

Financial Graph: Applying Graph Analytics to Consumers' Financial Statement Transaction Data

Adesanmi Fasoro

September 2016

**Dissertation submitted in partial fulfilment for the degree of
Master of Science in Information Technology**

**Computing Science and Mathematics
University of Stirling**

Abstract

The present work aims to apply graph analytics to customers' financial statement transactions (FST) dataset provided by The ID Co. The ID Co stakeholders have determined the business objectives of the project which include the preparing the FST data in an applicable form to be graph-minded, split the FST data based on spending category, and build graph mining model with visualisation. To accomplish the business objectives, several tasks must be carried out and achieved such as data cleansing, data preparation, graph construction and analysis and most importantly project evaluation by the stakeholders.

The project was implemented using the amended version of popular data mining methodology known as Cross Industry Standard Process for Data Mining Model (CRISP-DM) which consists of seven phases namely business understanding, data understanding, data preparation, modelling, graph visualisation, evaluation and deployment.

FST constitute a rich source of information and has the ability to aid business decision making. In this dissertation I present Graph Analytics (GA) system deployed for exploration, analysis and visualisation of FST data. By exploiting the relationship within the customer spending events, I am able to apply GA methods and algorithms to uncover patterns and insights. Apache Scala and GraphX API was implemented for graph construction and analysis while Gephi / D3 for visualisation. The result of the GA showed that Financial Graph can be achieved with the use of GA on FST data.