CASE STUDY
Using Minitab to Analyze Social Media Data for Increasing Sales Leads
About Me

I AM...

- Founder - Equilibria, Inc.
- Engineer & Lean Six Sigma Practitioner

I AM NOT...

- A social media or Minitab guru
- A behavioral or social scientist

Alicia Butler Pierre
@EfficiencyEngr
Contents

Introduction  Slide 04

The Challenge  Slide 13

Data Mining - Six Sigma  Slide 20

Insights  Slide 58
Introductions

Will this Journey Lead Towards the Light of More Sales...
…or Into a Bottomless, Time-Wasting Pit?
The Journey Began With a Hunch

- My Intro to SlideShare
- Began Uploading Content
- LinkedIn Acquired SlideShare
- Received Congratulatory Email from SlideShare (content in top 1% viewed)
So I launched an investigation...
and was shocked by what I discovered!
A New Metric... Outbound Click

<table>
<thead>
<tr>
<th>SlideShare actions</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>❌ Outbound clicks</td>
<td>1</td>
</tr>
<tr>
<td>❤ Favorites</td>
<td>0</td>
</tr>
<tr>
<td>🗣 Comments</td>
<td>0</td>
</tr>
<tr>
<td>🔗 Downloads</td>
<td>4</td>
</tr>
<tr>
<td>⌨ Email shares</td>
<td>3</td>
</tr>
</tbody>
</table>
Can an increase in lead to an increase in online sales?

THE MILLION DOLLAR QUESTION

OUTBOUND CLICKS
The Challenge
- Increase Outbound Clicks from SlideShare to Website
Online Sales Process

- **VIEWER**: Find Content
- **CONSUMER**: Content Engagement
- **CUSTOMER**: PURCHASE

www.eqbsystems.com
Anatomy of a SlideShare Post - Engagement

1. Engagement Options
2. Content
3. Inbound Links
4. Call-to-Action
5. Outbound Links

Screenshot circa 1st Qtr 2014

www.eqbsystems.com
Anatomy of a SlideShare Post - Stats

1. **Total Page #s**
2. **Title**
3. **Number of Views**
4. **Description**
5. **Viewer Comments**

Screenshot circa 1st Qtr 2014

www.eqbsystems.com
Anatomy of a SlideShare Post - Data

- **Top content**
  - Definition of Business Infrastructure: 261
  - Operations Manual Case Study - Small Business: 102
  - Job Task Analysis Case Study - Small Business: 76
  - Call Center Information Flow Diagram: 62
  - How To Create Small Business Infrastructure: 61

- **Top countries**
  - United States: 377
  - United Kingdom: 74
  - Canada: 42
  - India: 37
  - South Africa: 31

- **Traffic sources**

- **SlideShare actions**
  - Outbound clicks: 1
  - Favorites: 0
  - Comments: 0
  - Downloads: 4
  - Email shares: 3

- **Social actions**

- **Screenshot circa 2nd Qtr 2014**
Overcoming “The Challenge”

- Not a lot of data to work with
- Increasing outbound click can be difficult
- Investigate, but don’t spend a lot of time
- Not convinced SlideShare is a viable lead generator

Consumer activity on SlideShare can help us figure out which products & services to create.

www.eqbsystems.com
Moving Forward - a New Project

- My Intro to SlideShare
- Began Uploading Content
- LinkedIn Acquired SlideShare
- Received Congratulatory Email from SlideShare (content in top 1% viewed)
- Start project to increase outbound clicks

www.eqbsystems.com
DATA MINING – SIX SIGMA

- Using the DMAIC Methodology for Insights
## Defining the Path to Y – SIPOC (current state)

<table>
<thead>
<tr>
<th>SUPPLIERS</th>
<th>INPUTS</th>
<th>PROCESS</th>
<th>OUTPUTS</th>
<th>CONSUMERS</th>
</tr>
</thead>
</table>
| • Content Developer  
  • SlideShare | • Keyword Search | **Search for Content Online** | • Scan Search Results | ? |
| | • Select Search Result w/ Direct or Indirect Link | **View Content on SlideShare** | | |
| | • Confirm content addresses need | **Respond to Content** | • Email  
  • Comment  
  • Download  
  • Social Share | |
| | • Want more info | **Click to EQBsystems.com** | • Consumer to Lead conversion | |
WHO

Is Our Consumer?
WHERE
Is Our Consumer?

www.eqbsystems.com
WHAT MAKES

Our Consumer Respond?

www.eqbsystems.com
Voice of Customer – Extrapolation

**RELEVANT**
- Use relevant tags/keywords
- Content should match my search query
- Provide content that meets my needs

**FUNCTIONAL**
- Make it easy for me to share content
- Include content to explain images
- Include links only when they are active

**SUPPORTIVE**
- Keep your promises/guarantees
- Respond quickly to my inquiries/comments
- Give me multiple ways to contact you

www.eqbsystems.com
Error / Defect Identification

Defective Content has:

- Incorrect/missing tags
- Incorrect/missing keywords
- Punctuation & grammatical errors
- Missing or sub-par call-to-action
- Low views (not evergreen)
- Non-searchable title
- Inactive links
- Incorrect information
- Missing or sub-par description
- Less than four pages in length

www.eqbsystems.com
HOW/WHY
Does Our Consumer Respond?
Defining Y – Outbound Click Response

HISTOGRAM OF OUTBOUND CLICKS (FEB. 2014)

- Outbound Clicks (Y)
- Frequency

<table>
<thead>
<tr>
<th>FREQUENCY</th>
<th>OUTBOUND CLICKS (Y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>-1</td>
</tr>
<tr>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Mean: 0.1724
StDev: 0.5391
N: 29

90% content with zero outbound clicks!

Examine content with outbound clicks. What do they have that others don’t?

www.eqbsystems.com
Defining the Project Scope

GOAL
Increase outbound clicks by 15% from our accounting-related content on SlideShare to our online store in 4 months.
I suspect that with an increase in the performance of each x it will lead to an increase in Y, giving us more data to test.

Any increase in Y needs to be viewed as a success.
1 | DEFINE
2 | MEASURE
3 | ANALYZE
4 | IMPROVE
5 | CONTROL
Measuring Relationship Between Y and x

Y = f(x)

Y = outbound click (count)

x = factors that contribute to outbound clicks
The past year has only yielded 5 outbound clicks to the online store from acct-related content on SlideShare.
Download Data - Description

Discrete Count

Digital Measurement

www.eqbsystems.com
1. Examine **entire population** of content to determine number of downloads.

2. Calculate a **weekly ratio** of downloads to total views per content.

3. Express as a % up to three decimal places.
Process appears to be in control for predicting the download response ratio.
iNSANiTY Check

- Current process allows defective content to pass through
- Creates skewed data
- Outbound click data only available as of May 2013

In 6σ projects, goal is to have continuous data to determine if a statistical correlation between Y and x exists.

Now that I think we can predict our download data (process is stable)...

Is there a statistical correlation between outbound click, Y, and Download Data (x_D)?
1. DEFINE
2. MEASURE
3. ANALYZE
4. IMPROVE
5. CONTROL

6σ
Analyzing Relationship Between Y and x

Is \( Y = f(x_D) + f(x_2) + f(x_3) + f(x_4) + f(x_5) \) ?

\( Y = \) outbound click (count)
\( x_D = \) download response (ratio)

Prove/disprove the effect of each x on Y through statistical testing.
**STEPS**

1. Define $H_0$ and $H_a$
2. Set level of significance: $\alpha = 0.05$
3. Select test based on type of data
4. Calculate p-value from selected test
Hypothesis → Theory or Fact?

**H₀**  Seeing number of downloads has **no** effect on Viewer outbound clicks.

**Hₐ**  Seeing number of downloads has an effect on Viewer outbound clicks.

<table>
<thead>
<tr>
<th>p-value</th>
<th>H₀</th>
<th>Hₐ</th>
<th>CRITICAL X</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; α</td>
<td>✗</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>&gt; α</td>
<td>✓</td>
<td>✗</td>
<td></td>
</tr>
</tbody>
</table>
Test Results – Logistic Regression

Minitab

Regression Analysis: Outbound Clicks versus Downloads

Analysis of Variance

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Adj SS</th>
<th>Adj MS</th>
<th>F-Value</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>1</td>
<td>0.4137</td>
<td>0.4137</td>
<td>0.03</td>
<td>0.876</td>
</tr>
<tr>
<td>Downloads</td>
<td>1</td>
<td>0.4137</td>
<td>0.4137</td>
<td>0.03</td>
<td>0.876</td>
</tr>
<tr>
<td>Error</td>
<td>2</td>
<td>26.3363</td>
<td>13.1682</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack-of-Fit</td>
<td>1</td>
<td>1.8363</td>
<td>1.8363</td>
<td>0.07</td>
<td>0.830</td>
</tr>
<tr>
<td>Pure Error</td>
<td>1</td>
<td>24.5000</td>
<td>24.5000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3</td>
<td>26.7500</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Accept $H_0$ ?

Reject $H_a$ ?
NOT READY to affirmatively state that we have no critical x’s.

Continue collecting data until all 29 pieces of content are optimized and tested against our new internal QA Checklist.

THEREFORE...

\[ Y = f(x_0) + f(x_2) + f(x_3) + f(x_4) + f(x_5) \]
1. DEFINE
2. MEASURE
3. ANALYZE
4. IMPROVE
5. CONTROL
New Process

+ New People

+ New Tools

PROCESS MAP: SlideShare Consumer Engagement & Content Optimization (Future State)

1. View Content on SlideShare
2. Respond to Content
3. Analyze Content Interaction Data in SlideShare PRO
4. Analyze Search Terms Used in Analytics Tools
5. Enter Data into KPI Dashboard & Control Charts
6. Monitor for "out of control" Points
7. Select/Prepare Content to Optimize
8. Request Copywriting Quote
9. Provide Quote
10. Optimize Content
11. Approve Using SlideShare Content Checklist
12. Reformat Content
13. Reload Content to SlideShare
14. Test Links for Outbound Clicks
15. Promote Content

DEFINE | MEASURE | ANALYZE | IMPROVE | CONTROL

www.eqbsystems.com
Not sure which x’s are critical, so:

1. Optimize accounting-related content first using Error/Defect checklist
2. Monitor effect on download ratio, $x_D$
3. Test effect on outbound click, $Y$
4. Confirm the critical x’s
5. Optimize remaining content
# Content Optimization Schedule

## SlideShare Content Optimization Schedule (Test for Improve Phase - Accounting-Related Content Only)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CD</td>
<td>Select</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CD</td>
<td>Send</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CW</td>
<td>Quote</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CW</td>
<td>Optimize</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CD</td>
<td>Approve</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CD</td>
<td>Re-format</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CD</td>
<td>Reload</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CD</td>
<td>Test</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OS</td>
<td>Promote</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legend**
- Content 1: CTR
- Content 2: VAS
- Content 3: APP
- Content 4: ARP

Newly Optimized Content expected for release every two weeks

www.eqbsystems.com
Content Optimization Example

This is the custom visual system that I use for myself as well as on the I recommended to many entrepreneurs that I work with.

The left side contains the operational activities of my business, which I will explain in a future, separate document. The right side highlights the Accounting activities that my company engages in.

The first four slots are similar to stackable inbox or letter trays with the last component being a file drawer.

Go to next page.


Creating a system that works best for you depends on your work style. This system is designed for those business owners who are highly visual. We can customize an optimal system that fits your growing small business. There are many ways to connect with us to learn more.

www.eqbsystems.com
Content Optimization Example

- \( x_1 \): Content Length > 4pgs
- \( x_2 \): Call-to-Action
- \( x_3 \): Corresponding Blog/Video Post for Embed Viewing
- \( x_4 \): Content can be emailed
- \( x_5 \): Content can be downloaded

AFTER

www.eqbsystems.com
Murphy’s Law – Preparing for Failure

What Can Go Wrong?
What Happens?
How Bad?
What are the Causes?
How Often?
Are We In Control?
What Action Do We Take?
INSANITY Check

- Outbound click rate increased from 5 to 23 (by end of this stage)
- Hired four additional contractors to ensure a seamless process
- Developed a control plan and FMEA to manage risk

We are heading in a positive direction

We should see an upward shift in the mean of each control chart
1 DEFINE
2 MEASURE
3 ANALYZE
4 IMPROVE
5 CONTROL
Process In Control, but Still No Critical x

BEFORE

Mean shifted up by 132.6%. Ignore error message.

AFTER
By this point, only 2 out of the 4 pieces of accounting-related content were optimized.

It makes sense that this is also where we see the greatest improvement in outbound click.
Today’s Improvement Becomes Tomorrow’s Standard

The following Control Planning tools ensure the process runs as smoothly as possible:

- Process Maps
- Work Instructions
- Control Plan
- Job Aids
- FMEA
### Summary of Activities & Deliverables

<table>
<thead>
<tr>
<th>DEFINE</th>
<th>MEASURE</th>
<th>ANALYZE</th>
<th>IMPROVE</th>
<th>CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accomplishments:</strong></td>
<td><strong>Accomplishments:</strong></td>
<td><strong>Accomplishments:</strong></td>
<td><strong>Accomplishments:</strong></td>
<td><strong>Accomplishments:</strong></td>
</tr>
<tr>
<td>• Big Y vs. Little Y (narrow)</td>
<td>• Defined process baseline performance</td>
<td>• Ran statistical tests on each x; α set to 0.05</td>
<td>• Conducted pilot test on 2 out of 4 pieces of accounting-related content (VAS &amp; CTR)</td>
<td>• Identified corrective and preventive actions for technological breakdowns and labor shortages</td>
</tr>
<tr>
<td>• Big Y = ↑ online sales</td>
<td>• Identified CS process gaps &amp; bottlenecks</td>
<td>Deliverables:</td>
<td>• Created a J-I-T content optimization schedule</td>
<td>• Increased frequency for quality assurance checks</td>
</tr>
<tr>
<td>• Little Y = ↑ outbound click</td>
<td>• Identified 5 potential x’s to answer: is y=f(x) ?</td>
<td>• Value Stream Map (IS)</td>
<td>• FMEA</td>
<td>• Traced first client’s journey from SlideShare content!</td>
</tr>
<tr>
<td>• Defined project scope</td>
<td>• Identified Null &amp; Alternative Hypotheses</td>
<td>• Hypothesis Testing</td>
<td>• Content Optimization Schedule</td>
<td>Deliverables:</td>
</tr>
<tr>
<td>• Project’s Y identification</td>
<td>• Detailed Operational Definitions for data collection on each x</td>
<td>• Data Collection Plan (completed)</td>
<td>• MSA</td>
<td>• Control Plan</td>
</tr>
<tr>
<td>• Key stakeholder identification</td>
<td>Deliverables:</td>
<td>Discoveries:</td>
<td>• Control Charts</td>
<td>• Visual Process Metrics</td>
</tr>
<tr>
<td>• Internal and external customer identification</td>
<td>• Value Stream Map (CS)</td>
<td>• Continuous data works best for statistical testing</td>
<td>• DPMO &amp; Sigma Level</td>
<td>• Change Management Plan</td>
</tr>
<tr>
<td>Deliverables:</td>
<td>• Affinity Diagram</td>
<td>• All of our x and Y data is discrete and considered an integer/ratio for statistical test selection</td>
<td>• Preliminary Analysis</td>
<td>• Work Instructions &amp; Job Aids</td>
</tr>
<tr>
<td>• Project Charter</td>
<td>• Fishbone Diagram</td>
<td>• More Y data needed in order to “trust” initial results of critical x determination</td>
<td>Deliveries:</td>
<td>• Project Transition Plan</td>
</tr>
<tr>
<td>• Gantt Chart</td>
<td>• Data Collection Plan</td>
<td>• SlideShare PRO’s analytical tool should be tested against Google Analytics through use of tracking content URLs</td>
<td>• Outbound click rate increased on the 2 pieces of optimized content</td>
<td>Discoveries:</td>
</tr>
<tr>
<td>• SIPOC</td>
<td>• MSA</td>
<td>• New FS process has more steps and more people, yet yields a shorter cycle time</td>
<td>• New FS process has more steps and more people, yet yields a shorter cycle time</td>
<td>• The SlideShare app does not have same functionality as the website – outbound links do not work regardless of location</td>
</tr>
<tr>
<td>• High Level Process Map</td>
<td>• Control Charts</td>
<td>• FMEA exposed process vulnerabilities of working with independent contractors</td>
<td>• Disaster Recovery planning tantamount to process success</td>
<td>• Acquisition activity makes SlideShare, as a company, vulnerable to platform changes</td>
</tr>
<tr>
<td>• VOC Matrix</td>
<td>• DPMO &amp; Sigma Level</td>
<td>Deliverables:</td>
<td>Deliverables:</td>
<td></td>
</tr>
<tr>
<td>• COPQ Matrix</td>
<td>• Preliminary Analysis</td>
<td>• Value Stream Map (FS)</td>
<td>• Value Stream Map (IS)</td>
<td></td>
</tr>
<tr>
<td>Discoveries:</td>
<td>Discoveries:</td>
<td>• FMEA</td>
<td>Discoveries:</td>
<td></td>
</tr>
<tr>
<td>• Countries with highest viewership</td>
<td>• Some data easier to retrieve than others</td>
<td>• Content Optimization Schedule</td>
<td>• Outbound click rate increased on the 2 pieces of optimized content</td>
<td></td>
</tr>
<tr>
<td>• Broken links in online store</td>
<td>Deliveries:</td>
<td>• MSA</td>
<td>• New FS process has more steps and more people, yet yields a shorter cycle time</td>
<td></td>
</tr>
<tr>
<td>• SlideShare changed its embedded link policy</td>
<td>Deliverables:</td>
<td>• Control Charts</td>
<td>• FMEA exposed process vulnerabilities of working with independent contractors</td>
<td></td>
</tr>
</tbody>
</table>

www.eqbsystems.com
INSIGHTS

Flow in Flux™
Real-Life Success Story

1. Noticed same Consumer downloading content.
2. Thanked Consumer and offered to give free consultation.
3. Consumer accepted offer for free consultation.
4. Consumer became a Customer!

www.eqbsystems.com
Vigilance is Key

Key Insights:

1. Have sufficient data to apply Six Sigma testing
2. Perform Quality Assurance weekly (minimum)
3. Pay attention to social network acquisition activity
4. Approach social media data as a snapshot in time
When It Comes to Working with Digital, Social Media Data

The Single, Most Important Insight...
Stay on Top of Your Game

SlideShare no longer reports outbound click data!

www.eqbsystems.com
Questions?

Contact Us for more questions.

We condensed a lot of information for this presentation.

www.eqbsystems.com
Thank You!

Thank you to Minitab

This presentation is available via SlideShare
http://tinyurl.com/MonetizeSlideShare