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Leveraging the Impact of Retail Digital Signage Advertising Through Behavioral Merchandising

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The authors appreciate the comments received from Professor Edward J. Fox, Southern Methodist University, and Professor Barton Weitz, University of Florida.

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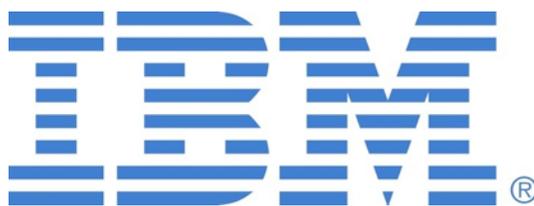
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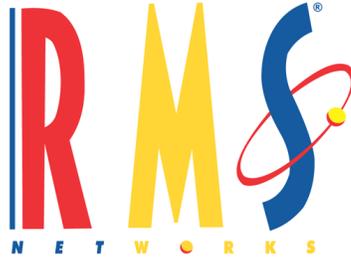
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Reflect Systems (www.reflectsystems.com) provides comprehensive enterprise solutions for rich media communications. The company's solution offerings include ReflectView, a software system enabling the management of digital signage networks, and the Reflect webcasting suite, a combined hosted service and software solution enabling the creation, management, and distribution of media content for intra/Internet delivery. Reflect Systems also provides network design, consulting, implementation, monitoring, support and hosting services.



RMS Networks, Inc. (www.rmsnetworks.com) is a broadcast media company that successfully uses its custom content and entertainment-based programming, along with its proprietary technology to influence the purchasing decisions of millions of active consumers in targeted "away-from-home" environments. RMS programming enhances retail environments with entertaining and informative audio and video content, increasing the duration and frequency of consumer shopping visits, generating incremental revenue, and promoting the sale of specific products. RMS enables advertisers and retailers to effectively and efficiently reach active consumers at the point of sale, where most purchase decisions are made. In addition to influencing consumer behavior, the programming is used as a corporate communications and distance learning tool to educate and create "top-of-mind" awareness for employees. RMS' programming has proven to be extremely successful in generating brand awareness and sales lift.



SignStorey, Inc. (www.signstorey.com) is a leading provider of digital advertising networks to supermarkets. With headquarters in Fairfield, CT, SignStorey is a full service network providing hardware, installation, and network management, as well as content creation and advertising, which includes a combination of store specials, meal ideas, wellness tips, entertainment and ads, delivered via satellite to the stores. The 42-inch plasma screens are located in the store interior, in such high traffic areas as produce, bakery/deli, and meats, where 98 percent of shoppers spend eight-plus minutes shopping. SignStorey is installed in Albertsons, Shaws, Jewel, Pathmark and Price Chopper, and will be in over 1,500 stores nationwide by the end of 2005.



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- Enhance the education of the school's students by offering retail courses and partnering with the retail community.
- Stimulate interest in retail careers among the school's students and to help prepare them for those careers.
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Introduction

A long-embraced truism of the American advertising industry was advanced in the early part of the last century by John Wanamaker, the Philadelphia merchant who will forever be memorialized for his observing that “half the money I spend on advertising is wasted; the trouble is I don’t know which half.” The significant aspect of this statement is that it is generally as true today as it was in the last century.¹ This fact is causing advertisers to seek more effective, alternative media outlets.

Advertisers are aware that traditional mass communication channels are less relevant than they once were, and that marketing spend decisions have been plagued by a lack of adequate methods to gauge their impact upon consumers. In addition, both retailers and consumer package goods manufacturers (CPG) have been hindered by an inability to effectively communicate with consumers in the store.

Retail Digital Signage (RDS) offers an important new media platform that addresses these issues. This is due to its location in-store, as a result of its message flexibility, and because of the ability to quantify its impact upon consumer shopping behavior. In addition, effective content strategy that is formulated through Behavioral Merchandising (BEM) and delivered by RDS is uniquely capable of building customer relationships by facilitating retailer and/or brand differentiation in the store.

This Working Paper details the benefits associated with RDS, and introduces the methodology of Behavioral Merchandising. The objective of BEM is to stimulate the consumer buying process by mass-customization of targeted messages. This systematization is significant for advertisers because it resolves how to most effectively develop and deploy RDS content.



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¹ According to the Addressable Advertising Coalition, “80 percent of the money invested in U.S. TV advertising each year is wasted.”

Discussion

A. Overview

Diminishing audience reach is impacting advertising effectiveness in traditional mass media.² In addition, persistent problems associated with gauging the impact of most forms of advertising have not adequately been resolved.³ These realities are taking a toll on advertising spending for traditional forms of mass communications. In fact, spending on new forms of advertising that can be monitored and measured are outpacing growth in older forms of media. To illustrate this, consider that while overall growth in advertising spending is forecast at 5.7 percent⁴ in 2005, Internet advertising is expected to grow by 25 percent⁵ and cable TV is expected to grow by 9.5 percent, while network TV is forecast to grow by only 1.1 percent.⁶ This fragmentation and lack of adequate metrics is causing marketing dollars to be redirected to new channels. One such channel is the retail store itself, where the consumer, the product, and the sale converge.

Retail stores are an underutilized marketing channel, with outstanding potential to impact shopping behavior.⁷ Messages delivered via a retail digital signage system may be individually addressed to several or thousands of locations real-time, and can be day-parted to adjust to various environmental factors.

RDS is defined as “visual content displayed in a retail environment, delivered digitally through a centrally managed and controlled network.”⁸ The key benefits of RDS are summarized as follows:

- RDS messaging is dynamic, possessing the capability to display complex graphics and videos, resulting in attention garnering-messages.
- RDS messages are capable of rapid deployment system wide, storewide or in a single store aisle, and can leverage specific regional and store conditions, such as customer demographics, weather conditions, promotions, and educational content, combined with the ability to be fractionalized into day-parts.
- RDS can be centrally monitored, ensuring that system-wide, brand-compliant messages are deployed. This represents a major advantage over other forms of in-store communications, which are plagued with questions of store-level compliance.

² See “Television Networks in the 21st Century,” Deloitte Touche Tohmatsu Global Technology, Media & Telecommunications Industry Group Report, 2005.

³ A recent survey by the Association of National Advertisers found that 61.5 percent of respondents felt it important to define measures and take concrete steps in the area of advertising accountability, but only 19 percent were satisfied with their ability to take those steps.

⁴ Source: Universal McCann revised 2005 estimate as of 30 June 2005.

⁵ Spending on Internet advertising is forecast at \$11.5 Billion in 2005 and \$19.2 Billion in 2010. Source: Sanford C. Bernstein & Co.

⁶ Source: TNS Media Intelligence.

⁷ “Another promising new media site is the store itself.” Philip Kotler, *Marketing Management*, Millennium Edition, 2000, p. 589. “For every four minutes a customer spends looking at an ad, he spends forty minutes inside a McDonalds,” Bill Lamar, SVP, CMO, McDonalds.

⁸ “Implications for Retail Adoption of Digital Signage Systems,” PRI Working Paper #1, October 2004, Platt, Sinha, Weitz, Hellberg, Iyer and Myers.



- Digital signage assists customers in locating the merchandise they are looking for in the store, and can provide in-depth information and product demonstrations to influence the purchase decision.
- RDS enables timely and accurate measurement of a message's impact upon a consumer. Measurement occurs through the integration with a retailer's legacy systems, such as POS, merchandise and supply chain, with the result that RDS has the ability to immediately gauge the impact of a message and adapt the message to changing retail dynamics.
- RDS technology facilitates the delivery of messages that both retailers and CPGs can leverage to build customer relationships.

Relative to existing forms of product and promotional testing, CPGs can quickly and relatively inexpensively experiment with new product concepts and advertisements to determine consumer impact.

In addition to the noted benefits, RDS possesses outstanding attributes as a new medium.



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B. Retail Digital Signage Attributes as a New Marketing Medium

RDS has distinct functionality as an advertising platform, which warrants its inclusion in the advertising mix. This includes the following:

- RDS eliminates the time lag between consumer exposure to a message and the place of purchase.
- RDS-enabled technology directly correlates the message to its sales impact.
- The dynamic nature of RDS enhances its ability to make timely changes to messages in response to changing consumer and environmental factors.
- RDS enables the CPG to communicate with customers persuasively at the retail level.

i. Elimination of the Time Lag between Consumer Ad Exposure and the Place of Purchase

RDS placement in-store eliminates the time lag between consumer exposure to a message and the opportunity to buy the product, which is associated with most forms of mass communication advertising. As retail environments become more prominent in the marketing mix⁹, RDS offers an advantageous method to influence consumer purchase behavior in the store.

Retail store advertising is important because it intersects the time and place where all elements of the sale – the consumer, the money, and the product – come together.¹⁰ Marketing expenditures at the place of purchase are becoming significant because: 1. They often prove more productive than advertising and promotion expenditures; 2. Sales support in-store is declining, which fosters greater interest among retailers in information at the place of purchase; and, 3. With changes in consumer shopping patterns and expectations, the place of purchase is becoming more important to consumer decision-making.¹¹ This is significant because many consumer purchases are unplanned.¹²

ii. Direct Correlation between Message and Sales Impact

Unlike most advertising platforms, RDS offers the ability to leverage technology to rapidly measure the impact of a message upon sales at the store-level. While retailers may also have an interest in measuring the customer experience and customer loyalty, among other things, measurement of the correlation between the sales impact and RDS-displayed messages can be achieved by integration into a retailer's legacy systems.

Contrast this to traditional mass media, where ad pricing is based upon a cost per thousand impressions, with no assurance of who is looking at the ad, and the measures are relative to the media content, such as a magazine, not the ad or its effectiveness per se. Simply, RDS affords the opportunity to measure whether someone buys something after viewing an in-store message.



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⁹ See "In a Shift, Marketers Beef Up Ad Spending Inside Stores," *Wall Street Journal*, p. 1, September 20, 2005.

¹⁰ See *Store Wars, the Battle for Mindspace and Shelfspace*, Corstjens and Corstjens, 1995.

¹¹ "Better Marketing at the Point of Purchase," Quelch and Cannon-Bonventre, *Harvard Business Review*, Nov.-Dec., 1983, p. 163.

¹² "In-Store Decision Making: The Role of Category-Level and Shopping Trip-Level Factors," Inman, Ferraro, and Winer, Working Paper, 2005. Inman, Ferraro and Winer determined that 59 percent of store purchases were unplanned.

In addition, RDS offers the ability to rapidly adjust in-store messages to the level of sales impact the message may or may not be exerting upon consumers. As such, RDS exhibits several of the same qualities associated with Internet advertising. By reviewing POS data, a manager can continually assess a message's impact upon sales and, if desirable, the message can quickly be changed. Finally, RDS messages can rapidly adjust to other retailer-specific factors, as well as the ability to experiment across stores to determine an ads impact. The effect the message is having at the store-level can rapidly be altered to achieve a desired result.

iii. Enhancing the In-Store Marketing Experience

Past research has found a relationship between exposure to in-store marketing activities and consumer purchase behavior.¹³ From an in-store marketing perspective, a retailer may distinguish itself in a variety of ways, including product assortment, price, and promotional strategies. RDS expands a retailer's ability to communicate with customers in the store, as well as to manage messages to appeal to specific customer segments, and to adapt to local environmental conditions, from changing weather patterns to the local girls' club bake sale.

RDS offers the opportunity to expand the amount and type of information provided to a customer due to its dynamic nature. Most in-store promotional activities such as store coupons, graphics, displays, etc. are static in nature. RDS, on the other hand, is dynamic in nature, thus adaptable to changing market conditions.

RDS Enables the CPG to Communicate with Customers at the Retail Level

Heretofore, the retailer has controlled most of the consumer/product interface at the store level. This includes shelf space allocation and location, the selection and location of displays, setting the selling price, customer service, etc. The CPG, on the other hand, has been limited in its in-store presentation with consumers to packaging, visual merchandising, and through store personnel. RDS technology enables the CPG to open a customized communication link with the consumer in the store. Again, consideration of the fact that a significant portion of consumer purchases is impulse driven in the store makes this critical for the CPG. Moreover, RDS is an outstanding method of gaining consumer attention in-store to increase brand purchase consideration. A recent study of consumer in-store visual attention to and consideration of a brand at retail found that looking at a brand in-store increases its consideration probability by 30 percent to 120 percent.¹⁴ These messages can also be focused toward building customer relationships based upon BEM, in stark contrast to much of the "promotional panhandling" practiced in-store today.



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¹³ "Price Discrimination Using In-Store Merchandising," *Journal of Marketing*, Volume 60, No. 1, 1996, Dhar and Hoch.

¹⁴ "Unseen is Unsold: Assessing Visual Equity with Consumer Eye-Tracking Data," under review at *Marketing Science*, Chandon, Hutchinson, Young.

C. Mass Customized Advertising Messages

RDS offers advertisers the ability to rapidly customize in-store messages, as well as to select the physical location in-store where those messages are delivered. It is these attributes of RDS, that is, the ability to deliver tailored messages at pre-determined times to specific areas of a store, which enable RDS to capitalize on mass media fragmentation. Thus, RDS advertising enables a bottom-up approach that tailors advertising around the consumer, as compared to the traditional top-down approach of buying the biggest outlet, which results in advertisers paying to reach consumers who might not be potential buyers of their particular product.

Advertising becomes more relevant when it is tailored to its audience. RDS offers this element of customization by enabling advertisers to match offers to specific audience demographics. Messages can be altered to address various environmental factors, including a particular geographic area or store's demographics, individual store, store-chain and CPG promotional activities, store inventory levels, and, local weather and activities. Further, single spots can be easily modified in various ways to keep advertisements fresh, current, and relevant.

RDS also affords advertisers the ability to select in which stores, as well as the location within specific stores, their message is communicated. This becomes relevant to a manufacturer of shampoo, for example, that wishes to deploy its advertising dollars in the health and beauty section of a store, and not pay to deliver messages in the hardware section of a mass retailer. A manufacturer of auto replacement parts, for example, might determine that running in-store ads in Manhattan, where few residents own cars, is similarly a poor advertising spend, and may redirect those same ad dollars to more suburban store advertisements. To accommodate this level of localization, retailers are creating multiple zones within their stores. For example, Tesco TV has 55 screens in its stores running seven channels. In addition, in early testing by Asda, one store was equipped with eleven zones, running different content in all zones.



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D. RDS Advertising Effectiveness

RDS has been found to substantially impact consumer shopping behavior. As a result, many domestic and international retailers have either deployed, are refining, or are in the early stages of implementing a retail digital signage system. These include: CompUSA (in 245 stores, with up to 80 screens per store); Focus Media (with some 8,866 locations in China); Kroger (with plans for 2,500 stores); Tesco (reaching 16.6 million consumers making 8.3 million transactions every 2 weeks with screens in 100 stores); Wal-Mart (with some 100,000 screens in most of its 2,650 stores); as well as Advance Auto Parts, Albertson's, Asda, Best Buy, Borders, Canadian Tire, Costco, CVS, JCPenney, Macy's, Nike Town Stores, Sainsbury, 7-Eleven, Target, Walgreen's, The Beer Store, and The United States Postal Service, among many others. By analyzing the stages of the buying process, and supported by scientific research, RDS can substantially influence consumer shopping behavior. This has been substantiated in various tests.¹⁵

In a six-month trial at the second largest grocery chain in the UK, RDS messages were found to generally have a 10-11 percent impact on sales of advertised products over and above any other promotional activity that was occurring in the store during the test period. Other noteworthy test results are summarized as follows:

- The overall impact of RDS messages realized by CPGs, combining both brand and promotional messages, averaged between 10 percent and 11 percent over the six-month trial.
- The overall impact of RDS messages realized by the grocery store's private-label merchandise, combining both brand and promotional messages, averaged between 9 percent and 11 percent over the six-month trial.
- The overall impact of RDS messages realized by combining CPG brand advertising and both CPG and grocery store private-label promotional messages, averaged between 10 percent and 11 percent over the six-month trial.
- The overall impact of RDS messages realized by advertised merchandise, by category, averaged between 10 percent and 11 percent over the six-month trial. Category sales were slightly higher in the individual aisles than in "Action Alley".
- The category impact upon the 12 categories tested (including RDS advertised and non-advertised brands) was the highest in unit volume (8.2 percent) and in sales (8.4 percent) in ready-to-drink. The category impact upon the 12 categories tested (including RDS advertised and non-advertised brands) was the lowest in unit volume (0.1 percent) and sales (0.2 percent) in the frozen dessert category.

During interviews, 52 percent of shoppers, on average, felt that RDS was relevant for providing new product information. In separate questioning, 50 percent felt that RDS was most relevant for providing information on in-store promotions.

Overall, 59 percent of shoppers recalled seeing the screens in-store.

RDS possesses many unique characteristics. However, the question remains how to develop and deploy relevant content across a network. BEM will assist advertisers in solving this issue.

¹⁵ "Establishing Retail Digital Signage as a New Medium and Measuring its Effectiveness", PRI Working Paper #2, May 2005, Platt, Mulhern, and Vaughan.



E. Behavioral Merchandising to Build Customer Relationships through Effective RDS Content Strategy

Many retailers and CPGs are confronted by the inability to distinguish their stores and their products, both of which are perceived by consumers to be commodities. Traditional forms of mass media have generally not served as useful instruments to address this problem, as they are best aimed at brand enhancement. RDS messaging, when executed pursuant to a valid store/brand strategy, can accomplish this by establishing customer relationships. This requires the development of a content methodology in support of such a strategy. BEM accomplishes this.

At its core, BEM advocates that by providing consumers with meaningful store, product, and service information, customer trust and loyalty can be increased. This trust and loyalty will, in-turn, result in enhancing the customer experience, which will result in distinguishing the retailer and the CPG. RDS technology enables the building of these customer relationships in the store.

To leverage the inherent benefits of RDS, advertising messages will move from a traditional awareness approach toward the establishment of customer relationship-driven content.¹⁶ This relationship building is stimulated by the delivery of the right message at the right time, with the right offer to the right customer. This is accomplished by knowing who is in a store or aisle at a specific time, presenting relevant content, understanding the impact an ad is currently having upon consumers in the store, and by predicting what messages and promotions will be most relevant to these consumers. The ability to dynamically alter messages based upon such relevant information enhances the value of RDS. Yet to effectively execute RDS at the store level requires a closed-loop, intelligent content system. Such a system will utilize information to gain knowledge of past purchase relationships, and possess the ability to predict and influence future purchase behavior by building customer trust and loyalty.

BEM is the method for the systematic approach to leveraging RDS content to foster customer relationships. BEM is defined as the methodology for understanding, predicating, and influencing consumer purchase behavior in-store by messages delivered via a digital signage system. The objective of BEM is to stimulate the consumer buying process by mass-customization of targeted messages. The BEM process involves collecting and analyzing data via mathematical models for the extraction of customer/merchandise relationships, and to further predict consumer response to targeted promotions. Moreover, BEM is an ongoing, enhanced process that coordinates content and continues to learn based upon in-store consumer purchase behavior, as well as from additional knowledge insights. The output includes strategies and processes for creating and distributing targeted advertising messages to enhance customer relationships and promotional effectiveness. The following illustrate how these relationships are manifested.

Calls-to-Action: RDS delivered messages can readily be tailored to respond to and/or stimulate a consumer need. For example, if the weather is very hot in a local market, placing beverage and sunscreen ads in response to such local market conditions at a particular time is logical. In addition, the placement of those ads can be targeted at the store and aisle level during the hottest times of the day or at times when the most likely buyers of those products are in the store. By knowing which customers are in the store, as well as incorporating



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¹⁶ The term “customer relationship” is used here to generally define a customer-centric approach to retailing by building insights achieved through BEM and leveraged through content delivered through RDS.

other relevant market factors, advertisers can direct their spending to the most likely time and place that a consumer is ready to buy. BEM will further determine if such targeted ads are effective or need to be reset, as well as suggesting other product and promotional messages.

Product Relationships: customized messages can be delivered to leverage cross-product and up-product relationships. The toothpaste/toothbrush linkage is a simple example. Extending insights gleaned from BEM, messages may be directed at athletic shoe purchasers, for example, that have been found to have a tendency toward the purchase of shock socks, which are then advertised in the sporting goods area. This will also result in causing consumers to shop more store aisles, which has a positive impact on sales. Other findings may indicate, for example, that consumers that tend to buy product warranties are receptive to security product purchases. RDS ads can quickly adapt to this at a consumer electronics store by displaying messages aimed at such consumers. By understanding product relationships relative to consumers in the store, BEM data analysis will illustrate and adapt to obvious and not-so-obvious customer/product relationships, and deliver relevant advertising real-time to stimulate purchase behavior.

New Product/Service Introduction and New Product/Service Uses: information relevant to new products/services and new product/service uses can readily be delivered to stores through RDS. New product introductions will benefit from consumer targeted in-store ads in a manner similar to current in-store marketing, such as POP and graphics, but in a consumer directed, dynamically enhanced manner. For example, if a paint manufacturer is introducing a new line of deck varnish, RDS content introducing the product, illustrating the products ease of application, a two-year fast forward durability enactment, etc., can be effective in communicating product attributes to consumers. New product uses, such as baking soda in the refrigerator, is one simple example of educating consumers about product extensions. BEM can determine what product/service extensions are acceptable to consumers and target messages at the store level to stimulate a purchase. Therefore, another important benefit of BEM is that an advertiser can quickly test and determine how to best allocate its RDS marketing spend related to such product line extensions. For example, if a brand has perceived a new product use, such as ketchup on cupcakes, and then chooses to selectively test this with in-store ads - later learning that this relationship was not effective, the brand would benefit from learning this without incurring extensive testing and advertising expense.

Dynamic Pricing: BEM enhances the ability to quickly alter product pricing to respond to changing environmental factors. This can range from increasing the price of umbrellas on rainy days to targeted price reductions based upon inventory levels. The retailer, the CPG, or both may facilitate these price adjustments.

Targeted Promotions: Data analysis and predictive modeling powered by BEM enables advertisers to optimize promotions. BEM collection of customer demographic and behavioral data makes precision targeting of promotional ads via RDS possible. Further, predictive promotional modeling can isolate promotional attributes with the highest customer impact, with the benefit that ad promotional effectiveness can rapidly be tested and refined prior to rolling out a national campaign.



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Customer Engagement: As a result of increased message relevancy, brand recall and persuasion will be positively impacted. Advertising geared to fostering customer trust and loyalty, rather than “buy me” messages can be communicated through this medium on a local level. For a CPG, the capability to present logical product linkage in the store enhances the customer’s product perceptions.

As noted, the BEM process itself can be visualized as a closed-loop, intelligent content coordination system. The specific steps in this technology process are delineated as follows:

- Data warehousing.
- Data mining.
- Predictive promotional modeling.
- Campaign management.
- Effectiveness measurement.
- Continuous evaluation and improvement.

i. Data Warehousing

A data warehouse provides the infrastructure required to integrate information from various databases to aid in the process of decision-making. Historical customer data is aggregated and updated with new customer and environmental insights. Sources of information include POS, CRM, loyalty programs, store-brand credit cards, Internet and other intelligent systems. In addition, store level information, such as the composition of customers in the store at different days and times, store traffic patterns, and inventory information is accumulated. Finally, localized information, such as demographic and weather conditions, is collected.

ii. Data Mining

Data mining refers to technologies that extract knowledge and insights from vast quantities of data, such as that contained in a BEM data warehouse, in an efficient manner. Statistical algorithms are applied to customer data, including store-level and other localized information, to identify merchandise buying patterns and relationships. From this, campaign decisions in respect to RDS programming can be made and promotional targeting can be pursued.

Through the analysis and evaluation of data intersections, various insights can be realized. These can include knowledge related to consumer product/service purchase patterns, customer segmentation for the targeting of ads, the demonstration of customer merchandise relationships to feature relevant product bundles, etc. These intersections can be determined from the following:

- Basket analysis: such analysis will reveal the items which consumers tend to purchase together. This will demonstrate product relationships and product relationships among various consumer groups.
- Time-based analysis: this analysis can lead to better sequencing of ads to logical times between and when items are most often purchased. The sequencing of ads around times products tend to be purchased, such as coffee ads in the morning, simply illustrates this.
- Customer segment profiling: this process incorporates various relevant data sets to target advertising. This can be as simple as isolating local data, such as the fact that the ladies bowling league visits a store every



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Tuesday at 10:00 am, to more intensive data mining, such as leveraging customer purchase history to target ads, such as matching store loyalty card purchase information with customers that tend to be in a store at a specific time to target ads.

- Propensity to purchase: such analysis will identify groups predisposed to the purchase of items, even though the purchase relationship has not previously been demonstrated. For example, if consumers in one geographic region tend to buy certain products, advertising to like consumers in another region may stimulate purchase relationships that have not previously been observed.
- Recommendation system: such analysis will match a consumer's purchase history with that of similar consumers to make suggestions for similar item purchases. For example, Amazon.com does a good job of suggesting books that other consumers have purchased to consumers considering a specific book purchase.
- Conversion analysis: this analysis seeks to understand the relationships that have caused a consumer to buy differing products, brands, etc. From this, purchase motivation patterns can be isolated.

Following this data mining, ad play lists are executed by content management software or further refinement can be undertaken for promotional ad development that requires predictive modeling.

iii. Predictive Promotional Modeling

Predictive promotional modeling refers to the process of using purchase patterns discovered by data mining to target specific promotions. Stated another way, once customer/product relationships are discovered, the process of developing specific promotional messages may be undertaken to further enhance the impact of RDS. The objective of predictive promotional modeling is to isolate and emphasize those aspects of a specific promotional campaign that will achieve the maximum impact upon customers at the store level. This modeling may include the use of experimental design and other statistical prediction tools to forecast the impact upon consumer purchase behavior relative to individual promotional stimuli to determine which promotional attribute would likely result in the strongest consumer response.¹⁷ It may also include the mining of promotional history data to build likely consumer response outcomes. From this, a promotion can go chain wide.¹⁸ The following example illustrates this:

Assume that data mining reveals a purchase relationship exists for males aged 30-40 who shop at discount retailers for pool chemicals and pet supplies. Store demographic data reveals that these shoppers tend to be in-store on Saturdays between 11 am and 1 pm. Advertisements aimed at building sales of these products can be shown during this time frame in various relevant places within a chain store (in the power aisle, the pool, and pet aisles, for example), to maximize ad spend utility and impact. In addition, if the manufacturer of pool chemicals desires to run product promotional ads, promotional attributes can be tested via experimental design in limited markets



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¹⁷ See "Boost Your Marketing ROI with Experimental Design", Harvard Business Review, October 2001, Almquist and Wyner.

¹⁸ It is noteworthy that firms involved in providing predictive analytics in various marketing contexts have reported impressive results. In one instance, for example, it was reported that response rates to direct mail offers increased dramatically following data mining of a large group of past customers by leveraging customer histories to accurately target prospects and identify key selling messages.

to gauge their impact prior to enduring the cost of a national campaign. By testing various attributes, such as various pricing scales (buy one/get one free, buy one product/get 10 percent off on a related company pool chemical, free samples, buy one/get a free ducky squeaky toy, etc.), the CPG can relatively quickly determine which promotional element will have the greatest impact. Once the campaign is rolled out containing the promotional attribute that is found to have the greatest impact for that targeted buyer, the result can be measured in a timely manner as well.

iv. Campaign Management

Based upon analytics and modeling, content and play lists are developed. This information is fed to content management software for store level programming. Integration into other promotional activities being undertaken by the retailer and CPG should also be considered.

v. Effectiveness Measurement

The intersection of POS data and content play lists reveals whether the advertising message is achieving the intended result. This information will aid in comprehending the following:

- The message's sales impact.
- Ad and promotional effectiveness.
- Future campaign execution.
- Cross sell/up sell accuracy.

vi. Continuous Evaluation and Improvement

The BEM system is updated with new information to become more intelligent to further enhance customization and ad effectiveness. This envisions a reincorporation of learning's into new campaigns to fully leverage RDS's potential through BEM.



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Conclusions

RDS has outstanding potential as a new advertising medium. This has been proven in various tests. Because of this, many retailers are implementing retail digital signage systems. However, issues regarding the design of effective content strategy confront both retailers and CPGs.

Maximizing the benefits from a store strategy that embraces RDS requires mass content customization to build customer relationships in-store. BEM methodology is a closed-loop system for the development of content strategy that results in effective consumer communication at the store level. BEM is further self-correcting and learning, by gauging the impact advertising messages are having upon consumer purchases in-store. As such, BEM continues to evolve and adapt to various changing store and environmental inputs.

Full implementation of a BEM system will take time. For BEM to achieve its ultimate impact, extensive investment in information technologies will be required. We envision that the retailers, CPGs, software firms, and system operators will be willing to make such investments, as the impact upon revenue can be substantial. As new forms of communication such as RDS, have overtaken traditional forms of advertising, these constituents will recognize that such an investment is worthwhile.



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