Making Money from **Big Data**

"Big Data" mined from **online shopping** and **social networks** has become yet another source of valuable information that can be used to pick future winners among the stock market's consumer equities.
How "Clicks" Lead to Buy Signals

Not all good investment ideas originate in the financial centers of New York or London; in fact recently some really interesting ones seem to be coming from Lakewood, Colorado. The Consumer Metrics Institute, Inc. has its headquarters there and they track the daily health of consumer equities by monitoring the constantly shifting levels of on-line shopper citations of the brand names of each of those equities. They also publish their own "leading indicators" that are derived directly from their daily measurements of consumer activity, a welcome improvement over the traditional "leading indicators" that forecast economic activity by using the previous month's stock market performance as one of their key inputs. And for investors who are seeking near real-time tracking data on the results of the marketing efforts of major consumer equities, the Consumer Metrics Institute's "BrandLoyalties.com" web site provides just that.

Their "universe" of tracked companies includes 547 U.S. listed companies, and that number is rising. More than 100 million online consumer brand name citations are recorded daily, allowing them to determine whether a particular brand is becoming more popular, less popular, or caught up in some sort of marketing turbulence. The frequency of those consumer brand name citations is then processed through Consumer Metric's unique and statistically rigorous algorithm to rank each equity's relative growth rate within their universe of 547 companies. After applying appropriate smoothing measures, "Buy" or "Strong Buy" signals are then generated for the equities with the strongest brand name citation growth rates. These signals occur when the equity's brand names have moved to the top quintile or decile (top 20 or 10 percent)

respectively of their tracking universe. Similarly, BrandLoyalties produces "Sell" or "Strong Sell" signals when an equity's brand name citation growth rate falls into the lowest 20 or 10 percent of the tracked universe. And since the signals are derived daily, yesterday's consumer activity could trigger a new trading signal as early as today.

Following in the Footsteps of Peter Lynch

As novel as this approach is – evaluating hundreds of millions of consumer choices every day – it must be admitted that BrandLoyalties.com

is actually only an extremely contemporary extension of the investment principles first used by the legendary master of active investing, Peter Lynch. He managed the Fidelity Magellan Fund from 1977 to 1990, during which time the fund realized an average annual return of 29 percent. He included his own version of brand loyalty monitoring as one of the fund's primary screening criteria during their stock analysis and selection process. He continuously asked his friends and acquaintances how they might like certain brands.

The Consumer Metrics Institute has adjusted this method for the digitized 21st century by mining the "Big Data" from Internet shoppers and social media for exactly those same kinds of consumer preferences. "Consumer Tracking Databases" provide information to online advertisers about

» We track over 100 million online and social media brand name citations daily and identify which equities are likely to be impacted by changing consumer sentiment. «

Tony H. Seker, Executive Vice President and Head of Sales of BrandLoyalties.com, Lakewood, Colorado

From Online Citations to Signal Generation
"Big Data" designed to target online advertising becomes the basis for investment signals.

Krzl.	Name	Alert	Ranking
MFI	Musterfirma		1
MGS	Mustergesellschaft		2
MUF	Musterfonds		3
INF	Internetfirma		4
DLL	Dienstleister Ltd.		5
HCO	Handelcomp.		6
ITF	IT-Firma		7

Internet Consumers   Consumer Tracking Databases   Ranking

Using Consumer Tracking Databases – the "seismograph" for consumer interest in durable consumer goods and services - provides detailed and immediate information about the buying behavior of private households.

Source: Consumer Metrics Institute

consumer behavior on the Internet. Those advertisers in turn provide highly targeted ads to consumers while they browse the Internet. But those same "Consumer Tracking Databases" can also serve as a form of seismograph for the consumption habits of Internet shoppers. Consumer Metrics uses fluctuations in those habits to monitor the changing frequency with which brand names are mentioned, and then uses those shifting citation rates for the ranking of equities within the BrandLoyalties platform *(see chart "from the online store to signal generation")*.

A Signal Driven Purely by U.S. Consumers

Institutional asset managers, hedge fund managers, traditional mutual fund managers, insurance companies and family trust officers that like to be ahead of their competition, buy the signals and use them when selecting equities for their portfolios. There seems to be some flexibility with pricing, according to Tony Seker, who is the head of sales for BrandLoyalties: "While signals for a particular equity might cost $1,000 per year, appropriate discounts are certainly available to those who subscribe to the entire coverage universe."

In fact it is probably not wise for any portfolio manager to only subscribe to signals for a few stocks, since at any given time, that manager might not receive any actionable ideas (if none of the chosen equities qualify for "Buy" or "Sell" signals by virtue of not being among the top or bottom 10 or 20 percent of the BrandLoyalties tracked universe). This limited subscription option might be most appropriate for a consumer goods company that would like to have themselves and their immediate competitors monitored. The "Prix fixe" subscription option grants access to the whole observed universe of BrandLoyalties, and it is an annual fee that is determined by the assets under management, the investment style, the turnover and the number of portfolio managers, analysts and users working with the data. Since BrandLoyalties.com has no connection to any brokerage house, it is also possible to work with soft-dollar compensation.

Ahead of the Curve

Tony Seker also pointed out that their clients are, on average, four weeks ahead of the market when trading according to their signals. While many fund managers wait for the quarterly results or a revised view of corporate guidance before reacting, clients

The idea of using the consumption behavior of the public to drive investment strategies has been around for a long time. However, using massive amounts of reliable data from the actions of online consumers opens up completely new perspectives.

using BrandLoyalties data are on average one month earlier – because their signals are essentially real-time and are not delayed by corporate reporting calendars. And the signals are also generated using data originating very early in the distribution channel – from shifting citation rates for brand names by Internet shoppers or social media – long before the consequential changes in revenue streams can flow down to corporate books. This provides much greater flexibility for a portfolio manager by allowing better timing of sales or purchases.

For example, if the frequency of brand name citations subsides, a large portfolio position can be disposed of little-by-little into a market where most traders still don't have insights provided by the BrandLoyalties data – a situation far preferable to liquidating large positions into an already depressed market that has been stampeded after an official confirmation of the negative trends. Likewise, a portfolio manager has more time and flexibility when building up a position, because in many cases the positive earnings surprises or

guidance still won't occur for several weeks. By using the BrandLoyalties signals a portfolio manager can stay well ahead of the curve. Richard C. Davis, founder and president of the Consumer Metrics Institute, says: "Our signals are generated well before earnings announcements and generally before guidance is provided. In fact, we can often tell how consumers are treating the brands of the large cap consumer equities even before the 'insiders' at those corporations realize what is happening at the far end of their distribution channels."

Separating Good News from Bad News

The raw citation rate data acquired by BrandLoyalties cannot (of and by itself) differentiate between surges in citation rates caused by positive news (e.g., exciting new products) or negative news (e.g., an unfolding PR nightmare). Because they cannot determine from the simple citation rate data itself whether a surging rate of the

online references to a trademark results from positive or negative reasons, the Consumer Metrics Institute advises its customers not to base investment decisions solely on the signals from BrandLoyalties. Each customer should conduct a reality check and weed out those trademarks that have generated negative headlines in the media or whose fundamentals (or executives) put them on the "blacklist" of most alert and rational managers.

A sharply rising frequency of brand name citations can have many causes, and unfortunately there are always a number of them that are unpleasant. The surging visibility of a brand on Facebook, Twitter, etc. can be due to suicidal pricing, deteriorating product quality or even a PR meltdown (defective or toxic products, product recalls, allegations of exploiting child labor, environmental contamination, unfair working conditions, labor strife ...). As a consequence, Consumer Metrics strongly recommends that any rapid and dramatic changes in BrandLoyalties.com rankings be initially treated as a "heads up" warning that warrants some further investigation and sanity checks before blindly adjusting portfolios. Seker has a concrete example at hand: "About two years ago, online citations for Bank of America was insanely strong, but not for the right kinds of reasons. The bank announced plans to institute new fees, which failed spectacularly when the news spread like wild fire and their online retail clients began to close their accounts – driving the stock price sharply downward."

Visualizing the Alpha

To demonstrate the investment value of their signals, Consumer Metrics has retroactively simulated a "proof of concept" long-only pro-forma portfolio since the beginning of 2006. Investments were made blindly in the top 10 percent of the equities in each day's BrandLoyalties.com tracked universe – meaning without additional filters, which allowed the above-mentioned Bank of America fiasco (among others) to generate an unfortunate spurious signal . The pro-forma portfolios had a one year time horizon, starting every trading day between January 2006 and mid-August 2012. Up to August 14, 2013, the top 10 percent portfolio performed with an average annual return of almost 25 percent while the average yield of the S&P 500 index over that same 1,667 one-year time spans was comparatively meager at 4.6 percent – creating an alpha for the strategy that averaged more than 20 percent per year.

The top quintile (20%) portfolio also performed very well, with an average alpha of more than 14 percent (see table "BrandLoyalties.com - Performance Statistics"). Even if one uses the consumer-equities-only sub-index of the S&P 500 Index (S&P Consumer Discretionary Universe), and uses an ETF as a proxy for a pro-forma portfolio, you can still obtain excess returns of 13.57 percent (for the top decile BrandLoyalties.com portfolio) relative to the 7.31 percent from the sub-index. The column "positive return - level of confidence" refers to the statistical confidence that any randomly selected one-year portfolio has a positive return (based on the average yield and the standard deviation of returns). The column "negative return in % of all cases" is the actual percentage of all those one-year portfolios which resulted in a simulated negative return since 2006. The last two categories do not total to a hundred percent because one is the statistically expected positive returns, while the other tallies the actually observed negative returns among all pro-forma-portfolios.

Graphing the trailing one-year returns from the top decile pro-forma portfolio and comparing it with the corresponding S&P sub-index (see chart, "S&P Consumer Discretionary versus top decile by BrandLoyalties") produces a chart covering the four years from March 2009 to March 2013. That chart clearly indicates that during most phases of a stock market cycle a very respectable alpha can be obtained by utilizing an BrandLoyalties.com based investment strategy – with signals derived from "Big Data's" most visible top 10-percent consumer stocks. The persistence of alpha over both bull and bear markets explains why hedge funds with vastly different investment styles dig deep into their pockets for the signals. Seker states: "We have both quants and fundamentally oriented managers among our clients, but of course they do not tell us in detail how they implement the signals – especially whether they use it only for 'long' positions or also for 'shorting' opportunities. Rumor has it that our signals are being used not only for aggressive stock selections, but also for the management of downside risk." On average, clients of BrandLoyalties.com have about $7.5 billion of assets under management. But because of confidentiality considerations, they have never learned how big a share of those portfolios are effectively managed using their signals.

Pro-forma Results are Net of Transaction Costs

The pro-forma performance results mentioned above are net of the largest portion of the operating costs commonly found in active or high turnover portfolios – the relatively high portfolio transaction costs are already deducted. The assumption used for those transaction fees has been to use those typically obtained in a hedge fund with assets of U.S. $100 million. The daily rebalancing strategy used in the pro-forma portfolios was also a factor in creating relatively high (and probably

BrandLoyalties.com – Performance Statistics
Data from 1,667 one-year portfolio simulations using our signals

Portfolios	Average Return	Average Return improvement	Standard Deviation of Returns	Positive Return Confidence Level	Actual % of Negative Returns
S&P 500 Index	4,58 %	--	20,35 %	58,91 %	28,43 %
S&P Consumer Discretionary Universe (represented by an ETF)	11,41 %	+6,83 %	34,61 %	62,92 %	32,55 %
Top Quintile (20%) of the rankings of the BrandLoyalties universe, equally weighted, daily rebalancing, no shorts	18,72 %	+14,14 %	34,42 %	70,68 %	26,65 %
Top Decile (10%) of the rankings of the BrandLoyalties universe, equally weighted, daily rebalancing, no shorts	24,98 %	+20,50 %	42,75 %	72,05 %	23,38 %

Between January 1st, 2006 and August 14th, 2012 portfolios were invested equally weighted for one year according to the signals of BrandLoyalties.com and rebalanced daily as equities enter and fall out of the top 10% and 20% or the ranked universe. Note: after rebalancing and transaction costs but before signal costs and management fees.

Source: Consumer Metrics Institute

unrealistic) transaction costs. "With these operating assumptions the returns actually represent the worst-case scenario," said Tony Seker, "because in reality you would probably work with filters that suppress minimal daily portfolio adjustments for cost reasons, and only act when a new equity moves into the top 10% and a previously existing position consequently falls out of that decile." However, it should be noted that in the performance numbers shown above, the costs for signal acquisition and standard management fees are not deducted.

Signal Frequency and Portfolio Turnover

To get an idea of the actual turnover and portfolio adjustment frequency for the pro-forma portfolios, a typical equity that enters the top decile (10%) remains there for an average of 30 days. An equity in the top quintile (20%) stays there for an average of 50 days, and one in the top half of the BrandLoyalties.com rankings stays in the top half for about 160 days. However, the standard deviations of those "dwell times" are relatively high and are about half the length of dwell times themselves. Depending on how aggressively portfolio managers adjust their positions, they should expect four to twelve portfolio turns per year. Because of daily rebalancing in the pro-forma-portfolios, the average turnover is very high – about ten turns per year on average. Since no sane manager would rely solely on the signals from BrandLoyalties and will exclude some equities whose brand names are being cited for the wrong reasons, Davis and Seker believe that their clients probably achieve even better results in their portfolios than the pro-forma portfolios provide. To assist with that screening process, BrandLoyalties.com also provides correlation data between the brand name citations rankings and the equity's subsequent share price performance. They provide both the raw correlation data and then a more sophisticated version, which considers the time lag between the change in the rankings and the subsequent impact on the share price (see box).
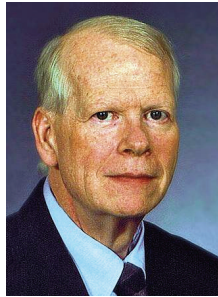
Gateway to a New Fund?

Given the convincing performance of the

pro forma portfolio, we asked Richard Davis and Tony Seker if they were considering a live implementation of their signals in the form of a new fund. Davis: "We were actually offered a share in a fund before, and they wanted to use our signals as the primary trading strategy. But at this time we are not entertaining those kinds of plans. Even though we do not feel that it would be a conflict of with our clients who buy our signals, we believe that we should keep our focus for now on what is our expertise: researching on-line consumer brand name loyalty." The model results have been published in a timely manner since January 2012. During the more recent period of 1/1/2012 to 7/31/2013, the pro-forma model has bettered the S&P 500 index by more than 30 percent. The average return of all one-year portfolios over those 19 months was 42.4 percent, while the average one-year S& P 500 index portfolio returned 12.3 percent.

A similar response was received when we asked whether in the future an active ETF based on the signal could be launched – either as a long-only or

as a long/short product. Davis and Seker are open to discussions about this and could make the model available, but they would prefer to rely entirely on the professionals in matters such as funding, administration, distribution and compliance.

A Long/Short Variant?

At first glance it seems strange that Consumer Metrics does not provide performance numbers for a pro-forma portfolio that "shorts" the lowest decile of the 500+ screened brands and companies. In fact, it is quite possible that these stragglers do not exhibit an underperformance relative to the S&P 500 index. When they build pro-forma portfolios that use their entire universe of tracked equities, the average one-year return since 2006 has been 17.2 percent (versus 4.5 percent in the S&P 500) – thereby providing an alpha of more than 12.5 percent relative to the S&P 500. That surprising alpha from their "full universe" becomes a little less mysterious when you consider the types of companies for which sufficient citation data is available: all 500+ companies that they track embrace the online world and social media for marketing and sales. All of the companies that they track have a significant presence and what Seker calls "high luminosity" on the web – giving them a real advantage compared to the less astute competitors. All of this translates into a collective "out-perform" for their full universe. But this does not mean that the bottom end signals of BrandLoyalties.com cannot be used defensively, says Tony Seker, because the bottom end signals can provide a "heads-up" alerts list that a portfolio manager might use to "sanity-check" an otherwise promising long-portfolio.

The U.S. May Just be the Beginning

Before they consider any expansion to the equities that they cover, Consumer

> » Our signals are generated well before earnings announcements and generally before guidance is provided. «

Richard C. Davis, Founder and President of Consumer Metrics Institute Inc., Lakewood, Colorado

S&P Consumer Discretionary vs. Top Decile of BrandLoyalties Rankings

Nice additional yield through investment using online consumer loyalty to brands

Legend: BrandLoyalties Top 10 % / S&P Consumer Discretionary Index
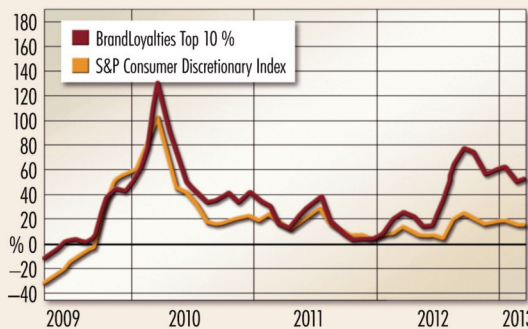
A new pair of pro-forma one-year portfolios were started each market day from March 2008 to March 2012. One portfolio contained an ETF proxy for the S&P Consumer Discretionary Index, and the other consisted of investments in the top ranked decile (10%) of the equities tracked by BrandLoyalties.com. The trailing one-year returns are plotted. The results are after trading costs, but before signal and management costs.   **Source:** BrandLoyalties

FOTO: © CONSUMER METRICS INSTITUTE INC

Two Examples of How Signals from BrandLoyalties Work

Anticipating equity performance using online consumer shopping and social media behavior

The left hand chart below illustrates how improving BrandLoyalties.com rankings can be a precursor for improved earnings and rising stock prices. The chart follows the rise of the Rite Aid Corporation (RAD). It moved into the top quintile of the BrandLoyalties universe on 11/26/2012, after improving from a year earlier when it fell as low as the bottom decile. It remained in the top quintile until 02/11/2013 (see chart: "Rite Aid Corporation Identified Early"). An upside alert went out to the subscribers of BrandLoyalties.com

on 11/27/2013 via e-mail – some 23 days before the RAD-management increased their guidance on 12/20/2013, causing the share price to increase by up to 70 percent.

An example of an early warning to the downside is Children's Place Retail Stores, Inc (PLCE)

In this case BrandLoyalties.com subscribers were alerted by e-mail on 10/12/2012 that the company had dropped into the bottom quintile. The compa-

ny's negative guidance was not released until 11/15/2012, giving BrandLoyalties.com clients ample time for a graceful exit from their positions. PLCE subsequently fell by almost 29 percent by 12/26/2012. Since 02/04/2013, PLCE has worked its way back up in terms of brand loyalty and reputation, so the company can now be found in the middle third of the universe (see chart "Children's Place Retail Stores recognized in time").

Rite Aid Corporation Identified Early

Although the guidance was not upgraded until mid-December, subscribers could be taking positions as early as the end of November.
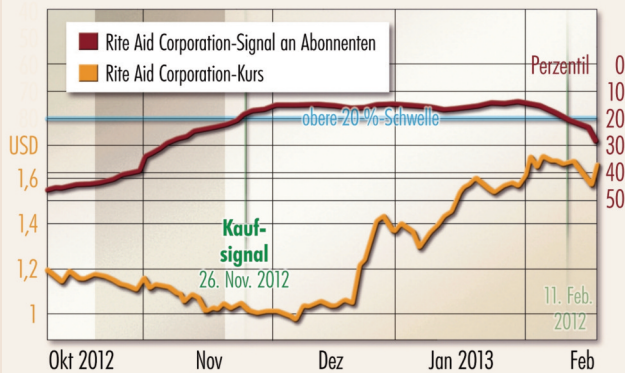

Rite Aid Corporation appeared in the top quintile for the first time on 11/26/2012. The signal to the subscribers of BrandLoyalties is dated to 11/27/2012. RAD management did not increase its guidance until 12/20/2012.

Source: BrandLoyalties

Children's Place Retail Recognized in Time

While the guidance was downgraded in mid-November, the "Sell" signal occurred in mid-October.
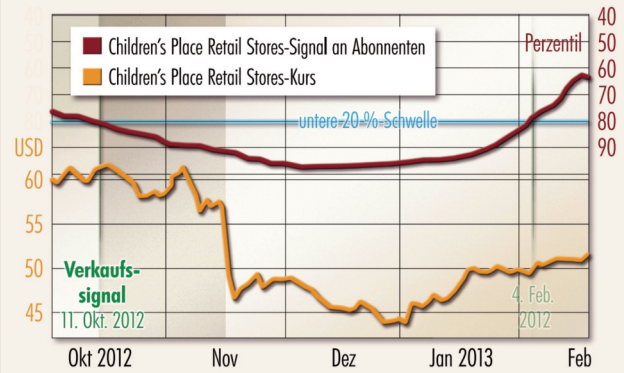
Children's Place Retail Stores ranking in the universe deteriorated and dropped into the bottom quintile on 10/11/2012. Subscribers to BrandLoyalties.com received a "Sell" signal the next day, saving a 29 percent loss. PLCE did not reduce their guidance for revenue and earnings until mid-November.

Source: BrandLoyalties

Metrics always asks whether or not the results could be of value for a new investor base. On the one hand, there must be a sufficient level of online brand name citations for any given equity to pass their "signal strength" criteria (actually a statistical signal-to-noise ratio), and on the other hand those citations need to be relevant (or correlate) to the observed sales trends. The visibility of a brand is crucial in order to determine, over time, whether the interest in the brand of a listed company is rising or falling. And it is also important to focus on stocks where on-line citations are ultimately relevant to the financial performance of the equity. Defense companies (such as Lockheed Martin, McDonnell Douglas and Dassault Aviation) have a very low correlation between the rate of online citations and their sales – because as it turns out consumers seldom buy fighter jets – and if they did, it is not likely to have been over the Internet.

Asia in the Works, Europe later

In any case, Consumer Metrics has already begun to cover some companies outside the United States, since the methodology applies everywhere in the world as long as enough online activity is measurable. The research process is lengthy and tedious, but they are soon expecting to have one hundred Asian equities available. They will then be able to offer a subscription that includes those equities, with the top quintile of Asian stocks composing about 20 names – which would allow a reasonable level of diversification in even the most aggressive hedge fund. Once the Asian universe is fully rolled out, it will be time for European equities, which until now have been only third on the list of priorities at Consumer Metrics. That should then give us Europeans food for thought. But in the meantime the profit-orientated Consumer Metrics

Institute has responded first and foremost to the desires of its clients. And unfortunately they have asked for Asia before Europe.

Conclusion

The BrandLoyalties.com concept seems to merit careful consideration. It will be interesting to watch wha.t happens when a major European-based fund manager buys the U.S. signals from BrandLoyalties.com and creates an investment vehicle using those signals – and how soon other managers follow that lead. And it would be equally interesting if a European asset manager could become the impetus for Consumer Metrics production of brand loyalty signals for European consumer shares.