

Utilizing “Big Data” to Generate Alpha in Portfolios of Consumer Equities

For additional information please visit:

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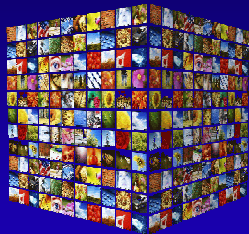
Over the past few years

“Big Data”

refers to the vast amounts of data generated
– consciously or unconsciously –
by billions of people every day
when they leave **digital tracks** as they simply go about
their plugged-in life during the 21st century.

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Who uses the “Big Data” that people leave behind?



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When doing whatever it is that they do ...



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Business “**Big Data**” comes from billions of on-line:

- Product or merchant searches
- Price comparisons / discount hunting
- Product reviews and recommendations (Yelp)
- Store location and/or business hours queries
- Auction entries or bids, on-line ads
- Help, Travel, Hobby and Investment forums
- Social media postings, “Likes” and “Tweets”
- “Siri: Where is the nearest Starbucks?”
- ... Anything that leaves behind **digital tracks**

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Business “**Big Data**” comes from billions of on-line:

- Product or merchant searches
- Price comparisons / discount hunting
- Product reviews and recommendations (Yelp)

This “**Big Data**” is typically massaged every day
by corporate product managers and marketing analysts.

- “Siri: Where is the nearest Starbucks?”
- ... Anything that leaves behind **digital tracks**

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Our topic here:

Turning “**Big Data**” derived
Business Intelligence
Into
Investment Alpha

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Turning “**Big Data**” into Investment α :

Let’s examine several simple questions:

- Are a corporation’s customers ultimately responsible for corporate revenue?
- Are there recent corporate revenues that have not become public knowledge yet?
- Would it be a good thing to know about corporate revenues before they become public knowledge?
- Can “**Big Data**” tell us what a corporation’s customers were **buying recently** (e.g. yesterday)?

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Turning "Big Data" into Investment α :

Peter Lynch famously exploited the **consumer link to revenues** while managing the Magellan Fund at Fidelity Investments during 1977-1990

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Turning "Big Data" into Investment α :

– when the average annual return experienced by Magellan's shareholders was **over 29%**.

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Turning "Big Data" into Investment α :

One of Peter's key initial **equity screens** involved selecting only those companies that he knew were **selling products again and again** to his acquaintances.

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Turning "Big Data" into Investment α :

How can we utilize "Big Data" to update Peter Lynch's approach for the early **21st Century**?

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What **Raw** information is in “Big Data”?

- Brand Names — (e.g., iPhone, iPad, iTunes & Mac)
 - Raw Brand “Citation” Rates
 - Opinions (“Likes” and “Unlikes”)
- Corporate Names — (e.g., AAPL & Apple, Inc.)
 - Raw Citation Rates
 - Perceptions / **Sentiment**

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What can be **Deduced** from “Big Data”?

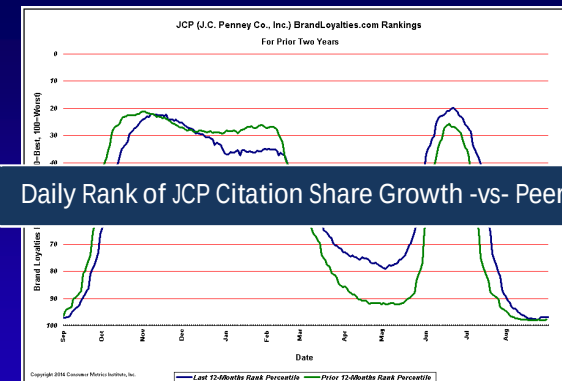
- Current popularity of various brand names
 - Seasonally adjusted “citation” rates
 - Peer relative rankings provide market share data
- Changes in citation rates over time
 - YOY changes during given quarters anticipate revenue surprises
- Alerts to developing product or service “events”
 - Statistically significant short term citation “blips”
- Brand -> Revenue relationships
 - Including some that are not **otherwise publicly available**

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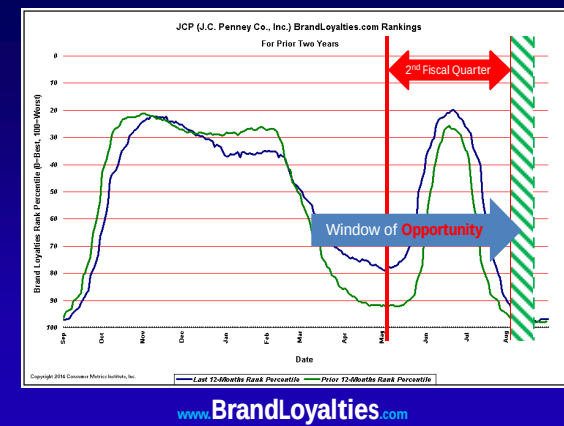
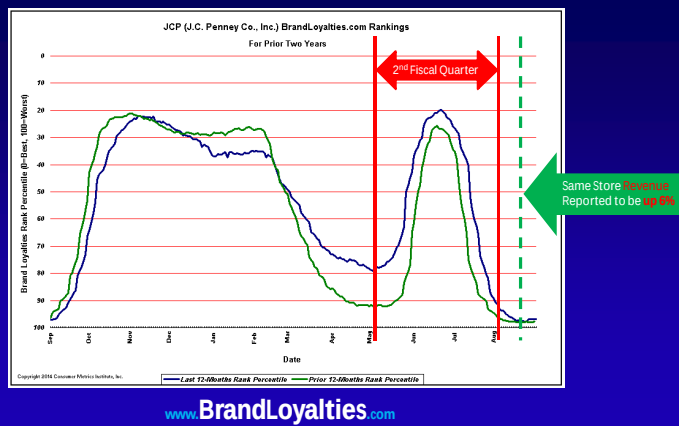
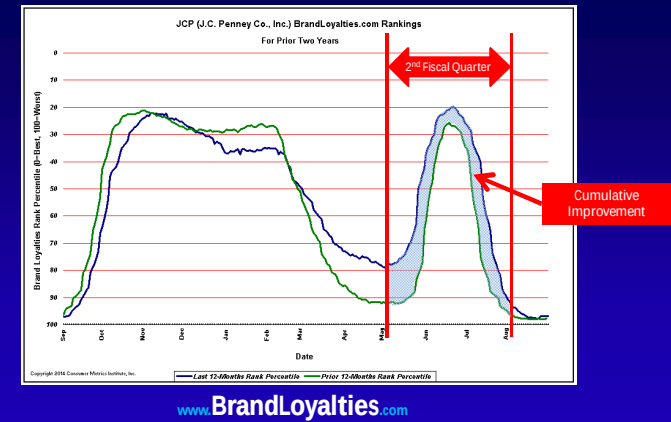
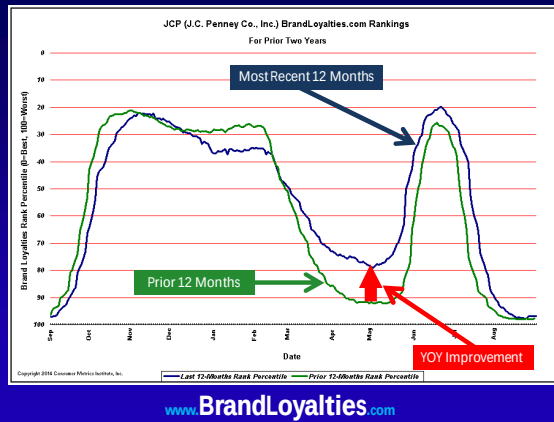
Is “Big Data” really useful?

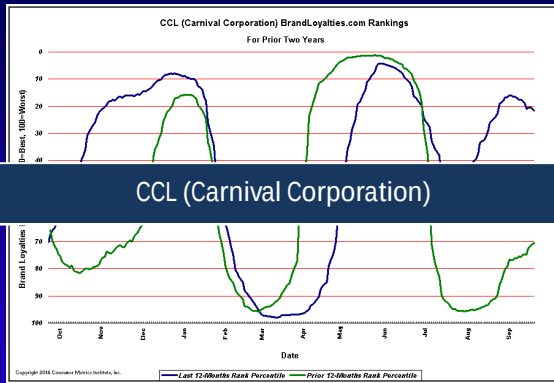
- At any given time roughly 40% of cited corporations have trailing 8 quarter revenue strongly correlated to citation rates – typically corporations with principal operations in the consumer sector and which embrace on-line marketing & sales of discretionary goods
- Examples of corporations with **recent 90%** citation -> revenue correlation include:
 - FRAN – Francesca’s Holdings Corp.
 - **JCP – J.C. Penney Co., Inc.**
 - LUV – Southwest Airlines Co.
 - IBKR – Interactive Brokers Group, Inc.
 - JWN – Nordstrom, Inc.

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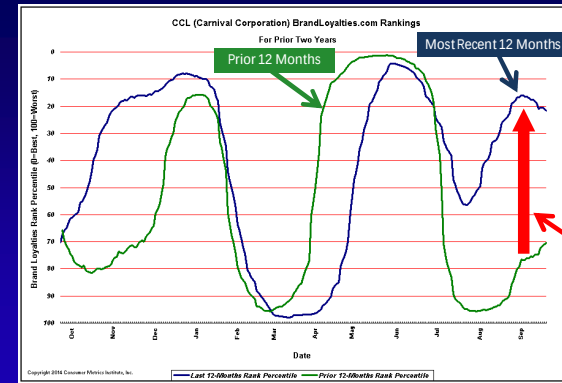
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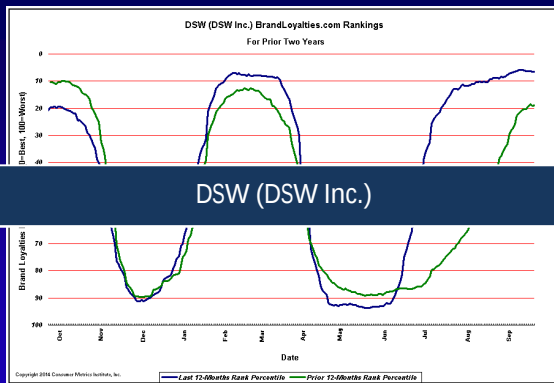


CCL (Carnival Corporation)

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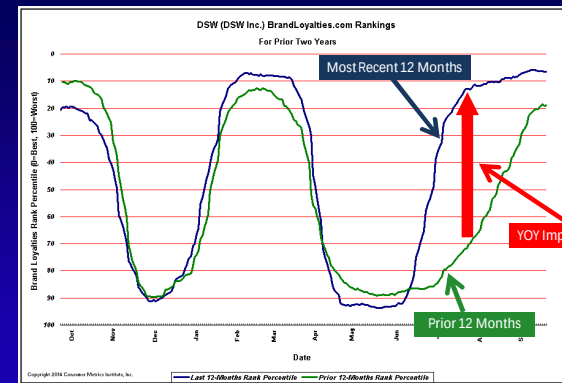


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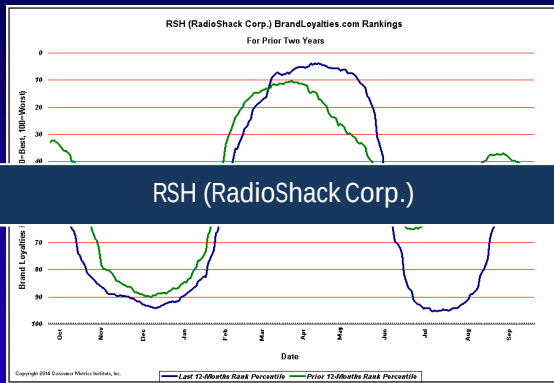


DSW (DSW Inc.)

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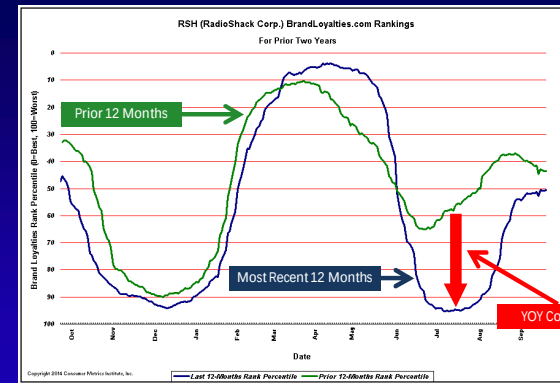


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RSH (RadioShack Corp.)

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YOY Collapse

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Is “Big Data” really useful?

- Conversely, at any given time roughly 60% of all corporations don't have trailing 8 quarter revenue that correlates well to citation rates.
- Examples of corporations that **do not** have high citation -> revenue correlations include:
 - LMT – Lockheed Martin Corporation
 - XOM – Exxon Mobil Corporation
 - MON – Monsanto Co.
 - RY – Royal Bank Of Canada
 - DD – E. I. du Pont de Nemours and Company

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Does “Big Data” work for Medium/Small Caps?

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"Big Data" and Capitalization:

- Usefulness is theoretically independent of scale of capitalization

AMGN to JACK capitalization ratio: 43:1

AMGN to JACK citation rate ratio: 1:59

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"Big Data" and Capitalization:

- Usefulness is theoretically independent of scale of capitalization

MCD to JACK capitalization ratio: 38:1

MCD to JACK citation share ratio: 29:1

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"Big Data" and Capitalization:

- Usefulness is theoretically independent of scale of capitalization
 - In principle methods are cap agnostic
 - The industry and scale of consumer operations are the critical factors

Citation rate -> Revenue correlations are strongest
for retailers of discretionary durable goods

- Current citation rates
- YOY citation growth rate
- Citation rate -> revenue correlation

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"Big Data" and Capitalization:

- Usefulness is theoretically independent of scale of capitalization
 - In principle methods are cap agnostic
 - The industry and scale of consumer operations are the critical factors
 - However, size matters: larger cap corporations with national markets and retail facilities generally have higher raw citation rates and better signal/noise ratios
- Most important metrics are:
 - Current citation rates
 - YOY citation growth rate
 - Citation rate -> revenue correlation
 - Citation rate -> earnings / equity price correlation
 - Quantify the citation rate -> revenue -> earnings -> equity price causality chain

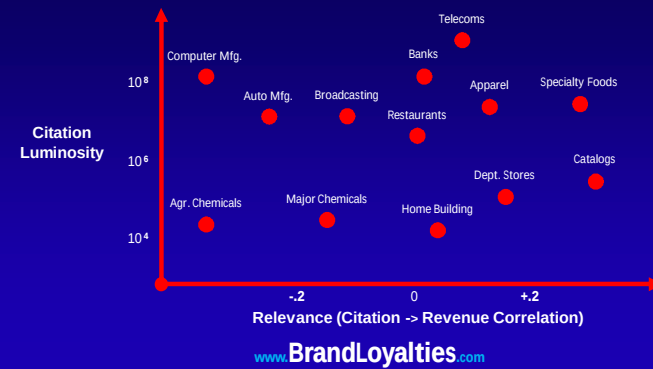
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"Big Data" key criteria:

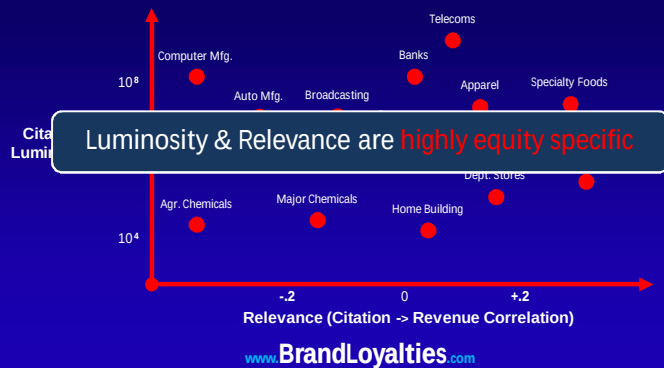
- Signal "Luminosity"
 - Baseline customer commerce brand name citations
 - "Event" generated citations:
 - Product/Service nightmares (recalls, outages, operational disasters)
 - Corporate nightmares (scandals, M&A, layoffs, fiscal implosions)
- Signal "Relevance"
 - Citations -> Revenue correlations
 - Citations -> Revenue -> Earnings -> Equity Price **causality chain**

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Luminosity and Relevance by Industry:



Luminosity and Relevance by Industry:



Luminosity and Relevance by Industry:



The “Big” question: can
“Big Data”
 actually be used in the real world
 to **significantly** and **consistently** augment
Alpha?

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“Big Data” and Alpha:

- Hypothesis: Certain “Big Data” metrics might provide portfolio Alpha
 - Recent normalized citation share growth rate (ranked –vs– peers)
 - YOY change in trailing quarter citation share growth
 - Citation rate -> revenue correlation
 - Integrity of citation rate -> revenue -> earnings -> equity price causality chain

Hypothesis: 4 different “Big Data”
 derived metrics **plausibly** could provide α .

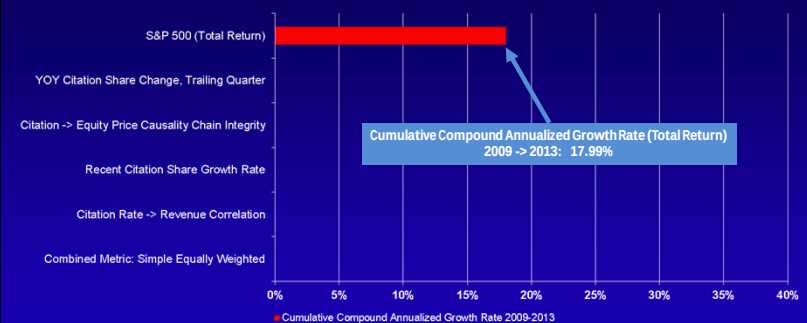
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“Big Data” and Alpha:

- Hypothesis: Certain “Big Data” metrics might provide portfolio Alpha
 - Recent normalized citation share growth rate (ranked –vs– peers)
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 - Citation rate -> revenue correlation
 - Integrity of citation rate -> revenue -> earnings -> equity price causality chain
- Test: Using hypothetical / pro-forma model portfolios
 - Construct “proof of concept” portfolios to identify potential alpha
 - Compose portfolios blindly using above metrics
 - Select best rated 10% at any time
 - Rebalance portfolios when composition changes
 - Calculate returns using:
 - Cumulative **compound annualized return** for full time span

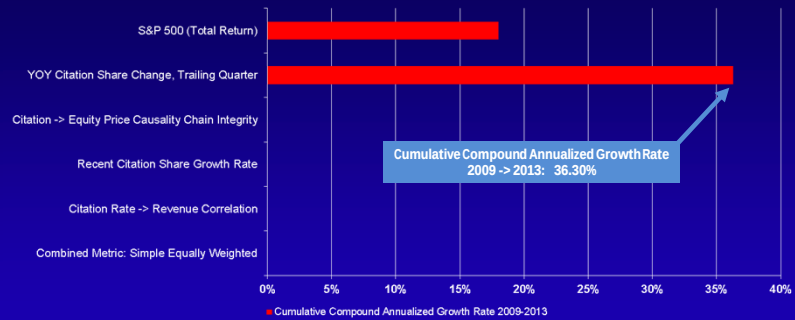
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“Big Data” and Alpha:



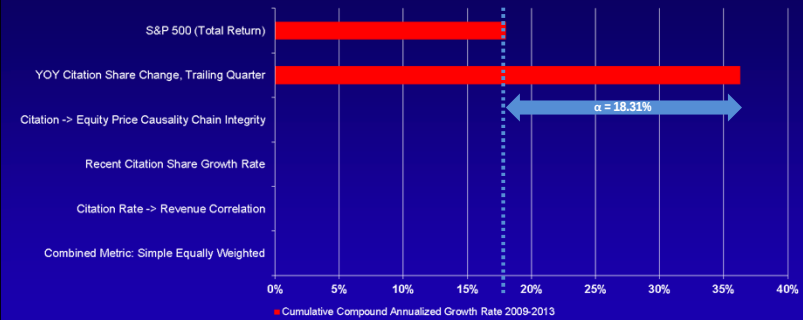
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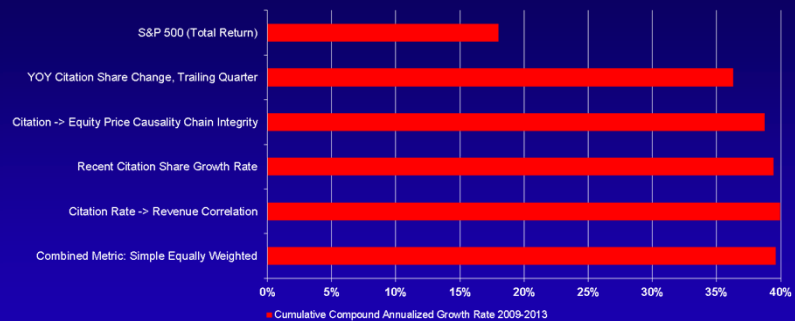
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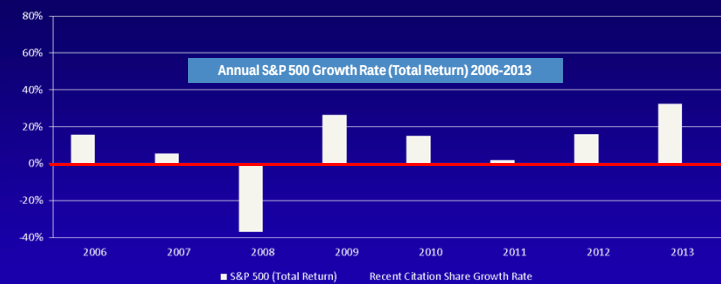
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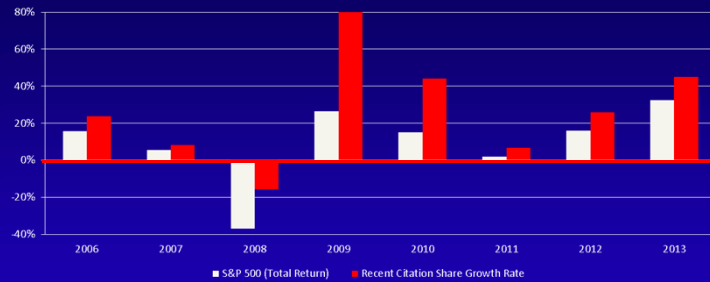
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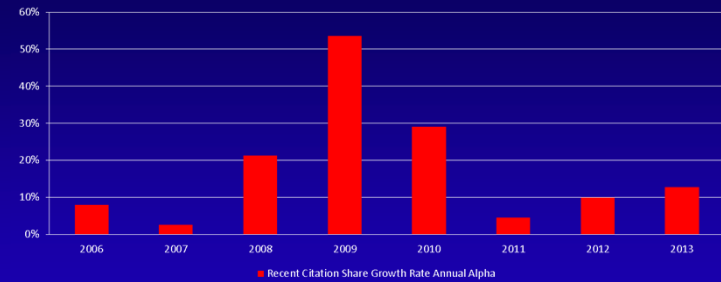
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“Big Data” and Alpha:



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“Big Data” and Alpha:



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“Big Data” collecting issues:

- Scale of on-line activity has changed drastically over time
 - In 2006 most data was from desktop searches and shopping carts
 - Now mobile apps and social media provide the bulk of the data
 - The nature and locus of commerce is constantly evolving – as are demographics
 - Raw citation rates have grown by two orders of magnitude since 2006 – while consumer commerce (real PCE) has increased less than 9% (3% per capita)
- Citation rate -> Revenues relationships require constant “normalization”

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“Big Data” collecting issues:

- Time granularity needs to match desired actionable signals
 - Quarterly (or better) resolution for general research
 - Weekly (or better) resolution to anticipate earnings reports
 - Daily resolution for alerts to unfolding PR “events”
- Scale of collected data must match extent of corporate markets/revenues
 - How many languages must be scanned / translated?
 - How many character sets must be utilized?
 - Are Simplified Chinese citations relevant? Mandarin? Cantonese?

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"Big Data" collecting issues:

- Dealing with Low Luminosity Signal / Noise Ratios
 - Especially critical for Small / Micro Cap Corporations
 - Aggressive Signal Amplification Methodologies
 - Seeking mean signal level that is $\geq$ twice the sample's sigma
 - Adjusting sample time aperture dynamically to create sliding meta-samples
 - Utilize **growth percentiles** to handle vast citation scale differences

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"Big Data" processing issues:

- Processing requirements often scale geometrically with scope of data
 - Pattern searches scale geometrically with number of target variables
- If you are collecting tens of billions of daily communications
 - Think grids with thousands to tens of thousands of processors
 - Think NSA scale processing resources (and "black" budgets)
- Storage of exabyte scale (10^{18}) **historic data can become a challenge**
 - Data needs to remain "on-line" to facilitate historic correlations
 - Data set integrity does not permit time based purges

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So, how can analysts utilize

"Big Data"

as a new "fundamental" data source to help

Optimize Investment Decisions?

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Symbol	Equity	Revenue Ranking ⁽¹⁾	Price Contention ⁽²⁾	Opting Log ⁽³⁾	Industry ⁽⁴⁾	10Y Change Percentile ⁽⁵⁾	Revenue Contention Percentile ⁽⁶⁾	Brand Name Citation Percentile ⁽⁷⁾	Equity Contention Percentile ⁽⁸⁾	Price Contention Percentile ⁽⁹⁾	Equity Contention Percentile ⁽¹⁰⁾	Revenue Contention Percentile ⁽¹¹⁾
AA	AIRBUS SE (AIRBUS HELICOPTERS)	47.0%	0.40	72	Air Freight/Delivery Services	42.9%	61.4%	45.2%	76.4%	40.0%	39.5%	77.3%
AS	ASTORIA SE (ASTORIA SEASIDE)	29.0%	0.03	220	Other Specialty Stores	16.6%	24.3%	53.5%	62.3%	36.1%	100.0%	25.1%
AS	ASTORIA SE (ASTORIA SEASIDE)	66.6%	0.50	132	Computer Manufacturing	47.2%	69.4%	34.6%	72.6%	27.6%	86.6%	25.1%
AS	ASTORIA SE (ASTORIA SEASIDE)	52.5%	0.50	62	Major Pharmaceuticals	61.6%	37.4%	67.6%	27.6%	33.0%	22.0%	16.5%
AS	ASTORIA SE (ASTORIA SEASIDE)	58.7%	0.94	59	Industrial Specialties	55.1%	24.6%	79.4%	79.6%	1.7%	74.0%	67.3%
AS	ASTORIA SE (ASTORIA SEASIDE)	41.0%	0.40	204	Business Services	74.4%	23.6%	42.5%	22.3%	37.0%	16.5%	71.0%
AS	ASTORIA SE (ASTORIA SEASIDE)	47.3%	0.50	173	Computer Software: Prepackaged Software	32.3%	39.5%	56.6%	88.2%	33.3%	73.9%	56.6%
AS	ASTORIA SE (ASTORIA SEASIDE)	25.4%	0.50	203	Shoe Manufacturing	6.1%	22.9%	34.7%	86.6%	46.7%	73.7%	86.4%
AS	ASTORIA SE (ASTORIA SEASIDE)	64.4%	0.30	27	CDR Services	50.7%	24.0%	18.9%	47.6%	52.7%	21.6%	23.6%
AS	ASTORIA SE (ASTORIA SEASIDE)	19.4%	0.53	174	Computer Software: Prepackaged Software	29.6%	51.4%	51.6%	4.6%	30.3%	66.0%	30.0%
AS	ASTORIA SE (ASTORIA SEASIDE)	76.6%	0.33	76	Clothing/Accessories Stores	63.3%	62.6%	61.7%	40.2%	45.0%	48.2%	9.6%
AS	ASTORIA SE (ASTORIA SEASIDE)	62.2%	0.02	136	Medical Specialties	28.6%	18.0%	77.7%	36.0%	62.0%	63.6%	64.9%
AS	ASTORIA SE (ASTORIA SEASIDE)	12.0%	0.15	249	Banking Institutions	49.4%	31.6%	21.9%	45.0%	55.6%	73.6%	65.5%
AS	ASTORIA SE (ASTORIA SEASIDE)	86.6%	0.49	111	Accident Health Insurance	36.7%	27.6%	63.5%	52.1%	6.6%	21.6%	14.7%
AS	ASTORIA SE (ASTORIA SEASIDE)	84.6%	0.40	7	Major Pharmaceuticals	31.6%	18.6%	63.0%	6.3%	34.1%	67.3%	5.6%
AS	ASTORIA SE (ASTORIA SEASIDE)	80.7%	0.54	121	Property Casualty Insurance	49.4%	75.9%	67.6%	71.6%	29.9%	27.6%	66.2%
AS	ASTORIA SE (ASTORIA SEASIDE)	30.4%	0.74	46	Accident Health Insurance	6.1%	39.3%	69.2%	62.2%	10.0%	61.2%	66.2%
AS	ASTORIA SE (ASTORIA SEASIDE)	86.7%	0.80	13	Business Services	16.4%	47.0%	88.1%	4.1%	86.6%	91.2%	91.2%
AS	ASTORIA SE (ASTORIA SEASIDE)	83.6%	0.80	169	Department/Specialty Retail Stores	57.6%	4.7%	69.2%	32.2%	6.2%	49.6%	36.2%
AS	ASTORIA SE (ASTORIA SEASIDE)	16.6%	0.23	169	Air Freight/Delivery Services	97.2%	39.1%	74.0%	25.9%	51.1%	86.6%	56.6%
AS	ASTORIA SE (ASTORIA SEASIDE)	62.0%	0.17	138	Property Casualty Insurance	16.2%	3.2%	27.6%	54.7%	44.2%	52.3%	52.3%
AS	ASTORIA SE (ASTORIA SEASIDE)	66.0%	0.50	57	Semiconductors	64.6%	35.4%	77.9%	26.3%	23.6%	35.3%	4.0%
AS	ASTORIA SE (ASTORIA SEASIDE)	35.1%	0.63	132	Semiconductors	6.6%	62.3%	48.2%	61.1%	20.9%	10.7%	56.1%
AS	ASTORIA SE (ASTORIA SEASIDE)	57.3%	0.20	89	Biotechnology: Biological Products (No Diagnostic Substances)	45.7%	7.2%	77.1%	31.2%	48.7%	53.1%	87.6%
AS	ASTORIA SE (ASTORIA SEASIDE)	41.1%	0.69	27	Investment Managers	92.9%	19.9%	67.5%	46.0%	26.6%	21.2%	17.6%
AS	ASTORIA SE (ASTORIA SEASIDE)	27.3%	0.04	46	Investment Broker/Dealers	56.6%	36.6%	62.0%	34.6%	62.1%	77.1%	5.2%
AS	ASTORIA SE (ASTORIA SEASIDE)	72.1%	0.14	178	Clothing/Specialty Distributors	4.3%	16.0%	6.7%	56.1%	38.0%	41.6%	41.6%
AS	ASTORIA SE (ASTORIA SEASIDE)	36.1%	0.50	132	Automotive Manufacturers	33.7%	38.6%	46.1%	56.7%	34.0%	64.0%	6.2%
AS	ASTORIA SE (ASTORIA SEASIDE)	36.1%	0.50	132	Clothing/Accessories Stores	47.6%	6.6%	26.6%	69.3%	0.6%	34.6%	53.4%
AS	ASTORIA SE (ASTORIA SEASIDE)	52.6%	0.41	136	Clothing/Accessories Stores	30.4%	63.3%	16.9%	39.0%	53.3%	41.4%	41.4%

Symbol	Equity	Financial Rating	Risk Correlation	Output Lag	Industry	YOY Change Percentage	Revenue Correlation	Brand Correlation	Event Correlation	Price Correlation	Equity Correlation	Investor Interest
AMZN	AMAZON.COM INC	47.0%	0.20	73	Air Freight/Delivery Services	42.9%	61.4%	45.2%	76.4%	40.0%	39.5%	77.9%
GOOGL	ALPHABET INC	29.9%	0.03	220	Other Specialty Stores	16.6%	24.3%	52.3%	63.1%	62.3%	96.1%	100.0%
MSFT	MICROSOFT CORP	80.3%	0.50	132	Computer Manufacturing	47.2%	69.4%	34.8%	72.8%	27.6%	86.6%	26.1%
UNION	UNION PACIFIC CORP	52.5%	0.50	62	Major Pharmaceuticals	11.6%	47.4%	0.7%	2.7%	33.0%	32.8%	16.7%
PG	PROCTER AND GAMBLE CO	58.7%	0.17	204	Industrial Specialties	55.1%	34.6%	79.4%	79.6%	5.5%	74.0%	47.2%
DIS	WALT DISNEY CO	97.3%	0.50	173	Business Services	74.4%	23.6%	42.5%	22.9%	37.1%	16.6%	71.6%
CRM	SAP AG	25.4%	0.20	203	Computer Software: Prepackaged Software	32.3%	39.5%	50.6%	88.2%	33.3%	73.9%	58.6%
ADP	ADP INC	64.4%	0.20	71	Shoe Manufacturing	6.1%	22.9%	34.7%	95.0%	46.7%	73.7%	86.4%
IBM	INTERNATIONAL BUSINESS MACHINES CORP	18.4%	0.52	174	Computer Software: Prepackaged Software	29.3%	51.4%	51.1%	4.0%	30.3%	86.0%	30.0%
CVX	CHEVRON CORP	76.1%	0.34	78	Clothing/Textile/Accessory Stores	63.2%	62.0%	81.7%	40.2%	45.0%	40.2%	8.2%
MRK	MERCK & CO INC	62.2%	0.02	130	Medical Specialties	28.9%	18.0%	77.7%	96.0%	62.0%	83.6%	84.9%
WFC	WELLS FARGO BANK	12.0%	0.15	240	Savings Institutions	48.4%	31.5%	21.9%	40.9%	55.6%	73.0%	60.5%
AXP	AMERICAN EXPRESS CO	86.8%	0.70	111	Accident/Health Insurance	30.7%	77.5%	63.5%	52.3%	6.1%	35.5%	14.1%
BA	BOEING CO	84.8%	0.60	7	Major Pharmaceuticals	21.6%	19.5%	63.0%	5.3%	34.5%	87.7%	5.5%
GS	GOOLD STREET FINANCIAL	30.7%	0.54	121	Property/Casualty Insurance	49.4%	15.2%	87.6%	71.6%	29.8%	27.6%	68.2%
WAL	WALMART STORES INC	30.4%	0.74	46	Accident/Health Insurance	5.7%	30.3%	69.2%	82.2%	10.0%	91.2%	96.2%
CVS	CVS HEALTH CORP	86.7%	0.90	10	Business Services	16.4%	47.0%	88.6%	88.1%	4.1%	86.6%	91.2%
ETSY	ETSY INC	83.2%	0.90	67	Department/Specialty Retail Stores	57.9%	4.7%	66.2%	32.2%	0.2%	49.9%	36.2%
AMT	AMERICAN AIRLINES GROUP INC	19.8%	0.23	189	Air Freight/Delivery Services	17.3%	58.1%	74.0%	26.9%	51.0%	88.6%	56.8%
SPY	S&P 500 INDEX	82.2%	0.17	189	Property/Casualty Insurance	16.2%	2.2%	27.6%	54.7%	44.2%	52.3%	5.5%
INTC	INTEL CORP	86.0%	0.50	57	Semiconductors	64.6%	39.4%	77.9%	26.3%	23.8%	35.5%	4.9%
ABBV	ABBOTT LABORATORIES	35.7%	0.63	132	Semiconductors	5.8%	62.3%	40.2%	61.1%	20.9%	10.7%	58.1%
MRNA	MERCK & CO INC	57.3%	0.26	38	Biotechnology: Biological Products (No Diagnostic Substances)	45.7%	7.2%	77.1%	31.2%	48.7%	4.1%	87.0%
MDLZ	MARILYN MCLEOD BETHUNE COS INC	41.3%	0.55	21	Investment Managers	12.9%	18.9%	67.5%	48.5%	28.8%	73.2%	17.8%
WMT	WALMART STORES INC	77.5%	0.04	46	Investment/Banking/Insurance	89.4%	38.5%	62.0%	24.0%	62.1%	77.1%	9.9%
WYNN	WYNN RESORTS INC	5.1%	0.14	179	Casino/Specialty Distributor	4.3%	15.0%	5.7%	58.1%	38.9%	41.5%	4.1%
GM	GENERAL MOTORS CORP	72.5%	0.14	247	Automotive Manufacturer	33.7%	89.4%	96.6%	46.7%	56.7%	94.0%	6.2%
WU	WILLIS TOWERS WATSON	36.1%	0.80	132	Clothing/Textile/Accessory Stores	47.8%	5.0%	26.8%	89.2%	0.4%	34.8%	53.4%
COO	COOKSON GROUP PLC	52.6%	0.41	130	Clothing/Textile/Accessory Stores	38.4%	93.3%	16.9%	39.0%	53.3%	41.4%	4.1%

Citation Rate
Correlation to Equity
Price Movements

Symbol	Equity	Financial Rating	Risk Correlation	Output Lag	Industry	YOY Change Percentage	Revenue Correlation	Brand Correlation	Event Correlation	Price Correlation	Equity Correlation	Investor Interest
AMZN	AMAZON.COM INC	47.0%	0.20	73	Air Freight/Delivery Services	42.9%	61.4%	45.2%	76.4%	40.0%	39.5%	77.9%
GOOGL	ALPHABET INC	29.9%	0.03	220	Other Specialty Stores	16.6%	24.3%	52.3%	63.1%	62.3%	96.1%	100.0%
MSFT	MICROSOFT CORP	80.3%	0.50	132	Computer Manufacturing	47.2%	69.4%	34.8%	72.8%	27.6%	86.6%	26.1%
UNION	UNION PACIFIC CORP	52.5%	0.50	62	Major Pharmaceuticals	11.6%	47.4%	0.7%	2.7%	33.0%	32.8%	16.7%
PG	PROCTER AND GAMBLE CO	58.7%	0.17	204	Industrial Specialties	55.1%	34.6%	79.4%	79.6%	5.5%	74.0%	47.2%
DIS	WALT DISNEY CO	97.3%	0.50	173	Business Services	74.4%	23.6%	42.5%	22.9%	37.1%	16.6%	71.6%
CRM	SAP AG	25.4%	0.20	203	Computer Software: Prepackaged Software	32.3%	39.5%	50.6%	88.2%	33.3%	73.9%	58.6%
ADP	ADP INC	64.4%	0.20	71	Shoe Manufacturing	6.1%	22.9%	34.7%	95.0%	46.7%	73.7%	86.4%
IBM	INTERNATIONAL BUSINESS MACHINES CORP	18.4%	0.52	174	Computer Software: Prepackaged Software	29.3%	51.4%	51.1%	4.0%	30.3%	86.0%	30.0%
CVX	CHEVRON CORP	76.1%	0.34	78	Clothing/Textile/Accessory Stores	63.2%	62.0%	81.7%	40.2%	45.0%	40.2%	8.2%
MRK	MERCK & CO INC	62.2%	0.02	130	Medical Specialties	28.9%	18.0%	77.7%	96.0%	62.0%	83.6%	84.9%
WFC	WELLS FARGO BANK	12.0%	0.15	240	Savings Institutions	48.4%	31.5%	21.9%	40.9%	55.6%	73.0%	60.5%
AXP	AMERICAN EXPRESS CO	86.8%	0.70	111	Accident/Health Insurance	30.7%	77.5%	63.5%	52.3%	6.1%	35.5%	14.1%
BA	BOEING CO	84.8%	0.60	7	Major Pharmaceuticals	21.6%	19.5%	63.0%	5.3%	34.5%	87.7%	5.5%
GS	GOOLD STREET FINANCIAL	30.7%	0.54	121	Property/Casualty Insurance	49.4%	15.2%	87.6%	71.6%	29.8%	27.6%	68.2%
WAL	WALMART STORES INC	30.4%	0.74	46	Accident/Health Insurance	5.7%	30.3%	69.2%	82.2%	10.0%	91.2%	96.2%
CVS	CVS HEALTH CORP	86.7%	0.90	10	Business Services	16.4%	47.0%	88.6%	88.1%	4.1%	86.6%	91.2%
ETSY	ETSY INC	83.2%	0.90	67	Department/Specialty Retail Stores	57.9%	4.7%	66.2%	32.2%	0.2%	49.9%	36.2%
AMT	AMERICAN AIRLINES GROUP INC	19.8%	0.23	189	Air Freight/Delivery Services	17.3%	58.1%	74.0%	26.9%	51.0%	88.6%	56.8%
SPY	S&P 500 INDEX	82.2%	0.17	189	Property/Casualty Insurance	16.2%	2.2%	27.6%	54.7%	44.2%	52.3%	5.5%
INTC	INTEL CORP	86.0%	0.50	57	Semiconductors	64.6%	39.4%	77.9%	26.3%	23.8%	35.5%	4.9%
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MDLZ	MARILYN MCLEOD BETHUNE COS INC	41.3%	0.55	21	Investment Managers	12.9%	18.9%	67.5%	48.5%	28.8%	73.2%	17.8%
WMT	WALMART STORES INC	77.5%	0.04	46	Investment/Banking/Insurance	89.4%	38.5%	62.0%	24.0%	62.1%	77.1%	9.9%
WYNN	WYNN RESORTS INC	5.1%	0.14	179	Casino/Specialty Distributor	4.3%	15.0%	5.7%	58.1%	38.9%	41.5%	4.1%
GM	GENERAL MOTORS CORP	72.5%	0.14	247	Automotive Manufacturer	33.7%	89.4%	96.6%	46.7%	56.7%	94.0%	6.2%
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Market Day Lag
to Earnings
Reporting

Symbol	Equity	Financial Rating	Risk Correlation	Output Lag	Industry	YOY Change Percentage	Revenue Correlation	Brand Correlation	Event Correlation	Price Correlation	Equity Correlation	Investor Interest
AMZN	AMAZON.COM INC	47.0%	0.20	73	Air Freight/Delivery Services	42.9%	61.4%	45.2%	76.4%	40.0%	39.5%	77.9%
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Other Useful New Fundamental Metrics :

Positive YOY Citation Rate Change

High Investor Interest/Disinterest

Low Risk of Unfolding PR Event

High Equity Price Correlation

High Revenue/Citations Correlation

Favorable Equity Perception

Favorable Brands Perception

"Big Data" Summary:

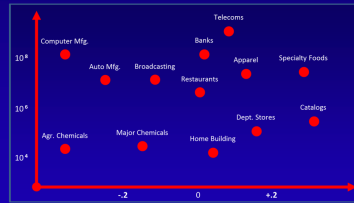
- Big Data is a pervasive and growing consequence of billions of people simply living life in a digitally connected 21st Century



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"Big Data" Summary:

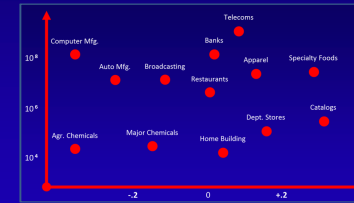
- For **certain classes** of equities it can provide useful business intelligence and investment fundamental data
 - Typically those involved in **discretionary durable goods** trade



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"Big Data" Summary:

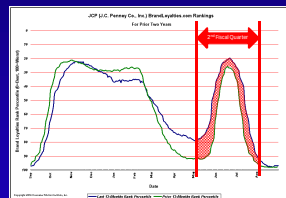
- The usefulness of the extracted data depends on:
 - Signal **luminosity**: baseline commerce and "event" generated
 - Signal **relevance**: correlations to revenue and equity pricing



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"Big Data" Summary:

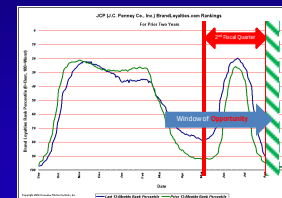
- Investment Fundamental Data that can be extracted include:
 - Changes** in citation rates / customer loyalty over time
 - During **ongoing live fiscal quarter**
 - YOY relative to **year-ago fiscal quarter**



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"Big Data" Summary:

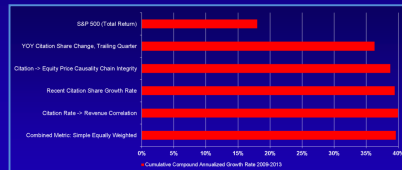
- It can tell us how loyal customers are to the brands of a corporation
 - Before **earnings reports** or **issued guidance**
 - In some cases **before corporate "insiders"** fully grasp what's happening in their own extended distribution channels



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"Big Data" Summary:

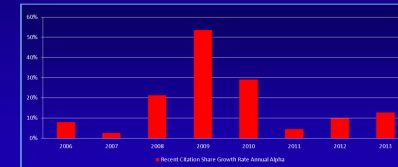
- At least four "Big Data" metrics could be used to generate significant α
 - Recent normalized citation share growth rate (ranked -vs- peers)
 - YOY change in trailing quarter citation share growth
 - Citation rate -> revenue correlation
 - Integrity of citation rate -> revenue -> earnings -> equity price causality chain



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"Big Data" Summary:

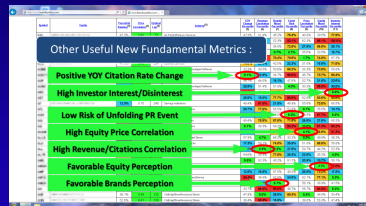
- Such α can be shown to be consistent over an entire market cycle
 - Risk mitigation 2006-2008
 - Explosive upside 2009-2010
 - Persistence during stability 2011-2013



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"Big Data" Summary:

- "Big Data" fundamental metrics can help portfolio managers choose consumer equities that significantly and consistently augment α



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For additional information please visit:

BrandLoyalties.com/QWAFEFW

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