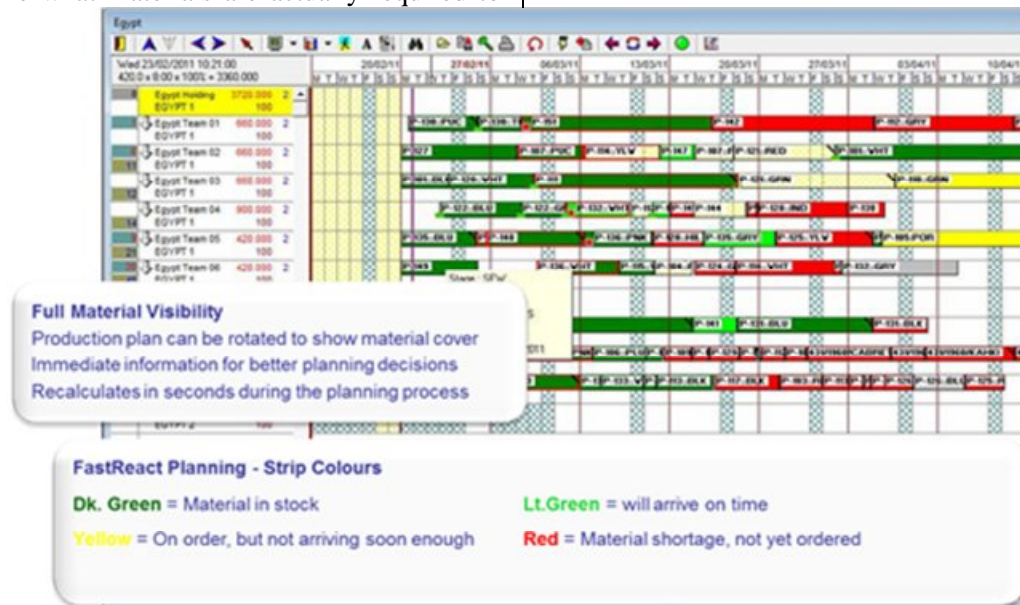


Figure 5. Visual Material Planning Board

Results & Discussion

The analysis revealed that the common problems in production planning and control in five companies has included lack of visibility, inability to quickly test out different “what if” scenarios

when planning, and poor decisions resulting from not being able to consider alternatives. In addition, because of using a huge number of spread sheets in planning and control, the internal information and communication system inside the companies

appears as islands of information. In summary, with conventional planning system far too much time and effort is spent in simply identifying the problems in the first place, leaving far too little time to solve them. Management time lost on managing and planning all these symptoms could be better spent on analyzing and implementing business improvement solutions. On the contrary, the sixth company, which has IT based VPPCS (FR) with a Visual Planning Board, showed success in overcoming all the before mentioned problems in conventional approach of PPCS. So we could see in Table. 3 there is a positive impact in using such a Visual Planning and Control System in export oriented apparel manufacturing companies, which lead us to advise these export

oriented apparel companies to adopt VPPCS aiming to enhance their export performance.

Limitations/implications

This study only provides a one case study; it limits the generalizability of case analysis result to other contexts. Therefore, more in-depth case studies can be conducted to analyze the differences in implementing VPPCS system across various sized companies and empirical studies in both macro and micro level can be conducted to investigate the factors that drive VPPCS successful implementations. Further studies should also be extended to evaluate the business value of adopting VPPCS technology.

Table 3. Impact of Adopting VPPCS in solving conventional PPCS' obstacles

Common Problems	Cause	Conventional Planning	Impact of adoption VPPCS
Fail to see far enough in advance that the factory will have an overload or bottlenecks on some operations or processes.	This is due to the style mix at a particular time leading to machine shortages on certain machines in sewing, or capacity problems either before or after sewing on operations such as embroidery, washing or sandblasting	With an ever-changing plan, it can be difficult to keep track of the style mix and loading on key machines or processes. With manual and spreadsheet based systems, this can be an almost impossible task.	Potential overloads and problems are highlighted well in advance using capacity planning board (by operation and by day/week/month), in plenty of time to take corrective action. Full drill down and 'modelling' of capacity and working hours etc. allow for rapid 'what-if' problem solving.
Poor Workflow Due to Work In Progress (WIP) Problems For many factories	Day to day production problems result in insufficient work for certain production lines. Many factories lose output due to not having cut/embroidered/printed the correct orders or the correct quantities to feed the production lines.	Not being able to quickly communicate the latest requirements/priorities to each department. This is often the result of numerous, necessary changes to the production plan	Generates work schedules for all departments and subcontractors from the master production plan (e.g. sew). Daily production updates are also fed into the program. Any WIP problems, such as insufficient cut work coming through for sewing, are immediately highlighted with a color coded warning on the planning board.
Fire Fighting Leads to Unnecessary Style and Color Changes	Cause further productivity losses due to fire fighting and the changes cause disruption on the factory floor.	Due to delays and urgency, a style which was originally planned on 1 sewing line now has to be re-planned on to 2 or 3 sewing lines to catch the delivery date. This means more style change losses and lower	Allows to plan and communicate better, which resulted in fewer surprises, and both Management and suppliers will receive clearer priorities. Potential problems will be seen in advance and there is more time to fix them.

		overall production efficiency.	
High Costs and Poor Decision Making	Due to Laborious Manual Systems, Manual planning methods inevitably result in low efficiency and high overheads. Indirect staff used to manually enter data into numerous spreadsheets, reports, data summary and analysis sheets etc.	Lack of visibility results in management time wasted in trying to identify priorities. Problems are often not visible until it is too late to avoid excess costs or late delivery. Staff is unable to quickly test out different "what if" scenarios when planning.	VPPCS solution sits on the local PC network and provides a central point of reference for all departments and 'a single version of the truth'. To plan effectively there are many variables to consider including capacity, lead times, material availability (using Visual material requirements planning board) and current production progress against the plan.... if one of these variables changes on a single order, it may also have a knock on effect on other styles and orders.

Conclusion

Since the implementation of VPPCS (FR), the company (C) no longer uses spreadsheets to plan. That has led to the overcoming of all planning obstacles that faced the company before implementing the new approach (VPPCS). This has also resulted in many business benefits being achieved including better On Time Delivery Performance (OTDP) to customers, better staff utilization, and increased production efficiency.

"Production Efficiency has increased by 10%, through the introduction of VPPCS," explained the System Manager of Company C.

This paper has identified the common problems facing the conventional planning and control system and how they could be overcome through implementation of IT based VPPCS. So, based on the before mentioned investigated results, it is highly recommended for the export oriented apparel companies to use this new approach of Visual Planning and Control system instead of the conventional one to solve the common problems facing those companies, which uses spread sheets in planning and control processes.

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