Chapter 1

INTRODUCTION

Background of the Study

A point of sale inventory management system allows a business owner to have more than one business location and adequately keep track of inventory at each without being present. No more worries about employee theft or pricing inconsistency between one location and another. The boss can be away and not worry about employee theft. Employee efficiency can be maintained. Point of sale systems take care of those problems that result when management isn't present.

Ravi (2010) pointed out that manual sales systems are time consuming, it is very tedious, lots of paper work, slow data processing, it is not user-friendly environment and it is difficult to found records due file management system.

In an early age when the most of the company are still using the manual system in the sales and inventory most of the company encountered so many problems and this is because of the process of the existing system is too slow and too long. According to Kaye Morris (2010), manual inventory management system can help sales and production managers control costs by identifying lost sales due to inventory shortages; inventory overrides on products that are not selling; losses due to employee's theft or damage. Implementing an inventory management system can take a large amount of time depending on the size and diversity of inventory.

ERRORS! Beyond it being time consuming, inventory counts and incorrect sales figures can be detrimental to your business (Juarez, 2010).

To overcome the deficiencies of manual system, many companies have automated their inventory system. This system is used to track or monitor the merchandise and goods of a retail store. With an automated Sales and Inventory System, business rely on computers to do tasks that were once performed manually, such as inventory check and product sales. Automated Sales and Inventory System these process can be handled in a timely manner and also be more accurate and reliable than ever before (Hartman, n.d.). It provides greater accuracy and more flexibility in the types of information and reports that can be generated by the system.

Point-of-sale systems have replaced traditional cash registers, largely for functionality reasons. POS systems, as they are sometimes called, are relatively easy to use and help provide valuable data for important decision makers. In order to keep up with the record-keeping needs of small and mid-sized businesses, a good point-of-sale system is a must. Web-based point-of-sale systems are preferred over software based pos systems because they are easily upgradeable, and feature access from multiple computers (Carter, 2012).

The best thing about having a computerized POS System in your retail business is: as new stocks arrives and as it is sold, it keeps the stock levels current and updated, hence making it is easier to identify which items are selling and which items are not. A POS System is also good in checking for any obsolete or out of date stock that needs to be disposed. If you are still counting your inventory manually on the shelves or in the warehouse, you should think twice about your method, for there are many advantages in using a POS System. One advantage of a POS System is its ability to help your business

achieve detailed real-time stock level information. In addition, a POS System can also give you information such as weather forecasts, public holidays and major sporting events, which can be of great help in determining the stock level of seasonal products. You can now efficiently and effectively handle your stock management accurately (Ganderton, 2010).

One of the biggest, and probably one of the most important, advantages of an automated sales and inventory system is that it helps businesses focus on their biggest goal, to improve the customers experience at the store (Mueller, 2011). With this system, companies can have a better understanding of customer demand through the analysis of their sales and inventory.

The retail business owners can do online selling, electronic payment processing, integrated accounting, marketing, video surveillance and much more in an easy way with no stress. The inventory system enables to get a complete control over the business and it helps to perform each and every task in a quick manner and this system makes your business to obtain a competitive edge over your competitors. The ultimate aim of this system is to increase your profit and sales. The complete inventory system will be very useful in making your business perform well in the market and you can make accurate report with the help of this system (Aspespos, 2011).

Business professionals consider sales and inventory system as the key to better management of business. It is the heart of most businesses and is design to aid in good and manageable operation of transaction processing activities. Most entrepreneurs this day find that computerized sales and inventory give a far wider range of information with

far less effort. According to LoZiSung (2005). “Sales and Inventory System software are numerous in this day and age, which is a testament to its importance in everyday business. Operating a product-based sales model without sales and inventory system is a business suicide, and most small businesses start with very simple sales and inventory system.

Diongco Glaasware Store is the subject of this project. The business is located at Manaoag, Pangasinan. The business was started in the year 1980 and the manager today is Mrs. Loreta S. Diongco. The store has a huge number of customers but the store has also increase problems due to the manual system, reports and difficulties in sorting the information of the service. This study is concerned in converting the manual sale of the company into a computerize sale system to ease out problems. Thus by enhancing the processes to be more efficient, fast, and accurate and also through the aid of computer, the store may certainly increase its productivity and can compete with other store.

The developers choose to create a system for Diongco Glassware Store to help the company to be on top and align with the fast growing stores in the province, to promote quality of service, and avoid waste of time.

Conceptual Framework

The developers will be using Input-Process-Output (IPO) to present paradigm of the study that illustrates the relationship between the input and output. The paradigm of the study exhibits the skeletal framework of the research study. Figure 1 shows the paradigm of the study to be conducted, it illustrates the problem needed to be resolved for

the study input which is the system requirements for the sales environment and inventory field.

Input represents objectives of the study. The existing sales process and the problems encountered by the company will be included as the input. Features of the system will also include as input of the study, as well as the acceptability of the system.

The waterfall model will be the basis for the development of the sales and inventory system. This includes the following stages: Requirement Analysis, System Design, System Development, System Testing and System Implementation.

The output of the study is the Sales System for Diongco Glassware Store.

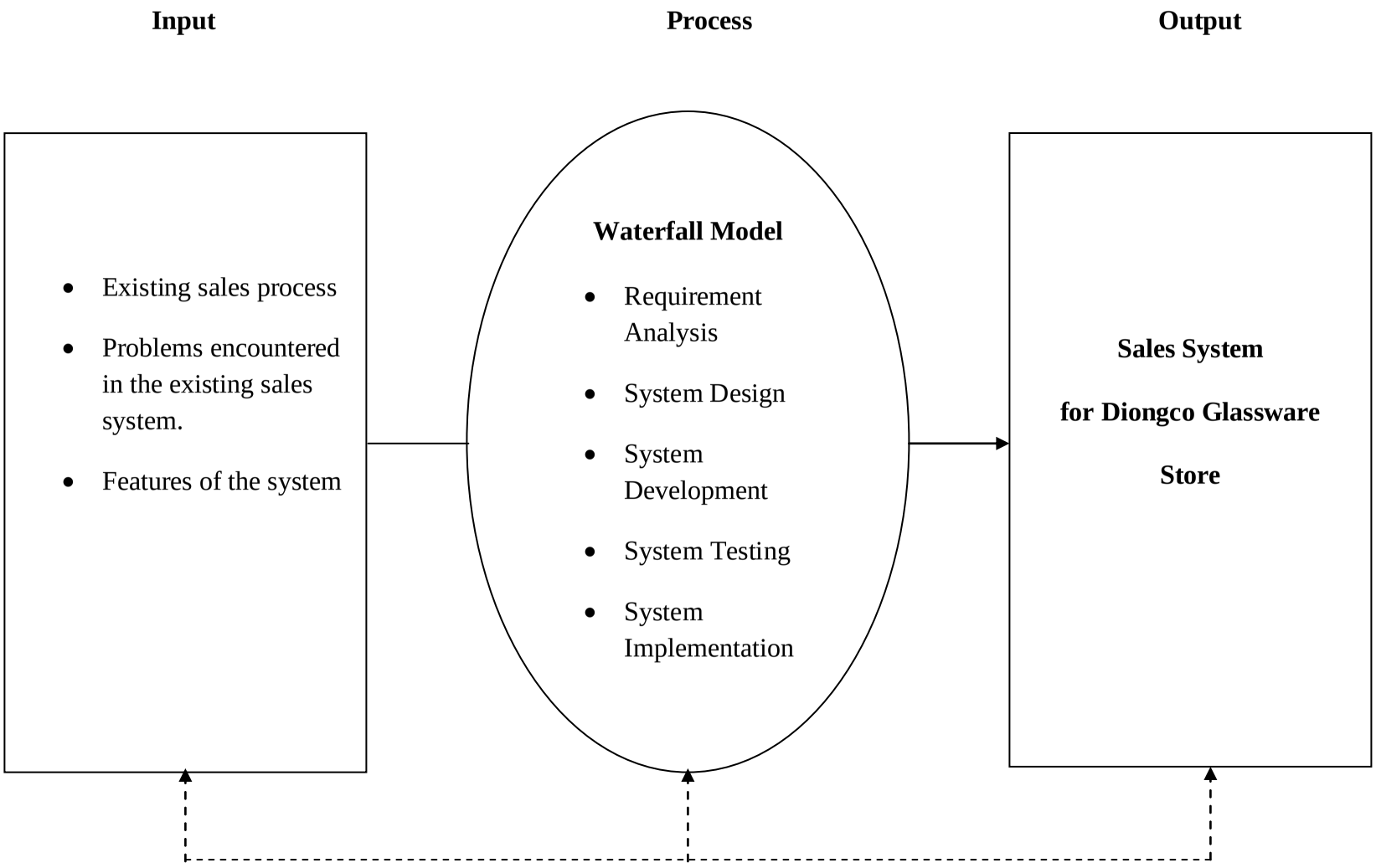

Figure 1 Research Paradigm

Statement of the Objectives

This research aims to design and develop sales system for Diongco Glassware Store. Specifically, it aims to answer the following objectives:

1. To identify the existing sales process.
2. To identify the problems encountered in the existing sales system.
3. To describe the features of the system
4. To test the acceptability of the system.

Significance of the Study

Diongco Glassware Store Sales System is intended to provide an effective tool in sales. This will be beneficial to the following entities:

Diongco Glassware Store. In business like glassware time is the essence so with the help of computerize sales system the business can use their time in a more productive way. They can also lessen their expenses specifically in salaries expense by hiring only a limited number of people. They can respond quickly for the query of a customer and they will not perform any calculation anymore because the system will do it for them and allow them to get accurate and timely information.

Manager. After the implementation of the system, the manager could easily view the sales of the product every day.

Cashier. This simplifies up their work in managing the stocks and sales. The cashier will ease his work because the system will automatically generate reports.

Customers. Customers will not wait for long just to purchase the products. They will patronize the company because of fast and accurate service of the company.

Supplier. This simplifies their work in locating purchased order. Through its updated inventory, the supplier will be able to determine the product needed to be delivered.

Developers. This research helps the enhancement of the researcher's ability, knowledge and skills in software development.

Future Developers. This research will serve as reference for the future researcher that chose sales and inventory system as their title.

Scope and Limitations

The study will focus on the development of Sales System for Diongco Glassware store.

The system can do product entry that comes from the specific supplier and choose the product delivered and its quantity. The system will be able to provide report generation which includes the daily, weekly, monthly and annual report of sales. The system will also have the capability to compute the customer bill, able to print receipt, can sell either in wholesale or retail, will provide discounts and can categorize product.

Advance search mechanism that includes product picture and providing barcode reader technology is included as one of the features of the system.

Transactions through credit cards and checks are beyond the scope of the system. Advertisement such as special offers and installment plan is not included in the system. The systems also do not offer reservations and it has no online features.

Definition of terms

To have a better understanding in the terms used in this context. The following terminologies are defined:

Acceptability Test. It is a term used in software development methodologies, referring to the functional testing of the software development team during the implementation phase.

Payables. It is a balance sheet item which equals the sum of all money owed by a company and due within one year, also called current liabilities or current debt.

Purchased Order. It is a written authorization for a supplier to ship products at a specified price, which becomes a legally binding contract once the supplier accepts it.

Receivables. It is the amounts owed to the corporation, whether or not they are currently due.

Re-Order level. This level happens if the stocks of Diongco Glassware Store reach the point of time when there is a need to re-order stocks.

Sales System. It is a set of principles, processes, strategies and tools that are put into place to bring the company results day-in and day-out.

Chapter 2

REVIEW OF LITERATURE

The existing process of Sales System

In the past, sales and inventory systems were mutually exclusive systems, with one used to sell merchandise and the other used to track it; modern point-of-sale systems incorporate computerized access to the inventory control system, allowing for real-time updating. An inventory and sales system working in unison effectively tracks product from the moment it enters the store to the moment it leaves, barring losses due to shrinkage (Mueller, 2011).

Originally, in the era before computers, sales were tracked with counter ledgers or, later on, mechanically issued receipts from cash registers. Inventories had their own ledger book, meaning that the two systems were entirely separate out of necessity. With the advent of modern computer technology, it has become possible to combine the two systems into one digital process (Mueller, 2011).

Operational point of sale processes include physical counts of sales, management-authorized purchase orders for new point of sale inventory or restricting employee access to prevent theft, fraud or abuse. Controlling the point of sale can help companies lower operating costs and improve overall efficiency. (Vitez, 2000)

Sales management is an important business function since sales usually represents the second largest expenditure in a company outside of payroll. Business owners and managers typically create an sales control system to help them with inventory management. A control system is the physical and written policies or procedures

employees must follow when completing inventory tasks. In today's business environment, most point of sale control systems involve the use of computers and software for electronically transferring business information. (Jane, 2011)

The interconnected steps from raw materials supplier through production to product delivery must operate efficiently for the supply chain to achieve its primary objective: meeting the expectations of the customer. ("Kauffmann, Paul J., et al, 2002).

Problems encountered in the existing sales system.

Many small manufacturers, wholesalers, and retailers with relatively few items in inventory use manual inventory control system. They use card records, inventory tags and accounting data to capture the information necessary to establish economic oreder quantities, order points, and other parameters for effective inventory control. However, as the number of item, supplies, and general importance of inventory increases. ("Small Business Management,"n.d.).

This means that the seller may have run out of product due to an inaccurate forecast. Or the supplier may have shipped an incorrect package size. Products in inventory may be unfit for sale because of damage or an expired shelf life. Finally, a seller may not have the capability to accurately track inventory in their stores or distribution centers. (Dolley, Frank, 2005).

As with anything paper based, it's so easy for things to get damaged by Coffee stains etc, or paper being lost due to fire or accidents or just generally lost because there is so much, using a computer based system is a lot more effective, you can use tools and

programmes that will easily fix things for you store and back up on external drives ensuring that you never lose any of the precious data you will require (Froggerp, 2010).

A manual inventory system is updated, maintained and controlled without using a technical system. This means the business updates the inventory by physically counting the inventory items on a frequent basis. Manual inventory systems are time consuming, as the business owner must keep track of inventory sales on a daily basis, while updating the system manually at the end of the day (Raley, 2012).

An inventory tracking system is often a technological system that helps a business owner control the items in an inventory. The tracking system essentially tracks all of the items that leave the inventory, whether the purpose is for constructing products or for direct sales. An inventory tracking system can also include other aspects of inventory control measures, such as technological locks, employee entry cards to the inventory and daily inventory reports (Jane, 2012).

Features of Sales and Inventory System

Sales and Inventory systems are designed to allow a company to keep track of the inventory it currently has and the rate at which inventory is consumed. A good inventory control system will help managers predict how much of a particular product will be required in the future and where, allowing them to plan ahead for the item's purchase and delivery (Wolfe, n.d).

The Sales and Inventory System of the vital to any institution, agency, or department. The proper safekeeping, processing and disposal of records play important roles in the efficient, effective and smooth operation that eventually would lead to the

success attainment of the goal and objectives of institution, agency and department concerned. Based on her recommendation there should be a central record management office that will hold data of the agency to serve as locator of the record and to control the disposal of each record. This can be possible through the use of computerized system. Computer with the appropriate software package is capable of handling records efficiently and effectively. And locating records that are computerized is faster than finding them in the filling cabinet. (Magat, 2007).

Sales and Inventory Management Systems must monitor inventory levels across all locations, internal and external. One of the chief components of a good inventory management system is its ability to monitor inventory levels. Every transaction that moves inventory from one location to another, either internally or externally, affects the level of inventory in one or more locations (Hamlett, n.d.).

In searching for an effective method for planning and optimising an inventory control system, the concepts of system dynamics is extremely useful. Digital computer simulation has confirmed some optimum solutions in inventory control system design. The authors describe two methods of setting the production control law: the coefficient plane model matching technique, and the Nichols-Ziegler parameter setting rule. The paper concludes by assessing system performance via a quadratic cost index function. An optimum coefficient plane region for system synthesis is thereby derived, and agrees well with similar models determined for hardware serve systems. (Elsevier, 2007)

Heizer & Render (2001) pointed out; that record accuracy is one of the important factors to be considered in sales and inventory management. Good inventory policies are

useless if management does not know what inventory is on hand. It allows the management to move away from being sure some of everything is in inventory to focusing on only to those items that are needed. The organization can determine accurately how many supplies left, and they will be ordered from the suppliers, they will also have a good decision making base one the reports on hand.

Acceptability of the system

According to Buzzle.com (2011), acceptance testing (also known as user acceptance testing) is a type of testing carried out in order to verify if the product is developed as per the standards and specified criteria and meets all the requirements specified by customer. This type of testing is generally carried out by a user/customer where the product is developed externally by another party.

Acceptance testing in software engineering generally involves execution of number test cases which constitute to a particular functionality based on the requirements specified by the user. During acceptance testing, the system has to pass through or operate in a computing environment that imitates the actual operating environment existing with user. The user may choose to perform the testing in an iterative manner or in the form of a set of varying parameters. The outcome of the acceptance testing can be termed as success or failure based on the critical operating conditions the system passes through successfully/unsuccessfully and the user's final evaluation of the system (Software Testing-Acceptance Testing, n.d.).

Acceptance testing is done in order to demonstrate the ability of system/product to perform as per the expectations of the user and induce confidence in the newly developed

system/product. A sign-off on contract stating the system as satisfactory is possible only after successful acceptance testing (User Acceptance Testing, 2011).

In testing, if use is to be made of some piece of information, then the information should be stable, consistent, and dependable … if decisions about individuals are to be made on the basis of test data, then it is desirable that the test results be reliable and tests exhibit a reliability coefficient (Bazemore, VanDyk, & Kramer, 2006, p.6)

Chapter 3

METHODOLOGY

Research Design

The study employed descriptive-development research. The descriptive developmental research describes data and characteristics about the populations phenomenon being studied, descriptive research answers the questions that who, what where, when, "why" and how.

One such process that the developers will be use in Software Development is the "Waterfall Model". Waterfall model will be use in the development of the Sales System for Diongco Glassware Store. The selected methodology incorporates systematic development techniques to the project. Waterfall model is discipline approach; it requires each stage of the software development to be documented. Besides that, the correctness of the product is checked on each stage of the product building. This ensures only the correct product that fulfills the users requirements are build during the whole development process.

Waterfall model is a sequential model where the development process goes through a number of phases in a certain order. These phases are requirements phase, system phase, coding, testing and implementation phase.

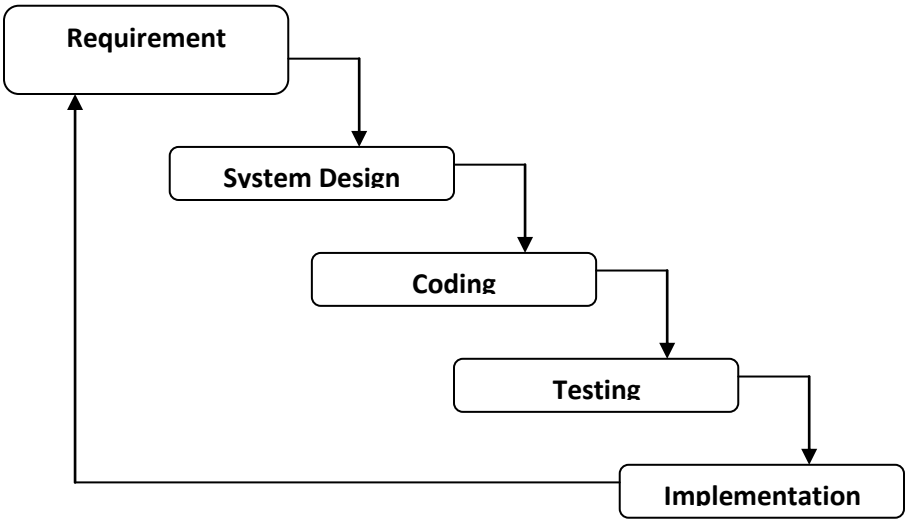

Figure 3.1 Waterfall Model

Requirements Phase. Requirements phase involves gathering a considerable amount of information. It is very important to understand the customer requirements and expectations so that the end product meets his specifications.

The developers obtain information from the interview conducted with Mrs. Loreta Diongco, the manager of the store. With this information that was elicited, the developers studied carefully the existing process of the company.

System Design. This phase focused on the data requirements, the software construction and the interface of the system.

The developers will follow the requirements specified by the company and made use of the different tools such as database schema, entity-relationship diagram (ERD), and data flow diagram in the developing the design of the system.

System Development. This phase involves converting design specification into executable programs.

After approving the design of the proposed system, the developers will create the source code for the system wherein researchers will use Visual Basic 6.0 as the front-end and MYSQL as the back-end of the development of the system.

System Testing. This phase requires organizations to complete various tests to ensure the accuracy of the programmed code, the inclusion of expected functionality and interoperability of application. Erroneous codes are rewritten and tested again until desired output is achieved.

At this phase, the developers will conduct system testing method such as user acceptance test or acceptability test to ensure all the features of the system is functioning as expected as well as the reliability of the system.

System Implementation. The implementation phase involves installing the approved application into the company. Primary tasks include announcing the implementation schedule, training end-users who will use the system and installing the product.

At this phase, the developers will conduct training with the end users. After which researchers will deploy and install the system in the company.

Sources of data

The primary sources of data in the design and development of the system are the information derived from the structured interview with Mrs. Loreta Diongco, manager. Through the conducted interview the researchers were able to identify the existing inventory processes of Diongco Glassware Store.

Browsing the internet, printed materials such as books and thesis, and documents used by the company served as the secondary sources of data.

Instrumentation and Data Collection

The developers will use the following data gathering procedures in order to gather related information in the development of Sales System for Diongco Glassware Store.

Interview Guide. This is fact-finding techniques that are normally done face-to-face but can also through phone calls and e-mails. Undocumented information is collected through a series of interviews with the company. The developers asked the manager regarding the important requirements and processes involved in inventory system of the company. The collected information's were analyzed in developing the system.

Library Research. This method in which the researchers gather the necessary information from the different printed materials which involves consulting books and articles in the library that helps the developers in finding similar studies and thesis that will serves as a reference in the development of the system.

Internet Research. The developers used the resources from the internet in gathering relevant information. This will serves as a basis in the development of the system.

Observation. The observation method involves human or mechanical observation of what people actually do or what events take place during a buying consumption situation. Information is collected by observing process at work.

Tools for Data Analysis

In this research, the following tools will be use for data analysis: Use case, Entity relationship diagram (ERD), database schema and flowchart.

Use Case. Use case is a tool that is used in a system analyst to identify, clarify and organize system requirements. It is made up of a set of possible sequence of interactions between systems and users in a particular environment and related to particular goal. It is a modeling technique that helps the developers determines which features to implements and hoe to gracefully resolve errors.

Entity-Relationship Diagram (ERD). ERD is a data modeling techniques that the developers will use to create a graphical presentation and present the relationship between entities with the system.

Database Schema. A database schema is described in a formal language supported by the database management system. In a relational database, the schema defines the tables, the fields in each table and the relationship between fields and tables.

Schema is generally stored in a data dictionary. Although a schema is defined in text database language, it is used by the developers to refer to a graphical depiction of the database structure.

Flow Chart. It is a diagram that shows the sequential steps of a process that goes into creation of a product and service. The developers will use this tool to show up the step by step procedure of the existing process involving stock in and stock out.

Fish Bone. It is a team brainstorming tool used to identify potential root causes

to problems. Because of its function it may be referred to as a cause and-effect diagram. The developers will use this tool to visually display the many potential causes for a problem or effect.