

***Implementing Goods Codification and Developing
Production Reporting System at FPSI***

**Master of Business Administration
In
Software Enterprise Management**

Submitted by

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DECLARATION

I hereby declare that this Project Report entitled Implementing Goods Codification and Developing Production Reporting System at FPSI submitted by me to the GGSIPU Delhi, is a bonafide work undertaken by me and it is not submitted to any other University or Institution for the award of any degree diploma / certificate or published any time before.

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ABSTRACT

Fair Plast and Synthetic Industries (FPSI) is a proprietary firm which is into the manufacturing of plastic packing material since 1971. The firm has its production house at Bawana Industrial area and its customers are widely spread all around north India and mainly consist of garment exporters.

The firm is into shop based production and hence produces the goods only after receiving an order for them i.e. each and every product is a customized one according to need of the customer.

The number of sales made by the firm in one month is not more than 5-10 and hence the firm mainly depends on local accountants for the process of book keeping i.e. an indigenous transaction processing information system is absent.

The aim of the study is to develop a technique of codification to avoid material mix-up during manufacturing and an information system to improve the decision making process.

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Chapter 1

Introduction

1. ORGANIZATION STRUCTURE

The training has been performed at Fair Plast and Synthetic Industries (FPSI) which is into the manufacturing of plastic packing material. The firm has been functioning since the year 1979. The firm had begun its production from a plant in Hastal Industrial area, Delhi and currently performs its production activities at Bawana Industrial area also situated in Delhi.

It can be said that Fair Plast and Synthetic Industries has a single layer organization structure which has just one key player which happens to be the proprietor of the firm. Since this firm happens to be a small production house therefore departmental bifurcation does not exist in the case of this firm. This means that the proprietor looks after all the activities of the company which are mainly marketing, purchase, production, accounts and recruitment.

The most integral part of this firm's organization structure is its highly experienced, trustworthy and loyal work force which has been associated with this firm for the past 20 years or even more.

The firm's production area employees 30 workmen who work in two shifts and are designated with the following positions Extrusion operator, sealing operator, Extrusion helper, Sealing helper and packaging helper.

The purpose of marketing wholly depends on the proprietor himself. In this firm there is not much stress given on finding new customers. The firm mainly stresses on satisfying its present customers who in turn reward the firm with referrals and further orders. Therefore clearly there is no cold calling done and not much stress is given to the marketing segment. The stress is majorly given on the production of goods to keep the quality up to the levels of customer satisfaction as well as on the credit period given to the customers.

Since the firm implements shop based production therefore most of the purchases are made by the firm only after receiving order from the customer. But the market situation in this industry is such that the raw material prices keep on fluctuating frequently and hence some minimal inventory has to be kept at times to be on the safe side. For ordering of the raw material the proprietor contacts the traders of the raw material for enquiring about the market situation so that orders in relevant amount may be placed. Therefore the purchasing process is also taken care of by the proprietor himself. In this case the building of relationship with the traders is very important to know the exact market situation and to get the most convenient credit period.

The firm majorly provide the goods to traders and garment exporters. The number of sales made by the firm in one month is not more than 5-10 and hence the firm mainly depends on local accountants for the process of book keeping i.e. an indigenous transaction processing information system is absent. The proprietor keeps track of the credit periods and balances on rough books and hence does not make the full use of accounting features.

Unlike the old employees the attrition rate of the new ones is quite high and therefore the need for recruitment arises but this is majorly taken care of by the old employees who in the case of shortage of labour, arrange for it themselves.

2. OBJECTIVE

Inventory Management is an important part of the production process at any of the manufacturing organizations. Since Fair Plast and Synthetic Industries happen to be a small proprietary firm it has not undertaken any inventory management techniques. Therefore this project is aimed at finding the scope of implementing inventory management techniques as well as finding the tools and techniques to efficiently manage the inventory at FPSI.

In MNCs generally there is a Decision support system or a documentation of the decision making protocols which enables the employees to take the right decisions independently. Such a concept is absent in FPSI majorly because it is a proprietary firm

and hence almost all decisions are made by the proprietor himself. But now as the firm wishes to grow it has to also move forward towards bifurcating its decision making powers and make its employees independent decision makers hence the need for a decision support system or at least a documentation of decision making protocols was felt.

This **project aims** at acquiring a thorough knowledge and understanding of the **day to day activities at FPSI so that techniques for inventory management may be suggested as well as a documentation of the decision making protocols may be made.**

3. SCOPE OF STUDY

This entire project has revolved around the Inventory systems and decision making processes at FPSI.

The scope of the project includes €

- Understanding the types of Raw materials, finished goods and work in progress involved in the manufacturing process to develop an appropriate system for codification of these goods.
- Understanding the production process and developing a production reporting system.

Chapter 2

Business Process

The business process of Fair Plast and Synthetic Industries has been studied and was found to be as described by the flow chart given below

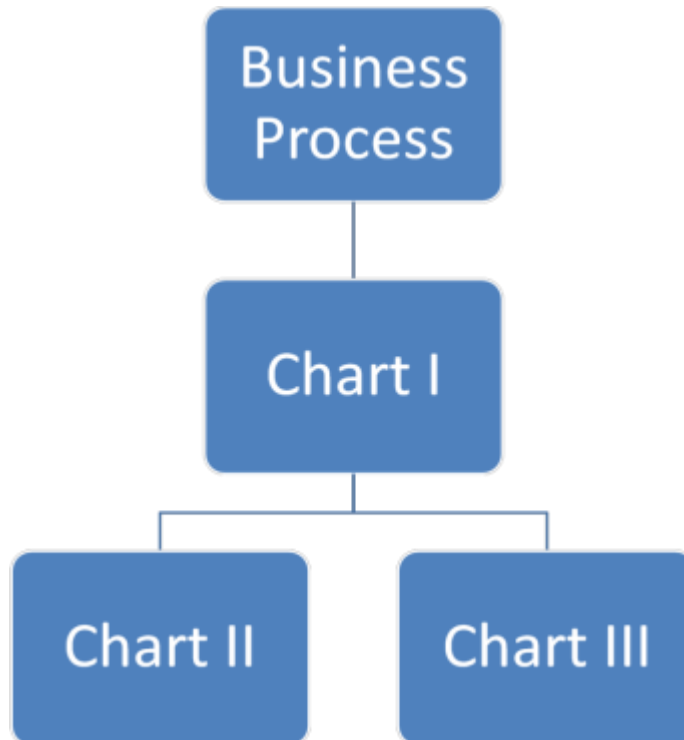
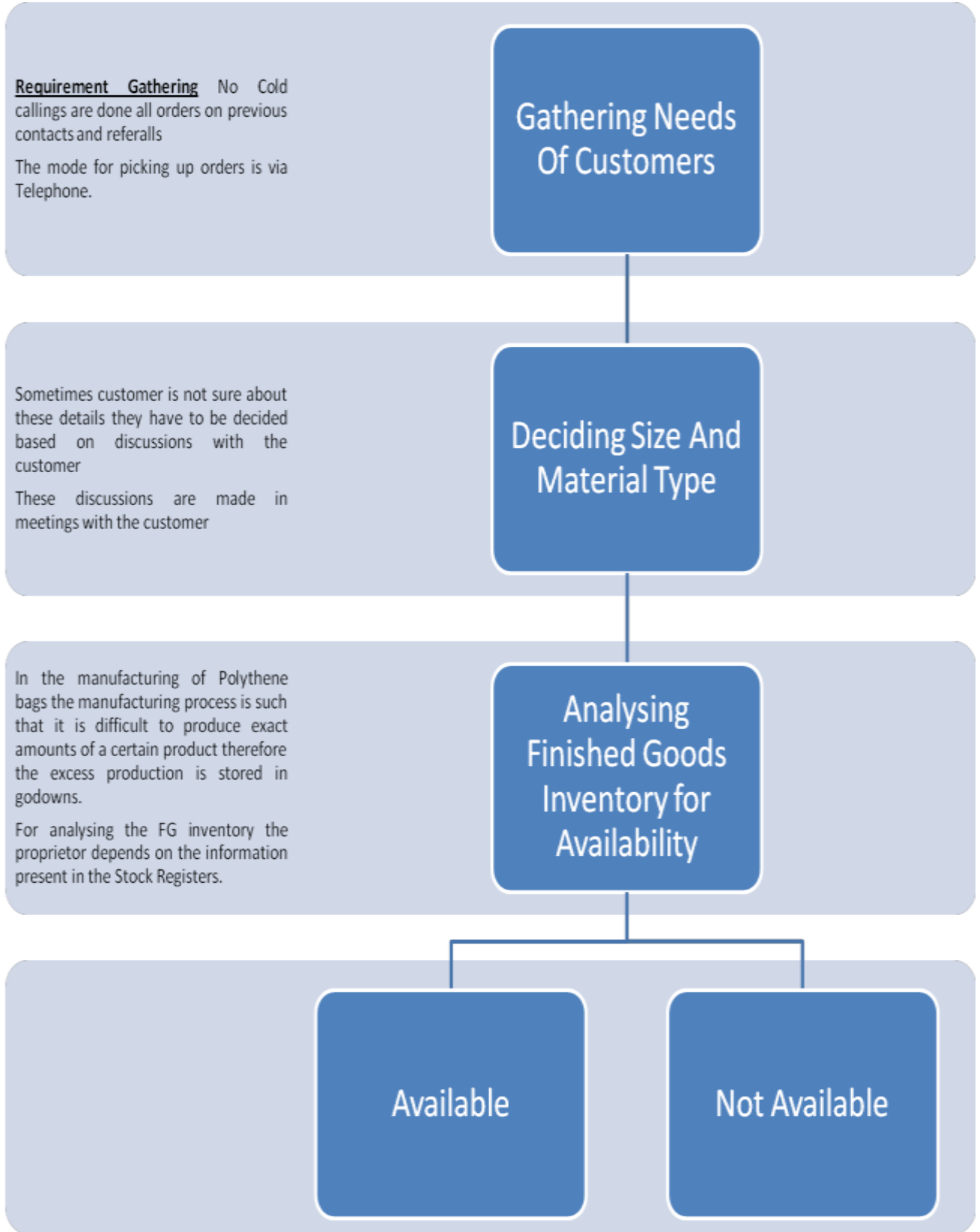


Chart I



Gathering Needs of Customers

This is the very first step of the business process and mainly involves taking up of orders from previously known customers and from referrals of both the suppliers and the customers. The mode used for contacting these customers is mainly the telephone.

This step involves keeping of contacts with purchase managers of different firms who can lead to or may themselves become prospect customers.

Deciding Size and Material Type

This is the second step of the business process and mainly involves the provision of providing consultation to the customers on what product to be used by them so that it may solve their purpose and may end up as an order for us.

In place of the firm giving customers consultation sometimes the customers may give the firm the sample of the current product being used by them. The firm would then study that product and decide what and how to produce.

Sometimes the repeated customers may give the specifications of the product in place of a sample and this makes it important for the production department to show consistency in their work and produce the order in such a way that it matches the previous orders delivered to the customer with the same specifications.

Such decisions may be made by across the table meeting with the customers or may also be done via Telephone.

Analysing Finished Goods Inventory for Availability

In the manufacturing of Polythene bags the manufacturing process is such that it is difficult to produce exact amounts of a certain product therefore the excess production is stored in godowns.

From this step onwards the internal communication with the labourers begins. The proprietor first of all checks the details of the available inventory with his stock register and then contacts the labourers to check the physical stock for the quantity and quality of the goods available.

The Stock Register € The Stock register contains the information about the material type, size and the quantity of goods available with the date of manufacturing and the date of purchase of raw materials. It also contains the value of the stock present. This value is taken as the price at which this material could have been sold to the customer when it was produced. This value is updated whenever after the production process extra amounts are stored.

Now from this step two conditions may exist

Finished Goods Inventory Available € Follow Chart II

Finished Goods Inventory Not Available € Follow Chart III

Chart II

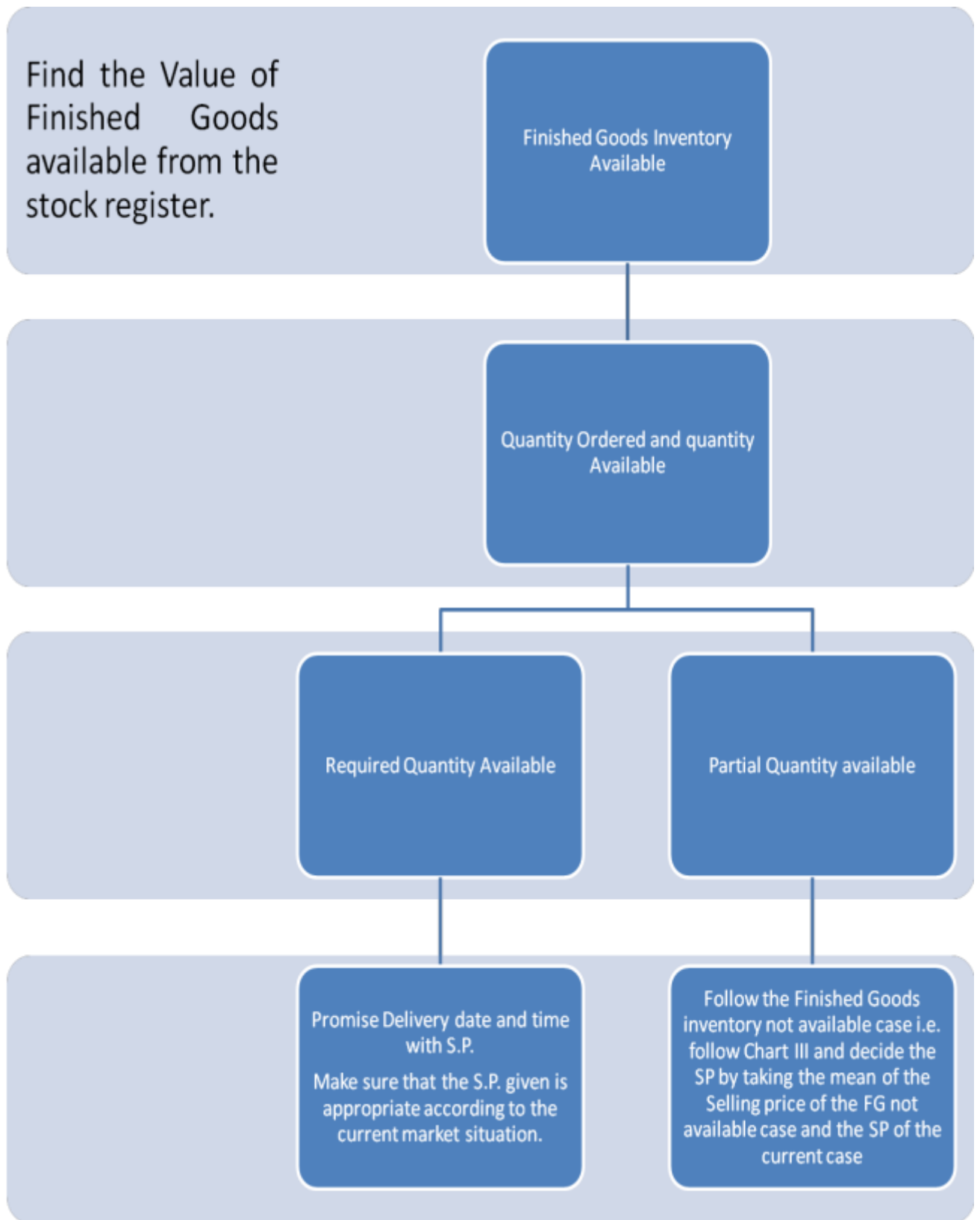
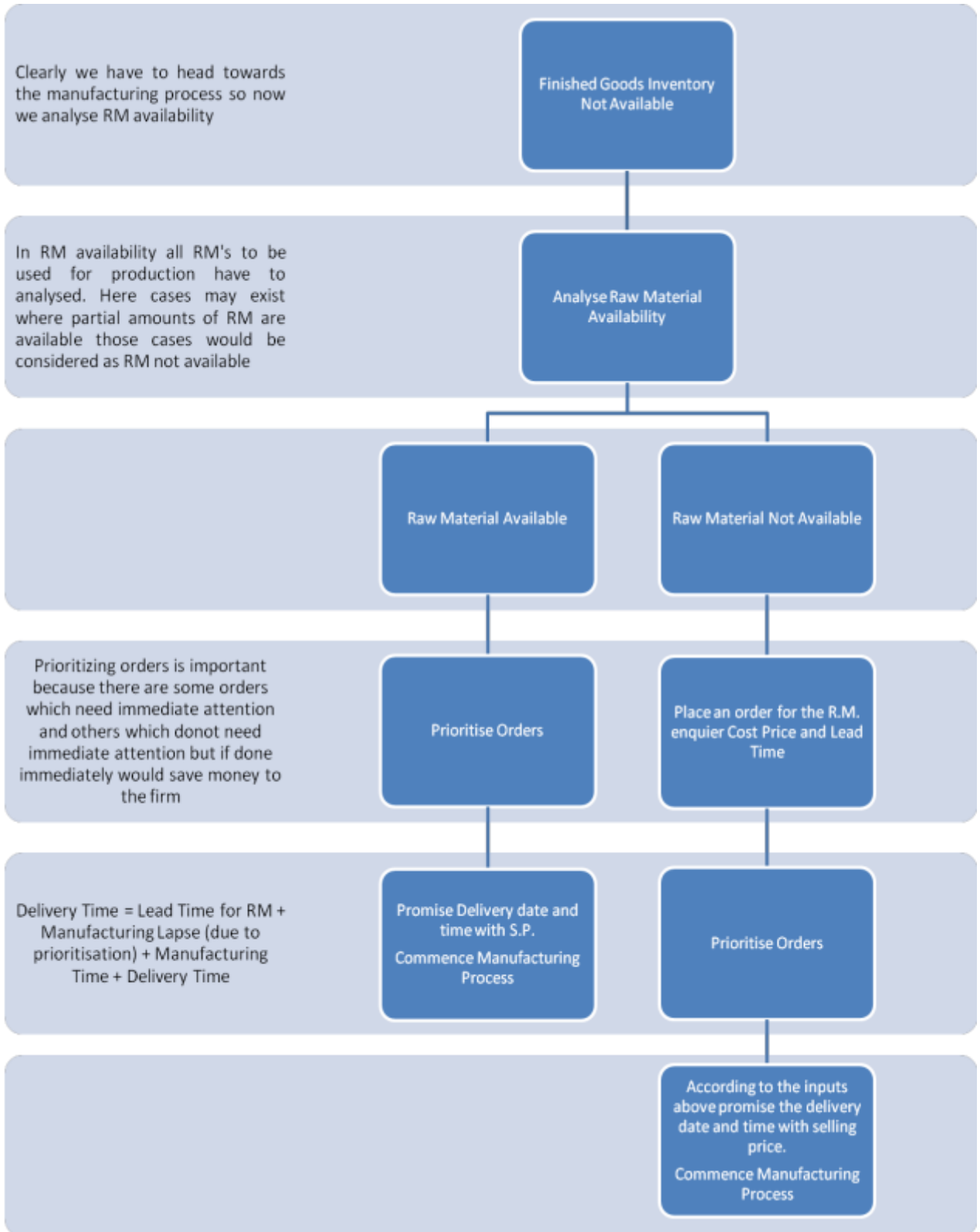


Chart III



Raw Materials

The Raw materials being used by Fair Plast & Synthetic Industries can be divided into the following groups with the corresponding contents.

Plastic Granules

Linear Low Density Polyethylene (LLDPE)
Low Density Polyethylene (LDPE)
High Density Polyethylene (HDPE)
Polypropylene (PP)

Fillers

Transparent Fillers
Opaque Fillers

Colour Master batch

Black
White
Yellow
Red
Green

Degradable Master batch

Oxy-degradable
Photodegradable

Placing Order for Raw Material

The orders for raw materials are placed by contacting the traders of Raw Material on the telephone and finding the best price for the longest credit period. Generally the credit period is decided on the basis of the delay in payments by the customer.

Prioritizing Orders

Prioritizing orders is important because there are some orders which need immediate attention and others which do not need immediate attention but if done immediately it would save money for the firm.

Prioritizing is done in such a way so that the similar products made of the same RM composition may be produced one after another. This saves heating time for the machine and hence the overall electricity expense but this is not possible every time as there are certain customers who need their orders immediately and hence they disturb the schedule.

Deciding Selling Price

The Selling Price of a product is decided mainly by the cost of RM, The cost involved in the processing of the RM and the cost involved in Transportation. All these cost and the Selling price are calculated in per Kg terms.

Therefore

$$\text{S.P.} = \text{CoRM} + \text{CI} + \text{CoL} + \text{CoE} + \text{CO} + \text{Profit}$$

Where,

S.P. = Selling Price

CoRM = Cost of Raw Material

$$\text{CoRM} = \frac{\text{sum of the cost of all the raw materials used}}{\text{the quantity of FG produced}}$$

CI = Carriage Inwards

$$\text{CI} = \frac{\text{Amount paid as CI}}{\text{the quantity brought for this amount}}$$

CoL = Cost Of Labour

$$\text{CoL} = \frac{\text{Amount paid as Labour Bill in previous month}}{\text{the quantity produced in that month}}$$

CoE = Cost Of Electricity

$$\text{CoE} = \frac{\text{Amount paid as Electricity Bill In previous month}}{\text{the quantity produced in that month}}$$

CO = Carriage Outwards

$$\text{CO} = \frac{\text{Amount paid as CO}}{\text{the quantity sent for this amount}}$$

Profit

$$\text{Profit} = \frac{2}{100} \times (\text{CoRM} + \text{CI} + \text{CoL} + \text{CoE} + \text{CO})$$

Chapter 3

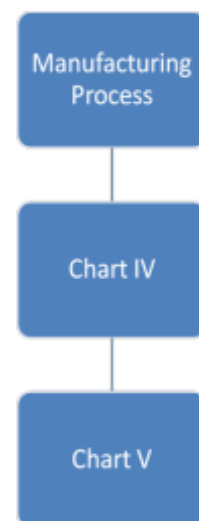
Manufacturing Process

Fair Plast and Synthetic Industries is into the production of Plastic Packing Material mainly for garment exporters and traders who supply it to all sorts of different industries. But even then the major share is from the garment exporting industry.

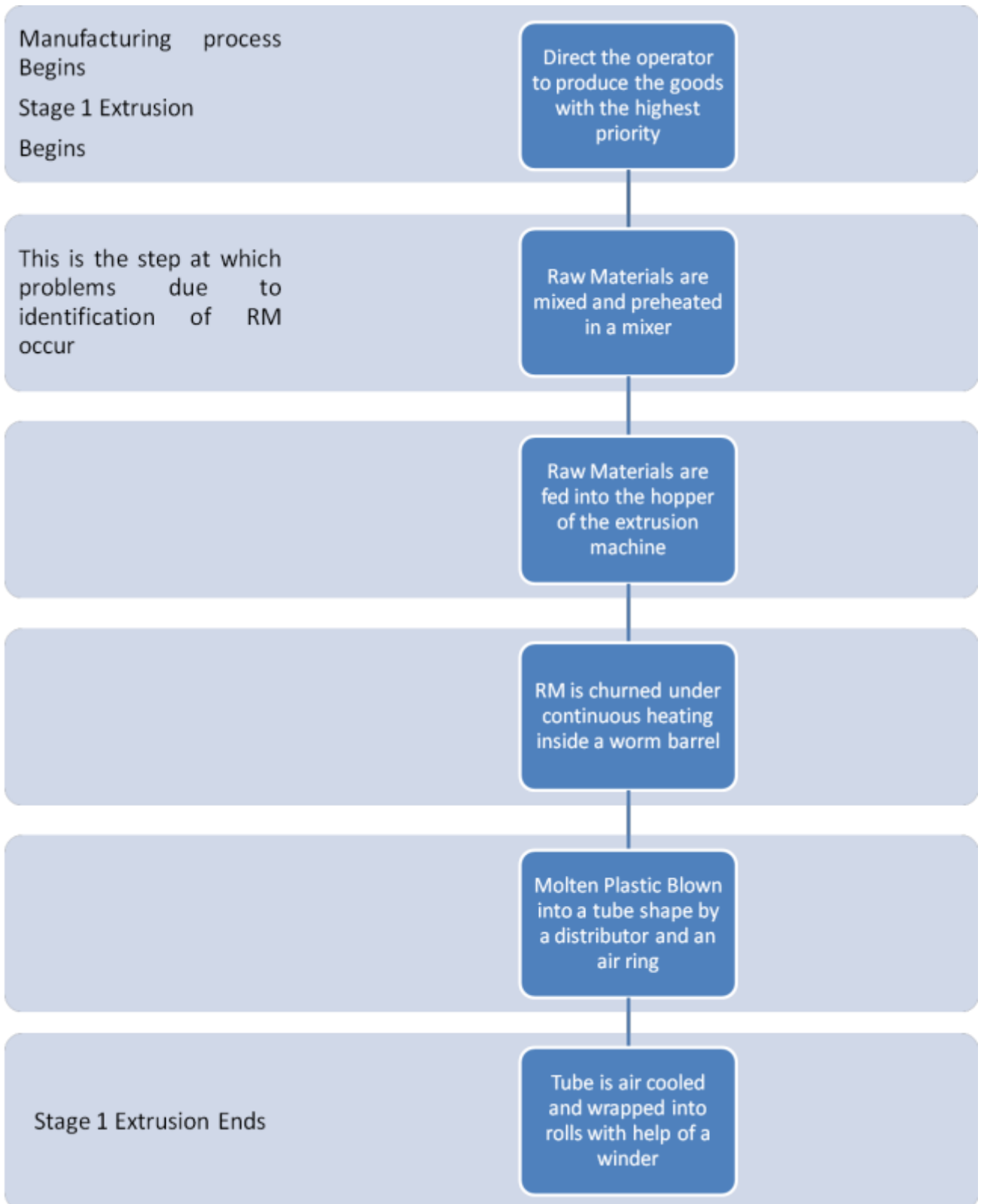
The plastic packing material being manufactured can be divided into various types these are PP, LLDPE, LDPE, and HDPE. The plastic bag manufacturing majorly consists of two types of processes these are the extrusion process and the bag making process.

The extrusion machines use the above four types of raw materials mixed with colouring agents called master batch. These machines produce plastic tubes of different sizes which are adjusted by the operator of the machine and are then sent to the sealing cutting machines.

The sealing cutting machines perform the task of converting the plastic tubes into plastic bags by the act of sealing the tube and cutting it apart to give it the shape of a bag. The length of the bag is adjusted by the operator of the machine.



ChatIV



EXTRUSION PROCESS ACTIVITY FORM

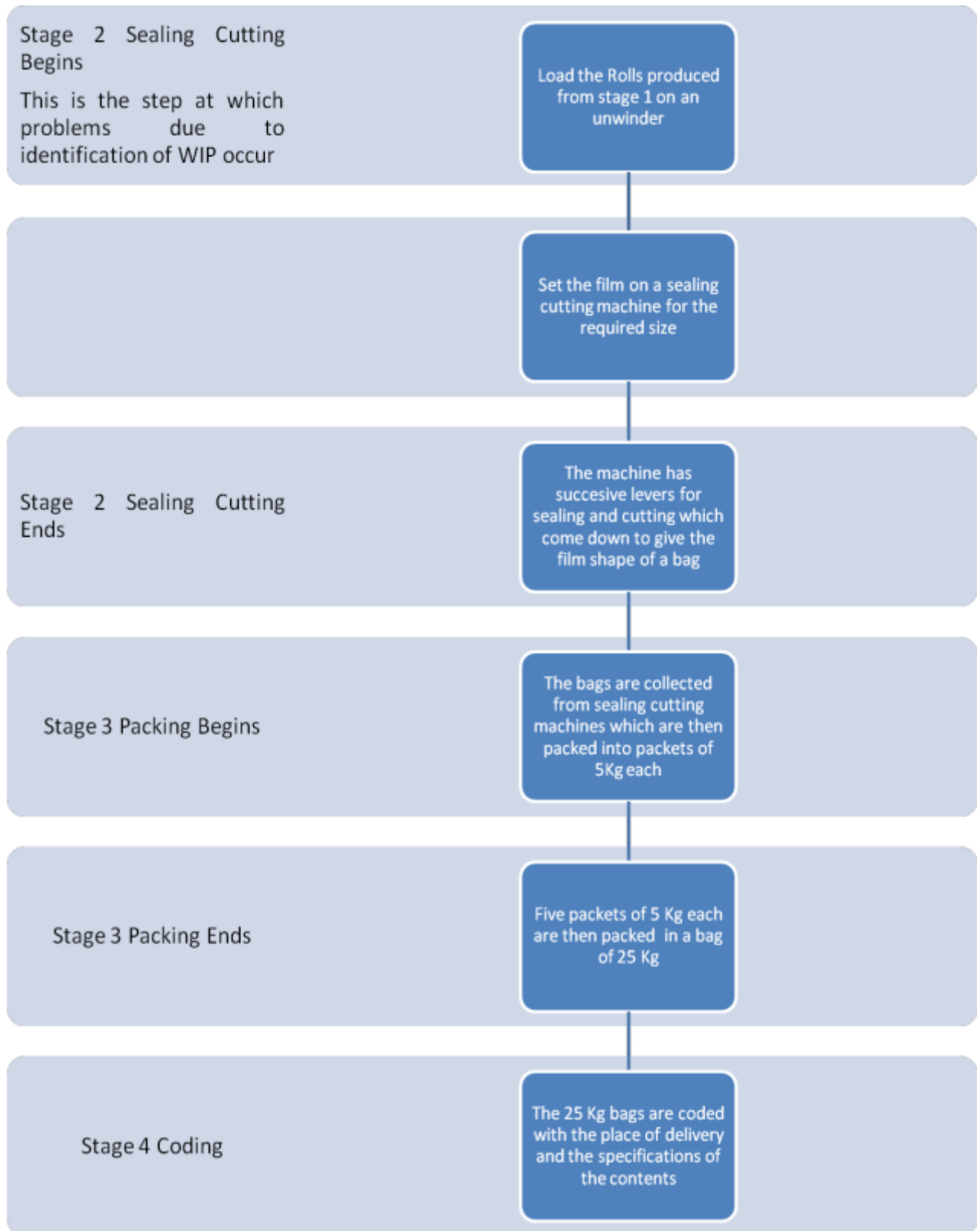
It is important for the firm to keep a check on the production quality and amount of the goods produced based on the changes in machinery, raw material as well as labour (both operators and helpers).

Till date there was no systematic record keeping of these details based on which any decision regarding machinery, raw material or labour could be taken. Therefore, special Daily Operation Reports have been designed for the operators to complete. A copy of the Daily operation report for the extrusion process can be found in Annexure-I.

The operator of the extrusion machine would be required to fill up the details of the goods produced simultaneously to the time of production.

After every week the Daily Operation Reports (DOR) would be compiled into a weekly report in which the inferences drawn from the DOR would be summarized for further reference.

ChartV



SEALING CUTTING PROCESS ACTIVITY FORM

It is important for the firm to keep a check on the production quality and amount of the goods produced based on the changes in machinery, raw material as well as labour (both operators and helpers).

Till date there was no systematic record keeping of these details based on which any decision regarding machinery, raw material or labour could be taken. Therefore, special Daily Operation Reports have been designed for the operators to complete. A copy of the Daily operation report for the sealing and cutting process can be found in Annexure-II.

The operator of the sealing and cutting machine would be required to fill up the details of the goods produced simultaneously to the time of production.

After every week the Daily Operation Reports (DOR) would be compiled into a weekly report in which the inferences drawn from the DOR would be summarized for further reference.

PACKING PROCESS ACTIVITY FORM

Packing of goods is also one of the most important steps in the manufacturing process. It is important for the firm to keep a check on the packing quality and speed based on the changes in labour.

Daily Operation Reports has been designed for the packers to complete. A copy of the Daily operation report for the packing process can be found in Annexure-III.

The packers would be required to fill up the details of the goods packed whenever the goods related to a particular order have been packed.

After every week the Daily Operation Reports (DOR) would be compiled into a weekly report in which the inferences drawn from the DOR would be summarized for further reference.

Current Codification Problems

After studying the primary sources of information it has been observed that FPSI faces a major problem in inventory handling due to the lack of codification techniques. Mistakes like delivery of wrong goods to customers as well as mixing of wrong combination of raw materials commonly take place in the firm. These mistakes majorly occur due to wrong identification of goods either by the delivery boys or by the labourers.

Each month at least 3-5 such instances occur in which wrong goods are delivered to customers. This happens due to the negligence of the delivery boys and the carelessness as well as the inefficiency of the labourers.

Mistakes of mixing of a wrong combination of raw materials are very rare as compared to the chances of wrong delivery of goods. The mistakes in mixing mainly occur in the months of June, July and August because at this time most of the labourers are new and do not have the experience for identification of raw material which can be differentiated only by the place they are kept or through their texture. These mistakes occur maximum once a year but cause a lot more trouble than the other mistakes.

According to the discussion with the labourers and the proprietor it has been observed that another common mistake made by the labourers is while transferring the material from the extrusion process to the sealing cutting process. This happens due to lack of communication and coordination of the operators for the two processes. Such types of mistakes generally occur due to lack of codification for the Work-in-Progress.

Solutions to the current Codification Problems

The common aspect in all the above problems was that they were occurring mainly due to the lack of codification techniques either in the raw material stage or the work-in-progress stage or the finished goods stage. The major solution that is suggested for solving the above problems is the implementation of codification technique at FPSI at all the different material stages.

The first step for the implementation of a codification system at FPSI would be to know the different kinds of materials used, their different stages and the specifications of the goods finally produced. The initial step would also consist of developing codes for all the above things.

There are mainly three material stages occurring during the manufacturing process, these are – the Raw material stage, Work-in-progress stage and the Finished goods stage. These different material stages have been coded as given in Table 3.1 below

Table 3.1 | Codes for Different Material Stages

| MATERIAL STAGES | CORRESPONDING CODES |
|------------------|---------------------|
| Raw Material | RM |
| Work in progress | WIP |
| Finished Goods | FG |

The manufacturing process may be bifurcated into main process where codification needs to be implemented. These processes are the Extrusion process and the Sealing Cutting process. These different process stages have been coded as given in Table 3.2 below

Table 3.2 | Codes for Different Process Stages

| PROCESS STAGES | CORRESPONDING CODES |
|-------------------------|---------------------|
| Extrusion Process | Ex |
| Sealing Cutting Process | Sc |

The manufacturing process uses different types of raw materials and the finished goods produced from them are recognized by the name of their Raw materials. The different types of materials are coded as given in the Table 3.3 given below.

Table 3.3 | Codes for Different Materials

| MATERIALS | CORRESPONDING CODES |
|---|---------------------|
| <u>Plastic Granules</u> | |
| Linear Low Density Polyethylene (LLDPE) | LL |
| Low Density Polyethylene (LDPE) | LD |
| High Density Polyethylene (HDPE) | HD |
| Polypropylene (PP) | PP |

| <u>Fillers</u> | |
|--------------------------------|----|
| Transparent Fillers | TF |
| Opaque Fillers | OF |
| <u>Colour Master batch</u> | |
| Black | BL |
| White | WH |
| Yellow | YL |
| Red | RD |
| Green | GR |
| <u>Degradable Master batch</u> | |
| Oxy-degradable | OD |
| Photodegradable | PD |

The codification technique developed would consist of the aspects such as Vendor ID, Labor ID and Machine ID. The codes for these aspects would vary in a range which has been defined in the Table 3.4 below.

Table 3.4 | Code Range for Different Aspects

| ASPECT | CODE RANGE |
|--------------------------------------|------------|
| Vendor ID | 01-99 |
| Labor ID | 1-30 |
| Machine ID (Extrusion Process) | 1-5 |
| Machine ID (Sealing Cutting Process) | 1-4 |

The codification technique developed would consist of the aspects such as Purchase Date, Manufacturing Date, Date of Packaging and Size. These aspects always have to be written in a predefined format. This format is defined in the Table 3.5 below.

Table 3.5 | Format for Different Aspects

| ASPECT | FORMAT |
|--------------------------------|----------------|
| Purchase Date | dd-mm-yy |
| Manufacturing Date | dd-mm-yy |
| Date of Packaging | dd-mm-yy |
| Size (Extrusion Process) | Width * X |
| Size (Sealing Cutting Process) | Width * Length |

The format for the coding technique suggested for the raw materials is as given below

Stage / Type / Vendor ID / Date of Purchase

Example

A material in the Raw Material (RM) stage of Polypropylene (PP) type purchased from vendor with Vendor ID 20 on 10th of May 2010 would be coded as give below.

RM PP 20 10-05-10

The format for the coding technique suggested for the work in progress is as given below

Stage / Process Stage Due / Type / Size / Operator's Labor ID / Machine ID /
Manufacturing Date

Example

A material to be worked on the Extrusion process in the manufacturing stage (i.e. it is Work-in-progress (WIP)) of Polypropylene (PP) type with width 12 inches under the processing of operator with labour ID 5 on machine no 2 with the processing date of 13th May 2010 would be coded as give below.

WIP Ex PP 12*X 5 2 13-05-10

A material to be worked on the Sealing Cutting process in the manufacturing stage (i.e. it is Work-in-progress (WIP)) of Polypropylene (PP) type with width 12 inches and length 7 inches under the processing of operator with labour ID 9 on machine no 3 with the processing date of 14th May 2010 would be coded as give below.

WIP Sc PP 12*7 9 3 14-05-10

The format for the coding technique suggested for the finished goods is as given below

Stage / Delivery Place / Type / Size / Date of Packaging

Example

A material produced (FG) on the 14th of May 2010 to be delivered at Vikas Nagar of Polypropylene (PP) type with width 12 inches and length 7 inches would be coded as give below.

FG / Vikas Nagar / PP / 12*7 / 14-05-10

Chapter 4

Data Collection

PRIMARY SOURCES

The primary sources in this project will be the data collected through interactions with the proprietor and the labourers as well as the information gathered from the various account statements of the firm.

The whole of the business process as well as the manufacturing process has been made on the basis of the data collected from the primary sources.

SECONDARY SOURCES

The secondary data in this project was collected from the internet and consisted of the inventory management techniques and the MIS being implemented at various organizations.

The inventory management techniques being implemented in other organizations were found to be quite impractical for such a small organization as this organization cannot afford the expense of an employee for the purpose of proper documentation and analysis of inventory.

The only inventory management technique that was found viable for use in this firm was that of codification of goods. This technique is being used but at a very small scale and only for finished goods. Another problem with the current system is that it requires literate delivery boys and efficient workers who can write the destination of goods in a legible fashion.

The solution suggested for the problem of illiterate delivery boys is the use of stickers of different colours for different destinations. But this also does not solve the problem due to the inability to differentiate between colours in bad light as well as due to the weak power of the stickers to stick on the gunny bags.

The codification technique at FPSI also needs to be taken to the next level by not just coding finished goods inventory but also the raw materials and the work in progress inventory. This would eradicate the problems caused due to mixing of incorrect combinations of raw materials as well as largely reduce the mistakes at the time of transferring goods from the extrusion process to the sealing-cutting process.

But before implementing such techniques the reasons behind the failure faced for codification of finished goods must be clearly understood. The failure had caused due to illegible hand writing of the labourers as well as due to lack of visibility in bad light in the case of colour coding for the finished goods. Not much can be done about the writing of the labourers as the firm cannot afford a printing process for codification but the colour coding technique can be used for the raw materials as they are stored in well lit

godowns and therefore there would not be any problem of identification of raw materials.

While studying the MIS systems being used in other organizations it was found that most organizations use customized MIS systems or the system being used by them is being used at a large scale in the different departments of the organization and such a case doesn't exist in this firm. Mainly the need for an MIS system at FPSI was for the proprietor to analyse the changes coming in the firms functioning and accounts so it was thought about advising the firm to implement any sort of a full-fledged MIS system only after it grows enough to have different departments for different operations or at least have a dedicated employee to look after it. Till then it is advised to the firm to depend for their book keeping process on software's like tally either indigenously or outsource the process and regularly take out reports of the firms functioning and account statements.

Chapter 5

Limitations of the Study

The limitations of the study are the following:

- The mode of Primary Data collection is discussions and interviews. The interviews have a Limitation that they are subjected to the availability of the people involved.
- In the case of interacting with labourers it is sometimes difficult to understand and get out information from them as there is a barrier of knowledge as well as language.
- Less availability of in-depth information regarding various management tools and techniques being used in other organizations i.e. there is major lack of secondary data available.
- Lack of experience of Researcher.

ANNEXTUE-I

DAILY OPERATION DETAIL

Extrusion Process

Date ___/___/___

Shift _____

Operator's Name _____

Helper's Name 1 _____

Helper's Name 2 _____

Machines Handled 1 2 3 4 5

(Circle Those Applicable)

| S. No. | Machine No. | Material Type | Thickness (Microns) | Breadth (inches) | Raw Material I/p (Kgs) | | | Rolls O/p (Kgs) | Waste O/p (Kgs) | Time of Beginning (hh : mm) | Time of Completion (hh : mm) |
|--------|-------------|---------------|---------------------|------------------|------------------------|------|-------|-----------------|-----------------|-----------------------------|------------------------------|
| | | | | | (I) | (II) | (III) | | | | |
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Notes Regarding Raw Material _____

Machine _____

Helper _____

ANNEXTUE-II

DAILY OPERATION DETAIL

Sealing Cutting Process

Date ____/____/____

Shift _____

Operator's Name _____

Helper's Name 1 _____

Machines Handled 1 2 3 4
(Circle Which ever Applicable)

| S. No. | Material Type | Thickness (Microns) | Breadth (inches) | Length (inches) | Bag O/p (Kgs) | Time of Beginning (hh : mm) | Time of Completion (hh : mm) |
|--------|---------------|---------------------|------------------|-----------------|---------------|-----------------------------|------------------------------|
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Notes Regarding Raw Material _____

Machine _____

Helper _____

ANNEXTUE-III

DAILY OPERATION DETAIL

Packing Process

Date ____/____/____

Shift _____

Helper's Name 1 _____

Helper's Name 2 _____

Helper's Name 3 _____

| S. No. | Order Packed | Amount (Kgs) | Number Of Packets | Destination Marking | Time Of Beginning (hh : mm) | Time of Completion (hh : mm) | Time And Date of Dispatch (hh : mm) / (dd-mm-yy) |
|--------|--------------|--------------|-------------------|---------------------|-----------------------------|------------------------------|--|
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Notes Regarding Raw Material _____

Machine _____

Helper _____