VALUE ADDED LOGISTICAL SUPPORT SERVICE

Part 2

OUTSOURCING PROCESS OF SPARE PART LOGISTICS IN METAL INDUSTRY

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OUTSOURCING PROCESS OF SPARE PART LOGISTICS IN METAL INDUSTRY

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ABSTRACT

The aim of this research study was to find out guidelines for outsourcing of logistics processes. The study was outlined to spare parts and ‘business-to-business’ (B2B) markets in metal industry. This study can be applied as a manual for outsourcing especially warehousing and transportation activities. The study also touches other important areas of spare part logistics like manufacturing, customer service, procurement, quality control, reverse and recycling logistics, logistics technologies and value added services.

The method of study consisted of three areas. Firstly exchanging views with logistics experts in participating companies, and secondly compiling material based on author’s practical experience in logistics business with several international and domestic logistics service providers and vendors. Thirdly the study includes also references to literature material.

Due to the fact that the outsourcing of logistics functions can be handled widely and from different point of views, in this study it is concentrated mainly on giving general level guidelines for defining logistics strategy, hints both for tendering process and implementation project, and not forgetting the aftercare of business partnership.

Key words: logistics, manufacturing, outsourcing, spare parts
PREFACE

Outsourcing of logistics activities is a strategic choice, which enables companies to focus on its core business. Outsourcing has been one of the dominant business trends of the 1990’s and this trend is still increasing.

The impulse for realizing this research report came from the members of “Valssi” steering group. The participating companies wanted to have a compact manual for managing the outsourcing process. The results of the study can be used, where applicable, to various business areas, but especially to service part operations in metal industry.

I wish to thank Tekes, the National Technology Agency for participating in funding of this project, and KONE for giving me a possibility to participate in this research project. I also want to thank the following Valssi-steering group members and their organizations for fruitful collaboration and support during the project: Heidi Lindroth (Tekes), Tapio Jämsä (KONE), Mikko Ilola (Metso Paper), Kari Suninen (Larox), Kenneth Palmgren (TNT Finland) and Kyösti Enqvist (ValLog).

I express special thanks to Anita Lukka (LUT) and Aarto Kivimäki (Kalmar Industries) for their important overall role in realization of Valssi-project.

Lappeenranta 26th of September, 2002

Pasi Kivinen
 TERMS AND ABBREVIATIONS

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<th>Abbreviation</th>
<th>Full Form</th>
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<td>3G</td>
<td>Third-Generation</td>
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<td>3PL</td>
<td>3rd Party Logistics</td>
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<tr>
<td>ADSL</td>
<td>Asymmetric Digital Subscriber Line</td>
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<td>ASP</td>
<td>Application Service Provider</td>
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<tr>
<td>B2B</td>
<td>Business-to-Business</td>
</tr>
<tr>
<td>EDI</td>
<td>Electronic Data Interchange</td>
</tr>
<tr>
<td>ERP</td>
<td>Enterprise Resource Planning</td>
</tr>
<tr>
<td>GPRS</td>
<td>General Packet Radio Service</td>
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<tr>
<td>GPS</td>
<td>Global Positioning System</td>
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<tr>
<td>GSM</td>
<td>Global System for Mobile Communication</td>
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<tr>
<td>ISDN</td>
<td>Integrated Services Digital Network</td>
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<tr>
<td>IP</td>
<td>Internet Protocol</td>
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<td>IT</td>
<td>Information Technology</td>
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<tr>
<td>ITT</td>
<td>Invitation To Tender</td>
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<tr>
<td>KPI</td>
<td>Key Performance Indicator</td>
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<td>LAN</td>
<td>Local Area Network</td>
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<tr>
<td>LUT</td>
<td>Lappeenranta University of Technology</td>
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<tr>
<td>PC</td>
<td>Personal Computer</td>
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<tr>
<td>RFID</td>
<td>Radio Frequency Identification</td>
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<tr>
<td>R/D</td>
<td>Research and Development</td>
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<tr>
<td>SCOR</td>
<td>Supply-Chain Operations Reference</td>
</tr>
<tr>
<td>SKU</td>
<td>Stock Keeping Unit</td>
</tr>
<tr>
<td>SME</td>
<td>Small and Medium Sized Enterprise</td>
</tr>
<tr>
<td>SWOT</td>
<td>Strengths, Weaknesses, Opportunities, Threats</td>
</tr>
<tr>
<td>UPS</td>
<td>Uninterruptible Power Supply</td>
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<tr>
<td>WAP</td>
<td>Wireless Application Protocol</td>
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<tr>
<td>WLAN</td>
<td>Wireless Local Area Network</td>
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<tr>
<td>WMS</td>
<td>Warehouse Management System</td>
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<tr>
<td>XML</td>
<td>Extensible Markup Language</td>
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</tbody>
</table>
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1 INTRODUCTION

1.1 Background

In the supply chain networks the partnership model and processes are in key role from the successful network point of view. According to the Logistics study (2001) published by the Ministry of Transport and Communications the Finnish companies are considering in general to outsource more and more logistics activities to external service providers. Another trend is that more complicated and extensive operations will be outsourced, which set new requirements for the outsourcing process. According to the Logistics study (2001) the biggest obstacles for realizing the outsourcing and partnership operation are:

- Forgetting the both parties’ win-win principle
- Poor management of outsourcing processes and supply chain (3PL, logistics integrator, outsourcing and partnership agreements)
- Continuous change in companies
- Incompatible and unsuitable information systems.

Finnish companies have a great deal of experience about outsourcing. Nevertheless there seems to be need for a compact manual for managing the logistics outsourcing process. It is an advantage of both customer companies and service providers that the best business practices can be applied for practical implementation projects and continuous improvement. The logistics business environment and requirements of every individual company varies from one company to another. Therefore a company who is considering to outsource (or renegotiate) any part of its logistics functions has to evaluate, which factors can be applied to practice from this study.

1.2 Aim and Method of Study

The aim of this study is to find out hints and guidelines for managing the logistics outsourcing process from outsourcer and partner point of view. The aim is to achieve a successful logistics outsourcing process and a genuine collaboration for developing logistics chains. The report adapts and further develops ideas presented by Logistics study (2001) for creating a manual for partnering and outsourcing purposes.

There are also in national level intentions to develop outsourcing process and partnership by compiling a manual, which should include all the basic facts involved in the outsourcing area. The manual should also include samples about reached benefits, projects that turned out well and projects that failed. The Logistics study (2001) suggests that there should be two types of outsourcing and partnership descriptions. First one should be a traditional outcoursings best practices model and the other one best practices model for partnership and deep co-operation.
The method of study consisted of three areas. Firstly exchanging views with logistics experts in participating companies, and secondly compiling material based on author’s practical experience in logistics business with several international and domestic logistics service providers and vendors. Thirdly the study includes also references to literature material.

1.3 Outlines

The requirements of logistics business both in national and international level will change constantly, therefore the research and development of outsourcing procedures and concepts will arise over the time. This study was outlined to spare parts and B2B markets in metal industry. It is obvious that other industrial areas have similar features in their operations but it requires further investigations to determine a logistics outsourcing process, which takes into account specialties in concerned business area.

1.4 Connection to Main Project

This study was realized as a part of Tekes funded project ”Value Added Logistics Service Support – Valssi” in Lappeenranta University of Technology. The Valssi-project examines a new business concept for logistics value added services (Part 1 - Trends and New Concept Model) and its practical business application model (Part 3 – Economical Conditions and Cost-Benefit Analysis of the New Business Concept).

2 DEFINING LOGISTICS MISSION AND STRATEGY

Frazelle (2001, pp.318-319) claims that the outsourcing decision for any logistics services must be made continuously (as the business and logistics environment is changing perpetually) and carefully (because it is much more difficult to re-insource an activity). That said Frazelle is cautious in outsourcing recommendations and suggests the following decision criteria to justify a logistics activity. He recommends logistics outsourcing if all of the following apply:

- There is a proven 3PL provider in your industry
- There are economies of scope and scale available for the 3PL
- The 3PL has a significant cost (-20 percent) and service advantage
- Outsourcing is acceptable to the customer base
- The 3PL has a better warehouse management system
- There is a cultural match between the 3PL and the user.
2.1. Mission

An outsourcer should give some thoughts why they want to outsource logistics functions and what is the mission of it (mission statement). The mission statement should be published and communicated to all parties involved. The statement can have features for instance from the following issues:

Rationalization of functions
Change of logistics concept development to new stage
Change of fixed costs to variable costs
Improve product quality / availability
Develop a professional reverse logistics concept
Develop the IT solutions for customers and total business
Improve customer satisfaction
Improve service level
Reduce distribution costs
Increase inventory turns etc.

2.2. Objectives

After the mission of logistics (and service parts) is defined in general level, the objectives should be discussed and presented more in detailed level. It is important that also the exact measurements and units are included in objectives defining phase. Below a sample about the outsourcing objectives statement (Figure 1):

<table>
<thead>
<tr>
<th>Logistics and Service Parts Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Increase service level to 98 %.</td>
</tr>
<tr>
<td>✓ Implement the reverse logistics concept by the end of 2003.</td>
</tr>
<tr>
<td>✓ Increase inventory turns to 3 turns / year.</td>
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<tr>
<td>✓ Implement customer satisfaction survey process.</td>
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<tr>
<td>✓ Reduce the warehousing cost by 5 % per year.</td>
</tr>
</tbody>
</table>

Figure 1. Objectives statement.

Also the objectives statement should be distributed and communicated to all parties involved and especially to the logistics partner. This helps the logistics service partner to understand all the actions connected to the objectives in planning and implementation phase.

2.3. Core-competence Strategy
When a company considers to outsource logistics activities it is recommendable to define the company’s own core-competence. The core-competence can be mapped with aid of Table 1. The table adapts partly the core-competence mapping presented by Luomala et al (2001, page 75).

**Table 1.** Core-competence mapping. (Source: Luomala et al, 2001).

<table>
<thead>
<tr>
<th>Function</th>
<th>Excellent</th>
<th>Good</th>
<th>Satisfactory</th>
<th>Bad</th>
<th>N/A</th>
<th>Potentiality for outsourcing</th>
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<tr>
<td>Marketing</td>
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<td>Customer knowledge</td>
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<td>Customer base</td>
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<td>Marketing competence</td>
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<td>Products and services</td>
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<td>Product</td>
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<td>Services attached to products</td>
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<td>Call center</td>
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<td>Duty service (7days/24h)</td>
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<td>Material management</td>
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<td>Contracts</td>
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<td>Purchasing</td>
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<td>Warehousing</td>
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<td>Material ownership</td>
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<td>Production</td>
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<td>Operations management</td>
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<td>Manufacturing</td>
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<td>Physical distribution</td>
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<td>Transportation</td>
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<td>Distribution network</td>
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<td>Organization</td>
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<td>Human resource competence</td>
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<td>Management competence</td>
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<td>Financial management</td>
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<td>Personnel management</td>
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<td>Logistics technology</td>
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<td>Information system(s)</td>
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<tr>
<td>Training</td>
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</table>
One way to utilize the core-competence mapping is to compare the tables between service provider and customer. In the areas where the customer-company has given low rates, the service provider should have 'excellent' or at least 'good' rates in those functions. In some cases the core-competence may be low in both companies, and in those cases the service provider should have an extensive network from where they can subcontract the needed services. Typically the information system and technology services are subcontracted from external parties.

The list (Table 1) can be also extracted more into details. For instance, if a company wants to outsource only warehousing, the services could be divided into deeper details of processes.

The column "potentiality for outsourcing" can be used for identifying, which are the activities that can be outsourced in near future or in later stage. Most probably the company has given rates "satisfactory" or "bad" in its own core-competence mapping to these outsourcing potentiality activities. An outsourcer should consider priorities in this stage for creating a manageable and realistic outsourcing strategy.

2.4. Defining the Logistics Concept

There are several ways to define and present the logistics concept of an outsourcer. It is important that the current state (before the outsourcing process) of the logistics concept is recorded. The concept description may be limited to any part of an operation under investigation for outsourcing process, but it can also include the global view of total supply chain. The concept presentation can be divided into three categories:

1. Physical supply
2. Operations management
3. Physical distribution.

The Figure 2 shows an example about a spare parts’ physical supply concept currently and planned process. Physical supply describes the purchasing of raw materials and/or (semi-) products, transportation and stocking and information flow linked to it.
The Figure 2 shows an example about a physical supply concept currently and planned process. Operations management includes managing a company’s internal logistics (e.g. Production control).

The Figure 3 shows an example about a spare parts’ operations management concept currently and planned process. Operations management includes managing a company’s internal logistics (e.g. Production control).

The Figure 4 shows an example about a spare parts’ physical distribution concept currently and planned process. Physical distribution includes the goods physical distribution to a customer. Customer service process plays an important role on the physical distribution concept.
2.5. Geographical Factors

Each company, existing or starting, has to decide the location of logistics points. Once a locational decision is taken there is no need to constantly review that decision. However, the changes in the company’s business environment, performance or processes may have influence also on the location decision afterwards.

Each company should go through a location-decision process before outsourcing the distribution center operations. The location decision may depend on several factors, like:

- Functional environment: Vicinity of factory, head office, supplier network, R/D or restructuring of internal process
- Market environment: Strategic decision to develop certain local or global level operation (important customers, central location from market area and volumes point of view)
- Investment decision: Current location must be replaced or renovated, or a new location is needed for entering into new market area.

The scope of location decision varies from one company to another. Below a checklist, which characteristics may have also influence on the location decision (Apitzsch et al, 1995, pp.8-9):

- Connectivity to hubs of major integrators
- Vicinity of major ports and airports
- Availability and level of logistics services
- Infrastructure within a country/area (including information systems and technology)
Cost level (telecom charges, industrial rental and building costs, electricity, market distance)

Regulations and legislation (Company Law, foreign investment, institutional support, transport and environmental regulations, direct and indirect taxes)

Banking system

Government investment incentives

Labor (availability, qualifications, cost, productivity)

Relations (Unions and labor agreements, employee – employer relations, international investor relations)

Intangible factors (reputation, competition situation, tradition, cultural match, stability and predictability).

3 DEFINING CRITICAL SUCCESS FACTORS

The criteria for selecting a service partner vary from one company to another. The criterion is most of the times a combination of location factors (discussed in section 2.5), costs, services, quality and processes.

3.1. Costs

A distinction can be drawn between set up cost, operational cost and relocation cost. The set up cost include land, building, administrative and infrastructural connection costs. Moreover, investment incentives have to be also considered. Operational costs include labor, transportation and storage cost, tax and other municipal charges. The level of costs will be especially important if the product is undifferentiated and if the company strategy is to compete on cost (Apitzsch et al, 1995, pp. 27-32).

3.2. Services

The scope of services is an important element, when a company considers to outsource logistics activities. The services can be distinguished to standard services and special services. Special services are not standard operations of a service provider. These special services have to be set up in practice from "green field" base, which brings in several risks in managing the operations and in the efficiency of the operations. An outsourcer should also pay attention to the experience of the service provider candidates, and consider, if it corresponds to the area of logistics that is going to be outsourced. For instance some logistics companies are specialized in retail logistics for consumer market (volume based operation), and another one is concentrating on industrial sector’s spare part logistics. For international companies the service provider’s global presence of services may be a key factor.

3.3. Quality and Processes

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There are companies, who require a certified quality and/or environmental system, and companies who do not require it from their service partners. Basically quality is about meeting the requirements and expectations of the customers’. In wide extent the quality can be measurable or it can be difficult to measure (quality is based on ”feeling and image”).

In briefer extent the quality can be determined that how the service provider succeeds in obtaining specifications and targets. The performance can be measured against own targets or targets given by a customer. The performance expectations vary from one another, therefore it is important that the targets and measuring methods are communicated properly. The performance indicators can be based on generally accepted best practices; yet the companies themselves must set the standards.

European Logistics Association (1999) has divided the performance measures into 8 categories, which are presented in the Table 2.

**Table 2.** Performance measures (Source: European Logistics Association).

<table>
<thead>
<tr>
<th>Group</th>
<th>Process</th>
<th>Description</th>
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<tbody>
<tr>
<td>A</td>
<td>Sales and Customer Service</td>
<td>Sales Customer Service</td>
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<td>B</td>
<td>Procurement and Supplier Service</td>
<td>Procurement Supplier Service</td>
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<td>C</td>
<td>Product</td>
<td>Product design</td>
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<td>Design Realization</td>
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<td>Design Maintenance</td>
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<td>D</td>
<td>Manufacturing</td>
<td>Manufacturing Planning</td>
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<td>Production of scheduling and Control</td>
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<td>Shop Floor Plan Execution</td>
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<td>E</td>
<td>Warehousing</td>
<td>Lead Time Related Issues</td>
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<td>Miscellaneous</td>
<td>Data Accuracy</td>
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<td>Personnel</td>
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<td>Reverse Logistics</td>
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</tbody>
</table>
Apitzsch et al (1995, pp. 9-10) have derived the criteria on the performance expectation, which follows the Council of Logistics Management approach of defining service level.

- **Lead time** (the average time between order acceptance and arrival at the client’s place): It varies from product to product depending on its size and special handling requirements. The products requiring significant value added logistics would also have different lead-time.

- **Lead time reliability** (the standard deviation of the lead time): For many operations reliability is absolutely critical. For instance, higher reliability results in lower safety stocks.

- **Quality or order completeness**. Granting quality services requires a company to be able to deliver the right goods, at the right place, the right time and without any damage.

- **Diverse factors** like the availability of service providers, the availability of information systems and technology, and languages skills of the personnel will have an impact on the customer service.

Whatever the performance measuring system is, it has to be measured consistently, coherently and it has to be compatible with customer expectations. Additionally, each measurement should have a relationship with the objectives of the service provider, which evidently vary over time and from company to company, and should be part of the control cycle of the processes by which logistics performance is improved.

The Figure 5 shows an example about a summary of critical success factors, which are requirements for a potential service provider in warehousing.

---

**Critical Success Factors in Warehousing**

- Service availability 24 hours 7 days a week
- Connectivity to hubs of major integrators
- Flexibility in capacity
- Experience in spare part warehousing and distribution
- Quality of warehousing output
- Cost efficiency

**Figure 5.** Critical success factors in warehousing.
4 DIFFERENT TYPES OF PARTNERSHIP

When outsourcing any logistics function it is worthwhile of considering what is expected from the service provider (partner). Partnership can be divided for instance to three different stages, which are presented in Figure 6.

![Figure 6. Different forms of partnership.](image)

It is difficult to define exactly which are the features on each level. Naturally, when the business relationship is just established, most probably the partnership level is also at the lowest level. The level of partnership may have features from the strategic, qualitative and operational levels but still the partners may feel in general level that the partnership is on operational level. Also personal relationships of contractual parties have a strong influence on the overall feeling about the level of partnership.

The Table 3 presents one way to analyze more in details the different features of partnership. In some cases it is not possible to move from one level to the next one before the lower level is taken care of. Basically the operational partnership means in practice that the customer and supplier relationship is based on price efficiency. An unsatisfied customer may change the supplier any moment they wish, which increases insecurity. The communication is most probably concentrated on price negotiations and problem solving.

In qualitative partnership the parties are committed to deepen the business relationship. Close co-operation and pro-active approach are typical aspects for qualitative partnership.

In strategic partnership an outsourcer has given responsibility of logistics co-ordination remarkably to the service partner. The management of both parties is strongly involved in the partnership due to strategic significance of partnership and long-term plans are in
many cases developed mutually. Strategic partnership is in practice difficult to reach. The features of different partnership types presented in the Table 3 are based on author’s own experiences.

Table 3. Different features of partnership.

<table>
<thead>
<tr>
<th>Strategic</th>
<th>Score</th>
<th>Qualitative</th>
<th>Score</th>
<th>Operational</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovativeness</td>
<td>-</td>
<td>Initiative</td>
<td>0</td>
<td>Managing of obligations</td>
<td>+</td>
</tr>
<tr>
<td>Win/win co-operation</td>
<td>0</td>
<td>Mutual efficiency</td>
<td>0</td>
<td>Cost and price focus</td>
<td>+</td>
</tr>
<tr>
<td>Responsive single point of contact</td>
<td>-</td>
<td>Contract co-ordination</td>
<td>+</td>
<td>Several points of contacts (contractual)</td>
<td>+</td>
</tr>
<tr>
<td>Best practices and know-how transfer</td>
<td>0</td>
<td>Pro-active</td>
<td>+</td>
<td>Development of corrective action system</td>
<td>+</td>
</tr>
<tr>
<td>Long-term relationship, “Grow together”</td>
<td>0</td>
<td>Seeing the “change” and potentiality</td>
<td>0</td>
<td>Short-term relationship or “business as usual”-attitude</td>
<td>0</td>
</tr>
<tr>
<td>Confidence</td>
<td>-</td>
<td>Negotiable approach</td>
<td>-</td>
<td>Contract based</td>
<td>+</td>
</tr>
<tr>
<td>Sincerity in communication</td>
<td>0</td>
<td>Interactive communication atmosphere</td>
<td>0</td>
<td>May be partly mistrustful atmosphere</td>
<td></td>
</tr>
<tr>
<td>Rewarding system</td>
<td>-</td>
<td>Identifying and negotiating about losses and benefits</td>
<td>0</td>
<td>Penalty system</td>
<td>+</td>
</tr>
<tr>
<td>Customer satisfaction surveys</td>
<td>-</td>
<td>Corrective action system</td>
<td>0</td>
<td>Feedback process</td>
<td>+</td>
</tr>
<tr>
<td>Co-ordination and development focus</td>
<td>-</td>
<td>Quality focus</td>
<td>0</td>
<td>Process focus</td>
<td>+</td>
</tr>
<tr>
<td>Regular management meetings</td>
<td>+</td>
<td>Regular manager level meetings</td>
<td>+</td>
<td>Regular operational meetings</td>
<td>+</td>
</tr>
<tr>
<td>Conclusion</td>
<td>-</td>
<td>Conclusion</td>
<td>0</td>
<td>Conclusion</td>
<td>+</td>
</tr>
</tbody>
</table>

It is recommendable that the customer and service provider will go through the partnership evaluation for instance once per year. It is important that all levels of organization have had a possibility to express their opinions about the partnership from their point of view. If a grade given by the customer and partner are not similar, the difference should be discussed and the grade agreed. For the evaluation the grades can be expressed by symbols, like presented in the Table 4:

Table 4. Evaluation symbols for partnership grading.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>Illustrates partnership well or the feature is in use</td>
</tr>
<tr>
<td>0</td>
<td>Neutral / feature is partially in use / potentiality to improve</td>
</tr>
<tr>
<td>-</td>
<td>Does not illustrate the situation or the feature is not implemented yet</td>
</tr>
</tbody>
</table>
The Table 3 includes fictitious grades. With aid of the grading system, it is possible to use the evaluation for basis of future improvements, in order to achieve next level of partnership. The biggest advantage of using the partnership evaluation system is that the problems are discussed, which is one step towards open communication atmosphere.

Practical experiences have disclosed that the top management’s commitment is a key factor in successful outsourcing (commitment in customer company and partner company). Without the commitment the outsourcing may have catastrophic consequences.

All the above mentioned issues should be discussed openly with service providers in order to achieve a good understanding about the basic starting point and strategy behind the decisions.

5 DEFINING BASIC DATA

This chapter introduces the different types of information that is needed in the preparation phase for outsourcing process, especially in outsourcing of warehouse activities. The basic data can be used for giving basic information and figures to potential service partners for tendering process, internal process analysis and partner evaluation process.

The basic data is split to six sections:

- Key figures
- Processes
- Quality
- Customer service
- Information systems and technology
- Implementation costs.

5.1 Key Figures

This chapter includes some sample tables, which include numerical information. The numbers are hypothetic and are only presented for the sake of sample.

(i) Location

For the tendering process it is important to know, where the warehouse or other sites needed should be located (e.g. Finland, Benelux, The Netherlands) and what should be gained through this location decision.

(ii) Warehouse
Below a checklist for defining warehouse requirements.

- Warehouse m² (cooling/warming/air-conditioning requirements, area with and without racking, type of racking)
- Office m² (equipment, phone and data line connections)
- Required extension areas
- Handling facilities and equipment (including security requirements)
- Multi-user or dedicated warehouse.

(iii) Product description

There should be a short description about the products, which are going to be handled and stocked in the warehouse. The description should include general information about sizes and weights of the products concerned (maximum, minimum, average).

(iv) Inventory

A short ABC-analysis gives a useful overview about the inventory volumes and resource indication. The Table 5 presents a sample about an ABC-analysis summary.

Table 5. ABC-analysis summary.

<table>
<thead>
<tr>
<th>Article</th>
<th>Number of articles</th>
<th>% of moves</th>
<th>Avg. picking events per annum</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-article</td>
<td>750</td>
<td>50</td>
<td>98</td>
</tr>
<tr>
<td>B-article</td>
<td>3 210</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td>C-article</td>
<td>5 790</td>
<td>20</td>
<td>3</td>
</tr>
<tr>
<td>D-article</td>
<td>250</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>10 000</strong></td>
<td><strong>100</strong></td>
<td><strong>141</strong></td>
</tr>
</tbody>
</table>

Other useful information is:

- Picking events per year (in average and per article group)
- Seasonal variances in inbound and outbound volumes
- Expected annual volume changes.

(v) Volumes

The article list can be divided into more detailed item groups, like regular articles and hazardous goods etc.

Inbound and outbound volumes can be presented with aid of the Table 6.
Table 6. Inbound and outbound volumes.

<table>
<thead>
<tr>
<th></th>
<th>Inbound Average per day</th>
<th>Minimum per day</th>
<th>Maximum per day</th>
<th>Total per annum (in 240 working days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orders</td>
<td>15</td>
<td>5</td>
<td>25</td>
<td>3 600</td>
</tr>
<tr>
<td>Lines per order</td>
<td>5</td>
<td>1</td>
<td>50</td>
<td>1 200</td>
</tr>
<tr>
<td>Articles per line</td>
<td>20</td>
<td>1</td>
<td>150</td>
<td>4 800</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Outbound Average per day</th>
<th>Minimum per day</th>
<th>Maximum per day</th>
<th>Total per annum (in 240 working days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orders</td>
<td>50</td>
<td>25</td>
<td>70</td>
<td>12 000</td>
</tr>
<tr>
<td>Lines per order</td>
<td>2,5</td>
<td>2</td>
<td>4</td>
<td>600</td>
</tr>
<tr>
<td>Articles per line</td>
<td>12</td>
<td>7</td>
<td>15</td>
<td>2880</td>
</tr>
</tbody>
</table>

Also the expected annual volume changes should be indicated, and if the operations should be organized in two or three shifts, what are the expected volumes during the shifts.

If the supplier base is dispersed to all over the globe, it may useful to list the origin countries on the basis of ABC-analysis.

A sample about the packaging types in goods receipt process is presented in the Table 7.

Table 7. Inbound packing figures.

<table>
<thead>
<tr>
<th>Type of packing</th>
<th>Average per day</th>
<th>Minimum per day</th>
<th>Maximum per day</th>
<th>Total per annum (in 240 working days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EUR pallet</td>
<td>10</td>
<td>1</td>
<td>20</td>
<td>2 400</td>
</tr>
<tr>
<td>Throwaway pallet</td>
<td>5</td>
<td>0</td>
<td>10</td>
<td>1 200</td>
</tr>
<tr>
<td>Plywood box</td>
<td>3</td>
<td>0</td>
<td>10</td>
<td>720</td>
</tr>
<tr>
<td>Carton box</td>
<td>24</td>
<td>10</td>
<td>45</td>
<td>5 760</td>
</tr>
<tr>
<td>Carton tube</td>
<td>1</td>
<td>0</td>
<td>10</td>
<td>240</td>
</tr>
<tr>
<td>Total weight (kg)</td>
<td>200</td>
<td>50</td>
<td>1 000</td>
<td>24 000</td>
</tr>
</tbody>
</table>

If any additional services are needed in inbound process, the volumes and process description should be indicated separately (e.g. Inbound barcode labelling).
The picking process is one of the most time consuming activity in the warehouse operations, therefore the number picking events from different storage locations is important information (see a sample in Table 8).

**Table 8. Picking events by location.**

<table>
<thead>
<tr>
<th>Type of picking location</th>
<th>Percentage of lines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pallet</td>
<td>22</td>
</tr>
<tr>
<td>Reel</td>
<td>8</td>
</tr>
<tr>
<td>Box</td>
<td>55</td>
</tr>
<tr>
<td>Carton tube</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

A sample about the packaging types in outbound process is presented in the Table 9.

**Table 9. Types of outbound packing.**

<table>
<thead>
<tr>
<th>Type of packing</th>
<th>Average per day</th>
<th>Minimum per day</th>
<th>Maximum per day</th>
<th>Total per annum (in 240 working days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EUR pallet</td>
<td>10</td>
<td>1</td>
<td>20</td>
<td>2 400</td>
</tr>
<tr>
<td>Throwaway pallet</td>
<td>5</td>
<td>0</td>
<td>10</td>
<td>1 200</td>
</tr>
<tr>
<td>Plywood box</td>
<td>40</td>
<td>20</td>
<td>100</td>
<td>9 600</td>
</tr>
<tr>
<td>Carton box</td>
<td>50</td>
<td>20</td>
<td>100</td>
<td>12 000</td>
</tr>
<tr>
<td>Carton tube</td>
<td>5</td>
<td>0</td>
<td>10</td>
<td>1 200</td>
</tr>
<tr>
<td>Total weight (kg)</td>
<td>1 000</td>
<td>550</td>
<td>5 000</td>
<td>240 000</td>
</tr>
</tbody>
</table>

If any additional services are needed in packing process, the volumes and process description should be indicated separately (e.g. Individual product labelling).

(vi) **Equipment**

The storage system needs for average stock can be presented with aid of the Table 10.
### Table 10. Storaging systems.

<table>
<thead>
<tr>
<th>SKU type</th>
<th>Storaging type</th>
<th>Volume (# of articles)</th>
<th># of picks (% of lines)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pallet storage system</td>
<td>Floor storage</td>
<td>100</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Stacking frames</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Pallets (30 cm high)</td>
<td>3000</td>
<td>23</td>
</tr>
<tr>
<td>Small item storage system</td>
<td>Bin shelving (e.g. 8 boxes high)</td>
<td>1900</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Mezzanine</td>
<td>5000</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Horizontal carousel</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Vertical carousel</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hazardous goods</td>
<td>Fence area</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>10 000</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

The equipment needed in the daily warehouse operations can be presented like presented in the Table 11. An outsourcer and service provider have to negotiate and agree, which equipment are needed in the concerned operation, ensure the availability, decide who supplies the equipment and how the costs will be charged.

### Table 11. Warehouse equipment.

<table>
<thead>
<tr>
<th>Type</th>
<th>Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air pressure system</td>
<td>Nail machine</td>
</tr>
<tr>
<td></td>
<td>Rivet machine</td>
</tr>
<tr>
<td>Packing machinery</td>
<td>Plastic belt machine</td>
</tr>
<tr>
<td></td>
<td>Steel belt machine</td>
</tr>
<tr>
<td></td>
<td>Stretchfold wrapper</td>
</tr>
<tr>
<td></td>
<td>Pallet scale</td>
</tr>
<tr>
<td></td>
<td>Colli scale</td>
</tr>
<tr>
<td></td>
<td>Strap machine</td>
</tr>
<tr>
<td></td>
<td>Ladder</td>
</tr>
<tr>
<td></td>
<td>Pad-pack machine</td>
</tr>
<tr>
<td>Hand tools</td>
<td>Rivet hook</td>
</tr>
<tr>
<td></td>
<td>Knife</td>
</tr>
<tr>
<td></td>
<td>Meter</td>
</tr>
<tr>
<td></td>
<td>Plate shredder</td>
</tr>
<tr>
<td></td>
<td>Hammer</td>
</tr>
<tr>
<td></td>
<td>Crowbar</td>
</tr>
<tr>
<td>Security</td>
<td>Fences</td>
</tr>
<tr>
<td>Storage system</td>
<td>Pallet racks</td>
</tr>
<tr>
<td></td>
<td>Pick face</td>
</tr>
</tbody>
</table>
5.2. Processes

(i) Inbound Process

A short ABC-analysis gives a useful overview about the vendor base. The Table 12 presents a sample about an ABC-analysis in inbound process.

Table 12. ABC-analysis in inbound process.

<table>
<thead>
<tr>
<th>Vendor</th>
<th>Number of vendors</th>
<th>% of orders</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-article</td>
<td>15</td>
<td>50</td>
</tr>
<tr>
<td>B-article</td>
<td>40</td>
<td>30</td>
</tr>
<tr>
<td>C-article</td>
<td>200</td>
<td>20</td>
</tr>
<tr>
<td>D-article</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>260</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

This table includes some numerical information. The numbers are hypothetic and are only presented for the sake of sample.

For the tendering process the service provider candidates need to have an overview about the activity they have to perform. The description of inbound process can be a process graph an/or it can be a verbal description about the tasks.
Below a checklist about the tasks that should be discussed in invitation to tender phase:

- Information systems to be used
- Pre-notification process about incoming shipments
- Unloading (e.g. Individually labelled and packed items)
- Customs clearance (volumes, process and responsibilities)
- Inspection of visual damages and completeness
- Booking the goods into systems (within agreed period of time)
- Reporting method of deviations recognized in inbound process
- Special activities (e.g. labeling of barcodes if needed, assembling)
- Method of handling rush orders (frequency)
- Archiving (methods and time).

(ii) **Storage**

The aim of describing the storage system is to give an overview of systems and methods of storing the goods. Below a checklist about the tasks that should be discussed in invitation to tender phase:

- Storage location method (e.g. Identification, location; normal, blocked/quarantine, scrap)
- Registering system (e.g. Information needed on location labels)
- Stock accuracy (e.g. Required cycle counting frequency, reporting system, handling of deviations)
- Insurances (values and responsibilities)
- Special requirements.

(iii) **Returns Process**

Returns process is a rather minor activity in warehouse, but the process has to be described, because in normal circumstances the returns process is essential part of outsourced logistics activity.

Below a checklist concerning the returns process:

- Estimated volumes of returned goods
- Returns handling (e.g. process and responsibilities)
- System registrations
- Handling of scrap materials.

(iv) **Outbound Process**

For the tendering process the service provider candidates need to have an overview also about the outbound activity that they have to perform. The description of outbound process can be a process graph an/or it can be a verbal description about the tasks.
Below a checklist about the tasks that should be discussed in invitation to tender phase:

- Information systems to be used
- Order receiving frequency (e.g. 80% of lines before 3PM for same day shipping or day x-1)
- Order book control possibility (e.g. for capacity planning)
- Description of concrete activities that has to be performed in outbound process
- Handling of special instruction
- Availability of packing instructions
- Handling of deviations (e.g. stock-outs)
- Method of handling rush orders (frequency)
- Shipment documentation (e.g. packing lists and customs documents)
- Consolidation process
- Authority of canceling or changing orders.

(v)  **Transportation**

The transportation process description should give a clear overview about the responsibilities and obligations that the service provider has to perform.

Below a checklist about the tasks that should be discussed in invitation to tender phase:

- Is transport management required or does the service provider only arrange the consignment notes and pick up calls.
- Who is responsible for negotiating with transport service providers (e.g. account, price list etc.)
- Who nominates the carrier to be used
- Process of special documents (e.g. forwarding)
- Destination split (e.g. volumes / country)
- Carrier cut-off times from warehouse
- Quality and service requirements
- Volumes
- Seasonality / frequency
- Tracking and tracing arrangements.

(vi)  **Special Services**

It is important that the service partners are aware about the special services and needs already in the beginning. Of course, the more prices the invitation to tender is, the more accurate the financial figures will be, which helps in comparing the different tenders.

(vii)  **Billing**
There are several ways to organize the billing of logistics services. Traditional way is to send the consolidated invoices manually as paper copies on agreed frequency of time (e.g. weekly, every two weeks, monthly etc.).

Modern systems like EDI and Internet provide a natural platform for electronic invoicing, which make possible to achieve potential savings in billing processes.

5.3. Processes

If an outsourcer wants that the potential service providers should have a valid quality or environmental assurance system, it should be indicated already during the tendering phase.

The quality standards and expectations should be also communicated clearly, for instance like mentioned below:

- **Inbound (warehouse)**
  - On-time booking after goods received in the warehouse
  - Minimum quality standard xx %

- **Outbound (warehouse)**
  - On-time booking after goods are packed ready for shipping in the warehouse
  - Minimum quality standard xx %

- **Transportation**
  - On-time deliveries compared to promises
  - Minimum quality standard xx %

There may be other types of quality standards also, and these requirements vary from one company to another. Basic idea is that all the quality expectations and proposals for KPI’s should be informed to potential service providers. In some cases an outsourcer may want that the potential service partners suggest a KPI report proposal.

In case the quality standards are not met an outsourcer may want implement a penalty procedure. The counting procedure should be defined.

On the other hand if the service provider performs over the defined quality standard level it may be worthwhile to implement a bonus rewarding procedure. A successful bonus system increases the commitment and quality level of service provider, which enhances partnership level and end-customer satisfaction.

Also the procedure of handling the service complaints and management reporting requirements can be described in the invitation to tender (including corrective action system).
5.4. Customer Service

An invitation to tender should include the requirements for customer service from the outsourcer point of view. The offer should include information like for instance:

- Opening hours of customer service
- Duty time service
- Language competency requirements
- Emergency plan.

The offer should contain information that how the customer service management (account management) and operations are organized (including team structure).

Concerning daily operational communication each company has to decide if different processes need to have a single point contact or should there be several contacts. From service provider point of it may be sometimes difficult to organize only one contact point due to the fact that the processes are very different from one to another. Basically a customer service function (e.g. call center) should be able to answer on questions concerning for instance following processes (depends on the scope of activities concerned):

- Warehousing
- Manufacturing
- Transportation
- Procurement
- Quality control
- Reverse logistics
- Recycling logistics
- Logistics technology
- Packaging services
- Consultancy
- Value added services.

From the service provider point of view it is important to know that who are the customers (centralized and authorized function, end-customer, customer’s customer) and what is the contact procedure in customer service related issues. Different customer types have different requirements for customer service function.

5.5. Information Systems and Technology

The information systems and technology is a remarkable cost factor in outsourcing process nowadays and an increasing factor in the future. Therefore it must be paid attention to the specifications and structure of warehouse management system in order to avoid problems in further stage of the outsourcing process.
An outsourcer has to make a decision, that is the service provider going to provide a complete warehouse management system or should the outsourcer supply it. If service provider’s warehouse management system is more sophisticated than outsourcer’s, the service provider’s system is worth of considering to be used. On the other hand, if a logistics service is outsourced step by step, it may be feasible to start with own WMS. If the service provider supplies the necessary hardware and software, the offer should include proposed charging methods about the Information services.

Below a checklist about the issues that should be taken into account in the invitation to tender phase:

- Specification of requirements; hardware and software (including quantities)
- Back-up and restoring facilities
- Interface management
- Data communication flow
- Licenses
- Customization needs
- Description of software functionalities
- Estimation about implementation times.

Frazelle (2001) suggests that a Warehouse Management System should have at least following features:

- Warehouse activity profiling
  - Order activity profiling
  - Item activity profiling

- Warehouse performance measures
  - Warehouse activity based costing
  - Warehouse resource utilization

- Receiving
  - Cross-docking
  - Receiving scheduling
  - Automatic cubing and weighing
  - Vendor compliance

- Putaway
  - Directed putaway
  - Batch putaway
  - Putaway sequencing
  - Interleaving and continuous moves

- Storage
  - Storage mode optimization
5.6. **Implementation Costs**

Basically the implementation cost can be split to three main categories:

- Storage (including equipment)
- Office
- Information systems and technology.

The equipment checklist concerning these categories is presented more in details in chapter 1.2.1 (vi; equipment).

The negotiating parties should agree on clear areas of responsibility in terms of *supply* and *cost carrying* before making the contract about logistics services. It may be also useful to suggest an implementation period, and if the service partner performs quicker than expected or exceeds the implementation time a bonus / penalty clause can be applied.

6 **INVITATION TO TENDER**

The issues that should be communicated to potential service partners in the invitation to tender phase are discussed in details in the Chapter 5. This chapter suggests the formal structure, how the invitation to tender could be organized.
An invitation to tender can be sent to as many service providers as an outsourcer feels appropriate.

6.1. General Conditions

General conditions of the invitation to tender (ITT) can be split to two categories: Tasks and tender process.

(i) Tasks

The ITT should give a short description of outsourcer’s business environment like logistics mission and concept. It should also include description of objectives of outsourcing process and the criteria about the critical factors that are important for successful implementation and operations. The potential service partners should get an overview, how the tasks they have to perform fit into the logistics concept of the customer company.

(ii) Tender process

It is important to inform to the potential service partners about the estimated schedule (exact date) when the activities concerned should be in full operation. In order to meet the starting date, an outsourcer has to set deadline dates, which are for instance return of confidentiality agreement, submission of quote and feedback date.

An outsourcer can suggest in his ITT, that which are the issues that should be at least presented in the offer. Below a checklist of the offer requirements:

- Return of confidentiality agreement
- Submission of quote
- Evaluation time
- Possibilities for offer presentations (for selected service providers).
- Short presentation of the company
- Description of account-management and communication process
- Service provider’s organization and operations presentation (incl. locations and volumes)
- References
- Service products
- Suggested location, process flow and organization
- Performance samples (standards)
- Manpower portfolio
- Prices
- Cost improvement procedure
- Description of quality assurance
- System infrastructure
- Emergency organization
• Implementation approach & proposal.

The outsourcer can also suggest the pricing structure and it has to be communicated in the ITT. Below some samples about the pricing methods.

<table>
<thead>
<tr>
<th>Handling (inbound, outbound)</th>
<th>Price per orderline / weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warehouse space</td>
<td>Price per square meter or pallet location</td>
</tr>
<tr>
<td>Special services</td>
<td>Hour rate</td>
</tr>
<tr>
<td>IT</td>
<td>Price per orderline or investment fee/fixed price</td>
</tr>
<tr>
<td>Insurance</td>
<td>If applicable</td>
</tr>
<tr>
<td>Project costs</td>
<td>Pre-calculated amount</td>
</tr>
<tr>
<td>Transportation</td>
<td>Price per kg, cubic meter, pallet meter</td>
</tr>
<tr>
<td>All prices given in</td>
<td>EUR, USD etc.</td>
</tr>
</tbody>
</table>

One possibility to start the operations is by implementing an open book charging method, where the service provider records all the costs by activity and a provision is added on the total costs. This is a good option especially in case an operation is started from “green field”. The open book approach can be used for instance for the first 12 months, and after that the charging method is for instance transaction based charging.

Another option is to implement a transaction based charging method. It is based for instance on fixed monthly management fee added with a transaction fee (for instance line fee).

The language and distribution of the quote has to be also mentioned in the ITT. The outsourcer must inform the contact information (name of contact person, address, telefax and telephone number, e-mail address) for communication purposes.

6.2. Specifications for Tender

Specifications for tender can be split to seven categories:

• Key figures
• Processes
• Quality
• Customer service requirements
• Information systems and technology
• Implementation costs
• Other relevant issues.

These specifications have been discussed in details in the Chapter 5. It is worth of mentioning in the ITT any relevant additional information, which may have influence on the price level and scope or requirements of services. Therefore each company has to decide individually what is the most useful way of expressing the specification.
It is the advantage of all parties that the ITT assignment is clear. This makes easier the tendering process of the potential service partners, and a clear assignment reduces the risk that the offer is based too much on assumptions. An insufficient ITT may cause troubles in the further state of the tendering process.

On the other hand, if an outsourcer can supply a clear ITT, a world-class service provider is able to supply a clear and professional offer. It is an advantage of both parties that the ITT and offer are clearly and comprehensively compiled. In this way it is easier for an outsourcer to rank the best offers and select few service providers for final negotiations and from service provider point of view the possibility for misunderstandings and miscalculations is minimized.

6.3. Appendices

It may be useful to add any information as an appendix, which an outsourcer thinks is worth of mentioning in the ITT. Below a checklist about these issues:

- Product overview
- Operations description & photos
- Logistics partner manual
- List of packaging materials
- List of customer specific equipment
- List of interface messages
- Description of Warehouse Management system to be used
- Confidentiality agreement
- Others.

7 SITE VISITS

From an outsourcer point of view it is recommendable to arrange site visit in the potential service providers premises. The objective is to understand and know better the business of potential partners. The issues discussed can include for instance following aspects:

- General presentation about the service provider
- Facility visit (e.g. availability of space, suitability, flexibility, possibility for expansion, storage solution)
- Financial stability
- Logistics concept and service products
- Availability of value added services
- Experience in similar business (e.g. capabilities and cultural fit)
- Management process
- Process management (e.g. allocation control, productivity, capacity planning, process monitoring steering)
- Quality management (e.g. management concept, continuous improvement process and samples of KPI’s)
- Human resource management (e.g. training, flexibility, rewarding system, aerial employment situation, manpower portfolio)
- Transport management (e.g. availability, connections)
- Project management approach and organization
- System infrastructure (e.g. management, resources, software, customization)
- Supply of goods and services (e.g. packing materials)
- Views about the schedules
- Brief the potential service partners about the desired format and content of the final offer.

From a service provider point of view it is worth of arranging a site visit in the premises, where the concerned activity is currently in operation. The objective is to understand and know better the business of the customer company. A potential service partner should pay attention to following issues:

- General presentation about the service provider
- Facility visit (e.g. availability of space, suitability, flexibility, storage solution)
- Financial stability of the customer
- SWOT-analysis about current operations (strength, weaknesses, opportunities and threats
- Business potentiality (e.g. own capabilities and cultural fit)
- Overview about current operation processes like management, quality, human resources and transport
- Current IT systems (e.g. management, resources, software, customization and interfaces)
- Supply of goods and services (e.g. packing materials)
- Create a general overview about implementation schedules and resource needs.

After the visit a service provider should have relevant information for preparing a final quote and recognizing business potentiality. It may be also possible that after the site visit a service provider may not be involved in the further stage of tendering process due to that fact that they cannot give any added value compared to current operations.

The issues mentioned earlier in this chapter are based on practical experiences with warehouse and transportation service providers.
The objective of comparing offers is to rank the service providers according to selection criteria, which are set by the management. These critical success factors are discussed in the Chapter 3.

The evaluation of offers and partners is done in several stages and extent. The Figure 7 presents one example about the negotiations procedure from the request for quotation to selection of partner.

![Tender process diagram](image)

**Figure 7.** Tender process.

The invitation to tender can be sent basically to as many service providers as an outsourcer wishes to send it. It depends on how much an outsourcer has resources to make analysis for tender process, what is sensible quantity of potential service providers for the operations concerned, schedule, and finally it is an internal decision that management has to do.

The critical success factors are discussed in the Chapter 3. These factors can be used as criteria when evaluating the offers and potential service partners. After the first tender is received it is sensible to create an evaluation summary. A sample is about the evaluation summary is presented in the Table 13. The table adapts partly the evaluation summary presented by KepConsult (2001).

**Table 13.** Evaluation summary. (Source: KepConsult 2001).
Flexibility in capacity
Experience in spare part warehousing and distribution
Quality of warehousing output
Cost efficiency (pricing)
Recommendation for phase 2

The evaluation parameters can be presented also more in general level like:

- Concept
- Management capability
- Process management
- Process quality
- Quality control
- Continuous improvement process
- Warehouse quality/location
- Human resource management
- Information systems and technology.

Basic idea is that all the companies, which have returned an offer as reply, should be ranked with aid of evaluation summary table. The ranking can be realized with aid of for instance following symbols, which are presented in the Table 14.

Table 14. Evaluation symbols for partner grading. (Source: KepConsult 2001).

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>++</td>
<td>Very good</td>
</tr>
<tr>
<td>+</td>
<td>Good</td>
</tr>
<tr>
<td>0</td>
<td>Neutral</td>
</tr>
<tr>
<td>-</td>
<td>Not very good</td>
</tr>
<tr>
<td>--</td>
<td>Bad</td>
</tr>
<tr>
<td>?</td>
<td>Information not available</td>
</tr>
</tbody>
</table>

There may occur problems with this type of evaluation approach if the invitation to tender does not state clearly how the information should be presented. The problems may occur because:

- Service providers have used different types of pricing structures and units
• Processes are not clearly stated
• Offers are not comparable
• Missing prices etc.

This problem can be tackled if an outsourcer has delivered a clear template assessment form, which forces the potential service providers to give tender information in comparable format. For instance the orderline price should include all depreciation costs.

So, in principle, the first step can be skipped if a template form is delivered to the service providers already in the beginning of tender process.

The Table 15 presents a sample template form for evaluating offers. The table adapts partly a form compiled by TX Consulting GmbH (2001).

**Table 15.** Template form for evaluating offers. (Source: TX Consulting GmbH 2001).

<table>
<thead>
<tr>
<th>General information</th>
<th>Service Provider A</th>
<th>Service Provider B</th>
<th>Service Provider C</th>
<th>Service Provider D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site visit in service provider’s warehouse</td>
<td>Yes / no</td>
<td>Yes / no</td>
<td>Yes / no</td>
<td>Yes / no</td>
</tr>
<tr>
<td>Site visit in current warehouse</td>
<td>Yes / no</td>
<td>Yes / no</td>
<td>Yes / no</td>
<td>Yes / no</td>
</tr>
<tr>
<td>Comparable template information received</td>
<td>Yes / no</td>
<td>Yes / no</td>
<td>Yes / no</td>
<td>Yes / no</td>
</tr>
<tr>
<td>Meeting of service provider’s local project team</td>
<td>Yes / no</td>
<td>Yes / no</td>
<td>Yes / no</td>
<td>Yes / no</td>
</tr>
</tbody>
</table>

**Pricing**

- Direct employees
- Indirect employees
- Number of orderlines (basis for calculation)
- Warehouse m²
- Price per orderline (€)
- Price per m² per month (€)
- Price per orderline (overall) (€)
- Grand total costs (€)

**Project**

- Project costs (including implementation, management, labour, IT) €
- Project plan proposal | Yes / no | Yes / no | Yes / no | Yes / no |

**Contractual issues**

- Contract proposal | Yes / no | Yes / no | Yes / no | Yes / no |
- Proposal for KPI’s (Key Performance Indicators) | Yes / no | Yes / no | Yes / no | Yes / no |
- Work shifts | 1 / 2 / 3 | 1 / 2 / 3 | 1 / 2 / 3 | 1 / 2 / 3 |
- Name and detailed features of service provider’s WMS | Yes / no | Yes / no | Yes / no | Yes / no |

**Transport / Distribution**

- Price lists received (air and road) | Yes / no | Yes / no | Yes / no | Yes / no |
- List of all transportation companies used by service provider | Yes / no | Yes / no | Yes / no | Yes / no |
- Automated freight bill printing | Yes / no | Yes / no | Yes / no | Yes / no |
The Figure 8 presents a summary about the costs, which can be concluded with aid of the template form. The analysis can be presented for instance also on orderline level.

**Figure 8.** Cost summary.

The Table 16 presents a sample evaluation form for evaluating offers. The form adapts a form compiled by TX Consulting GmbH (2001). The evaluation arguments can be applied mainly for ranking the warehousing service providers. The ranking arguments can be extended to other areas of logistics services, which an outsourcer feels appropriate like:

- Manufacturing
- Procurement
- Quality control
- Reverse logistics
- Logistics technology
- Packaging
- Logistics consultancy
- Customer specific value added services.
On the other hand it is possible to remove any arguments from the evaluation form. The evaluation grade points are from 0 (bad) to 5 (very good). The table adapts partly a form compiled by TX Consulting GmbH (2001).

**Table 16.** Evaluation form for ranking service providers. (Source: TX Consulting GmbH 2001).

<table>
<thead>
<tr>
<th>Evaluation</th>
<th>Company A</th>
<th>Company B</th>
<th>Company C</th>
<th>Company D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warehouse</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Availability</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expansion possibilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suitability (for concerned operation)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage solution (type of storage system)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage concept (multi user / single user)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleanness</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flexibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human resource management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training concept</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Employment flexibility</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Job classification</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Employee recognition</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Process management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inbound control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outbound control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory accuracy procedure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Productivity control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Returns process</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capacity planning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Process monitoring and steering</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management concept</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KPI reporting concept</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuous improvement process</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrective action system</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information technology &amp; systems</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of technology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professionalism of available systems</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Interface management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transport</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cut-off times</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forwarding</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connectivity to several carriers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Customer service</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duty time service</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Language competency</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pricing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orderline (price vs. quality)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implementation costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Project management</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Availability of resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project schedule proposal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>General assessment</strong></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Background/history</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial background</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industrial competence (references, innovativeness, concept etc)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management team</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience in concerned activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total grade points</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total grade points / 40 → Ranking evaluation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recommendation for contract (negotiations)</td>
<td>Yes / no</td>
<td>Yes / no</td>
<td>Yes / no</td>
<td>Yes / no</td>
</tr>
</tbody>
</table>

The evaluation form for ranking service providers can be used for instance either for selecting the two most potential service providers for contract negotiations or even for making the final decision, which service provider will be selected as coming logistics partner.
This chapter handles contractual issues related to outsourcing of logistics functions. The chapter contains in a checklist mode general guidelines for contractual negotiations for outsourcing of different services. The issues discussed in this chapter are not comprehensively presented due to the fact that every company has its own purchasing policy and the focus differs from one company to another. The checklists are based on author’s practical experiences. A world-class service provider can definitely give even more valuable hints for contractual issues in their area of expertise.

The services discussed in this chapter are:

- Warehousing
- Manufacturing
- Transportation
- Customer service
- Procurement
- Quality control
- Reverse logistics
- Recycling
- Logistics technology
- Packaging
- Consultancy
- Value added services.

From an outsourcer point of view it should be paid extra attention during the contract negotiations to achieve a sought-after result, which is in accordance with the company’s logistics and service parts mission and objectives. These are the issues, which should be emphasized as requirements to the service provider.

In some cases it may be appropriate to prepare and sign a letter of intent, where the parties express their commitment to proceed to a final agreement, but from practical reasons they cannot underwrite the agreement before making further investigations in details of contract.

The structure of purchase agreement depends on the company policy and scope of purchased equipment or services. So there is not a single right agreement base. The Figure 9 presents one sample, how a logistics agreement can be organised.
9.1. Master Agreement

The master agreement handles the liabilities and obligations of both parties. It combines the appendix material under one master agreement. It can include for instance following statements:

- Agreement parties
- Definitions of terms
- Object of agreement
- Scope of the purchase agreement
- Liabilities and Obligations of both parties
- Purchase obligation/estimates
- Terms of delivery and packaging
- Delivery time
- Payment terms
- Ownership of goods in warehouse
- Variations in materials for equipment or personnel (prices, handling of deviations in pricing, purchase of dedicated equipment etc.)
- Delivery of commissions (orders etc.)
- Discontinuation of (spare part) production
- Early termination
- Effect of termination
- Transit/storage
- Limitations
- Quality and inspections
- Warranty
- Documentation
- Liability for damages
- Product liability
- Applicable law and settlement of disputes
The parties normally execute the Agreement in two identical copies, one for each party.

9.2. **Warehousing**

The specification of warehousing services should firstly include a flow chart of processes, which the parties have agreed upon. A basic principle is that the more pricesly the processes have been described in the contract the less there will be misunderstandings and miscalculations in price level.

Basically there are two main types of warehousing services: Multi-user and dedicated processes. It has an influence on practical process flows. Bonded warehousing has also special features on the processes. These processes can be split into more detailed specification like:

- Unloading
- Receiving
- Storing
- Picking
- Packing
- Loading
- Security
- Equipment
- Inventory counting.

Other issues, which are worth of mentioning, are for instance:

- Volume variations
- Stocking types and methods
- Documentation requirements (incoming and outgoing documents, special documentation, invoices etc.)
- Handling of exceptions and failures (damages, blocking of goods, scrapping etc)
- Handling time of incoming and outgoing goods
- Change and cancellation of orders
- Returns handling
- Maintenance of dedicated equipment
9.3. **Manufacturing**

The description of manufacturing services should include clear guidelines, how the practical processes are agreed to work upon. Below a checklist about some basic features:

- Flow chart of process
- Ordering methods (including the exact contents of information)
- Order confirmation process (including the exact contents of information)
- Buffer stock requirements
- Packing and labelling requirements (including special packing instructions)
- Packing documentation requirements
- Specialities in invoicing (including the exact contents of information)
- Tool / casting costs (management, ownership and cost carriage)
- Requirements for testing and inspection procedures
- Filing requirements of documentation
- Others.

If the manufacturing service include also repair, reconditioning or installation services, it is worth of defining the flow chart and following details:

- Specification of commission (invitation of tenders and order)
- Testing and inspection procedures
- Training
- Supervision of work
- Acceptance of commission.
- Others.

9.4. **Transportation**

The process flow chart of transportation services should be described from the commission of transport to invoicing. Below a sample about the processes that should be at least agreed upon:

- Impulse for commission of transportation (transportation booking)
- Creation of freight waybill (manual or electronic)
- Other documentation needed
- Attachment of documents (in/on packing)
- Informing the freight note numbers
- Pick-up procedures (including cut-off times)
- Delivery procedures
- Transit times
- Insurance and liability requirements
- Freight billing
- Tracking and tracing.

A basic transportation agreement includes two main points; Frame agreement, which includes general legal principles with liabilities and obligations and Service level Agreement (SLA), which includes for instance Key Performance Indicators (KPI) and claim procedures.

In the widest extend the logistics of transportation services include following features (Frazelle 2001, pp.174-176).

- Transportation activity profiling and data mining
- Transportation performance measures
- Transportation network design (hierarchies, location selection, facility mission design, deployment, site selection)
- Shipment management (routing and scheduling, mode and carrier selection, planning and rating, load planning, shipment tracking)
- Container/fleet management (sizing and configuration, acquisition/replacement, maintenance, identification and tracking, yard management)
- Carrier management (carrier selection, carrier negotiation, core carrier programs, carrier contracting, carrier monitoring)
- Freight and document management (freight billing, freight bill audits, freight payment)
- Transportation management systems
- Transportation organization design and development.

Typically a logistics service provider should be able to arrange for instance following transportation modes:

- Integrator (door-to-door, time definite courier service)
- Air freight
- Road freight
- Sea freight
- Mail
- Railway.

9.5. Customer Service

There are several ways how the logistics service providers have organized the customer service related communication and management. In this study the customer service is based on separate function ’service center’. In principle a Service Center should be able
to answer on questions related to services mentioned in Chapter 9. Below a checklist about the customer service related issues that should be agreed upon:

- Communication structure (authorized contacts in commercial, operational, managerial, contractual and technical issues)
- Exact service hours
- Duty time service during out of office hours
- Sufficient emergency plan
- Performance related issues
- Language requirements
- Customer satisfaction monitoring
- Tracing of orders
- Response time and limitations
- Claim handling and administration procedures
- Forwarding (administration) in inbound and outbound processes
- Co-ordination of inspection procedures (inspection done by external parties, export licenses)
- Order flow control and informing possible delays (including handling of special shipment instructions)
- Order entry
- Order processing
- Invoicing and collections
- Fiscal representations (reports to authorities)
- Archiving of needed documents
- Others.

9.6. Procurement

The description of procurement services should include clear guidelines, how the practical processes are agreed to work upon. Below a checklist about some basic features, which issues should be agreed upon:

- Flow chart of process
- Clear responsibilities in the ownership of supplier relations (responsibility of contract with external suppliers)
- Ordering methods (including the exact contents of information)
- Order confirmation process (including the exact contents of information)
- Buffer stock requirements
- Packing and labelling requirements (including special packing instructions)
- Packing documentation requirements
- Specialities in invoicing (including the exact contents of information)
- Requirements for testing and inspection procedures
- Filing requirements of documentation
- Others.
9.7. Quality Control

In this chapter the quality control is divided into two main categories:

1. General procedures for controlling quality of services, products and processes

The general procedures of controlling quality in concerned operations should be described in the agreement. These procedures should give clear guidelines for practical operations. The guidelines should include for instance following aspects:

- Process flow chart of the activities which need to be quality controlled
- Methods and responsibilities in collecting data and carrying out quality controls / tests
- Supply of quality control (e.g. testing) documents
- Reporting methods and frequency of distribution
- Forum for developing the quality of services, products, process and partnership in general
- Attention should be paid also to regulatory requirements
- Procedure in case the quality levels falls below an agreed level
- Claim and corrective action procedure
- Method for calculating bonus / penalty system
- Others.

The measured KPI’s should reflect the logistics concept objectives and critical success factors, which are discussed more in details in the chapter [1.1.2] and [1.2]. There are no industry standards to measure logistics quality. In practise there are hundreds of different measures available. Therefore each company has to identify the right set of logistics accuracy indicators for their operations.

One of the most sophisticated models of measuring KPI’s is the Supply-Chain Council’s SCOR-model. The SCOR model has been developed to describe the business activities associated with all phases of satisfying a customer’s demand. The model itself contains several sections and is organised around the five primary management processes of Plan, Source, Make, deliver and Return. The model (Version 4.0) is designed and maintained to support supply chains of various complexities and across multiple industries. The SCOR-model spans: all customer interactions (order entry through paid invoice), all physical material transactions (supplier’s supplier to customer’s customer, including equipment supplies, spare parts, bulk product, software etc.) and all market interactions (from the understanding of aggregate demand to the fulfilment of each order. It does not attempt to describe following business processes: sales and marketing, product development, research and development, and some element of post-delivery customer support (Supply-Chain Council, 2000). More information about the SCOR-model can be found in Internet address [http://www.supply-chain.org](http://www.supply-chain.org).
With aid of the SCOR-model a company can compile the process flow charts, define the measures (metrics) of quality and implement best practices introduced by the Model. The performance attributes in the SCOR-model are:

- Flexibility and responsiveness
- Cost
- Reliability and
- Assets.

The Table 18 includes a sample about the SCOR-model’s approach in measuring processes.

**Table 18.** Sample of process measurement (Source: Supply-Chain Council, 2000).

<table>
<thead>
<tr>
<th>Enable Process: Manage Supplier Agreements</th>
<th>Process Number: ES.9</th>
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<tbody>
<tr>
<td><strong>Enable Process Definition</strong></td>
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<tr>
<td>The management of existing purchase orders or supplier contracts. This includes managing volume/step pricing, resolving issues, enforcing terms and conditions and maintaining an accurate status for existing purchase orders or contracts.</td>
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<tr>
<td><strong>Performance Attributes</strong></td>
<td><strong>Metric</strong></td>
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<td>Flexibility and Responsiveness</td>
<td>Degree and frequency that purchase orders/contract can be altered. Average length of contracts.</td>
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<td>Cost of managing Long Term Agreements as a % spent, % revenue</td>
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<td>Cost of managing All Contracts as a % spent, % revenue</td>
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<tr>
<td>Reliability</td>
<td>Supplier Delivery Performance Percent</td>
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<td>Supplier Quality Performance Percent</td>
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<td>Supplier Price Performance Percent</td>
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<td>Re-negotiation Cycle Time</td>
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<td>Volume of Amendment compared to total contracts</td>
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<tr>
<td>Assets</td>
<td>Assets Associated with the Management of Supplier Agreements as a % of total Assets</td>
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</tbody>
</table>

### 9.8. Reverse Logistics

The contractual requirements depend on the scope and concept of concerned reverse logistics services. Different service providers have different types of reverse logistics
concepts. For instance some companies may speak only about the recycling of goods, which may actually include sophisticated features of reverse logistics. On the hand, there may be service providers, who offer recycling and reverse logistics as a part of their manufacturing concept. So basically the first thing is to define between the parties how the reverse logistics is defined in their relationship. Different persons will most probably have different views about the reverse logistics.

Below a checklist about the reverse logistics related issues that should be agreed upon:

- Process flow charts of reverse logistics
- Authorization and return request procedures
- Processing and inspection procedures
- Standard rules for handling of returned material based on the products physical condition (including opportunities for resale)
- Inspection certification and seals
- Technical support
- Repair service
- Re-boxing, recycling and disposal
- Reporting procedures
- Inventory management
- Shipping and freight management
- Re-distribution procedures
- EDI, XML, Web, & Legacy systems integration
- Others.

9.9. Recycling Logistics

Due to increased concern in protection of environment, companies have to consider more and more in practical level the re-usage of materials or controlled disposal. Especially the companies, who have the ISO 14000 environmental certification, have to control the recycling and disposal process in an accurate level. This fact cannot be forgotten even if the activity needing re-cycling is outsourced.

The Figure 10 presents a sample process flow of recycling process (incoming and outgoing).
Below a checklist about the recycling logistics related issues that should be agreed upon:

- Process flow chart
- List of repaired and re-cycled products (groups)
- Recycling responsibilities
- Cost carriage procedures and principles
- Reports (e.g. for ISO 14000 purposes)
- Others.

9.10. Logistics Technology

The use of different types of technologies in logistics is increasing, and new technical solutions are invented constantly. In principle the logistics technologies used in outsourced logistics operations can be for instance:

- Wireless and mobile solutions like (WAP, 3G, GPRS, Bluetooth, WLAN)
- Internet solutions (EDI, XML)
• E-commerce
• RFID (Radio Frequency Identification)
• Positioning, location information (GPS)
• Automation technologies for material handling etc.

From contractual aspects point of view the use of these technologies in outsourced operations should be also in the agreement. Due to the fact, that the above-mentioned technologies are very extensive and the practical application vary very much; the contractual details are not discussed in this chapter. In practise, if a company outsource warehouse operation and one of these technologies will be implemented, it is a common practise that the warehouse service provider does not supply all the equipment and information needed but outsources it to an external partner. Therefore it is recommended to use the experts of their area of specialization also in giving inputs to the logistics agreement.

In this chapter it is concentrated on integration of customer’s ERP-system and service provider’s WMS. Basically an outsourcer has two possibilities to organise the WMS. The service provider may use its own WMS or the outsourcer wants that its own WMS software or ERP module is used for managing warehouse operations.

The Figure 11 presents a sample about a simplified net/hardware map, which should describe the operating network. The agreement should also include technical description about the equipment used including relevant details (e.g. types, IP-addresses etc.).
Below a checklist about the Information systems related issues that should be agreed upon:

- Net/hardware map
- Information (data) confidentiality
- Interface management responsibilities and procedures
- Responsibilities in supply and cost carriage of net/hard/software
- Licenses for using systems
- Technical support organization and contact information
- Supply of backup and restoring equipment and procedures.

It may be also useful to attach a service description into agreement, which describes the general procedures of the service provider in its area of responsibility for defining and
measuring service level. In case the parties have decided that the service provider uses its own WMS, the service level attachment could include following aspects:

- Purpose and aim of WMS service level
- Object of WMS service
- Critical classification of services (e.g. Critical, normal, not critical)
- Service hours
- Response times
- Problem solving
- Changes in data transfer and in net/hard/software
- Implementation of new procedures and processes
- Measuring the service level (compared to promised response times and accuracy of data transfer)
- Interface management responsibilities and procedures
- Reporting
- Bonus / penalty procedure
- Others.

9.11. Packaging

In this chapter the packaging service is divided into three main groups, which are:

- Packaging of manufactured or procurement goods
- Pre-packaging in inbound phase
- Packaging in outbound phase.

In case a logistics service provider can offer manufacturing and/or procurement services the products may be asked to deliver to customer individually packaged and with an agreed layout and information of products sticker, label or tag.

*Pre-packaging (in inbound phase)* is performed in a warehouse when products are received in bulk from a supplier subsequently packaged singly, in merchandisable quantities, or in combinations with other parts to form kits or assortments. An entire receipt of merchandise may be processed at once, or a portion may be held in bulk form to be processed later. This may be done when packaging greatly the storage-cube requirements or when a part is common to several kits or assortments (Frazelle 2001, pp. 229-230).

*Packaging (in outbound phase)* may be done as an optional step after the picking process. As in the pre-packaging function, individual items or assortments are boxed for more convenient use. These functions have the advantage of providing more flexibility, identification of package during on-site stocking and handling is maintained with aid of labels on the package and product traceability can be guaranteed (Frazelle 2001, pp. 229-230).
• Process flow chart
• Influence of lot size volumes into packaging price (price of actual work)
• Supply and cost carriage of packaging materials needed in packaging service
• Packaging instruction and requirements of customer
• Model layout of product sticker/label/tag
• Packaging material price list (including consumption if applicable)
• Others.

9.12. Consultancy

There may be a need to buy know-how from the service provider in its area of expertise. Consultancy is defined in this chapter, that a service provider is asked to participate or give specialist’s advices and proposals to a customer company. The aim of consultancy projects is generally cost savings, process improvements or business development mapping.

The SME Foundation in Finland has published in its Internet pages the general terms and conditions in consultancy and also a model about consultancy agreement. This information can be found from the Internet address: http://www.pkt.fi. Below a list of issues that the SME foundation suggests in its consultancy contract:

• General conditions to be followed in consultancy agreement (name)
• Definition of commission
• Aim of commission
• Fee, compensate expenses, terms of payment
• Schedule and delay conditions
• Report and other alienated material / immaterial rights
• Other specialities
• Settlement of disputes
• Date & signatures
• Appendix.

The pricing of consultancy services may be based on sum indemnity or hour rate.

9.13. Dedicated Services

In case a service provider performs a dedicated operation for a customer company, it is recommended to add this dedicated operation into agreement. The scope and requirements of dedicated operations may vary significantly from one company to another, therefore hints from contract point of view can be presented only in very general level. The agreement should include at least following issues:
• Process flow chart
• Description of commission
• Implementation of commission
• Quality and environmental audits
• Industrial safety audits
• Supply and cost carriage of dedicated equipment
• Maintenance of dedicated equipment
• Resource requirements and planning
• Volume variation
• Pricing of service
• Reports
• Others.

It may be also useful to implement some kind of follow-up of productivity and efficiency measures in order to develop the customer specific operations. It can be used as an effective tool and driver for further development of dedicated operation.

9.14. General Terms and Conditions

It is a common practise that an agreement includes also in annex material the generally accepted conditions of logistics business.

The major companies have their own conditions, which they may suggest to be attached to an agreement. In general these conditions are of course in favour of service provider and a service provider wants to limit its risks to minimum with aid of these conditions. On the other hand the general conditions completes and improves the agreement with details that may have not been mentioned in the main agreement.

It is possible to use also other sources of conditions. For instance Denmark, Norway, Finland and Sweden have agreed with the Nordic Association of Freight Forwarders about these general conditions. These conditions can be applied to members of national associations affiliated with the Nordic Association of Freight Forwarders, and also to other parties having agreed to apply them (NSAB 2000). These conditions can be found in Internet address: http://www.huolintaliitto.fi.

Finnish Freight Forwarders Association has published the general conditions of international road traffic. These conditions can be found in Internet address: http://www.huolintaliitto.fi.

The general conditions SE 01 for the supply and erection of mechanical, electrical and electronic products is the updated version of SE 94 which takes into account the increasing use of these conditions in electronic form. The General Conditions SE 94 are intended for deliveries where the obligations of the supplier (contractor) include erection on site of the equipment that he delivers, normally to the purchaser's premises. More
information about this issue can be found in the Internet address: http://www.orgalime.org.

10 IMPLEMENTATION PROJECT

To implement a warehouse outsourcing effectively and successfully, a business must adopt change management approach. The top management’s commitment plays a key role in outsourcing process. According to Eccles (1996, p. 41) in 93 percent of the implementation failures, tactics that appeared to be minimizing the strategic manager’s involvement were applied.

Below a list of fundamentals of successful warehouse outsourcing project based on author’s practical experience:

- Top management’s commitment
- Steering group should govern the progress of project (‘check points’)
- Define the aim and scope of project
- Run parallel warehouse during planning and implementation phase
- Keep processes as simple and standard as possible
- Try to avoid customisation of information systems
- Importance of communication with interest groups
- Ensure sufficient resources and skills
- Minimize risks with aid of risk analysis
- Establish a motivation and commitment program
- Award project team members for successful work.

10.1. Steering Group

According to author’s experience a steering group should govern the progress of project. A steering group consist of senior level managers, who have different types of areas of responsibility and information. The group members should be named both from outsourcer’s and service provider’s organisations. The main tasks of a steering group can be for instance:

- Defines the aim and outlines of project
- Controls budget and schedules
- Secures resource availability
- Supports project team
- Makes decisions which are beyond responsibility of project team
- Steers commitment and communicational issues
- Carries the full responsibility of project implementation (together with project team).
The project is appointed normally by the chairman of the steering group by presenting the commission in first steering group meeting. A chairman appoints also the project manager.

10.2. Project Team

A competent project manager will have the primary role of integration. He or she is responsible for the planning, realization and follow-up of project. A project manager should have ability and authority and ”soft skills”, which are linked to communication and leadership. According to author’s experience the project manager should be from service provider’s organization. This increases the commitment of logistics service provider, which becomes essential issue especially after the project has been signed off and the service provider is fully responsible for the operative activities. The three most important factors in project manager’s work are (Mercuri International, 2001):

1. Quality of project results
2. Follow deadlines
3. Efficient use of resources.

The members of project team should be specialists of there area of expertise.

10.3. Project Schedule

The project schedule planning is an essential phase in successful outsourcing implementation project. With aid of project schedule planning it is possible to clarify what kind of events and actions are needed, when and in which order they should be realized, where they should be realized, how the actions are implemented and which are the resources and responsible persons in charge of actions.

A sample and guidelined project schedule for implementation of warehouse outsourcing process is presented in Appendix 1. The schedule includes main activities from the signature of logistics contract until the signing off the project. It is recommended to use any sophisticated project management tool for compiling a project schedule. The activities mentioned in the Appendix 1 are based on both author’s practical experience in outsourcing projects, and it partly adapts a schedule compiled by TX Consulting GmbH (2001).

Every outsourcing process is different, and there are always features that are not standard and similar for all the outsourcing projects. Therefore it is recommended to pay special attention that all the concerned activities to be performed are noticed in the project schedule.
The checkpoints mentioned in the Appendix 1 mean that the steering group meeting should be invited, and they should perform the actions mentioned with aid of project manager.

10.4. Risk Analysis

In logistics outsourcing projects there is always a risk that everything will not go as planned. Mercuri International has defined that risk is a negative deviation from the project targets. With aid of risk analysis it is possible to prepare an action plan for eliminating the risks and a reserve plan for preparing a project organization if something goes wrong and which risks the project aim and objectives.

SWOT-analysis (Strengths, Weaknesses, Opportunities and Threats) helps in identifying the internal and external risks, which may lead to a failure of the logistic outsourcing project. The Figure 12 presents a sample about SWOT risk analysis.

Figure 12. Sample of SWOT risk analysis.
Typical risk areas vary in accordance with the scope and size of logistics outsourcing project. A risk elimination plan may have influence on the project costs and schedule. On the other hand there can be also risks involved which may occur unexpectedly but in normal circumstances most of the risks can be identified and even eliminated or influence can be minimized already in the project planning phase. A reserve plan should be done in project planning phase.

10.5. Check Points

As it can be seen in the Appendix 1, the project schedule includes several ‘Check points’ during the project. Mercuri International states that with aid of systematic checking points it is possible to secure that a project is on the correct way according to priory settled criteria. It is the decision stage where the project settler, according to the report and information presented by the project manager, decides alone or together with steering group:

- To proceed with the project according to plans or
- Ask project manager to re-plan some points and they should be accepted by project settler or steering group
- To interrupt the project.

10.6. Final Report

When an outsourcing project is finished, it is often tempting to move to new projects and assignments. A project ending has to be realized as professionally as the other activities and phases during a project.

Mercuri International emphasizes that a project’s final report is the last official paper and the aim of it is to conclude the final phase of a project. The contents of final report depends on the project, but following basic issues should be included:

- Observations about the project
- Experiences about the (implementation) process (learnt issues and best practices)
- Reasons for deviations
- General proposals for future improving in similar projects
- Project result’s delegating from project organization to line-organization and/or service providers (proposals for continuation actions, follow-up meetings)
- Conclusions.

A sign-off meeting should give clearly the operative responsibility to the service provider, and the partner should formally accept the commission.
CONTINUOUS COMMUNICATION

In outsourced logistics activities, communication is an absolute necessity. Globalisation is changing the fabric of business from patchwork of discrete national and regional markets to a boundary less global markets (Gattorna, 1998, p. 325).

Communication means the exchange of messages between individuals or groups of individuals with the fundamental purpose of achieving a common understanding. Communication is required in order to influence others. Managers particularly need to communicate in order to direct and control effectively. The development of effective communication process cannot be achieved overnight between a customer and service provider. Cultural determinants have implications, but mostly to resist rather than assist change. Communication is explaining what needs to be, doing it and then explaining what went right and what went wrong is much more acceptable than just telling someone they have failed or that they failed to match acceptable standards. In this respect, it requires the development of two-way communication skills – a proactive and improvement-oriented approach (James, 1996, pp.180-187).

Communication is one of the key success factors in creating a long-term partnership relation. The parties should constantly go through conformance to customer demands and make gap analysis about the deviations. Both organizations executive team should communicate whatever immediate corrective action has been implemented (such as establishing customer satisfaction measurement systems etc) and explain how the service provider plans to proceed with the customer-centered supply chain management change process (Kuglin, 1998, p. 94).

Hines et al (2000, pp. 229-231) points out that performance measurement as a subject involves the development of goals and their related measures, as well as the appropriate mechanisms of feedback. The nature of any performance measurement system will be extremely significant in determing what employees and functions do, and how they do it. Hines et al also claims that it is commonly recognized that measurement influences behaviour in a certain direction, and this is often reflected in phrases such as:

- What gets measured gets done;
- What gets measured is only what gets done;
- What gets measured gets managed;
- What gets measured improves.

In view of this a regular communication structure should be established in order to avoid a situation, where only above-mentioned issues, are controlled. Changes in any business strategy, business environment and processes, or service and quality requirements have a significant influence on the partnership relations. One of the most efficient way to try to tackle occurring problems in this relationship is to communicate these issues in two-ways. In another words, the partnership may fail only due to lack of communication between the parties.
According to author’s experience there should be two types of meetings for reaching a fruitful and structured communication flow between a customer company and logistics service provider.

An executive level meeting should be arranged 2-3 times a year. The issues discussed in executive meeting are mainly in general level like strategy and concept’s overall performance. A very important issue is that the service provider should inform clearly if there is issues that should be changed in any activity in order reach mutual goals. It is recommended that minutes of the meeting are written up for distribution, action and follow-up purposes.

Managerial and operational level meetings can be arranged according to the needs, but they should be arranged more frequently than executive level’s. Minutes of the meetings are again recommended to distribute to concerned parties. In many cases issues discussed in managerial and operational level meetings are firstly raised up in executive appointments, and the operative work is executed accordingly. It is important that all results and actions are informed to relevant persons and formally written in order to avoid misunderstandings and later speculations. It is especially important in international communication.

12 CONCLUSION

According to Frazelle (2001, p. 343) less than one-third of logistics projects ever meet their intended goals, industry is paying high price for the lack of understanding logistics concepts. Frazelle also claims that the very best logistics organizations maintain formal career paths and development programs for their logistics professionals.

Logistics study (2001) suggests among other things operation proposals for compiling logistic partnership guidebook and contract models and guidelines for outsourcing process for Finnish industry. This research study tries to respond to this challenge by introducing one way to manage and implement a successful outsourcing process, and not forgetting the aftercare of business relationship.

Traditionally a logistics outsourcing process is seen only as asking offers from several service providers, selecting a business partner and preparing and signing a contract. Then the business parties establish an implementation project and try to manage the operations as well as possible. But, in fact, it should be more than only that. Before doing any actions for outsourcing any logistics activity, a customer company should discuss thoroughly within its organization what are the logistics and service part mission and vision including objectives. An outsourcer should also define its core-competence strategy, define a logistics concept and critical success factors. It is also important to understand and define what is expected from partnerships and how these different
partnership levels are achieved. It is a matter of working together for reaching the objectives and goals. Open two-way communication plays an important role in this respect.

This study includes also hints and checklists for contract negotiations, which may help and simplify the process of making partnership agreements.

A steering group should govern the implementation project, and it should reflect the commitment of senior management in outsourcing process and project. A project team should be responsible for operative planning, implementation and execution work. Risk analysis should not be forgotten either. With aid of risk analysis it is possible to prepare an action plan for eliminating the risks and a reserve plan for preparing a project organization if something goes wrong and which risks the project aim and objectives.

This study can be used, where appropriate, also as an internal training manual for educational purposes. In this use, it is recommended that a company completes the contents with any features and issues that are appropriate for its own operations.

A basic idea in realizing this study is to give a tool and some guidelines for Finnish business to achieve the ultimate goal – a managed and controlled logistics outsourcing process. In principle the results of this study can be applied both by SMEs and large enterprises.

The requirements of logistics business both in national and international level will change constantly, therefore the research and development of outsourcing procedures and concepts should be continued. This study was outlined to spare parts and B2B markets in metal industry. It is obvious that other industrial areas have similar features in their operations but it requires further investigations in determining a logistics outsourcing process, which takes into account specialities in concerned business area.

The study was realized in English due to international business approach and background of participating companies, but there may be needs to have an outsourcing process manual also in Finnish especially for small enterprises, which are operating mainly in domestic markets.
REFERENCES


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</table>

8. Systems interfaces

- Definition of interface specifications
- Definition of programming needs in customer’s ERP
- Definition of progr. needs in service provider’s WMS
- Interface control proposal

9. Check point

- Proposal of information systems and technology approved
- Proposal of office and warehouse equipment approved
- Interface management and control proposal approved
- Budget review

10. Purchase and delivery of equipment

- Inbound equipment
- Prepackaging equipment
- Stocking equipment
- Outbound equipment
- Hardware
- Software
- Licenses
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<td>Programming resources</td>
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<td><strong>11. Set up of office</strong></td>
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<td>Equipment</td>
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<td><strong>12. Set up of warehouse</strong></td>
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<td>Installation of rackings</td>
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<td>Installation of mezzanine</td>
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<td>Setup of hardware equipment</td>
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<td>Systems customization ready and tested</td>
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<td>Systems integration ready</td>
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<td>Transportation agreements ready</td>
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<td>16. Labour organisation</td>
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<td>17. Supply of parts</td>
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<td>Purchasing of parts to be stocked</td>
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<td>Implementation of supplier quality and rating</td>
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18. **Test runs**

- Test inbound order processing
- Test inventory counting process
- Test prepacking process
- Test stocking process (item movements etc)
- Test outbound order processing
- Test interfaces to 3rd party systems (integration)
- Test interface control procedures
- Test reporting procedures
- Review results

19. **Check point**

- Employees and staff recruited and trained
- Distribution center ready for operation (office and warehouses)
- Systems and technology successfully tested and approved
- Go Live plan approved
- Budget review
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<td>Processing of Live orders; medium quantities</td>
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<td>Processing of Live orders; target quantities</td>
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