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**A Research for Finding a Potential Point of Sale System  
Vendor for Peroba Ltd.**

Peroba Ltd.

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## Thesis Abstract

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The purpose of my thesis was to provide a comprehensive look into information system purchasing for my commissioner. The commissioner runs and owns an interior design shop called Peroba. The case company imports and sells Brazilian furniture made out of recycled materials.

The thesis is divided into five main chapters: 1. introduction, 2. Company presentation, 3. theoretical framework, 4. introduction to point of sale systems, and 5. findings on empirical study and observations.

The second chapter is the company presentation, an introduction to Peroba Ltd. The third chapter presents the theoretical framework of information purchase project. It is divided into two main phases; planning and implementation. The numerous variables related to information systems and what must be considered before investing in them is presented in this chapter.

The fourth chapter outlines the purpose and structure of point of sale systems. The fifth chapter includes empirical findings and presentation of suggested vendors. In this chapter observation is linked to theory. The empirical part discusses the problems of current operational model at Peroba and suggests possible vendors.

The thesis focus is on theory based purchasing regarding type of industry, operational model of the company and its limitations.

Keywords: information system, purchasing, retail management, point of sale, vendor

## Opinnäytetyön Tiivistelmä

Koulutusyksikkö: Liiketalous yksikkö

Koulutusohjelma: Kansainvälinen liiketalous

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Opinnäytetyöni tarkoitus on tarjota toimeksiantajalleni kattava tutkimus potentiaalisen POS-tietojärjestelmätoimittajan löytämiseksi. Toimeksiantaja on Peroba Oy. Peroba on yrittäjäpohjainen sisustuskauppa, jonka omistaja maahantuo brasilialaisia, kierrätetyistä materiaaleista valmistettuja huonekaluja.

Opinnäytetyö jakautuu neljään osaan. Ensimmäinen osa sisältää yritysesittelyn, jossa kerrotaan Peroba Oy:n taustaa. Kolmas sekä neljäs osa ovat teorialuvut. Kolmas luku on jaettu kahteen vaiheeseen: suunnitteluun ja toteutukseen. Teoreettinen viitekehys ottaa kantaa siihen mitä on hyvä ottaa huomioon projektipohjaisessa tietojärjestelmän hankinnassa. Neljäs luku esittelee kassa- ja myymälänohjausjärjestelmät kokonaisvaltaisesti.

Viides luku on empiirinen tutkimus, joka pyrkii yhdistämään teorian käytännön havainnointiin. Empiirinen tutkimus esittelee yrityksen tämän hetkisen tilanteen ja tarjoaa ehdotuksia sopivasta kassa- ja myymälänohjausjärjestelmästä, sekä sopivasta palveluntarjoajasta.

Opinnäytetyön painotus on teoriapohjaisessa hankinnassa, jossa on otettu huomioon yrityksen toimiala, myymälän toimintaympäristö ja sen rajoitteet.

Keywords: tietojärjestelmä, hankinta, kassajärjestelmä, myymäläjärjestelmä, toimittaja

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**Abbreviations**

<b>C-CEI</b>	Customer Centered ERP Implementation
<b>CRM</b>	Customer Relationship Management
<b>ECR</b>	Electronic Cash Register
<b>ERP</b>	Enterprise Resource Planning
<b>FSM</b>	Functional Size Measurement
<b>FURPS</b>	Functionality, Usability, Reliability, Performance, Supportability
<b>MRP</b>	Material Requirements Planning
<b>PC</b>	Personal Computer
<b>PDA</b>	Personal Digital Assistant
<b>POS</b>	Point Of Sale
<b>RFQ</b>	Request for Quotation



## 1 Introduction

Peroba Ltd. is a unique interior business with roots in the colorful Brazilian culture and a beautiful establishment in Helsinki, Finland. The initial business idea of importing Brazilian furniture that are manufactured from recycled materials is fascinating, and I wanted to lend my helping hand in order to further develop and strengthen the company's processes.

The objective of my thesis was to provide my commissioner with in depth information and perspective on point of sale systems (POS), vendors that sell them, and general knowledge on purchasing an information system.

I am interested in entrepreneurship and the daily routines entrepreneurs face in their work. As an independent entrepreneur one is sometimes faced with unexpected problems as the business grows.

In Peroba's case it was time to re-evaluate the daily routines that are causing too much work and time consumption. In three years Peroba has grown and its size of inventory is many times the original. The amount of customer contacts per day is increasing, and the recent opening of Peroba e-store has created a new set of duties. The amount of manual work in running the business could be cut in half with the proper business management solution. But before investing, it is important to know what you get yourself into.

The thesis is limited to focus more on the theoretical side of purchasing an information system and answers the question: "What must be taken in account when purchasing this type of a product?"

The nature of information systems is layered and purchase projects often fail due to limited understanding in how the subject should be approached. These layers must be peeled off to unveil the actual information that is needed for a successful purchase plan.

The thesis begins with a company presentation and moves on to theoretical framework in which I present principles that should be followed when dealing with information systems. After the theory, an in depth look in the world of point of sale

systems is provided, and then followed by my empirical study that outlines my observations during my visits to Peroba and interviews with Terhi Pietilä, the founder and owner of the company.

In my study I noticed that there is not a lot of literature available about point of sale systems. As an information source I used Internet articles from a variety of sources, and books to outline the theoretical framework.

## 2 Peroba - Practical & Beautiful



Figure 1. Peroba company logo (<http://peroba.fi/>)

Peroba is a limited company that imports Brazilian interior products directly from Brazil, and sells other decorative ornaments from a variety of suppliers in Scandinavia, and currently has one retail store. The manufacturers and suppliers are carefully selected to fit the criteria and ideology of the company. The ideology of the selection is that majority of the raw materials are recycled and gathered from demolition sites. Regarding and promoting ecological values and environmental friendly awareness are at the core of the original business idea, but not compromising the uniqueness and beauty of the goods, because these work hand-in-hand very well.

The predominant idea of Peroba Ltd was formed while the owner, Terhi Pietilä, was living in Rio De Janeiro, Brazil. Enchanted by the easy and social lifestyle, vibrant colors and the warmth of the environment, she decided this was something that was lacking in Finland and wanted to take a part of Brazil with her.

Peroba's company form is limited company. At the moment Peroba employs only the owner. Peroba has recently opened its e-store, which is attracting customers in an increasing manner. The current storage value is over 50 000€ and annual turnover approximately 150 000€. During three years both, the amount of transactions per day and demand, have steadily increased. Peroba's assortment is mixed with a variety of design furniture and ornaments. The assortment consists of bigger furniture such as tables, chairs and carpets, and smaller decorative ornaments.

The name, 'Peroba,' originates from a specific species of tree, Peroba Rosa, which is widely used in furniture because it is easy to work with, its durability, beautiful color and natural patterning in the wood. (<http://peroba.fi/yritys>)

## 2.1 Facts

- Limited Private Company
- Owner: Terhi Pietilä
- Currently 1 employee
- One store with 240m<sup>2</sup>, including 12m<sup>2</sup> space for storage
- E-store since 2011 (<http://peroba.valmiskauppa.fi> )
- Annual turnover ca. 150 000 €
- Estimated turnover for 2011, 180 000€
- Current inventory value over 50 000€

## 2.2 Products

- Ca. 300-400 pieces, including:
  - Furniture
  - Lighting
  - Ornaments
  - Articles for daily use
  - Rugs, carpets
  - Textiles

In the figure 2. below you can see a classic "Tripolina" chair which is manufactured in Brazil. Its frame is made from eucalyptus and the material of the seat can be separately selected from leather or canvas. (<http://peroba.fi/tuotteet/tuolit-ja-penkit/tripolina-tuoli>)



Figure 2. Tripolina chair. (<http://peroba.fi/tuotteet/tuolit-ja-penkit/tripolina-tuoli>)

In the figure 3. you see a Sebastiao dining table which is from Brazil and manufactured from recycled wood. (<http://peroba.fi/tuotteet/ruokapoydat/ruokapoyta-sebastiao-1>)



Figure 3. Sebastiao table (<http://peroba.fi/tuotteet/ruokapoydat/ruokapoyta-sebastiao-1>)

### **2.3 Company history**

Peroba first opened its door in 2008 in Lauttasaari, Helsinki, with a small store, but given the opportunity, the owner decided to move the store to central Helsinki. Currently Peroba is located at Fredrikinkatu, among its peers. Fredrikinkatu is known for its variety of design and clothing stores. Regardless of the rivalry it is an excellent location for a unique store to claim its place and clientele.

Peroba has gradually been expanding during its three years of business. In 2011 it started its e-commerce. After the first year the annual turnover was 94.000€ (VAT not included), after the second year 150.000€ (VAT not included) and the estimate for the third circle is ca. 180.000€.

Peroba is gaining more recognition and the demand is growing. Keeping up with the growing pressure to meet the demand has pushed the company to re-evaluate its processes and find more advanced way to handle its routines. Peroba is faced with a problem to integrate its information system and is in need of a point of sale system (POS) that would decrease the time consumption on basic business routines and increase the efficiency of basic retail functions such as inventory.

### 3 Information System Purchase Project

Purchasing an information system is always a challenging task. It is usually part of business development when a company wants to strengthen its processes. The purchase process in itself varies between companies and currently there are several ways to acquire information systems, e.g. by buying or leasing. Carefully defining the current needs of your company, and the suitable way to purchase, lowers the risk of failing and ending up with a costly and inefficient product. More often companies turn to outside help, because of the difficult nature of information systems. Purchasing an information technology can involve purchasing equipment, software or systems. (Tietojärjestelmän hankinta; Talentum, 2005, p. 16)

According to CHAOS-survey conducted by Standish Group, 34% of projects are implemented within the time frame and the budget, 51% of projects exceed the estimates, and 15% projects are cancelled completely. (Tietojärjestelmän hankinta; Talentum, 2005, p. 16)

Purchasing an information system is a vast project which can simply be divided into two parts: planning and implementation. Each of the parts can then be divided into different operations, which have certain goals. Figure 4. shows the sub-categories of the two main phases.

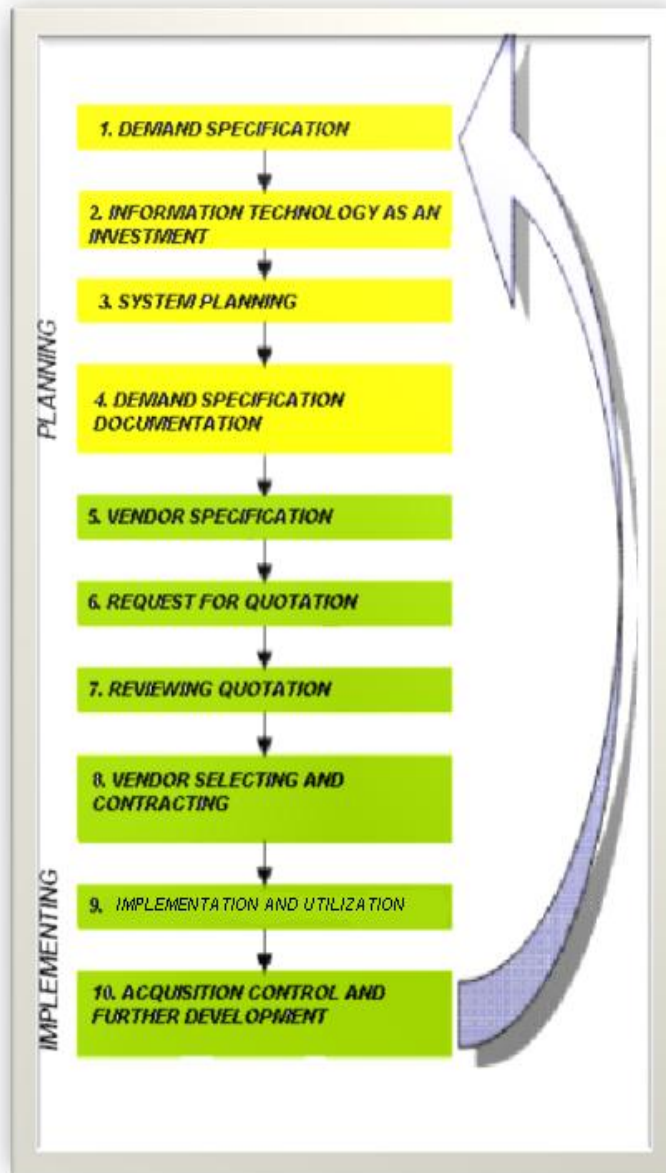


Figure 4. The information system purchase process (<http://www.yrityssuomi.fi/default.aspx?nodeid=16289>)

The sub-categories are planning and implementation. In Figure 4. the course of the information system purchase process and its steps can be seen. The following subtitles 3.2 to 3.3.6. explain each step individually. (<http://www.yrityssuomi.fi/default.aspx?nodeid=16289>)

After the initial commission the planning phase begins. In the planning phase the company determines its needs and goals, as well as the desired effect on the business in an operational level. In the implementation phase, when the objectives



and characteristics of the system are defined, the search for suitable vendor begins according to their ability to provide the needed solution. (<http://www.yrityssuomi.fi/default.aspx?nodeid=16289>)

### **3.1 Information Technology as an Investment**

The monetary value for enhancing company's data processing and flow of information is hard to calculate exactly. The return of investment (ROI) might appear in intangible savings. But streamlining the company processes indirectly affects savings and profit by f. ex. decreasing time consumption and by increasing customer loyalty. (<http://www.yrityssuomi.fi/default.aspx?nodeid=16289>)

Functional Size Measurement (FSM) can help the company forecast some of the costs involved in the project. By using the FSM, the company measures the functional components needed for the system to serve its purpose. Added components or components that are left out will increase or decrease the total cost of ownership (TCO). (Tietojärjestelmän hankinta; Talentum 2005, p. 27)

### **3.2 Phase 1. Planning**

The basis of the purchase plan is the need for change. It can be the need to re-evaluate the existing system or purchase a completely new system. Several factors influence the decision:

- Growth of business
- Efficiency of routines
- Streamline processes
- Competition

The factors involved in making the decision to purchase are good to keep in mind during the whole process of purchasing. (Tietojärjestelmän hankinta; Talentum, 2005, p. 21-43)

There are three key parts for a proper purchase plan:

1. Why this purchase is made?
  - a. The link to the company's business strategy
  - b. What is the expected outcome of the purchase
  - c. How much does it cost and what is the estimated return of investment?
  - d. The expected success of the acquisition
2. What are we purchasing?
  - a. The description of the needs of the company, problems of the current situation and the desired information system
  - b. What and who does the purchase concern
  - c. The limitations of the purchase, what and who does it not concern
3. How is the purchase implemented?
  - a. A schedule is made
  - b. Phases of the purchase process
  - c. Selecting the right vendor
  - d. Possible risks involved

(Tietojärjestelmän hankinta; Talentum, 2005, p. 21-43)

### 3.2.1 System Demand Specification

Defining the system demands and requirements during the planning phase is the most vital part of the purchase process, since it will have a direct effect on the end result. In this phase the requirements are analyzed. What are the problems of the current situation, how does it affect the business, what needs to be done in order to correct the current situation? Depending on the company structure this can involve many people, so clear communication between parties ensures the quality of the analysis.

There are three parts to system requirements:

- Operational demands
  - Usability of functions
- Technical demands
  - Usability of components
- Quality demands

- Quality and durability of operational and technical demands

System requirements can also be divided into functional and non-functional. Functional requirements relate to operational demands, e.g. software programs, and non-functional relate to technical demands, e.g. working life and performance of equipments. (Tietojärjestelmän hankinta; Talentum, 2005, p. 21-43)

Hewlett Packcard has developed an ISO 9126 standard based tool for specifying software requirements. FURPS is an acronym for functionality, usability, reliability, performance and supportability. Further the symbol “+” was added to the end, FURPS+, to represent product or organization based attributes that are important.

- **F**unctionality: feature set, accuracy, interoperability, security
- **U**sability: understandability, learnability, operability, human factors, documentation
- **R**eliability: maturity, fault tolerance, recoverability,
- **P**erformance: time behavior, resource behavior
- **S**upportability: analyzability, changeability, stability, testability, compatibility, configurability, serviceability, localizability

(<http://www3.hi.is/pub/honnhug/vika3/furps/sld003.htm>;

<http://www2.cs.uidaho.edu/~cs481/RequirementsDevelopment.html>)

### **3.2.2 Information System Planning: Defining The Technical Information System Architecture**

Based on the system demand specifications, a more in depth look can be given to the technical capabilities of the current system and the desired capabilities of the future information system. It is also good to compare these two. (<http://www.yrityssuomi.fi/default.aspx?nodeid=16289>)

Defining the technical system architecture includes defining the needed equipment, software, and software modules. Software modules include functions

important to business, such as accounting and inventory management. The most important factors when designing the system architecture are:

- Current information system and its infrastructure
- Connectivity to customers, partners and other outside systems
- Other demands concerning the new information system

The purchasing company can also let the selected vendor to specify some of the needed components. (Tietojärjestelmän hankinta; Talentum 2005, p. 21-43)

### 3.2.3 Documenting System Specification

The evolution from recognizing the problems to making specific plans to correct them follows a certain motto. Figure 5. exemplifies the course:

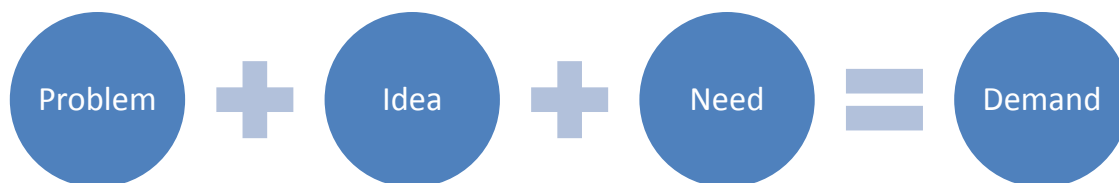


Figure 5. Recognition of problems and drawing up a solution

Firstly the company recognizes the issues which are causing problems in daily routines or that might even hinder growth of business. Secondly an idea for correcting the problems is born. In the case of information technology the original problem and idea for correcting it together form a need. When the needs are carefully addressed, they are documented into demands which then can be forwarded to the vendor who provides the solution. (Tietojärjestelmän hankinta; Talentum, 2005, p. 96)

All details of the desired solution don't have to be too specific. In fact this might hinder the company in finding a suitable product. But it is not good to leave the demands too vague. Often the vendor assists the purchasing company to define

some of the aspects, and this requires good communication between parties. The vendor might not know or understand all the aspects of the specific industry. It is up to the purchasing company to articulate its needs properly for the best result. (Tietojärjestelmän hankinta; Talentum 2005, p. 96)

### **3.2.4 Final Plan for Purchase**

The final purchase plan includes all the aforementioned aspects of the project in the preparation stage. Firstly the final plan should express the starting point and the expectations for the whole project, then secondly the more detailed demands of the system should be expressed. (Tietojärjestelmän hankinta; Talentum, 2005, p. 21-43)

The following factors should be addressed in the final plan:

- The starting point for the project
- Needs of the purchasing company
- Goals of the new system
- Description of the system
- Functions of the system
- Investment plan
- Risk management

(Tietojärjestelmän hankinta, Talentum, 2005, p. 21-43)

Risk management is addressed separately as a focal point due to its elusive nature and critical importance for the success of the project. Risk management should be discussed early in the process and followed throughout the implementation phase and follow-up. (Toiminnanohjausjärjestelmän hankinta C-CEI –menetelmän avulla; Vilpola, Kouri, 2008, p. 70-80)

### 3.2.5 Risk Management

Every project involves risks and an important part of project management is assessing, evaluating, managing and monitoring these risks. Purchasing an information system is no exception. Investing on a new information system is costly and hence the importance of risk management can be rationalized, but regarding the multidimensional nature of acquiring an information system, the risks involved can often be intangible and hard to measure accurately. Risk management can in general be interpreted as avoiding mistakes from afar, or controlling uncertainty. (Toiminnanohjausjärjestelmän hankinta C-CEI –menetelmän avulla; Vilpola, Kouri, 2008, p. 70-80)

Figure 6. describes the cycle of risk management:



Figure 6. The cycle of risk management (Toiminnanohjausjärjestelmän hankinta C-CEI –menetelmän avulla; Vilpola, Kouri, 2008, p. 70-80)

The cycle in figure 6. can be applied to each step in the information system purchase process because each of them includes risks, and it is important to assess these risks early in the preparation phase. Risk management attempts to

reduce the effect of uncertainty on decision making. (Toiminnanohjausjärjestelmän hankinta C-CEI –menetelmän avulla; Vilpola, Kouri, 2008, p. 70-80)

- Assess and recognize the probability of risks
- Evaluate risk likelihood
- Manage actions to prevent risks
- Monitor and re-evaluate risks and their prevention

The assessment of possible risks is the basis of risk management. At the beginning of the project the project manager or the company management assesses and evaluates risks that could be involved in the project. These risks can include uncertainties regarding the current situation, or a risk of having wrong people managing the operation. Every project is unique and hence the risks involved evolve. (Toiminnanohjausjärjestelmän hankinta C-CEI –menetelmän avulla; Vilpola, Kouri, 2008, p. 70-80)

After the assessment the risks are prioritized according to their effect and likelihood. Figure 7. shows the three step evaluation of risks in choosing the information system. This example chart can further be utilized to map out risks in different stages of the project, e.g. risks regarding the usage of the final product.

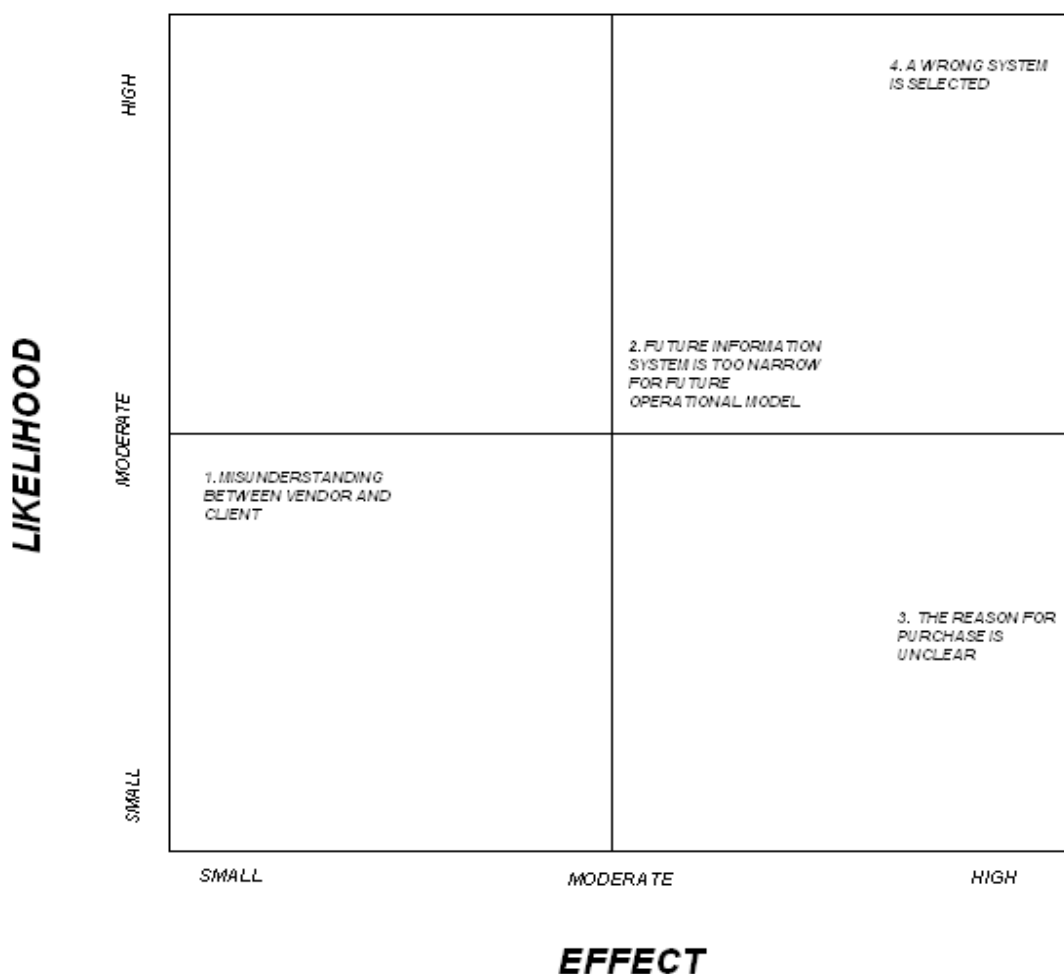


Figure 7. Risk likelihood and effect matrix related to selecting an ERP –system (Toiminnanohjausjärjestelmän hankinta C-CEI –menetelmän avulla; Vilpola, Kouri, 2008, p. 70-80)

In the figure the risks are prioritized according to their likelihood and effect on the project. Numbers refer to their explanation. For example number one refers to a misunderstanding between the purchasing company and the vendor. Misunderstandings between the parties are moderately likely to happen, but their effect on the project is minimal, because misunderstandings are often resolvable. On the contrary number three refers to the basis of the project which will determine the success of the end result, so the likelihood for reason to purchase being unclear is very small. If the reasons are unclear and the demands are not specified well enough, the effect on the project is very high and will affect the end



result in a drastic manner. (Toiminnanohjausjärjestelmän hankinta C-CEI –menetelmän avulla; Vilpola, Kouri, 2008, p. 70-80)

Risk management in information system purchase project can roughly be divided in three stages including selection, introduction and usage. The risks can be analyzed and documented and this document can be used as an instrument in monitoring them in each stage as figure 8. states.

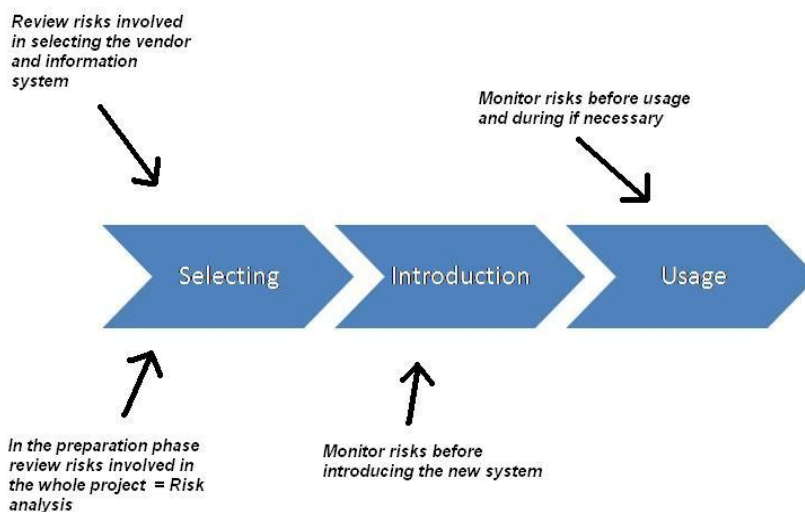


Figure 8. Risk management in ERP purchase project stages  
(Toiminnanohjausjärjestelmän hankinta C-CEI –menetelmän avulla; Vilpola, Kouri, 2008, p. 73)

After the risks are evaluated and prioritized, managing them plays a key role in preventing them from happening, or diminishing their likelihood. Many risks are elusive and therefore hard to prevent completely. A small action can have a big impact on the likelihood and effect of the risk. (Toiminnanohjausjärjestelmän hankinta C-CEI –menetelmän avulla; Vilpola, Kouri, 2008, p. 70-80)

Monitoring the possible risks is important in the implementation phase. Often a project has a designated person who is responsible for monitoring the pre-determined risks, and is in charge of preventing new ones from occurring. The position often lies in the hands of the company management. (Toiminnanohjausjärjestelmän hankinta C-CEI –menetelmän avulla; Vilpola, Kouri, 2008, p. 70-80)

### 3.3 Phase 2. Implementation

Before implementation it is suggested to survey whether the original condition has changed and how well the specification of demands is still in place. If there are mishaps in documenting the demand specifications, or if they are missing completely, it is suggested they are re-assessed and if necessary the re-assessment could be its own, independent project. The clarity of analysis regarding the demand specifications and the desired result is a prerequisite for the success of the total project. (Tietojärjestelmän hankinta 2005, p. 45)

The implementation phase begins after the system demands are specified. The implementation phase consists of seeking after possible vendors and listing them according to their capabilities to provide a system that would correspond to the needs of the purchasing company. When prominent vendors are found, the request for quotation can be send. After receiving quotations the purchasing company can decide which vendor they like and can make a suitable contract with. When the contract is in order the implementation of the purchase project begins. The vendor provides the product and works with the purchasing company by integrating the new information system into the daily routines of the company. Future follow-ups and updates are mentioned and agreed on in the initial contract, and they're highly recommended. (<http://www.yrityssuomi.fi/default.aspx?nodeid=16289>)

### 3.3.1 Vendor Specification

The vendors as well as the information systems should be compared. When selecting the vendor it is important to notice how well the vendor understands the problem at hand and how well it can respond to it. One simple way of figuring out the right vendor is to ask for references. Vendors may offer records of their past projects if asked. With references you can draw a picture of the vendor's communication and collaboration skills. When comparing vendors it is suggested to ponder the following facts:

- Vendor's commitment to client
- Credibility and honesty
- Technical know-how
- References
- Portfolio
- Solid financial standing and capital adequacy
- Service and support
- Collaboration skills
- Prices: software, hardware, service and updates

(Toiminnanohjausjärjestelmän hankinta C-CEI –menetelmän avulla; Vilpola, Kouri, 2008, p. 50)

When mapping out the vendors, it is important to decide which parts of the information system, equipment and software, are bought from which vendor or is it possible or even a requirement to purchase the whole system from one vendor. This will limit the possible vendors at first hand. One limiting factor is also the contract and type of agreement the vendor is ready to offer. It is recommended to specify if the purchase is a onetime event or will the contract include updates and follow-up. (<http://www.yrityssuomi.fi/default.aspx?nodeid=16289>)

### **3.3.2 Request For Quotation**

The request for quotation (RFQ) is a commission provided by the purchasing company that declares the demands of the client and specifies the requirements for delivery and collaboration. (Tietojärjestelmän hankinta 2005, p. 159)

The request for quotation should present the purchasing company's demands in a clear manner and specifically enough for the vendor to offer their best in return. Clear articulation of demands helps the vendor to understand the needs of the client as well as the client himself does. (<http://www.yrityssuomi.fi/default.aspx?nodeid=16289>)

A good RFQ is short and precise. The length should be only few pages, but it can include appendices if needed. It is suggested to use graphics in order to provide a clear overview for the vendor. A successful RFQ is a basis for a successful purchase.

The RFQ includes a general description that presents the purchasing company and its industry. The general description may also include a short overview on the whole purchase. The RFQ should also include information system demands, requirements concerning the vendor, delivery and services, data security and terms of agreement concerning the contract, and evaluation of criteria by which the purchasing company reviews the vendors. (Tietojärjestelmän hankinta 2005, p. 48-59)

### **3.3.3 Comparing Quotations**

Comparing quotations happens when the vendors are listed according to their offers. The offers are reviewed with predetermined criteria, first how they fit the demands stated in the request for quotation and then between each other. Vendors are discarded or qualified according to their ability to meet the demands, then according to their company's success and ability to deliver. (Tietojärjestelmän hankinta 2005, p. 60-61)

It is important for the purchasing company to distinguish also between the pricing models of the vendors. The offered price should be compared to the company's own evaluation on costs. (<http://www.yrityssuomi.fi/default.aspx?nodeid=16289>)

### **3.3.4 Contracting**

When contracting with the selected vendor, it is important to specify the terms of agreement. The details include length of the contract and how the price of the final product is accumulated. It is also important to declare the frequency and implementation of customer training and support, and updates for the information system. (<http://www.yrityssuomi.fi/default.aspx?nodeid=16289>)

### **3.3.5 Implementation and Utilization**

Implementation of the project must be carefully planned. Depending on the size of the project it is important to clarify the amount of participating people and their roles. The management of the purchasing company should supervise the implementation. In the implementation phase, the purchasing company together with the vendor plan and select the type of used solution, whether the information system is pre-planned or customized. Implementation includes the assembly of the equipment and training of usage and utilization of the product. (<http://www.yrityssuomi.fi/default.aspx?nodeid=16289>)

### **3.3.6 Follow-Up**

The terms of agreement in the contract declare the future of the system. The purchasing company must pay attention to how well the predetermined terms of contract are followed through by the vendor. It is also suggested that you pay attention to the development of information technology and other information system vendors, to forecast the possibility of future changes to be made to the information system. The terms of agreement on licensed products should also be

assessed to avoid legal and economical mishaps.

(<http://www.yrityssuomi.fi/default.aspx?nodeid=16289>)

## 4 Point of Sale Systems

Finne and Sivonen (2009, 223) suggest that the efficiency in retail operations relies in fundamentals of information flow and transparency, and that managing information has become the core of competency in retailing. Streamlined processes and reduced manual work at store level enable fact based management and successful retailers have found many ways to utilize information that is generated by their POS system. Information can be used to plan assortment and measure marketing efficiency. (The Retail Value Chain; Finne, Sivonen, 2009, p. 223)

The blooming of low cost computed technology in the late 1980's, such as the personal computer (PC), enabled retailers to take advantage of the automated capabilities, to run their business operations more efficiently at store level. A POS system refers to a point at a store where transaction between the customer and the company happens. POS systems can be found in retail stores, restaurants, cafes and hospitals. (<http://www.articlesbase.com/ask-an-expert-articles/point-of-sale-and-pos-systems-explained-431479.html>;  
<http://definitions.uslegal.com/p/point-of-sale-systems/>;  
[ftp://ftp.software.ibm.com/software/retail/marketing/whitepaper/pos\\_vs\\_pccd\\_1106.pdf](ftp://ftp.software.ibm.com/software/retail/marketing/whitepaper/pos_vs_pccd_1106.pdf); <http://pages.ebay.com/buy/guides/point-of-sale-pos-system-buying-guide/>)

POS systems have developed and replaced electronic cash registers (ECR) and function as retail management systems that record and generate real-time information. POS systems consist of hardware, such as the personal computer (PC) and software which consists of desired features, such as inventory management and accounting modules. (<http://www.articlesbase.com/ask-an-expert-articles/point-of-sale-and-pos-systems-explained-431479.html>; The Retail Value Chain; Finne, Sivonen, 2009, p. 243; [ftp://ftp.software.ibm.com/software/retail/marketing/whitepaper/pos\\_vs\\_pccd\\_1106.pdf](ftp://ftp.software.ibm.com/software/retail/marketing/whitepaper/pos_vs_pccd_1106.pdf))

## 4.1 Point of Sale System Structure

The point of sale system consists of two main parts: hardware and software. Hardware includes all the gadgets and devices, such as the PC and cash drawer. The software includes programs and modules which are run on the PC interface. (<http://www.articlesbase.com/ask-an-expert-articles/point-of-sale-and-pos-systems-explained-431479.html>)

### 4.1.1 POS Hardware

Each point of sale system is different and often customized to fit the needs of the user. But the basic POS hardware combination has common features. Figure 9. details the anatomy of a typical POS system.



Figure 9. A point of sale system



A common version of POS system hardware includes following devices that each provide certain function:

- Personal Computer (PC): is the operative unit of the system that consists of PC, monitor, keyboard and mouse. The PC operates the POS software and other devices connected to the system.
- Modem: Allows PC to connect to Internet and other computers.
- Pole Display: A display facing the customer and shows item and price.
- Cash Drawer: A locked box with compartments for bills and coins that is operated by POS software and automatically opens during transaction.
- Barcode Scanner: Reads the barcode and converts barcode lines into numbers. Each barcode represents a stock keeping unit (SKU), and each SKU has specific information, such as price.
- Receipt Printer: Prints out the paper version of documented transaction for the customer.
- Magnetic Swipe Reader and PIN-pad: Debit or credit card reader connected to bank that retrieves the personal information of the card holder during payment.
- Point of Sale Software: POS software can also interpret as hardware since it's tightly integrated to the PC and runs all operations of the whole POS – system.
- Personal Digital Assistant (PDA): PDA is a terminal device which is enabled by wireless Internet connection and can be used to check store inventory and ordering data, and share information via e-mail. (Finne, Sivonen, 2009, 253)

(<http://www.articlesbase.com/ask-an-expert-articles/point-of-sale-and-pos-systems-explained-431479.html>)

#### 4.1.2 POS Software

The initial purpose of POS system is to serve at the place of transaction. The transaction should be accurate and efficient. The functions of POS systems can be simpler and cost efficient in bigger retail stores, but in smaller entrepreneur based stores and retail stores, POS systems have more responsibilities. For this reason the software in smaller stores might be more complex and demand more functionality, for example a customer relationship management module (CRM). (The Retail Value Chain; Finne, Sivonen, 2009, p. 243)

Since its early stages the POS system has developed into a sufficient information system which according to Finne and Sivonen (2009, 243) imitates a small enterprise resource planning system (ERP) that bigger companies use to efficiently share information between departments. Continuous development leads to new innovations and newer functions are added to POS software.

Basic POS software includes:

- Daily reporting: Closing reports and sales are generated in real time.
- Integrated accounting: Accounting module within the POS software that enables the manager to create financial statements.
- Inventory management: Real time information enables easy perpetual inventory.
- Demand forecasting: Following sales trends company management can make estimates of customer behavior.
- Ecommerce: Brick and mortar businesses can be synchronized.

Customer Relationship Management: A module for establishing and managing old and new customer relationship, as well as for marketing purposes to attract new customers and provide continuous and expansive customer service. (Customer Relationship Management; Anderson, Kerr, 2002; <http://www.articlesbase.com/ask-an-expert-articles/point-of-sale-and-pos-systems-explained-431479.html>)

## **4.2 Open Source POS System**

An increasingly more common way of acquiring a POS –system is Open Sourcing. Open Sourcing refers to Internet based, freely distributed software programs that can be downloaded and modified to fit the user’s needs. Using web-based interfaces are more affordable, but lack support. Operating on Open Source software can decrease purchase costs, but increase the risk of integration difficulties with hardware and system failure, due to lack in IT-skills of the business owner. (<http://www.articlesbase.com/software-articles/open-source-erp-reducing-the-dependency-on-the-vendor-4597623.html>;  
<http://www.articlesbase.com/software-articles/jumping-on-the-linux-pos-point-of-sale-bandwagon-1037863.html>;  
[http://eu.conecta.it/paper/What\\_is\\_open\\_source.html](http://eu.conecta.it/paper/What_is_open_source.html);  
[ftp://ftp.software.ibm.com/software/retail/marketing/whitepaper/pos\\_vs\\_pccd\\_1106.pdf](ftp://ftp.software.ibm.com/software/retail/marketing/whitepaper/pos_vs_pccd_1106.pdf))

## **4.3 Point of Sale System vs. Enterprise Resource Planning System**

ERP has its roots in Material Requirements Planning software (MRP) which in the 1970s served as the purchasing, ordering and inventory tool for manufacturing companies. MRP was later developed into more integrated information system by former IBM workers who together formed System Analysis and Program Development, also known as SAP and later SAP AG. In 1980 SAP created the first software package that would be referred as ERP –system, System R. By late

1980s SAP AG had developed its most complex system SAP R/3. (Concepts in Enterprise Resource Planning; Monk, Wagner 2006)

POS –systems have developed from hand operated cash registers in the late 19<sup>th</sup> century, to electronic cash registers, to automated multifunctional accounting, inventory and marketing tools that can run business operations as well as serve as the check out points for customer transactions. The POS –system hardware and software market is vast and thousands of wholesalers and manufacturers around the world compete for the best market segment. (<http://www.retailsystems.com/history-of-retail-pos-systems.cfm>; The Retail Value Chain; Finne, Sivonen, 2009)

The most radical difference between a POS system and ERP system, in the end is not so much in their software designs, but in companies that use them. Both systems are built according to the same principle of gathering and integrating information in real time, utilizing and sharing it with whom needs it and wherever it is needed, even between vast distances via the Internet. ERP and POS systems can be tailored and modified to fit the needs of the user. They can both be purchased as software packages or licensed as open source solutions. Still the software interfaces can distinctively be differentiated from each other. It can be said that POS systems are starting to look like ERP systems. Only the roots of development are different. (Concepts in Enterprise Resource Planning, second edition; Monk, Wagner 2006; <http://www.articlesbase.com/ask-an-expert-articles/point-of-sale-and-pos-systems-explained-431479.html>)

Client determines which system is better to use. Whether big or small, if the company manufactures and sells its own products, an ERP system might be more suitable. On the contrary, if a company functions for example as a retailer, ERP can be too stiff, costly to modify and in the end miss the intended purpose. POS systems are generally lighter and can generate and handle same type and amount of information that an ERP system could, and be more cost efficient. ([http://www.toiminnanohjaus.fi/index.php?option=com\\_content&task=view&id=21&Itemid=9](http://www.toiminnanohjaus.fi/index.php?option=com_content&task=view&id=21&Itemid=9); Concepts in Enterprise Resource Planning, second edition; Monk, Wagner 2006; <http://www.articlesbase.com/ask-an-expert-articles/point-of-sale-and-pos-systems-explained-431479.html>)

#### 4.4 Special Characteristics of Purchasing a Point of Sale System

Important factors to consider when purchasing a POS system are:

- Understanding company needs: a simple approach to figuring out company needs is to use the FURPS model. The FURPS model provides the purchasing company with an overview to its needs and quality expectations in functionality, usability, reliability, performance and support. The FURPS model can be used on both software and hardware
- Product references: request vendor references from other users.
- Due diligence: ask questions about the company you are about to do business with. Figure out company history, size and business stand point.
- Training: training should be included pre- and post-installation.
- Price: low cost hardware might become costly if they lack on reliability and are not compatible with the software.
- Market specific solution: industry specific solution serves for a ROI. Customized software is not too flexible and can become obsolete in time.
- Maintain data input and standards: data input should be accurate for information quality.
- Back-up and recovery: all important information must be backed-up for worst case scenario.
- Right partner: the vendor should have a steady marketplace for long term partnership, use direct sales channel for their own products, offer onsite technical assistance and training.

(<http://www.articlesbase.com/software-articles/pointofsale-software-top-ten-mistakes-to-avoid-425465.html>;

<http://www3.hi.is/pub/honnhug/vika3/furps/sld003.htm>)

## **5 Empirical Study and Suggested Solutions**

The basis of my study is my commissioner's desire to enhance her business processes at store level by managing information better and more easily. I gathered my data onsite by observing the daily routines at the store and by interviewing Terhi Pietilä, company owner and my thesis commissioner. In the interview Terhi elaborated on what works and what does not, what could be done better, and in which direction she would like her business to develop into.

With no prior experience on information system purchasing or POS systems, Terhi wanted to know what must be taken in account before investing in a new system and what kind of systems are available.

Based on empirical study and theory I found vendors who fit the demand criteria and could potentially provide the solution Terhi is looking for.

### **5.1 Current Situation**

In three years Peroba has grown and its size of inventory is almost ten times the original. The amount of customer contacts per day in both stores, in the physical (brick & mortar) and e-store (virtual) is gradually increasing. This puts a strain on the current information system which in theory is non-existent, because it relies almost entirely on human capacity to remember and record information.

At the moment Peroba is looking for solutions to integrate its information system. Currently Peroba has no POS system. Every transaction during the day is recorded into a notebook by hand and then later added to Microsoft Excel, which is used as the main tool for business operations. While Microsoft Excel is a handy tool for every business it lacks capability to process accurate real-time information, this then falls upon the user to keep the information up to date. Needless to say this is time consuming and results in a lot of extra work. The manual usage of Excel also increases the risk of error, which can later result in problems in every area of business.

According to the Terhi, “the increased amount of products and customer contacts makes it difficult to keep the database up to date. Some days it is so busy that it is difficult to remember everything that is sold”. (Appendix 1.) This of course directly affects inventory management which is becoming increasingly difficult to keep accurate. Reporting and sales follow-up is difficult and demands a lot of extra time. And along the new e-store the amount of work is doubled since both of the stores share common stock. The number of items in the e-store must be separately updated. This can result in bad customer service if the item is up on the web-site, but has already been sold in the physical store.

Although the positive increase in interest and sales, the current handling of business functions decreases the efficiency of everyday retail functions and might even hinder growth of business if left unsolved. Good management relies on facts. (Appendix 1.)

## **5.2 POS System Requirements**

The system demands for Peroba are outlined in Appendix 2. as follows

- Hardware
  - PC
  - Cash drawer
  - Receipt printer
  - Scanner
  - PDA
- Software
  - Inventory and storage control
  - Reporting
  - Order handling
  - E-store integration
  - CRM

(Appendix 2.)

The only piece of hardware used for running Peroba’s business operations is a Macbook PC on which the owner runs MS excel, cash is stored in a locked box,

receipts are written by hand, sold items are not scanned, but the item type and type of payment are documented in excel.

There is no official POS software that would automatically generate all the needed information at the time of transaction. All reporting and following must be done manually. The software program should be able to record data and produce accurate real-time information on inventory and sales, as well as handle ordering and customer records.

The software should also be integrated to the e-store, so that the information on the site is updated consequently. Peroba currently uses an open source, licensed solution for the e-store called "valmiskauppa.fi". This solution should be compatible with the POS system.

### **5.3 Vendor Requirements**

Regarding location, logistical reasons and trustworthiness, the vendor should be Finnish. Other attributes follow the theoretical framework of selecting a vendor.

- Vendor's commitment to client
- Credibility and honesty
- Technical know-how
- References
- Portfolio
- Solid financial standing and capital adequacy
- Service and support
- Collaboration skills
- Prices: software, hardware, service and updates



(Toiminnanohjausjärjestelmän hankinta C-CEI –menetelmän avulla; Vilpola, Kouri, 2008, p. 50)

#### 5.4 Vendor Long list and Short list

The basis of the survey was on theoretical framework and on the specific requirements Peroba's character sets for the POS system. I conducted an Internet survey and long listed ten Finnish vendors that fit the criteria and would be suitable. According to the long list, I short listed three most suitable and notable vendors that fit the demand criteria the best. The focus is on these three and they are presented in more detail.

#### 5.5 Long list

The long list consists of ten vendors that are able to provide products, services, and whose marketplace and company image fit the criteria. The criteria consist of attributes the vendor should fulfill according to the theoretical framework of information system purchasing and specific criteria of Peroba. The following attributes are retrieved from companies' websites and shown on the following figure 10:

COMPANY	HARDWARE	SOFTWARE	E-SHOP	E-SHOP INTEGRATION	CRM	OPEN SOURCE	SUPPORT	INDUSTRY SPECIFIC	REFERENCES	ESTABLISHED
SKJ OY	X	X	X	X	X		X	X	X	1991
WINPOS	X	X	X	X	X		X	X	X	1997
KASSONE	X	X	X	X	X		X	X	X	
SOLTEQ	X	X	X	X	X		X	X	X	1982
CRAFTHOUSE	X	X	X	X	X		X	X	X	
OY WIKE AB	X	X					X			1986
NOTE SHOT OY	X	X	X	X	X	X	X			
VIEW INTERACTIVE	X	X			X		X		X	2003
DACOTECH	X	X			X		X		X	
PC POS SYSTEMS OY AB	X	X							X	

Figure 10. Vendor long list

Vendors with more hits, “Xs”, are more suitable and vendors with fewer hits are don't fit the criteria as well. The criteria consist of:

- **Hardware:** POS equipment
- **Software:** POS program and modules
- **E-shop:** does the vendor offer an e-shop solution
- **E-shop integration:** is the e-shop integrated to POS software
- **CRM:** does the vendor provide a customer relationship module
- **Open Source:** does the vendor offer a licensed, Internet based software solution
- **Support:** does the vendor offer post sale support
- **References:** does the company have references
- **Industry Specific:** does the vendor offer industry specific solutions
- **Year of establishment:** how long the company has existed; perseverance

## 5.6 Short list

The short list comprises of three vendors whose character, products and services meet the criteria. What they all have in common is a steady market place with a long history in business. All of them offer system integrated e-store solutions, but Note Shot is the only one that provide a licensed product.

Two of them, Winpos and SKJ, have references on their website. Note Shot is missing references, but they mention that their product is used in more than 2000 Finnish companies. Each of the vendors has certificates from Finnish organizations that monitor quality in Finnish products and services.

### 5.6.1 Winpos Ltd.



Figure 11. Winpos logo ((<http://www.winpos.fi/winpos.8.html>)

Founded over twenty years ago, in 1997. Winpos has a steady market place, vast know-how and experience in providing retail management solutions for a variety of different industries such as retail, restaurant and public administration. Winpos products are valued due to their easy usage and are suitable solutions for smaller sized companies and bigger, international chains.

Winpos is able to provide industry based POS solutions with inventory, reporting, CRM and accounting tools, among many other modules. Winpos hardware is modern with touch screens monitors and PDAs. Winpos offers a total pre- and post-sale support.

They provide an e-shop solution which is totally integrated to their POS systems, and full customer support and assembly.

Winpos has a long list of references from different types of well-known, Finnish retail establishments, and has been given the 'Suomen Vahvimmat' platinum certificate, which is recognition that your company is a trustworthy business partner. Winpos was also granted with a success certificate by Balance Consulting the research and analysis unit of Kauppalehti Ltd.

"The best feature in the system is the real time stock keeping that helps in ordering routines and inventory control. Also the price changes and campaigns are easy to do from one location to both stores. Product sales history helps in ordering the right quantities. (Life Turku)"

(<http://www.winpos.fi/winpos.8.html>)

### 5.6.2 SKJ Oy – Suomen Kassajärjestelmät Ltd.



Figure 12. SKJ logo (<http://www.skj.fi/index.php?section=1>)

Suomen Kassajärjestelmät Ltd. (SKJ) was established in 1991, and has provided their POS solutions now for more than 2500 companies.

SKJ has a partner network of 25 expert and authorized resellers across nation. The partner network model brings savings for the customer in initial investment with preprogrammed software and local support.

SKJ focus is on software which in their opinion is more important than the hardware. Their solutions are backed up with industry leading IBM hardware and quality peripheral equipment.

SKJ is able to provide a complete retail management solution with integrated ecommerce.

As well as Winpos, SKJ has been admitted the 'Suomen Vahvimmat' platinum certificate and has a long list of references from well-known Finnish companies.

(<http://www.skj.fi/index.php?section=1>)

### 5.6.3 Note Shot Ltd.



Figure 13. Note Shot logo (<http://www.noteshot.com/>)

Since 1997 Note Shot has provided their POS solution for more than 2000 different sized companies. Note Shot has their own program and in addition they provide a variety of compatible hardware and services, such as open source POS software and ecommerce solutions.

Out of the three companies Note Shot is the only one who provides an open source solution. The customer can download the free version of Note Shot Finance, a retail management program, for a month and later register the licensed version.

Note Shot Finance has been admitted the Finnish 'Avainlippu' certificate. The certificate is given to quality Finnish products.

(<http://www.noteshot.com/>)

## **5.7 Synopsis of Vendors**

All of the three aforementioned vendors: Winpos, SKJ and Noteshot are potential and fulfill the criteria Peroba sets. The vendors have a long history in business; can provide hardware and software, an integrated e-store solution, training and post-purchase support.

It is important to consider the hardware Peroba needs and compatibility of hardware and software. Out of the three Winpos and SKJ are similar. Noteshot is differentiated by their licensed products. Winpos and SKJ have references that can be further investigated by approaching companies that currently use their products. Noteshot's Finance can be downloaded free from their website for one month, and later be registered as full version. This way the consumer is able to test-drive the product and make the decision later. The ultimate decision is based on the monetary compensation the investment brings, and the type of contract the vendor offers.

## 6 Conclusion

For me information systems and purchasing them was an unknown territory, but I can say I learned a lot. The investigation I have done for the project to be initiated has been very eye opening to the world of entrepreneurship. The work is never done and there are always possibilities to enhance and grow your business. Sometimes the situation demands you to dwell into subjects you have never understood before, but it is important to understand them in order to prevent unnecessary risks and losses that can result from poor background work. Investing on an information system always demands capital and mistakes can become costly.

The current operational model at Peroba is a result of under managing some of the important daily routines. The manual work results in extended amount of work and consumes valuable time that could be used more efficiently by having the right tools.

As I investigated the current situation and compared it to solutions available, I found out that many of the time consuming routines and mistakes could be easily prevented with a comprehensive POS system. The efficiency of a business can often be measured in how well the business is able to cultivate data and transfer it into meaningful information. Fact based management leads to better business decisions, but needs accurate information in real time.

A typical POS solution consists of hardware which includes PCs, cash drawer, receipt printers, and software that runs and runs on the hardware. It could be said that software is in the end more important for the user, since all the important business operations depend on it. But the compatibility between the software and hardware is equally important, because they are interconnected and depend on each other. When choosing the vendor it is good to look for comprehensive vendors that can provide both hardware and software.

In the current market there are several vendors who provide feasible POS solutions and in the end are not so different from each other. When selecting the vendor it is important to keep in mind principles of purchasing an information

system. Because in the end it is not the price of the actual product, but the overall project that determines the total amount of investment and the return of it. With no prior experience in purchasing information systems, consumers might be faced with unexpected difficulties and pitfalls that can result in losses. So it is better to avoid unnecessary risks by understanding the diverse nature of information systems.

Information system as an investment is full of variables that are dependent on the two phases of the purchase process: planning and implementation. Proper planning saves time and money, but is often neglected. In the implementation phase communicating with the vendor is important to avoid misunderstandings and ensure the quality of the work, and the future of the system. Support and training often make it or break it.

The three short-listed vendors: Winpos, SKJ and Noteshot all offer viable solutions that can be differentiated by the characteristics of the company. All of them fulfill the predetermined criteria. It is important to consider the compatibility of hardware and software, support and time of delivery. All of these attributes are cost-effective and heavily affect the type of contract and initial amount of investment.

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PC POS SYSTEM OY AB: <http://www.pcpos.fi/> (16.5.2011)

PEROBA OY: <http://www.peroba.fi/yritys>; <http://peroba.fi/tuotteet/tuolit-ja-penkit/tripolina-tuoli>; <http://peroba.fi/tuotteet/ruokapoydat/ruokapoyta-sebastiao-1> (20. 3. 2011)

SKJ OY: <http://www.skj.fi/index.php?section=1> (16. 5. 2011)

SOLTEQ OYJ: <http://www.solteq.com/> (16.5.2011)

VIEW INTERACTIVE OY: <http://www.view.fi/> (16.5.2011)

OY WIKE AB: <http://www.oywikeab.com/> (16.5.2011)

WINPOS OY: <http://www.winpos.fi/winpos.8.html> (16.5.2011)

## APPENDICES

### Appendix 1. E- mail exchange between Janne Koskela and Terhi Pietilä

Terhi Pietilä kirjoitti 11.04.2011 kello 10:08:

Peroba Oy perustettiin heinäkuussa 2008. Toiminta alkoi elokuussa 2008. Minä olen ainoa osakas ja ainoa virallinen työntekijä. Peroban tilikausi on 1.9.-31.8., joten vasta 2 täyttä tilikautta on takana ja nyt tämä puolikas meneillään oleva. Liikevaihto ensimmäisellä tilikaudella oli noin 94.000 euroa (alviton). Liikevaihto viimeksi päättyneellä eli toisella tilikaudella oli noin 150.000 (alviton). Kuluvalle tilikaudella 5 ensimmäisen kuukauden jälkeen liikevaihto oli jo lähes 80.000 euroa (alviton), joten odotan alvittoman liikevaihdon olevan tällä tilikaudella noin 180.000 euroa. Kasvu on ollut mielestäni hyvä.

Tilaa on kaiken kaikkiaan noin 240 m<sup>2</sup>. Vain pieni osa tästä tilasta, noin 12 m<sup>2</sup> on varastotilaa. Tilan suuruus ja sijainti vaikuttavat tietysti vuokran suuruuteen eli se on paljon. ALViton vuokra on 4.135 euroa. Tuoteryhmiä on seuraavasti: huonekalut- valaisimet- kodin tekstiilit- matot- koriste- ja käyttöesineet- muut (pitää sisällään vaihtelevia tuotteita kuten korut, vaatteet jne, joita kokeilumielessä tilailen suomalaisilta käsityöläisiltä.) En osaa sanoa eri tuotteiden (esim. rautatuoli/pinkki, rautatuoli/turkoosi, ruokapöytä "Ball Legs", ruokapöytä "Raw Wood", kynttilänjalka "Rainbow/turkoosi", jne jne...) määrää tällä hetkellä, mutta arvioisin niitä olevan noin 300 - 400. Joitakin erikoistuotteita on vain yks kappale aina kerrallaan myynnissä, joitakin pienempiä juttuja taas on varastossa kymmeniä. Varaston arvo on keskimäärin 50.000 euroa (alviton).

Tällä hetkellä Peroban kassatoiminnot perustuvat käsipeliin eli kirjaan käsin päivän myynnit excel taulukkoon. Taulukkoon kirjaan myydyn tuotteen nimen, hinnan ja maksutavan (pankkikortti/luottokortti/käteinen). Kerran kuukaudessa teen myyntiyhteenvedon, jonka lähetän kirjanpitäjälleni.

Ongelmat:

- myyntitapahtumien määrä per päivä kasvaa koko ajan => aina ei ehdi kirjaamaan myyntiä heti ja eri myyntitapahtumien muistaminen vaikeutuu => yksinkertaisesti unohtuu mitä olen myynyt ja näin joudun kirjaamaan vain summan enkä muista myytyä tuotetta => varasto menee pikkuhiljaa sekaisin
- jos haluan ulkopuolisen työntekijän joutuu hän kirjaamaan myynnit käsin ruutupaperille => joudun kirjaamaan ne jälkikäteen exceliin
- nettikaupan tulo normikaupan rinnalle teettää lisätyötä, kun kaupasta myydyt tuotteet pitää muistaa päivittää nettikaupan varastoon ettei käy niin että nettikauppa näyttää jotain tuotetta olevan varastossa vaikka sitä ei todellisuudessa olekaan kun olen juuri myynyt liikkeestä kyseisen tuotteen loppuun
- raporttien teko monimutkaistuu kun tuotteiden määrä kasvaa koko ajan, varastomäärien seuranta hankalaa
- inventaarion teko työlästä kun ei ole valmista varastopohjaa jonka perusteella inventaariota lähtisi tekemään...

Terkuin, Terhi

Janne Koskela kirjoitti 10.4.2011 kello 14:43

Heippa Terhi,

Olisiko mahdollista, että voisit lähettää minulle hieman tietoa itsestäsi sekä Perobasta näin sähköpostilla kirjallisena?

Eli ihan perusfaktoja kuten perustamisvuosi, yhtiömuoto (OY?), osakkaat, liikevaihto, myymälän ja varaston koko m2:ssä, vuokra, tuotemäärä ja kategoriat, sekä kaikkea muuta mitä mieleen tulee.

Osa löytyy tietenkin myös nettisivulta, mutta jos haluat kertoa vielä yksityiskohtaisemmin se olisi suureksi avuksi.

Kaikkea ei tietenkään tarvitse paljastaa. Mikä tuntuu oleelliselta ja luontevalta.

Sekä jos vielä voit valottaa minulle nykyistä tilannettasi yksityiskohtaisemmin kassanpuutteen vuoksi. Miten kassajärjestelmän puute näkyy omin sanoin nyt ja miten rahastaminen, sekä varastonhoito ja inventointi fyysisen kaupan ja verkkokaupan kanssa tällä hetkellä tapahtuu?

Mikä yleisesti turhauttaa ja mikä on ok?

Terv. Janne

## Appendix 2. Open Questionnaire

An interview to outline the current operational model and information system at Peroba with key points.

### 1. Problem statement

- No POS system
- Manual work
- Time consuming
- Excel
- E-store not integrated
- Inventory
- Reporting

### 2. System requirements

- Hardware
  - PC
  - Cash drawer
  - Receipt printer
  - Scanner
  - PDA
- Software
  - Inventory and storage control
  - Reporting
  - Order handling
  - E-store integration
  - CRM