# A TOOLKIT ON EFFECTIVE DECISION MAKING MEASUREMENT IN ORGANIZATIONS

**Abubakar Allumi Nura**
Department of Operations Management
School of Operations Management and Logistics
College of Business
Universiti Utara Malaysia
06010 Sintok, Kedah, Malaysia.

**Nor Hasni Osman**
Department of Operations Management
School of Operations Management and Logistics
College of Business
Universiti Utara Malaysia
06010 Sintok, Kedah, Malaysia.

**Abubakar Allumi Nura**
Department of Operations Management
School of Operations Management and Logistics
College of Business
Universiti Utara Malaysia
06010 Sintok, Kedah, Malaysia.

## Abstract

*This paper aimed at exploring the decision making measurement strategies and tools and at the same time expose organizations to different techniques of measuring decisions. In achieving that, a Meta analysis on how to measure effective decisions in organizations was carried out, from the quantitative (scientific application) and qualitative (social science) perspectives. It was how ever unraveled that, majority of the decisions made from 18$^{th}$ to 19$^{th}$ century were unprogrammed and not measured while most of the decisions in the later part of the 20$^{th}$ century up to 21$^{st}$ century are measured. It was also discovered that though decisions are measured based on uniqueness of an organization (particularly culture and goal), organizations are not restricted to adopt any measurement strategy of their choice as there is no one best way of measuring decisions.*

**Keywords:** Decision making, Quantitative decision measurement, Qualitative decision measurement

## *1. Introduction*

Every manager regardless of the nature of organization he /she belongs to, needs to design a comprehensive plan of action, articulate it and direct it towards organizational activity to accomplish a task. By doing so, series of decisions are involved (Jones and George, 2006). Decision making is the procedure of reducing the gap between the existing situation and the desired situation through solving problems and making use of opportunities (Saroj, 2009). A decision is simply a conclusion reached after consideration: it occurs when one option is selected, to the exclusion of others-it is rendering of judgment. The groundwork for any decision is indeed a clear statement of objectives; leadership traits; ability to illuminate the meaning for the objectives and capability to measure the cost and benefit of different alternatives as well as the effectiveness of the decisions. A typical decision measurement helps organizations in occasionally setting targets and then providing the necessary feedback to managers on the progress made towards the targeted objectives. The perspective of time for these goals according to Simmons (2000) depends on the approach and resource capability of organizations. Lebas and Euske (2002) in their definition of performance, they simply describe it as an act of "doing today what will lead to measured value outcomes tomorrow." For organizations to stand the test of time, and remain focused to achieving their targeted goal, measuring every decision they take becomes very paramount indeed.

### 1.2 Issue

The centrality of decision making in every aspect of human endeavor is in fact too important to be ignored, this is perhaps true because even the life itself is worthless without decision. Little wonder then therefore that organizations (public, nonprofit and private) today, world over commit so much resource and are engaged in a very serious competition to capture the right set of people to man their respective units and/or departments to assist in taking efficient and effective decisions. The anxiety to deliver however overtook most managers today, that in an attempt to take decisions a very important aspect of deciding was either consciously (because they relegate its importance) or unconsciously (because of ignorance) left out. This important factor is, decision measurement.

But one big alarming question is, how do we know that decisions are effective efficient or not? Very simple you may say, in fact, any attempt to answer such question without a proper backing of a measurement tool will end up measuring ones bias instead of decisions. Measurement systems consist of multiple measures. A measure as argued by Simmons (2000) is both a quantitative and qualitative value that can be used for purposes of comparison. Measures can be objective or subjective; financial or non-financial; leading or lagging; complete or incomplete (Kellen, 2003). Simply put, measures are substantial things, often recorded or intangibles such as level of skill or knowledge, creativity and innovation. The focus of the paper is how ever to explore the decision making measurement strategies and tools and to expose organizations to different techniques of measuring decisions.

## *2. Related Literature*

### 2.1 Concept of Decision Making

One of the major recurring, perhaps if not the most constant activities in life is, decision making. The outcomes of some decisions are solely for individual consumption (decision maker) while other decisions carry in them the faith and future of others (organizational). The concept of decision making however, have been interpreted differently by different scholars. In the words of Harris (2009) decision making involves an act of identifying and ably selecting among an array of alternatives based on the inclination. A manager is only called a manager if he/she is capable of making effective decisions. It is all about conscious choice of an alternative course of action (Chabbra, 2005; Jones & George, 2006). Decision making depicts a process of adequately reducing uncertainty and doubt about alternatives to allow a reasonable choice to be made from within and among them. Decision making is not a well-defined field; it includes variety of processes that are all intermediate steps between thought and action which are the precursors to behavior (Talley, 2011).

In Chattered Institute of Management Accountants (CIMA, 2009) decision making levels are discussed from the points of view of an organization's hierarchy, thus the levels are categorized in to Strategic decisions; Tactical decisions and Operational decisions. Strategic decisions are long-term in their impact because they affect and shape the direction of the whole business and are generally made by senior managers of the organizations, the decisions are primarily strategic and long term in nature. Tactical decisions are usually made by middle management and assist in implementing the strategy of the organization. Operational decisions relate to the day-to-day running of the organization they are mainly regular or routine taken by middle or junior managers.
Decision making levels could be discussed from point of view of a resolution mechanism sort of. Managers strategically involve more hands and more talents in approaching organizational functions and objectives (Weddle, 2011). How and what types or kinds of decisions are made, when and by whom doesn't matter as long as the outcome of those decisions are directed towards an accomplishment of goal that affects people or organization or both, the need to measuring those decisions for efficiency and effectiveness is not only necessary but also, in evitable.

### Efficiency versus Effectiveness

According to Clifton (2011) Efficiency is a productivity metrics meaning how fast something is done. Hence Testing efficiency metric can be done quantitatively. Effectiveness on the other hand, is a quality metrics meaning how good something is at testing. Hence Testing effectiveness metrics can be done qualitatively. The difference between the two concepts is somehow logical. Again, while efficiency means doing the right thing, effectiveness means doing the thing right (Chaffey, 2011).

Looking from the organizational point of view, according to Scocco (2010) efficiency is defined as the extent to which an organization maintains a particular level of production with fewer resources or increases the level of goods or services it produces with a less than proportionate increase in the resources used and effectiveness means the extent to which an organization produces output or outcome. Kelly (2011) pointed out that efficiency is all about time, money and effort and effectiveness could be best explained using the concepts of accuracy, reliability and ease of use.

**Decision Making Measurement**

Wang et al (2007) pointed out that decision making can be measured from different angles, i.e. optimistic, pessimistic and the geometric average efficiency. When measured from the optimistic angle, the approach as explained by Anderson et al (2010) evaluates each decision alternative in terms of the best payoff that can occur depending on problem at hand. For example if maximum profit is desired, the approach will guide the decision maker to choosing an alternative that corresponds to larger payoffs and if minimization is targeted, an alternative with the smaller payoff will be chosen hence, the resultant efficiencies are constrained to be less than or equal to one. If the pessimistic approach is done, Rokach et al (2008) declared that selection of instances to be acquired during the exploration phase should be based on the change in the lower bound of the confidence interval of the success probability rather than on the probability itself the efficiencies here, are caught within the range of greater than or equal to one. Also the two (optimistic and pessimistic) could be integrated together and measured using the geometric average efficiency where the weights of the variables are considered.

Tanck (2008) argued that with a process or framework, managers have the needed weapon within their reach to warrant the quality of their decisions. The common understanding of decision making measurement and processes, criteria and roles avoids many of the common organizational decision blocks, allowing managers in organizations to spend their conversational energies on creating better alternatives and validating and measuring assumptions and ultimately justifying their own decisions. The framework proposed by Tanck (2008) for breaking down working and measuring decisions of virtually any size and complexity, begins with two large ideas: declaring a decision and working and measuring decision. Frames are mental construction that managers should create to simplify their decisions by reducing complexity. Mankins and Steele (2006) believe it is high time that managers stop making plans and devote their time in making and measuring decisions. When they say stop making plan, they rather advised to integrate decision making with plan making and strategic measurement.

Bill and Melinda (2011) designed a frame work for decision measurement they believe decisions need to be measured to be able to gauge the results of the work to improve upon what was done and, ultimately, to improve more people's lives that are going to be affected by the decisions "Actionable measurement" they call it. The collection, analysis, and synthesis of data and experience are critical first steps toward informed action and decision measurement. But these according to Bill and Melinda are not enough for action organizational process also needs to allow time for teams to reflect and develop an insight, to be able to support the enthusiasm and ability to change and adapt. Together, these elements provide the basis, leading to informed decisions and actions. In general, there are supporting evidences to further cement the fact that, decisions need to be measured to ensure that they are effective or not. Furthermore, the fact that organizations are ever growing with challenges becoming more complex along with competitions, decision measurement is not only necessary but also in evitable.

**Trend of Decision Making Measurement**

Researchers have revealed that in the late $18^{th}$ century to the beginning of $19^{th}$ century, there wasn't much attention on organizational decisions; mainly, elites from highly cultural and religious backgrounds were often consulted for issues that required decisions. It was believed that they were more educated and/or had more authority, as such made the decisions and one just followed. Individual decision making were discouraged for the cause of the groups. The measurement of decisions then was based on how highly positioned and politically or religiously renowned the decision maker was. Aarts et al (1998) argued that decisions then were based on the ability to predict behavior from actions in the past. Devine (1989) believes when a behavior is performed many times, there is every tendency that future decisions will be guided by habits rather than being based on evaluative explanations. Consequently frequency of past behavior can be directly influenced by subsequent behavior (Triandis 1980) At tale end of $19^{th}$ century and the early $20^{th}$ century, managers started noticing the problems of traditional reasoning methods and decision making techniques based on such logics and another paradigm emerged of making decisions intuitively.

The new possibility of decisions based on intuition was brought to fore and it empowered managers. Gaines (2011) argued that, when managers make decisions based on logic alone, they rely on someone else's theories, processes, and models. This perhaps implies that making intuitive decisions somehow satisfies manager's ego, feeling that it is him or her who is making the decision in the doing and not subject to other authorities. In making intuitive decisions one doesn't worry whether they have adequate information, whether they possess the required know how or education. The measurement here is based on self confidence.

In the 21st century however, organizations expand, challenges become enormous and the world become a global village sort of with approaches to organizational decisions and activities in variably changing. Managers are now called strategic managers with a big task of coping with the environment as well as working very hard to achieving effective decision making and creativity (Jones and George, 2006)

Figure 1 below shows the trend at which decisions are made and measured from 18th century to Date (21st century)

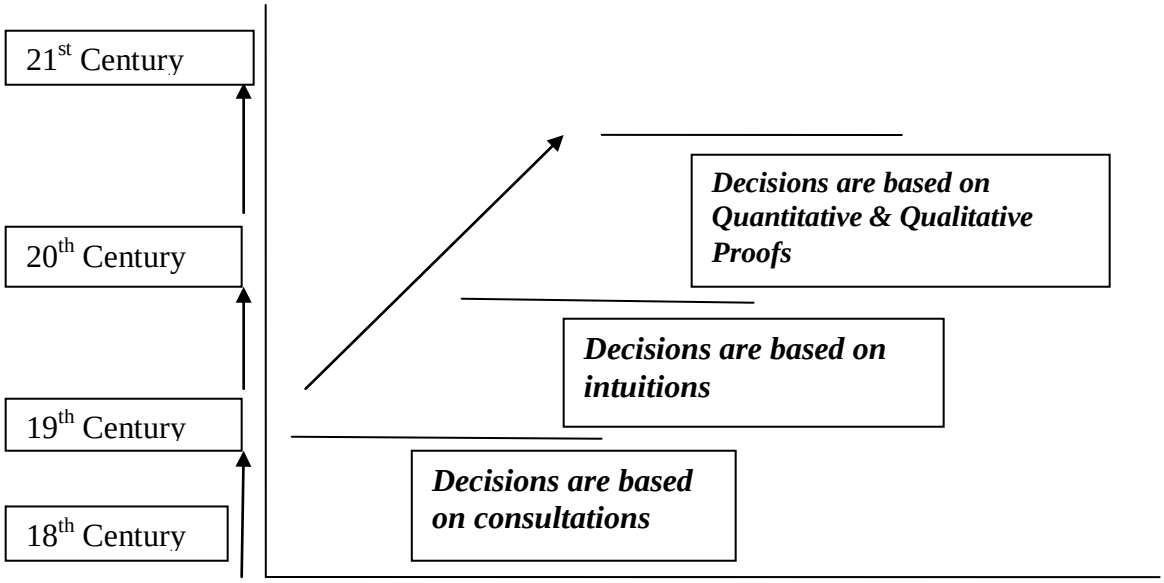


**Figure 1: Trend of Decision Making Measurement**

### 3.1 Quantitative and Qualitative Decision Measurement Tools

There may be many different ways of measuring effectiveness of decision making in organizations but this paper focus only on quantitative and qualitative standpoints. This is so because researches today the world over are mainly conducted along two main extremes of either theory building or testing theories. The latter (qualitative research) attempts to induce ideas from specific to general and the former (quantitative) deduce from general to specific.

#### 3.1.1 Quantitative Measurement Tools

Quantitative decision making tools categorize an element by a numeric measure. In this section, the paper discusses Data Envelopment Analysis (DEA), De Novo Programming Method Nonlinear Programming and Structural Equation Modeling (SEM).

**Data Envelopment Analysis (DEA)**

Tseng (2003) postulated that data envelopment analysis (DEA) is a very important technique of measuring multi criteria decisions. DEA according to Talluri (2001) and Shahooth and Battal (2006) is a nonparametric method in operations research and a multi factor productivity analysis model used to measure the relative efficiency of homogenous set of decision making units. DEA is used in economics for the estimation of production frontiers. It is used to empirically measure productive efficiency of decision making units (or DMUs). Non-parametric approaches have the benefit of not assuming a particular functional form/shape for the frontier; however they do not provide a general relationship (equation) relating output and input.

Fethi and Pasiouras (2009) and Paradi et al. (2004) sighted in Eken and Kale (2011) specified 136 and 42 studies that use DEA-like techniques to estimate bank efficiency. In a short period of time DEA has grown into a powerful quantitative, analytical instrument for measuring and evaluating decision performance. DEA has been successfully applied to a host of different types of entities engaged in a wide variety of activities in many perspectives globally.

**De Novo Programming Method**.

Zeleny (1995) debated that an attempt to effectively measure decision is often confronted by a situation that is almost impossible to optimize all criteria in a given system (tradeoffs). Meaning for a manager to increase the level of satisfaction of one criterion, another level of satisfaction has to be inversely decreased. He suggested the concept of optimal portfolio of resources which is designed to ensure integration and prevent tradeoffs. The fact that modern production is increasingly characterized by cost benefit analysis, De Novo programming is intended to pursue these new requirements explicitly. The difference is demonstrated between "optimizing a given system" and "designing an optimal system". New concepts of optimality, new ways of resolving Multiple-Criteria Decision-Making (MCDM) conflicts, and new conditions for optimal and continuous system improvement, are all tackled by the method. There are several methods of De Novo programming for measuring decisions they include synthetic-optimal budget; meta- optimal budget and flexible constraint Meta – optimal budget (Shi, 1995)

**Nonlinear Programming**

Murtagh (2010) pointed out that, nonlinear programming could be used from the quantitative angle to measure organizational decisions in many respects; ranging from decisions risk measurement; to decision rate of return, to success of asset allocation implementation. Minimizing risk is insufficient in it self and would result in low-yield sectors/ units being selected. It is necessary to specify a target level of return so that the model chooses the combination of sectors that achieve the target level of return with lowest downside risk. Another application of nonlinear programming is to consider the issue of asset allocation and downside risk. To effectively formulate the best way of asset allocation among a number of sectors or units as the case may be, it is required to examine the patterns of growth of the amassing indices in each sector or unit and the variability in their performance; optimize the allocation of assets to achieve a measured balance between risk and return, and consider the use of derivatives to moderate any obstacle movement that does occur. Rather than calculate the mean and standard deviation and assume a normal distribution. The variation from expected value is measured for each of the previous periods and weighted exponentially in time to give maximum credibility to recent periods and minimal to the oldest.

**Structural Equation Modeling (SEM)**

Structural Equation Modeling (SEM) is a statistical technique for testing and estimating causal relations using a combination of statistical data and qualitative causal assumptions. SEM allows both confirmatory and exploratory modeling, meaning they are suited to both theory testing and theory development. Ghasemi (2009) pointed that latent variables could be used in structural equations as dependent or independent variables. If a latent variable in a SEM, it is usually modeled using two or more observed variables called "indicator" variables. Wen et al. (2008) used SEM in their study to examine the direct effects from regulations on capital management, financial management, and risk management as well as the interrelated effects of the three managerial decisions. The three managerial decisions as Wen et al (2008) observed are the factors that drive the determination in noticeable corporate strategies in the implementation of derivatives in managing risks, in the allocation in bond and stock investments, and the adoption of equity in capital formation.

**3.1.2 Qualitative Decision Making Tools**

Qualitative decision making tools categorize an element by a non-numeric attribute. This segment of the paper discusses Benchmarking Economic Value Added (EVA) and Balanced Scorecard.

**Benchmarking**

The term benchmarking was first introduced by cobblers to measure people's feet for shoes. The term is today been used globally by people to measure performances of their actions and or decisions using a specific indicator (cost per unit of measure, productivity per unit of measure, cycle time of x per unit of measure or defects per unit of measure) resulting in a metric of performance that is then compared to others. Nunes and Bennett (2010) argued that there is a high demand for external benchmarking data among organizations today.

Organizations are now beginning to recognize the impact benchmarking can have on decision-making capabilities and improved performance. Not only can a more focused risk and insurance strategy be adapted, benchmarking allows the introduction of a whole new level of accountability into the program. Haithcoata et al (2005) in their study revealed that a benchmarking survey was developed to measure the baseline performance of a decision support system (DSS) operated by the Production Estimates and Crop Assessment Division (PECAD) of the USDA Foreign Agricultural Service (FAS). The purpose of the survey was to collect essential performance indicators and metrics to be used in establishing the baseline, as well as in populating the matrices of a Defect Detection and Prevention (DDP) risk management tool. Based on the results of a previous PECAD characterization study, the survey focused on decision-making environment among other things.

**Economic Value Added – EVA**

Shimin (1977) decision making measurement was viewed from the perspective of profit maximization and resource minimization. It was argued that decision would be easy to make only if it could be measured even before action. Measurement means quantification of its impact and projections of the impacts as contribution in profit. It would be relatively easy to decide between different profits amounts, and to choose the decision with highest positive impact on profit. It could be understood that Decision problem lays in the fact that it is extremely hard to correlate actions according to decisions with financial statements. There is an enduring need for managers of organizations and financial analysts (controllers) to prepare business scenarios that are time bound and backed with effective decision measurement strategy because Krajl (2011) opinionated that core problem of decisions are their corresponding measures in financial world. If they could be measured in visible way that every business manager or entrepreneur or both understands it would get a lot of organizational challenges checked and minimized.

**Balanced Scorecard**

The balanced scorecard was originated by Kaplan and Norton (1996) as a performance measurement framework that added strategic non-financial performance measures to traditional financial metrics to give managers and executives a more 'balanced' view of organizational performance. Is a strategic management system that is used comprehensively in organizations (both profit and nonprofit) to support organizational activities to the vision and mission of the organization, in order to improve internal and external communications, and monitor organization performance against strategic goals. While the phrase balanced scorecard was invented in the early 1990s, the roots of the this type of approach are deep, and include the pioneering work of General Electric on performance measurement reporting in the 1950's and the work of French process engineers (who created the Tableau de Bord – literally, a "dashboard" of performance measures) in the early part of the 20th century. The balanced scorecard has progressed from its early use as a simple performance measurement framework to a full strategic planning and management system. The "new" balanced scorecard transforms an organization's strategic plan from an attractive but passive document into a more attractive and active manuscript for the organization on a daily basis. It provides a framework that not only provides performance measurements, but also helps planners identify what decisions should be made and to measure them. It provides feedback around both the internal business processes and external outcomes in order to continuously improve strategic performance and effective decisions.

**4.1 Conclusions**

Based on the above discussions, it was understood that, since the late $18^{th}$ century to the tail end of $19^{th}$ century and the beginning of $20^{th}$ century, the levels at which decisions were made and how they were measured changes with time i.e. from the consultation period to the period of predictive decisions to the period of intuitive decisions. Virtually, all the decisions made during those periods were unprogrammed, based on in adequate data, risk and uncertainty. At the end of the $20^{th}$ century and the beginning of $21^{st}$ century however, the impact of science almost dominated the world of decisions. Organizations hardly accept decisions made without adequate preparation and information and perhaps measurement which could be in quantitative or qualitative form. For a manager to decide therefore he / she should have enough data about the issue to be decided upon and a matching decision measurement tool which could be any of those discussed above depending on the complexity of the issue, the level of expertise, time frame and resources.

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