Process Improvement Project

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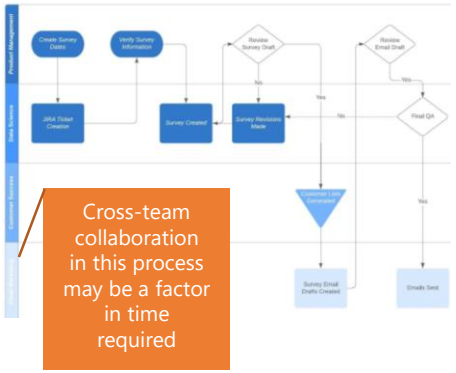
Process Improvement Project – Reducing Survey Creation Time

Define (Oct 7 - Oct 20)

Our existing process for survey development and distribution has been identified as an issue with several potential points of failure, including:

- Lack of measurement on distribution efficacy or quality
- Decentralized documentation around survey/stakeholder responsibilities
- Lack of standard distribution timeline
- Manual quality assurance without a documented standard practice



Cross-team collaboration in this process may be a factor in time required

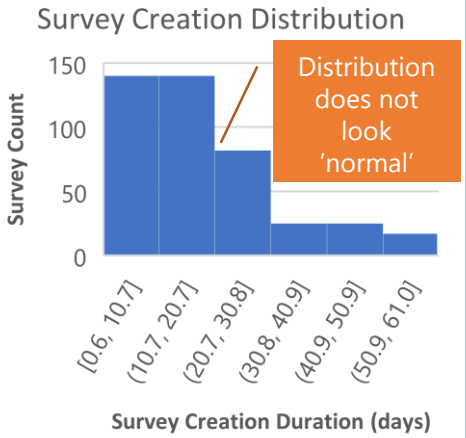
CURRENT PROCESS SQL:

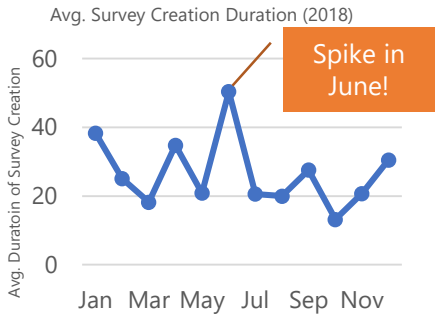
2

Measure (Oct 21 - Nov 3)

I measured the existing process by collecting exported data from:

- Ticketed requests for surveys in JIRA (project management software)
- Survey team feedback on successful and defective surveys





Analyze (Nov 4 - Nov 17)

I analyzed this process using the following approaches:

Measures of Central Tendency	
Mean:	18.9
Median:	14.9
Mode:	13.9
Measures of Variation	
Range:	60.4
Standard deviation:	13.6
Variance:	184.2

High variance indicates an inconsistent process!

This analysis helped me prioritize the areas where I could provide feedback on where to approve. Proposed changes needed to include:

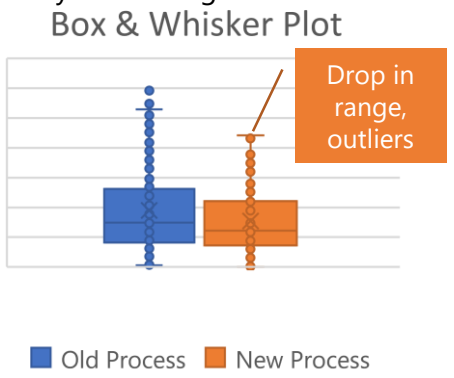
- A goal set significantly lower than the existing mean
- Access to real-time data to help prioritize tickets during times of high volume (e.g. June)
- Brainstorm of ways to reduce burden on the survey team

Improve (Nov 18 - Dec 1)

The team sought to improve this process by instituting the following ideas:

- Set a team goal for 2 week (14 day) turnaround on all survey requests
- Use data from JIRA to measure which tickets were at risk for failing to meet the goal to help prioritize work.
- Requiring teams to include more information on the ticket itself, reducing time the survey team spent manually entering the information.

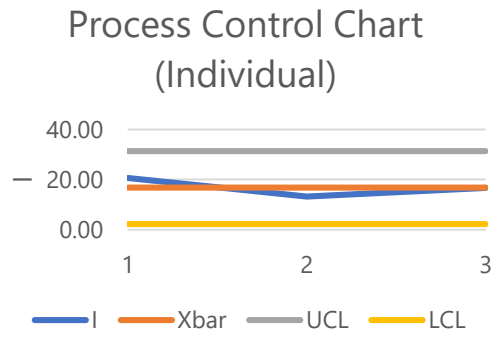
Since implementation, initial signs indicate the changes may be starting to work!

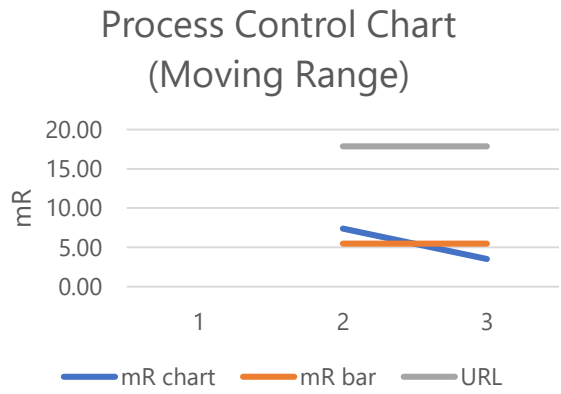


As more data become available, a new SQL will be calculated.

Control (Dec 2 - Dec 19)

I ensured that the changes can improve the process over time by instituting a standard framework that determines whether the process is in control:





Next Steps:

Calculate new SQL after 6 months of new process

Review Process Control Charts monthly

Calculate new measures of variation and central tendency after 6 month mark.

Business Process & Problem Statement

- **Business Process**
  - My company creates and distributes customer experience surveys on a regular cadence. These surveys are the backbone of our company's ability to interpret the quality of our product offerings.
- **Problem Statement**
  - This process is plagued with several potential points of failure, including:
    - Lack of measurement on distribution efficacy or quality
    - Decentralized documentation around survey/stakeholder responsibilities
    - Lack of standard distribution timeline
    - Manual quality assurance without a documented standard practice

Business Impact, Measuring Success and Sigma Quality Level (SQL)

- **Business Impact**
  - These points of failure create a risk to the company's ability to measure not only customer satisfaction, but also to measure the impact of executive strategic decisions in response. Resolving these issues will decrease the required billable hours per survey and reduce the overall cost of the survey process.
- **Success Measure**
  - Our goal was to improve the time from survey request to send **by 16%** (2 hours) by the end of the project period.
  - Initial data indicates we're on track. **18.9** (old mean) – **16.8** (new mean) = savings of **2.1** hours
  - Data is *continuous* (hours).
  - SQL of Current Process: **2**

Data Stratification Tree

- This tool guided the survey team through a discussion on what affected our output variable (survey creation time), and helped us know which data points I should be collecting. This method helped us determine a process change – an adjustment of who performs manual entry.

Data Stratification Tree

Questions About Process	Survey Creation Time (Output Y)	Stratification factors X Variables	Measurements
Are certain teams associated with longer survey creation time?		Subtasks by Team	• # of related subtasks by team
Does the time of year impact the number of survey tickets?		Month of Ticket Creation Date	• Duration of Survey creation by Month in year (1-12)
Does the product type influence how long a given survey will take?		Product Offering Type	• Duration of Survey creation by product type
Do surveys for new product offerings take longer to setup than for existing?		Days since Product Launch	• # of days since product launch
Does the assigned individual survey creator impact survey creation time?		Survey Creator ID	• Duration of survey creation by Creator ID
Does time of month have an impact?		Day of Month	• Count of Surveys by day of month (1-31)
Does # of concurrent surveys have an impact?		Concurrent Open Survey Count	• Count of Active Surveys during survey creation period
Does ticket priority impact survey creation?		Priority Level	• Priority Rating (1-3)
Do reported errors in QA impact time?		QA Errors Reported	• # of reported errors in QA
Does the comment volume impact time?		Comment Volume	• # of comments made on a survey ticket
Does the size of the group being surveyed impact survey creation time?		Survey Population Size	• # of projected respondents

Determining Sample Size for Analysis

Acceptable parameters for sample size:

- **95%** Confidence Level
- Margin of Error = **2 Days**
  A wide margin of measurement error is accounted for here, as we recognize there are circumstances out of the survey team's control, and some room for delayed data entry.
- Standard Deviation = **13.6**
- N (Desired Sample Size) = **177**
  ((1.96 * 13.6)/2)^2
- Actual Available Sample Size = **429**
- **Good to go!**

Sample Size Formula for Continuous Data

$$n = \left(\frac{z^* \hat{\sigma}}{E} \right)^2$$

	Month	Sept	Oct	Nov
Step 1, 2	X	20.57	13.18	16.7
	mR		7.39	3.52

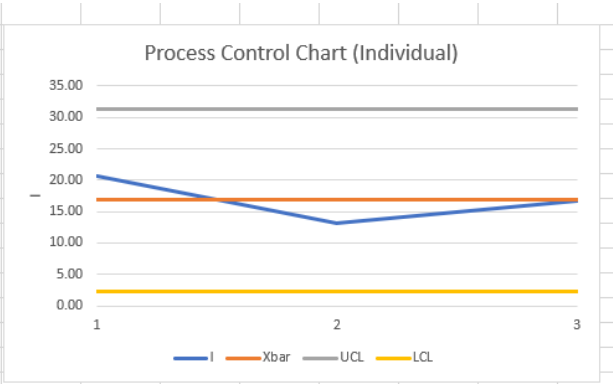
Step 3	Average Survey Duration:		16.82			
Step 4	Average Moving Range:		5.45			
Step 5	Xbar	UCL:	31.326091		E2	2.66
		LCL:	2.3074932			
Step 6	mR	URL:	17.836619		D4	3.27
Step 7						

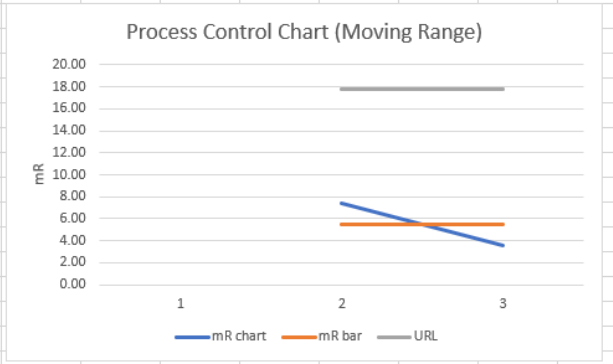
I-chart

	Centerline		
I	Xbar	UCL	LCL
20.57	16.82	31.33	2.31
13.18	16.82	31.33	2.31
16.70	16.82	31.33	2.31

mR chart

	Centerline	
mR chart	mR bar	URL
7.39	5.45	17.84
3.52	5.45	17.84





Controls – How I created them.

Tools Used

HISTOGRAM

RUN CHART

MEASURES OF CENTRAL TENDENCY + MEASURES OF VARIATION

PROCESS MAP

BOX AND WHISKER PLOT

CONTROL CHART

Appendix A: Measuring SQL (Sigma Quality Level)

- Old Process
  - Surveys have two main types of defects:
    - Delayed Delivery (outside of 2 week turnaround)
    - Content Error (misspellings, etc.)
  - SQL Calculations:
    1. Defect opportunities per unit: D = 2
    2. Units produced per month: U = 56
    3. Total possible defects per month: D U = 112
    4. Total actual defects: A = 34
    5. Defect-per-opportunity rate: A / DU = DPO = 30.3%
    6. Defects per million opportunities (DPMO): DPO * 1,000,000 = 303,571
    7. SQL value (from SQL table) ~2

    NOT a great process!