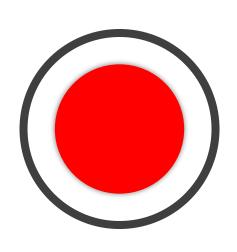# ASK ME (ALMOST) ANYTHING! MANAGING THE QUALITY OF ANALYTICS PRACTICE

Michiko I. Wolcott, Principal Consultant

Msight Analytics

February 16, 2022
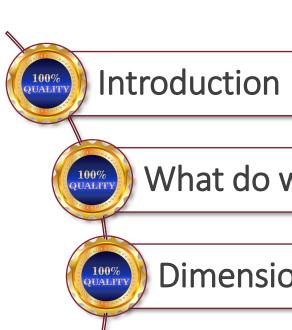
AGENDA

Introduction

What do we mean by the "quality of an analytics practice"?

Dimensions of quality in an analytics practice

Considerations for implementing a quality program in analytics

Open Q&A: Please use the chat panel to submit your questions

DEFINE THE QUALITY OF ANALYTICS PRACTICE?

It is _not_ using analytics to measure or improve the quality of something else, but rather the quality of the analytics itself.

It is something we all want.

It is something we intuitively understand but is difficult to articulate.

THE QUALITY OF OUR WORK IS OUR RESPONSIBILITY.

WHAT DO WE MEAN BY "QUALITY"?

"In technical usage, 'quality' can have two meanings:
1. the characteristics of a product or service that bear on its ability to **satisfy stated or implied needs**;
2. a product or service **free of deficiencies**."

Source: American Society for Quality, https://asq.org/quality-resources/quality-glossary/q

Compliance with some set of criteria, standards, or requirements

Noncompliance of standards or requirements = Deficiency, Defect

Perfect quality = Complete absence of defects

100% QUALITY

WHY QUALITY OF ANALYTICS PRACTICE?

Prevention or control of risks from defects.
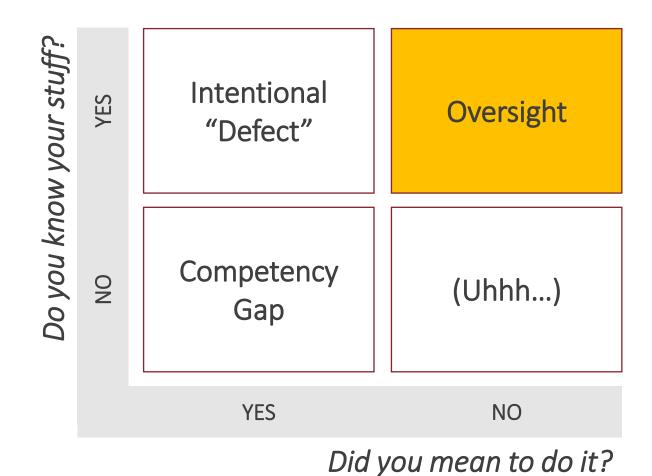
More value from analytics.

Trust and confidence in analytics.

Element of analytics governance.

HOW DO DEFECTS HAPPEN IN ANALYTICS PRACTICE?

Do you know your stuff?

	YES	**NO**
YES	Intentional "Defect"	Oversight
NO	Competency Gap	(Uhhh...)

Did you mean to do it?

Other dimensions:
- Do you mean well?
- Whose best interest do you have?
- Do you care?
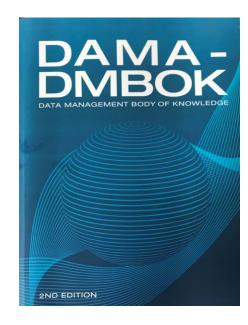
Msight
Analytics • Consulting

DATA QUALITY: FOR ANOTHER DISCUSSION!
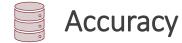
Not in the scope of this talk.

There is already an entire discipline on the subject.

For analytics practitioners, data quality is a dependency/constraint rather than an objective.

DAMA-DMBOK — DATA MANAGEMENT BODY OF KNOWLEDGE — 2ND EDITION

- Completeness
- Validity
- Accuracy
- Consistency
- Integrity
- Timeliness
- Uniqueness
- Reasonability

Msight
Analytics · Consulting

DIMENSIONS OF QUALITY IN ANALYTICS PRACTICE

1 APPROPRIATENESS
- Is the data appropriate for the need or question?
- Is the analysis appropriate for the need or question?

2 CLARITY
- Are the definitions exact and repeatable?
- Are the methods and steps employed free of ambiguities?

3 CONSISTENCY
- Is it invariant?
- Is it tool- and system-agnostic?

4 TRACEABILITY
- Are all inputs and outputs known for each step or task performed?

5 ACCURACY
- Is it free of errors: syntax, runtime, semantic, logical?

6 TRANSPARENCY
- Is the result or analytic interpretable?
- Is everything about the analysis clearly documented?

7 COMPLETENESS
- Is the logic free of gaps from start to finish?
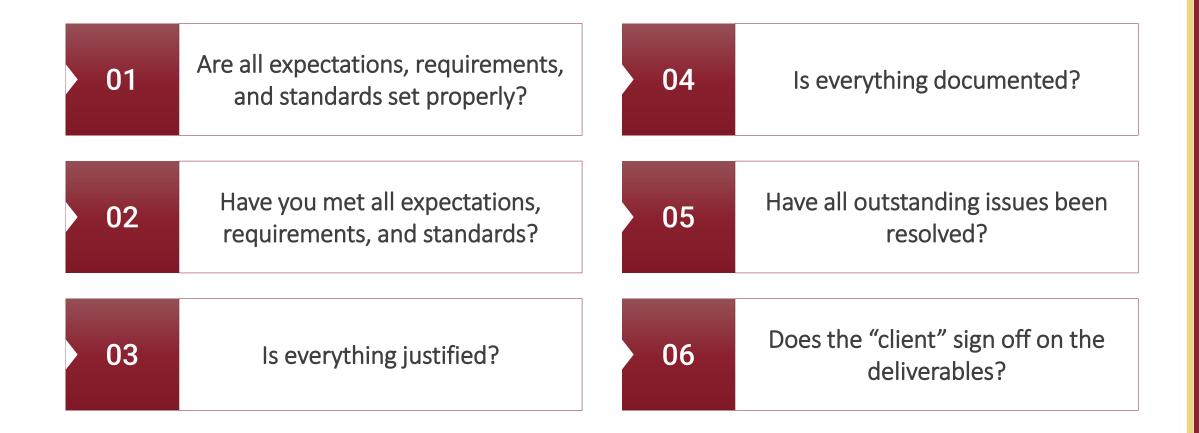- Have you considered everything?

8 JUSTIFIABILITY
- Do you have a defensible reason for everything?
- Are all risks, limitations, and dependencies clear?

Msight
Analytics • Consulting ®

DIMENSIONS OF PROJECT QUALITY IN ANALYTICS

01 Are all expectations, requirements, and standards set properly?

02 Have you met all expectations, requirements, and standards?

03 Is everything justified?

04 Is everything documented?

05 Have all outstanding issues been resolved?

06 Does the "client" sign off on the deliverables?

COMPONENTS OF QUALITY MANAGEMENT

1. Quality Planning

Defining the quality requirements and necessary activities for generating the required quality.

2. Quality Assurance

Generating the product in a way such that maximizes the likelihood of achieving the quality expectations.

3. Quality Control

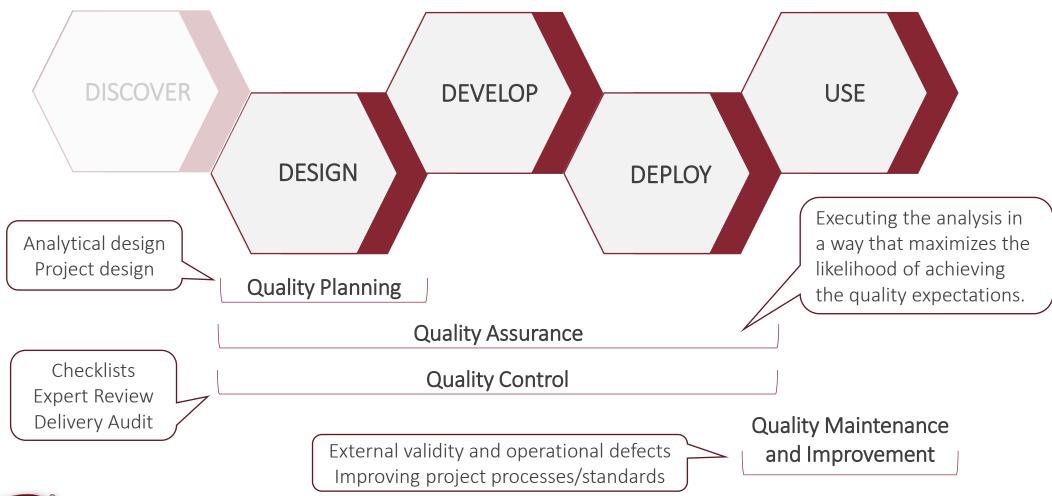Inspection of products for meeting quality requirements.

4. Quality Improvement

Ongoing activities after "launch" that improves (or maintains) the quality of the product.

MANAGING THE QUALITY OF ANALYTICS PROJECTS

DISCOVER

DESIGN

DEVELOP

DEPLOY

USE

Analytical design
Project design

Quality Planning

Executing the analysis in a way that maximizes the likelihood of achieving the quality expectations.

Quality Assurance

Checklists
Expert Review
Delivery Audit

Quality Control

Quality Maintenance and Improvement

External validity and operational defects
Improving project processes/standards

Msight®
Analytics · Consulting

ASPECTS OF QUALITY CONTROL IN ANALYTICS PRACTICE

	DELIVERY AUDIT	EXPERT REVIEW
OBJECTIVE PROBLEMS	• Expected vs. observed. • Presence of justifications. • Tactical errors (syntax, runtime, semantic). • Proper documentation (analytical and non-analytical).	• Faulty application of analytics expertise. • Recommendations and suggestions based on best technical practices. • Bias and statistical ethics.
STARTING POINT	• "Guilty until proven innocent"	• Observed = Expected. • Everything is justified. • No tactical errors.
SCOPE/FOCUS	• Project delivery	• Statistical/Analytical (i.e., technical)
QUALIFICATIONS	• Lack of expertise can be an asset.	• Specific technical expertise by the reviewer is required.

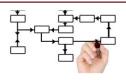**Msight**
Analytics • Consulting

IMPLEMENTING A QUALITY PROGRAM OF ANALYTICS PRACTICE

Create an inventory of the analytics and the analytics projects.

Define roles and responsibilities.

Independent team?
Independent analysts within the same team?
Who will sign-off?

Define processes and procedures.

Workflows
SOPs

Define standards, policies, and a set of common requirements.

Checklists
Forms
Auditability standards

Set up basic infrastructure.

Document store
Shared computing environment
Common statistical tools
If operationalized:
- Test environment
- Test dataset

Train all analysts on basic quality principles and practices.

More at https://msightanalytics.com

Michiko I. Wolcott, Principal Consultant
Msight Analytics
info@msightanalytics.com
@Michiko_Wolcott
linkedin.com/company/msight-analytics
@msightanalytics