

# Transition Platform To Virtual Era

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**Abstracts:** big data platform for transition to virtual era

## 1. Introduction

In recent years, we have seen a lot of publicity about the importance of data management and the need to deploy it by firms. Data known as an asset, and every day we hear buzz words such as data management, cloud computing, big data, Data Lake and data analytics, etc. on the Internet. In this regard, we see management systems, tutorials, courses, software and applications in the field of data management, predictive analytics, and so on. Nowadays, Big Data Management (BDM) as emerging technology seems essential for each firm to survive in the virtual era. It will boost their capabilities to manage threats and opportunities that resulted from the fast competitive marketplace by Data Analytics. Despite leader's perceptions about BDM, it has known as Mandatory Strategy that each firm should take along with the digital transformation path. They will be faced with challenges such as big data collection, analysis, knowledge and technologies when going to deploy BDM. Still, most of the firms are not able to collect external data. Moreover, Internal structured master data looks like an easy target for them in first step of BDM implementation. However, they must try to manage all data. Because, unstructured data growing rate is higher than structured data, and capability in processing and collecting more data can increase the accurate insights. Ensuring Data's quality, availability, integration, Governance and analytics is responsibilities of Chief Data Officer (CDO) and his staff. On the other hand, data analytics at different levels within the organization also boosts innovation. On that ground, a platform should design to manage data-driven innovation. Otherwise, implementation of BDM will suppress innovation. Obviously, more data and predictive analytics (BDM) can lead to informed decisions and strong solutions (Figure.no.1).

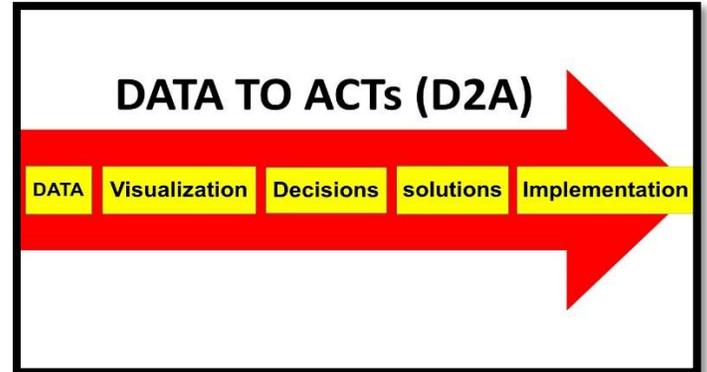


Fig.No.1

Trend of future value will be accessible by statistical methods. Then Identifying opportunities and threats of the future value will nominate correct decisions successively. (Predictive analytics) The Opportunities and threats should clarify according to Key Success factors (KSF). At that time, High consequence's threats and Most Value added opportunities could be selected. After that, each person could announce his suggested solutions to a final decision maker accordingly. The approved solutions should be planned for implementation.

### 1.1 Case Study

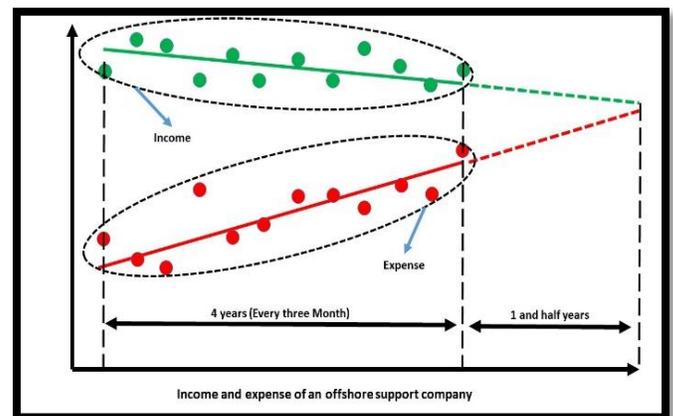
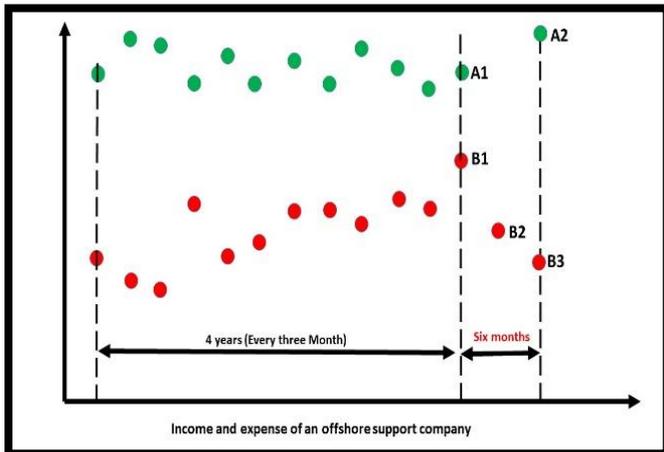


Fig.No.2

In 2011, we collect every three-month income and expense data for an offshore support company. Statistical analysis indicated that increasing expense rate and decreasing income rate would cause after a year their trend lines cross each other (Predictive analytics), which shown in figure.no.2. After investigation of income and expense data, it found that unplanned maintenance was the main cause. Maintaining income and expenses of company as key success factors announces to each company's party.

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Furthermore, maintenance department asked to reduce unplanned maintenances as a critical success factor. Analyzing the expense's items indicated that vessels fuel consumption, maintenance and repair, provisions, personnel wages, certificates and insurance cost are main part of company expense. It found that there is an opportunity to reduce bunkering cost regarding receiving government fuel subsidies for a vessel that sailing inside territorial water. Due to reducing bunkering cost, B1 should shift to B2 in figure. No.3, also because of deleting off hire days by programmed maintenance during six months A1 should shift to A2, and B2 should shift to B3.(prescriptive analytics)

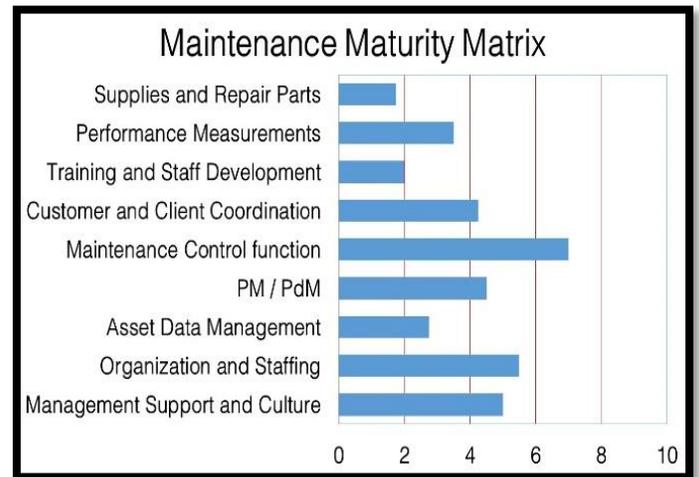


**Fig.No.3**

Real time monitoring of trends will confirm solutions' effectiveness and predictions validity. Monitoring of expense data shown that expense shifted from B1 to B2 during three months. However, incomes decreasing rate and expense increasing rate still were same as before after Six months. The solutions should follow up continuously in order to achieve acceptable effectiveness. It must be found out why implemented solutions were unsuccessful in prevent unplanned maintenance (Diagnostic analytics). Therefore, the evaluation of the maintenance system started based on the maturity matrix and the following reasons were found according to weaknesses (Figure.no.4):

- Most of the failures in critical machineries related the repaired spare parts.
- Repair's durations are much more than standard prior to delay in receiving spare parts and low experiences maintenance personnel.
- Maintenance persons were under serious workloads due to the high critical maintenance backlog.
- Fleet's maintenance qualities were inadequate during the past dry-docking.

Finally, the unplanned maintenances were reduced by 87% due to implementing new solutions.



Maintenance system Maturity Matrix results

**Fig.No.4**

Above real experience presented that maturity assessment and data management integration improved the Company's revenue.

## 2. Determining Critical Success factors

In today's turbulent world, Maturity assessment (total gap analysis) integration with BDM gives firms required abilities to respond to rapid changes. The combination of Business analytics and Management system is Vital to create a dynamic strategy. The first place to apply previously mentioned combination is identifying Business sector Key Success Factors (KSF). Then maturity assessment should conduct to determine capabilities and strength point of target firm. Ranking of KSF started in order to prioritize them in the path of determining Critical and non-critical success factors. Defining the improvement projects of CSFs Based on agile (scrum) is the last part of improvement strategy.

- Identify KSFs.
- Implement management system Maturity Assessment.
- Determine CSFs.
- Announce CSFs and manage solutions.
- Define and implement Improvement Projects.

### 2.1 Case Study

In 2014, an upstream oil and Gas Company faced with a failure on seabed pipeline. Test Results on damaged pipeline in a laboratory indicated that improper corrosion management was the main cause. Benchmarking of industry indicated that establishment of the pipeline integrity management system (PIMS) was a best solution. Our company suggested three projects to them regarding the pipeline failures. First project title was: Comprehensive and strategic studies on identifying, assessing and classifying threats and vulnerabilities. Nonstop flow of gas in each pipeline is an industry Key Success Factor. Therefore, establishment of PIMS will be an effective solution. Seabed pipelines' condition assessment Data indicated many corroded areas. Three Teams have assigned to repair, but there was high possibility of

pipelines' failures again. Hence, capability to repair failed pipeline based on emergency is determined as CSF. Emergency pipeline repair system (EPRS) should be established as soon as possible in order to maintain the KSF. Of course, PIMS also put in projects' backlog. Moreover, Emergency pipeline repair services outsourced until completion of EPRS deployment. Furthermore, damaged pipelines operated under normal condition until repair has carried out. A month later, a rupture happened because of anchoring operation of a Platform support vessel. Temporary repair carried out less than a week by selected company. All repair jobs accomplished eight months after that accident. And effective deployment time of EPRS and EPRS took more than a year.

### 3. Transition Platform to virtual era

Firms have to seek new methodologies and tools that will ensure their growth and development constantly. Today, they experience significant changes around them. These changes lead to new challenges. Goal settings to lead and directing organizational resources to achieve best performance during digital transformation. BDM plays a very important role in improvement strategy steps. Not only Big Data Analytics (BDA) are able to give insights to leaders and managers in order to identify KSFs and availability of maturity assessment that is necessary to determine CSFs, But also it is support the effective use of human resources' capability and creativity. In this regards, BDA and CSFs must become available in order to gather personnel's suggested solutions. They should be able to predict the results of their solutions. Furthermore, since agility is crucial in fast digital transforming, so selected solutions should be implemented based on Scrum. Feedback of implemented solutions also could be monitored in order to support sustained changes. Organizational structure needs to proper modifications in transition to the virtual era. Advertising on Big Data should not make us think that Capability in BDM is all to do. Economics, technological, social, environmental and geopolitical fast changes required proactive quick responses and actions by firms. They require a platform which is containing close interrelation between Big data, Critical success factors, Innovations and agile as separate modules (Figure.No.5).

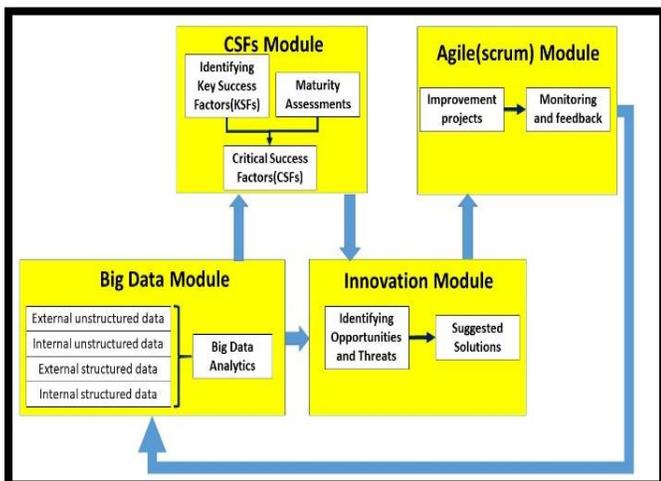


Fig.No.5

### 3.1 Big Data Module

Collecting, transforming, storage and analytics of big data are main tasks of this module of the platform. Managers and personnel should be able in access to data and analytics in decision-making process and suggesting solutions for announced CSFs.

### 3.2 Critical Success Factors Module

Analytics may apply to monitor any alterations in KSFs and maturity assessment in order to determine CSFs. Performance-based Maturity Key readiness indicators (KRI) trend indicates firm capabilities and shortages in CSFs. So after prioritizing, projects (business case) will announce to related department and personnel by CSFs list.

### 3.3 Innovation Module

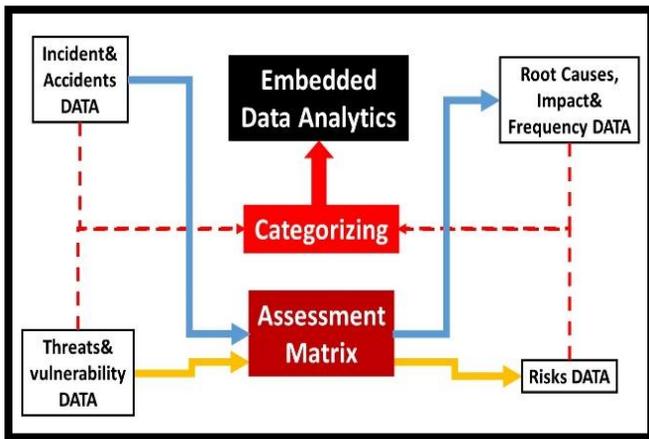
Individuals and department have access to data analytics and prioritized projects with purpose to Create and supporting an innovative organizational atmosphere. Finally, Innovating solutions are collected in this module.

### 3.4 Agile Module

Selected solutions will put in Scrum Improvement backlog at agile module. Each solution is planning, implementing and monitoring by sprint(s) and tasks, which will be assigned to team(s).

### 3.5 Case Study

In 2016, we were the HSE consultant of a parent (national) Oil and Gas Company. Incident& accident management and investigation started as a project. We had chance to direct an HSE general visual inspection of two oil and gas production fixed platforms. Furthermore, we assigned to work in one of their subsidiary company on the Incident Command system (ICS). We found that there was not any data-management system. BDA can be applied to HSE management in order to drive success in risk management and reducing incidents. In this regard, BDA and firm's processes should be integrated. And more important is the integration between risk and incident management. IN 2013, we suggested the integrated risk assessment and root causes analysis software to the parent company. During the aforementioned project, excel based data gathering and analytics of incident& accidents designed by purpose of creating an embedded analytics. A week before writing this case, there was a meeting with their IT department; we were surprised when we found out that IT designed a platform to DATA gathering and analytics for internal data on the company portal. The question is why they resist applying data analytics to their HSE management? We are going to discuss BDA analytics for HSE management platform hereinafter. A common assessment matrix is used to evaluate risk and accident impact level. The risks and accidents in different level, Root causes, frequency of the accidents categorized by Reference data. Places, processes, activities, assets and departments belong to firm could be used as reference data. Data analytics results from the categorizing block (figure.no.6).

**Fig.No.6**

"Zero accident" is vision and a Key success factor of HSE management. Data analytics is used to determine high potentiality in places, processes, activities, assets and departments. Root cause assessment of the high potentialities could indicate critical success factors (CSFs) in order to preventing incidents & accidents. Embedded analytics and announcement of Root causes are capable firms to collect and evaluate suggested solutions. Actions should be implemented by scrum methodology in order to prevent chance of any potentiality occurrence.

#### 4. Conclusion

Despite vast advertising, Big Data can revolutionize business only alongside with Agile, CSFs and Innovation's modules. Firms' data-driven responses even buying market analytics services should form via a platform that is containing above-mentioned modules to anchor BDA to their dynamic strategy in order to manage threats and opportunities. The performance of this platform will ensure the success of the firms.

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