**Date:** 16 May, 2016

**Re: Proposal to use Data Analytics to model and predict employee turnover within JCN Inc.**

**From:** Natarajan Shankar, Data Science

**Issue:** Workforce attrition is a cause of concern at JCN Inc., which has a staff of 400. The employee turnover rate has affected the company bottom line when organizations that are critical to the core business operations and product, such as Product Engineering and Sales, have lost employees. These critical employees are well trained and extremely competent and their attrition has caused major quantifiable gaps in product delivery, replacement hire and ramp up and re-training cost.

**“Why are employees voluntarily leaving”?**

Shankar will **build** a **model** of attrition and the reasoning behind it by **collecting data** on all employees who are voluntarily leaving. Attributes relating to the work environment, both personal and company related, will be **queried and quantified and normalized**. Shankar will **discover and document associations** between the chosen data attributes and document trends.

A representative set of top-level data, with sub attributes, that will be used to model the event:

1. Relationship with Manager, Rank 1, Qualitative
2. Team dynamic, Rank 2, Qualitative
3. Compensation satisfaction, Rank 5, Qualitative
4. Career term and path, Rank 3, Qualitative
5. Work place stress, Rank 2, Qualitative
6. Personal, Rank 4, Qualitative
7. Manager’s rating, Rank 5, Qualitative
8. Company culture, Rank 3, Qualitative

**The strategic question to answer is: “How can valued employees be retained”?**

Shankar will **create a predictive model** using multivariate data modeling techniques, using the data identified in the tactical study and create a predictive index called the Employee Attrition Likelihood (EAL) for employees in various employment classes This normalized index will use the top-level data measurements to predict possibility of attrition and recommend defensive action based upon the value of the index and trend over time.

A representative summary of the decision matrix is:

1. EAL > 0.8, Employee not at risk
2. 0.7 < EAL <= 0.8, EAL trend negative over 2 quarters, at risk, flag Yellow
3. 0.7 < EAL <= 0.8, EAL trend is positive over 2 quarters, defensive action working
4. EAL <= 0.7, Employee is attrition risk, flag Red, begin defensive action

There are roadblocks to success:

1. Population sample: The **population sample** must be **truly representative** and large enough for models to be effective
2. Data collection and normalization: Data in the tactical study is overwhelmingly qualitative and data perspective will vary significantly and thus the **data must be normalized in** order to prevent decision skews
3. Data Modeling: Developed models must be validated over time and **refined adaptively** as more data is collected