**STUDY ON PROVIDNG EMS SOLUTIONS TO THE MARKET WITH EXISTING RESOURCES AT SOLITON TECHNOLOGIES BANGALORE**

By

R.ARUL BALAJI
Reg. No. 1120400010

Under the guidance of

PRIYA DHARSHINI A
Assistant Professor

A PROJECT REPORT
Submitted

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**BONAFIED CERTIFICATE**

Certified that this project report titled "**Study on providing EMS solution to the market with existing resources at Soliton Technology Bangalore"** is the bonafide work of Mr**. R. Arul Balaji, 11MBA059** who carried out the project under my supervision. Certified further, that to the best of my knowledge the work reported herein does not form part of any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

Faculty Guide
**(A. Priya Dharshini)**
**Assistant Professor**
**KCTBS**

Director
**Dr. Vijila Kennedy**
**KCTBS**

Submitted for the Project Viva-Voce examination held on

_____

Internal Examiner

External Examiner

**DECLARATION**

I, **Arul Balaji.R** hereby declare that the project report titled as **"Study on providing EMS solution to the market with existing resources at Soliton Technology Bangalore"** done at Soliton Technology, Bangalore, is an original work done by me in the partial fulfillment for obtaining the degree of Master of Business Administration from the Anna University, Coimbatore. It is the record of work carried out by me during the period from 02.07.12 to 10.08.12 under the guidance of **A.Priya Dharshini**, Assistant Professor, KCTBS.

The conclusion made in this project report is based on the data collected by me and no part of this work has been submitted elsewhere for any degree.

Place :

Date :

Signature:

Name :

**ACKNOWLEDGEMENT**

I express my sincere gratitude to our beloved chairman **Arutchelvar Dr.N.Mahalingam** and Management for the prime guiding spirit of Kumaraguru College of Technology

I wish to express deep sense of obligation **to A.Priya Dharshini** , Assistant Professor, KCT Business School, for her intensive guidance throughout my project

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## EXECUTIVE SUMMARY


In today's globally competitive business environment, electronics companies are under relentless pressure to provide innovative products in shorter time cycles, at reduced cost, and with improved quality. The electronics industry is driven by demands for products that are smaller, lighter, cheaper, and better than the ones they replace. In order to meet market requirements, industry has been moving to Asia, which is now the primary source of electronic components and is soon to become the primary market for consumer electronics.

The project involves the implementing SAP Business One at Soliton Technologies. The company facing difficulties in three key areas, availability of real-time information, sales force automation and automated reporting system. Suggestion to implement SAP Business one modules, sales and receivables, purchasing and payables, financials (banking, fixed assets and payroll), Inventory, production & MRP, CRM & service will overcome all the major problems occurring in the functional departments of Soliton technologies.

## CHAPTER 1
## INTRODUCTION

### 1.1 INTRODUCTION TO THE STUDY

The two important trends that are having sweeping effects on both industry and consumers are short product life cycle and mass customization. This is particularly true in the electronics industry. Consumers increasingly demand a highly customized, high quality product to be delivered quickly at a competitive price. The industry is moving to one in which competition is supply-chain vs. supply-chain, not simply company vs. company.

The manufacturing is contracted out to specialists, creating an industry known as electronics manufacturing services (EMS) or simply contract manufacturing. These specialists are called contract manufacturers (CMs), or EMS providers. Their customers are original equipment manufacturers (OEMs).

The top EMS providers are a new breed of super contractors that promise to revolutionize manufacturing well into the new century. They command dozens of factories and supply networks around the world. Increasingly, they also manage their customers' entire product lines, offering an array of services from design to inventory management to delivery and after-sales service.

Companies such as Lucent Technologies, Hewlett Packard, NCR, Phillips, Ericsson, IBM, Compaq, Nokia, and Apple Computer have all liquidated manufacturing plants and chosen to partner with major EMS providers to strengthen or reposition their competitive advantages. It is reported that Customers of EMS providers in the U.S. have already achieved cost efficiencies of 15% to 25% and that is only 5% to 10% of U.S. industry's potential savings.

As a result of basic similarities in finished goods, electronics manufacturers have an easier time subdividing their skills, equipment, and information systems to handle many different work orders. Second, the competitive, fast-changing nature of the electronics markets has forced discipline on this manufacturing segment.

### 1.2 HISTORY OF EMS INDUSTRY

The EMS industry took off after the late 1970s when Solectron was established. These companies offered flexibility and eased human resources issues for smaller companies doing limited runs. The business model for the EMS industry is to specialize in large economies of scale in manufacturing, raw materials procurement and pooling together resources, industrial design expertise as well as create added value services such as warranty and repairs.

The development of Surface Mount Technology (SMT) on printed circuit boards (PCB) allowed for the rapid assembly of electronics. During technology's late-1990s heyday, EMS players routinely acquired assets in high-cost locations. EMS players largely focused on printed circuit board fabrication, leaving system assembly to the OEMs. EMS companies largely disdained industries outside the world of information processing (computers) and communications.

In recent years, EMS players have shifted production to low-cost geographies; embraced non-traditional industries including consumer electronics, industrial, medical and instrumentation; and added substantial vertical capabilities, stretching from design and ODM through system assembly, test, delivery and logistics, warranty and repair, network services, software and silicon design, and customer service.

EMS providers managed to improve and increase their production capabilities, invest in the latest technologies and expand the services they offer. Many OEMs discovered that it was cheaper to turn to these contract manufacturers to produce the majority of their components. With economic recovery, OEMs have simply increased their reliance on contract manufacturers instead of increasing capital investment. The EMS providers shared multiple OEM clients, are able to leverage the advantages of year-round full-volume production. Today, the capital required for an EMS provider to grow is enormous. Extremely short life cycles and constantly declining prices prompt OEMs to launch their products in multiple locations around the world and to demand a greater range of services than just manufacturing

### 1.3 ELECTRONIC MANUFACTURING SERVICES

India is well-known for its software powers. But on the hardware front, the progress is rather slow. However, the country has been making gains in this sector also. Already, 50 Electronics Manufacturing Services (EMS)/Original Design Manufacturers (ODMs) Electronics Manufacturing Services (EMS)/Original Design Manufacturers (ODMs) providers are operating in India, ranging from global players including Flextronics and Solectron to indigenous firms including Deltron, TVS Electronics and Sahasra.

For OEMs, using contract manufacturing services in India can help them penetrate the local market. However, OEMs face specific risks associated with using contract manufacturers in India. Fluid exchange rates combined with volatile oil and component prices lead to unpredictable costs. Changing government policies along with shifting government regimes also contribute to an unpredictable political environment..

The semiconductor fabrication segment has a small existing base in India with only two fabrication units, which both are developing chips for the defense and strategic sectors. However, semiconductor suppliers are expanding their manufacturing activities in India to serve the growing contract-manufacturing industry in the nation. As evidence of this trend, groundbreaking commenced on a 200 mm fabrication unit in Hyderabad operated by Nano Tech Silicon India Ltd

Recent trends show that an increasing number of engineering and design activities are also being outsourced to EMS companies and they are becoming ODMs (Original Design manufacturers) and also provide final system integration and logistical support. The recent acceleration in EMS activity is mainly due to rapid growth in the electronic Hardware market in all segments particularly rapid growth has taken place in Telecom Infrastructure Equipment, computers, Consumer & Hand held devices.

### 1.4 RATINALE FOR EMS INDUSTRY

**ECONOMIES OF SCALE** A product often experiences cyclic demand. If an OEM decides to have in-house production and designs its capacity to satisfy peak demand, there will be excess capital resources and labor during downturns in the demand. A CM is likely to be able to shift the excess capacity allotted to one OEM customer to another.

**CORE COMPETENCY** With increasingly severe competition amongst OEMs, it is important to sense what new product consumers want, and to design and build the pro duct quickly. It is difficult to excel at all of these. An OEM's core competencies are typically in new product design and demand generation. By outsourcing manufacturing activities, electronics OEMs can devote their attention to design and demand creation.

**LOW MATERIAL COST** With EMS providers growing bigger, they have more leverage in purchasing raw materials. Purchasing power due to increased size and shared inventories of common parts can result in lower component costs.

**RETURN ON INVESTMENT** Manufacturing processes often require heavy capital investment, which often takes a long period to pay back. With shortened product life cycles, it is harder to make capital investment decisions. For an OEM, these difficult decisions are removed if the CM takes care of the entire manufacturing process, resulting in better return on investment for the OEM.

**GLOBALIZATION** Markets have become global rather than local in nature. Major OEMs are striving to satisfy global demands. Smaller companies would like to tap into this market, but lack the resources to have widespread production. By establishing a global presence, CMs are able to serve both types of customer in an efficient manner.

### 1.5 FRAMEWORK OF EMS

EMS companies grow along another two dimensions, these being services and capabilities. The 'product' dimension represents their deliverables, illustrating that along firm growth, EMS companies are able to cope with increasingly complex products. Meanwhile, along the 'service' dimension, EMS companies seek to

vertically integrate services along the supply chain and to move to the upper stream (e.g., design services).

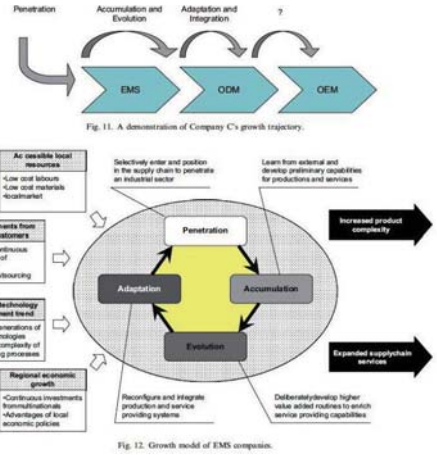


Fig. 11. A demonstration of Company C's growth trajectory.

Fig. 12. Growth model of EMS companies.

Fig 1.5.1 Framework of EMS

The capability development framework for EMS companies is presented as follows

| | |
|---|---|
| **PENETRATION** | **Products (completely of manufacturing process and technologies )**<br>• Start production from labor-intensive component Products<br>• Leverage existing resource for production, e.g founder's educational background, local economic policy and low-cost labor<br>• Choose a product component as core product component for long-term capability development<br>**Services (servicing processes along the supply chain )**<br>• Selectively position in the lower stream of supply chain with high-labor and low technology contents (production, distribution)<br>• Leverage existing local resources such as low-cost labor, personal networks and privileged local economic policies |
| **ADAPTION** | **Products (completely of manufacturing process and technologies)**<br>• Integrate components production capabilities to manage full system manufacturing<br>• Adapt production knowledge to address more complex components products<br>• Utilize production to enter new sector/industry<br>**Services (servicing processes along the supply chain )**<br>• Restructure organization to address new services (international factory network, internal management structure)<br>• Services (production network/supply chain/global design network) restructuring |
| **ACCUMULATION** | **Products (completely of manufacturing process and technologies )**<br>• Production knowledge experience accumulation through duplicate production processes technologies from customers and repetitive practice.<br>• Diversify customers to learn from different production practice<br>Codify manufacturing<br>• Incrementally Follow universal manufacturing technology trend.<br>**Services (servicing processes along the supply chain )**<br>• Expand along the supply Chain by providing more value-added services (mainly contain labor-intensive contents)<br>• Adopt multiple methods (alliances, geographical expansion) to enrich service provisions |
| **EVOLUTION** | **Products (completely of manufacturing process and technologies)**<br>• Deliberately build continuous improvement system<br>• Develop process design and redesign capabilities<br>• Continuously develop new organizational routines to enhance production services<br>• **Services (servicing processes along the supply chain )**<br>• Continuously improve existing services along supply chain to add more value<br>• Utilize existing process knowledge and experience to provide supportive activities to technology intensive projects |

Table 1.5.1 Framework of EMS companies

*(Source -The growth and capability development of EMS Companies)*

**1.6 ORGANIZATION PROFILE**

Soliton Technologies is a company focused in the field of Machine Vision. Soliton designs and manufactures digital cameras and smart cameras for industrial applications. Soliton cameras are used by manufacturers of capital equipment (OEMs) and systems integrators for various automation and imaging applications.

These cameras are integrated into capital equipment, special purpose machines, and production lines for various applications including: High Speed Color / Shape Sorting Contamination Detection Surface / Web Inspection Gauging / Measurement Parts Placement / Robotic Guidance Presence - Absence Verification Label and Package Inspection Parts / Assembly Inspection 2-D Barcode Reading Intelligent Security and Surveillance Soliton is a fast growing company with two offices in India and a wholly owned subsidiary in the US.

Soliton's work has received outstanding recognition over the years, garnering a total of nineteen international awards including an Imaging Solution of the Year award in 2004 and three Overall Winner awards at the annual worldwide Virtual Instrumentation conference in Austin, Texas, USA. Soliton have received nineteen international awards, including the "Most Outstanding Application of the Year Award" in 2000, 2001 and 2004 at the Worldwide Conference on Computer Based Measurement & Automation, in Austin, Texas, USA.

**KEY PEOPLE**

| BOARD OF DIRECTORS | MANAGEMENT TEAM |
|---|---|
| Dr.Ganesh Devaraj<br>Managing Director and CEO | Dr. Ganesh<br>Managing Director and CEO |
| Mr. Ashok Aram<br>Director | Mrs. Mekhala Devaraj<br>Director |
| Mrs. Mekhala Devaraj<br>Director | Mr. Swaminathan Kumaragurubaran<br>General Manager Camera Division |
| Mr. Rajesh Devaraj<br>Director | Mr. Anish Mathews<br>General Manager Test & Measurement Division |

Table 1.6.1 Key people of Soliton

**VALUES**

Soliton has a core purpose - to build a world-class global company with a reputation for **Integrity** and **Excellence**. These are our core values.

**INTEGRITY**

As a company we are making commitments every day - to our customers, our people, our partners, our suppliers, and our investors. Integrity is being true in our communication to each and every one and then meeting these commitments. The trust that this creates for Soliton is, and will continue to be, the foundation of our success.

**EXCELLENCE**

Excellence inspires! An environment of excellence inspires us to do our very best every time. The resulting recognition inspires us to do even better the next time. This positive cycle is what we actively work to create and enhance in Soliton.

**CUSTOMERS**

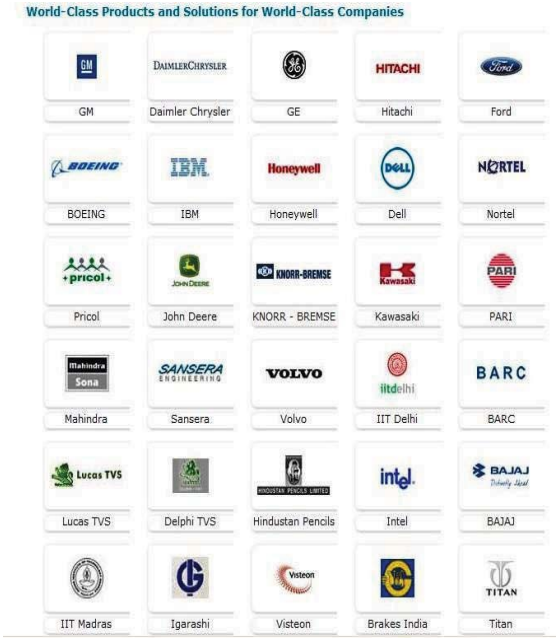


Fig 1.6.1 Customers of Soliton

## PRODUCTS OVERVIEW

**COLOR REGISTER CONTROL**

Soliton PRIM is a color register control system developed for 4 color web offset printing machines. Based on Soliton's embedded smart vision system platform, it uses high speed imagers and high intensity LED strobe lights to acquire images of the printed register marks at high speeds. The powerful Texas Instruments DaVinci DSP processor inside PRIM analyzes the images to determine the alignment offsets and sends the control signals to the motors for fast and accurate lateral and circumferential alignment.

**SMART CAMERA - NEO**

Soliton **Neo** is a standalone DSP-based smart camera. Smart cameras are compact systems that do not require a PC for operation. Powered by the high-speed algorithms of the **Soliton Vision Library (SVL)** and the easy GUI of **Soliton Vision Artist (SVA)**.

The Soliton Neo is a complete vision system, with built-in camera, powerful DSP processor, integrated LED lights, optics and various industry standard interfaces for control. Connect the smart camera to a laptop computer (or a remote PC) via Ethernet, and using the interactive interface simply drag and drop steps from the given list of image acquisition, image processing, and control action steps.

**GAUGE VIEW**

The Gauge view is state-of-the-art machine vision software that has been specifically designed to read gauges or needle based meters. The unique technology in GaugeVIEW can be easily used to read and calibrate any type of gauge. GaugeVIEW is the basis for the award winning application 'Automated Analog Speedometer Calibration' which was selected as one of the top three Virtual Instrumentation Applications of 1999 in the Automotive category at the National Instrument's NI Week Best Applications Contest.

**INSTRUMENT DRIVER CREATOR**

Soliton has developed hundreds of LabVIEW Drivers for a wide range of instruments ranging from Spectrum Analyzers to Power Meters to Oscilloscopes etc. Soliton is the one-stop shop for all your driver development needs. You can either purchase our one-of-its-kind driver development tool and create standardized drivers yourself or you can leverage our expertise by outsourcing your driver development needs to us.

**VALVE TEST SYSTEM**

Soliton Universal Valve Test System is highly configurable Hydraulic / Pneumatic **Valve Testing and Report Generation** software. It addresses the needs of companies looking for flexible software that can be configured to test different types of valves easily.

Benefits of Valve Test System include

- A high degree of customization and flexibility in designing test systems
- Test various testing setups before finalizing on the most appropriate one for your testing needs

**APPLICATIONS**

**MANUFACTURING**

Improves quality, avoid wastage and maximize factory efficiency using machine vision

**PRINTING**

Maintain high print quality even at high web speed

**HEALTH CARE**

Adopt latest image processing method for better screening, earlier detection of health threats

**AUTOMOTIVE INDUSTRY**

- Non-contact gauging / dimensioning
- Spark plug inspection
- Instrument cluster calibration and inspection
- Parts tracking in production lines with 1-D and 2-D barcodes

**ELECTRONICS**

- Assembled PCB inspection (presence-absence, orientation, dry solder, short circuits etc.)
- Bare PCB inspection (holes, traces, solder paste, screen print)
- IC and connector inspection (bent pins, lead length, etc.)

**GENERAL MANUFACTURING AND ASSEMBLY**

- Automated visual inspection of machined parts
- Mechanical assembly inspection for presence-absence, orientation, engagement etc.
- Inspection of parts for physical damage, scratches, etc.
- Size / shape based sorting (metal, rubber, plastic parts)
- Parts counting on assembly lines
- Parts alignment during automated assembly
- Automatic control of welding process
- Surface defect inspection

## 1.7 STATEMENT OF THE PROBLEM

Soliton is well known for its Electronic Manufacturing Services, they are India's first and largest manufacturer of Machine Vision products including industrial-grade cameras, smart cameras, LED lighting and OEM products. But they are dealing only less quantity of products and providing high quality hence they are lagging in system implementation and unable to start new business verticals i.e. concentric diversification.

## 1.8 OBJECTIVE OF THE STUDY

### PRIMARY OBJECTIVE

- To explore new business verticals or opportunities with available existing resources and to identify the Target customers.

### SECONDARY OBJECTIVE

- To understand the external challenges and opportunities using SWOT analysis and Porter Five Forces Model

## 1.9 SCOPE OF THE STUDY

This project provides an opportunity to identify the target customers and also new business opportunities for the existing resources in Soliton Technologies. It also gives an insight about the knowledge of system implementation in small scale business in order to overcome the manual works and it's pitfalls/drawbacks

## CHAPTER 2

## LITERATURE REVIEW

**2.1. Comparative analysis of ERP vendors: SAP, Oracle, and Microsoft, School of Business and Economics Indiana University South Bend, K507–Enterprise Resource Planning – 2008 Fall – ERP Project**

ERP system is an integrated information system to support the business within different organizational parts of an enterprise. The leading global providers are SAP, Oracle, and Microsoft. ERP packages are designed to be customizable to concrete needs of an organization and to its legacy systems. The customization of ERP modules for a concrete user is performed with special tools and using specific or standard programming languages. Due to already mentioned general ERP characteristics, customization and implementation usually require specialized knowledge and significant resources

**2.2 Evolution and Revolution as Organizations Grow Mainiero, L. and Tromley, C. Developing Managerial Skills in Organizational Behavior: Exercises, Cases,**
**and Readings (Englewood Cliffs, NJ: Prentice Hall) (2d ed. 1994), pp. 322-329.**

A small research company chooses too complicated and formalized an organization structure for its young age and limited size. It flounders in rigidity and bureaucracy for
several years and is finally acquired by a larger company. Key executives of a retail store chain hold on to an organization structure long after it has served its purpose, because their power is derived from this structure. The company eventually goes into bankruptcy. A large bank disciplines a "rebellious" manager who is blamed for current control problems, when the underlying cause is centralized procedures that are holding back expansion into new markets. Many younger managers subsequently leave the bank,competition moves in, and profits are still declining.

**2.3.The growth and capability development of electronics manufacturing service (EMS) companies, Endong Zhai, Yongjiang Shi, Mike Gregory Centre of International Manufacturing, Institute for Manufacturing, Department of Engineering, University of Cambridge,Mill Lane CB2 1RX, UK Received 29 July 2009**

This paper describes the firm growth model in electronics manufacturing service (EMS) companies and its link with their internal capability developments. This research work, based on multiple in-depth case studies of EMS companies during the last 3 years, explores the EMS business and its capability growth processes in a supply network environment. It demonstrates that EMS companies usually start by selectively penetrating and positioning themselves along the supply chain. Business growth takes place along three intertwined dimensions: production, supply chain and capability development. The paper proposes the growth model of EMS companies from a capability perspective, which itself can be broken down into four stages of resource and capability development: penetration, accumulation, evolution and adaptation.

**2.4. New Service Development for Electronic Services – A Literature Review Christoph Riedl Technische Universität München, Boltzmannstr. 3, 85748 Garching b. Munchen, Internationl journal 2010**

As the importance of services in our society increases, so does the importance of systematic approaches to develop these services commonly termed New Service Development (NSD). An increasing proportion of services are now electronic
Services delivered over the Internet. The purpose of this article is to derive a set of key attributes that distinguish electronic from non-electronic services and their potential influence on NSD. These key attributes are then used as a framework for analyzing NSD literature with regards to their applicability to the development of electronic services. This analysis revealed several gaps in NSD research.

## CHAPTER 3
## PROCESS FLOWS

**EMS-ELECTRONIC MANUFACTURING SERVICES**

- ✓ **EMS** is a term used for companies that design, test, manufacture, distribute, and provide return/repair services for electronic components and assemblies for Original Equipment Manufacturers (OEMs). The concept is also referred to as **Electronic Contract Manufacturing** (ECM).
- ✓ Electronic manufacturing services are located throughout the world. They vary in terms of production capabilities and comply with various quality standards and regulatory requirements

**CLASSIFICATION OF EMS**

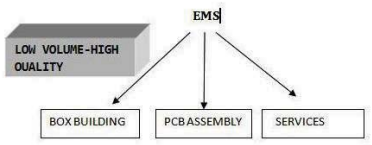


Fig 3.1 Classification of EMS

**BOX BUILDING (COMPLETE PRODUCT BUILDING)**
**DESIGN**

- PCB Design
- Mechanical design

Designers will choose the design and sometimes they go for outsourcing

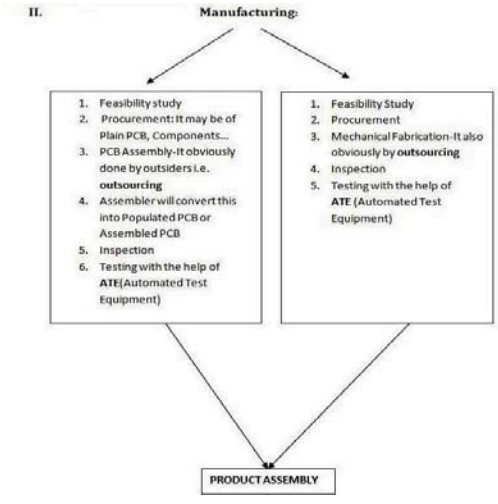


Fig 3.2 Manufacturing Process of Soliton

**PCB ASSEMBLY**

A **printed circuit board**, or **PCB**, is used to mechanically support and electrically connect electronic components using conductive pathways, tracks or signal traces etched from copper sheets laminated onto a non-conductive substrate. It is also referred to as **printed wiring board** (**PWB**) or **etched wiring board**

A PCB populated with electronic components is called a **printed circuit assembly** (**PCA**), **printed circuit board assembly** or **PCB Assembly** (**PCBA**)

In **Soliton** technologies, PCB assembly is done by outsourcing and here design works are done either by manually or with the help of system called **CAD-**

**Computer Aided Design** and similar to Box Building, all other steps (Feasibility study, Procurement, PCB Assembly, Populated PCB design, Inspection and Testing) will also be taken over here.

**SERVICES**

Soliton mainly deals with two important services, they are

- Building ATE's
- CAD

**Building ATE's**

**Automated Test Equipment** (**ATE**) is any apparatus that performs tests on a device, known as the Device under Test (DUT), using automation to quickly perform measurements and evaluate the test results.

**ATE in the Semiconductor Industry** Semiconductor ATE, named for testing semiconductor devices, can test a wide range of electronic devices and systems, from simple components (resistors, capacitors, and inductors) to integrated circuits (ICs), printed circuit boards (PCBs), and complex, completely assembled electronic systems.

**CAD** CAD is the use of computer systems to assist in the creation, modification, analysis, or optimization of a design.

# CHAPTER 4
# ANALYSIS

## 4.1 SWOT ANALYSIS OF SOLITON TECHNOLOGIES

**STRENGTH**

- ✓ **Soliton Technologies** is **India's first and largest manufacturer** of **Machine Vision** products including industrial-grade cameras, smart cameras, **LED lighting** and **OEM products**
- ✓ Soliton is a pioneer in machine vision in India having been in this field for more than 14 years.
- ✓ **Development of Lab View** software for test and measurement automation
- ✓ Design and manufacture of **smart cameras for machine vision applications**; and
- ✓ Video solutions using **surveillance cameras** and **video analytics software**.
- ✓ ESD protection (Electrostatic discharge)-Dust Free Environment
- ✓ Stage wise Inspection and Testing
- ✓ Procurement: it usually from India only e.g.-Bare PCB's
- ✓ Components from all over the world/**Authorized distributors**
- ✓ **Experienced people** i.e. Soliton have expertise and experienced people to meet challenging task and as well as competitors.
- ✓ Strong and effective **Research and Development**
- ✓ They deals with **Low volume** but they are capable of providing **High Quality**
- ✓ Flexibility in Structure module i.e. Designer can be able to enter anywhere of the process stage and can be exit anywhere
- ✓ Feedback and suggestion on obsolete Products, price and manufacturability. It helps to improve the quality and also the standard of an industry.

**WEAKNESS**

- ✓ For PCB Manufacturing, Soliton have to go for outsourcing only. Hence it make them to depends on third party
- ✓ PCB Assembly facility is not available. Hence it make them to depends on third party
- ✓ Mechanical Fabrication facility is not available. Hence it make them to depends on third party

Since Soliton deals with very low volume, it creates obstacles for them to implement system enterprise software's like SAP, SIEBEL etc… It leads them to do their tasks manually, hence very high chance of error, redundancy and time consuming process

**OPPORTUNITIES**

- ✓ Soliton has also introduced a design innovation to substantially reduce the cost of this automation system compared to the imported alternatives
- ✓ **Product expansion**
- ✓ **Services expansion**
- ✓ Using strong R&D can be able to produce special and advanced equipments in order to compete with global market.
- ✓ Benchmarking with international company helps for market expansion
- ✓ New Business Verticals
- ✓ Advanced discussions for the development of miniature smart cameras for use in unmanned aerial vehicles among other applications
- ✓ Product and services expansion
- ✓ Benchmarking with international company helps for market expansion
- ✓ Continue to focus on higher value added, higher technology EMS products in Bangalore
- ✓ Develop more domestic capacity for manufacture of electronic components and PCB fabrication
- ✓ Invest more in training, R&D and education
- ✓ To work in partnership with Intellect in the development a value-added package of business services for contract manufacturers

**THREATS**

- ✓ New entrants with aggressiveness
- ✓ Rising EMS labor rates
- ✓ Companies like RANGSONS Electronics are capable of providing **PCB Assembly,** it make Soliton to lose key customers
- ✓ Cheaper Technologies
- ✓ Lower cost competitors or imports
- ✓ Maturing categories, products, or services
- ✓ Many original equipment manufacturers (OEMs) are expected to continue following commodity purchasing patterns, which erode profits for EMS/ODMs
- ✓ OEM desires to increase efficiency in supply chains will continue to pressure lead times and inventory levels
- ✓ Alternative service providers are likely to pose a greater competitive threat to the EMS industry and EMS firms will be challenged to keep providing new value to their clients
- ✓ Price wars

## 4.2 PORTER FIVE FORCES MODEL ANALYSIS

**INTRODUCTION**

The porter five forces is a strategic framework developed by Michael porter in 1979 to derive the forces that determine the attractiveness of a market in terms of the value firms in the market (or looking to enter) can capture. This model involves a relationship between competitors within an industry, potential competitors, suppliers and buyers to better understand the context in which firms within the

industry operate.

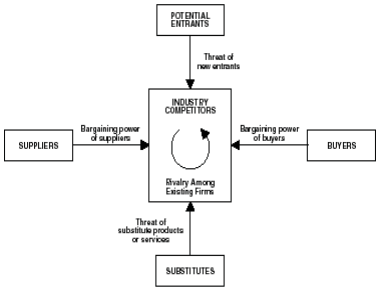


Fig 4.2.1 Porter 5 Forces Model

**BARGAINING POWER OF BUYER**

**EMS SCENARIO: Negative**

- Switching cost from one EMS firm to another are relatively low and limit the negotiating power EMS firms have with their customers
- Most EMS are working with more than one EMS firm as a way to reduce risk but also to put pressure on the EMS industries to keep prices low

**BARGAINING POWER OF SUPPLIERS**

**EMS SCENARIO: Positive**

- Any one of the leading EMS firms is spending billions of dollars annually on component purchases. They hold a significant procurement power on the electronic suppliers who operates in a commodity market.
- For the high end components that are not commoditize yet, such as camera modules and high end displays, the EMS firms make sure to backward integrate through acquisitions in order to benefit from the higher margins.
- Soliton receives Components from all over the world/Authorized distributors so it need not to be depend on single supplier , hence we have strong bargaining power.

**THREAT OF NEW ENTRANTS**

**EMS SCENARIO: POSITIVE**

- In a business that is all about low cost, economies of scale plays a significant role .It will be very hard for a new entrant to achieve the cost advantage needed to compete.
- Current players gained their scale mostly through acquisitions but as the industry consolidate, and since most of the major OEM's already outsourced their manufacturing assets, there are only a few acquisitions opportunities left.
- Beside scale, manufacturing capabilities are key in achieving cost advantage .The current incumbents are already down the learning curve. It will take years for a new entrant, even if it has the necessary scale, to build the capabilities in high volume manufacturing in order to compete effectively**.**

**THREAT OF SUBSTITUTE PRODUCTS**

**EMS SCENARIO: NEUTRAL**

- In the context of EMS industry, substitution can mean returning to the old model where OEM's were vertically integrated. The chances of that happening in the near future are very slim.
- OEM's will have a hard time justifying the big investments only years after they outsourced their factories. In addition, the economies of scale EMS companies achieved, combined with the capabilities they built in low cost

areas, make it uneconomical for the OEM's to bring back some of the services they currently outsource such as product design material procurement while still using EMS providers for labor and capital intensive tasks, such as final assembly and board stuffing, that are usually low-margin services.

**RIVALRY AMONG COMPETITORS**

**EMS SCENARIO: NEGATIVE**

- Competition is high with several first-tier firms fighting for the leading OEM accounts, and many second and third tier competitors trying to work their way up.
- In the past 10 years the competition map changed as a different firm took the lead every few years. In general all the players are finding it hard to differentiate
- They are trying to climb the value chain with new services, such as Original Design Manufacturing (ODM), in order to stand out.

**4.3 COMPARATIVE ANALYSIS OF ERP VENDORS**

ERP system is an integrated information system to support the business within different organizational parts of an enterprise. The leading global providers are SAP, Oracle, and Microsoft. ERP packages are designed to be customizable to concrete needs of an organization and to its legacy systems. The customization of ERP modules for a concrete user is performed with special tools and using specific or standard programming languages.

**SAP**

- SAP was founded on April 1, 1972, by five IBM employees. It developed its first product (financial accounting software) in close cooperation with its first customer.
- The company grew initially around ERP and solidified its market leadership by being a pioneer in the move from mainframe to client-server computing with its R/3 ERP solution introduced in the 1990s.
- SAP expanded into a much broader set of applications for other functions in the enterprise: customer relationship management (CRM), supply chain management (SCM), product life-cycle management (PLM), and supplier relationship management (SRM).
- By bundling and integrating these applications, SAP became known for high-quality, comprehensive enterprise solutions, which SAP or SAP-trained SI consultants would then customize.

**ORACLE**

- Oracle was founded in 1977 as Software Development Laboratories.
- The first Oracle program was written in assembly language, ran on PDP-11 and with 128k of memory.
- The software was never "officially" released though. Version 2 which was released in 1979 was the first to be released.
- The company had changed its name by then to Relational Software Inc. Business grew and by 1982 they had changed their name again, this time to Oracle and in 1987 the company went public.

**MAIN DIFFERENCES**

- **Best of breed functionality vs. more tightly integrated modules.** The software strategy of the two vendors could not be much different. While

SAP has built a solution primarily from the ground up, Oracle has grown primarily through acquisition of best-of-breed point solutions. For example, Oracle has acquired Demantra for advanced sales and operations planning, Hyperion for financial reporting, and Siebel for CRM, while SAP has built much of this functionality into its core ECC and All in One ERP solutions.

- **Product roadmap.** SAP continues to build upon and enhance its core product offering, while Oracle is moving toward Fusion. While some may suggest that Oracle is more innovative or visionary in its technology direction, it also means that there may be more uncertainty with Oracle's product lines. This is especially true for clients considering Oracle's JD Edwards and Peoplesoft solutions.
- **Flexibility.** Although very powerful, SAP can be more difficult to change as a business evolves. This is both a strength and a weakness: it is tightly integrated and helps enforce standardized business processes across an enterprise, but it can be more difficult to modify the software to adjust to evolutions to core processes and requirements. Oracle's best of breed approach, on the other hand, can allow for more flexibility to accommodate changing business needs, but this strength can become a weakness when it becomes harder to enforce standardized processes across a larger organization.
- **Implementation cost, duration, and risk.** Although both solutions typically cost more and take longer to implement than most Tier II ERP software, there are distinct differences between the two. Oracle has a slight advantage in average implementation duration and an even larger advantage in average implementation cost, at 20% less than SAP. SAP, on the other hand, has the lowest business risk of the two, measured via the probability of a material operational disruption at the time of go-live.

- **Business benefits and satisfaction.** This is perhaps SAP's greatest strength. Although Oracle has the highest executive satisfaction level of all ERP vendors across the globe, SAP leads the pack in actual business benefits realized. Assuming the #1 reason most companies implement ERP software is to achieve tangible business benefits, this can be enough to justify SAP as a solid solution for many companies.

The Information Technology views quadrants Gartner Consulting produces each year as a type of benchmark to see where each provider stacks up against their competition. In 2007, Gartner released the quadrant on the left. While many will argue that Gartner's methods are too simplistic and don't give a truly accurate view of what the decision makers face, it is still a good place to start when comparing products. Gartner ranks venders in two areas, Completeness of Vision and Ability to Execute. Using various qualifiers based on the rankings, the solutions are places in one of four quadrants:

**Leaders** score higher on both criteria; the ability to execute and completeness of vision. Typically larger industry developed businesses with vision and potential for expansion

**Challengers** score higher the ability to execute and lower on the completeness of vision. Typically larger, settled businesses with minimal future plans for that industry

**Visionaries** score lower on the ability to execute and higher on the completeness of vision. Typically smaller companies that are unloading their planned potential

**Niche players** score lower on both criteria: the ability to execute and completeness of vision. Typically market fledglings

In 2007, both Oracle and SAP were placed towards the bottom of the Challengers Quadrant. This would indicate they have the ability to execute, though maybe not that well as they are towards the bottom of the quadrant, and they don't seem to have a great deal of vision.


Fig 4.3.1 Market position of SAP and Oracle

**FUNCTIONALITIES AND FEATURES**

**SAP R/3**

SAP R/3 is a client-server based application, utilizing a 3-tiered model, the presentation layer, the application layer, and the database layer. SAP R/3 is structured using its own proprietary language called ABAP (Advanced Business Application Programming). ABAP, or ABAP/4 is a fourth generation language (4GL), geared towards the creation of simple, yet powerful programs.

SAP R/3 also offers a complete development environment where developers can either modif y existing SAP code to modify existing functionality or develop their own functions, whether reports or complete transactional systems within the SAP framework. ABAP's main interaction with the database system is via Open SQL statements.

**END-USER SERVICE DELIVERY**

SAP ERP offers role-based access, self-services, and employee interaction center support through SAP Manager Self-Service, SAP Employee Self-Service, Duet and employee interaction center support. Plus, SAP Mobile Time and Travel enables employees in the field to report time and expenses offline.

**SAP ERP FINANCIALS**

Ensure compliance and predictability of business performance so the organization can gain a deeper financial insight across the enterprise and tighten control of finances. SAP ERP Financials automates financial and management accounting and financial supply chain management. The solution also provides rigorous support for corporate-governance mandates such as Basel II and Sarbanes

**SAP ERP HUMAN CAPITAL MANAGEMENT**

Optimize the HR processes with a complete, integrated, and global human capital management (HCM) solution. SAP ERP provides this HCM solution for organizations of all sizes and in all industries.

**SAP ERP OPERATIONS**

SAP ERP Operations also helps discrete and process manufacturers manage the entire life cycle of product development and manufacturing. The solution automates the entire manufacturing process and reduces costs by controlling and adapting the manufacturing process in real time

**SAP ERP CORPORATE SERVICES**

SAP ERP Corporate Services is a complete and integrated solution that maximizes transparency and control, while reducing financial and environmental risks and enhancing safety of employees.

**PERFORMANCE MANAGEMENT**

Support the entire life cycle of performance management, delivering real-time, personalized measurements and metrics to improve business insight and decision making. SAP ERP supports financial analytics, operations analytics, and workforce analytics, as well as consolidated financial and statutory reporting; planning,

budgeting, and forecasting, strategy management and scorecards, and risk management.

**ORACLE**

An Oracle database system is a platform with at least one application running on it to access and process the data. Data is stored logically in the form of table spaces and physically in the form of data files. The recommended structure for an Oracle database is the institute RAC--Real Application Clusters. Multiple instances, usually on different servers, attach to a central storage array. This offers better performance, scalability and redundancy for the users.

Oracle Business Suites alone have over 140 different applications which can be installed on their platform. These include:

**ENTERPRISE PERFORMANCE MANAGEMENT**

A tool which aides in the executive decision making process by supporting a broad range of strategic, financial and operational management processes.

**BUSINESS PROCESS OUTSOURCING**

An application which seems to work as an extranet and allows organizations track the non-core business processes which have been outsourced.

**CUSTOMER RELATIONSHIP MANAGEMENT**

Tracks what is going on in the sales department. Allows other departments (finance, production) know what they can expect. It will also allow the marketing groups know how effective campaigns have been.

**CUSTOMER SELF-SERVICE SOLUTIONS**

Allow customer place orders themselves without the supplier having to have someone enter the order. This reduces the risk of order entry errors. Production or warehouse groups receive the order right away and can act on it much quicker so turn around takes less time.

**FINANCIAL MANAGEMENT SOLUTIONS**

Provides and tracks data for finance operations, governance, risk, compliance, and performance management.

**HUMAN CAPITAL MANAGEMENT**

Tracks all aspects of the Human Capital needs, from core human resource (HR) transactional functionality through service automation and delivery to complete enterprise talent management solutions. It provides the needed resources and has proven to reduce the costs.

**THE TOTAL COST OF ERP OWNERSHIP**

Total cost of ownership (TCO) is a significant factor in ERP strategies and decisions. Yet while both end-users and ERP vendors tend to talk about lower TCO and many vendors claim it as a point of differentiation. Three different elements of total cost associated with ERP implementations are actually important

- Amount spent on software
- Amount spent of external services

| Company Size | Average no of Users | Average software | Average Service | Average 3 years maintenance | Average Total cost |
|---|---|---|---|---|---|
| Under $50M | 38 | $176,597 | $126,022 | $81,676 | $384,295 |
| $50M-$100M | 92 | $482,941 | $351,374 | $247,554 | $1,081,869 |
| $100 M-$250M | 195 | $695,395 | $581,090 | $443,066 | $1,719,551 |
| $250M - $500M | 344 | $985,714 | $655,263 | $346,639 | $1,987,616 |
| $500M - $1B | 475 | $1,364,286 | $1,110,000 | $617,735 | $3,092,021 |
| $1B - $5B | 2187 | $2,360,577 | $2,081,000 | $1,479,208 | $5,920,785 |
| Over $5B | 3365 | $2,652,500 | $2,102,778 | $1,163,531 | $5,918,809 |

Table 4.3.1 Average Software and Services Costs by Company Size

Table 4.3.2 displays software and service costs by vendor, since the ratio of services to software costs is indicative of both ease of use and ease of implementation. We just adopted a few major vendors, Infor, Lawson, QAD, SAP and Oracle.

| ERP Vendor | Average Software | Average Service | Average no of ERP Modules | Average Software+ Service per user | Average Total costs per user |
|---|---|---|---|---|---|
| Infor | $703,261 | $494,444 | 11.0 | $9,843 | $12,773 |
| Lawson | $482,500 | $455,556 | 10.8 | $10,521 | $11,826 |
| QAD | $633,871 | $463,158 | 10.2 | $9,741 | $12,161 |
| SAP | $1,276,667 | $1,115,323 | 11.9 | $11,381 | $15,067 |
| Oracle | $1,929,167 | $1,694,231 | 11.5 | $16,882 | $20,983 |

Table 4.3.2 Software and Service Costs by Vendor

Functionality and TCO remain significant factors on ERP strategies and decisions. The depth and breadth of functionality deployed, along with the cost of software, services, and on-going maintenance combine to provide a price performance of ERP. Table 3 shows the ERP usage and total cost per user per percentage Point of functionality used by three vendors, SAP, Oracle, and Microsoft Dynamics.

| ERP Vendor | Average no of modules used | Average % of Functionality used | Average no of users | Software+Service+ 3years Maintenance |
|---|---|---|---|---|
| Oracle | 12.4 | 69.1% | 834 | $702 |
| SAP | 11.3 | 72.4% | 1365 | $513 |

Table 4.3.3 ERP Usage and Costs per User per Percentage of Functionality Used

**TARGET MARKET**

SAP serves 75% of the Fortune Global 1000, but less than 1% of Fortune Global million. The small and medium enterprise (SME) market is a huge opportunity. SAP views SMEs as its main potential source of growth.

As of summer 2006, SAP led the midmarket segment, but to reach its goal of having 45% - 50% of order entry from SME customers by 2010, SAP has to address the two most important elements of an SME solution: Total Cost of Ownership (TCO) and ease-of-use. SAP's offering has higher up-front outlays but lower maintenance rates. SAP aggressively expands SME market via the SAP Net Weaver platform strategy toward the goal of doubling SAP's market cap by 2010.

## CHAPTER 5
## FINDINGS

### 5.1 COMPARISON STUDY BETWEEN SOLITON AND SI2 MICRO SYSTEMS

| CHARACTERISTICS | SOLITON TECHNOLOGIES | SI2 MICROSYSTEMS |
|---|---|---|
| **COMPANY PROFILE** | **Soliton Technologies** offers products and solutions in the areas of<br><br>1) **Test and measurement;**<br><br>**2) Machine vision; and**<br><br>**3) Video analytics.** | Si2 Microsystems Ltd is a System-in-Package (SiP) and Microsystems solutions company providing<br>1. **Wireless**<br>2. **Wire line;** and<br>3. **Microsystems solutions**<br>for global customers |
| **MERGER** | **No** | Merger of **Silitronics** (San Jose based firm which is into custom microelectronics manufacturing with expertise in RF, CSP, and SiP Packaging Technology); **Sun Electronic Technologies** (Bangalore-based manufacturing company with SMT lines) and **D'gipro Systems**(Bangalore-based with domain expertise in ASIC, PCB and sub-system design). |
| **BUSINESS CLASSIFICATION** | ✓ Machine vision products<br>✓ Virtual instrumentation services. | ✓ **ASiP -** customer specific SiP solutions<br>✓ **FSiP -** Standard and semi-custom SiP solutions for wireless applications<br>✓ **ODM - turnkey system and sub-system manufacturing business with design expertise** in the area of telecommunication systems like IAD, and SDRAM Memory Modules for PC and other appliances |
| **CORE COMPETENCIES** | 1. Development of Lab View software for test and measurement automation<br>2. Design and manufacture of smart cameras for machine vision applications; and<br>3. Video solutions using surveillance cameras and video analytics software.<br>4. **ATE building capabilities** to meet high quality | Our core design expertise and intellectual property (IP) is in the area of developing<br>1. Communication systems<br>2. Integrated multi-service radio and antenna Micro-systems<br>**3.** Critical areas of SiP manufacturing technology<br>By leveraging **SiP** (substrate engineering, embedded passives & CSP) **technology**, **ASIC Design, System Engineering and in-house manufacturing infrastructure**, we provide **Co-designed solutions optimized for form-factor (size), price, and time-to-market**. |
| **FACILITIES and TECHNOLOGIES USED** | ✓ ESD protection (Electrostatic discharge)<br>✓ Stage wise Inspection and Testing<br>✓ Procurement: it usually from India only e.g.-Bare PCB's<br>✓ Components from all over the world/**Authorized distributors**<br>✓ **Experienced people** i.e. Soliton have expertise people<br>✓ They deals with **Low volume** but they are capable of providing **High Quality**<br>✓ **ATE building capabilities** to meet high quality<br>✓ Flexibility in Structure module<br>✓ Feedback and suggestion on obsolete Products , price, manufacturability | ✓ Our SiP packaging plants in the US and Bangalore are located in **clean room facilities** and **supported by inline and off line quality control instrumentation** like SAM, SEM, low and high magnification Visual Microscopes, X-ray microscopes with tilt facility, thermal mapping system, etc.<br>✓ **Substrate Engineering** – This involves selection of appropriate substrates like FR-4, BT, Alumina, Ceramic, IMC, DBC, etc. depending on the technology and cost requirements of the final solution.<br>✓ We have in **house technology and library** for embedding passives, varieties of filters, etc. primarily for RF designs.<br>✓ **ASIC & FPGA** design is done using traditional methods and is mostly digital.<br>✓ SiP technology allows freedom from long drawn ASIC design cycles. The combined methodology of using ASIC design and standard components through value added system engineering provides the most optimal solution<br>. |

| | | |
|---|---|---|
| **OUTSOURCING** | ✓ PCB Manufacturing<br>✓ PCB assembly<br>✓ Mechanical fabrication | They outsource the **LTCC manufacturing** to vendors like Kyocera, Anaren, etc. |
| **PRODUCTS** | **CAMERA DIVISION PRODUCTS:**<br>• Color register control<br>• Smart camera-NEO<br>**TEST AND MEASUREMENT PRODUCTS:**<br>• Value Test System<br>• Instrument Driver Creator<br>• Gauge View | ✓ **Substrate Engineering** Substrate Engineering, for a given system, to embed passives and passive-based networks like filters<br>✓ **CSP & RF Packaging** CSP (Chip Scale Packaging) refers to some of these approaches like FBGA, micro-BGA, BGN, QFN, CSP and Ultra compact packages where the package size is almost equal to the die size. |
| **SERVICES/SOLUTIONS THEY OFFER** | **Soliton Technologies** offers products, solutions and EMS to the customers who looking for low volume and high quality in the areas of<br>✓ Test and measurement;<br>✓ Machine vision; and<br>✓ Video analytics. | ✓ Si2 Microsystems (Si2) delivers **turnkey Systems and SiP solutions** by integrating System & Chip design capabilities with Manufacturing Technology<br>✓ Co-designed solutions optimized for form-factor (size), price, and time-to-market |
| **DESIGN COMPETENCE** | ✓ **Development of Lab View** software for test and measurement automation<br>✓ **smart cameras for machine vision applications**; and<br>✓ Video solutions using **surveillance cameras and video analytics software**. | ✓ System in a Package (SiP)<br>✓ ASIC and sub-system design<br>✓ Communication Systems<br>✓ Multi-Band Radios and Antennas |
| **STRATEGIC ALLIANCE** | NATIONAL INSTRUMENTS<br>TEXAS INSTRUMENTS | Si2 Microsystems, along with its in house expertise in substrate design approaches, **has strategic alliance / tie up with leading substrate vendors covering the standard industry** options of special ceramics, LTCC, Laminates, Quartz or Glass |
| **FUTURE PLAN** | ✓ Complete EMS solutions to the customers.<br>✓ A new product that would bring in automation technology to the printing industry<br>✓ Soliton is planning to launch PRIM shortly. | ✓ Si2 is soon to introduce a family of SiP solutions for the **next generation mobile devices.**<br>✓ It is targeted to be embedded into smart-phones, PDA's, notebook computers, media players and personal gaming systems |

Table 5.1.1 Comparison between Soliton and SI2 Technologies

## CHAPTER 6

## SUGGESTIONS AND CONCLUSION

### 6.1 SYSTEM IMPLEMENTATION IN SOLITON TECHNOLOGIES

**INTRODUCTION**

Soliton Technologies deals only with less volume, it is lagging in implementing system enterprise software. So it has following downfalls

1. Time Consuming
2. High chance for manual errors
3. Reduce the chance of higher productivity
4. Reduce the chance of Market expansion
5. Reduce the chance of global opportunities
6. High Diversion or Deviation

In order to overcome all above pitfalls and also to improve the business standard to next level Soliton Technologies can adopt "**SAP BUSINESS ONE**".

**SAP Business One**, a Business Management Software from SAP specifically for small and midsized businesses, can be a single application for multiple tasks – there's no need to look at several different systems to get an accurate picture of data and no need to be proficient at several different applications.

**SAP OVERVIEW**

SAP Business One can automate manual processes to greatly reduce the risk of human error further increasing operational efficiencies in small and midsized businesses. When a change is made in one facet of the business, such as inventory, the software can cascade that change through other processes that are affected by it, saving time and resources. And SAP Business One provides one place for collaboration and development, so new products get to market faster.

SAP Business One software is created specifically for small and midsized businesses. It's a single, powerful application that can help us better manage practically every aspect of our daily operations.

It's affordable, easy to use, and quick to implement. SAP, a world leader in business management software for over 30 years, has performed more than 30,000 SAP Business One installations worldwide.

By implementing SAP Business One, Soliton can

- Streamline their operations by seamlessly integrating key business processes.
- Take proactive control of their business through automatic alerts, workflows, and response to key business events and customer needs.
- Expand their business and their customer base with Web-based CRM and e-commerce capabilities.
- Customize SAP Business One to support their changing needs and individual user preferences with easy-to-use customization tools.

SAP Business One gives us instant access to their critical business information precisely when they need it to run their business. This comprehensive application covers all their core operations, giving you keen insight so they can confidently make informed business decisions.

**SAP BUSINESS ONE UNIQUENESS**

**SAP Business One** is an integrated, affordable, business management solution built from the ground up to meet the immediate and long-term needs of small and midsized businesses (SMBs).It provides a true and unified view of

operations across customer relationship management, manufacturing, and finance. Simple to use yet powerful, SAP Business One puts business users in charge, arming you with the critical, up-to-the-minute information you need to make smart business decisions.

**A COMPREHENSIVE BUSINESS MANAGEMENT SOLUTION**

SAP Business One supports every critical business function, allowing them to stay on top of their business and grow profitability a must have for small and midsized businesses. And they can easily adapt applications to meet new requirements. Nontechnical users have the power to make critical changes on their own, and the system can easily accommodate new functionalities when required.

**ACCESS TO PRECISE, UP-TO-THE-MINUTE INFORMATION**

Quickly access accurate, relevant, and complete business information from the desktop with:

- An **easy-to-use user interface** that allows them to get answers fast and work more efficiently and proactively
- Unique **Drag Relate** feature that instantly places information and transactions in understandable formats and drill down into the information to answer questions and perform what-if analyses
- Seamless integration with Microsoft Office products such as Word, Excel, and Outlook

Automatically keeps us on top of issues that require decisive action with:

- **Workflow-based alerts** to monitor and take action on specific business events
- **Exception management** that automatically detects, logs, and reports on exceptions

Powerful tools let us tailor the application to meet our changing business needs. For example

- Users can specify their preferences for fields, data type, policies, queries, and reports without time-consuming IT involvement Changes go into effect immediately across all relevant areas, so we can adapt the application to fit the way we do business An Affordable, Easy-to-Implement Solution

Accelerated implementation times ensure that we quickly realize the full benefits of SAP Business One through such features as

- An **intuitive user interface and a Microsoft Windows environment** to significantly reduce the learning curve
- A **simple, single-server architecture** that runs the entire SAP Business One solution
- **Simplified administration capabilities** that streamline operation and maintenance and significantly lower ongoing costs
- **Quick time to benefit,** which the solution ensures through reduced modification and maintenance costs and shortened upgrade cycles

**IMPORTANCE OF SAP BUSINESS ONE**

Soliton is growing fast. Days are consumed with the flurry of activities it takes to manage that expansion. The last thing they need to worry about is whether their software meets their business needs. With SAP Business One, they can integrate their business, improve customer service, make more-informed business decisions, and move into online sales**.**

With SAP Business One, they can integrate sales with customer relationship management, accounting, and more. When they connect all of their business solutions, day-to-day details are automated, so their time is free to focus on more important priorities, like growing their business**.**

**DIFFERENTIATING SOLITON CUSTOMER SERVICE WITH BETTER ACCESS TO DATA**

It's essential to keep current customers happy while they attract new ones. Keeping track of who they are, their needs, and which products and services they already use is a key. So it's important to maintain current and accurate information.

SAP Business One, can help them compile information from multiple software applications into a single, integrated solution, so they can:

- See into existing customers' current and historical orders
- Recognize which products or services complement what a customer already has
- Identify when to contact customers for reorders
- Track the entire sales process, from opportunities to closed sales
- Exceed customer expectations at every level

Plus, they can change reports as their requirements change; for example, Soliton can include additional information when they see areas that need deeper analysis. SAP Business One can support them in making the right decisions for their company's growth.

**MAKE GREAT DECISIONS**

Making the right business decisions quickly is essential to the health of a growing company. But to do so requires accurate, up-to-date information. SAP Business One can help them aggregate data such as sales figures, inventory, warehouse numbers, pricing, and supplier statistics. And they can create custom reports that help Soliton

- Identify where their business is most successful
- Recognize where they need to do more strategic planning
- Act more quickly and make better decisions, saving them both time and money

With access to these reports, Soliton's employees can

- More easily fulfill large orders by arranging for delivery of necessary components
- Better time deliveries by proactively addressing issues
- Forecast potential revenue
- Monitor and analyze sales opportunities
- Look into the pipeline to monitor new initiatives

**TAKE OUR BUSINESS ONLINE**

An online presence helps them keep up with increases in sales from new markets. It also empowers customers to control their experience with our company. This saves their company time and money. But when they busy managing their company, it's tough to find the time to create an online presence. With SAP Business One, doing so is both easy and fast.

SAP Business One has integrated e-commerce capabilities, which allows them to quickly create online storefronts that are integrated with their back-end systems and data. So Soliton can play in the same league as our larger competitors, without enormous investments in time and money.

| | |
|---|---|
| Accounting and Financials | **Financial accounting** Handle all your financial transactions, including general ledger, journal entries, budgeting, and account setup and maintenance in one system, with comprehensive tools and reports. |
| | **Budgeting** Manage budget creation, allocation, and distribution. Provide budget tracking, reporting, and alerts that notify the responsible users whenever a transaction exceeds a monthly or annual budget limit. |
| | **Banking** Track all banking processes such as cash receipts, check writing, deposits, advance payments, credit card payments, and account reconciliation. |
| | **Financial reporting** Provide easy-to-use financial reports including balance sheets, profit and loss |

| | |
|---|---|
| | statements, cash-flow analysis, transaction reports, multi-period comparisons, and budget reports. |
| **Customer Relationship Management (CRM)** | **Sales-opportunity management** Manage the entire sales process through different sales stages. Track sales opportunities and activities, analyze their outcome, and forecast revenue potential. They can monitor and analyze sales opportunities using dashboards and sales reports. |
| | **Web CRM** Give their sales team secure access to customer data on the Web wherever they are. Provide a Web-based interface to your customers so they can log inquiries and check order status all in real time. |
| | **Microsoft Outlook integration** Import customer data from SAP Business One into their Microsoft Outlook contacts list. Activities and tasks entered into your calendar in SAP Business One can be synchronized with their schedule in Microsoft Outlook. |
| | **Customer service and support** Allow their customer service and support teams to administer customer warranties and service contracts, manage service calls, and track all customer-interaction activities. |
| | **Business-partner management** Manage the master data for your resellers and channel partners to track sales leads and opportunities including profiles, contact summaries, account balances, and sales pipeline analyses. |
| **Operations and Distribution** | **Sales and delivery** Generate price quotes, enter customer orders, set up deliveries, update stock levels, report on customers' current balances, and manage all billing and accounts receivable.. |
| | **Purchasing** Manage and maintain your vendor contracts and transactions including the issue of purchase orders, updates to stock quantities, calculations for the value of imported items, returns and credits, and payment processing. |
| | **Inventory management** Handle inventory levels, item management, price lists, special price agreements, transfers between warehouses, and stock transactions all via integration with other processes such as sales and purchasing. |
| | **Production planning** Manage their production material requirements through a wizard-based process that enables users to define a planning scenario in five easy steps and predict demand based on forecasts. |
| **Administration and Reporting** | **Human resources** Capture pertinent information about each employee so Soliton have only one system for maintaining and managing their employee records and data. |
| | **Automatic alerts** Define their own alerts and unique workflow processes by establishing approvals, procedures, and steps that are automatically initiated when a specific event occurs. |
| | **Dashboards and reports** Create intuitive reports and dashboards for every aspect of their business including customers and suppliers, sales, cash flow, bookkeeping, warehouse stock, financial statements, pricing, and customer activities. |
| | **Drag and relate** View important relationships between data and instantly gain a complete understanding of any business transaction by dragging the data they want more information on, positioning it on top of other data, then drilling down for more details. |
| | **Customization and integration**—Enable users to easily add fields, change forms, and personalize queries and reports. A standard software development kit (SDK) consisting of reusable business objects and user-interface-customization tools is available to customize and integrate SAP Business One to meet your specific industry and business needs. |
| **E-Commerce** | **E-Commerce**—Set up your own online store that is fully integrated with inventory and financials including online catalog, shopping cart, order processing and notification, customer configuration tools, and online customer services. |

Table 6.1.1 SAP Business Overview

**6.2 SUGGESTIONS TO START NEW BUSINESS VERTICALS IN SOLITON TECHNOLOGIES**

**Bidding Government Projects**

Soliton have strong R&D, they can bid government projects which related to EMS. We may deal with less volume, but initially if they start dealing it with lower level projects it have very high opportunity to boom the company's growth in future.

**Providing Rapid Repair**

Soliton can also offer unique rapid repair services to help increase overall yields, improve quality and lower customer costs. Since we have strong engineering department, we can set up unique

Pre-manufacturing and post-manufacturing services such as

- ODM design
- Outbound logistics

- An **Original Design Manufacturer** (**ODM**) is a company which designs and manufactures a product which is specified and eventually branded by another firm for sale.
- The movement of material associated with storing, transporting, and distributing goods to its customers.

## CONCLUSION

This Project seeks to understand the growth of EMS companies with their available resources. Meanwhile, in the EMS industry, penetration and positioning are keys during the early stages of EMS company's growth. The growth patterns of EMS companies show further evidence of a growth model driven by capability developments. This model contributes to the research into firm growth. EMS companies need to achieve an 'imitation to innovation' of process and supply-chain capabilities in order to compete.

As EMS companies possess more capabilities and resources, adaptation is required to optimize the whole business system and dynamically fit with the changing market for future growth. Soliton technologies doing all kind of business activities manually and facing various problems, so suggestion of system implementation would overcome those problems and helps them to attain next level in their business.

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