International Journal of Academic Pedagogical Research (IJAPR)
ISSN: 2643-9123
Vol. 7 Issue 3, March - 2023, Pages: 84-91

Online Water Transport Registration System a Case Study of Kasenyi Fish Landing Site

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Abstract: *The development of information and communication technology (ICT) has made it easier for people to carry out tasks in a variety of fields, including education, business and industry, agriculture, social services, and technology, among others. In contrast to paper-based file systems, high speed internet connectivity today has made data storage and retrieval simpler. Information can now be accessed quickly and in real time. A platform that enables the registration of water vessels and everything related to water transport, such as personnel, certificates in hand, and safety considerations in everyday life, is known as an online water transport registration system. The Transport License Board (TLB), a division of the Ministry of Transport and Works, wants to maintain track of the information about watercraft and their owners with the use of this system. The system's basic features, such as processing records and sending alerts when something happens to the vessel in relation to other records provided, make it user-friendly in general.*

Keywords: online water transport and registration system

BACKGROUND OF THE STUDY

Transport refers to the movement of people, animals, and things between two locations. It involves numerous types, including pipelines for the railroad, air, and water.

A watercraft, such as a barge, boat, ship, or sail boat, is transported through a body of water, such as a sea, ocean, lake, canal, or river. The need for buoyancy binds every watercraft together and makes the hull a major feature of their design, particularly in terms of appearance. Even though it is slow, contemporary marine transportation is incredibly effective at moving enormous loads of cargo.

Early Egyptians were the first to use seagoing vessels to help them move from one place to another while using wind-powered boats to either move and conquer new areas or transport their gods from one place to another in search of adventure or new territories to rule. Water transportation dates back to 1500 BC.

The Romans, Greeks, Cretans, and Arabs came after them. Throughout their extensive slave trade, the Arabs also utilized boats known as dhors to travel to the East African coast.

Later in 1948, the East African Railways was established, and they operated passenger steamers and ferry services on lakes such Lake Victoria, Lake Albert, Lake Kyoga, as well as navigable stretches of the River Nile. This led to the emergence of water transport in Uganda.

Massive floods struck the Awoja region of Uganda in 1961, which includes districts like Soroti, Kumi, et cetera. These floods had a devastating effect on the water transport industry and contributed to its demise because there were no transport operations taking place on Lake Victoria.

However, the water transportation never fully recovered from the disaster in 1961, and in the absence of additional investment, it has slowly declined. Almost 70 landing sites in Uganda where formal or informal water transport services had been provided were discovered by the inland water transport study (IWTS), which was conducted in 1988.

Due to this incident, all activities were halted and the remaining vessels' insurance was cancelled.

PROBLEM STATEMENT

The office was still utilizing a paper-based manual system that was prone to error and was insecure, allowing records to be easily lost, destroyed, and accessed by unauthorized individuals, which would result in the loss of customer data and increasing document

forgery within the company. However, this paper-based system was extremely inefficient; updating records and producing periodic reports would take hours or even days, costing the company a lot of taxes. and be aware of the organization's success.

Therefore, the researcher came up with a computerized Online water transport registration system which would give a proper count of the number of water vessels that are sailing on Lake Victoria and improve effectiveness of water transport in Uganda and also save time in a way of avoiding long queues of registration at the office.

SPECIFIC OBJECTIVES

1. To analyse the existing management system used by Kasenyi fish landing site
2. To identify requirements for an online water transport registration system for Kasenyi Fish landing site.
3. To design the system that can make registration of boats easy and time saving.

Research questions

1. What are the management systems used by Kasenyi fish landing site?
2. What are the requirements for an online water transport registration system for Kasenyi landing site?
3. What is the necessary system design required to make registration of boats at Kasenyi fish landing site?

RESEARCH METHODOOGY

RESEARCH DESIGN

The study employed primary data as well as secondary data. Secondary data was collected from different published sources such as books, journals, magazines and online sources. Then primary data focused on interviews and questionnaires.

STUDY POPULATION

The study focused on 30 respondents, these included the working administrators and staff of Kasenyi fish landing site.

DATA COLLECTION METHODS

The researcher used various ways to collect required information for the new system like Observation, Interview, and document review. These methods were applied in the collection of the data. The selection of tools was guided by time, objectives and nature of data to be collected.

OBSERVATION

This method was useful especially where the required information was not easy to obtain due to restrictions imposed on the obtaining of such information that proved to be relevant to this research. Observation involved visiting the offices at Kasenyi Fish landing site where registration process is done, the researcher witnessed various documents on the shelf which included the folder of each ship/vessel as well computer is used to keep some of the information but in document.

INTERVIEWS

This involved physical contact with direct questions to the people being interviewed. It proved to be useful in obtaining first-hand information on the topic the researcher investigated and therefore identifying requirements and gathering ideas and opinions. The interviews were mainly structured type with specific questions asked this interview mainly was conducted with vessel registrar, a few staff members and a few fishermen at Kasenyi.

SYSTEM ANALYSIS AND DESIGN

After data collection about the previous traditional system, the researcher used the following tools to design and analyse the new system.
In designing, the process involved defining the architecture, components, modules, interfaces and data for the system

- **Conceptual Design**
- Drawings are the main emphasis of the conceptual design process, which is the first stage of a design. A conceptual design entailed the development of an idea, examination of its motivations, and manifestation of the notion as a plan.

- • Logical design: This comprised data flow diagrams and entity relationship diagrams.
- • Physical design: This represented the system's real input and output procedures.
- • System Implementation: Graphical user interfaces (GUI), which the users interacted with while logically engaging with the server, were created using a scripting language (PHP in particular) integrated in HTML. MySQL database management system was used to store, manipulate, retrieve data, and generate reports like summaries on boats being registered. Xampp server (64bit) which processes user's requests and sends information through the web browser

SYSTEMATIC ANALYSIS

This is a process by which an individual studies a system such that it can be analyzed, modeled, and a logical alternative can be chosen.

WEAKNESS OF THE CURRENT SYSTEM

The current registration system is manual i.e. paper based and due the research that was carried out, the researcher found the following weakness;

The system had duplication of records (registration paper documents) due to poor coordination between the people involved in the process.
The system was very tiresome, and boring in writings, since it was manual and involved human labor and had heavy work load
It was time consuming because it required storage of records on paper which needs compiling, stapling and binding.

The system was prone to loss of data since it required storage of records on paper which could go missing any time because of misplacements or disasters like fire outbreaks.

STRENGTH OF THE CURRENT SYSTEM

Although the manual system had weaknesses, after gathering, studying and analyzing information about the system, the following were established as its strength:

The manual system was cheap since it did not require hardware and software requirements which are expensive to buy
The current system's data was not prone to malware such as viruses, worms and Trojan horse.
The manual system was associated with the availability of resources since papers were readily available compared to computers and its peripherals which need clients to apply online.

PROPOSED SYSTEM

Because of the difficulties involved in the current system, an online water transport registration system was developed to address the gaps and vulnerabilities like time conservation, durability of data storage, online registration of details of vessels and owners. After being granted full access to the system, guidelines are shown to the system users on which criteria to follow when performing different tasks..

FEASIBILITY STUDY

The feasibility study is an evaluation and analysis of the potential of a proposed system which is based on extensive investigation and research to support the process of decision making.

Feasibility studies aim to objectively and rationally uncover the strengths and weaknesses of an existing business or proposed venture, opportunities and threats present in the environment, the resources required to carry through, and ultimately the prospects for success. In its simplest terms, the two criteria to judge feasibility are cost required and value to be attained.

REQUIREMENT SPECIFICATIONS

Software requirements specification (SRS) is a description of a software system to be developed, laying out functional and non-functional requirements. This include a set of use cases that describe interactions the users will have with the software. These requirements were divided into the user requirements and the system requirements

USER REQUIREMENTS

The user requirements were sub-divided into Functional and Non-functional requirements as explained as bellow;

FUNCTIONAL REQUIREMENTS

These are statements of service that describe the functionality of the system. These included:

- Capturing and storing information about owners of vessels, name or type of the vessel capacity of the vessel, and the harbor or pier it docks from.
- Editing, updating and deleting information that already exists in the system
- Displaying and searching for records needed necessarily by a specific user

NON FUNCTIONAL REQUIREMENTS

These describe the limitations of the system provided and they do not affect the system functionality. These included the following;

- For any user to use the system he or she should have an account created in the system
- User must login in order to access the system.
- Limiting removal and update of records by unauthorized users of the system.
- Showing Notification messages when operation was successful or when it fails on the system. Identifying User rights and authentication through the use of passwords and User Names.

SYSTEM REQUIREMENTS

SOFTWARE REQUIREMENTS

- Operating system like windows 7 windows 8 windows 10 that supports
- Dreamweaver, Xampp server, adobe photo shop of any version, notepad++
- Web browser such as Mozilla Firefox, Google Chrome etc.
- And databases like; Apache 2.4.9 as web server , MYSQL Version 5.16 or higher database

HARDWARE REQUIREMENTS

- Computer with megahertz or higher processor,
- 512 megabytes (MB) of RAM or higher recommend,
- 20 Gigabytes (GB) of available hard disk space,
- Uninterrupted Power Supply (UPS) in order to minimize risk of failure in case of power failure and to provide back up.

DATA FLOW DIAGRAM

A context Data Flow Diagram (DFD) graphically represents the data "flow" of an Online Water Transport Registration System. DFD shows the interaction between the system and entities. Data flow diagrams are commonly used during problem analysis and it views a system as function that transforms the given input into required output. Movement of data through the different transformations or processes in the system is shown in Context Data Flow Diagram.

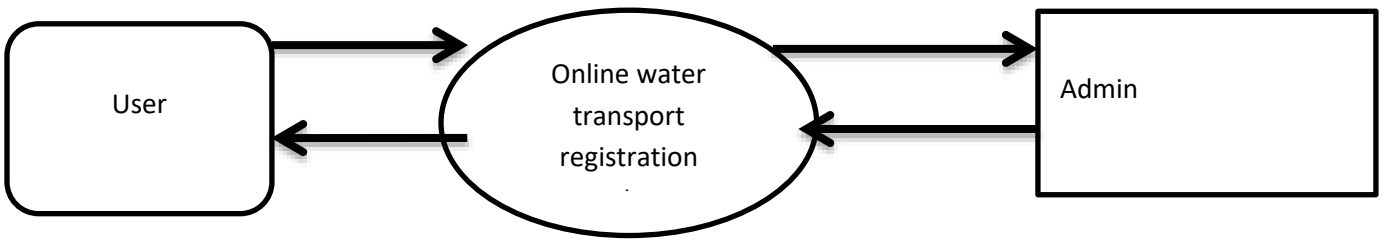

Figure1: Level zero data flow diagram of an online water transport registration system

Entity

This is a source of data or a destination for data

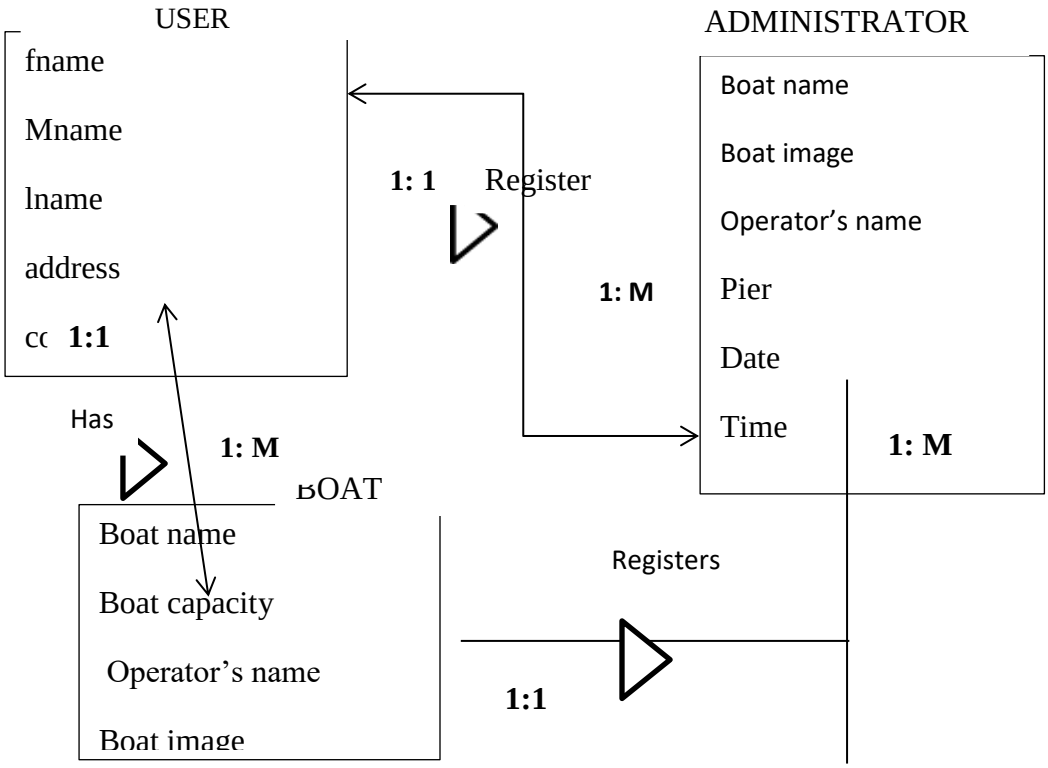

Figure3: Entity Relationship diagram for online water transport registration system

Table: 1 Administrator

Entity	Attribute	Data Type
Administrator	Username	Varchar
	Password	Varchar

Table: 2 Users

Entity	Attribute	Data Type
User	Name	Vachar
	Address	Varchar

	Contact	Varchar
	Username	Varchar

Table: 3 Boat Registration

Entity	**Attribute**	**Data Type**
Boat	Boat name	Varchar
	Operator name	Varchar
	Boat capacity	Int
	Boat picture	Varchar
	Pier	Varchar
	Date Time	Int Int

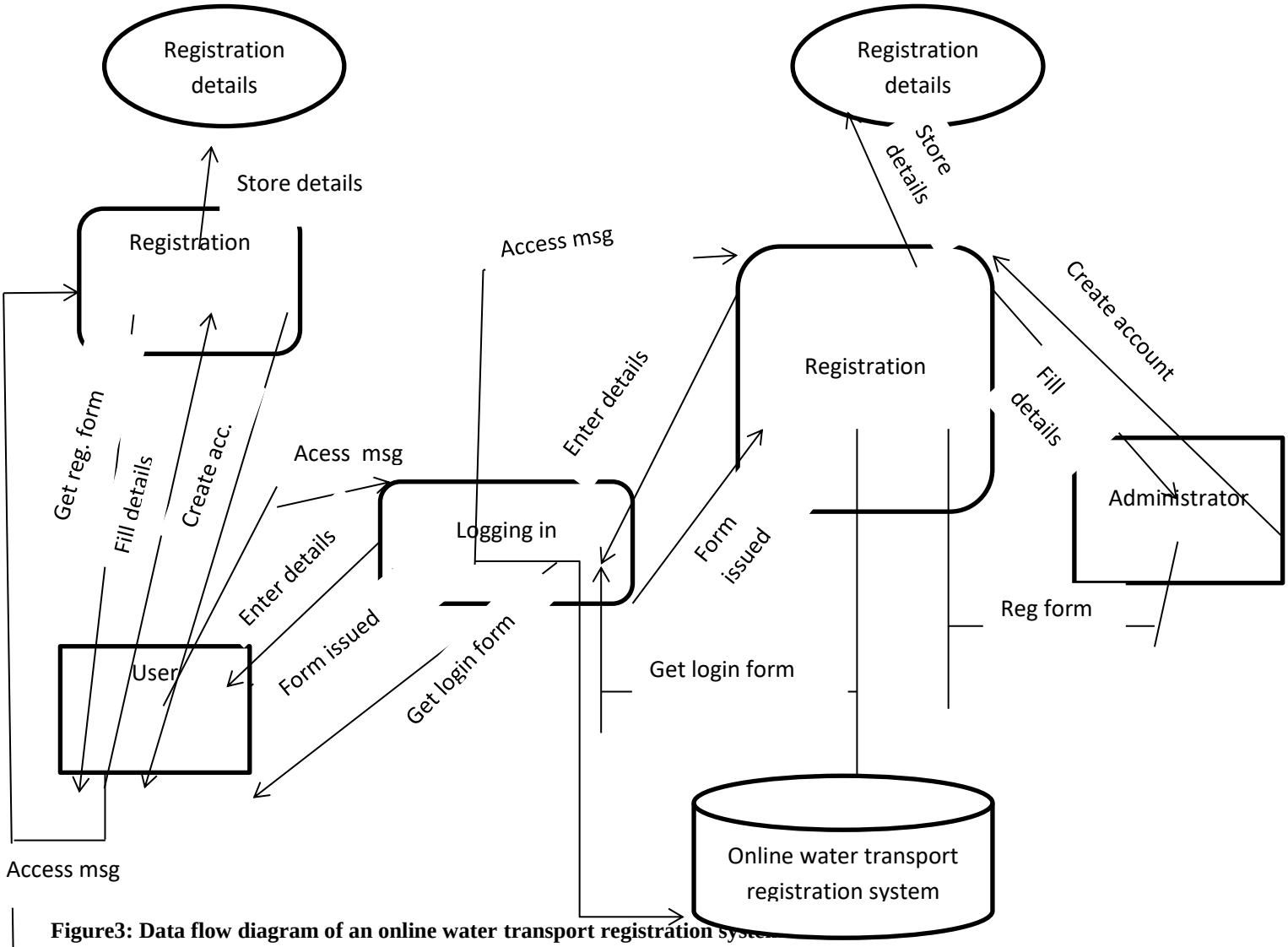

Figure3: Data flow diagram of an online water transport registration system

CONCLUSION

In conclusion the system met the intended the objectives that were set in the proposal

Improved data confidentiality as there is reduced insecurity of users' information by the use passwords.

Update and generation of reports is easier since the system is now automated and fast.\

Data storage is good since all the data is stored in a database and there are lesser risks of losing it.

RECOMMENDATIONS

The researcher recommends that in the future if other researchers have interest in an online water transport registration system development, this project should be a starting point.

The Researcher recommends to train the users of the system on how to use it and privately keep authentication details that is; the user name and password well to avoid unauthorized access.
In future, additional functionality should be made on the system to cater for improvements in using the online water transport registration system

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