

A Relevant Supply Chain Dashboard with Risk Management

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Abstract— To have strategy actions, we need a dashboard and making the latter one is an easy action if we fixe relevant objectives. However, sometimes the dashboard is not composed of relevant performance indicators, and we must study the risks linked to these latter. In fact, this is the objective of this article.

Key words: Management, Risk, Dashboard, Performance Indicator, Strategy

1. Introduction

Risk can be defined as the probability of loss or an adverse outcome associated with an action. Uncertainty does not know what will happen in the future, the greater the uncertainty, the greater the risk. For a person, risk management involves optimizing expected returns based on the risks involved and risk tolerance. Risk is what makes profit possible. If there was no risk, there would be no return to the ability to manage it successfully. For every decision, there is a risk/reward trade-off. Whenever there is a possibility of loss (risk), there should be a possibility of profit.

Risk management is the process of identifying, assessing and controlling threats to an organization's capital and profits. These threats, or risks, could arise from a wide variety of sources, including financial uncertainty, legal liabilities, strategic management errors, accidents and natural disasters. IT security threats and data risks, and risk management strategies to mitigate them, have become a top priority for digitized businesses. Therefore, a risk management plan increasingly includes processes for identifying and controlling threats to corporate digital assets, including proprietary corporate data, personally identifiable information and intellectual property.

Definition of risk management:

- 1) Risk management is an integrated process of delineating (defining) specific risk areas, developing an overall plan, integrating the plan, and performing continuous assessment” - Dr. P.K. Gupta.
- 2) Risk management is the process of measuring, or evaluating risk, and then developing strategies to manage risk” – Wikipedia.
- 3) Risk management may involve insuring against loss, insuring a loan against rising interest rates, and protecting an investment against falling interest rates” – Oxford Business Dictionary.

When an entity makes an investment decision, it is exposed to a number of financial risks. The extent of these risks depends on the type of financial instrument. These financial risks can take the form of high inflation, capital market volatility, recession, bankruptcy, etc. Thus, in order to minimize and control the exposure of investments to such risks, fund managers and investors practice risk management. Not giving due importance to risk management when making investment decisions, but risk arises from change in an economy. Different levels of risk are associated with different asset classes.

For example, a fixed deposit is considered a less risky investment. On the other hand, investing in stocks is considered a risky business. While practicing risk management, equity investors and fund managers tend to diversify their portfolio to minimize risk exposure.

The traditional approach to risk management is to protect the organization against losses through compliance procedures and hedging techniques. It's

about avoiding inconvenience. The new approach to risk management is to “seek the upside while managing the downside”.

Risk management ([2], [3], [4], [5], [6], [7], [8], [9], [10], [11], [12]) focuses on identifying the risks on the assets (i.e. what it owns) of the company, its values in the broad sense, including and perhaps even above all, on its personnel.

The problem treated is to study risks linked to the dashboard. That's why the following paragraph that we develop is about performance indicators.

There are many approaches to compute performance indicators. In the following[1], we will develop the most known:

-The traditional accounting approach:

It is based on analytical accounting

-The activity based costing approach:

The objective of the ABC is the identification and traceability of costs. The model requires the identification of activities and the relevant cost factors relating to these activities. The first stage of the analysis consists in defining the relevant activities in relation to industrial objectives. We thus obtain a cross table: activity x functions

We can then determine by aggregating the costs by process and by product.

To analyze the performance of a critical activity, we look for the influential factors

These causal factors play an essential role in activity-based management

- The hidden cost and performance approach:

This method consists of using five headings 1) absenteeism 2) work incidents 3) product quality 4) staff turnover 5) direct productivity and analyzing their impact in terms of extra pay, time, overconsumption, non-production, non-creation of potential and risks

It also uses the principle of inductors

-The COQ (costs of obtaining quality):

This method consists of looking for indicators of non-quality of products, work and organization

The analysis focuses on 4 factors

- cost of anomalies and internal failures

- cost of anomalies and external failures

- cost of detection and evaluation

-costs of equipment inefficiency

The method evaluates all the losses of operating results due to the lack of efficiency of the installations

-The direct value added method

The method consists in defining a VAD brought back to the time of manufacture

VAD can thus be calculated by family, by production sold and by function

VAD can thus be calculated by family, by production, sold, by function

-The ECOGRAI method

It is based on the following principle

We start from a production system that we define by its physical activities, its information patterns and its decision-making centres. The decomposition is carried out on 2 criteria: a functional criterion and a temporal criterion.

-The Lee Balanced scorecard method

It is based on the financial perspectives:

She is based on the financial perspectives:

-manufacturing cost

- storage cost

-acquisition cost

It is based on customer perspectives, internal processes and growth innovation parameters

-The SCOR model

It is organized as the author of 4 domains

PLAN, SOURCE, MAKE and DELIVER

In aggregate, the SCORE model is organized around 4 dimensions

- 1)reliability of business performance
- 2) flexibility/responsiveness
- 3) supply chain cost
- 4)rotation of capital employed

Regarding risks linked to dashboard, we can identify 7 types :

- 1)data accuracy: If the data being displayed on the dashboard is incorrect or outdated, it can lead to poor decision making
- 2)security: Dashboards often contain sensitive information, so proper security measures must be in place to protect against unauthorized access.
- 3) usability: Dashboards can be complex, so it's important to design them in a way that is easy for users to understand and navigate
- 4) data visualization: If the data is not properly visualized, it can be difficult for users to understand and make sense of it
- 5) scalability: As the volume of data increases, the dashboard may not be able to handle it, leading to poor performance and slow load times
- 6) Interoperability: Dashboards may need to integrate with other systems, so it's important to ensure that they are able to do so seamlessly
- 7) privacy: In some cases, the data displayed on the dashboard could be sensitive and may need to be kept private and accessible only to authorized users

We focus in our research on data accuracy. In fact, we study how to improve performance indicators so that the corrective measures are obtained rapidly.

2. Conceptual model

We determine the risk linked to each performance indicator then, we determine a more relevant indicator.

3. Case study

We apply the last model in SEB (Sousse, Tunisia). It's a company specialized on building bridges, buildings and roads.

Indicator n°1:

Name: rate of non-compliance with legal requirements and other applicable requirements

Risk: the indicator is general. We do not know on which requirement we must focus.

New performance indicator:

rate of non-compliance with legal requirements and other applicable requirements per requirement

Indicator n°2:

Name: rate of achievement of planned actions

Risk: the indicator is inaccurate. We do not know on which action we must aim to improve the company performances.

New performance indicator:

rate of non-achievement of planned actions per action

Indicator n°3

Name:cost of the project

Risk: We don't know the origin of the cost

New performance indicator: Cost per activity realized/Cost per activity planned

Indicator n°4:

Name: project service rate

Risk: We don't know on which service we must focus.

New performance indicator: : project service rate per service

Indicator n°5:

Name : customer satisfaction rate

Risk : We don't know on which customer we must aim to improve company efficiency

New performance indicator: customer satisfaction rate per customer

Indicator n°6:

Name: deliverable compliance rate

Risk: we don't know the quality problem on which we must focus

New performance indicator:

Unsatisfactory deliveries by quality problem

Indicator n°7:

Name: availability rate of human resources by project

Risk: we don't know the most important origin of absenteeism

New performance indicator:

Absenteeism rate per reason and per project

Indicator n°8:

Name: rate of completion of training actions

Risk: we don't know whether all worker training requests have been considered

New performance indicator:

: rate of completion of training actions per worker

Indicator n°9

Name: rate of achievement of objectives

Risk: we don't know which objective has the more problems

New performance indicator:

Rate of achievement of objective per objective

Indicator n°10:

Turnover rate

Risk: we don't know on which type of customer we must aim to improve the turnover rate

New performance indicator:

Turnover rate per category of customers

Indicator n°11:

Compliance rate of raw materials and spare parts purchased

Risk: we don't know from which supplier we have problems

New performance indicator:

Compliance rate of raw materials and spare parts purchased per supplier

Indicator n°12:

Rate of compliance with the preventive maintenance schedule

Risk: we don't know how to focus on problems linked to the maintenance schedule

New performance indicator:

Rate of compliance with the preventive maintenance schedule per machine

Indicator n°13:

Equipment availability rate

Risk: We don't know how to focus on problems

New performance indicator:

Failure rate machine by machine and by anomaly

4. Conclusion

The case study can make the responsible of the company able to strategic optimising actions rapidly. In fact, the performance indicators are relevant. In the future researches, we will develop a methodology to manage risks linked to decisions.

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