Enterprise Systems

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1 Introduction

Enterprise systems are the technological guts that keep companies running. These include accounting, human resources, payroll, inventory control, etc.

Many small businesses start out by managing certain parts of such functions manually (calling up a supplier, writing a check to supplier, etc.), but that becomes unsustainable once businesses grow beyond the capacity of an individual to carry out those functions.

Most businesses realize that their core competency is *not* building such enterprise systems, and simply purchase a solution from a vendor. Without naming brands, there are only a handful of vendors in this space.

2 What do companies need?

Everything boils down to what companies need in order to conduct their business. Every company needs some form of resource management software. Often called "enterprise resource planning" or ERP.

This is the software that handles everything in business that is not the core-business, such as (non-exhaustive list):

1. Finances

2. Employees

3. Inventory

4. Customers

2.1 Finances

Most businesses have a general ledger system that keeps track of accounts payable, receivable, etc.

Anything that has a financial aspect is often integrated into the general ledger. For example, the payroll system might be a separate component, but the aggregate amounts are often recorded in the general ledger.

Since most businesses are not banks, they need applications that link up the bank information with internal accounting software—when a customer wires money to the bank account, the corporate financial system must link that activity to a customer invoice, etc.

The tracking and reconciliation steps get a bit more involved when a company accepts a physical check and deposits it, and when a company writes a check and waits for money to be withdrawn from its account.

2.2 Employees

A company needs to maintain a profile for its employees. This often includes address, phone, email, photo, emergency contact information. This should be editable by employees.

In addition to profile information, corporations often maintain the organization structure—and where each employee fits in that structure (who is the immediate supervisor, etc.)

Human Resources systems include:

1. Payroll: cutting checks or direct-deposit of salaries.

2. Benefits: management of health insurance, and other benefits.

3. Time tracking, sick days, vacation management, etc.

4. Training, for compliance purposes and to grow skill.

5. Talent management: exposing open position requirements internally and externally.

6. Reviews and metrics

2.3 Inventory

Many businesses need to acquire resources in order to build products (or services). This building process often takes multiple steps. Each such step often requires input materials, and produces output materials. The final outputs are the finished products to be sold to customers.

Each of these steps deals with inventory, either before production or after. Inventory has cost, storage as well as labor and materials. It also takes time to order, receive, ship, move between steps.

Inventory systems track the inventory at each step, as well as streamline inventory levels without causing business disruption.

Supply chain management systems fall under this umbrella. Such systems deal with procurement of everything the company needs to make products or services.

2.4 Customers

Every business has customers—without customers there is no business. Customer relationship management systems integrate all customer interaction into a single system. This often includes maintaining customer profiles, such that customer-facing employees can easily lookup and update customer information, view past orders, create new orders, check on shipping, etc. All in the name of forming stronger bonds with customers.

3 Communication

Every company needs to have internal communication. That often takes the form of phone systems, video conference systems, emails, collaboration software, as well as intranets and portals.

4 Automation

Many businesses use software to automate production of goods or services. These systems may streamline operations, or control factory robots, etc.

5 Themes

Many systems mentioned above may have a batch or online component. For example, check to invoice matching may be performed nightly or as the checks arrive.

The above systems may be implemented separately (with perhaps nightly handshakes), or with a shared data store.

If different ERP systems are used, various components may need to be integrated to function together. This may include manual configuration or development to get non-compatible systems to talk to each other. Often it is easier to integrate systems by scripting a nightly batch extract & import, instead of an online message passing.

A lot of the ERP systems are currently moving to the cloud—the companies do not need to purchase or maintain hardware or in many cases, software. The company may purchase a license for N units of a particular component (e.g. an HR system for upto-N employees).