

# Corporate Performance Analyzer

## Project Summary

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# Introduction

*Why are we building this site?*

We are building this site for our customer because they are in need of a corporate performance analyzer program.

*What is this website suppose to do?*

This website is suppose to allow users to construct ratios, upload or view articles and financial information about big companies such as Walmart, Home-Depot, Lowe's, Target and Costco. Users can also construct knowledge objects and semantic predicate to assist them with extracting critical informations from articles.

*Who is suppose to use it?*

Typical users of this website program are teachers and students in the field of accounting and finance.

*What can the user obtain from this site?*

Users can obtain constructed ratios, company articles and company financial information.

## Target Audience

*What kind of users are we targeting with this website?*

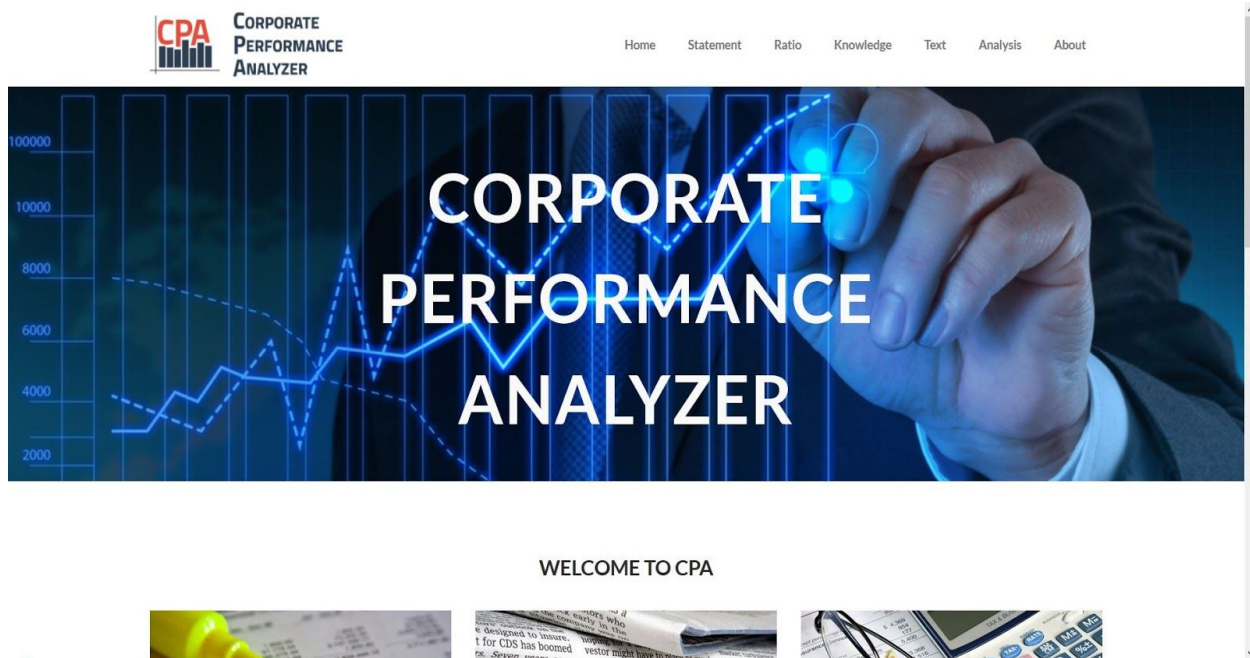
This website will be used by students and teachers in the field of accounting and finance. They will be able to construct and analyze ratios that pertain to different companies of their choosing.

# Website Skeleton Layout

1. Home Page
2. Statement Tab
  - a. Income Statement
  - b. Balance Sheet
3. Ratio Tab
  - a. Ratio Construction
  - b. Ratio Analysis
4. Knowledge Tab
  - a. Object Capture
  - b. Predicate Writing
5. Text Tab
  - a. Search
  - b. Upload Article
  - c. Read Article (Hidden)
6. Analysis Tab

# Home Page

## Home



## Purpose


- Introduce the user to the corporate performance analyzer tool.

## Features

- Main navigation with tabs which include statement, ratio, knowledge, text, analysis and about.
- Jumbotron with financial images.
- CPA Logo.

# Statement Tab

## Income Statement

**CORPORATE  
PERFORMANCE  
ANALYZER**

[Home](#) [Statement](#) [Ratio](#) [Knowledge](#) [Text](#) [Analysis](#) [About](#)

INCOME STATEMENT

Home > Statement > Income Statement

Select A Company

Costco

Period Ending	2012	2013	2014	2015
Total Revenue:	-	\$10,104,000.00	\$10,899,000.00	\$11,445,000.00
Cost of Revenue:	-	\$91,948,000.00	\$98,458,000.00	\$101,065,000.00
Gross Profit:	-	\$13,208,000.00	\$14,182,000.00	\$15,134,000.00
Operating Expenses:				
Research Development:	-	-	-	-
Selling General and Administrative:	-	\$10,104,000.00	\$10,899,000.00	\$11,445,000.00
Non Recurring:	-	\$51,000.00	\$63,000.00	\$65,000.00
Others:	-	-	-	-

## Purpose

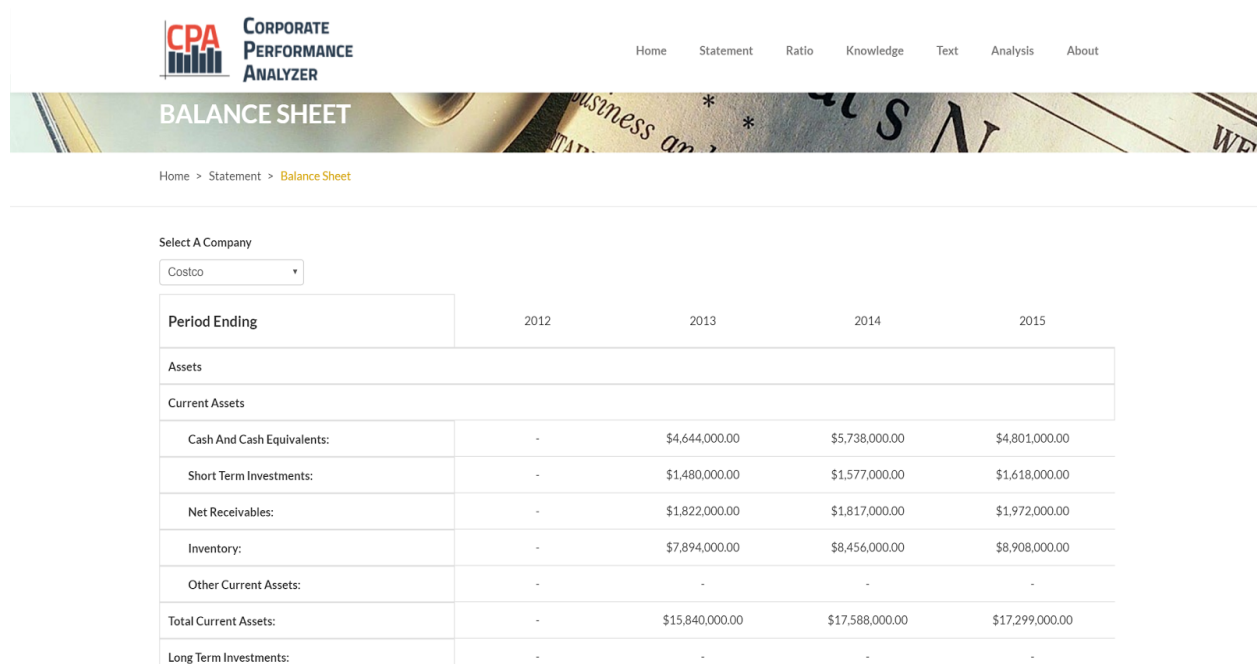
- Allow users to view income statements

## Features

- Let users view income statements based on companies and years
- Income statement constructs are retrieved from the database depending on what the user selects from the dropdownlists

- Income statement constructs then populates a table on the webform in a income statement format for the user

## Balance Sheet



Period Ending	2012	2013	2014	2015
Assets				
Current Assets				
Cash And Cash Equivalents:	-	\$4,644,000.00	\$5,738,000.00	\$4,801,000.00
Short Term Investments:	-	\$1,480,000.00	\$1,577,000.00	\$1,618,000.00
Net Receivables:	-	\$1,822,000.00	\$1,817,000.00	\$1,972,000.00
Inventory:	-	\$7,894,000.00	\$8,456,000.00	\$8,908,000.00
Other Current Assets:	-	-	-	-
Total Current Assets:	-	\$15,840,000.00	\$17,588,000.00	\$17,299,000.00
Long Term Investments:	-	-	-	-

## Purpose

- Allow users to view balance sheets

## Features

- Let users view balance sheets based on companies and years
- Balance Sheet constructs are retrieved from the database depending on what the user selects from the dropdownlists

- Balance Sheet constructs then populates a table on the webform in a balance sheet format for the user

# Ratio Tab

## Ratio Construction

The screenshot shows the 'Ratio Construction' page of the CPA Corporate Performance Analyzer. The page has a header with the CPA logo and navigation links: Home, Statement, Ratio, Knowledge, Text, Analysis, and About. The main content area is titled 'RATIO CONSTRUCTION' and includes a breadcrumb trail: Home > Ratio > Ratio Construction.

The interface is divided into three main sections:

- New Ratio Name:** A text input field containing 'Test'. Below it, a message states 'Ratio name already exists.' Below that, a 'Ratio Type' section lists several categories with radio buttons: Financing Structure Ratios (selected), Asset Allocation Ratios, Asset Utilization Ratios, Sales Profitability Ratios, Return on Investment Ratios, and Others. At the bottom of this section is a green 'ADD NEW RATIO' button.
- Existing Ratio Constructs:** A scrollable list of financial items including: Deferred Long Term Asset Charges, Deferred Long Term Liability Charges, Discontinued Operations, Earnings Before Interest And Taxes, Effect Of Accounting Changes, Extraordinary Items, Goodwill, Gross Profit, Income Before Tax, Income Tax Expense, Intangible Assets, Interest Expense, Inventory, Long Term Debt, Long Term Investments, Minority Interest, Misc Stocks Options Warrants, Negative Goodwill, Net Income, Net Income Applicable To Common Shares, and Net Income From Continuing Ops.
- Numerator and Denominator:** Two boxes for constructing the ratio formula. The Numerator box contains '+Accounts Payable', '+Accumulated Amortization', and '+Capital Surplus'. The Denominator box contains '+Cash And Cash Equivalents', '+Common Stock', and '+Cost of Revenue'. Between these boxes are four green buttons: 'ADD [+] =>', 'ADD [-] =>', '<= REMOVE', and '<= REMOVE ALL'.

## Purpose

- Construct new ratios to be used for ratio analysis

## Features

- “Existing Ratio Constructs” is populated from the database by SQL statement when the page is loaded.
- Formulas are created by allowing users to move existing ratio constructs between the numerator and denominator with the available buttons



- Users are able to remove a single construct from the numerator or denominator by clicking on the construct and pressing the “Num remove” button
- A maximum of 3 constructs are allowed in the numerator and denominator, which is enforced by disabling the add buttons when the numerator and denominator list box reaches 3 constructs (light green button turns dark green as seen above)
- “Remove All” button will clear the numerator or denominator list box and return the constructs to the “Existing Ratio Constructs” list box
- Validation is implemented and complete. If user forgets to input “New Ratio Name” or to select a “Ratio Type”, labels will alert the user to do so before adding the new ratio. If the numerator and denominator list boxes are empty, labels will notify users that “1 constructs required”
- Validation is implemented and complete. If user forgets to input “New Ratio Name” or to select a “Ratio Type”, labels will alert the user to do so before adding the new ratio. If the numerator and denominator list boxes are empty, labels will notify users that “1 constructs required”

- Validation is used to store unique ratio names. No duplicates allowed per table.
- Validation is used to store unique ratios/formulas only. No 2 ratios will be alike per table.
- Each ratio type has its' own table in the database. Depending on which ratio type is chosen, the new ratio will be add and stored to that table in the database
- Database is now able to store 3 numerators and 3 denominators along with their operators, instead of 1 of each from Prototype I.

## Ratio Analysis

**CPA CORPORATE PERFORMANCE ANALYZER**

Home Statement Ratio Knowledge Text Analysis About

**RATIO ANALYSIS**

Home > Ratio > Ratio Analysis

**COMPANIES**

Costco

**RATIO TYPES**

- Financing Structure Ratios
- Asset Allocation Ratios
- Asset Utilization Ratios
- Sales Profitability Ratios
- Return on Investment Ratios
- Others

**RATIO NAMES**

Total Debts to Assets  
Interest Coverage Ratio  
Test 3  
3/1 Test  
3/1 Test 2  
Example 3/3 Test

**RESULTS**

Company: Costco  
ratio: Total Debts to Assets

	2012	2013	2014	2015
<b>NUMERATOR:</b>				
+ Total Liabilities	\$14,779,000.00	\$19,450,000.00	\$20,721,000.00	\$22,823,000.00
subtotal:	\$14,779,000.00	\$19,450,000.00	\$20,721,000.00	\$22,823,000.00
<b>DENOMINATOR:</b>				
+ Total Assets	\$27,140,000.00	\$30,283,000.00	\$33,024,000.00	\$33,440,000.00
subtotal:	\$27,140,000.00	\$30,283,000.00	\$33,024,000.00	\$33,440,000.00
<b>RATIO:</b>	0.54	0.64	0.63	0.68
difference:				

**CALC VIEW**

## Purpose


- Allow user to view ratio calculations of companies using income statements and balance sheets

## Features

- Ratio Type formulas are retrieved from the database
- Balance Sheet and Income Statement constructs and values are retrieved from the database depending on what the user selected from the Ratio Type options
- SQL statements unionize tables and combine all three relative database together
- The page generates a panel presenting all the values being calculated once everything has been validated.

# Knowledge Tab

## Object Capturing



CORPORATE  
PERFORMANCE  
ANALYZER

HomeStatementRatioKnowledgeTextAnalysisAbout

OBJECT CAPTURING

Home > Knowledge > Object

CATEGORIES

1RESOURCE

2EVENT

3AGENT

OBJECT FORM

Object 1

Object 2

Object 3

OBJECT TYPE

☒ Resource ☐ Event ☐ Agent

ADD

KNOWLEDGE OBJECTS

	Object 1	Object 2	Object 3	Object Type
<a href="#">Edit Delete</a>	asset	assets		resource
<a href="#">Edit Delete</a>	cash			resource
<a href="#">Edit Delete</a>	equipment	equipments		resource
<a href="#">Edit Delete</a>	receivable	receivables		resource
<a href="#">Edit Delete</a>	market share	market shares		resource
<a href="#">Edit Delete</a>	cash receipt	cash receipts		resource
<a href="#">Edit Delete</a>	profit	profits		resource
<a href="#">Edit Delete</a>	income	incomes		resource
<a href="#">Edit Delete</a>	inventory	inventories		resource
<a href="#">Edit Delete</a>	raw material	raw materials		resource
<a href="#">Edit Delete</a>	finished good	finished goods		resource
<a href="#">Edit Delete</a>	capital	capitals		resource

## Purpose


- The purpose of the Object Capture is to allow admin to group important terms into economic resources, events, or agents (REA) knowledge objects with the same meaning to write semantic predicates.

## Features

- There will be three object forms to allow admin inputs and creates the knowledge object.

- There will be three radio buttons to allow admin to define and assign the REA knowledge objects into types.
- Add button allows admin to create the knowledge object and stores the object into database.
- View button allows admin to pull a specific type of knowledge object and list them into a table format.
- Delete button allows admin to delete an unwanted knowledge object from the database in the same row.
- Validation for Object 1 is applied. If Object 1 test box is empty, A label will show the message “Please enter an Object.” in red and other text boxes other than Object 1 is allowed to be null or empty.
- Validation for adding the object. A confirmation label will show a message if the Object is added. Else, it will will show a message if the object already exists in the database.
- Added sorting in the gridview table. Admin can sort through the gridview in all 3 columns either ascending or descending order.

# Predicate Writing



CORPORATE  
PERFORMANCE  
ANALYZER

HomeStatementRatioKnowledgeTextAnalysisAbout

PREDICATE WRITING

Home > Knowledge > Predicate

CATEGORIES

1

ATTRIBUTE

2

ASSOCIATION

3

CASUALTY

PREDICATE FORM

Object 1

Object 2

Annotation

PREDICATE TYPE

☒ Is A ☐ Is Part Of ☐ Is Caused By

ADD

SEMANTIC PREDICATE

	Object 1	Object 2	Annotation	Predicate Type
<a href="#">Edit Delete</a>	sales	revenue		attribute
<a href="#">Edit Delete</a>	salesman	sales representative		attribute
<a href="#">Edit Delete</a>	product	merchandise		attribute
<a href="#">Edit Delete</a>	uncollectible	uncollectible receivable		attribute
<a href="#">Edit Delete</a>	production	manufacturing		attribute
<a href="#">Edit Delete</a>	technological advance	technological development		attribute
<a href="#">Edit Delete</a>	customer	purchaser		attribute
<a href="#">Edit Delete</a>	cash	money		attribute
<a href="#">Edit Delete</a>	sales	earning		attribute
<a href="#">Edit Delete</a>	test	test2	test3	attribute
<a href="#">Edit Delete</a>	test	test2	test3	attribute

## Purpose

- The purpose of the Predicate is to allow admin to retrieve REA knowledge objects from the database and use it to create a relationship between those objects for future knowledge base analysis.


## Features

- Two object forms will allow admin to select REA knowledge objects from the REA knowledge object table database.
- An annotation input will allow admin to input it manually.

- There will be three radio buttons to allow admin to define a specific type of relationship for the semantic predicate.
- Add button allows admin to create the semantic predicate and stores it into database.
- Edit button allows admin to edit a specific semantic predicate in the grid view table and update it. It will also update the database afterward.
- View button allows admin to pull a specific type of semantic predicate and list them into a table format.
- Delete button allows admin to delete an unwanted semantic predicate from the database.
- Validation for Object 1 is applied. If Object 1 test box is empty, A label will show the message “Please enter an Object.” Other text boxes other than Object 1 is allowed to be null or empty.
- Validation for adding the predicate. A confirmation label will show a message if the predicate is added. Else, it will will show a message if the object already exists in the database.
- Added sorting in the gridview table. Admin can sort through the gridview in all 3 columns either ascending or descending order.

# Text Tab

## Search

**CORPORATE  
PERFORMANCE  
ANALYZER**

HomeStatementRatioKnowledgeTextAnalysisAbout

SEARCH

Home > Text > Search

**Keyword Search**  
  
**Filter By:**  
**Company**  

All Companies

  
**Date**  
From (Month/Day/Year)  

112010

  
To (Month/Day/Year)  

652016

SEARCH

**SEARCH RESULTS**

Company Name	Article Title	Date (MM/DD/YY)	View Article	Reference
Home Depot	Better Buy: The Home Depot, Inc. vs. Target	04-25-16	<a href="#">View</a>	<a href="#">Source</a>
Home Depot	Good news: Homeowners spend like it's 2006	08-18-15	<a href="#">View</a>	<a href="#">Source</a>
Home Depot	Here's how Home Depot is eating Lowe's lunch	02-24-16	<a href="#">View</a>	<a href="#">Source</a>
Home Depot	Home Depot breach bigger than Target at 56 million cards	09-18-14	<a href="#">View</a>	<a href="#">Source</a>
Home Depot	Home Depot CFO to Fix Interline's Reporting, Refinance Coming Debt	11-17-15	<a href="#">View</a>	<a href="#">Source</a>
Home Depot	Home Depot in 2015: What Investors Must Watch For	01-07-15	<a href="#">View</a>	<a href="#">Source</a>
Target	It's not looking good for Target	05-21-14	<a href="#">View</a>	<a href="#">Source</a>
Home Depot	Home Depot Is Headed for a Deep Pullback	04-29-16	<a href="#">View</a>	<a href="#">Source</a>
Target	Low, low prices: Target beats Wal-Mart	03-08-11	<a href="#">View</a>	<a href="#">Source</a>
Target	Missed Alarms and 40 Million Stolen Credit Card	03-17-14	<a href="#">View</a>	<a href="#">Source</a>

## Purpose

- The purpose of search is to allow the user to manually look up and pull articles from the provided database.
- Search contains options for users to specifically choose their desired filter for results returned.
- Users are able to input their desired company, title/keywords of article and date.



## Features

- Search box to specify keyword lookup.
- Menu to select specific company via dropdown list.
- Ability to filter by from date to date with month, day and year.
- Search results will populate in a table to the right side of the page.
- Ability to view source articles.
- Ability to view articles from database. Error messages returned for invalid queries.

## Upload Article

The screenshot shows the 'Upload Article' page of the 'CORPORATE PERFORMANCE ANALYZER'. The page has a navigation bar with links: Home, Statement, Ratio, Knowledge, Text, Analysis, and About. The main heading is 'UPLOAD ARTICLE'. Below this, there is a breadcrumb trail: Home > Text > Upload Source. The form is divided into two columns. The left column contains fields for 'Company' (a dropdown menu), 'Title' (a text input field), 'Date' (three dropdown menus for Month, Day, and Year), and 'Reference' (a text input field). The right column is titled 'ARTICLE' and contains instructions: 'Upload the Article by clicking the button below and select a .txt file.' and 'The .txt file can not contain HTML tags.' Below these instructions is a 'Browse...' button and a status message 'No file selected.'. At the bottom of the form is a green 'UPLOAD' button. The footer of the page is dark blue and contains three sections: 'DR. DREW HWANG' with a profile picture, 'ABOUT' with a bio, and 'CIS 466 - SENIOR PROJECT / SP16' with a list of team members and their LinkedIn links.

**CORPORATE PERFORMANCE ANALYZER**

Home Statement Ratio Knowledge Text Analysis About

**UPLOAD ARTICLE**

Home > Text > Upload Source

**Company**

Select Company

**Title**

Article's Title

**Date**

Month Day Year

**Reference**

www.website.com/

**ARTICLE**

Upload the Article by clicking the button below and select a .txt file.

The .txt file can not contain HTML tags.

Browse... No file selected.

**UPLOAD**

**DR. DREW HWANG**

**ABOUT**

Dr. Drew Hwang is a Professor of Computer Information Systems at California State Polytechnic University, Pomona. He received a B.S. in Business Administration from Soochow University, Taiwan, a M.S. in

**CIS 466 - SENIOR PROJECT / SP16**

Alan Nguyen  
Albert Chan  
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Denzil Yin

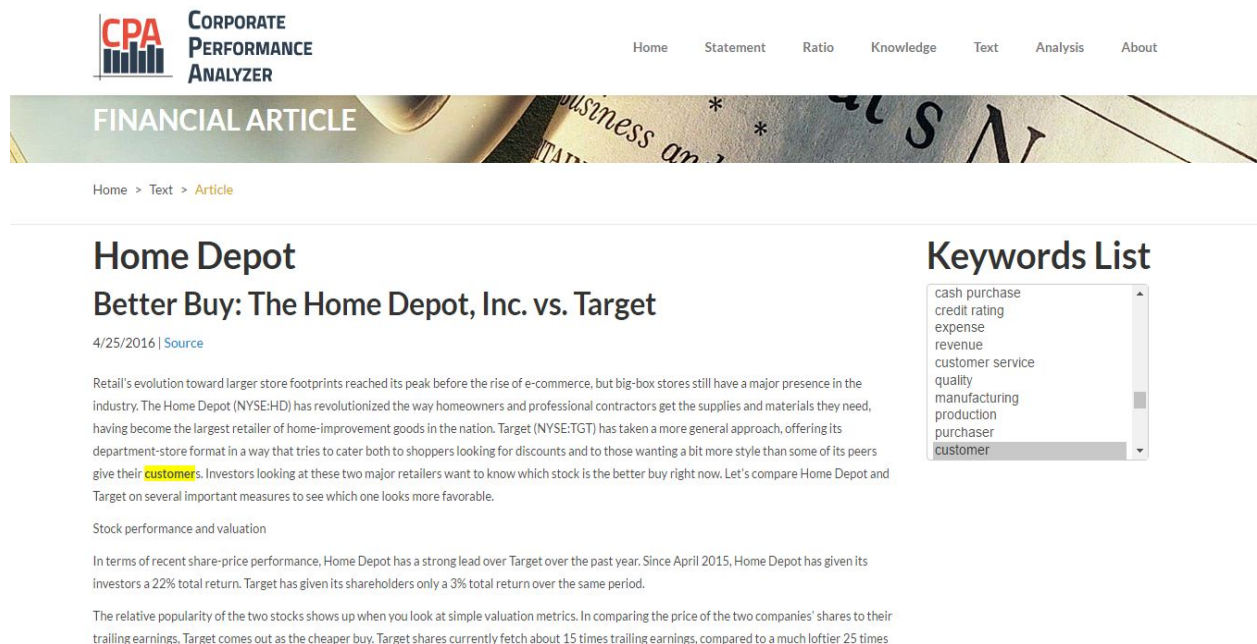
## Purpose

- Allow users to upload financial articles

## Features

- Select a company from a dropdown box Input article's title
- Select publishing date Input article's website
- Upload a text file containing the article

## Read Article



The screenshot displays the 'CORPORATE PERFORMANCE ANALYZER' web application. The header includes a navigation menu with links: Home, Statement, Ratio, Knowledge, Text, Analysis, and About. Below the header is a banner for 'FINANCIAL ARTICLE' with a background image of a document and a magnifying glass. The main content area shows an article titled 'Home Depot Better Buy: The Home Depot, Inc. vs. Target' dated 4/25/2016, with a 'Source' link. The article text discusses retail evolution and compares Home Depot and Target. A 'Keywords List' sidebar on the right contains a scrollable list of terms: cash purchase, credit rating, expense, revenue, customer service, quality, manufacturing, production, purchaser, and customer. The breadcrumb trail at the top reads 'Home > Text > Article'.

## Purpose

- Allow users to read financial articles and highlight keywords

## Features


- Display Company's name, article's title, date and source

- Analyze the financial article and compare with keywords from the Object database table
- Populate the keyword list

# Analysis Tab

## Analysis

### - Ratio Analysis Tab



HomeStatementRatioKnowledgeTextAnalysisAbout

ANALYSIS

Home > Analysis

COMPANIES

Costco

Ratio Analysis

Financial Articles

Keywords List


RATIO ANALYSISVIEW ARTICLE

Company: Costco

Ratio: Get Revenue

	2012	2013	2014	2015
NUMERATOR:				
+ Total Assets	\$27,140,000.00	\$30,283,000.00	\$33,024,000.00	\$33,440,000.00
Subtotal:	\$27,140,000.00	\$30,283,000.00	\$33,024,000.00	\$33,440,000.00
DENOMATOR				
+ Common Stock	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00

### - View Article Tab



HomeStatementRatioKnowledgeTextAnalysisAbout

COMPANIES

Costco

Ratio Analysis

+

Financial Articles

Costco: America's best retail...  
Costco Earnings Hit by Highe...  
Costco Earnings Surge on Hig...  
Costco Risks Losing Its Mojo...  
Costco Wholesale Corporation...  
Costco's entry-level workers...  
Costco's switch from Amex to...  
Market Minute: Warren Buffet...  
Midday Report: Costco's Memb...  
The Biggest Risks of Investi...

Keywords List

RATIO ANALYSISVIEW ARTICLE

## Costco

### Costco: America's best retailer?

3/5/2015 | [Source](#)

Can anything stop Costco?

The giant wholesale retailer is incredibly popular with consumers ... and investors.

Shares of Costco (COST) rose as high as 2.5% Thursday after the company reported that its latest quarterly earnings estimates easily topped forecasts. People are shopping and same-store sales are up.

The stock is now up nearly 10% this year and more than 30% over the past 12 months -- much more than Sam's Club owner Walmart (WMT), its biggest rival.

costco walmart stocks

The success of Costco is a sign that many middle class Americans are still extremely cost conscious.

We are bargain hunters by nature and that hasn't changed even as the job market and overall economy have improved over the past few years.

Related: Costco is one of Motley Fool's best stocks to buy

## - Keyword List

The screenshot displays the CPA Corporate Performance Analyzer web application. The header includes the CPA logo and navigation links: Home, Statement, Ratio, Knowledge, Text, Analysis, and About. On the left sidebar, there are buttons for 'Financial Articles' and 'Keywords List'. The 'Keywords List' section shows a list of keywords: customers, money, product, sales (highlighted), and shareholders. A 'CLEAR' button is at the bottom of the list. The main content area features an article titled 'Costco: America's best retailer?' dated 3/5/2015. The article text discusses Costco's popularity, stock performance, and financial results, with the word 'money' highlighted in yellow. Related links for 'costco walmart stocks' and 'Costco's credit card switcheroo' are also visible.

## Purpose

- Display company's ratio analysis, financial articles and highlight keywords

## Features

- Users can select a company they would like to see the ratios of within the last 4 years.
  - The user can select a ratio type varying from financing structures to return on investments. After the type is selected, the ratio index is filled by the ratios formulas from the database created by the Ratio Construction page.
- User can select a ratio type to see the ratio calculations for the selected company.

- The Calc button will open a grid on show the ratios for from the present year to the last 4 years.
- Selecting a company will display its financial articles in the Financial Articles tab. The article will be displayed in View Article tab
- The behind code will read the article and check if there are words matching with Object Capture database. After filtering the keywords, it will displayed in the Keyword List tab.
- User can highlight keywords in the articles by selecting the keywords and clear the highlighted keywords by clicking on Clear button.