

# Need Of Document Digitization And Its Online Storage In Practice In Construction Projects As A Part Of Management

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## ABSTRACT:

This paper presents the need and practice of Digitalization of documents (category wise) produced in ongoing civil engineering construction projects and it must get stored at online storage (centralized) to efficiency, consistency, and quality. It will integrate all related records or files into a digitalized form, eliminating redundancies and shortening of communication chains, also improve and facilitate a better informational exchange. The maintaining and retaining of project documents and data is a critical and clumsy process depends over the management body at the construction site.

With Document Digitization, the online stored documents, we can use where they become necessary to produce and also within time. Reduce and stop practicing taking photocopies of original document often. Digitalized document management systems can provide easy access and secure storage for project documents and information. Hence this research paper summarize the need of document digitization and its online storage in practice, its benefits, what should be the methodology to adopt it, its barriers and the need of training to user with its importance.

Document Digitization practice must have to make compulsory and habitual to reduce use of paper and to save our eco & environment factor as saving paper equates to saving trees.

**Keywords - Document, Digitization, Management, Construction Project, Civil Engineering, Online storage, Environment.**

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## I. INTRODUCTION

Civil engineering projects often have a long duration and are dynamic in nature.

A project consists of multiple phases that have to be complete the construction within the scheduled time. The execution of different phases requires the involvement of different specialized parties. Information is not only transferred between various involved parties, but also from one phase to another. The construction industry involves diverse and complex information that flows between the various

participants, much of which is conveyed using documents (Rezgui et al. 1998). In common language, the word “document” generally means an information carrier (usually on paper) containing written or drawn information for a particular purpose (Bjork 2003), and a document usually can be easily-transferred, stored and handled as a unit (Lownertz 1998). Construction documents are significant to this industry, because they are the “things” that are actually shared by different project participants and are also gateways to the shared or non-shared project information sources (Zhu et al.

2003). Furthermore, they are “windows” to the whole process and can evolve as the process does (Zhu et al. 2001). In addition, regardless of whether they are paper-based documents or electronically generated, “documents are interfaces, used to access and navigate through collections of information” (Haimes 1994).

Documentation is of great importance as it is the main means to transfer information from party to party and from phase to phase.

In Civil engineering construction projects, A project manager should always give due importance to good documentation. Sometimes, documentation is not appreciated as a work of your project. Project success is defined by meeting project objectives within project constraints. But to assure the success, you need the support of good project documentation. Documentation – seems to be a herculean task for a project manager. Project managers are often engaged in delivering high-end complex projects. They are supposed to produce expected deliverables by encountering triple constraints in a project. Hence, the job of a project manager is always challenging with managing lots of activities. With this busy schedule, project manager seldom appreciates documentation part of project management. But, even then, a good project manager never strays from the documentation, while managing a project’s nitty-gritty. Reason being, project documentation is equally important for a good project manager as right document to the right user at the right time is the most important task in Civil engineering Construction projects.

The maintaining and retaining of project documents and data is very critical .The importance of maintaining and retaining project documents and data should not be overstated.

In order to have an effective and manageable document management system, it is important to anticipate what parties and documents will be involved. Parties may include owners/developers, architects, engineers, general contractors, subcontractors, suppliers, inspectors, lenders and others. Relevant documents may include contracts/agreements, plans and specifications,

drawings, schedules, insurance policies/programs, notices, progress/inspection reports, draw requests and pay applications, change orders, permitting, code compliance and occupancy documentation, as well as communications.

Digitization is the process of creating a digital image of any hard/physical document and then presenting it on a computer, local area network or the Internet.

One of the significant application of IT is the digitization of knowledge i.e., to convert the printed information in the digital form and made available for use with the help of computer networks.

If you manage the project documentation well, you’ll see a rewarding career as a project management professional.

## **II. LITERATURE REVIEW:**

[1] Dr. Shazia Khan stated in her study, to improve digitization along with the social economic and ecological benefits of digitization of knowledge and information, the process of digitization should be marked by the cost effectiveness to cut the cost that incurred in various knowledge practices related to the production, organization and communication of information that makes long-term economic growth.

[2] In paper titled "The needs for digitization" Miss Thiyam Satyabati Devi concluded that, to digitize a document is different than preserving it, the goal of preservation being to provide access to an original item. Digitization complements preservation by protecting the original and providing far superior access. The future holds great promise for preserving the documents in the digitized form.

[3] According to research of Mr. Changxin Cynthia Wang and Mr. Jim Plume, the efficient management of all the document and information in the life cycle of a construction project is a real challenge. A key, initial gap identified in the research is the need for a greater and well-documented understanding of the benefits of using the document management systems. The means or methods for overcoming the barriers to efficient

document management have not yet been fully addressed and there has been limited research done to investigate how training could enhance the document management skills and knowledge in the construction industry.

[4] *Omar Isa, Subah Ahmed Al Sowaidi, Osama Pervaiz Alam* conducted research and stated that, While observing current work environments where documents are not handled automatically there is a higher chance of errors occurring in documents and the placement on the work materials. Companies are held back, being unable to quickly and efficiently transfer to an online well-structured system. Digitalization further exemplifies commercial endeavors. It adds flexibility and effectiveness to the commercialization to a company. Digitization of hard document as a whole has many useful functionalities which ease the use of it with a friendly user interface that has proper guidelines the user can follow and use the system with training and practicing. Cloud storage made the access of large stored files easy and portable that can be used anywhere and anytime.

### III. METHODOLOGY

#### 1. Document Selection -

Select such document for Digitization which will be used by many individuals or it will be required at many places, many times. Examples - Drawing, Plans, Tender document, Clauses, Mix Design, etc. First we should identify the stages of document generation, time to time, then select or identify the needed document to get digitalized, make strict practice to scan them firstly with appropriate device before taking any use or before sending at any address.

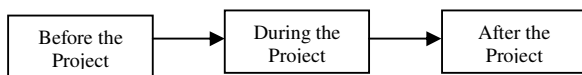


FIG 1:- DOCUMENT GENERATE STAGES

#### 2. Scanning Device -

Nowadays Mobile is a great device having great camera resolution and many high-rated scanner apps are available which scan and finish your document better and convert it into PDF format. As there are different devices available to document scan, so mobile scanner is a great device available easily at any time with an installed scanner app.

The process basically involves taking a physical object and capturing it using a mobile scanner or mobile digital camera and converting it to digital format that can be stored electronically and accessed via mobile or computer device.

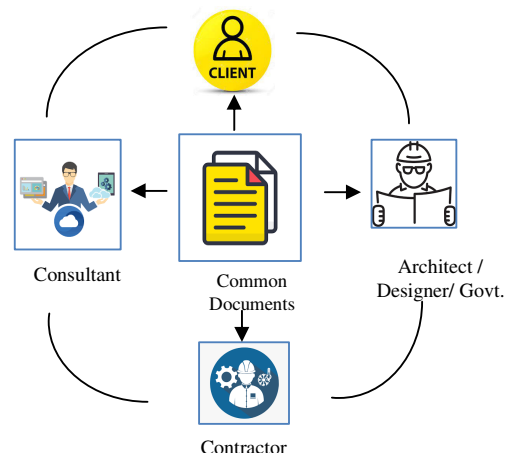


Fig 2 - DOCUMENT AND USER

#### 3. Storage -

This digitalized document must get stored at an online centralized storage system. Creating a digital image and converting it into an appropriate format and then preserving it on a computer, local area network or on the Internet. Anybody can better access it at ease of use as needed at any time and place.

*Example-An Email id can be generated for the purpose of Document storage only.*

#### 4. Mode of Access -

With User Id and password shared to appropriate user, so he can download and share the digitized document to the needy one. He might be the Engineer, Supervisor, Technical, Non-Technical

key person. So, it can get protected and avoid the misuse of important or general documents.

5. Procedure for Uploading and handling -

This practice of Digitization of document can be adopted regularly without fail if there is provision of proper training at every working places i.e. Office, site, store, at every places. There must be made this practice compulsory of making hard document to digitalized one and upload at online storage at decided location within time.

Digitalized Documents must have the proper ID and titling according to its category. So anybody can search and download it. Timely training and practicing of this method is essential to get improved and become habitual and regularised. There must be harmonized communication system in between various departments of the project to create and process the digitized document, so the titles will not be repeated or wrongly titled.

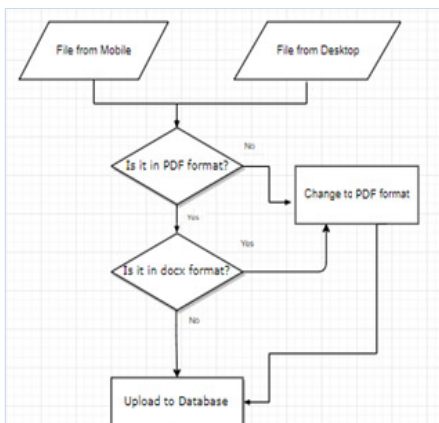


Figure 3: the flow chart to check document format before Upload

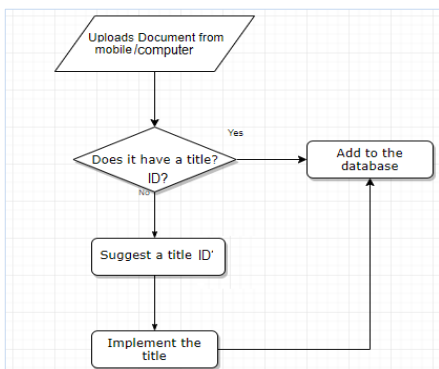


Figure 4: USER FLOW CHART DOCUMENT TITLE.

**IV. ECOLOGICAL IMPACTS OF DIGITIZATION**

The paper industry is the third greatest contributor to global warming emissions. One ream of paper can generate 36 kg of carbon, excluding transportation and shipping at a direct cost of Rs. 200 per ream. With the average worker consuming some 10,000 to 12,000 sheets of paper per year, a department of 20 employees is generating over 4028 kg of carbon for paper consumption alone.

Saving paper equates to saving trees and using less overall supplies, which can keep the position of an organization ahead of its competitors in terms of positive user sentiment.

Digitization can help organizations to take advantage of new technologies and allow staff to access records at any location. It turns a help in making ecological sustainable society as the person does not use vehicle to go here and there and it controls pollution and ultimately carbon emission again.

**V. BEHAVIOURAL BARRIERS AND TRAINING**

Behavioural factors create a key barrier to the efficient Digitization. According to Bjork (2003), one of the behavioural barriers is the fact that it is very difficult to get people to change their individual way of working, often due to forgone user freedom as well as the requirement for a great deal of discipline. Digitization requires mental fortitude.

These behavioral barriers can get break with proper training which must have to provide regularly to all the workers of all discipline .With responsible manners and sentiments valuing towards environment.

According to Peansupap and Walker (2005), training helps the users to understand how to best use and adopt IT applications, such as document digitization systems for management, leading to raised levels of ability and acceptance of the systems. It is also essential that such programs provide quality training that avoids disinterest and

boredom (Wilson 1997). Environment awareness and motivational program leads to break all barriers and lean to adopt this practice.

## VI. CONCLUSIONS

To conclude here, the Need of Document Digitization and has the most important effect over the construction projects. To adopt this practice and make it regularized and making habit to use digitalized documents while working becomes the call of the bright future. This paper includes the significance of document digitization, the evolution of paper- based documents to electronic documents, and hard-copy delivery, mail to electronic document transfer and management. Cloud storage made the access of large stored files easy and portable that can be used anywhere and anytime. Besides that, the barriers to effective document management are also identified, and how the scarcity of training, resistance to change, as well as poor team attitude can hurdle the effective working process and progress. Digitization of documents can help organizations to take advantage of new technologies and allow staff to access records at any location and it turns the great help in making ecological sustainable society.

Need of Document Digitization is for the particular documents we can use where they become necessary and within time. Reduce and stop practicing taking photocopies of original document often. Digitalized document management systems can provide easy access and secure storage for project documents and information. Digitization requires mental fortitude. Offices with many documents and papers lying around would benefit significantly through the practice of digitized document. The system has many features that makes it suitable for companies with many documents and less space in the office, the system keeps the employees in order and updated in terms of work as tasks can be stored in online cloud storage and can be accessed remotely without the need of a manager to be present, to inform the employees about a specific tasks as instructional guidelines are ready uploaded for the employees.

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