
**PURCHASING FUNCTIONS
ANALYSIS AND DEVELOPMENT**

Case for a Company



Bachelor's thesis

Degree Programme of Supply Chain Management

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ABSTRACT

This thesis was targeted at generating development proposals for a company's purchasing functions. Reducing the number of suppliers was the key operational aim, set by the company's management.

Thesis was done by collecting information to understand each function and their relationships. Then a current status mapping was built for the purchasing activities.

To generate the proposals, the Supply Chain Management Process Maturity Model theory was the leading benchmarking method. The key outcome of the theory is the understanding of supplier collaboration level.

For the company to implement the changes leading to development, Continuous Improvement Tools, idea generating and Change Management theories were selected. The supplier collaboration is best initiated by the company and done in collaboration with the suppliers.

The Action proposals were built on a process developed and tailored for the company. Employee interview feedback was the main driver for outlining the proposals to ensure an easy roll-out of the developing actions.

The general conclusion is the company's personnel should agree on the issues they will act on to gain improvements. Then they need to create a common root causes understanding and share it. Only after that they can act together to make developments that will stay.

The company can use the Supplier Collaboration Development Tool concept in developing also company internal functions in addition to enhancing the collaboration through the supply chain.

The actions the company selected are the company's internal decision and not a part of this thesis.

Keywords Collaboration, Supply Chain, Supplier, Development, Improvement.

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TIIVISTELMÄ

Tämän opinnäytetyön tavoite oli aikaansaada kehitysehdotuksia yrityksen ostotoiminnalle. Yrityksen toimitusjohtajan asettama operatiivinen tavoite oli etsiä keinoja vähentää pienten toimittajien määrää.

Työ tehtiin keräämällä yrityksestä ja organisaatiosta tietoa sekä pyrkimällä ymmärtämään yrityksen ostoja tekevien osastojen toimintaa. Silloisen hetken nykytila kartoitettiin ostotoimintojen osalta.

Kehitysehdotusten aikaansaamiseksi Supply Chain Management Process Maturity Model -teoria valittiin vertailukohtaksi. Teorian pääasiallinen tulos on ymmärrys kunkin toimittajan kanssa tehdyn yhteistyön tasosta ja yhteistyön kehittämisen tarpeista.

Yrityksen kyvykkyyttä aikaansaada pysyviä parannuksia pohjustettiin jatkuvan parantamisen sekä muutoshallinnan toimintamalleilla. Yrityksen toimittajat eivät yksin voi parantaa yrityksen toimittajayhteistyötä, joten yhteistyön parantaminen ehdotettiin aloitettavaksi yrityksen suunnasta.

Kehitysehdotukset rakennettiin yritykselle erikseen tehdyn toimittajayhteistyön parantamisen työkalun päälle. Kehitysehdotukset valittiin ja muotoiltiin työntekijäpalautteen päälle varmistuen muutosvalmiutta.

Johtopäätöksenä oli, että yrityksen henkilöstön tulee ensin olla sisäisesti riittävän yhtä mieltä parannuksen kohteesta. Sen jälkeen kunkin asiointilan varsinaisten syiden yhteinen ymmärtäminen ja yhteinen jakaminen mahdollistavat todellisen etenemisen kohti pysyvien parannusten tekemistä.

Yritys voi käyttää toimittajayhteistyön parantamisen työkalun rakennetta ja tasoihin pohjautuvaa ajattelua parantaakseen myös sisäisiä toimintojaan ulospäin näkyvien hankintaketjujen parantamistoiminnan lisäksi.

Yrityksen tekemät valinnat ja toiminnan varsinainen parantaminen eivät kuulu tämän opinnäytetyön piiriin.

Avainsanat Yhteistyö, Toimitusketju, Toimittaja, Kehitys, Parannus

Sivut 44 s. + liitteet 6 s.

CONTENTS

1	INTRODUCTION	1
2	COMPANY ORGANISATION	2
3	PURCHASING CURRENT STATUS	4
3.1	Common Features for All Purchasing	4
3.1.1	Enterprise Resource Management System	4
3.1.2	Purchasing Number System	5
3.1.3	Incoming Deliveries	5
3.1.4	Invoice Handling	6
3.1.5	Supplier Performance Improvement.....	6
3.2	Manufacturing related materials and services	6
3.2.1	Main Material	7
3.2.2	Key Material	9
3.2.3	Supportive Materials	10
3.2.4	Protective Clothes.....	11
3.2.5	Manufacturing Tools	12
3.2.6	Packing Materials	13
3.2.7	Shipping Service.....	14
3.3	Manufacturing Equipment and Maintenance	15
3.4	BU3 Materials	16
3.5	Outsourced Labour.....	17
3.6	Testing Services	17
3.7	Office Materials.....	17
3.8	Computers and related equipment.....	18
3.9	Telephones and data connections	18
3.10	Services	18
3.11	Small Purchases.....	19
4	THEORIES.....	21
4.1	Supplier Collaboration Levels.....	21
4.2	Continuous Improvement Tools.....	23
4.3	Change Management.....	24
4.4	Tailored solution for the company	25
5	DEVELOPMENT PROPOSALS	27
5.1	Common Features for All Purchasing.....	27
5.1.1	Enterprise Resource Management System	27
5.1.2	Purchasing Number System	28
5.1.3	Incoming Deliveries	28
5.1.4	Invoice Handling	29
5.1.5	Supplier Performance Improvement.....	29
5.2	Manufacturing related materials.....	30
5.2.1	Main Material	30
5.2.2	Key Material	31
5.2.3	Supportive Materials	33
5.2.4	Protective Clothes.....	34

5.2.5	Manufacturing Tools Purchasing	34
5.2.6	Packing Materials	35
5.2.7	Shipping Services	36
5.3	Manufacturing Equipment Maintenance	37
5.4	BU3 Materials	38
5.5	Outsourced Labour	38
5.6	Testing Services	39
5.7	Office Materials.....	39
5.8	Computers and Related Equipment.....	40
5.9	Telephones and Data Connections	40
5.10	Services	41
5.11	Small Purchases.....	41
6	CONCLUSION	43
	SOURCES	44

Appendix 1 EMPLOYEE INTERVIEWS

GLOSSARY

BU1	Business Unit 1, selling specialised products
BU2	Business Unit 2, selling basic products
BU 3	Business Unit 3 selling BU1 and BU2 products with installing service. Called also Installed Goods Business Unit
Key Material	Material that is needed for most of company's products
Main Material	Material that is needed for all company's products
Manuf	Manufacturing
Mgmt	Management
Resp	Responsible organisation
Supportive Materials	Materials supporting manufacturing or products. For example cleaning materials, chemicals or paints
System LS	A system the company uses for payables invoice circulation and managing the payments. LS is used also for sales invoicing. LS offers a full enterprise resource planning software feature set.
System PC	A system the company uses for production planning, including materials management. PC offers a full enterprise resourcing planning software feature set.
System PN	A system that was very recently discontinued. The company used PN for payables and receivables management.

1 INTRODUCTION

This thesis targets at generating development proposals for the company's purchasing. The proposals were based on understanding and analysing the company's purchasing plus employee feedback. The operative task given by the managing director was to find ways to reduce the number of small suppliers.

To develop purchasing, the company has earlier initiated a project to agree the terms of payments with suppliers. Progress of payment terms negotiations was followed as a part of the thesis.

The company's purchasing current status understanding was gathered by getting familiar with the company organisation and discussing with the company personnel. The purchasing related working habits, methods, tools and relationships were the focus in the discussions. The current status was outlined per material, commodity or service the company purchased. The small purchases were given an additional focus.

A development tool was custom-built for developing the company's purchasing and making the developments permanent. The development tool was built on a set of supportive theories and tools.

To gather a deeper understanding of the employees' own views and their willingness to implement changes, a formal interview was given to employees who purchase. The interview was based on questions agreed with the managing director. The employees got a good level of freedom to express from their point of view what the purchasing related development possibilities or problems were.

The actual development proposals were selected and built on employee interviews and other knowledge gathered during the thesis work. One main measurable was how easy the implementing of the improvement would be, that is how much buy-in the employees had. The development proposals were presented to the managing director.

The supplier collaboration improvements were targeted to reduce the supplier base, simplify total purchasing related work and minimising purchasing related problem solving needs.

The decisions about selecting the activities were done later within the company and are not a part of this thesis.

2 COMPANY ORGANISATION

The company is divided into three business units, each having separate product ranges but using the same manufacturing unit.

BU1 and BU2 sell and ship the manufacturing outputs to customers. The difference between BU1 and BU2 is a treatment given to BU1 products.

BU3 sells products with installing services. The installing related materials are stored in BU3 own warehouse.

Manufacturing serves all three business units.

The BU3 has an own warehouse and a team for installing work.

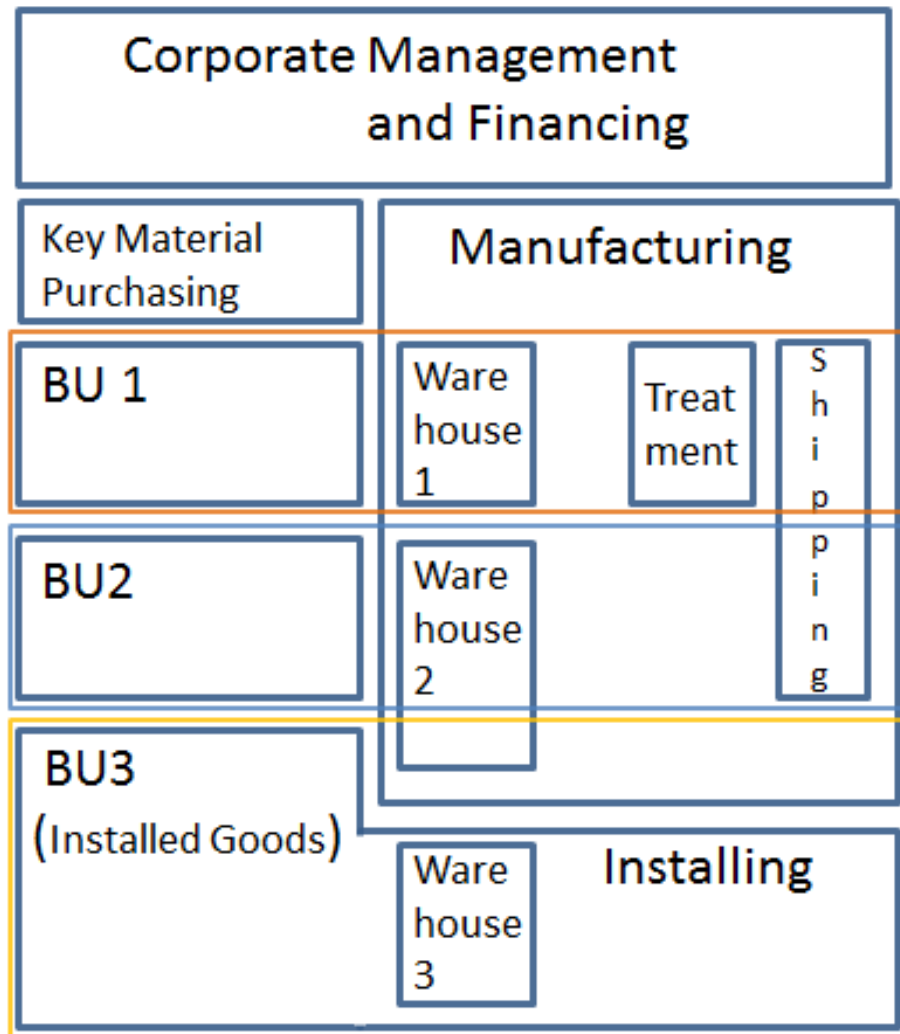


Figure 1 Company organisation and main supply chain functions

The purchasing flows per material needed are presented through chapter 3.

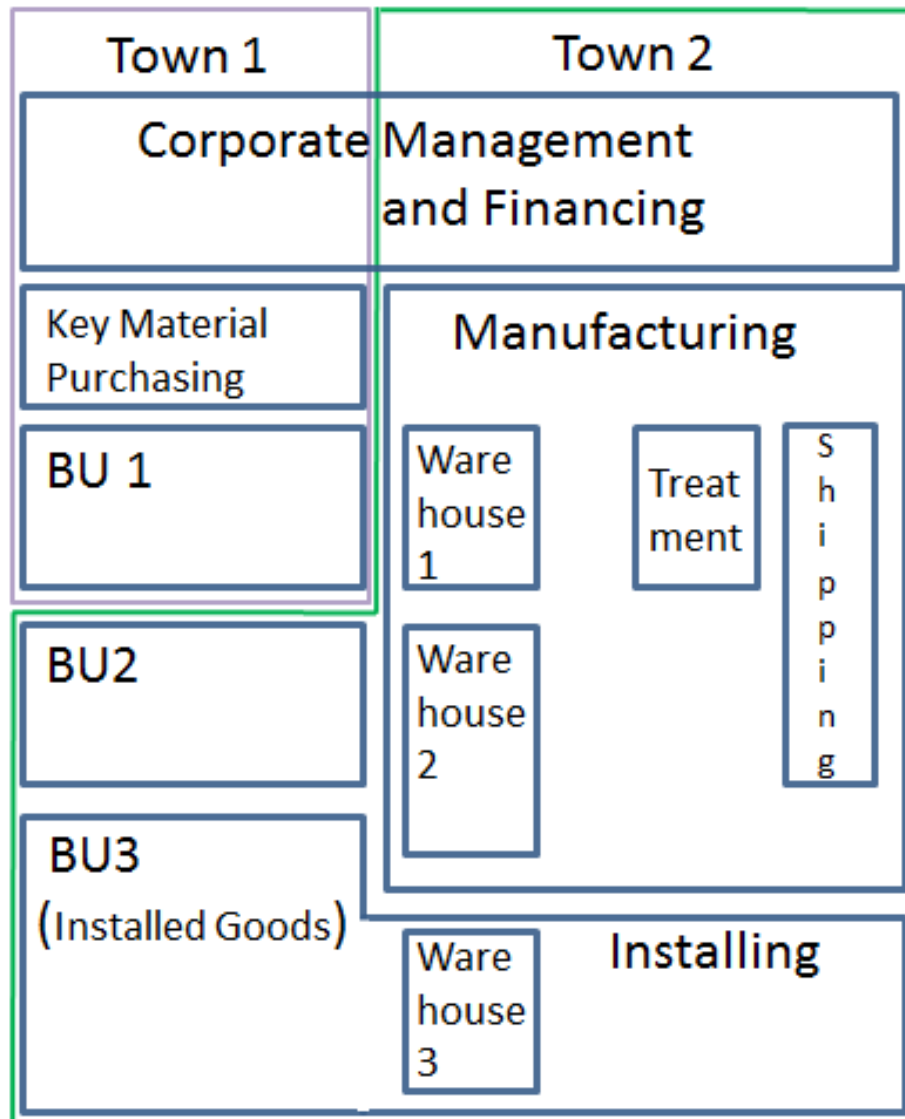


Figure 2 Company organisation and locations

The company operates at two sites in two Finnish towns.

BU1 sales, key material purchasing and a part of the management are in town 1.

BU2, BU3, manufacturing with warehousing and shipping, financial department and a part of management are in town 2.

The majority of the purchased materials are imported to Finland and procured through the suppliers' Finnish departments or representatives. Some purchased materials are imports.

Some of BU1 and BU2 sales are exports. BU3 operates within Finland.

3 PURCHASING CURRENT STATUS

The different purchasing functions are characterized by the items purchased and divided into parts of organisation where applicable. This approach brings up the current diversity within the purchasing activities and related responsibilities.

The common purchasing features are described in chapter 3.1. The purchasing that varies by items is described in chapters 3.2 through 3.11. The small purchases under focus are described in chapter 3.12.

3.1 Common Features for All Purchasing

3.1.1 Enterprise Resource Management System

The financial department uses a system LS to manage payables invoices' circulation and paying. All purchases are recorded in the LS latest when the invoice arrives. Based on the knowledge gathered during the thesis work, the system LS offers features of a full enterprise resource planning system if used thoroughly. LS is used also for managing receivables invoicing. Some employees using LS are uncertain if they use the LS correctly.

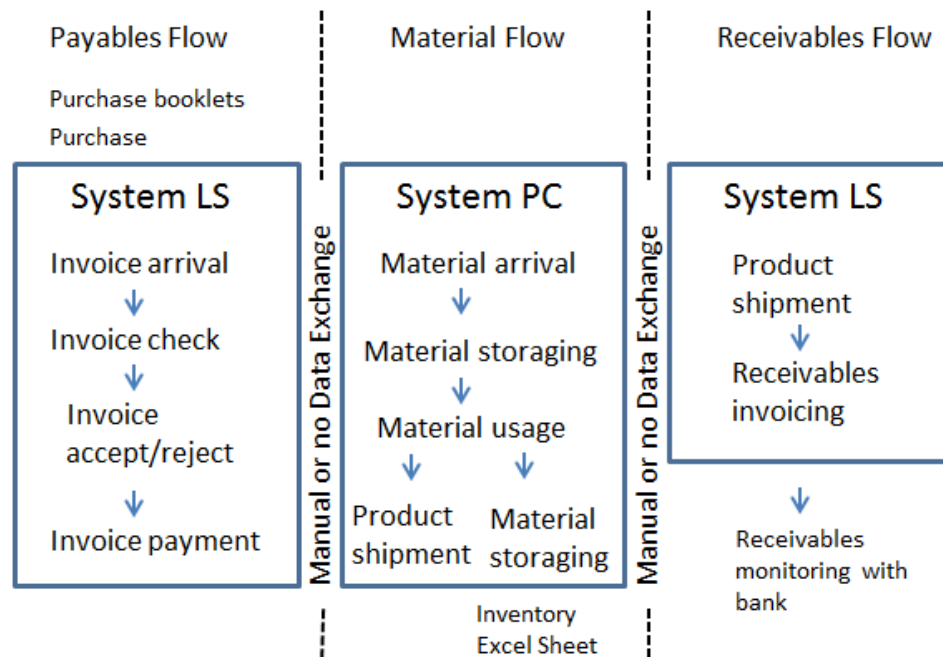


Figure 3 Company's enterprise resource management systems

Manufacturing uses a system PC for material and production planning. Based on the knowledge gathered during thesis work, also system PC offers features of a full enterprise resource management system.

System PN has been recently discontinued and has been replaced by system LS. All employees managing purchases have not understood or accepted the implemented change.

The current status is the company uses two enterprise resource planning systems LS and PC. Not all employees know this new LS system should be used and how it should be used.

The data interchange between systems LS and PC is manual.

Production does not record total used materials neither into system PC nor system LS. Material inventories are done once a month into an excel sheet.

3.1.2 Purchasing Number System

A purchasing number system is in use by most employees who purchase. Purchase number system identifies the responsible senior person by the last two digits. For example a number 3311 is the 33rd purchase for person 11.

Normal purchasing number utilisation happens through purchasing booklets. A purchasing number is reserved in the booklet when purchasing. There is no connection from purchasing booklets to System LS as described in figure 3.

Some employees, who purchase, do not use the purchasing number, or do not always use the purchasing number. Also the suppliers sometimes do not record the given purchasing number neither to the delivery nor the invoice. In those cases, after finding the person who did the purchasing, the purchasing number is attached to the invoice.

BU3 uses an additional identification for each project they run to follow the costs per project delivery more accurately. All BU3 purchasing employees use both purchasing and project numbers. By the knowledge gathered during the thesis work, the project numbering is not supported by the system LS. The project cost following is done manually.

3.1.3 Incoming Deliveries

The incoming deliveries are received at different loading areas at different buildings of the Manufacturing and the BU3. There is one person per warehouse receiving the goods. All incoming deliveries are checked to notice any damages on the packing surface.

No documents are produced when receiving the material deliveries. Knowledge of material receipts propagates randomly. The materials are sometimes received, accepted and placed in a wrong warehouse. In these cases, the materials must be found before the planned manufacturing can be done.

3.1.4 Invoice Handling

Each invoice progresses through the enterprise resource planning system LS, as described in figure 3.

When the invoice has been received, it is checked by the relevant senior person, signed or rejected, brought to financial department and then the checked invoices are individually signed for payment by the managing director in System LS. Each invoice returns to the financial department for actual paying or for further investigation if rejected by the managing director.

Like described in chapter 3.1.2, there are situations the financial department must search the actual buyer to start the invoice acceptance routine. Invalid invoices are a rarity.

3.1.5 Supplier Performance Improvement

Most manufacturing material purchasing related problems cause scheduling problems, or pose a direct risk for such. Also, any production materials related problem solving causes extra workload for at least the manufacturing supervisors.

The company does not have a problem solving system. People solve the problems as they see feasible. The solved problems are not documented.

One manufacturing team has a weekly information sharing meeting for improving team performance. Also materials related issues are discussed as a part of that team's meetings. Few if any documents are produced at those meetings.

Supplier related problems are solved by presenting reclamation to get a re-funding for payments done. Another method for problem solving has been to change the supplier in case of unsatisfactory service.

3.2 Manufacturing related materials and services

The manufacturing input materials are divided into six categories:

- Main Material
- Key Material
- Supportive Materials
- Protective Clothes
- Manufacturing Tools
- Packing Materials
- Shipping

Figure 4 presents the materials and associated purchasing personnel.

Main Materials are machined before going further in the manufacturing and Manufacturing Tools are used at a Treatment work phase. More detailed manufacturing description is not needed in describing the company's purchasing activities.

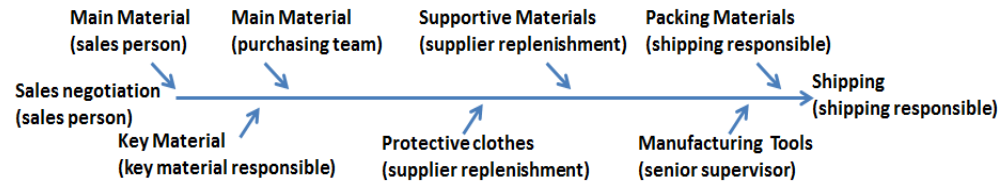


Figure 4 Manufacturing related purchasing chain and responsibilities

The sales person initiates activities through the purchasing chain. The manufacturing related materials purchasing current status is described through chapter 3.2. Shipping is bought as a service.

3.2.1 Main Material

All outgoing shipments are mainly built of the Main Material the company purchases. The managing director negotiates and agrees the terms and pricing with the Main Material suppliers.

The main material is sourced from six suppliers, totalling 20,60% of the company's purchases. The largest Main Material supplier represents alone 15,44% of the company's total purchases. The other five together represent 5,16%. There are also random smaller purchases from other Main Material suppliers for special projects.

In this company, the sales person also initiates Main Material purchasing. The sales person estimates the material need and informs the Main Material purchasing team in town 2. The incoming delivery timing is agreed with supplier and Manufacturing. The Main Materials purchasing team has good relations with Main Material suppliers.

As the sales personnel estimate the Main Material needs to a good degree with the largest Main Material supplier, the largest supplier knows what the predictions are and can indicate if the material is or is not available in the indicated time window. The actual delivery schedules are typically two days for the Main Materials from the largest supplier.

The collaboration with the largest Main Material supplier is done using some of the Lean guidelines to achieve the shortest possible lead time for the Main Material delivery.

In case the materials are not available, the Main Materials purchasing team must find the materials from other suppliers. Some of those purchases are one-time purchases.

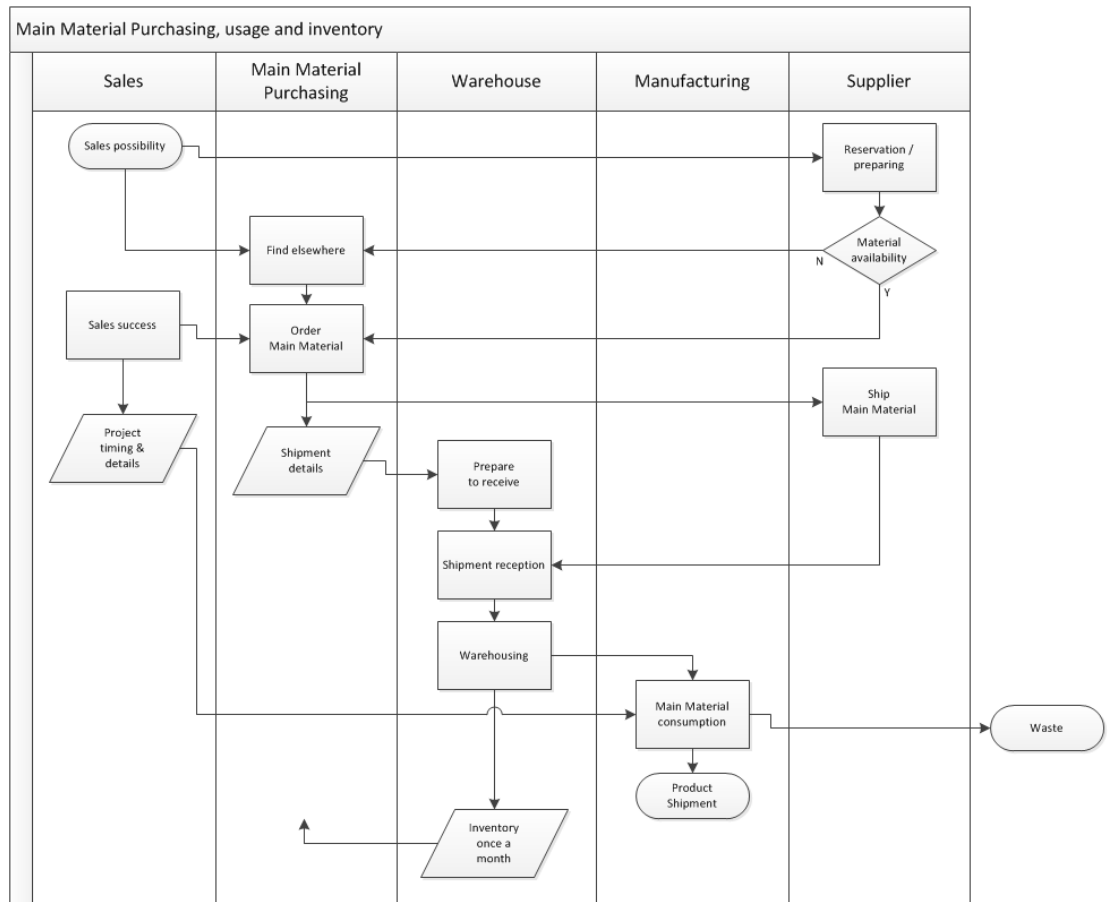


Figure 5 Main Material purchasing current status

There are two separate storages for the Main Materials. Inventories are recorded into an excel sheet once a month. Warehouses are located in dedicated Manufacturing areas with dedicated machining and treatment capabilities; see figure 1.

The manufacturing quality factors are not always stable or predictable, thus Main Material related waste varies between projects, sometimes waste is substantial.

There are more than twenty Main Material types. The main differentiating features and properties are a pre-treatment, thickness and colour. Mix of the Main Material types in the two warehouses is largely overlapping. Moving materials between the storages is not possible due to production internal logistics and crane arrangements. This causes double inventories of many Main Material types.

The Main Material payment terms are 30 days from delivery for the largest supplier. For the smaller suppliers the payment terms vary. Some Main Material suppliers must be paid in advance.

The Main Material is in practise imperishable, but is fragile and requires work safety related special attention when storing.

In case the company's payments are lagging too much behind the purchases, even the largest Main Materials supplier declines to ship. Many times, the warehouse expects the delivery but after calling over phone the situation is revealed that the payments of previous shipments have not been done. The company can get the material only after the payments are at agreed level with the supplier. There is no connection from purchasing to monetary flow inside the company, but the suppliers follow the payments very carefully.

3.2.2 Key Material

The Key Material purpose is to support the product structure. The Key Material is needed for most products; but not all products. The Key Materials are purchased by a dedicated person in town 1. The Key Material responsible employee negotiates and agrees the prices and terms with the Key Material suppliers.

There are three Key Material suppliers. They Key Material purchases represent together 4,34% of the company's purchases.

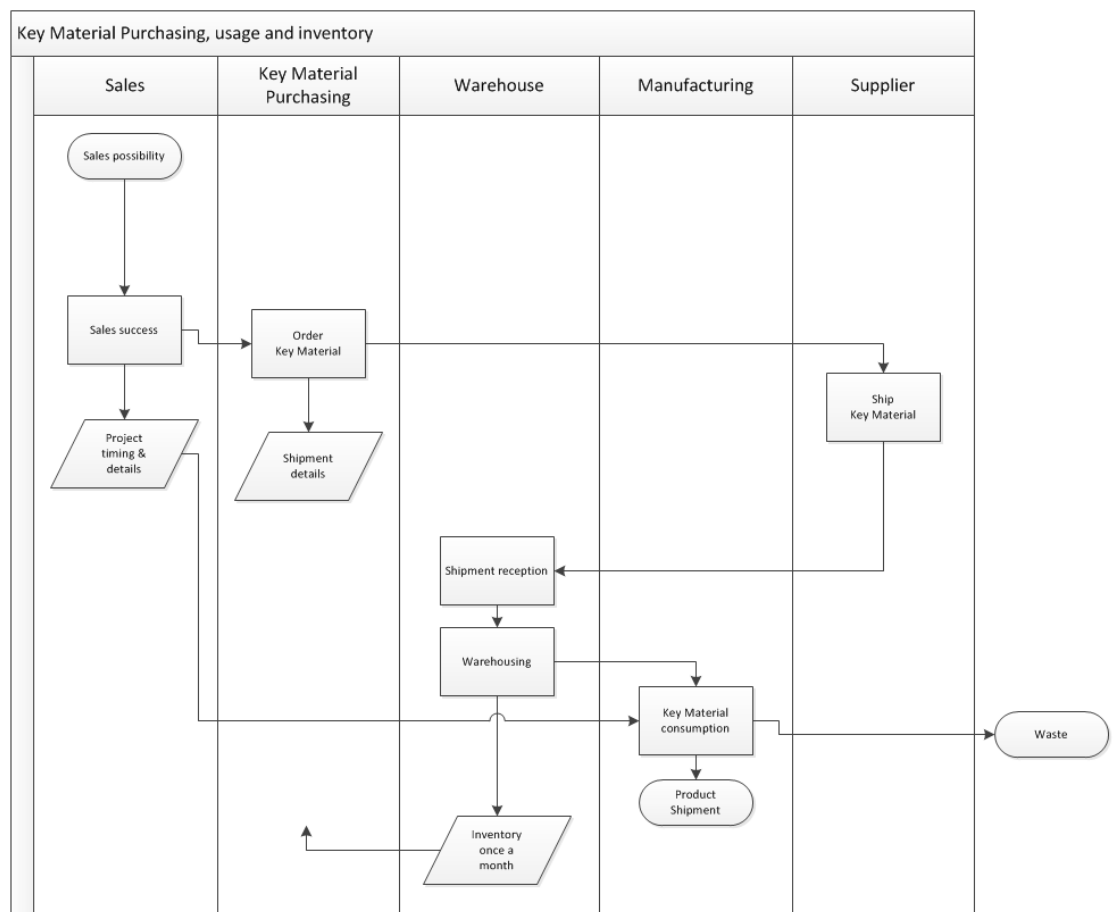


Figure 6 Key Material purchasing current status

Key Material need and timing estimates are built based on Key Material purchasing responsible negotiations with the sales. The coming projects are reviewed and the material consumption is estimated. No documents

come to Manufacturing from this negotiation between Key Material purchasing and sales. If any information comes, it is based on emailing or phone calls that are not systematic.

Manufacturing gets the information of sales latest from the Main Material purchasing team. Neither sales personnel nor Key Material responsible systematically tell Manufacturing a project is coming; or Manufacturing does not systematically spread the information within. Manufacturing internal operations clarifications are not a part of this thesis and this problem setup was not investigated to the detail during the thesis work.

There have been occasions a Key Material delivery amount has surprised the warehouse and Manufacturing, causing problems in warehousing and causing employee dissatisfaction due to seeing a largely excessive amount of materials in the warehouse. Typically those cases have been such the warehousing people did not know of coming temporary rise in production volume.

The Key Materials are stored in Manufacturing's two storages. Inventories are checked once a month and recorded into an excel sheet. Manufacturing has occasionally issues with the Key Material, thus the consumption of the material cannot always be predicted. There are cases the Key Material is missing or runs out.

There are more than ten different key material types in the storages. Some of the Key Material types are overlapping causing double inventories.

The key material is sensitive to moisture and other environmental factors. Moving the key materials between storages is not feasible because of Manufacturing's internal logistics arrangements and Key Material could get contaminated or damaged when moving.

3.2.3 Supportive Materials

The Supportive Materials are chemicals, paints or add-on materials. They are used for cleaning, gluing, decorating or protecting the products.

The Supportive Materials are located in cabinets on the Manufacturing shop floor. Replenishment happens weekly by an agreed supplier. The agreed supplier fills the cabinets' inventories to certain levels. There are cases of Supportive Material running out, causing delays and extra work. Reasons to running out are unplanned high usage or the agreed supplier was not able to fill the cabinet to agreed inventory.

The managing director has negotiated the prices and terms with the agreed supplier. The Supportive Materials represent 0,40% of the company's total purchases.

When there is a case of some supportive material being not available from the agreed supplier, the manufacturing supervisors search the needed materials by calling around until a suitable material has been found. Then the

needed Supportive Material is typically fetched. Having to look for the Supportive Materials causes unplanned work and delays.

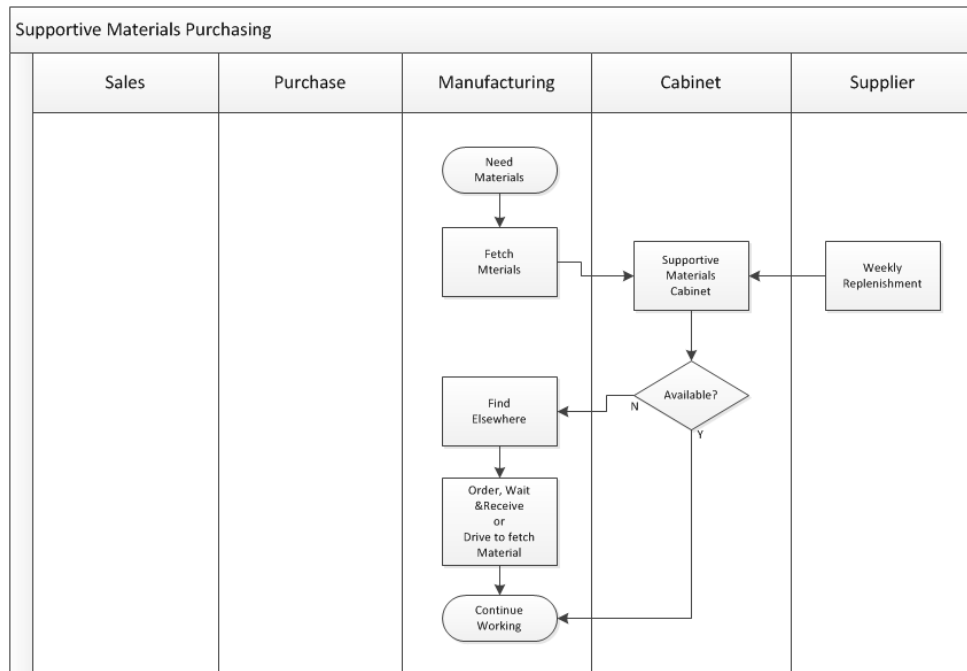


Figure 7 Supportive Materials replenishment and purchasing current status

There is no systematic communications from Sales to Manufacturing regarding temporary peak times to provide into Supportive Materials planning to respond to production peaks.

In addition to the above, there are non-standard Supportive Materials that are rarely needed. Some rarely needed Supportive Materials run out in unpredictable manners, causing changes in schedules and extra workload as the materials must be sought. The more rarely needed Supportive Materials are not under any inventory control.

3.2.4 Protective Clothes

The workers need for example protective shoes and gloves. To buy shoes and other bulkier clothes, the manufacturing personnel go to a working clothes selling shop in town 2. The purchase invoices are checked by the manufacturing supervisors.

Majority of the smaller protective clothes, like special gloves, are available in locked cabinets on the shop floor. The supervisors have the locker keys. The supervisors work typically in the morning shift only. Evening shift personnel have problems accessing the cabinets in case they need new protective clothing.

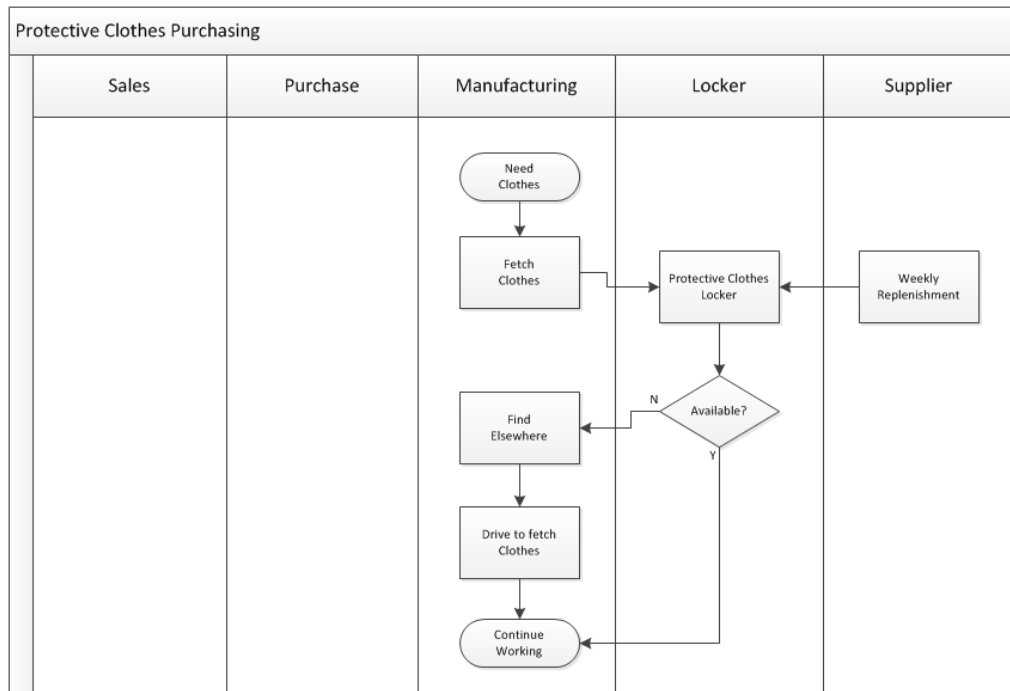


Figure 8 Protective clothes replenishment and purchasing current status

The replenishment is managed in the same way as for the Supportive Materials; an agreed supplier fills the cabinets weekly to agreed inventory levels. There have been cases the supplier has run out of materials so the manufacturing supervisors have had to purchase those Protective Clothes elsewhere than the agreed supplier.

The managing director has agreed the terms of payments to 14 days. The protective clothes represent 1,07% of the company's total purchases.

3.2.5 Manufacturing Tools

Manufacturing tools are needed for Business Unit 1 product specific treatment. The tools are designed based on customer end-product requirement documents. A manufacturing supervisor designs the tools using design software, based on a direct request from sales personnel and a dialogue with the customer. The design software is not compatible with any customer drawings. The supervisor has not received any training to use the design software.

The Manufacturing Tools are purchased from a company close to the manufacturing. The people know each other, and their work is based on common reviewed documents the supervisor makes. Thus making the tools is fast and flexible. The supervisor agrees the tools' payment terms and does the actual buying with scheduling. Terms of payments are 14 days.

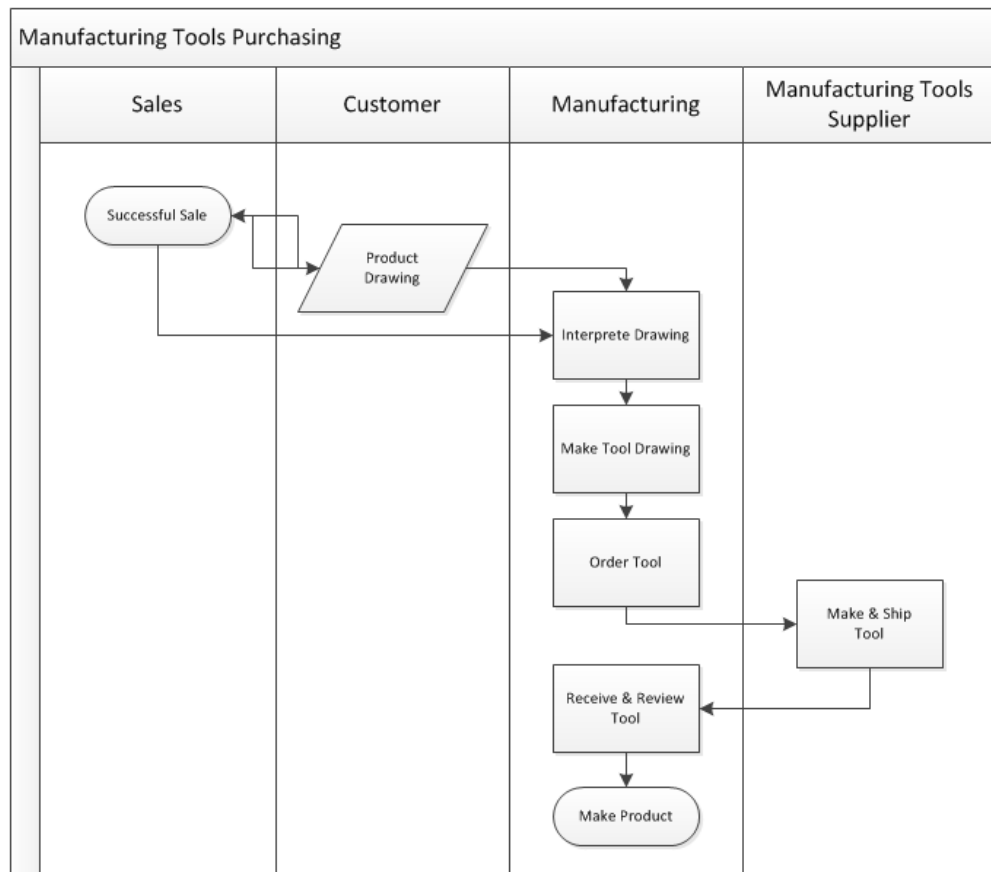


Figure 9 Manufacturing Tools designing and purchasing current status

The Manufacturing Tools proportion of the total company purchases is 0,11%.

There are occasionally problems interpreting the customer documents resulting in un-acceptable production lots, wasted materials, late deliveries and delivery rejections. The delivery rejections happen as a result of errors in interpreting customer documentation when making Manufacturing Tool design. Deliveries get rejected at the customer site.

3.2.6 Packing Materials

The packing pallets and other Packing Materials are purchased from dedicated suppliers with whom the collaboration has been continuing for years. The shipping responsible in practise procures and purchases the packing pallets. The terms of payments are 14 days.

The packing pallet supplier can typically respond to demand fluctuations; there is a packing pallet storage that helps with fast-turnaround shipping needs. As an additional helping factor, the Manufacturing is typically not early with the products being ready for shipping.

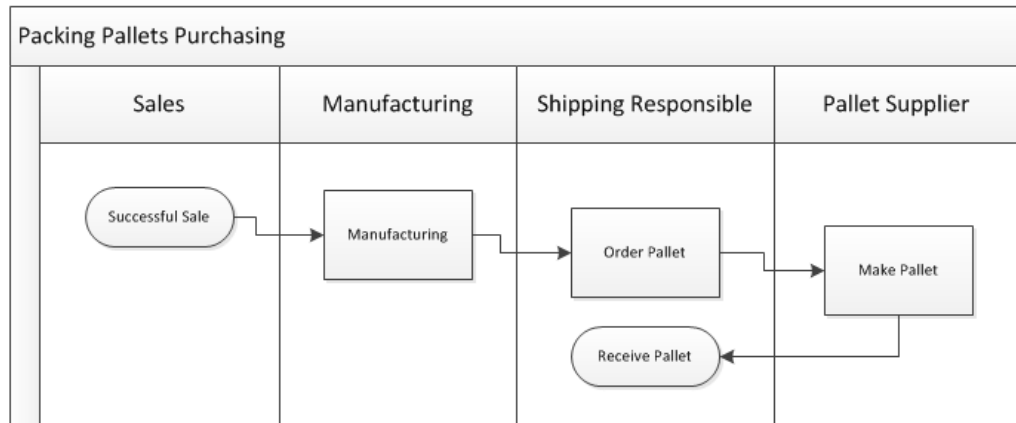


Figure 10 Packing pallets purchasing current status

The packing pallet storage is not under inventory control. There are good pallets, but also unusable packing pallets around the company's backyard.

The value of packing pallets and related materials is 3,54% of the company's all purchases.

3.2.7 Shipping Service

The outbound logistics is bought as a service. There are three logistics service providers that are typically used. The shipping responsible person has agreed the terms with the typically used logistics service providers. One of the typically used logistics service providers demands payment in advance; the other two have set terms of payments to 14 days after invoice.

The logistics services proportion is 2,52% of the company's purchases.

The shipping responsible orders the shipping based on the same information she gets when ordering or reserving the pallet for the shipment.

One logistics service provider was changed during the last year due to quality issues. According to the knowledge gathered when making the thesis, no systematic supplier improvement negotiations were carried out. Currently the three service providers operate at an acceptable level.

There are cases some other logistics services providing companies have to be used due to unplanned fast-turnaround shipments.

If a product is delayed at the production, the shipping responsible has to re-schedule the shipment. In case the original logistics service provider cannot change the timing, then the shipping responsible has to find a suitable service from some other logistics service provider.

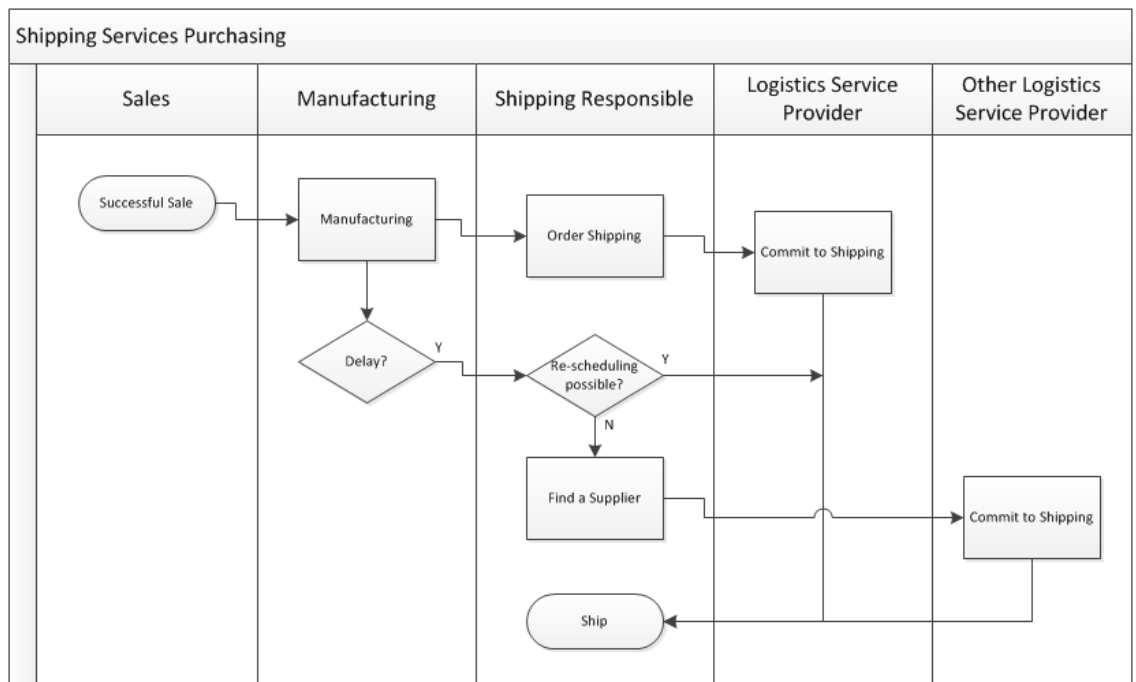


Figure 11 Shipping service ordering current status

During the analysing of the company’s purchasing functions, there was one major case of a shipment breaking. The main root cause was improperly loaded packing pallet. There is no final review for the packed pallets and there is neither guideline document nor systematic training for the packing personnel.

3.3 Manufacturing Equipment and Maintenance

There were investments in manufacturing equipment during the thesis time period. Actual equipment costs are not analysed. The Manufacturing Equipment is acquired one at a time from various sources. No defined flow of purchasing for the Manufacturing Equipment is used other than purchasing invoice circulation. The company owns all manufacturing equipment.

Production equipment maintenance responsible person comes from a personnel service company. The maintenance responsible concentrates mainly in repairing the machinery instead of servicing. If there are several pieces of equipment dysfunctioning at a time, the manufacturing supervisors set the repairing priority order. Some production supervisors can repair many of the manufacturing equipment themselves.

During the thesis time period there were three major equipment break-downs as manufacturing’s air compressors gave up one after another. The maintenance responsible made a new compressed air tubing structure to network the equipment in order to prevent effects of a single or even two compressors going dysfunctional at the same time.

Partial preventive maintenance is done to one machine at the production as well as the skills of the subcontracted person allow. He has not received training for maintaining this kind of production equipment and the equipment manual is in Italian. Nobody in the company reads Italian.

The spare parts for the manufacturing equipment are partially under inventory control. For some spare parts the suppliers are known but for a majority not. There are occasions the spare parts must be searched and bought as soon as possible, from where ever the parts are available.

The manufacturing equipment maintenance responsible has a logbook covering the repairs he has done or has been told about. The maintenance responsible works normally during the morning shift.

Manufacturing supervisors do not have a fully acceptable level cooperation with the outsourced maintenance responsible.

3.4 BU3 Materials

The BU3 purchases the main materials from company's Manufacturing. The internal buying does not show in the consortium level purchasing document that was given for the thesis work. The estimated value of BU3 internal purchases is about 6% of total purchases.

BU3 has its own suppliers, of which the biggest represents 2,22% and the second biggest 1,21% of the whole company's purchases. Total BU3 purchasing volume could not be defined based on the information available during the thesis work. BU3 has many small suppliers; see chapter 3.11.

BU3 describes the relationship with the most important suppliers and subcontractors by using expressions they cooperate well at the customer sites and the work division has been developed close to perfection.

The customers the BU3 and its suppliers have are actually more mutual; shared; than this business unit's customers alone.

The BU3 purchasing payment terms have not been re-negotiated as the company is often late in paying. The BU3 head comments clearly there is no respecting way to negotiate with the supplying and subcontracting companies in this payment situation.

The installing workers face situations where the storage they have brought to the customer premises is not exactly adequate to the needs. There is preparatory planning for the materials. Problems are often solved by finding a suitable supplier for the required parts locally near the installing site. The personnel drive to fetch the needed parts. This activity creates random small purchases that currently do not produce any pattern.

3.5 Outsourced Labour

Some of the manufacturing and also white collar personnel are outsourced. The outsourced personnel are trained in varying ways for their responsibilities. Contracts are work-hour based for all outsourced labour. The proportion of outsourced labour is 1,89% of the company's total purchases.

The level of employee collaboration with the outsourced people at the workplace varies.

3.6 Testing Services

The company purchases a testing service. The testing is mandatory for some specific types of company's products. The managing director has agreed the prices and terms.

There have been issues as the testing service provider has mishandled company's products delivered for testing and the products have been damaged beyond repair. The end result has been the deliveries were late and material was unnecessarily wasted. The related sales personnel are not satisfied with the current status.

There has not been a documented corrective measures dialogue with the testing service provider.

The collaboration with the testing service providing company is not limited to testing activity. Based on the knowledge gathered for the thesis work, fees for only the testing activity are unknown but are estimated to be about or under 1% of total purchases.

3.7 Office Materials

Office equipment and materials are purchased separately for the two locations, mainly from one nation-wide supplier. Some materials are not available from this one supplier. Unavailable materials cause extra work when the company personnel search and purchase the materials from other sources.

The proportion of purchases from the agreed office materials provider are 0,15% of the company's total purchases. The office materials payment terms are usually 14 days.

The Office Materials supplying company was changed recently before the thesis work as the old company sent double invoices. Some of the double invoices were accidentally paid.

A recent problem with the new office materials supplier has been a purchase of paper clips. The clips were made of too soft material and were not suitable for the job. The problem caused material loss and similar extra

work load compared to problems with bigger purchases. No purchase is too small to look after carefully enough.

3.8 Computers and related equipment

The computer and network maintenance is bought as a service from a computer services provider for the company's two locations. The computers and other equipment are bought as needed. Especially the printers have been bought by strict cost per purchase based criteria, set by the company management. That has resulted in ordering the lowest cost printer available at the time the need for a printer had occurred.

The computers and related equipment maintenance consultation related spending was worth 0,09% of the total purchases.

The current status is printer toner costs are higher than the printer costs and the variety of toners needed is large as the printers' brand range is large. Also suppliers range is wide.

The employees do not feel the company functions efficiently with computer and related equipment support.

3.9 Telephones and data connections

All company telephones are mobile phones. The mobile phone connections were changed to a new operator some months before the analysis of the purchasing started. The email and web browsing requirements and properties were not understood thoroughly. Some employees' telephony invoices were much higher than anticipated as the employees need at least mobile email as a data service to do their work. Some employees' mobile phone agreements may still currently have wrong criteria for the mobile data.

The mobile phone service level was promised to be better with the new operator than it was with the previous one, but the difference has been vanishing as the individual mobile phone contracts have been updated to include also data services.

Telephones and data connections represent 0,38% of the company's purchases.

There are fax machines that use wired telephone connections. Employees comment the fax usage is minimal if anyone at all uses the fax machines.

3.10 Services

All electricity-, energy-, banking-, insurance-, housekeeping- and healthcare services are subcontracted based on separate individual agreements. The service agreements are based on supplier driven terms. The services represent 19.03% of all purchases.

3.11 Small Purchases

The company has 501 suppliers that have presented invoices during the previous 12 month period.

Table 1 Number of suppliers versus percentage of purchases

Percentage of purchases value	Number of suppliers
80-100	1
60-80	6
40-60	10
20-40	22
0-20	462
	501

Table 1 shows a great majority of suppliers are small. There are only 39 suppliers for the top 80% of the purchases, while 462 suppliers total contribution is only 20% of the company's purchases.

Focusing at the absolute smallest suppliers, 200 smallest suppliers together represent only 0,598% of the company's purchases. These 200 suppliers are categorised for operative reason, responsible organisation and number of suppliers per operative reason in table 2.

Table 2 Company's 200 smallest suppliers

Operative reason	Number of Suppliers	Resp
– BU3 installing problem solving	53	BU3
– Manufacturing problem solving	33	Manuf
– Advertising and related	31	Mgmt
– Membership and support fees	16	Mgmt
– Travel related	13	Mgmt
– Car services and car rental	9	Mgmt
– Management other	8	Mgmt
– Transporting services	6	Manuf
– Consultation services	5	Mgmt
– Training course fees	2	
– Literature purchases	2	
– Unknown / uncategorised	22	
	200	

Business Unit 3 made most random purchases with a total of 53 small purchases. The purpose was installation site acute problem solving.

Manufacturing Unit's responsibility area are manufacturing acute problem solving and needed fast-turnaround transportation services. Manufacturing was responsible of 39 purchases.

Corporate Management was responsible of altogether 82 small purchases. 31 of them were aimed at advertising and marketing activities, 13 were aimed at traveling and nine were for car repairs plus car rentals. Eleven small purchases were for management and consultation services.

4 THEORIES

The selected method to develop the company purchasing is to view the current status through supplier collaboration describing levels. The supplier collaboration; or Supply Chain Management Process Maturity Model; suits this company purchasing analysis. The descriptions have developed recently and the newer theories give a better match for real company cases. The Supply Chain Management Process Maturity Model is described in chapter 4.1.

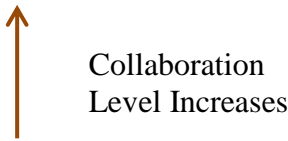
Chapter 4.2 describes how to outline development for the company's purchasing. The current status is the company does not have an agreed problem solving system. To make a sufficient problem solving tool with a set of prepared ideas how to implement developments, a root causes analysis and associated operations development methodology is needed. Continuous Improvement Tools of the About.com is a good tool for describing the changes in the company. In order to facilitate the idea generating when making the root causes analysis, a method for idea generating is needed.

In order to implement the needed changes on the shop floor and also with the suppliers, the company should take advice of the change management theories available. The actual implementation of change and how to create additional employee buy-in are important in making the changes so the purchasing related operations will improve. Chapter 4.3 discusses change management tools and planning principles.

It is not feasible to try to bring many separate tools and theories for the company. A more simple solution, combining the different theories into one tool was needed. A tailored supplier collaboration development tool was developed for the company and is described in chapter 4.4.

4.1 Supplier Collaboration Levels

In 2000, Lysons (2000, 302-304) described sourcing collaboration levels as "The Stages of Excellence" in four steps:

- Integrated
 - Quality Focused
 - Controlled
 - Entrepreneurial
- 
- Collaboration
Level Increases

Entrepreneurial means the company has the will and energy to act and do better. But the company does not have management capabilities that would lead to control and consistency.

Next level controlled means there are controlled, professional mutually agreed procedures in place and the procedures are followed to an extent the results are repeatable.

Quality focused illustrates a level in supplier collaboration the main factors affecting quality have been found and can be acted upon in controlled ways.

In the integrated phase the company barriers are partially opened so the companies work together - collaborate - for better performance with the customer they both serve.

Matching the nature of the company's supplier collaboration processes with Lysons's classification is nearly satisfactory. Compared to newer theories, the sourcing level descriptions can be improved to better suit real world companies and their interaction.

As a more developed theory of sourcing levels, in 2004, McCormack published an article "Development of a Supply Chain Management Process Maturity Model Using the Concepts of Business Process Orientation".

McCormack divides the supplier collaboration improvement levels to five categories using more illustrative terms and definitions (Development of a Supply Chain Management Process Maturity Model Using the Concepts of Business Process Orientation, 2004):

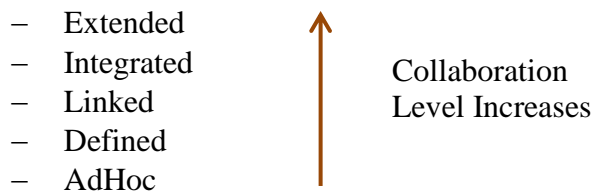


Figure 12 Supply Chain Management Process Maturity Model

The AdHoc refers to a collaboration level where the processes are not structured, few if any documents are used and good individuals just make things work – mentality is considered a success. Supply chain management total costs are high and customer satisfaction is low.

Second level Defined means collaboration is based on agreed and documented processes that are under change management. There are meetings across the organization boundaries. Process performance is better but customer satisfaction, even if improved, remains low. The required change management methods are described in chapter 4.3.

Linked is described as the breakthrough level. The collaborator organisations are targeted to perform by common processes towards common goals. There are intra-company supply chain management targets that are pursued by planned common efforts and improvements. Customer satisfaction increases further as the customers are included in the common plans and metrics.

Integrated level also includes customers in addition to incorporating only the suppliers. The company in between brings the whole visible supply

chain cooperation to common process level. Management systems and goals are shared, thus the process performance is achieved with mutual planned activities.

Supply chain implementation at extended level means a network of integrated level collaborators. Mutual dependency and trust hold the network together. A customer based culture drives the collaboration. (Development of a Supply Chain Management Process Maturity Model Using the Concepts of Business Process Orientation, 2004)

4.2 Continuous Improvement Tools

The Continuous Improvement Tools describe how any team or company can improve its performance.

The first step is to understand more thoroughly the activity under evaluation. The activity is described for both; physical and information flows. The personnel will agree also how the activity links to the other company activities.

Then the Root Causes Analysis is run to find the real causes and make cause descriptions the employees agree. Understanding the actual root causes in the same way is most important in defining the improvement actions.

The final step is to initiate a cycle with plan and targets for process outcomes. Only after that, doing the improvements may start. The improvements are followed and if necessary, the improvement activity is adjusted to better match the wanted outcomes.

The final step also includes an idea of sustaining the induced change by normalising the improved workflow. (Continuous Improvement Tools, 2013)

Additional justification for the root causes analysis is that it helps an organisation to avoid blaming. Root Causes Analysis helps concentrating on building together. When used as a systematic tool, the peoples' willingness to achieve together better results increases. Also, the Root Cause Analysis targets at changing peoples' awareness of the actual subject to generate real development. (Root Cause Analysis that Replaces Blame with Introspection)

Brainstorming or idea generating is one easy-to-learn tool to achieve true consensus on virtually any topic. A very recent Finnish text is suggested reading for the company senior personnel. The idea generating is a professional skill that can be learned. The process is first to understand and share the area/topic for which the idea is required. Second step is to generate ideas through group discussion and select the best ideas for further actions. Then succeed together through acting using the agreed ideas. (Idean Anatomia, 2013)

Out of the above theories, a chain of activities in table 3 suits the company to pursue systematic developments.

Table 3 Activity chain to find and solve the Root Cause

- Symptom; something to optimise, enhance, reduce, remove or create
- Writing the symptom description
- Finding and inviting stakeholders
- Common agreeing on symptom through contributing discussions
- Agreeing the underlying mechanisms
- Agreeing the actual root cause
- Plan the doing together
- Start do in order to achieve the development
- Check and act based on the monitored results
- Plan again and do again as needed

For a company aiming at developing its supply chains, the company must understand the development needs are wider than needs that one company alone. The supplier must be brought in to develop the supply chain. As a result, the Supplier Collaboration develops.

4.3 Change Management

Any change causes friction and most changes have clear counter-forces. Even if a group of people who aim at developing purchasing, are going to present changes to also other employees. Changes can be difficult to accept but planned implementation can create buy-in.

The Change Management process explains how to carry a change into an organisation. (Welcome to the Change Management Tutorial Series, 2013)

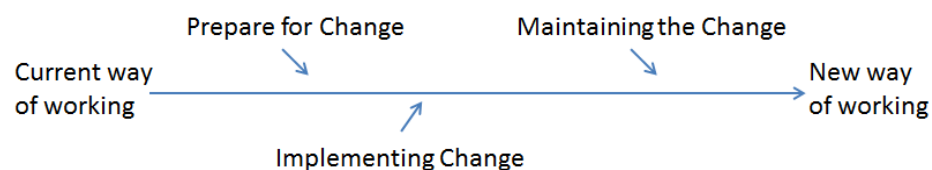


Figure 13 Three step Change Management Process

When preparing for change, the readiness versus resistance to the change can be evaluated. For chapter 5 development proposals, this is taken into account.

Implementing requires training and coaching for company's managers and employees, and also for supplier side coaching and training is needed to achieve better results through supplier collaboration. (Yhteistyön organisointi)

In order to maintain the new way of working, proper ways to recognise and celebrate the successes should be a part of the plans. These steps are also the main differences to the Continuous Improvement methodology.

One way to recognise and celebrate is to encourage employees to discuss the successes amongst themselves. (Furman, Ahola & Riihihulta 2004, 22)

4.4 Tailored solution for the company

The company needed a solution that uses common everyday language instead of complicated expressions. A commonly used gap-analysis was bypassed as it does not create short-term value in this operative environment.



Figure 14 Supplier Collaboration Development Tool

For the Current Level and Target Level definitions, expressions using everyday language give the best results. Going for the Root Causes, de-personalising, target activity creating expressions are selected. The Root Causes are not to pinpoint anything or anybody, but are targeted to create achievements oriented mind-set. Managers and senior employees contrib-

uting in making the statements must understand and agree this is the most critical part of the analysis in order to create an achieving mind-set.

Going towards the solution, the Action Plan tells timing when to carry out the actions the Root Causes defined. A key part contributing to the timing is to understand the employee buy-in. The expression Resistance Assessment tells to employees the intended development with change targets and performance improvements is needed and has company management sponsorship.

Company employees, together with appropriate personnel from the supplier side work together in order to achieve a better future with less concurrent problem solving needs.

The Recognition and Celebrating step is included in the process to show the participating people the company management really want the developments.

For longer term development planning an upper level plan, or roadmap, would be a practical tool for the company management to induce a permanent flow of improvements.

After some initial improving activities, a clear management sponsorship ensures systematic making capability for future developments. The personnel will learn to make the improvements better after some practise.

For the company to select the development projects, a resistance assessment is needed so the planning guidelines are set in a way they can be achieved with success. Understanding the employees' willingness to change also drives the Future Planning. This assessment functions also as a test against trying to take too big leaps for which the company is not ready.

5 DEVELOPMENT PROPOSALS

Employees' development ideas and problem statements were gathered by live spoken interviews. The interviews were based on a set of questions agreed with the managing director. The list of questions and answers is in Appendix 1

The purchasing functions development proposals are described in this chapter 5 in the same order as the current status descriptions were in chapter 3.

The company managing director was given a set of development proposals with operational targets. The thesis includes development proposals' outlining for Current Level, Target Level, Root Causes, Resistance Assessment, Action proposal at company level and Future Planning suggestion.

5.1 Common Features for All Purchasing

5.1.1 Enterprise Resource Management System

Current Level: Much of the work is manual and based on emails and telephone calls. People forgetting or not understanding required activities create extra work unnecessarily. Level is AdHoc.

Target Level: Reduce errors and required manual labour. Reduce extra work. Clear targets for extra work reduction exist. Level should be first Developed and then Linked; developing later to Integrated.

Root Causes: Company has two systems. Typically any company has maximum one enterprise resource management system. The two systems do not interoperate. The purchasing is run on purchasing booklets and the inventory is run on a separate excel sheet.

Resistance Assessment: Getting people to use System LS when they make orders; that is to use the system LS instead of purchasing booklets; will require idea selling. Enhancing System LS usage so it would be accepted to support manufacturing may be difficult. System PC improvements may get less resistance from the financial department if System PC really supports all required features. Training will be needed. (Oston & hankintaimen koulutus)

Action proposal: Set a dedicated enterprise management systems development project for financing and Manufacturing to manage in collaboration. Project's targets are to reduce extra work related to incoming material receiving and related invoice handling. Main tools are system LS and PC descriptions and systems user training.

Future Planning suggestion: The participating employees will invent themselves to use the enterprise resource planning usage when ordering

and assigning the purchase number for the purchase. The need and the opportunity to integrate the two systems will follow with some guidance.

5.1.2 Purchasing Number System

Current Level: Everybody does not use the purchasing numbers and there are suppliers not using the purchasing numbers. Level is AdHoc.

Target Level: The purchasing numbers should be used in such way everybody understand the system well enough. As this is company's internal operation, first target level is Linked, but should develop later to Integrated. Target level with the suppliers is at least Defined so the suppliers understand the purchase number system.

Root Causes: All personnel and all suppliers have not understood they create extra work for others by not using the purchasing numbers. To achieve Linked level, a tool to share the purchasing numbers is needed.

Resistance Assessment: Some suppliers will show resistance to negotiate such item. Some employees will have difficulties in finding time to discuss about purchasing numbers but after they realise they cause unnecessary extra work, they will have buy-in for improvement.

Action proposal: Set another target for financing's and manufacturing's project to develop the usage of enterprise management systems. The target is to clarify the usage of purchasing numbers. The project's targets are to reduce extra work related to incoming material receiving and related invoice handling.

Future Planning suggestion: The project should find the BU3 project numbering and the related benefits. Some guidance may be needed. The project is bound to find also other items to develop, thus following the project is important.

5.1.3 Incoming Deliveries

Current Level: There are lost shipments that must be searched for despite everybody knowing each other in this relatively small company. Also in case of a reclamation need, the work is not standardised. Level is AdHoc. The warehouses may receive large shipments they are not prepared for.

Target Level: The shipments should be received in the right warehouse based on purchasing number. The receiving should be given information of coming shipments so the warehousing personnel can prepare for the shipments. In case of any doubt, the persons receiving an unclear shipment, they should know what and how to do in the situation. Level should be Defined, then Linked. Company internal departments' collaboration should develop towards Integrated

Root Causes: Personnel accepting unclear shipments do not realise they cause occasionally extra work for their co-workers. On the other hand, they do not have a system to record the received shipments. An electronic system that works inside either System PC or System LS is missing. Definition for shipments without a purchasing number requires some additional focusing. For reclamation needs, a workflow defining the reclamation related work is missing. Tools the employees miss are at least digital cameras with a computer connection. The reclamation tool is not a part of the shipment receiving tool.

Resistance Assessment: After understanding how reclamations affect the company result and manufacturing delays, the shipments receiving tool set has a maximum buy-in from the related employees.

Action proposal: The shipment receiving tool should be a part of the enterprise resource planning project that is done by manufacturing and financial departments' collaboration. The shipment receiving tool should support making reclamations.

Future Planning suggestion: The project will show and report the next gaps they find, if there are any. Some guidance may be needed. Connecting suppliers to the tool set may come later as a development step.

5.1.4 Invoice Handling

Financing and Manufacturing enterprise resource management project will improve the invoice handling to the required level.

5.1.5 Supplier Performance Improvement

Current Level: The company functions in various ways with the suppliers in relation to supplier performance improvement. Some suppliers cause direct problems to the company, for example the testing services or some Main Materials breaking at Treatment. Level is AdHoc.

Target Level: The defects the materials or services pose should be seen also as supplier improvement opportunities. Building a way to make reclamations, or even better to find improvements for a supplier by comparing to another supplier would be of essence. Level should be Defined, then Linked. The supplier improvement activities within the company should be Integrated.

Root Causes: The need to solve the problems is seen as the primary activity, above everything else. The second most important activity is the daily work; keep the company rolling. Going into discussions with the suppliers is seen as a long and non-profitable way to improve anything. There is no habit of documenting the reclamations.

Resistance Assessment: The people need to understand how the suppliers could improve if the suppliers would be told what to improve. After realis-

ing there will be some buy-in. After having a tool where to document the reclamations and how to compare the reclamations or improvement requests, the new habits will develop.

Action proposal: Make a reclamation workflow and include that to the enterprise resources management tool project. At a later phase of the project, include a requirement of a tool for supplier improvement requests.

Future Planning suggestion: Feed in a will to compare the suppliers by finding examples of supplier differences. Seek ways to highlight the differences and how the differences can be turned into communications toward the suppliers for that supplier to improve.

5.2 Manufacturing related materials

5.2.1 Main Material

Current Level: The largest Main Material supplier operates with the company in ways that have clear collaborative features. However, from the company's direction the lacking payments cause situations the supplier declines from delivering the needed materials. For other Main Material suppliers the collaboration is more random. Level is AdHoc.

Target Level: All important collaboration with the largest Main Material supplier must be working with routines, including the payment situation. For other bigger Main Material suppliers the collaboration level should improve to show more predictability. The reclamations related work can improve. The level should be Linked for all important suppliers. The less important suppliers should be reviewed if they are needed. Reducing number of suppliers builds simplicity and saves time.

Root Causes: The company has occasionally liquidity issues. Aside from that, the linking from sales to Main Material planning team and Manufacturing head is not working with routines. The financial department does not get information of ordered materials so they could do the payments with a routine. The inventory records are not always at the right levels causing wrong purchases.

Resistance Assessment: The sales knows this will create some short term extra work for them but the reward of less incoming shipment scheduling problems is very valuable for everybody. The justification for this development activity is likely welcomed by everybody.

Action proposal: Create a purchasing workflow including the monetary flow. Review the inventory procedures against presented Manufacturing problems and build a better system.

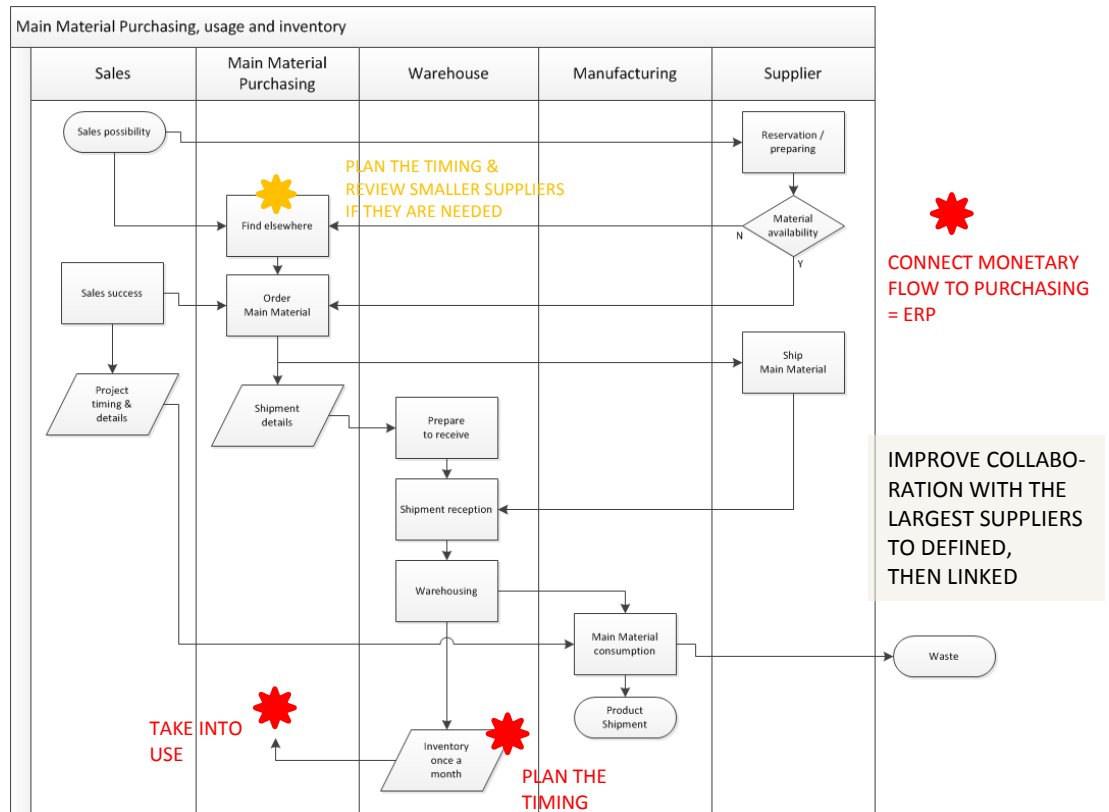


Figure 15 Main Materials action targets

In addition, a focus point to fast-turnaround ordering needs should be set. Are those caused partially by company internal friction? Fast-turnaround orders lead also to purchasing from various suppliers; using those should be minimised. Development project lead either financing or company management. The action's target is to get rid of all other true fast-turnaround ordering needs than the ones originating from true Manufacturing problems.

Future Planning suggestion: Seek automatizing possibilities for materials future budgeting to financial planning capability. Also reclamations related work can be automatized later.

5.2.2 Key Material

Current Level: Manufacturing supervisors say the Key Material runs out in unpredictable ways. Material consumption is occasionally too large. Keeping a reliable inventory is difficult as the Key Material has ageing related quality issues leading to unpredictable amounts of waste. There have been times a Key Material delivery had arrived containing much more material than Manufacturing prepared to receive. That caused uncertainty of order size rationality and some difficulties in warehousing. Level is AdHoc.

Target Level: The Manufacturing, when receiving the Key Material should know what and how much to expect. Also to what deliveries the material

is intended or if a reserve supply is intentionally built. Target level is Linked. After the enterprise resource system development is done, the target level is Integrated.

Root Causes: There is neither systematic meeting structure nor an information delivering structure in place from Key Material purchasing to Manufacturing.

Resistance Assessment: There will be claims no production halts happen because of missing Key Materials. As Manufacturing says there are, ask a number in hours per month from Manufacturing.

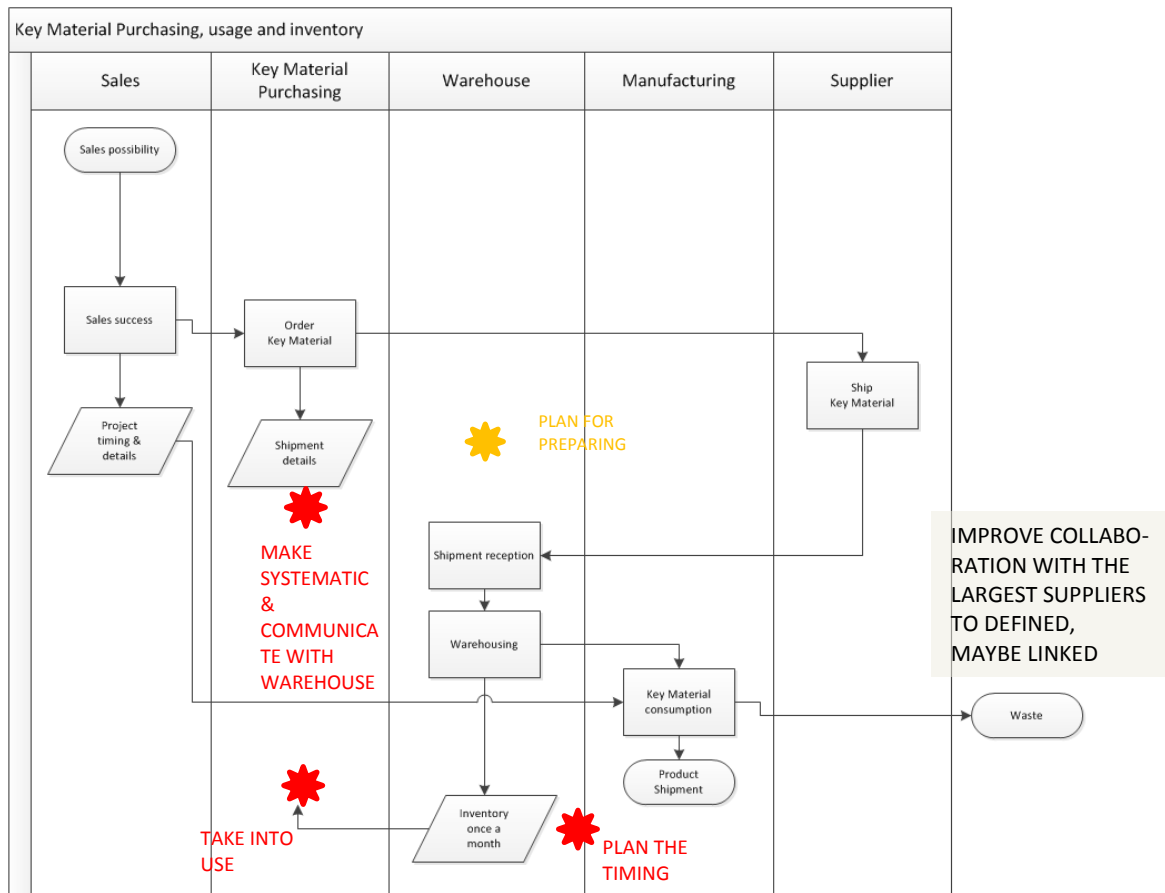


Figure 16 Key Material action targets

Action proposal: Ask a number in hours for production stoppages per week. Set a target to reduce Key Material related production stoppages. Development project lead Key Material purchasing team.

Future Planning suggestion: Improve quarterly. When reaching zero, find ways how to keep the achieved level.

5.2.3 Supportive Materials

Current Level: The Supportive Materials are two-fold. There are supplier replenished cabinets on the shop floor and there are more randomly needed Supportive Materials that need to be replenished as they run out. Finding and fetching new material is not straightforward. Company lacks a common view of the randomly purchased Supportive Materials. Level is AdHoc.

Target Level: No material runs out, or if something runs out there is a system in place how to get the required replenishment. The number of Supportive Materials suppliers must reduce and the product range from the cabinets filling supplier is reviewed for widening their range. The level should be Linked.

Root Causes: For cabinet materials, there are two reasons. Either the supplier did not have enough material to refill the cabinet or manufacturing amount has been much above normal. For more randomly needed Supportive Materials, the running out just seems to happen as there is no inventory control.

Resistance Assessment: Company workers can see the improvement possibility but they see also the cabinet materials supplying company would resist widening its product range. Trying to find a common supplier for most of the non-cabinet Supportive Materials will be considered difficult. A workaround is to give a separate task to Manufacturing head or give the job to a potential supplier; one of the randomly needed materials suppliers to supply more and let the supplier find out what actually is needed.

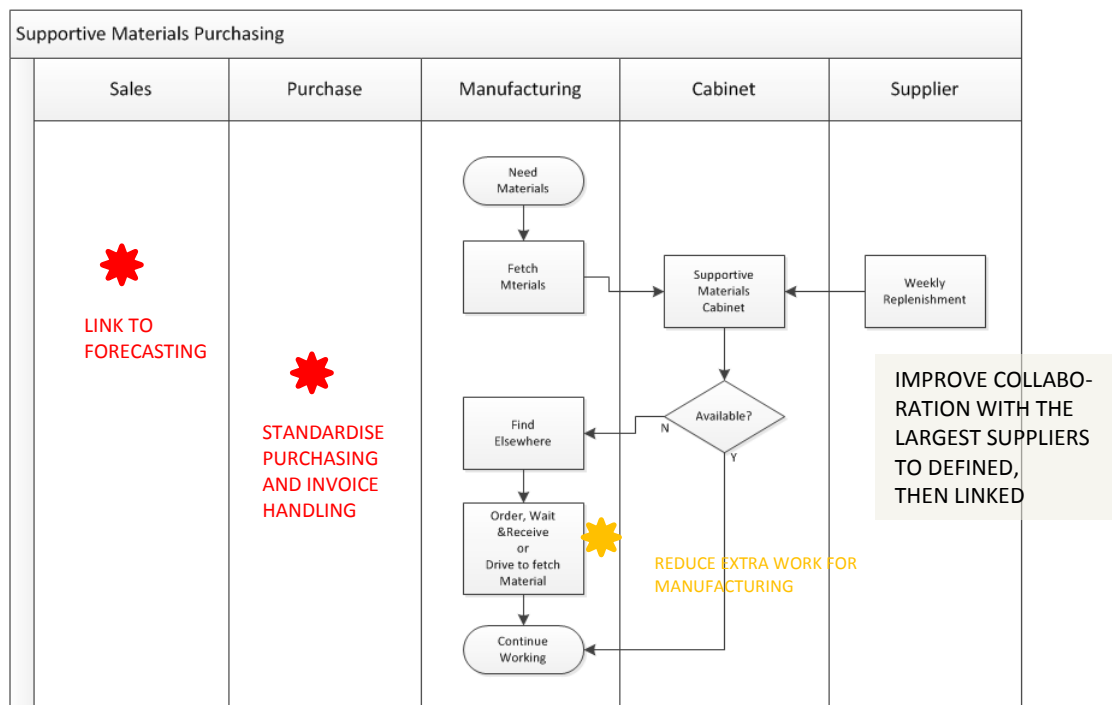


Figure 17 Supportive Materials action targets

Action proposal: This action needs a new view into materials the production purchases. Instead of reviewing the invoices one by one, a better view would be built if the invoices could be collected into batches of one week before signing. This would create a review possibility and reduce managing director's work amount at one go. This development project can be done so the company managing director gives invoice circulation rearranging to be done by the financial department head. Individual larger invoices, from 1000 euros can be signed individually. After a view of the purchases is built, the task to streamline random Supportive Materials purchases can be given to Manufacturing Head.

Future Planning suggestion: As there are many kinds of random purchases, a better categorisation can be built for all materials the company purchases.

5.2.4 Protective Clothes

Current Level: The Protective Clothes are bought locally from suppliers close to Manufacturing. The only problem is availability during the evening shift. Supplier collaboration level is Linked, company internal AdHoc.

Target Level: The clothes availability should have no unnecessary limitations. The target level is Linked.

Root Causes: The Protective Clothes cabinets are locked because of alleged theft cases.

Resistance Assessment: The employees will not resist having a senior person in the evening shift that would have keys to the cabinets.

Action proposal: Manufacturing Head to assign a person having keys during the evening shift to create an access to needed items.

Future Planning suggestion: Drive for further collaboration with the suppliers for better and or lower cost Protective Clothing.

5.2.5 Manufacturing Tools Purchasing

Current Level: The Manufacturing Tools supplier collaboration works fine. The customer set requirements have a discontinuity at the company. Level is AdHoc for supply chain collaboration.

Target Level: The drawing interpretation errors should be minimised or removed completely. The target level is Linked.

Root Causes: The senior supervisor who makes the drawings to the supplier does not have formal mechanical engineering training.

Resistance Assessment: Manufacturing will not resist an improvement in making the jigs. Depending on selected action, the new activity recipient may have some inertia.

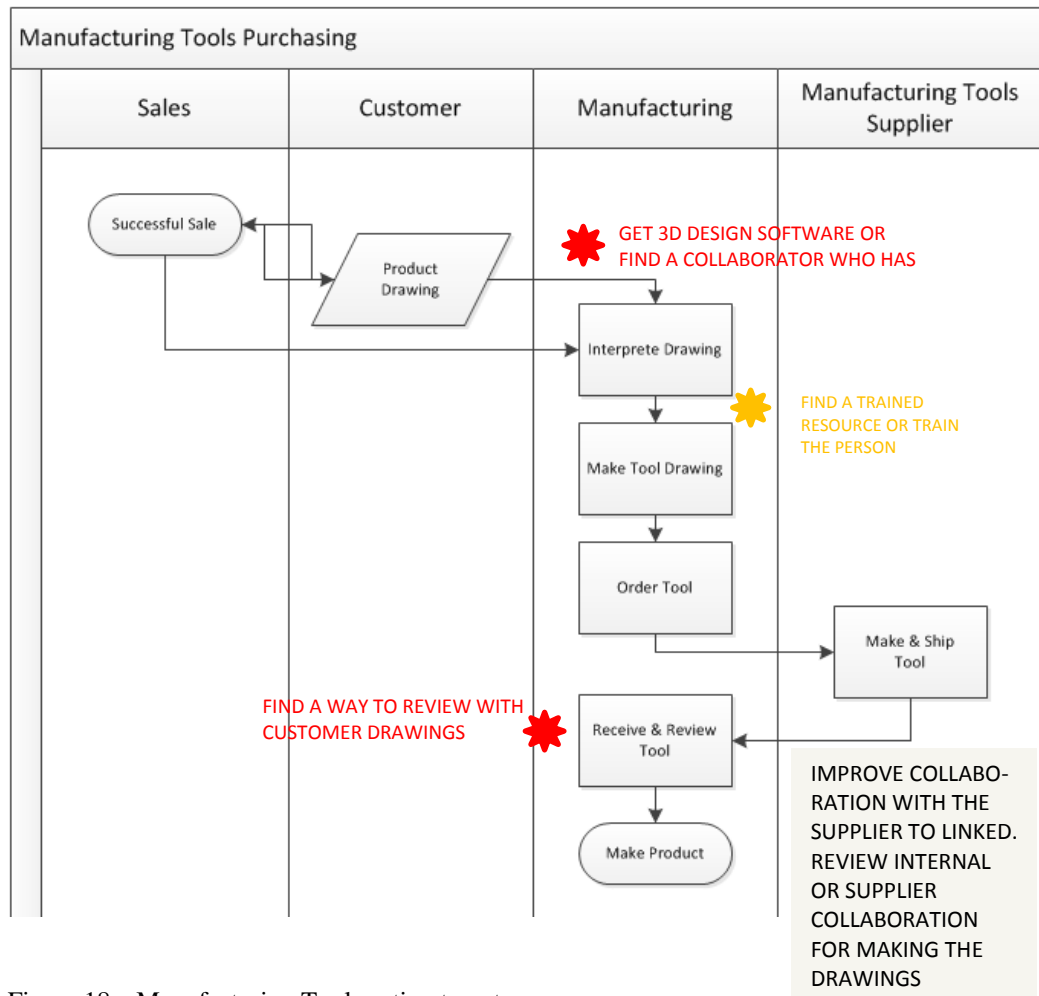


Figure 18 Manufacturing Tools action targets

Action proposal: Give Manufacturing Head a task to check if the customer drawings could be edited to jig drawings either by BU3 mechanical designers or jig supplier. If not, train the person who does the drawings and review the work description.

Future Planning suggestion: See what other tasks have problems that are done by self-taught people without the proper tools. Seek for improvement by training or transferring the work to trained people.

5.2.6 Packing Materials

Current Level: Pallet storage could be maintained better. There are several unusable pallets on the company backyard. The pallet storage level is AdHoc. The concurrent pallet ordering and consumption works in practise, but is AdHoc as there are no describing documents for the ordered pallets. Some suppliers have been changed due to problems.

Target Level: See what documents for ordering the pallets should be done, if any, Check if there is a possibility for cost savings by negotiating the pallets and other materials pricing. Understand the methods for negotiating through problems with packing materials suppliers; improve if necessary. The target level is Linked.

Root Causes: The shipping materials purchasing has not been developed consciously.

Resistance Assessment: The shipping responsible person has a work time problem as her helper has been absent for a long time. In the case of bringing new responsibilities, some help would be in order. There is resistance, but it is not because of the employee’s will to do and perform.

Action proposal: Give Manufacturing Head a task to clean up the backyard and to review what pallets can be used.

Future Planning suggestion: Maybe organise bidding on some packing materials. If good results with small effort, then check all packing materials pricing.

5.2.7 Shipping Services

Current Level: The shipping companies have been changing as service has not been good. Whether service improvement negotiations were done or not is unclear. The most important logistics service provider requires payments in advance. Also, there are many fast turnaround requests for the logistics services. Packed products break in transport.

Target Level: The logistics services needs should be better planned and executed. The target level is Linked for the most important logistics service providers.

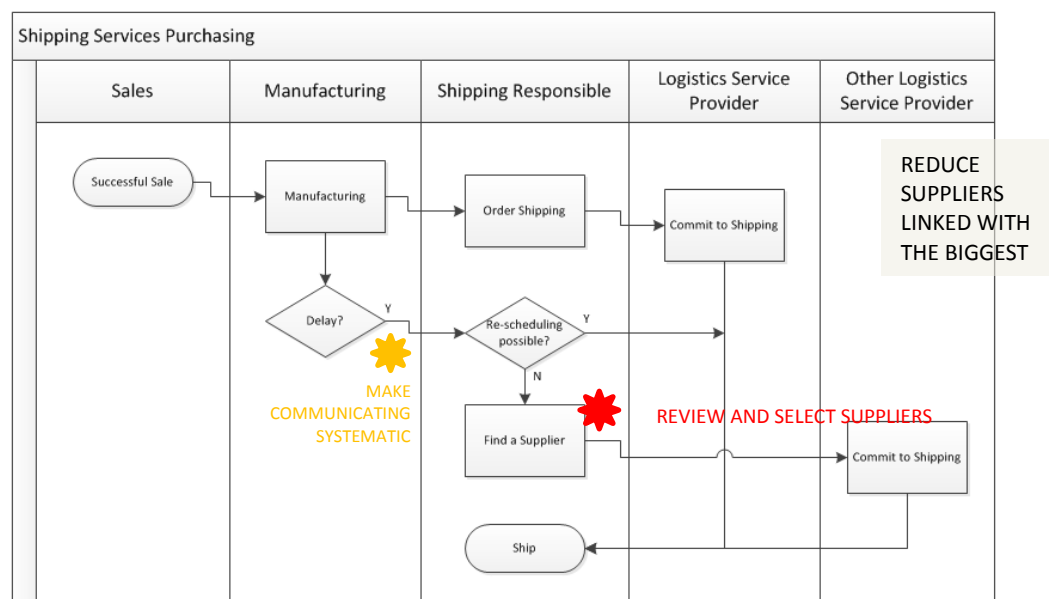


Figure 19 Shipping services action targets

Resistance Assessment: The shipping responsible accepts reviewing shipping activities if she gets the help she needs even without extra responsibility.

Root Causes: Shipping services providing companies require payment in advance. Also, the shipping services providing companies have their own ways of working with their customers; in this case the company. In order to improve the collaboration, the company needs to adjust. For breaking shipments, the company does not have packing guidelines. Manufacturing is sometimes unpredictable.

Action proposal: The company needs to agree packing guidelines and review the outgoing shipments. To reduce fast turnaround shipment needs, all manufacturing should be declared with estimated timing to shipping responsible before starting to make the products. The changes in timing estimate should be available from one source for the company. Give development project to Manufacturing Head.

Future Planning suggestion: After the company's liquidity situation improves, the logistics service provider contracts should be re-evaluated.

5.3 Manufacturing Equipment Maintenance

Current Level: The most expensive equipment's manual is in Italian nobody reads. The spare parts lockers are not maintained properly. The supervisors fix machinery without communicating with the maintenance responsible. Level is AdHoc.

Target Level: The spare parts lockers and buying the spare parts should be under control. Any repairs must be written in machinery logbooks. Spare parts sources must be evaluated and agreements are needed to reduce the complexity in finding the spare parts. Sufficient predictive maintenance must be achieved. Level should be integrated.

Root Causes: The equipment maintenance responsible person repairs the machines. He does not maintain the equipment. There are many people repairing the machinery and people do not share information with each other.

Resistance Assessment: Supervisors will comment they have too much to do and they cannot start to teach anybody to repair the machinery. Overcoming that resistance in a positive way needs creativity.

Action proposal: Discuss with Manufacturing Head and supervisors how to arrange equipment maintenance if it could be done from the scratch. Then give the task to one of the supervisors and give supervising responsibility to an advanced employee. There are at least two who are suitable. Alternative is to give the maintenance responsibility to one advanced worker. The downside is they need training to maintain the equipment.

Future Planning suggestion: Make machinery maintenance success a key metric for the production in longer term. Messages like xx days without accidents and yy days without equipment failures will lead to further development.

5.4 BU3 Materials

Current Level: Collaboration with some suppliers and subcontractors seems really Linked so the company and some suppliers share the customer requirements and work together to achieve the best possible results. However BU3 makes a lot of small purchases telling the projects have frequent surprises. Level is partially Linked, partially AdHoc.

Target Level: Understand the small purchases and limit them as much as feasible. Level should be true Linked.

Root Causes: Surprises at the installation site due to various reasons. Surprises can be reduced with better planning.

Resistance Assessment: The BU3 will respond this cannot be improved. A project flow discussion, emphasizing importance of material acquiring in the beginning of the project should provide results.

Action proposal: Give a task to BU3 Head to reduce random purchases through better project planning.

Future Planning suggestion: The project deliveries can be challenged if they really fulfil the Linked level features. If they do, BU3 supplier collaboration sets a benchmark for the other parts of the company

5.5 Outsourced Labour

Current Level: The collaboration with the outsourced resources varies. There are good examples of very efficient collaboration with an outsourced person and also examples of not so efficient collaboration. Level is AdHoc.

Target Level: Company's own personnel should know better and act accordingly. Level should be Linked.

Root Causes: Un-clarity in understanding the role of outsourced personnel versus company personnel.

Resistance Assessment: Most employees will understand their role after a discussion.

Action proposal: The collaboration level should be mapped per individual and improving actions established where feasible.

Future Planning suggestion: When outsourcing resources, discuss with the group the outsourced people are coming to before hiring.

5.6 Testing Services

Current Level: Testing service is mandatory for some product types. The testing services providing company has broken one or more products by poor handling. The shipments have been delayed because of the handling related problems. Level is AdHoc.

Target Level: The testing related material handling does not cause any more problems. The testing company knows well ahead what is required, can plan and can perform better. Level should be Defined.

Root Causes: Lack of testing service provider's personnel training.

Resistance Assessment: There should be no resistance from company employees as the problem was described strongly by BU1 sales.

Action proposal: Give a development project to BU1 sales and Manufacturing to bring the testing service provider to a better level in collaboration.

Future Planning suggestion:

Establishing their own test house in a separate company is an alternative. The investment is moderate or small as the testing facility would cost less than a value of four destroyed shipments.

5.7 Office Materials

Current Level: The office materials providing company was changed recently. The new company has poorer product availability than the old one did. Non-available items must be searched for individually. Level is partially Linked, partially AdHoc.

Target Level: The amount of suppliers is under control for all Office Materials. Level should be Linked.

Root Causes: The old supplier was sending double invoices, some improving actions were tried but collaboration was discontinued. The new supplier creates an extra workload as it does not carry all needed materials.

Resistance Assessment: The personnel purchasing Office Materials will welcome a clear task to clarify the Office Supplies situation. The new supplier is reluctant to add their selection with fair terms.

Action proposal: Give a task to town 2 Office Supplies responsible to find a second supplier to add to available materials selection.

Future Planning suggestion: Accept maximum three suppliers for all Office Supplies.

5.8 Computers and Related Equipment

Current Level: The people that need computers have an access to a computer if some do not have a computer of their own. Computer network functions. Some do not have System LS working on their computer. The biggest employee comments were about the printer support. The company employees have bought the printers from various sources based on the best offer at the time a printer was needed. The service provider does good work as the computer support is not easy to deliver well for a company that has two office locations so far away from each other. Level is Linked.

Target Level: Printer support can be centralised to the computer services providing company. Personnel computer need needs reviewing. A clear responsibility division of software support is needed.

Root Causes: Focusing on purchasing cost only, not total cost.

Resistance Assessment: Nobody will resist an idea the computer services providing company will make a better description of computers and peripherals.

Action proposal: Let computer services providing company build the computer network with the peripherals to the lowest total cost.

Future Planning suggestion: See if there is anything the rest of the company could adopt as a benchmark.

5.9 Telephones and Data Connections

Current Level: Everybody who needs a phone has a mobile phone. Some may lack data services. As the telephones providing company was recently changed, some employees were left without a data connection they needed. As they used the data connection, the fees were much larger than anticipated. There are fax machines the employees do not know if they are needed anymore. Level is Linked, partially AdHoc.

Target Level: All employees should have mobile communications tools they need at their work. Unnecessary telecommunications equipment is removed. Total cost is under control.

Root Causes: Operational change was not planned thoroughly. The equipment at workplaces is not reviewed.

Resistance Level: Everybody welcomes a fair review of the communications tools they need at work.

Action proposal: Make a list of telecommunications equipment the company has and review it with relevant employees. Remove the unnecessary equipment. Add needed services and seek for price reductions. Give development project lead to town 2 Office Supplies responsible employee.

Future Planning suggestion: Review what telecommunications tool the suppliers and customers use and drive towards compliancy.

5.10 Services

Current Level: The services are operated according to different suppliers' standard agreements and work methods. Level is Linked.

Target Level: Better understanding of cost levels and possibility for total cost reductions. Level should be Linked.

Resistance Assessment: The personnel responsible of negotiating the purchasing terms need to understand the driver for reviewing.

Action proposal: Review the services the company purchases.

Future Planning suggestion: Review the services at least yearly.

5.11 Small Purchases

Current Level: The company does a lot of random buying. The company management itself is responsible of nearly a third of all small purchases. BU3 is the next biggest and Manufacturing problem solving is third. Level is AdHoc.

Target Level: As small purchases do not necessarily save anything compared to total cost when purchasing from regular suppliers, all small purchases should be discouraged. The level should be Linked.

Root Causes: Nearly all random purchases are a result of problem solving. Most problems are claimed to be acute, but the actual nature of the problems can be challenged.

Resistance Assessment: Company management will say it is impossible to cut the small purchases. BU3 will respond their projects' nature is what it is and cannot be changed. Manufacturing will claim the production stoppages will increase.

Action proposal: Change the invoice accepting routine to collect all small purchases into weekly batches for approval. Seek for patterns from all who do small purchases. Challenge the purchasing habits when possible. Ask BU3 and Manufacturing heads to review the outcome. Negotiate selected suppliers to widen the materials selection they carry.

Future Planning suggestion: Make BU3 project planning an example for the rest of the company as the best practise to copy proudly. The shipping related random problem solving purchases can be reviewed at the same go with shipping unit's packing pallet review described in chapter 5.2.6.

6 CONCLUSION

The company has a lot of direct, even short-term savings possibilities through purchasing development. Clear and easy-to-explain theories work best and such were found for the company. However, a customised tool was developed for the company to develop the purchasing. The main outputs from the tool are the Actions with the Plan. Thesis gives only Action proposals, on which the company can proceed as seen feasible.

Table 4 Action proposal summary

- Understand the enterprise management systems real usage and set a training and improvement project
- Create a company way to purchase and bring that into the enterprise resources management system. Focus in information sharing to prevent problems
- Create a workflow for reclamations. Integrate into enterprise resources management system
- Set targets to reduce Key Material related production stoppages
- Make a new invoices approval cycle so the small invoices come as batches for signing and look for opportunities to challenge to buy from regular suppliers
- Assign a person with an access to Protective Clothes lockers for the evening shifts
- Find out how manufacturing jig drawing could be rearranged
- Clean backyard and check what pallets can be used
- Make packing guidelines and train the relevant people. Include shipping pre-planning by Manufacturing
- Improve manufacturing equipment maintenance
- BU3 to reduce small purchases through project planning
- Give emphasis to managing the outsourced workers
- Improve collaboration with testing service provider
- Find one or two alternative suppliers for Office Supplies to reduce random purchasing
- Give computer services providing company a total cost responsibility
- List and review the telecommunications equipment and services
- Check all supporting services and see if the terms are aligned and fair

The purchasing functions should mirror their activities to the target level thinking each time they meet a problem. ‘Review for improvement’ - mind-set opens possibilities regarding money spent, workload and also employee satisfaction. The workload reduction may come with a delay, but will realise in allowing employees to deal with new issues as the old workload creating problems get solved and prevented from reappearing.

The company can benefit from the proposed operating model also in internal operations. Even the customer relations can be reviewed with basically the same theories for better customer service.

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EMPLOYEE INTERVIEWS

The employees were interviewed for gathering the current status understanding and improvement ideas from each function and relevant organisation levels. Altogether nineteen people were interviewed. The questions and answers are listed in this Appendix 1.

As there were similar answers to many questions, all individual answers are not written. The answers for each question show a range of the employee understanding and buy-in levels.

1. What do you purchase?

- I buy the main manufacturing materials for my own business unit.
- I buy the office supplies if the actual person buying those is absent.
- I buy the materials I need at the production. Sometimes I buy what the manufacturing supervisors ask me to buy.
- I purchase the telecom services, phones and all such equipment.
- I buy office supplies.
- I buy all cafeteria materials.
- I buy the materials our team needs.
- I buy main materials we need from the Netherlands.
- I purchase manufacturing supportive materials.
- I purchase all packing materials our business unit needs for outbound logistics.
- I buy the manufacturing process jigs I draw using Auto Cad.
- I purchase the outbound logistics services and packing materials.
- I buy protective clothes and work related safety equipment.
- I buy all company official envelopes and letters.
- I purchase the key materials.
- I procure marketing services. The marketing services market is very difficult in order to try and find reliable partners.
- I buy tools for manufacturing, like drills for example. I use many suppliers.
- I buy all kinds of materials for my business unit.
- I purchase test services from the test house company.

2. What purchasing invoices do you handle, check or sign?

- I buy using my supervisor's purchasing number but I do not get to check any invoices thus I do not sign any.
- I buy the main material but the business unit head signs off the main material purchases.
- I sign all financing related invoices.
- I handle no invoices. The supervisors do the checking.
- I sign all manufacturing related purchasing invoices.
- I sign the invoices for the items I have ordered.

3. How do the purchasing invoices circulate?

- The invoices go from me to the head of financing department.
- All invoices go to the managing director for signing and then to the financial department for actual paying.
- I do not know.
- In the beginning there were questions about the invoices but not anymore.
- All invoices go to the managing director, one by one. I suggest a system that smaller invoices are gathered together and they are given on a weekly basis for the managing director to sign. Any invoice at 500 euros or larger would go as today; individually to the managing director to accept or reject.
- Sometimes I get invoices that are not for our company. All such have come to me by an honest accident.
- With the purchase numbering we have a reliable invoice handling system.
- Through financing and then managing director.

4. What system do you use for signing the purchasing invoices?

- I use a new system, I do not remember its name and I cannot really use it properly I think. The system has changed just recently. I hope the system PC could be used instead.
- I use a system LS for signing the invoices.
- We used an enterprise resource planning system PN, now we are changing to LS. For production we use PC but also production should use LS for the material order handling.
- The LS will never do the tasks manufacturing needs.
- The system PC will get improvements soon.
- I use system LS for signing my invoices.

5. Do you order by email, telephone or other and do you use a purchasing number?

- I go to a shop to buy what is needed and payment goes through invoicing. Occasionally I buy using my own money if something special is needed we do not find from the normal suppliers. I use my own purchasing number for all items I buy.
- I call the companies selling the items I need and buy what is needed.
- I email the companies.
- I just call a company and order what is needed, using the purchase number.
- I use the company procurement template and demand the suppliers to use the purchasing number I specify per each order.
- I call the supplying company, agree everything and then send an email asking for an email verification to ensure all will go well.
- I have been asking for prices from various suppliers for any larger purchase. The last item I asked pricing was a set of truck beds. I buy always from the lowest bidder.
- Everything happens through the purchasing number.
- We do not have a purchasing number for the items I buy.
- I order by emailing. I know we have a purchasing document template but that is cumbersome to use. A free text is much more flexible. I have had no problems with free text email purchases.
- I do not have a purchasing number but I use the other business unit's number so I get my work done.
- Combination of purchasing and project numbers guide the costs to the right activity in the BU3.

6. How do the purchasing invoices proceed to paying?

- The managing director signs the invoices and the financing department arranges the payments.
- I propose a change to paying process.
- The supervisors handle the invoices.
- The manufacturing head signs off the invoices.
- The managing director signs all invoices for paying.

7. What kind of material handling software do you use?

- The enterprise resource planning system PC is used for material handling in production.
- I use no software.
- I do not use system LS.
- The system LS is used for all material ordering and invoicing.
- System LS.
- I use system PC for information searching. System LS is for materials management.
- I use also PN for material handling.
- System PC will get an improvement soon.
- We no longer use system PN.
- I use system LS and the common file for all our purchases as LS does not support everything.
- I use system PC to handle all my material purchases and management.

8. Have you seen double billing for any items you purchased?

- Very rarely if at all.
- A supplier notified us about an invoice we had actually paid twice. It was refunded in the next one.
- We had double billing cases when we used system PN for handling the billing. It was largely due to the subcontracted typing of the invoices.
- No
- Problems in invoicing have been agreed case by case as the problems have been noticed.
- We had such cases with a supplier and we stopped buying from them.

9. Have you agreed the payment terms for the items you buy?

- No I do not was it is the managing director's job for my area. In general for the company, we should change our pricing strategy to accommodate later payments and encourage our customers to pay faster.

- Yes. We have arrangements with several banks for our financial operations.
- I cannot make any agreements because we are behind in our payments in any case.
- We are getting new materials only after paying the old bills.
- Not really. We pay before we get what we need.
- No.
- I negotiated with my suppliers. One did not agree my proposal of 30 days payables. We cannot always pay even in 30 days, though.
- The largest suppliers should extend the payment terms.
- For my items, we have agreed 14 days.
- I have agreed 30 days.
- We tried to negotiate 30 days. The supplier feedback was we could negotiate if we would comply with the terms we have today. Our paying times typically exceed 30 days.
- About the main materials I buy, we pay in advance to main material supplier G.
- For example service provider S demands payments in advance.

10. Regarding problems. Do you have to buy occasionally from other than the typical suppliers?

- At least the office supplies cannot always be found from the agreed typical suppliers and we have to search for some items.
- I buy the materials from sources capable of delivering.
- Usually I have to really call around and search for the materials I need.
- We have some opportunities in concentrating some of our purchases to selected suppliers.
- The machinery maintenance services are bought from various companies.
- We have had to ask another company to request some services on our behalf that were actually given to us. If we would have asked, we would not have gotten the service.
- We changed from supplier W to supplier A for most of our manufacturing supportive materials. I do not understand why. We have more shortages now as the main supplier was changed.
- I just had a case we ran out of a material we source once in maybe every three years. I had to spend some hours on the phone finding a supplier as the old supplier was not there anymore. After I found the material, I immediately drove there to buy a full bucket. We were late in our delivery.
- Not really. I buy my materials from one supplier.
- I got better prices from another supplier and changed. But the service they offer is not as good. I have to use a lot of time for problem solving now.
- We get nearly all materials from one supplier. When we have to, we buy also from others. We have not brought up this with our supplier.
- If there is a wrong person taking holidays from the supplier I normally use, the delivery is often lacking from the agreed schedule. I wish I could buy also elsewhere.
- By ordering early enough I get the materials I need.
- Purchasing new materials that are not in any catalogues yet is normal procedure for us. We plan those materials with our suppliers in the BU3.
- No. There are only few suppliers for the main material and they all are easy to work with.

11. Do you have scheduling issues with the incoming deliveries?

- Sometimes the incoming deliveries are stretching, but there are no real catastrophes. The surprises are normally based on unpaid previous invoices.
- No.
- Everything does not arrive as requested. Sometimes not even as promised.
- Sometimes we have been waiting for a material but after going to the supplier they let us know they are not selling the items at all and we had to go elsewhere to buy what we needed. Usually we need to notice these ourselves. The result is I direct my purchases elsewhere.
- We have started to find suppliers who give better service.
- As we need spare parts from overseas, I manage those purchases to minimise the problems.
- In my responsibility area I do not care about pricing as long as I find some supplier capable of delivering what I need.
- We have availability problems also due to a reason the old invoices have not been paid for.
- Because of the cyclic nature of our business, we have one week gap at the moment.
- The key material suppliers' capacity limits their output at times. Then our deliveries are postponed.
- Our production capacity is not at full use because of various problems.
- Not anymore as we stopped ordering from that one supplier.
- We buy our materials on a monthly basis.
- If some delivery is late, it is some hours at maximum.
- With materials we need rarely we tend to have problems more often.
- When I have, I do some phone calls.
- No. However we run out of the main material every now and then.
- The BU3 cooperates with the suppliers so they know what we are promising. We operate together for the customer so we are not late.

-No. The main material delivery schedules do not fail.

12. How far ahead do you have to schedule your purchases?

-A couple of weeks. Typically we are a little bit late or at least on the limit for each delivery project.

-I buy the materials and if a supplier cannot deliver right away, I contact another supplier.

-I cannot really plan any purchases. I buy what I need with minimal schedules.

-We have started to think about servicing contracts for our machinery.

-I ensure the main material availability first and only after that I promise a delivery.

-A week.

-Not more than a week.

-I use typically 4 week planned delivery time for my materials thus I have no materials problems.

-For the BU3, we negotiate with the suppliers so we plan our deliveries together. We do not use any fixed times, we rather cooperate and succeed without too large own inventories.

13. Have you had any quality issues with any deliveries or anything you have ordered?

-No, we do not typically have any issues with the incoming materials.

-In the actually received materials everything is typically OK.

-The key material has problems if anything is of a quality problem. More often the problem has been caused in our storage or production; not actually in the deliveries.

-The mechanical drawings our customers send me cannot be inputted to our Auto Cad. I re-draw the pictures and we have occasionally problems with mistakes due to miscommunication.

-With each supplier and customer we have some learning to do.

-We have been learning from each case.

-The sales people should come here to agree how we handle quality problems.

-The latest paper clips batch was defective and caused a lot of problems at the office.

-Our main material supplier A materials do not handle correctly in our production. Supplier P has problems much more rarely. Supplier A handles the reclamations well. (Refunds the money paid)

-We were getting some bad key material but we ended that contract.

-Previously some suppliers were not good enough. Now we have selected our suppliers so at least I have no material related quality problems.

-In one big delivery one of our collaborators delivered their share of the delivery late. There was no question of the responsibility for the delay.

-Not really. The issues, if we have any, come from our own operations. We have material handling problems.

14. Does everything function OK?

-The enterprise resource planning system PN was not at all good. I am happy we are changing away from that.

-The line supervisors sometimes purchase materials actually belonging to our responsibility and do not notify us.

-We do not have any recordings of purchasing prices or suppliers in my area. I just record the date of ordering and an estimate for delivery.

-We are gradually developing the manufacturing all the time so we enhance our processes and work methods.

-The system LS update did not function at all on my computer. The financial department is solving the problem.

-Even our fax works but that has not been used for a long time.

-System LS is difficult and slow to use.

-System LS dysfunctions with invoicing.

-Now that we have the system LS in use, I have to check all invoices that they proceed. With the previous system my work was easier. The financial department has had to take an end-of-month reminding letter into use.

-At the moment we do not have any bigger issues. Not even with the storage.

-The test service company mishandles the products we give them for testing too often. The breaking does not happen because of a failed result in testing. We get a lot of delivery problems due to their lack of concentration.

15. What are the problems for the manufacturing?

-As the machinery goes dysfunctional, our deliveries stall.

-Some materials have a clear cycle how they are needed. When there is a peak in demand, we are struggling. For some materials we have now an extra storage.

-We do not have an overall picture of our purchasing.

-Everybody buying should have their own purchasing number.

- We have been fully processing our business unit's main materials ourselves, but now we buy a part of the processing. We have been increasing our quality.
- We do not follow the key material usage, so we do not know for a key material type the last time exactly this key material type was used. That causes uncertainties in following the material quantity we have in the storage.
- We have had cases where we already had packed everything and then our sales start to give instructions how the delivery must be arranged and packed.
- If the main material has had problems we could not anticipate we get problems.
- We have a very small storage and we have to think carefully when we are purchasing more.
- Our throughput is large so we have no problems.
- There are too much main materials in the storages. We could cut the amount of stored materials.
- In case we are lacking in our payments, we cannot get new materials from the suppliers.
- Somebody may try to claim we have had problems with key materials but they are wrong.
- The machinery do not function well enough.
- We should have maintenance instead of waiting until we have to repair everything.
- The manufacturing supervisors go and tamper with the machinery so the factory maintenance responsible does not know what has been done to each machine.

16. Have any deliveries been delayed because of purchasing?

- Yes. Not often, though.
- In case a production machine has broken, we have holes in the production.
- No.
- We have an understanding of the delivery times. But as we speak about special deliveries, surprises do happen.
- No. We order the delivery services as we get the products ready for shipping.
- There was a case we got a big key material shipment for no apparent reason. We had problems storing it. The production needed that key material type all of a sudden and the storage is back to normal.
- We sometimes run out of the larger volume key material types. The reasons come from changes in consumption.
- We have in principle one person responsible for key materials storage. Now we have again an acute problem with missing key material type.
- The customer requirements for delivery details are presented too late causing delays.
- We have to do extra tasks in the storage if a delivery comes in with many main material types.
- The main or key materials, as they are missing we face delays.
- We have problems with certain key material types yielding scheduling issues.
- One customer is particularly sensitive to any quality issues. We have problems delivering to them.
- The only surprises we have in the BU3 come typically from our company's shared manufacturing. As our manufacturing cannot plan too well ahead, we have faced some challenges.
- Some deliveries have gone totally wrong because of the testing company mishandlings.

17. Have you had to arrange any rush-deliveries?

- Yes.
- Big clients tend to require rapid deliveries.
- I buy transports services from logistic service providers if we need to ship immediately after packing. If needed, we get the service from any company that can offer the service.
- We have a lot of cases the sales people do not really know how long it takes to manufacture something they have sold. Then we need to rush and the quality suffers even to a level we need to do the production series again with rush-ordered materials.
- One of our suppliers is very flexible in answering to fast turnaround requests.
- If a customer makes a rush-order.
- We have cases when the customer contacts manufacturing and requires a shipment earlier than they agreed with the sales when agreeing pricing.
- We order our printers as we need them. All those are rush orders including a requirement they have to be the cheapest available. As a result, the printers are all of different brand and the maintenance support for all the different printer types is difficult.
- Storage handling is so complex at times we need to input more than one incoming daily shipment.
- All the time.
- Our customers may be late in their projects. They may indicate longer lead times, and then all of a sudden the schedules change and we have to rush at the end.
- At times we have problems with outgoing deliveries, such our shipments break. Then we have to make the products again in a hurry.
- No. We schedule our deliveries.

18. Is there anything in the company that should change immediately?

- In my own area, I should drive for finding time to do supplier bidding. I try to get our suppliers to compete against each other. (This person buys the main material only and the purchasing prices and terms are agreed by the managing director)
- We have changed away from the PN. The system level change was good.
- In all purchasing invoices, there should be a name of the person who did the buying or at least some other identification. Missing information causes extra work.
- The information flow from the supervisors. The supervisor R keeps Thursday meetings but the others do not have such.
- Proactive measures, like spare parts inventory would be a welcome action.
- The spare parts cabinets would need some actions.
- We should keep our paying promises.
- The production transparency is not good.
- If the sales detailing are wrong, the whole chain is broken. The sales people really should come to production even to see what we do here.
- The work ordering must be improved. We just had seventeen work orders and seven of them were wrong. Now that one problem is spotted and I am just waiting for the next case. It all is about accuracy and carefulness of our sales personnel.
- Our material handling process needs improvements.
- The storage is not managed right. We need a bigger storage.
- Some incoming materials go to BU3 warehouse. Not only that, but they are accepted there and they do not tell us our material is there. We need to search for our material for no real reason. That is deeply unfair.
- The lack of key material is an unnecessary problem. It stops the production. We should improve managing the key material storage.
- We have one of the key material storages in the same floor space as our outbound packing. Our forklift is a four meters long diesel. We have not yet had any accidents.
- At times we run out of the protective clothes. It should not happen.
- The evening shift does not always have a person with keys to protective clothes lockers.
- We should get to order the key materials directly from the manufacturing. We do not always remember to notify the key materials responsible people of the changes in production and we run out of some key material types.
- We could use a system for controlling the key materials.
- We need better quality control for the incoming materials.
- As we get deliveries, they end up in various places. We have found some of the received goods in the yard after some severe searching.
- We would need a person for receiving the materials.
- The person responsible of receiving the materials should do what he is supposed to do.
- I would like to know how to use system LS for materials planning.
- We should look closely at how we use the key materials. We must have improving opportunities.
- I would like a change in the trust of our suppliers so they could trust we pay our bills in time.
- At times we have half-empty containers for outbound overseas deliveries. We have problems to fill up the containers.
- We would need to initiate collaboration with the test house so they would learn how to handle the products we give them for testing.