

## A MODEL OF ASSET MANAGEMENT IN ELECTRIC DISTRIBUTION COMPANIES CONSIDERING THE STRATEGIC THINKING AND CORPORATE GOVERNANCE PATTERN

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### ABSTRACT

*Although Asset Management is an important area in electric distribution companies so that some of them have widely developed its concepts and performance in the electric utilities all over the world; focusing on Strategic Thinking and Corporate Governance will facilitate the continuation of Asset Management and prevention of excess expenditures resulting in misuse of electric equipment. This study aims to focus on Strategic Thinking and Corporate Governance pattern as a critical topic which will assist the managers of the electric utilities keep the trend of optimal utilization of electric equipment as continuously as possible.*

### INTRODUCTION

Electrical equipment has a vital and crucial role in generating, transmitting and distributing electric energy as the cleanest and probably the best source amongst the other forms of energy. Optimal utilization of electric energy is in direct proportion to the suitable usages of equipment.

Empirical evidence indicates that some companies have little accurate and also a few applicable plans for managing and controlling their assets. So, these utilities will be encountered with many defects in their equipment and it will lead to more outages and lack of customer satisfaction as well. The main reason for this deficiency is that the importance of asset management has not been defined in strategy of some companies so that the top managers have the least belief to the creation of asset management system and putting it into the corporate strategy.

The policy makers of the electric distribution companies are able to hinder or reduce the trend of equipment aging by some managerial and technical regulations; and if they follow their best practice, they will definitely facilitate the process of reliability and stability for national grid and local networks. On the other hand, the strategy defined by top managers must be clarified for both middle managers and first-line managers to enable them to prepare and supervise the instructions originated from the organizational strategy. In other words, all the details about the maintenance and required repairs or even overhauls have to be included as procedures in compliance with the defined strategy to prevent any defects or deficiencies in equipment.

Decision making will be essential in managerial affairs and each decision must be made based upon the corporate strategy. However, a question may now arise is that how we can assure about the accuracy of the decisions as well as the instructions prepared on the basis of the strategy? The answer is: presenting the strategy in public together with recording the feedback by the shareholders and stakeholders for taking future measures. In other words, the efficient mechanism for making decision relating to the optimal asset management is Strategic Thinking and Corporate Governance pattern. Another question may arise simultaneously is that: "What is the efficient strategy which has to be considered by the electric utilities to ensure the optimal trend of asset management? The answer to the aforesaid question is: **Considering the Strategic Thinking and Corporate Governance in Strategic Plan of the Electric Distribution Companies by their Top Managers and Policy Makers.** In this case, the trend of presenting the measures and receiving feedback from the customers, staff, and all stakeholders via managerial approaches like Kaizen Suggestion System will lead to an annual event so that the Strategic Plan of the electric utilities will be revised each year; meanwhile, the best possible actions in connection with the optimal usage of asset management mechanism will be taken into consideration as well.

### ASSET MANAGEMENT

Reliability and stability of electric networks in urban and rural areas are crucial factors that the electric utilities must take into account based upon their mission, vision, and values. According to [1], electric power transmission and distribution (T and D) systems are composed of a great deal of aged apparatus, which may cause a decrease in reliability owing to their deterioration.

Nowadays, many electric utilities have been utilizing a lot of smart and IT-based equipment in their overhead and underground networks. In addition, the modern equipment has important impacts in stability of the grids and they also have a considerable role in decreasing the outage rate. Therefore, a management information system must be established to monitor the equipment status and help the managers to become aware of any required actions.

The researchers in [1] have also proposed a system named IGMS (Intelligent Grid Management System) which determines the optimum maintenance strategy and optimum power flow control based on condition monitoring and diagnostic results of the operating power apparatus; so that the IGMS not only includes both concepts of an asset management system and a smart grid, but also it optimizes power flow routes and maintenance plans based on the failure risk, T and D loss, overload operation, life estimation of the power apparatus, customer outage, and other metrics.

The concept of 'smart' is increasingly used in the commercial environment, and relates to a perception of technological intelligence. The concept of 'Internet of Things' (IoT) has also become a reality that makes a different approach to managing physical assets necessary. With this technological intelligence come vast quantities of asset data and the analysis thereof, which has proven to add value to asset management. To capitalize on and expand this value creation, smart asset management (SAM) came into being by incorporating proven methodologies and applying these in real-time management structures [2].

Based on [3], at an increasing pace, power system outages are destroying billions of dollars in value every year. These researchers argue that the United States endures more blackouts than any other developed nation, with the number of incidents and hours of outage increasing steadily for the past few decades. Moreover, a 2006 model by [4] has focused on **asset management information systems** (such as GIS, SCADA, Customer Information System, Automatic Control Systems, etc.) to support the asset management processes. They have also addressed to **Real-time Asset Management** (Operational management), **Mid-term Asset Management** (Maintenance Management), and **Long-term Asset Management** (Planning Management) in their model which reveals the importance of asset management in stability of networks.

The impact of individual apparatus failure affects the entire T and D system's performance, causing blackouts and secondary failures. Reduction in reliability of whole system is highly dependent on ageing of the materials [1].

Here are some definitions relating to asset management and its importance in electric distribution networks:

Asset Management is all about achieving a good return on a property investment [5].

The emergence of physical asset management as an important field of action in the industry is an indisputable fact that has given renewed attention to the maintenance of equipment and infrastructure [6].

According to [7], asset management can be defined as: 1. a corporate function that allows an organization to extract maximum value from its assets; 2. a decision making process to decide when the best time maintain or renew an asset; 3. a system that tells you when an asset should be replaced.

It should be noticed that if the essence of asset management is considered in the upper levels of organizations as a vital requirement for the continuation of power, the performance and maintenance of assets will be taken into consideration continuously.

ISO 55000 recognizes that effective asset planning enables better decision-making processes to balance costs, risks, opportunities and performance. British Standards Institution's Publicly Available Specification 55 (PAS 55) advises that organizations should not set asset management objectives without due consideration of the costs so that the best value combination of partial achievements can be determined [8].

Asset Performance Management (APM) in the electricity generation, transmission and distribution context refers to the decisions that the asset owner has to make to increase asset availability, optimize overall cost of asset maintenance and reduce risks associated with operation. Consistent **data management, risk management** tools and advanced analytics through smart use of technology is required to make this a reality [9].

According to [8] (quoted from ISO 55000:2014, Section 2.5.3.5), the asset management system and the ability to leverage it for investment planning will require collaboration among many parts of the organization; and this collaboration often involves the sharing of resources. Also, coordinating these resources and applying, verifying and improving their use should be objectives of the asset management system; meanwhile, it should also promote awareness of the asset management objectives across the whole organization.

## STRATEGIC THINKING

Strategic thinking as one of the ways of thinking has a crucial place in the modern world and plays essential role in major issues at different organizational levels including individual decision-making and planning [10]. Strategic thinking is understanding that the world may not always work in linear, methodical ways – that organizations and those working within them must become **agile, flexible, relationship-savvy** and **wise** as they continually adapt plans to meet emergent, even, ambiguous situations [11].

Employing strategic thinking enables analysis, exploration, understanding and defining a complex situation and then developing planning actions to achieve the greatest possible positive impact towards a pre-defined goal [12].

Holding companies, due to the kind of problems that they experience, are in serious need of managers capable of strategic thinking. We need managers who can think strategically and also promote this ability in all the individuals in the organization [13]. Moreover, according to [14], having strategic thinking among the managers may be considered as a robust foundation for better execution of strategic plans in organizations.

Based on [15], a model of strategic plan contains five items: **Mission** (Why we exist), **Values** (What we value), **Vision** (What we want to be), **Forecast** (Our future environment), and **Goals** (What we must achieve). Also, According to [16], seven characteristics of strategic thinking have been listed as: **conceptual thinking ability, visionary thinking, analytical thinking ability, synthesizing ability, objectivity, creativity, and learning ability**. Moreover, based upon [17], the basic and revised flow of strategic thinking contains **system thinking, creativity, vision, planning and implementing, problem solving, and decision making**.

### CORPORATE GOVERNANCE

Corporate Governance is the system by which companies are directed and controlled [18].

Corporate Governance involves a set of relationships between a company's management, its board, its shareholders and other stakeholders. Corporate Governance also provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance are determined [19].

According to [20], corporate governance is the process and structure for overseeing the corporation's strategic direction and management to ensure that it effectively meets its mandate and objectives; meanwhile, the principles of Good Corporate Governance have been declared by [21] as: **Transparency, Accountability, Responsibility, and Fairness**.

Since the Corporate Governance, responsibility, and transparency have close relationship with each other; therefore; if the organizations focus on the concept of Corporate Governance, they will be able to solve most of their problems. Corporate Governance also transpires the jobs at the organizations and may create confidence among the employees and all the stakeholders who utilize the productions or services of the company [22].

According to [19], Corporate Governance has mainly three components: Adequate disclosures and effective decision making, Transparency in business transactions, and Commitment to values and ethical conduct of business.

### THE MODEL

According to [23], more organizations are adopting a strategic approach in asset management and this new direction can be observed from the guidelines and best practices published by them. In addition, some common themes can be identified and categorized as follows:

1. **Systematic Management:** To optimize asset performance, asset management must adopt a systematic and structured process of maintaining, upgrading, and operating physical assets in a cost effective way

2. **Whole Life Cycle:** Life cycle approach is central to asset management by taking account of the total cost of an asset throughout its life
3. **Resource Allocation:** Asset management can be described as a methodology to efficiently and equitably allocate resources amongst valid and competing goals and objects
4. **Service:** A better service, not a better asset, is a key indication of successful asset management
5. **Strategic Focus:** Strategic approach considers the assessment of costs, benefits and level of service provided to ensure that the present needs are met without compromising the ability of future generations to meet their needs.

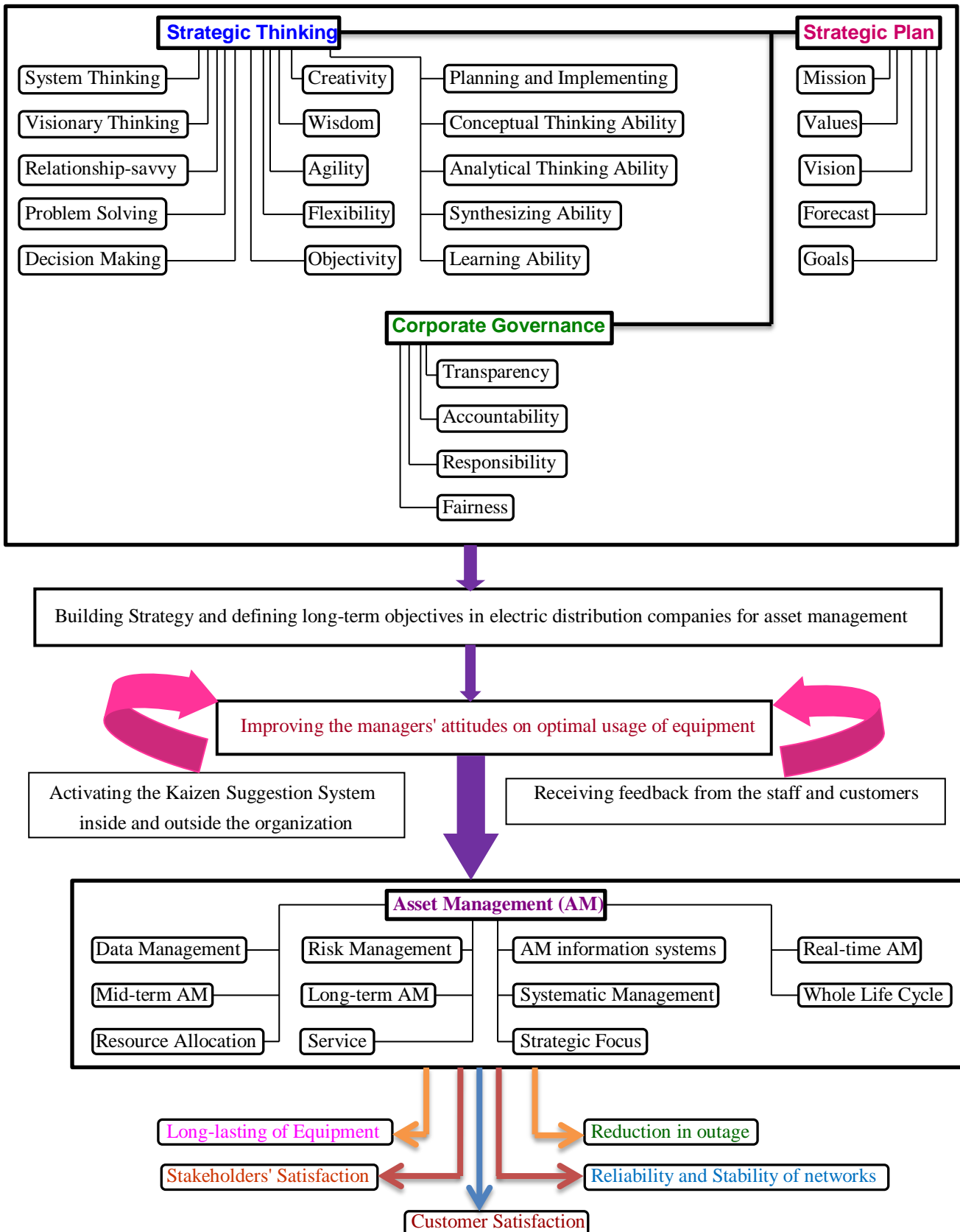
Asset management areas need to be aligned across the organization and across the hierarchies of asset management. This starts with a strategic plan which describes the vision, mission and values; business policies; stakeholder requirements; and the goals and risk management approach of the organization. This strategic outline is then used to perform asset management planning activities which include: Asset management policy, Asset management strategy, Asset management objectives, and Asset management plans [8].

The principles of asset management derive from the practical experience and reasoning, and aid to inform both strategic asset management and its practical applications to the life-cycle of the asset. These principles are asset acquisition, disposal and life-cycle management decisions, which are integrated into an entity's strategic and organizational planning. Furthermore, asset planning decisions are based on the evaluation of alternatives, which measures risks and benefits, and applies the public's core procurement principle of 'value for money across the asset's life-cycle [7].

### CONCLUSION

The importance of asset management has attracted the attention of many electric distribution companies all over the world, although it seems that some of these companies have not considerably focused on asset management. The main reason for lack of attention by some electric utilizes is that they have not considered the asset management in their corporate strategy. In this paper, the essence of asset management has been discussed based upon recent studies and a general model has been presented by focusing on the essential concepts of Strategic Plan, Strategic Thinking, and Corporate Governance pattern. By reviewing the more important coordinates of the three aforesaid concepts, subsequently a model containing the required items for asset management has been designed in Figure 1 which can be utilized in electric distribution companies for optimal usage of asset management:

Figure 1: A final model for asset management considering the Strategic Thinking and Strategic Plan together with the Corporate Governance Pattern



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