ORENDA SOFTWARE SOLUTIONS | CANADA GENERAL ELECTION 2015

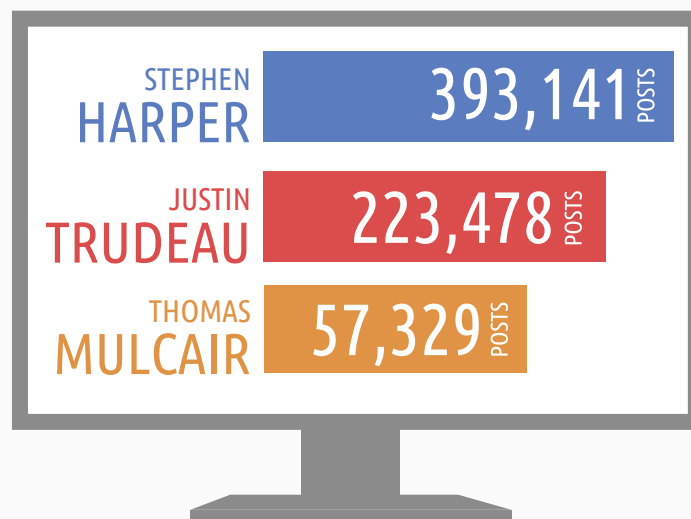The Canada General Election was called on August 2nd and scheduled for October 19th

The 78 day span made for the longest federal election campaign since 1872

Orenda tracked and assessed social media mentions of the party leaders for the duration of the campaign

POSTS PER CANDIDATE

In relation to the election each candidate was mentioned by the public in:

STEPHEN HARPER — 393,141 POSTS

JUSTIN TRUDEAU — 223,478 POSTS

THOMAS MULCAIR — 57,329 POSTS

Early comparisons were based on sentiment analysis of the posts and revealed that mentions of Stephen Harper were more negative than other party leaders, where posts mentioning Mulcair were more positive

The problem with this sentiment analysis of the posts is that the sentiment on its own does not indicate voter intent.

Orenda functions as a measurement tool, indicating how conversations about a brand are interpreted, according to methodologies in public relations and other social sciences. We've applied numerical metrics to qualitative data that previously could not be quantified.

Orenda was able to transfer qualitative messages into quantitative data points and compare these measures against one another, and against public opinion poll data

Public opinion polling data was taken from eight national sources:

- Abacus Data
- Forum Research
- EKOS
- Leger Marketing
- Nanos Research
- Mainstreet Research
- Ipsos Reid
- Innovative Research

Public opinion data was compared with Orenda data, daily, throughout the campaign period. It was observed that the changes in Orenda data plots would be similarly reproduced in public opinion data

ANOVA revealed that Orenda's scores were correlated with public opinion data and the results were statistically significant

From the eight categories Orenda measures, we found that an interaction between at least two categories is an accurate indicator of public opinion data. The categories that are used to predict voter intent are different among the political parties

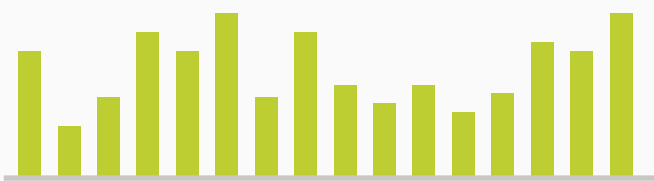|	SUM OF SQUARE	DEGREES OF FREEDOM	MEAN SQUARE	F-TEST	STATISTICAL SIGNIFICANCE
JUSTIN TRUDEAU (PREDICTIVE STRENGTH 61%)					
CHARACTER*SATISFACTION	160.20	12	13.35	2.26	.03
ERROR	224.88	38	5.92		
TOTAL	581.28	58			
STEPHEN HARPER (PREDCITIVE STRENGTH 63%)					
CHARACTER* EXHANGE OF BENEFITS	83.97	13	6.46	3.55	.01
ERROR	62.27	37	1.82		
TOTAL	179.63	58			
THOMAS MULCAIR (PREDICTIVE STRENGTH 71%)					
GENERAL*SATISFACTION	245.85	14	17.56	2.09	.04
ERROR	301.86	36	8.38		
TOTAL	1046.04	58			

- Linear Regression (ANOVA) method was used.

- Significance threshold was set at .05. P<.05 for each analysis, indicating that Orenda values quantifying reputation are statistically significant.

- Public opinion poll data was taken from several research firms, averages were calculated when more than one value was published for one day.

- Missing values were excluded from analysis.

TRUST INFLUENCE SATISFACTION COMMITMENT

CHARACTER SOCIAL EXCHANGE OF GENERAL
RESPONSIBILITY BENEFITS

Orenda organizes and provides numerical metrics for 8 different categories that drive brand and reputation. We have found that no one category is correlated to public opinion data, but an interaction between two are in each case correlated and significant.

SATISFACTION ⟷ GENERAL

Orenda was able to identify changing dynamics of public opinion before traditional polling data through the analysis of social media posts.
We have found that measuring social media posts is a reliable method of polling voter intent

Based on Orenda data, we were able to gauge the likely outcome of the election on September 19

Orenda data accurately predicted the increase in Liberal support during the last three weeks of the campaign

Orenda predicted the relatively unchanging Conservative support throughout the campaign

Orenda correctly traced strategic voting campaigns as the decline in NDP support, to the benefit of the Liberals, in the last two weeks of the campaign

Orenda Software Solutions and the Canadian Federal Election of 2015

Case Study, Insights, and an Analytical Assessment of Orenda's Predictive Capacity

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Orenda Software Solutions (OSS) is a new on-line and social media monitoring company, based in Sydney, Nova Scotia, and specializing in what it terms "reputation management and insight."

In speaking of the *raison d'etre* of OSS, founder and CEO Tanya Seajay has said "We've been working hard behind the scenes to develop a product we know leaders of major brands and major projects need when reacting in today's warp-speed world"

Orenda Software Solutions is in the business of providing executive and managerial leaders in both the private and public sectors with public opinion data and analysis respecting their organizations, their leadership, their actions and changing public perception about their "brands" in "real time." All this data is gleaned from tracking publically-available social media posts such as Twitter, Facebook posts, Google+, YouTube comments, and major online media posts and articles.

According to Orenda's website, "Orenda advances the online monitoring industry beyond data collection and sentiment analysis. By applying numerical metrics to emotions, connections and associations with your brand, you'll know how conversations impact you in real time. Gone are the days when a team of analysts are needed to sort through a sea of data to find valuable insights. With Orenda, get accurate, refined and prepared insights customized for you, so that you automatically have what you need at your fingertips at a moment's notice."

Orenda Software Solutions is designed to provide users with customized analysis of their brand reputation, and information respecting organizational and industry standards and related trend-lines, specific events of interest, risk alerts, social media analytics, brand influences by geographic region or time, issues relevant to given stakeholders in real-time, and stakeholder management.

The leadership of OSS asserts that Orenda can help "leaders overcome the barriers that come with excessive information. You do not need an understanding of public relations, social sciences, or statistics, in order to effectively use and benefit from our services. Alerts are designed to notify you when an issue requires attention."

Orenda Software Solutions: An Overview of Systems and Data

Orenda Software Solutions purports to offer a new and unique service for any organization or group interested in tracking how it is perceived in ever changing public opinion and how its modifications of organizational leadership and behaviour are, in turn, viewed in public opinion.

And what is unique to OSS is that this tracking of public opinion is not achieved through traditional and costly public opinion polling and assessment but through refined data analysis derived from tracking social media posts. The key question confronting anyone intrigued by Orenda's claims of offering in-depth analysis of brand assessment and management in real time

is whether OSS can offer data analysis deriving from social media data points that is as accurate as well-established and professionally-competent public opinion survey research.

As a test of Orenda's capabilities, the leadership of OSS undertook a study of Orenda's predictive capacities and its ability to develop similar data and analysis corresponding to professional public opinion survey research in light of changing public opinion during the Canadian federal election of 2015. This election was called by then Prime Minister Stephen Harper on August 2, 2015, with Election Day being scheduled for October 19, 2015. Given these dates this election had a duration of 78 days, making it the longest federal election campaign since 1872.

It was well known that this campaign would elicit a huge amount of public opinion polling, as it did, with these polls offering all Canadians the ability to track the ebb and flow of the campaign and the changing nature of public opinion with respect to rising and declining support levels for the parties and their leaders across Canada. This public opinion polling data, coming from eight national sources that Orenda tracked – Abacus Data, Forum Research, EKOS, Leger Marketing, Nanos Research, Mainstreet Research, Ipsos Reid, and Innovative Research - would become the trend line against which Orenda data could be assessed on a daily basis. Could Orenda's tracking of social media posts provide the same quality of data, the same assessment of the changing nature of public opinion as reported in traditional survey research? And if so, could Orenda data reflect and highlight the nature of public opinion even before the results of survey research became known?

In its study[1] of this election, the leadership of OSS noted that: "Election forecasts are based on modern sampling methods conducted by several independent research firms. Refining the data may take more than a week to publish after the survey has been conducted, meaning that they may not provide the most current snapshot of voter intention. This may be an unreliable indicator of performance in the wake of campaign gaffes or personal indiscretions."

If Orenda could provide the same quality of data respecting the dynamism in Canadian public opinion respecting the federal election campaign, with this data available within hours rather than days, then OSS would have a management information system of exceptional calibre and importance; one as important, if not more so, than traditional survey research.

In its assessment of public opinion, Orenda tracks the changing nature of individual perceptions respecting leadership and organizational identity in light of the following eight categories:

Trust: Measures the level of confidence in and willingness to open oneself to the other party. There are three dimensions to trust as we've defined it:

1. Integrity (the belief that the organization is fair and just)
2. Dependability (the belief that the organization will do what it says it will do)
3. Competence (the belief that an organization has the ability to do what it says it will do)

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[1] Orenda Software Solutions, *Case Study and Insights*, 2015.

Satisfaction: Measures the extent to which one party feels toward to other because positive expectations about the relationship are reinforced.

Commitment: Measures the extent to which one party believes and feels the relationship is worth spending time to maintain and promote.

Exchange of Benefits: Measures the expectation or state of reciprocity in a relationship, where one party gives to the other because they were provided benefits, or is expected to in the future.

Social Responsibility: Measures the emotional appeal and fair practices that an organization has in relation to environmental and social awareness.

Influence: Measures the capacity that an organization can impact the behaviours and opinions of others based on trust and transparency.

Character: Measures the level of favourability that the public, according to industry standards of reputation, judges an organization's traits.

General: Is a category that measures the favourability and tone of messages that are not captured by the existing categories. More categories can be created out of General if trends begin to present themselves.

Each of these categories has been identified as a factor to building and maintaining a favourable brand and reputation in the field of public relations. The research suggests that these are the main components to a healthy relationship between an organization, corporation, or individual, and their respective stakeholders.

Over the federal campaign the OSS tracked hundreds of thousands of social media posts relating to the election and how Canadians were expressing opinions about the federal parties and leaders. In particular, Orenda assessed 393, 141 posts relating to Stephen Harper, 223, 478 dealing with Justin Trudeau, and 57,329 focusing on Thomas Mulcair. The OSS did some tracking for Elizabeth May of the Green Party but decided not to make this a focal point of their study on the grounds that she was considered an electoral victory outlier. In assessing all these posts in light of Orenda's eight categories of measurement, OSS coders must take qualitative statement made on social media platforms and turn them into quantitative data points. According to the OSS, the process of quantification is as follows:

> Orenda searches online sources and stores every post mentioning a particular client. The post is either determined to be relevant or non-relevant to the client's brand through an automated process involving a probability algorithm. Only relevant data is then organized into a specific category and scored.

> Orenda's algorithm then accesses a dictionary that we've created, where certain words and phrases have been scored in different social and cultural contexts in order to overcome the ambiguity a word or phrase has on its own. A post will have an individual

score, and is combined with all other scores in that category is adjusted to produce a percentage of favourability.

<u>Scoring and Context.</u>

Orenda determines if a particular post is negative or positive, then adjusts to the total number of posts in each category giving us a score between 0-100, 0 being absolutely negative, and 100 being absolutely positive. The rating is meant to be a grade, however, the thresholds or standards for scores are determined by industry and sector averages over time.

So, a score of 45% may be poor for one brand when compared to its biggest competitor that has a 60%, but these numbers need to have context. Averages for these brands may be 30% and 80% respectively, indicating that the comparison by category is not best indicator, but how they're performing against their established average in the wake of similar events.

Federal Election 2015 – Orenda and the Polls

The Orenda document *Case Study and Insights* makes for interesting reading. As noted at the outset of this document, the leadership of the OSS state that: "We have observed that as the scores produced by Orenda change, opinion polls also tend to change. Going beyond sentiment analysis, we have found that the scores produced by Orenda are an indicator of public opinion polls that are significantly faster than any other sampling methods, as well as providing comprehensive data that can explain why voter intentions change based on provincial and federal developments."

The Case Study and Insights document provides a detailed statistical overview of Orenda data tracking the changes in public perceptions respecting Conservative leader Stephen Harper, Liberal leader Justin Trudeau, and New Democratic leader Thomas Mulcair throughout the 2015 federal election. Key findings from these data indicate that Orenda data accurately and with statistical significance predicted the growing surge in Liberal support in the last three weeks of the campaign. With some justification, the senior leadership of the OSS can claim that Orenda "was able to gauge the likely outcome of the election on September 19." Orenda data also, in turn, accurately predicted the relative stasis in Conservative support throughout the long campaign, while correctly tracing the precipitous slump in NDP support, to the benefit of the Liberals, in the last two weeks of the campaign.

In other words, Orenda accurately followed the changing dynamics in Canadian public opinion throughout the 2015 federal election, and was picking up on these shifts in public attitudes, before traditional polling data was reporting them. And the OSS was able to do this through their tracking of social media posts.

The statistical strength and accuracy of Orenda data and how it is gathered and interpreted is sound. The use of ANOVA linear regression is correct and the overall Orenda findings respecting the popularity of the party leaders throughout the campaign are statistically significant.

Orenda – Overall Findings, and a Caveat

Orenda Software Solutions shows all the appearance of having developed a carefully designed and analytically robust tool for probing and assessing ever changing public opinion via the means of recording and analyzing social media posts. And Orenda data is suggestive of being able to disseminate this data to organizational leaders and managers much more quickly, effectively and economically than traditional survey research. Orenda may very well be a game changer with respect to modern management information systems and the ways and means of tracking public opinion data and using such data to shape and direct organizational behaviour and related leadership decisions.

One caveat, however, must be now introduced. While the results of the OSS 2015 Canadian federal election are very positive to Orenda, this was just one test of Orenda's ability to collect and accurately interpret diverse and changing sets of data. Orenda will need to undergo further similar tests with respect to other elections and other challenges to correctly track and report upon changing public opinion before potential clients in both the public and private sectors will be confident and comfortable with Orenda data analysis. But Orenda and its leaders are off to a superb start. Orenda Software Solutions shows the promise of being on the cutting edge of public opinion analysis, organizational leadership and brand management via the tracking and analysis of social media posts. Orenda has the potential to fundamentally change how organizations and their leaderships in both the public and private sectors access and assess public opinion data and how they use these data to inform their decision-making and leadership actions in real-time.