ANLY482 - ANALYTICS PRACTICUM

PROJECT PROPOSAL

TEAM MST

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Using Social Network and Text Analytics to evaluate Sales Performance through Relationship Data

Introduction

Advanced analytics have permeated almost every aspect of business management, from sales and marketing to finance and operations. Once carried out through intuition and experience, the human resource (HR) function is now undergoing its own revolution in the form of People Analytics. People Analytics provide HR professionals with data-driven methods to evaluate human capital and uncover critical workforce insights, thus diminishing the "guesswork" and uncertainty that comes with talent management.

This project seeks to assist TrustSphere in gaining insight into how efficiently their sales team communicates within the company's external and internal network. Furthermore we aim to develop a dashboard that helps them monitor these communications and assess the performance of their sales employees.

Sponsor

TrustSphere delivers Relationship Analytics solutions, enabling organizations to unlock the value of their own networks. This set of analytics surfaces insights that help clients across the globe improve key business issues including sales force effectiveness, enterprise-wide collaboration and corporate governance. Solutions are delivered through leading technology and business partners such as IBM, Salesforce.com, SugarCRM.

Motivation

While much has been explored in the field of Sales Analytics, a quick search reveals that few companies have delved into the area of Sales People Analytics. Deloitte found that almost 70% of companies felt they were weak in using HR data to predict workforce performance and improvement.

Conventional wisdom tells us there are several ways to evaluate a salesperson's performance, such as the size of his external network and his sales figures. New research say this is an oversimplification of sales practices. Steward et al. (2010) found that higher-performing salespeople regularly activated their internal company networks to coordinate a team of experts tailored to serve a particular customer. Purely focusing on sales figures as an indicator of performance also neglects the time aspect. Sometimes long-term projects take months to realize revenues. Harvard Business Review also found that spending time with both internal and external connections contributed to success in selling.

Data

Currently, the following 3 sets of data are provided by TrustSphere:

1. Daily email communication data

This dataset contains daily email communication data (from May 2016 to present) and variables deemed relevant in our visualization. A total of 70,000 entries are provided.

Date: Includes the date and time of a particular email being sent

Originator address: Sender email address

Recipient address: Receiver email address

Direction: Nature of communication (internal, inbound or outbound)

MsgID: Unique message ID of emails sent

Email Subject: Email subject header

2. Staff Relationship Report

This dataset lists all of TrustSphere sales employee's unique relationships with both internal and external party. It includes their relationship metrics and contains 9 variables deemed relevant.

Contact domain: Sender's email domain

Internal address: TrustSphere employee's address

Contact address: Receiver's email address

Trustscore: Relationship score calculated by TrustSphere (confidential)

Received: Number of emails received

Sent: Number of emails being sent

Last contact: Number of days last email was sent or received

Last in: Date and time of last email being received from a particular address

Last out: Date and time of last email being sent to a particular address

3. TrustSphere's Staff List

The dataset lists all of TrustSphere staff (57) with the following variables.

Name

Hierarchy

Department

Position

Location

TrustSphere will be providing updates of their recent email communication data to the team once every 3 days during the course of this project.

Business Problem

TrustSphere has a sales team spread across APAC, US and the UK. This has made it hard for the Sales Director to track salespeople activity, especially in a fast-growing company.

Additionally, while a salesperson may be physically located in one particular office, TrustSphere's salespeople tend to engage in business with clients internationally. A salesperson in Singapore might try to expand his sales into the UK, even though there are already local salespeople there. This also raises some questions about productivity. For instance, are two salespeople from different offices unnecessarily pursuing the same clients?

As a Relationship Analytics company, TrustSphere is also naturally curious about the networks its salespeople are involved in and their effects on sales performance. TrustSphere has pointed out that its salespeople have a tendency to work in silos instead of sharing information. Such behaviour is beneficial to the salesperson who gets to keep his leads to himself and enjoy greater earnings. However, this might negatively affect the company's overall performance.

Research Objectives

We aim to analyze the sales team's internal and external networks to gain insight into their communication strategy, to identify silos and any other red flags which may lead to adverse consequences for the company. We seek to develop metrics that would indicate sales health performance in terms of relationships.

On the whole, we seek to address these problems and present our insights by building a dashboard which allows the Sales Director an eagle eye's view of the entire sales team's performance and activity

Scope of Work

The research points we would like to address include:

1. **Uncovering Insights into Network and Sales performance**
   A. Develop a measure to evaluate the quality of internal and external relationships formed, possibly using recency, frequency, TrustScore etc.
   B. Discover opportunities through text analysis on salespeople's email headers and placing them into an appropriate sales cycle
   E.g. For Salesperson A, 50% of emails about closing, 20% about meetings

2. **Analysing the Sales Team's Internal Network**
   A. Analysing salespeople interactions with various other departments e.g. marketing
   B. Deriving a collaboration score to observe how salespeople activate their internal connections to serve an account.

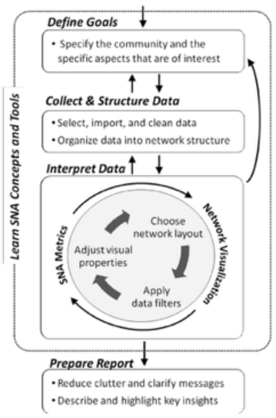
C. Deriving a salesperson’s influencer score within the organization using eigenvector centrality. This will include factors such as Hierarchy, Number of Ties, Strength of Ties to other influential people within the organization
D. Tracking a salesperson’s network trajectory i.e. how a salesperson’s internal network changes over time

3. Analysing the Sales Team’s External Network

A. Tracking the sent and response rate of emails
B. Identifying which client sectors a particular salesperson tends to interact with e.g. Healthcare, Education, Government
C. Measuring dependency of the firm’s business on a particular salesperson/a team of salespeople

Methodology

The approach taken for this project will follow the Network Analysis and Visualization Process Model.



Using email communication datasets provided, an appropriate visualisation graph will be created which will look at (1) the individual position metrics of employees and (2) the overall network metrics of the organization.

We look to create a sales dashboard for each employee which will map out their individual relationship network, emphasising on their relationship strength and connectivity with colleagues, department, superiors and clients. We aim to implement a dynamic network visualization graph to monitor changes in employee’s network structure over time. These changes could be attributed to increased collaborations with their colleagues or clients. It also enables the organization to determine their staff’s capacity for greater collaboration and hence increase connectivity with others.
Some of the metrics calculated in this dashboard can be found in the previous section, scope of work. Further statistical research will be carried out during the course of this project to determine the appropriate measures for calculating these metrics.

Work Plan

Task		W0	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14	W15	Status
Research																		
Find a Project	All																	Completed
Proposal Development	All																	Completed
Proposal Submission																		
Proposal Document	Tarika, Mabel																	Completed
Wiki Page	Siti																	Completed
Data Preparation and Exploration																		
Preparation and Cleaning	Siti, Tarika																	Pending
Integration Planning	Mabel, Siti																	Pending
Exploaratory Data Analysis	All																	Pending
Tools Exploration	Siti, Tarika																	Pending
Analyse and Design Data Representation	All																	Pending
Iterate with Client	All																	Pending
Network Analysis																		
Design Dashboard	Siti, Tarika																	Pending
Internal and External Social Network Visualizations	Siti, Mabel																	Pending
Test Dashboard	Siti																	Pending
Iterate with Client	All																	Pending
Revise Scope	All																	Pending
Midterm Presentation																		
Presentation	Tarika																	Pending
Report	Mabel																	Pending
Wiki Page	Siti																	Pending
Post Mid-Term Presentation																		
Revise Scope	All																	Pending
Iterate with Client	All																	Pending
Test Dashboard with Live Data	All																	Pending
Build Alert System	Siti, Tarika																	Pending
Final Presentation																		
Presentation	Tarika																	Pending
Report	Mabel																	Pending
Wiki Page	Mabel																	Pending
Poster	Tarika, Mabel																	Pending

Deliverables

Report and Presentation of Findings

A report and presentation of the findings of the sales team's network and communications and how they fare on the performance metrics determined by our scope of work.

Sales Dashboard

The sales dashboard which will map out their individual relationship network, emphasising on their relationship strength and connectivity with colleagues, department, superiors and clients. This will help TrustSphere to successfully monitor the performance of their sales employees.

Alert System

An alert system will be incorporated into the dashboard - the system will send an email to the sales manager at TrustSphere each time a sales associate has not responded to an email from an external party within a specified number of working days (to be discussed with TrustSphere).

Requirements from Client

An anonymised communications dataset to answer our preliminary questions. Using the insights from this dataset we will create a reporting model and dashboard that TrustSphere can use to assess and monitor performance of their sales associates. Once the model is created we will require a larger dataset to test the validity of our insights and the application of our dashboard.

Weekly meetings with our point of contact at TrustSphere to discuss the scope and progress of the project.

Privacy

As the depth of the insights is heavily dependent on the volume of data obtained from TrustSphere we are ready to take responsibility for maintaining the privacy of any and all data provided to us by our sponsor for the purpose of this project. A non disclosure agreement has been signed by both the

References

team and TrustSphere guaranteeing the same as of 18 August 2016.

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