A Beginner's Guide to
Getting Your First Business Analytics Job

BUSINESS ANALYTICS

Career Development Guide 101

Data Application Lab

开启商业分析征途

Section V：BA 资源总汇

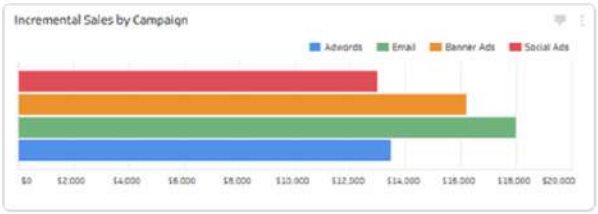
为了帮助大家更好的谋求一份 BA 的工作，我们准备了一些资料的汇总作为面试冲刺前的 cheat sheet，用来快速扫盲~ 最后祝大家一切顺利！成功找到 BA 相关的好工作！

Business Product Metrics

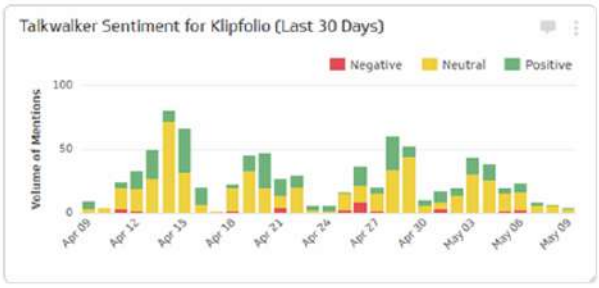
https://www.klipfolio.com/resources/articles/what-are-business-metrics

Marketing Metrics

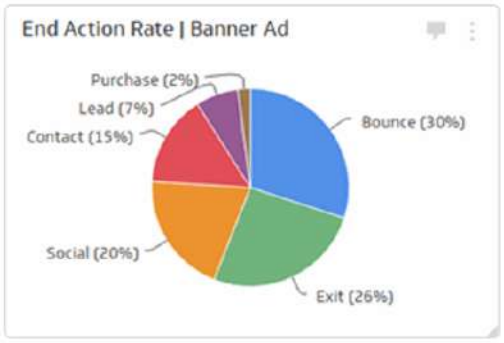
Web Traffic Sources



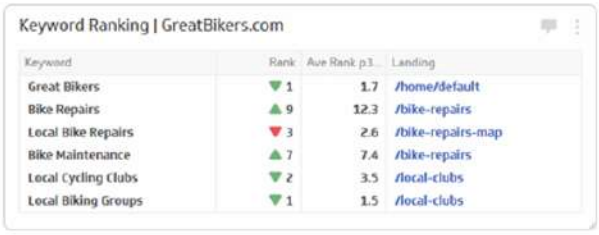
Incremental Sales



Social Sentiment



End Action Rate



SEO Keyword Ranking

SEO Traffic

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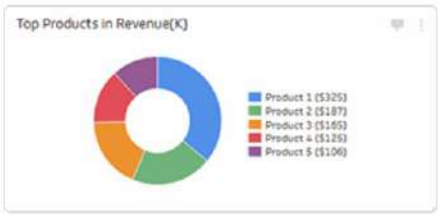
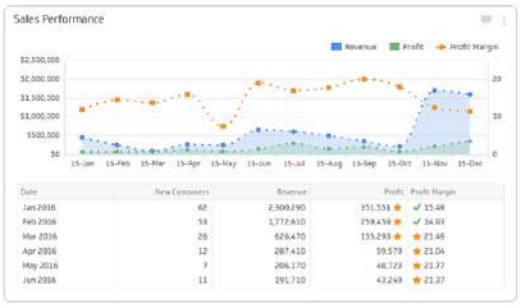
Sales Metrics

Sales Growth



Product Performance

Average Purchase Value



Average Profit Margin

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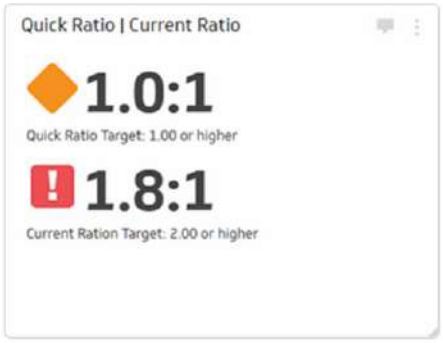
Financial Metrics



Quick Ratio / Acid Test

Working Capital

Debt to Equity Ratio

Current Ratio

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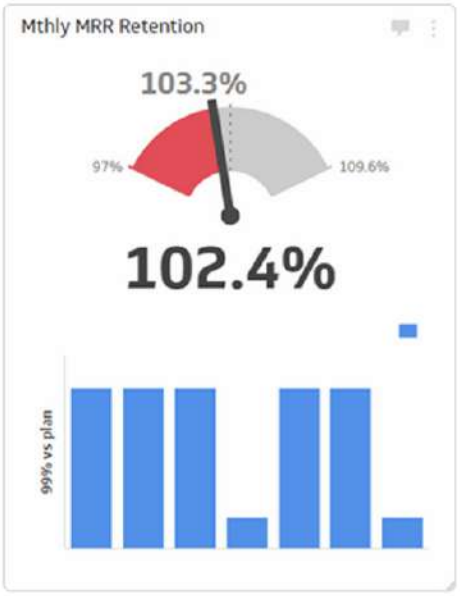
SaaS (software as a service) Metrics

Customer Retention Rate



Monthly Recurring Revenue (MRR)

Customer Lifetime Value (CLV or LTV)

Customer Churn Rate

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Social Media Metrics

Social Followers vs Target

Twitter Followers Metric

Facebook People Talking About This Metric

Key Social Metrics

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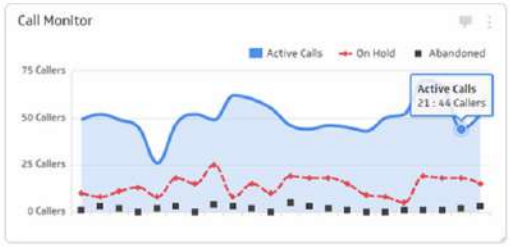
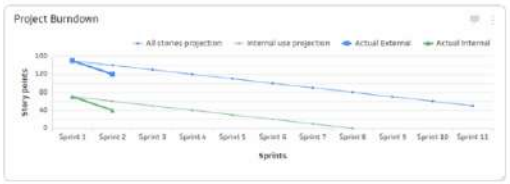
And More Business Metrics



Call Abandonment

Service Level

Time to Healthcare Service



Project Burndown Metric

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常用公式及 Syntax

SQL

https://www.w3schools.com/sql/sql_quickref.asp

SQL Statement	Syntax
AND / OR	SELECT column_name(s) FROM table_name WHERE condition AND|OR condition
ALTER TABLE	ALTER TABLE table_name ADD column_name datatype or ALTER TABLE table_name DROP COLUMN column_name
AS (alias)	SELECT column_name AS column_alias FROM table_name or SELECT column_name FROM table_name AS table_alias
BETWEEN	SELECT column_name(s) FROM table_name WHERE column_name BETWEEN value1 AND value2
CREATE DATABASE	CREATE DATABASE database_name
CREATE TABLE	CREATE TABLE table_name (column_name1 data_type, column_name2 data_type, column_name3 data_type, ...)
CREATE VIEW	CREATE VIEW view_name AS SELECT column_name(s) FROM table_name WHERE condition

DELETE	DELETE FROM table_name WHERE some_column=some_value or DELETE FROM table_name (**Note:** Deletes the entire table!!) DELETE * FROM table_name (**Note:** Deletes the entire table!!)
DROP DATABASE	DROP DATABASE database_name
DROP INDEX	DROP INDEX table_name.index_name (SQL Server) DROP INDEX index_name ON table_name (MS Access) DROP INDEX index_name (DB2/Oracle) ALTER TABLE table_name DROP INDEX index_name (MySQL)
DROP TABLE	DROP TABLE table_name

EXISTS	IF EXISTS (SELECT * FROM table_name WHERE id = ?)
	BEGIN
	--do what needs to be done if exists
	END
	ELSE
	BEGIN
	--do what needs to be done if not
	END

GROUP BY	SELECT column_name, aggregate_function(column_name) FROM table_name WHERE column_name operator value GROUP BY column_name
HAVING	SELECT column_name, aggregate_function(column_name) FROM table_name WHERE column_name operator value GROUP BY column_name HAVING aggregate_function(column_name) operator value
IN	SELECT column_name(s) FROM table_name WHERE column_name IN (value1,value2,..)
INSERT INTO	INSERT INTO table_name VALUES (value1, value2, value3,....)
INNER JOIN	SELECT column_name(s) FROM table_name1 INNER JOIN table_name2 ON table_name1.column_name=table_name2.column_name

LEFT JOIN	SELECT column_name(s) FROM table_name1 LEFT JOIN table_name2 ON table_name1.column_name=table_name2.column_name
RIGHT JOIN	SELECT column_name(s) FROM table_name1 RIGHT JOIN table_name2 ON table_name1.column_name=table_name2.column_name
FULL JOIN	SELECT column_name(s) FROM table_name1 FULL JOIN table_name2 ON table_name1.column_name=table_name2.column_name
LIKE	SELECT column_name(s) FROM table_name WHERE column_name LIKE pattern
ORDER BY	SELECT column_name(s) FROM table_name ORDER BY column_name [ASC|DESC]
SELECT	SELECT column_name(s) FROM table_name
SELECT DISTINCT	SELECT DISTINCT column_name(s) FROM table_name
SELECT INTO	SELECT * INTO new_table_name [IN externaldatabase] FROM old_table_name *or* SELECT column_name(s) INTO new_table_name [IN externaldatabase] FROM old_table_name
SELECT TOP	SELECT TOP number|percent column_name(s) FROM table_name
TRUNCATE TABLE	TRUNCATE TABLE table_name
UNION	SELECT column_name(s) FROM table_name1 UNION SELECT column_name(s) FROM table_name2
UNION ALL	SELECT column_name(s) FROM table_name1 UNION ALL SELECT column_name(s) FROM table_name2

UPDATE	UPDATE table_name SET column1=value, column2=value,... WHERE some_column=some_value
WHERE	SELECT column_name(s) FROM table_name WHERE column_name operator value

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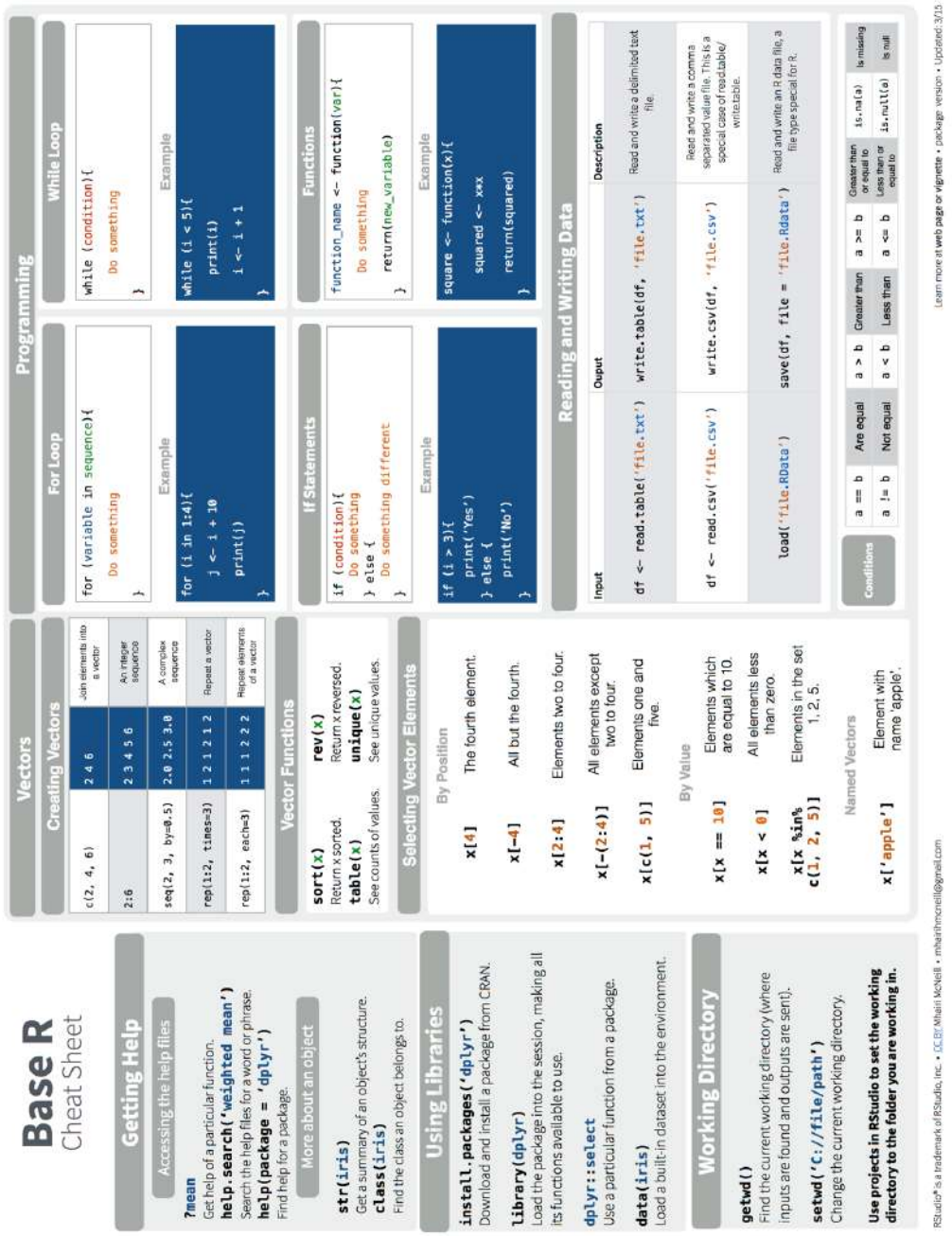
R

https://www.rstudio.com/wp-content/uploads/2016/10/r-cheat-sheet-3.pdf



Types

Converting between common data types in R. Can always go from a higher value in the table to a lower value.

`as.logical`	`TRUE, FALSE, TRUE`	Boolean values (TRUE or FALSE).
`as.numeric`	`1, 0, 1`	Integers or floating point numbers.
`as.character`	`'1', '0', '1'`	Character strings. Generally preferred to factors.
`as.factor`	`'1', '0', '1', levels: '1', '0'`	Character strings with preset levels. Needed for some statistical models.

Maths Functions

`log(x)`	Natural log.	`sum(x)`	Sum.
`exp(x)`	Exponential.	`mean(x)`	Mean.
`max(x)`	Largest element.	`median(x)`	Median.
`min(x)`	Smallest element.	`quantile(x)`	Percentage quantiles.
`round(x, n)`	Round to n decimal places.	`rank(x)`	Rank of elements.
`signif(x, n)`	Round to n significant figures.	`var(x)`	The variance.
`cor(x, y)`	Correlation.	`sd(x)`	The standard deviation.

Variable Assignment

```
> a <- 'apple'
> a
[1] 'apple'
```

The Environment

`ls()`	List all variables in the environment.
`rm(x)`	Remove x from the environment.
`rm(list = ls())`	Remove all variables from the environment.

You can use the environment panel in RStudio to browse variables in your environment.

Matrixes

`m <- matrix(x, nrow = 3, ncol = 3)`
Create a matrix from x.

`m[2, ]` - Select a row

`m[ , 1]` - Select a column

`m[2, 3]` - Select an element

`t(m)`
Transpose

`m %*% n`
Matrix Multiplication

`solve(m, n)`
Find x in: m * x = n

Lists

`l <- list(x = 1:5, y = c('a', 'b'))`
A list is collection of elements which can be of different types.

`l[[2]]`	`l[1]`	`l$x`	`l['y']`
Second element of l.	New list with only the first element.	Element named x.	New list with only element named y.

Also see the **dplyr** library.

Data Frames

`df <- data.frame(x = 1:3, y = c('a', 'b', 'c'))`
A special case of a list where all elements are the same length.

x	y
1	a
2	b
3	c

List subsetting

`df$x` `df[[2]]`

Understanding a data frame

`View(df)`	See the full data frame.
`head(df)`	See the first 6 rows.

Matrix subsetting

`df[ , 2]`

`df[2, ]`

`df[2, 2]`

`nrow(df)`
Number of rows.

`ncol(df)`
Number of columns.

`dim(df)`
Number of columns and rows.

`cbind` - Bind columns.

`rbind` - Bind rows.

Strings

Also see the **stringr** library.

`paste(x, y, sep = ' ')`	Join multiple vectors together.
`paste(x, collapse = ' ')`	Join elements of a vector together.
`grep(pattern, x)`	Find regular expression matches in x.
`gsub(pattern, replace, x)`	Replace matches in x with a string.
`toupper(x)`	Convert to uppercase.
`tolower(x)`	Convert to lowercase.
`nchar(x)`	Number of characters in a string.

Factors

`factor(x)`
Turn a vector into a factor. Can set the levels of the factor and the order.

`cut(x, breaks = 4)`
Turn a numeric vector into a factor but 'cutting' into sections.

Statistics

`lm(x ~ y, data=df)`
Linear model.

`glm(x ~ y, data=df)`
Generalised linear model.

`summary`
Get more detailed information out a model.

`t.test(x, y)`
Preform a t-test for difference between means.

`pairwise.t.test`
Preform a t-test for paired data.

`prop.test`
Test for a difference between proportions.

`aov`
Analysis of variance.

Distributions

	Random Variates	Density Function	Cumulative Distribution	Quantile
Normal	`rnorm`	`dnorm`	`pnorm`	`qnorm`
Poison	`rpois`	`dpois`	`ppois`	`qpois`
Binomial	`rbinom`	`dbinom`	`pbinom`	`qbinom`
Uniform	`runif`	`dunif`	`punif`	`qunif`

Plotting

Also see the **ggplot2** library.

`plot(x)`
Values of x in order.

`plot(x, y)`
Values of x against y.

`hist(x)`
Histogram of x.

Dates

See the **lubridate** library.

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Excel

https://blog.udemy.com/excel-formulas/

Name	Function	Formula
SUM	It allows you to add 2 or more numbers together.	=SUM(5, 5) or =SUM(A1, B1) or =SUM(A1:B5)
COUNT	The count formula counts the number of cells in a range that have numbers in them.	=COUNT(A1:A10)
COUNTA	Counts the number of non-empty cells in a range. It will count cells that have numbers and/or any other characters in them. It works with all data types.	=COUNTA(A1:A10)
LEN	The LEN formula counts the number of characters in a cell. This includes spaces.	=LEN(A1)
TRIM	Gets rid of any space in a cell, except for single spaces between words.	=TRIM(A1)
RIGHT, LEFT, MID	hese formulas return the specified number of characters from a text string. RIGHT gives you the number of characters from the right of the text string, LEFT gives you the number of characters from the left, and MID gives you the specified number of characters from the middle of the word. You tell the MID formula where to start with the start_number and then it grabs the specified number of characters to the right of the start_number.	= RIGHT(text, number of characters), =LEFT(text, number of characters), =MID(text, start number, number of characters)
VLOOKUP	Define a value (the lookup_value) for the formula to look for. It looks for this value in the leftmost column of a table (the table_array).	=VLOOKUP(lookup_value, table_array, col_index_num, range_lookup)

IF	One of the logical functions, to return one value if a condition is true and another value if it's false	=IF(logical_statement, return this if logical statement is true, return this if logical statement is false)
SUMIF, COUNTIF, AVERAGEIF	These formulas all do their respective functions (SUM, COUNT, AVERAGE) IF the criteria are met. There are also the formulas: SUMIFS, COUNTIFS, AVERAGEIFS where they will do their respective functions based on multiple criteria you give the formula.	=SUMIF(range, criteria, sum_range), =COUNTIF(range, criteria), =AVERAGEIF(range, criteria, average_range)
CONCATENATE	Combining data in 2 (or more) different cells into one cell	=CONCATENATE(B2," ",A2)
IFERROR	Returns a custom result when a formula generates an error, and a standard result when no error is detected. IFERROR is an elegant way to trap and manage errors without using more complicated nested IF statements.	=IFERROR (value, value_if_error)

重要统计概念一览

Bayes' Rule

Bayes' rule expresses the conditional probability of the event A given the event B in terms of the conditional probability of the event B given the event A and the unconditional probability of A:

$$P(A|B) = P(B|A) \times P(A)/(P(B|A) \times P(A) + P(B|Ac) \times P(Ac)).$$

In this expression, the unconditional probability of A is also called the prior probability of A, because it is the probability assigned to A prior to observing any data. Similarly, in this context, P(A|B) is called the posterior probability of A given B, because it is the probability of A updated to reflect (i.e., to condition on) the fact that B was observed to occur.

Central Limit Theorem

The central limit theorem states that the probability histograms of the sample mean and sample sum of n draws with replacement from a box of labeled tickets converge to a normal curve as the sample size n grows, in the following sense: As n grows, the area of the probability histogram for any range of values approaches the area under the normal curve for the same range of values, converted to standard units. See also the normal approximation

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Chi-square curve

The chi-square curve is a family of curves that depend on a parameter called degrees of freedom (d.f.). The chi-square curve is an approximation to the probability histogram of the chi-square statistic for multinomial model if the expected number of outcomes in each category is large. The chi-square curve is positive, and its total area is 100%, so we can think of it as the probability histogram of a random variable. The balance point of the curve is d.f., so the expected value of the corresponding random variable would equal d.f.. The standard error of the corresponding random variable would be (2×d.f.)½. As d.f. grows, the shape of the chi-square curve approaches the shape of the normal curve.

Confidence Interval

A confidence interval for a parameter is a random interval constructed from data in such a way that the probability that the interval contains the true value of the parameter can be specified before the data are collected.

Confidence Level

The confidence level of a confidence interval is the chance that the interval that will result once data are collected will contain the corresponding parameter. If one computes confidence intervals again and again from independent data, the long-term limit of the fraction of intervals that contain the parameter is the confidence level.

Double-Blind, Double-Blind Experiment

In a double-blind experiment, neither the subjects nor the people evaluating the subjects knows who is in the treatment group and who is in the control group. This mitigates the placebo effect and guards against conscious and unconscious prejudice for or against the treatment on the part of the evaluators.

Margin of error

A measure of the uncertainty in an estimate of a parameter; unfortunately, not everyone agrees what it should mean. The margin of error of an estimate is typically one or two times the estimated standard error of the estimate.

Normal distribution

A random variable X has a normal distribution with mean m and standard error s if for every pair of numbers a ≤ b, the chance that a < (X−m)/s < b is

$$P(a < (X-m)/s < b) = \text{area under the normal curve between } a \text{ and } b.$$

If there are numbers m and s such that X has a normal distribution with mean m and standard error s, then X is said to have a normal distribution or to be normally

distributed. If X has a normal distribution with mean m=0 and standard error s=1, then X is said to have a standard normal distribution. The notation X~N(m,s2) means that X has a normal distribution with mean m and standard error s; for example, X~N(0,1), means X has a standard normal distribution.

P-value

Suppose we have a family of hypothesis tests of a null hypothesis that let us test the hypothesis at any significance level p between 0 and 100% we choose. The P value of the null hypothesis given the data is the smallest significance level p for which any of the tests would have rejected the null hypothesis.
For example, let X be a test statistic, and for p between 0 and 100%, let xp be the smallest number such that, under the null hypothesis,

$$P(X \leq x) \geq p.$$

Then for any p between 0 and 100%, the rule

reject the null hypothesis if $X < xp$

tests the null hypothesis at significance level p. If we observed X = x, the P-value of the null hypothesis given the data would be the smallest p such that x < xp.

Quantile

The qth quantile of a list ($0 < q \leq 1$) is the smallest number such that the fraction q or more of the elements of the list are less than or equal to it. I.e., if the list contains n numbers, the qth quantile, is the smallest number Q such that at least n×q elements of the list are less than or equal to Q.

Significance, Significance level, Statistical significance

The significance level of an hypothesis test is the chance that the test erroneously rejects the null hypothesis when the null hypothesis is true.

Standard Error (SE)

The Standard Error of a random variable is a measure of how far it is likely to be from its expected value; that is, its scatter in repeated experiments. The SE of a random variable X is defined to be

$$SE(X) = [E((X - E(X))2)]^{½}.$$

That is, the standard error is the square-root of the expected squared difference between the random variable and its expected value. The SE of a random variable is analogous to the SD of a list.

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Type I and Type II errors
These refer to hypothesis testing. A Type I error occurs when the null hypothesis is rejected erroneously when it is in fact true. A Type II error occurs if the null hypothesis is not rejected when it is in fact false.

z-score
The observed value of the Z statistic.

Z statistic
A Z statistic is a test statistic whose distribution under the null hypothesis has expected value zero and can be approximated well by the normal curve. Usually, Z statistics are constructed by standardizing some other statistic. The Z statistic is related to the original statistic by

Z = (original − expected value of original)/SE(original).

z-test
An hypothesis test based on approximating the probability histogram of the Z statistic under the null hypothesis by the normal curve.

For the Full List, please see: https://www.stat.berkeley.edu/~stark/SticiGui/Text/gloss.htm

商业分析师术语

https://oe.ucdavis.edu/resources/Business%20Analysis%20Glossary%202014%20v2.docx

Action Plan:	An agreed upon set of actions or tactics that are the particular means used to achieve objectives.
Active Listening:	Active Listening is a method used to listen and respond to others in a structured and deliberate way. It requires a listener to understand and actively evaluate what he or she heard.
Activity Diagram:	An activity diagram is used to model a process. It models the actions (or behaviors) performed by the components of a business process or IT system, the order in which the actions take place, and the conditions that coordinate the actions in a specific order. Activity diagrams use swim lanes to group

	actions together. Actions can be grouped by the actor performing the action or by the distinct business process or system that is performing the action.
Agile:	Agile is a general term and conceptual framework used to describe a number of “light-weight” methodologies, such as Extreme Programming (XP), SCRUM, and Rapid Application Development (RAD), which exhibit a series of common characteristics. Some of these characteristics include iterative analysis and development, time-boxed iterations of a predefined length, delivery of the most critical features and functions first, delivery of a complete build with an initial set of limited features within a few months (often 1-2 months), small cross-functional teams usually of 6-9 team members, daily team communication meetings, and reduced levels of documentation.
Alternative Flow:	An alternate flow describes a use case scenario other than the basic flow that results in a user completing his or her goal. It is often considered to be an optional flow and implies that the user has chosen to take an alternative path through the system.
Analysis:	The examination of facts and data to provide basis for effective decision making.
Benchmarking:	A technique in which a company measures its performance against that of best-in-class companies, determines how those companies achieved their performance levels and uses the information to improve its own performance. Subjects that can be benchmarked include strategies, operations and processes.
Black Belt:	Leaders of team responsible for measuring, analyzing, improving and controlling key processes that influence customer satisfaction and/or productivity growth. Black Belts are full-time positions.
Business Analysis Planning and Monitoring:	Describes how a business analyst determines which activities will be needed to complete the business analysis effort. The tasks within this knowledge area govern the business analysis tasks in all of the other knowledge areas.
Business Drivers	Crucial factors (people, information, conditions such as market forces, processes, etc.) that lead to the success of the organization.

Burndown Chart: A Burndown Chart is a tool used by multiple software engineering methods to track the progress of work completed. It compares the amount of work remaining (typically measured along the vertical axis) against time (measured along the horizontal axis). The burndown chart gives a quick view of the amount of work that is completed over time.

Business Process Re-engineering: A process used to identify, analyze and restructure an organization's core business processes with the aim of achieving dramatic improvements in critical performance measures, such as cost, quality, service and speed.

Business Entity Model: A business entity model is a logical model that documents the entities, or things, that a business or business process uses and interacts with in order to accomplish its business activities and goals. In addition to documenting entities, a business entity model may capture the attributes of an entity, relationships between entities, and cardinality information. Many business entity models are created in the form of a class diagram.

Class Diagram: A class diagram describes the structure of a system by showing the classes of a system, the attributes and operations that belong to each class, and the relationships between the classes.

Communication Diagram: A communication diagram is a diagram which models the objects or parts of a system, the interactions (or messages) between them, and the sequence in which these interactions occur. A communication diagram models this as a free-form arrangement of objects or parts of a system. The free-form arrangement of objects lends itself well to showing the sequenced interactions in a more compact space.

Communication Plan: A guide to the communication and sponsorship efforts throughout the duration of the project. It is a living and working document and is updated periodically as audience needs change. It explains how to convey the right message, from the right communicator, to the right audience, through the right channel, at the right time. It addresses the six basic elements of communications: communicator, message, communication channel, feedback mechanism, receiver/audience and time frame. A communication plan includes

- "Who" – the target audience
- "What" – the key messages that are to be articulated

- "When" – timing, specifically, the appropriate time of delivery for each message
- "Why" – the desired outcomes
- "How" – the communication vehicle (how the message will be delivered)

"By whom" – the sender (who will deliver the information and how he or she is chosen)

Concentration Ratio: Concentration Ratio (CR) is a measurement used to understand the level of competition that exists within a market or industry in which a company operates.

Context Diagram: A context diagram is a special form of a data flow diagram that represents an entire system as a single process and highlights the interactions between the system being analyzed and other systems or people that interact with it.

Continuous Improvement: Sometimes called continual improvement. The ongoing improvement of products, services or processes through both incremental and breakthrough improvements.

Convergent Thinking: Convergent thinking is the process of focusing on a few sets of ideas and evaluating them based on selection criteria in order to narrow down the available options.

Cost Benefit Analysis: Cost Benefit Analysis is a technique used to determine if the financial benefits of a project outweigh the associated cost of undertaking the project in the first place. For a short-term project where the benefit may be an immediate one-time cash windfall this may be as simple as subtracting the total of all project costs from the total of all project benefits. If the total is positive, then the project may be worth completing.

Customer: The recipient of a product, service, information or other input. See "external customer" and "internal customer."

Dashboard: A data visualization resource that displays the current status of metrics and performance indicators for an organization. A dashboard consolidates and arranges numerical results that are often produced on a periodic basis such as monthly or quarterly.

Database View: A database view is a stored query that returns data from one or more database tables. The stored query, or view, is a virtual table. Once you have defined a view, you can reference it just as you would any other table in a database. Since the view is the result of a stored query, it does not contain a copy of the

	data itself. Instead, it references the data in the underlying base tables.
Data Flow Diagram:	A data flow diagram models the system as a network of functional processes and its data. It documents the system's processes, data stores, flows which carry data, and terminators which are the external entities with which the system communicates.
Decision Table:	A decision table is an unambiguous and compact technique for modeling complicated logic using several sets of conditions in a tabular format. It is often used to model logic that may otherwise require many sentences or paragraphs to convey.
Decision Tree:	A decision tree graphically represents a series of decision points with branching occurring at each decision point forming a treelike structure. A decision tree maps out each possible outcome and will often also include the probability of each outcome.
Divergent Thinking:	Divergent thinking is the process of generating many ideas that branch out from an original topic or concept.
Elicitation:	Describes the steps required to elicit requirements from stakeholders. It includes preparing for elicitation by identifying a combination of techniques that will be used; conducting the elicitation using the identified techniques, documenting the elicitation results, and confirming what has been documented.
Enterprise Analysis:	Describes the business analysis activities required to compare the needs of the business against the current capabilities of the business and identify opportunities for improvement. Then, based on this information, the analyst can determine which solutions should be selected to resolve the issue.
Entity Relationship Diagram:	An entity-relationship diagram models the relationships between entities in a database. Standard symbols are used to represent different types of information. The conventional notation uses rectangles to represent entities (nouns), diamonds to represent relationships (verbs) and ovals to represents attributes of entities. Other notations are sometimes used.
Fact Model:	A fact model is a static model which structures business knowledge about core business concepts and business operations. It is sometimes called a business entity model. The

	fact model focuses on the core business concepts (called terms), and the logical connections between them (called facts). The facts are typically verbs which describe how one term relates to another.
Gantt Chart:	A project planning and management tool that displays all the tasks or activities associated with a project or initiative as well as the relationships/dependencies between these tasks. Resources, completion status, timing and constraints are all shown in the chart.
Gap Analysis:	Gap analysis is the process of comparing two things in order to determine the difference or "gap" that exists between them. Most often gap analysis is used to compare two different states of something; the current state and the future state.
Handoff:	Any time in a process when one person (or job title) or group passes the item moving through the process to another person; a handoff has the potential to add defects, time, and cost to a process.
Joint Application Development:	Joint Application Development is a requirements-definition and software system design methodology in which stakeholders, subject matter experts (SME), end-users, business analysts, software architects and developers attend collaborative workshops (called JAD sessions) to work out a system's details.
Lean	An integrated approach to designing and improving work towards a customer-focused ideal state, through the engagement of all people aligned by common principles and practices. These include direct observation of work such as activities, flows and connection, systemic waste elimination, systematic problem solving, establishment of a high-level of agreement of both what and how, and creation of a learning organization.
Macro-environmental Factors:	The larger external factors that affect an organization's ability to fulfill its mission, e.g.: political, legal, economic and sociocultural.
Measures of Success:	The criteria, metrics or means by which a comparison is made with output.
Metric:	A standard from measurement. Metrics may have a number of characteristics such as the following:

- Leading – a measurement that predicts future success or failure; sometimes called “windshield view,” these are used to predict outcomes.
- Lagging – a measurement that depicts what has already occurred; sometimes called “rear view mirror view,” these may be used to determine corrective measures.
- Quantitative – a numerical measurement of an outcome.
- Qualitative – a non-numerical measurement of an outcome such as customer satisfaction.
- Output – typically numerical and measures units of goods or services produced.
- Outcome – can be quantitative or qualitative and measures broader impact.

Micro-environmental Factors: The external factors specific to an organization that affect its ability to fulfill its mission e.g.: external customers, agents, distributors, suppliers, competitors, etc.

Milestone: The end of a stage that marks the completion of a work package (project management) or phase, typically marked by a high level event such as completion, endorsement or signing of a deliverable, document or a high level review meeting. A large complex project may have numerous milestones before the project is complete.

Model-Based-Management: Model-Based Management refers to the activity of managing and making informed decision regarding the future direction of a business, process, or system(s) based on information gleaned and understood from models that document the current state.

Non-value-adding activities: Any steps in a process that do not add value to the customer or process. Examples include rework, handoffs, inspection and delays.

PDCA Method: A 4-step, iterative method commonly used for Business Process Improvement. PDCA stands for Plan, Do, Check, Act. It is used to create a feedback loop based on measurable results and make incremental changes and improvements over time.

Pilot: Trial implementation of a solution on a limited scale to ensure its effectiveness and test its impact.

Primary Actor: Primary actors are people, or at times even other systems, that require the assistance of the system under consideration to

achieve their goal. They initiate the use cases of the system (business processes or application functionality). A use case within the system may have more than one primary actor, since more than one type of role may initiate the processes or functionality of the system.

Process: A series of steps or actions that lead to a desired result or output. A set of common tasks that creates a product, service, process or plan that will satisfy a customer or group of customers.

Process improvement: Improvement approach focused on incremental changes, involves solutions to eliminate or reduce defects, costs or cycle time; leaves basic design and assumptions of a process intact.

Process Mapping: Illustrated description of how things get done, which enables participants to visualize an entire process and identify areas of strength and weaknesses. It helps reduce cycle time and defects while recognizing the value of individual contributions. A type of flowchart depicting the steps in a process and identifying responsibility for each step and key measures.

Process Owner: Process owners are exactly as the name sounds - they are the responsible individuals for a specific process. For instance, in the legal department there is usually one person in charge - maybe the VP of Legal - that's the process owner. There may be a Director of Marketing at your property - that's the process owner for marketing, and for the Check-in process, the process owner is typically the Front Office Manager.

Project Management: The process of organizing and managing resources to complete a project to specification, on time, within budget and to the customer's satisfaction.

Project Sponsor: This member of the executive committee is a strong advocate of the project and can assist with barriers that may come up. He or she is accountable for the project's success and can therefore explain to Six Sigma Council members and everyone in the property the business rationale for the transfer project and assist with cross-functional collaboration efforts. He or she will remain up to date on key aspects of the project by regularly meeting with the team leader and members.
The project sponsor:

- Is a member of the Executive committee
- Is accountable for project success
- Addresses cross-functional or other barriers

- Reviews and tracks progress with team leader
- Advocates for necessary resources

Quality Assurance: Quality Assurance is about Process. It describes the proactive method of establishing a process that is capable of producing a product or deliverable that is error or defect free.

Quality Control: Quality Control is about Products or Deliverables. It describes checking a final product or deliverable to ensure that it is defect or error free and meets specifications.

RACI Matrix:

A project management tools that identifies all required tasks or activities and what parties are involved in those tasks as well as their level or type of involvement. A RACI is used to ensure clarity on roles and responsibilities in a team environment. It alleviates problems and fosters a culture of accountability. A RACI is used to ensure clarity on roles and responsibilities in a team environment. It alleviates problems and fosters a culture of accountability.

- **R** – Responsible: The person who performs the activity; the "doer"
- **A** – Accountable: The person with ultimate approval power; the "buck stops here"
- **C** – Consulted: A stakeholder who is involved prior to the task completion; "in the loop"
- **I** – Informed: A stakeholder who is told of the outcome of the task or decision; the "keep in the picture"

Random sampling: Method that allows each item or person chosen to be measured, to be selected completely by chance.

Requirement: A documented representation of a condition or capability. Specifically, one that is needed by a stakeholder to solve a problem or achieve an objective, or one that must be met or possessed by a solution to satisfy a contract, standard, specification.

Requirements Analysis: Describes the activities and methods used to analyze stated requirements and transform them into a potential solution which possesses the capabilities that will fulfill the stakeholder needs.

Requirements Management and Communication: Describes what is involved in managing and articulating requirements to a wide variety of stakeholders. It includes understanding the link between business or project objectives and the specific requirements that comes from them such that

	any change or clarification in the objectives will result in a revised set of requirements that reflect the business need.
Risk Management:	Risk management is about thinking ahead and preparing for things that may go wrong. This includes identifying potential problems and putting together preventive and contingent action plans, in order to reduce the potential damage.
Role:	A role describes a related set of activities that a single person may regularly undertake in order to partially or fully complete a process or goal. A role is different than a job title. Roles, reporting structures, and other parameters may all be used in conjunction to define a job title.
Root cause analysis:	Study of original reason for nonconformance with a process. When the root cause is removed, or corrected, the nonconformance will be eliminated.
Scrum:	Scrum is one of several light-weight agile methods that use an iterative and incremental approach for the development of information systems. The Scrum method brings a small team together to work on a specified set of features over a short period called a sprint (often 30-days).
Scope:	Defines the boundaries of the process; clarifies specifically where the start and end points for improvement reside (for instance, room service delivery time from the time of the guest call to knocking on the guest door); defines where and what to measure and analyze; needs to be within the sphere of control of the team working on the project. The broader the scope, the more complex and time-consuming the improvement efforts will be.
Secondary Actor:	A secondary actor is a person, business processes, or applications that provide a specific result or information to a use case in order for the end goal of the use case to be achieved. A secondary actor never initiates the use case. It is invoked by the system's use cases in order to obtain the required information or result. There may be many secondary actors for a given system.
Sequence Diagram:	A sequence diagrams is a diagram that depicts interactions among various application components or participants over time, including but not limited to system objects, actors, and other systems or services, in order to accomplish a task.

SIPOC Diagram: The SIPOC diagram is a tool that is used to outline the scope of a process improvement initiative (often as part of a Six Sigma improvement project). The tool captures all of the relevant elements of the process under consideration. The diagram's name is an acronym for the elements that need to be identified and documented. (S) – Suppliers: Who supplies the inputs to the process under consideration, (I) – Inputs: What are the inputs to the process, (P) – Process: What are the steps of the process that is being improved upon, O – Outputs: What are the outputs of the process, C – Customers: Who are the customers or beneficiaries of the outputs of the process.

Six Sigma: Six Sigma is a process improvement methodology. It is structured into 5 phases which can be iterated to continually improve key processes and deliver greater efficiencies and success within an organization. These 5 phases are Define, Measure, Analyze, Improve, and Control.

SMART Goals Acronym for goals which satisfy the SMART framework: *Specific, Measurable, Attainable, Relevant and Time-bound.*

- Specific – detail what is expected, why it's important, who is involved, where it will occur and which attributes are important.
- Measurable – allow progress to be clearly quantified and demonstrated.
- Attainable – goals that stretch the employee but can be accomplished to motivate.
- Relevant –answer the question of why the activity is worthwhile.
- Time-bound – establish sense of urgency by setting a deadline.

Clear, motivating, easily understood goals and result in a much higher likelihood of success.

Solution Assessment and Validation: Describes the activity of determining how closely a solution meets the original stakeholder and solution requirements as well as describe the activities that the business analyst should complete to ensure the successful implementation of solution.

Solution statement: A clear description of the proposed solution(s); used to evaluate and select the best solution to implement.

Stakeholder: Any individual, group or organization that will have a significant impact on or will be significantly impacted by the quality of a specific product or service.

Stakeholder Analysis:	Stakeholder Analysis is the process of identifying project stakeholders, how their needs may impact the project, and the contributions that the stakeholders will make to the requirements elicitation process.
SWOT Analysis:	SWOT Analysis is a strategic planning technique used to assess the internal and external environment in which a company operates and competes. Internal environmental factors are classified into strengths and weaknesses, while external environmental factors are classified into opportunities and threats.
Tollgate:	A review session that determines whether activities up to that point in a project have been satisfactorily completed. Tollgates are commonly conducted to review critical decisions during a project.
Use Case Diagram:	The use case specification provides the details of the functionality that the system will support and describes how the actors will use the system in order to obtain a specific result of value.
User Story:	A user story (typically used by Agile methodologies) is a high-level requirement containing just enough information to help the team produce a reasonable sizing for the requirement. The user story is generally one to two sentences in the everyday language of the user.
Value adding activities:	Steps/tasks in a process that meet all three criteria defining value as perceived by the external customer: • Transforms the item/service toward completion • Customer cares (willing to pay for it) • Done right the first time A project team may suggest improvement ideas to bring their current process closer to the ideal process comprised only of value-adding activities.
Value Stream Map:	Visual map of work flow from beginning to end, which produces an outcome or product (services, materials, information, etc.) Value is defined from the customer's perspective. It is a tool to document the current process, point to problems and focus direction.
Variance:	A change in a process or business practice that may alter its expected outcome.

Voice of the Customer (VOC): A systematic approach to gather and analyze customer requirements, expectations, level of satisfaction and dissatisfaction. Methods of gathering Voice of the Customer include complaints, surveys, comments, market research, focus groups and interviews. Voice of the Customer should drive the process improvement or re-design efforts, and is a key data source in the project selection process.

Work Breakdown Structure: The Work Breakdown Structure (WBS) documents the subdivision of tasks and effort required to complete an objective or project. It is most often depicted as a tree structure where high level tasks break down into lower level tasks. Low level tasks are typically grouped in various logical ways such as by system, subsystems, project phase, or a combination of these.