

INSODE 2011

# Designing accounting information system using SSADM1 Case Study: South Fars Power Generation Management Company (S.F.P.G.M.C)

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## Abstract

In the following research, the accounting information system for the studied company which had various sub-systems of accounting, payment, storage, properties, salary and wages systems were analyzed salary and wages system is developed as one of the sub-systems subsequent to sub-systems problems identification. In both stages of analysis and designing, SSADM methodology, which has a Top-Down approach, is used. Based on the studied methodology in analysis stage, system requirements including needs (determined through studying present system problems) and obligations (determined by the designer and according to experiences obtained from similar systems) were identified and considering such requirements, the proper information system concept model was designed. Some suggestions are represented for organizations use and information systems development fans, in the final part to the article.

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*Keywords: accounting information system; information system; Structured System Analysis and Design Method.*

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## 1. Introduction

Development in IT has led to increase in information in organizations and institutes life and movement. Ordinary individuals could not make decisions in reaching their goals, without being influenced by information. An information system includes a set of individuals, data/information, methods, software, hardware and communications which are active in a company to provide useful information to accelerate and ease the activities, create coordination and control, assist with problems analysis, support decision making and reduce uncertainty in decision-making [1]. Management information system is only considered as a part to authenticate the organization in organizational charts in organizations. Moreover, organizations don't train their human resources in accordance with such technology. Another point to consider is the organizations structural problems. The organization structure and individuals must be prepared for information circulation and absorption. Also, the culture for demanding decision-making should be changed and substituted with information based management [2]. Appropriate situation should be present to establish an appropriate information system and using that optimally. Among such situations are clear explanations of the problem and objectives, formulating appropriate strategies for system development and support changes, monitoring and managing development processes, professional and scientific efficiency for the

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system users and training them, appropriate position for information system, defining information systems employers', consultants', supervisors and commissioners' roles and duties, and finally the cultural problems [3].

## 2. Accounting Information Systems

Kieso and Weygandt define accounting information systems as an element of the organization which offers decision-making biases for users and fans through processing financial events, warning information and other information [4]. Accounting information system could be considered as a logical intersection between two broader issues of accounting and information systems. The thing which both majors of accounting and management information system share in common is their regards on information. Accounting tends to the information while MIS2 covers systems which create information. These three environments are presented in figure 1.

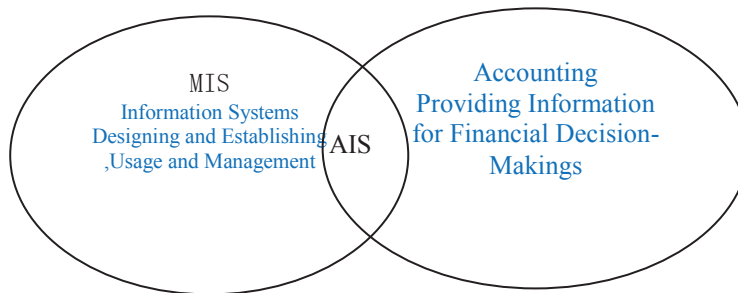


Figure 1. Relation between Accounting, Management Information Systems and Accounting Information Systems

## 3. Practical Method in Executing This Research

SSADM is one of the most popular and complete structured methods in Britain which includes the superior ideas of other methods with the following characteristics:

- 1- It chops the system into smaller pieces and determines the order and the interaction between activities.
- 2- The method uses modeling techniques and diagrams to present a more accurate (structured) and comprehensible definition to users and developers.

Among SSADM superiorities on other present methods is that the method defines and combines techniques in a certain framework. Beside analysis techniques, it also provides guidelines for analyzing time and usage of each one. SSADM separates the logical design from physical design and the logical design is carried out independent of hardware/software. Although SSADM uses a prescriptive method, this method has a great flexibility and the method should be prepared for certain projects situations. SSADM is used to develop the system, but it doesn't apply to whole system lifecycle [5]. This method includes the following stages:

1. Present System Operation Analysis
2. Determining the Requirements
3. Data Logical Designing

## 4. Accounting Information System Analysis and Design

### 4.1. Systems Problems Identification

Fars Power Generation Management Company is a subset of Tavanir holding company. The headquarters for this company is located in Shiraz and its power plants are in Kazerun, Bushehr, Kangan and Jahrom.

Reviewing reporting model, lack of access for users, lack of appropriate relation between systems and considering changes created in commercial world show that this model has not been able to keep its pace with these fast changes. Hence, considering the need for fast access to information, and users and decision-makers expectations who like to have access to up to date information, a review in relation between systems seems to be of essence.

<sup>2</sup>Management Information System

Identified Problems in Accounting Information System in S.F.P.G.M.C:

1. Lack of access for the users (power plants managers) to the present integrated system in headquarters (Shiraz) which has led to failure for the company informatics section to reach the integrated systems creation objective. Hence, the company is sufficed with island systems.
2. Lack of bilateral relation between present sub-systems. As an instance, there is a lateral relation between accounting sub-system and wages and salary, storage, liquidities and properties.
3. Company various parts geographical dispersion and difficulties in creating communicative and information networks.
4. Duplications in registering personnel, product and services sales persons' information due to lack of integrity in sub-systems.
5. Lack of appropriate usage of resources and time due to the duplication.

**4.2. Determining System Requirements**

For each of information requirements a set of systems which should provide the information is listed in table 1.

Table1. Systems- Information Requirements Matrix

Information Providing Systems	Information Requirements
Accounting System	- Bank Bills - Bank Statements - Temporary, Monthly and Annual Balance Sheets - Accounts Turnover - Opening and Closing Documents
Wages and Salary System	- Financial Documents - Related Reports on Financial Year - Salary and Net Income Payroll - Wages and Salary Financial Documents Draft - Banks, Insurance, Taxes and Overtimes Working Lists - Loan Installments Information and Other Country Separate Units
Payment System	- Reports based on Specific Information Items - Statistical Reports and Diagrams - Related Documents to Organization Payments - Financial Documents - Issued Checks - Bank Accounts Reports - Check Information
Property System	- Issued, Missing, Reserved and Canceled Checks Reports - Cash and Non-Cash Payments Reports - Organization Properties - Organization Cars - Properties and Assets Status Change Report - Properties Value ( Categorizing Based on Properties Value) - Delivered Properties Profile - Present Properties and Assets Report - Non-Consumable/ Ruined Properties Report - Properties Depreciation Report - Financial Reports Related to Properties and Assets - Properties Physical Displacement and Deployment
Storage System	- Warehouses, Inventories, Storage Charge, Goods Enter and Exist Condition - Issued Drafts of Warehouse Report - Incoming Receipts to the Warehouse - Stock Report

**4.3. Ideal Situation Entities List**

In table 2, organization entities are introduced in contrast with systems in ideal situation. This list is determined in accordance with organization information requirements and used in suggested ERD.

Table2. Systems-Entity Matrix

System Entity	Storage	Properties	Payment	Wages and Salary	Accounting
Organizational Unit	✓	✓	✓	✓	✓
Financial Documents	✓	✓	✓	✓	✓
Accounts					✓
Wages and Salary				✓	✓
Function				✓	
Personnel Provisions				✓	
Personnel				✓	
Warehouse	✓	✓			✓
Properties and Equipment	✓	✓			✓
Regulations and	✓	✓	✓	✓	✓

Instructions					
Units Performance Report	✓	✓	✓	✓	✓
Welfare				✓	✓
Payment			✓		✓

**4.4. Suggested DFD (Data Flow Diagram)**

He revised DFD for systems ideal situation (which could meet the determined requirements as possible) is presented. The relation between identified functions in organization and macro-entities is shown in this diagram.

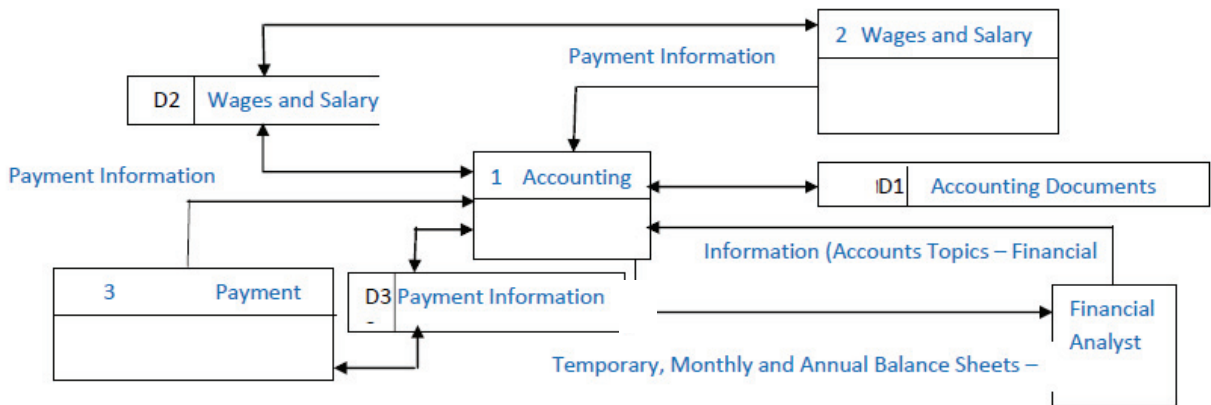


Figure 2. S.F.P.G.M.C Accounting Systems DFD (Level One) (Suggested)

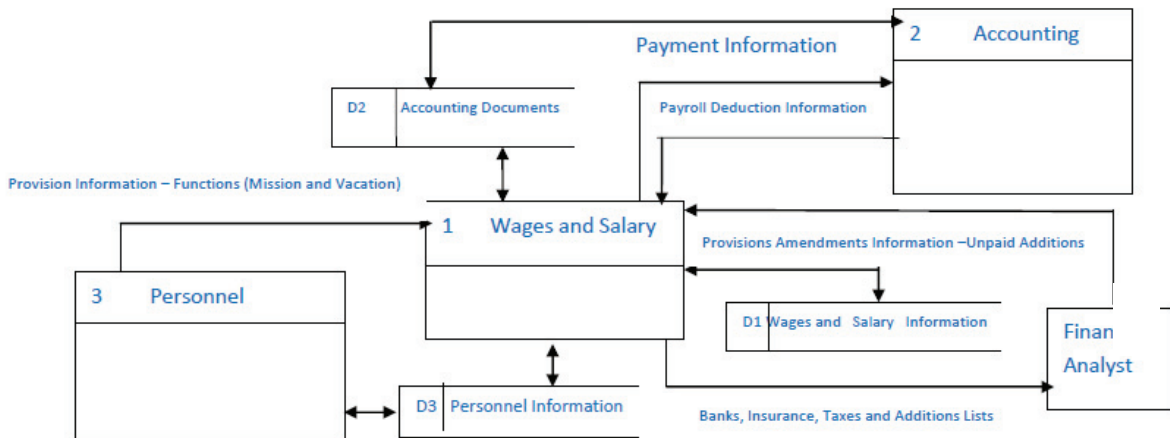


Figure 3. S.F.P.G.M.C Wages and Salary System DFD (Level One) (Suggested)

**4.5. Suggested ERD (Entity Relation Diagram)**

ERD is the most significant diagram in an information system data model. There are some places for Data Store in DFDs. While most system analyzers consider ERDs as an image of such places and a dependent to DFDs, ERD models are more than a graphical image of a DFD Data Store. They are independent of processes which are done on Data Stores .The main concept on ERDs which should be considered is that such diagrams neither explain information fellows nor the process fellow. Hence, they are not to be studied like DFDs or fellow charts. ERDs

show the data which is stored in a static manner. Such diagrams don't have any details on data usage, creation, updating or omission. ERDs are used in various phases in systems improvement cycle in SSADM [5]. (Figure 4)

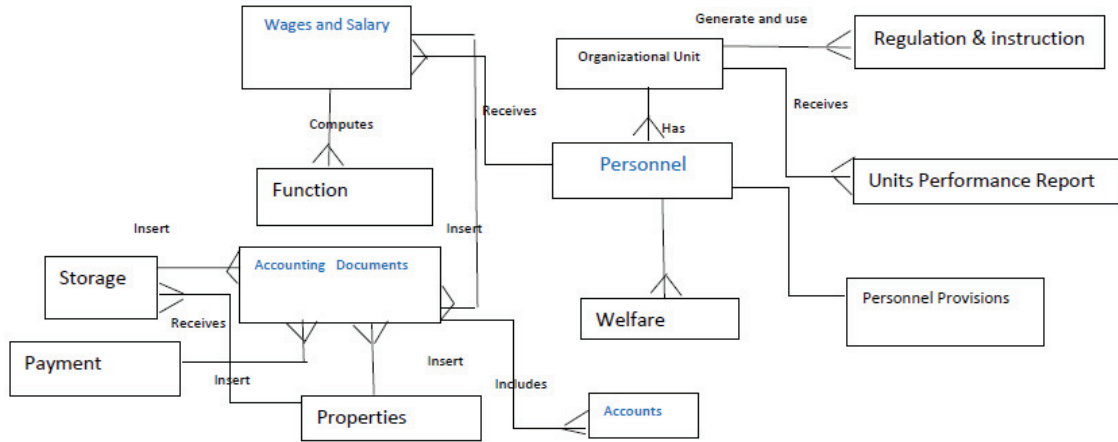


Figure 4. S.F.P.G.M.C Financial of Systems ERD (Suggested)

5. Results

Results to this research are represented in the following table 3  
Table 3. results.

Subject	Results Review Present Condition	Desired or Suggested ondition
S.F.P.G.M.C Accounting Information System Deficiencies	Presence of Parallel Activities	Omitting Parallel Activities by DFD in Desirable Condition (Figure 4)
	Presence of Redundant Information	Omitting Redundant Information by Forming a Database (Figure 2)
	Low Speed in Information Fellow Existing Administrative Systems Dispersion and Inconsistency Managers Lack of Access to the Financial Reports and Information	Designing Desirable Condition by DFD (Figure 3) Creating Common Entity for Sub-systems ( Organizational Unit Entity) Creating Entity of Performance and Connection with Organizational Unit for Quick Access
S.F.P.G.M.C Accounting Information Sub-systems Relation	Lack of Interaction between Wages and Salary System and Accounting System	Creating Interaction by EDR in Desirable Condition(Figure 4)and Level One DFD in Desirable Condition (Figure2, 3)
	Lack of Interaction between Payment System and Accounting System	As Suggestions For Further Research are Discussed
	Lack of Interaction between Storage System and Accounting System	As Suggestions For Further Research are Discussed
	Lack of Interaction between Properties System and Accounting System	As Suggestions For Further Research are Discussed

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