

AN APPROACH TO OPTIMIZE IT GOVERNANCE TO ALIGN WITH BUSINESS GOALS IN IT INDUSTRY

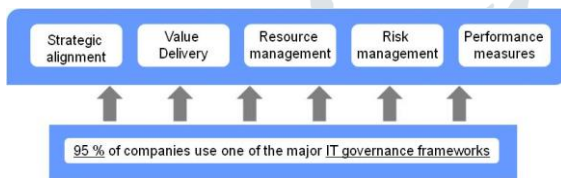
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I. INTRODUCTION

IT Governance is the key contributor in the success all the IT projects. ¹ The Focus areas of IT Governance are

- Strategic alignment
- Value Delivery
- Resource Management
- Risk Management
- Performance Measures



Major challenges that impacts the success of IT projects are

- User Involvement
- Executive Management Support
- Type of requirements

We have internationally recognized Governance Frameworks such as COBIT – (Control Objectives for Information and Related Technology) a framework created by ISACA – (Information Systems Audit and Control Association) for information technology (IT) management and IT governance. ITIL - Set of practices for IT Service Management (ITSM) that focuses on aligning IT services with the needs of business. We also have many customized frameworks as per the type of the business models and many project management tools to track the progress of the delivery and business goals.

This paper is part of the ongoing research programme with Sathyabama Institute of Science and Technology

II. PROBLEM STATEMENT

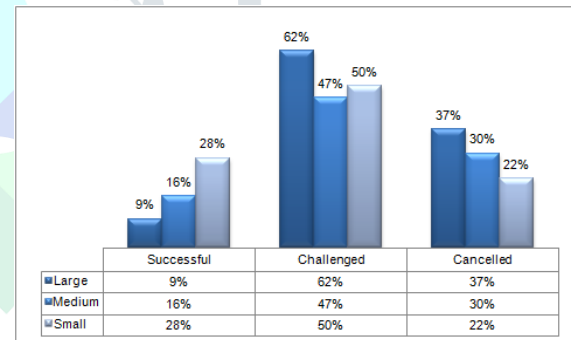
Lack of standard governance tools to predict the success and failure probability of IT projects . Most of the software projects are being executed with with task oriented mindset without focusing on the overall

success of the projects. This can increase the risk of the rework, delay in delivery and even failure of short term and long term objectives.

III. SUCCESS AND FAILURE OF IT PROJECTS

² As per the The Standish Group - Chaos Report – Survey conducted to around 365 IT Executives working on around 8400 Applications

31.1% of projects will be cancelled before they ever get completed. Further results indicate 52.7% of projects will cost 189% of their original estimates



On the success side, the average is only 16.2% for software projects that are completed on- time and on-budget. In the larger companies, only 9% of their projects come in on-time and on-budget

Following are the ³10 Main Causes of Project Failure

S.No	Main Causes of Project Failure
1	Poor Preparation
2	Inadequate Documentation and Tracking
3	Bad Leadership
4	Failure to Define Parameters and Enforce
5	Inexperienced Project Managers
6	Inaccurate Cost Estimations
7	Little Communication at Every Level
8	Culture or Ethical Misalignment
9	Competing Priorities
10	Disregarding Project Warning Signs

⁵ The 2017 Pulse findings continue to show that when proven project, program, and portfolio management practices are implemented, projects are more successful

⁵ As per the recent "Pulse of the Profession 2017" report from PMI, organizations are experiencing more success implementing strategic initiatives.

IV. PROPOSED APPROACH

Governance Team generally handles activities at a Portfolio, Program or Project level.

- Project is a set of activities with agreed timelines
- Program is a group of related projects
- Portfolio is a combination of Program and Projects aligned with strategic initiatives

This Governance approach with predictive model is applicable only at project level. This project level result can be grouped to determine the status of the Program or Portfolio

This Governance predictive model gets current project data and past project data as inputs to determine the probability of the project success percentage.

⁶ Predictive modeling works by collecting data, creating a statistical model and applying probabilistic technique to predict the likely outcome

⁷ Following are the Statistical Techniques considered for this approach

1. Linear Regression
2. Classification
3. Resampling Methods
4. Subset Selection
5. Shrinkage
6. Dimension Reduction
7. Nonlinear Models
8. Tree Based Models
9. Support Vector Machines
10. Unsupervised Learnings

1. Linear Regression - Method to predict a target variable by fitting the best linear relationship between the dependent and independent variables
2. Classification - Data mining technique that assigns categories to a collection of data in order to aid in more accurate predictions and analysis
3. Resampling Methods - Drawing repeated samples from the original data samples. It is a non-parametric method of statistical inference

4. Subset Selection - Identifies a subset of the predictors that we believe to be related to the response.

5. Shrinkage - This approach fits a model involving all predictors, however, the estimated coefficients are shrunken towards zero relative to the least squares estimates

6. Dimension Reduction - Dimension reduction reduces the problem of estimating $p + 1$ coefficients to the simple problem of $M + 1$ -----*coefficients, where $M < p$

7. Nonlinear Models - Form of regression analysis in which observational data are modeled by a function which is a nonlinear combination of the model parameters and depends on one or more independent variables.

8. Tree-Based Methods - Tree-based methods can be used for both regression and classification problems. grow multiple trees which are then combined to yield a single consensus prediction

⁸ Decision trees are simple and interpretable models for regression and classification. However they are often not competitive with other methods in terms of prediction accuracy

9. Support Vector Machines - SVM is a classification technique that is listed under supervised learning models in Machine Learning.

10. Unsupervised Learning - Clustering is an example of unsupervised learning in which different data sets are clustered into groups of closely related items.

Based on the investigation of the different types of statistical techniques, classification technique is being used in the prediction process.

⁹ Classification techniques are used because it is a systematic process for obtaining important and relevant information about data, and metadata. The classification analysis helps to identify the categories the data belongs.

¹⁰ Features of Classification Techniques

- A classification task begins with a data set in which the class assignments are known
- Classifications are discrete & do not imply order
- Classification algorithm finds relationships between the values of the predictors and the values of the target.
- Classification models are tested by comparing the predicted values to known target values in a set of test data

Since we have to predict the Success and failure probability of the software projects we will use a binary classification model with Oracle Data Mining

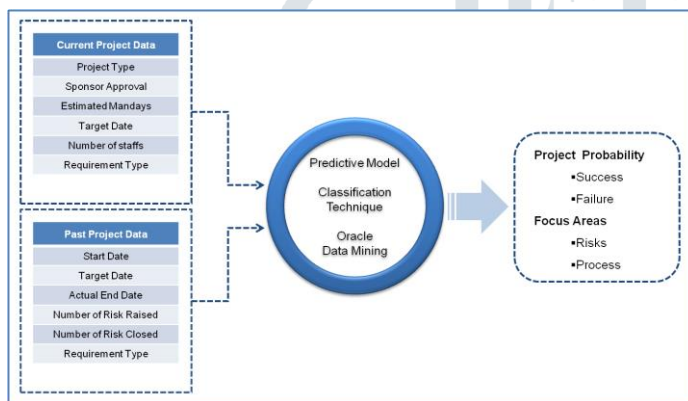
¹¹ Oracle Data Mining (ODM), a component of the Oracle Advanced Analytics Database Option, provides powerful data mining algorithms that enable data analysts to discover insights, make predictions and leverage their Oracle data and investment.

V. ALGORITHMS

¹⁰ Following algorithms are available in Oracle Data mining for classification mechanism

- Decision Tree
- Naive Bayes
- Generalized Linear Models (GLM)
- Support Vector Machine

Overall Architecture of the model



Current Project Data and Past Project Data are the key inputs to determine the success probability and key focus areas.

VI. MODEL IMPLEMENTATION

This approach can be used with existing Governance Models such as COBIT or ITIL to determine the focus on the areas such as

- Strategic alignment
- Value Delivery
- Resource Management
- Risk Management
- Performance Measures

This model can also be implemented in the local or customized governance of the software projects

VII. ADVANTAGES

- ✓ Helps to get an initial governance view on the success and failure probability of the new projects
- ✓ Management information based on the current and past project data
- ✓ Can be customized and used across different types of software projects
- ✓ Algorithm based prediction with maximum accuracy on the results
- ✓ Project failures can be eliminated based on the results in the focus areas

VIII. CONCLUSION

Implementing this approach in the initial governance age of the software projects will be a value add in the existing Governance model and help to increase the success rate and to align with business goals. Using this approach we can also optimize the process, change the task oriented mindset.

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