CHAPTER 2

THEORETICAL FOUNDATION

2.1. Documents

In general, a document is an object that holds a meaningful item of information for the user (**Craine 2000**). Documents are always involved in an enormous quantity in most companies' business processes. Thus, documents constitute the second venture for almost all companies after their main products or services as the first venture. However, most companies do not realize that they themselves are in the document business. Without mail sent and received by companies daily, most corporations would be stagnant. Without sheets of business forms of departmental functions, business processes would terminate right away. Without brochures, manuals, catalogs, invoices, identity cards, and the rest, there would be no business at all.

In addition to the second venture, documents are also the basis of the information medium. Web pages, e-mail and e-commerce all rely on documents as the catalyst that converts information into action. Whether traditional or electronic, documents stimulate people to act and employees to work. Thus they possess a strategic role in taking the information companies have gathered and communicating it in a way that obtains the desired response/reaction from the readers.

Moreover, documents are the trigger for business revenue and expense. Documents have huge scope and significance because they influence a variety of actions critical to a company's business processes. Companies communicate with

customers through documents. Documents drive revenue by stimulating customers to buy, borrow and pay. Customer satisfaction, brand recognition and perceived quality are fostered by documents that communicate clearly, contain accurate and timely information, and serve the needs of readers.

Under these circumstances, documents are always involved from the beginning to the end of internal business processes. They help run a business every day and connect work groups and link key business processes to the people who perform and manage those processes. Actions are taken accordingly by employees after they get the right information when they need it, with minimal time expended for searching for information, correcting errors, and destroying useless information. In other words, the efficiency of the daily workflow relies on actions influenced by documents.

In this way, documents can influence the way people think and feel. They inspire a feeling about the company that issues them, and influence what customers think about the quality of products and services, whether good or bad. The effectiveness of the ***desired reactions*** depends on the way documents take the collected information and present it to the readers.

As the basis of business revenue and expense, documents play a significant role in almost every business strategy. Consequently, documents should also be given attention in the same proportion in strategic planning as other important aspects of business such as marketing, finance, human resources and information technology. Under these circumstances, companies are more likely to have an advantage in the Information Age by leveraging information contained in documents,

communicating effectively and reducing costs. In this way, companies should no longer plan and implement strategies in isolation from the document. Instead, to gain the advantage, many firms are attempting to design and implement an explicit document strategy.

For that reason, a company should consider three major strategies as its effort to become a document-centric company, as follows:

- Corporate strategy
- Information technology strategy
- Document strategy

Companies must adopt a more inclusive view of documents by recognizing them as a medium to bring alignment and success to their whole agenda of business strategies and objectives since the strategies above are tightly interdependent and important in the overall success of any firm. Hence, the lack of this type of strategic alignment will give rise to problems that will affect the overall profitability of companies, i.e. increased costs, decreased profits and unsatisfied customers (**Turton, 1999 pp. 12 – 14**).

Documents should be recognized as a tactical liability when they are not effective in daily business processes. Both paper and digital documents cost money to produce and require labor to process. This can be seen from the following statistics:

- Thirty billion original documents are utilized each year in the United States alone (**Coopers & Lybrand, 1997**)
- The cost of documents to corporate America is calculated to reach as much as 15 percent of annual corporate revenue (**Pellow & Griffin, 1998 p.27**)

- Documents claim up to 60 percent of office worker's time and account for up to 45 percent of labor costs (**Gross, 1997**)
- 85 percent of documents are never retrieved, 50 percent are duplicates, and 60 percent are obsolete (**McKinley, 1997 p.14**)
- For every dollar spent by a company for a final document, ten dollars are spent to manage the process (**Pellow et al., 1998**)

From the statistics above, it is clear that document production is focused on producing pages faster and cheaper, or not at all. The main charter of any document strategy must be to cut operating costs, reduce labor and eliminate waste. The success of a document strategy will be measured using these factors as a guideline.

Documents are generally viewed as a problem or a liability, not an opportunity or an asset. But simply seeing documents in this way can cause the cost expended to limit opportunity for incremental improvements. Consequently, a document strategy should be designed with a balanced perspective, viewing documents as both a strategic asset and a tactical liability.

2.2. Document Management

In general, document management is defined as the automated control of (electronic) documents through their entire life cycle, from creation to archiving (**Cleveland 1997**). The electronic documents it manages can include any kind of digital object such as images, HTML files, graphics, drawings, spreadsheets, and word-processed documents. It allows companies to control the production, storage, management and distribution of electronic documents in order to yield greater

efficiencies in its ability to reuse information and to control the flow of documents. A document management closely relates to the workflow system.

Huge sums of money have been spent on software applications which support key functions such as accounting. Other millions have been spent on personal productivity tools such as computer based word-processing, spreadsheets and the like. Unfortunately, information overload has inhibited some decision-making activities in companies, so that the actual processes carried out by employees who tend to work in a procedural way have not benefited to any significant level. Only when the infrastructure was in place could e-mail start to assist employees in their work by enabling them to communicate and pass business information to one another to help in and speed up their everyday jobs. Once a networked infrastructure is in place, the workflow technology can be added at marginal cost to effectively revolutionize the effectiveness of business processes.

One significant part of effective business processes is managing electronic documents. Fully effective electronic document management requires consideration of a company's total information environment. Sophisticated technology has created a situation where documents are easily copied and transferred from one medium to another. No single medium now holds all the documents relating to the business processes. Proper consideration needs to be given to all sources in order to identify authoritative versions of documents. Besides proper consideration, all sources should be managed in a coordinated way (IESC 1995), in a manner appropriate to their environment, in order to preserve and provide access to business documents.

There are two kinds of documents sources which should be managed in construction companies in order to perform effective business processes. Paper as the traditional form of documents is still a widely used medium for the storage of information. Nevertheless, recently there is a widely held view that there has been a decline in the effectiveness of paper records management over the last decade due to changes in work practices and a lack of trained and qualified records management staff. Such changes happening in work practices in construction companies affect the shop drawings and the project budget estimation papers being reproduced. The mounds of papers in the archive folders often require the staff members to take long time to search for a particular document when it is needed.

Electronic documents involving word processing, spreadsheet and computer-aided design (CAD), and personal computers have been utilized in construction companies since the last decade. Unfortunately, the decline in control over paper documents has not been compensated for by a corresponding increase in control over the electronic documents above. Construction companies are in transition from the use of paper documents to dependency on electronic documents. If the electronic documents are not submitted to records management and do not comply with the archival requirements for record documents, companies will place themselves in a vulnerable position in the marketplace.

Good document management may incur additional expense in terms of software purchase and extra time required to provide the necessary document management information. However, it will also contribute benefits not offered by paper-based documents, i.e.:

- faster and more effective retrieval of information than is possible with paper systems
- greater accountability
- preservation of corporate memory
- special uses for electronic documents, such as template documents and precedent documents, for reuse with little modification

On the other hand, poor document management will incur real and ongoing costs, i.e.:

- time wasted searching for electronic documents stored with inadequate planning for future retrieval
- time wasted searching for electronic documents deleted due to inadequate document retention procedures
- time wasted due to use of an incorrect version of a document, with negative implications for accountability
- storage wasted on unnecessary duplication of documents
- loss of business due to inability to provide information, or to provide it in timely manner
- lack of common corporate view caused by information stored in electronic documents not being available throughout the companies
- loss of client confidence

2.3. Document Management Systems

Documents often contain a large amount of the knowledge held by construction companies. This knowledge takes the form of word processing documents, documentation of various types, drawings, memos, and spreadsheets. Often they are compound documents, containing a mix of text, images, and data. Documents are unstructured information. However, through indexing they can be preserved and accessed through structured techniques. By enabling the companies to capture, organize, and manage the knowledge mentioned above as a document archive and to make it available to the authorized employees, document management systems play an important role in knowledge management of the firms.

How important the role of document management systems in construction companies is can be illustrated in practical activities. For instance, an archive of a successful construction project probably contains much knowledge, if only of what a successful project construction includes. Similarly, an archive of construction product specifications represents a valuable source of knowledge about the quality of many construction products.

Rooney (1992) defines document management systems as "software packages designed to help individuals, workgroups and large enterprises manage their growing number of documents stored in electronic form." Document management is viewed as a way to assist companies in managing knowledge that is locked up in the companies' documents, currently hidden away in a morass of directories and subdirectories in scattered file servers across their networks. Document management