Dashboard as a Tool for Decision Support Development in Algeria

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Abstract—Nations no longer have the choice between evidence-base decision-making or depending on the judgmental heuristic and experience. Also, the use of the scientific basis approaches in support decision-making were no more a characteristic that limited to the developed nations, as they have become an international obligation on the developing countries. Moreover, the science of decision-making has improved gradually to the point that it becomes able to attract the social and natural sciences, such as statistics, economics, and sociology. By the great increase in using scientific methodologies, the need of the participation of the science of statistics has increased. Most of the scientific methodologies require the availability of good statistics and indicators for decision-making in the right time. By the continuous improvement in the theories of decision-making and the emphasis on the necessity of the completion of decision-making and design policies through designing of monitoring and evaluation systems, in order to activate and implement programs and policy's return, the need for the existence and development of statistics and indicators and statistical models have risen which make it possible to draw conclusions and simulation. In any way, the development of evidence-base decision-making consider a relatively slow process, but once its impact appears into public life to the citizens, it becomes obvious that its one of the countries' wealth. This paper, consist of four main sections. The first section presents the dashboard and the importance of the role of statistics in evidence-base policy-making, second section setup the methodological framework of the decoction support system. In the third part, statistics and its impacts on policy reformation, was analyzed. On the final section, study presents Algerian experience in decision support system.

Keywords— dashboard, decision support, development, statistics.

I. INTRODUCTION

The shift from the traditional economy towards knowledge-based economy and the adoption of technology and technical skills and knowledge capital and intellectual pays modern institutions to pay more attention to the information assembled and screened and presented quickly administrator especially intense competition pursued by most of the sectors and allowing to stand on the various activities in order to monitor and control and making decision. From this standpoint, the idea of the dashboard as document information on the performance of the institution.

II. THE EVOLUTION OF THE CONCEPT DASHBOARD

The first requirement: the emergence of the dashboard and evolution models, the dashboard; The term has appeared dashboard since the fifties of the last century in France in the field of accounting system and the leadership of the institution, and with the beginning of the nineties and the entry of American management concepts have become the dashboard mean reports (Reporting) that entered into the boiling processes driving the follow-up to achieve goals. With the beginning of the nineties the back of the term card driving forward-looking (Balanced Scorecard) (Balanced Scorecard) as a result of the works of Robert Kaplan and David Norton (1992) and the evolution of this term as a result of research cascading in Anglo-Saxon countries and the countries of Scandinavia such acts (Scandia), Sweden (1993) and this new concept of measuring performance, which came from Kaplan and forward-looking dashboard (balanced Scorecard) depends on the vision of a multi-dimensional performance measurement by four basic themes. Where was the bulk of large enterprises under the control of the state as public institutions (BNP, Société Générale, EDF, SNCF, RENAULT) The concerns of the state in turning the wheel the economy and push the operating frequency and the image of France abroad was a financial dimension in the reports is not a priority in the management of institutions to Hedda was the concept of the dashboard is limited to carrying reports quantitative indicators (such as production, inventory, rate .... workers) Where U.S. business saturated culture report Reporting oriented shareholders were conferences financial taken up most of these reports, but with the beginning of the nineties noticed the need for attention to conferences of non-financial, which covers the time dimension in that it in terms of the investment of the order where the back of the American model of the dashboard through research by R.Kaplan and D.Noprtan balanced Scorecard (dashboard forward-looking balanced Scorerzard). The development of this concept is the result of successive research in Anglo-Saxon countries and the Scandinavian countries appeared to be a new concept for the dashboard in measuring performance through research Edvisson in Scandia in Sweden, which focused more on the concept of performance monitoring through intellectual capital.

In 2000, suggested Alain Fernandez a new model of the dashboard in France and represented in the model GIMSI which includes four basic stages of the design of the dashboard and focused on the concept of distribution objectives at all levels of the organization (strategic, management and level .......) It should be noted that it was there...
are other models of the dashboard, among them matrix determinants and outcome La matrix de Déterminant et Resultats and developed by Fitzgerald and others, and the latest model of the dashboard, especially strategic enterprise services developed by Anthony Attkin and is based on the approach solutions theory with rights (stakeholder) we will address in this research to form more famous and successful in the dashboard are: GIMSI and Navigateur Scandia, BSC.

A. Dashboards

Dashboards often provide at-a-glance views of KPIs (key performance indicators) relevant to a particular objective or business process (e.g., sales, marketing, human resources, or production). The term dashboard originates from the automobile dashboard where drivers monitor the major functions at a glance via the instrument cluster. Dashboards give signs about a business letting the user know something is wrong or something is right. The corporate world has tried for years to come up with a solution that would tell them if their business needed maintenance or if the temperature of their business was running above normal. Dashboards typically are limited to show summaries, key trends, comparisons, and exceptions. There are four Key elements to a good dashboard:

1. Simple, communicates easily
2. Minimum distractions...it could cause confusion
3. Supports organized business with meaning and useful data
4. Applies human visual perception to visual presentation of information

In management information systems, a dashboard is "An easy to read, often single page, real-time user interface, showing a graphical presentation of the current status (snapshot) and historical trends of an organization's key performance indicators (KPIs) to enable instantaneous and informed

B. History

Early predecessors of the modern business dashboard were first developed in the 1980s in the form of Executive Information Systems (EISs). Due to problems primarily with data refreshing and handling, it was soon realized that the approach wasn’t practical as information was often incomplete, unreliable, and spread across too many disparate sources. Thus, EISs hibernated until the 1990s when the information age quickened pace and data warehousing, and online analytical processing (OLAP) allowed dashboards to function adequately. Despite the availability of enabling technologies, the dashboard use didn't become popular until later in that decade, with the rise of key performance indicators (KPIs), and the introduction of Robert S. Kaplan and David P. Norton's Balanced Scorecard. Today, the use of dashboards forms an important part of [Business Performance Management] (BPM).

C. Classification

Dashboards can be broken down according to role and are either strategic, analytical, operational, or informational. Strategic dashboards support managers at any level in an organization, and provide the quick overview that decision makers need to monitor the health and opportunities of the business. Dashboards of this type focus on high level measures of performance, and forecasts. Strategic dashboards benefit from static snapshots of data (daily, weekly, monthly, and quarterly) that are not constantly changing from one moment to the next. Dashboards for analytical purposes often include more context, comparisons, and history, along with subtler performance evaluators. Analytical dashboards typically support interactions with the data, such as drilling down into the underlying details. Dashboards for monitoring operations are often designed differently from those that support strategic decision making or data analysis and often require monitoring of activities and events that are constantly changing and might require attention and response at a moment's notice.

Dashboards and scoreboards: Balanced Scoreboards and Dashboards have been linked together as if they were interchangeable. However, although both visually display critical information, the difference is in the format: Scoreboards can open the quality of an operation while dashboards provide calculated direction. A balanced scorecard has what they called a “prescriptive” format. It should always contain these components (Active Strategy)...
III. CONCEPT OF DECISION AND DECISION MAKING

To better understand the concept of a decision, we will present some proposed definitions by different authors. According ALAZARD & SEPARI (1998):

"The decision is a deliberate choice among several possibilities, in order to solve a problem." According STRATEGOR Group: "The decision is a process by which a company changes its real strategy " ie " decisions are the processes by which choices to make changes in strategy between times T and T performs 1 " .

KALIK and ORSONI, state in their book " management: strategy and organization " that "the decision is a voluntary act by which after examination of one slice doubtful or disputed questions, we took advantage." According to Woodman et al (1976), << The decision is an act by which one or more individuals for a choice among several options to arrive at a satisfactory solution to a given problem. The classical sense, it assimilates the decision to the act by which the individual (with the power to decide) take measures to encourage the creation, exploitation and distribution of wealth in a company based on a all information at its disposal.>> This notion of decision evolved over time as and when were corrected and more complex procedures for decision making. The decision is all the highlights in the course of the process, the path that leads to the final decision. In its more modern approach, Sfez L. (1992) say that << the decision appears rather as a gradual process of engagement, connected to others, marked by the recognized existence of multiple paths to reach the same and only goal. >>

These developments are understandable because they only emphasize modifications decision system. The business environment has become more complex, uncertain and also the decision not based on a single individual but shared by a high number of actors operating within the business number.

A. The determinants of decision-making

The decision is the least visible part of the company policy. Yet it is a key driver since through it, ideas, feelings and ambitions of individuals turn into action. The decision is the result of multiple variables:

The decision is a necessity when a problem occurs, do not make a decision is to leave the situation deteriorate
- Decisions are not all of the same magnitude: some commit the future of the company (launch a takeover bid), others have only limited consequences (set a price for a command)
- The decision can be individual (taken by the entrepreneur, the manager of a team) or collective e.g. taken after negotiations with employee representatives
- The quality of a decision can not be made after analysis of the results, all times a good decision must lead on the accession of the people who must implement it.

Decision making is influenced by many factors:
- behavior and personality of the decision maker;
- structure and corporate culture;
- level of rationality;
- the nature of the decision;
- environment;
- strategic lines of business;
- performance objectives

B. Models and types of decisions a. Models of decision

i) Models (or theories) of Decision are three in number
   - The rational or classical model: the man is supposed to make a fully informed decision optimal.
   - The political model: where decisions are rather subject to negotiation and coalition groups.
   - The psychological model: in the latter, which is a new theory of the firm is the optimality is negotiated to achieve, according to H. SIMON (1960), with the principle of bounded rationality has a rather situational and decision satisfactory.

ii) Types of decisions

Decisions are so numerous, they apply to such different problems, they have a mixture of quantitative and qualitative factors. Approach whichever decisions Making short-term decision that affects the future in a short period i.e. a few days a few months (not more than one year in general). Example: hiring an employee for 2 months to replace another leave.

- Decision has Moven term decision that affects the future over a period of one year a few years ago. Example: buying a computer.
- Decision has long-term decision that affects the future of the company over the long term (5 years, 10 years or more). The long-term decisions are often strategic. Example: launch of a new product. Approach according to the subject of the decision.

It is a typology has borrowed Igor Ansoff (1999):
- Strategic Decision: fundamental decision, essential, which involves the future of the company in the medium and long term. It must be carefully considered and implications for the future. This type of decision is the responsibility of senior management or the board of directors.
- Operational Decision: decision is taken at the bottom of the hierarchical pyramid, which is to ensure the current and ongoing operation of the company. A business decision, or "routine decision" poses no special difficulty.
- Tactical Decision: decision is taken at the average level of the hierarchy. Decisions at this level are management decisions that ensure in the medium and short terms the strategic decisions.

Approach depending on the nature of the decision variables:
- Programmable Decisions: they are easy to take decisions that bear on quantitative and few variables, because it is easy to formalize the decision by developing an algorithm.
- Non-programmable decisions: these are difficult decisions to be taken where the variables are qualitative and numerous. It is difficult to include in a mathematical model.

C. Concept of decision support

The decision support activity is one that (human study, the engineer of the decision), building on models clearly explained, helps to get some answers to the questions in a process decision. Elements contributing to informed decision-making and promote a normal behavior of nature increase the coherence between the evolution of a process, the objectives and the system of values other hand.
D. Aid tools has the right decisions

Many techniques allow the decision maker to make some decisions. Tools that will implement, depend on the initial problem and the more or less precise knowledge of the decision maker. It is possible to classify the different situations into four categories according to an increasing degree of uncertainty.

i) The decision support in some future

In some universe, the decision maker has a perfect knowledge of the different parameters of the decision. He can foresee the consequences of his choices. Some techniques of decision support may nevertheless be used to assess the consequences of different choices: linear programming (it aims to determine an optimum taking into account the various constraints of resources), discounting techniques (they allow decision-maker to assess the economic profitability of an investment), or networks (they aim to minimize the costs and delays of programs) are tools for decision support that can assist decision-makers in their choices. With the advent of intranet, the company has a tool to aid decision (Business Intelligence) which is based on data Dashboard, the information comes from databases of business.

ii) The decision support in an uncertain future

Random universe, the decision maker can assign a probability to each event of the decision. The calculation of probabilities (expectation), statistics (variance, standard deviation to assess the risks), and the technique of decision trees (useful when one wants to study the consequences of a series of successive decisions) may assist in the process leading to the final choice.

iii) The aid decision random future

Under uncertainty, the decision maker does not have sufficient information to predict various events related to the decision. In such situations, it may appeal to certain criteria game theory. It is a research tool that allows the analysis of decisions of economic agents. Minimax criteria and maximax are generally used.

- If the decision maker is optimistic he will emphasize the choice for which the maximum expected gain is higher
- If the decision maker is pessimistic, it will favor the solution for which the expected gain was the lowest (minimax) risk

iv) The aid decision conflicted universe

In conflictual world, all events are dependent on stakeholders by hostile in nature. Decisions can indeed concern several agents (e.g. the case of oligopolies). Game theory can once again allow the decision maker to analyze a decision in a situation where several economic agents interact. Everyone should take into account the actions of other players to make a decision.

IV. ANALYSIS OF RESULTS

<table>
<thead>
<tr>
<th>TABLE I</th>
<th>DIFFERENCE BETWEEN THE DASHBOARD AND OTHER TOOLS MANAGEMENT CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>elements</td>
<td>Dashboard</td>
</tr>
<tr>
<td>The nature of the data is different</td>
<td>All kinds of data (including amounts, physical indicators, deadlines, quality ...); Ability to environmental information and information produced outside; Possibility of side information on not controlled by the responsible sectors</td>
</tr>
<tr>
<td>The different reactivity is sought</td>
<td>Publication J + 3; Few data, synthetic; Door only on the most elements important; Presentations speaking, all processes possible: graphics, colors ...</td>
</tr>
<tr>
<td>The underlying modalization is different.</td>
<td>Modeling led action; Often based on a strategic analysis (objectives and key variables)</td>
</tr>
<tr>
<td>The degree of adaptability of the tool is different</td>
<td>Content adapted to the means Physical controlled by the responsible, the variables bring under control ...; Frequency as required for taking decision, based on external time the organization; Rapid developments, ideally in real time needs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TABLE II</th>
<th>RESULTANT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Agriculture sector</td>
</tr>
<tr>
<td>Do not know dashboard</td>
<td>03</td>
</tr>
<tr>
<td>Know it but do not use it</td>
<td>00</td>
</tr>
<tr>
<td>Do not use in making decision</td>
<td>00</td>
</tr>
<tr>
<td>Use it in decision</td>
<td>00</td>
</tr>
<tr>
<td>Number of firms</td>
<td>03</td>
</tr>
</tbody>
</table>

Note by the results that the majority of institutions in the interrogation of 57% using the dashboard in the decision and the majority of the sector of services which can be traced back to the nature of the product, as well as sector NTIC. The industrial sector is using the dashboard, but do not use it in decision-making and remains the agriculture sector does not use the dashboard and in the majority of them do not know it. And by the results we note that the sectors that rely more on organizational restructuring and decision-making, use of the dashboard and more, and whenever the absence of a
V. CONCLUSION

The present research aims to study instead of the dashboard in the decision-making. More precisely, it is to provide an explanatory framework for practical dashboards. To do this, we defined a first step, the main concepts and the main concepts used in this research work we have carried out an empirical study. Thus, the survey questionnaire was sent by mail, electronically, after collecting data from 42 firms, they were subjected to an exploratory analysis. Note by the results that the majority of institutions in the interrogation of 57% using the dashboard in the decision and the majority of the sector of services which can be traced back to the nature of the product, as well as sector NTIC The industrial sector is using the dashboard, but do not use it in decision-making and remains the agriculture sector does not use the dashboard and in the majority of them do not know it. And by the results we note that the sectors that rely more on organizational restructuring and decision-making, use of the dashboard and more, and whenever the absence of a regulatory decision-making and have a personal whenever use dashboard less.

REFERENCES


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