Facial Recognition Case

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Abstract

There are many new and exciting technologies. This case study presents one that is not quite in the mainstream yet – facial recognition. Facial recognition has been used by the United States Department of Homeland Security for recognition of individuals who might have ties to terrorism activities. This case presents a hypothetical usage – using facial recognition with a customer relationship management system to give retail customers a better shopping experience. This course ties nicely to IS2002.9 IS in Emerging Environments; and IS2010.7 IS Strategy, Management and Acquisition.

Case Summary:
Martin Department store has flourished for many years based on superior customer service. But, revenues and profit is declining. Bill Martin, founder and CEO is wondering if a new (and untried in the retail marketing area) could turn the company around. The case presents a technology that has been used in border security and other areas – facial recognition as an option for better customer service and interfacing to their customer relationship management (CRM).

Keywords: Facial recognition, emerging technologies, customer relationship management (CRM), retail management.

1. CASE STUDY

Bill Martin couldn't believe the figures. In four years, Martin Departments Stores had dropped in sales from 940,000,000 in 2005 to 860,000,000 in 2009. Originally Bill thought the economic recession was the reason for the drop, but his research and development department has surveyed customers and found that, although the economic had hit some customers, one of the contributing factors had been a decrease in customer service. As founder and CEO, Bill took things like this very personally.

Bill said to Iva Lacy, his Vice President for Customer Support "Iva – that can't be!!! We've always been the leader in customer service."

Iva, who had been with Martin Department Stores since 1982 replied: "Bill, I can hardly believe it either. But, I've seen the data, and read the customer comments. There were people who said they were never coming back to Martin's again, after a bad shopping experience".

Bill then faced his board of directors – "Okay – what can we do – where can we go to get back in the right direction. Turning to Rich Ferguson, his chief information officer, he asked "Rich – is there any kind of technology that could help? More web presence?

Facebook ads?". Then to Marcus Falen, vice president of logistics, he asked "Come on Marcus – can we cut some of those supply chain figures down. Aren't you using that RFID stuff to keep track of where our inventory is?" Even Henry Martin (his son and CFO) got the third degree questioning from Bill Martin.

He continued going around the table – search, asking for ways to turn the business around. Finally, he said "Let's take a couple of days to think this over. Let's think outside-the-box, what might we be missing? Let's reconvene on Tuesday – after the Memorial Day weekend to think about this. And … maybe you can all go shopping at Martin's over the weekend to help our sales grow!!" At this the board had a little laugh and slunk out of the meeting.

2. BACKGROUND

Martin's Department Store was established in 1969 in Charlestown, North Carolina. Bill Martin is the owner and Chief Executive Officer. His two children assist him in running the company. His son, Henry Martin is the CFO, while his daughter Julie (Martin) Briscoe is Director of Marketing.

Martin's Department Store originated in 1969 by Bill Martin and a couple of family members. Mr. Martin wanted to create a department store that would attract people of all ages and provide them with a one-stop location for all their clothing, apparel, shoes, and home décor needs. The first store was established in Charlestown, North Carolina and since 1969 there have been 28 other locations added along the East Coast of the U.S. The five most recently built stores have been located in the New England region.

Exhibit 1: (Represents the amount of stores in each state Martin's currently has locations in, along with the state acquisition process)

State	Stores	Established
North Carolina	5	1969
South Carolina	3	1980
Florida	5	1986
Maryland	3	1990
Virginia	3	1996
New Jersey	2	1999
New York	2	2001
Massachusetts	3	2004
Connecticut	2	2006

The New England region has been established within the past 5 years, starting in 2004. With this rapid expansion, Martin's is facing increased competition with the already established department stores in these selected locations. Expansion of Martin's began in 1980 after the first establishment in Charlestown, North Carolina was proven to be successful.

Martin's has developed into a chain of mid-to-high range department store along the East Coast of the U.S. Since 1969, Martin's has created more partnerships with brands that they offer within each department store. Depending on the location and target market of the region, each location sometimes offers different brands. However, Martin's is known for offering exclusive brands to their valued customers.

Martin's culture was established around putting their customers first. In the past Martin's has been known of having dedicated employees who develop rapport and personal relationships with shoppers. Shoppers have appraised Martin's for their personal approach to the department store industry. Employees often remember their customers and assist in their shopping experiences. Through this assistance, customers at Martin's do not mind paying a higher price compared to the prices offered at discount department stores. Martin's has developed brand equity and a strong brand reputation over the years through their personal approach to shopping.

Martin's top level management focuses their employee training around customer relationship management. Below is exhibit 2; it highlights the percentages of shoppers who say their purchases are affected by the employees at Martins:

Exhibit 2: (from a 2007 survey down by Martin's Research & Development Department)

% of Purchases	Percent of shoppers who made purchases with help from Martin's Employee
100%	58%
75%	24%
50%	9%
25%	6%
0%	0%
TOTAL	100%

By providing customers with exclusive brands and a personal shopping experience, Martin's has been able to see a large number of repeat shoppers.

Since 1969, Martin's has adopted multiple forms of technology in order to generate revenues. They have a personalized barcode system used for purchases and returns. A 'loyalty' card is used to give customers discounts (and to track purchases). They also use an inventory scanning system to provide distribution centers the correct number of inventory counts currently in each store. These forms of technology have been assisting Martin's in providing an easy-to-use transactional and inventory replacement process.

Overall, Martin's has grown into a large department store chain on the East Coast of the U.S. Their experience and brand equity within the department store industry has helped them acquire partnerships with exclusive brands that attract more customers.

In 1969, the first Martin's Department Store brought in roughly $400,000 in revenues with a net income of $75,000. Since then, Martin's has established 27 other locations. Currently the corporation employees 6,000 people with 300 people working in their main corporate headquarters in North Carolina. The other 5,700 employees currently are staffed throughout each store location. In 2009, each store had revenues around $25.8 million. Therefore in 2009, the overall revenue for the entire corporation was approximately $875.4 million. Net income for Martin's Department Store in 2009 was reported to be approximately $40 million. Sales and net income have recently been decreasing at a rate around 2% since 2005.

Exhibit 3: (taken from the 2009 income statement for Martin's, covering the period from 2005 to 2009)

Year	Sales Revenue
2005	935,580,000
2006	918,037,000
2007	893,403,000
2008	881,279,000
2009	875,417,000

Currently Martin's top level management is looking to expand their reach into new locations. Their research and development department is busy analyzing future location prospects for their next store. They tend to focus their search around demographics and buying behaviors.

3. COMPETITION

In the mid 1960s, Macy's, Hudson's, and Marshall Field were the three biggest department stores in the U.S (in regards to sales volume and physical size). In the mid 1960s department stores tended to be many stories with several different departments. For example, a typical store location for Hudson's in the 1960s would be about 25 stories with 16 of them selling floors. In today's current department store industry, there are more competitors and each location tends to be smaller in physical size.

When Bill Martin opened his first Martin's Department Store location in 1969 much of the market was dominated by Macy's, Hudson's, and Marshall Field like previously mentioned. However, Bill Martin was determined to penetrate the department store industry with a competitive advantage and core benefit proposition for his department store. Martin wanted to grow into a department store that was known for providing a personal shopping experience while still supplying thousands of brands and products. The top competitors in the department store industry currently did not use this personal shopper management approach. Martin believed he would be able to take market share away from competitors, despite the small size of his store with his competitive advantage formula.

Currently with the rapid expansion of Martin's, the chain has been able to compete respectably with other department stores in the same locations. For example, in the North Carolina area, Martin's has 17% of the market which is filled with 12 other competitors (6 of them being national retailers including: Sears, Macy's, JCPenney, Kohls, Target, Dillards). This is a significant amount of market share compared to competitors in the mid-to-high end department store chains. Exhibit 3 shows the distribution of market share within the North Carolina region for mid-to-high end department stores:

Exhibit 4: (represents the market share associated with each mid-to-high end department store in North Carolina).

Store	Market Share in North Carolina
Macys	19%
JCPenney	18%
Martin's	17%
Dillards	16%
Target	11%
Sears	7%
Others	13%

With the current economic crisis, discount department stores have also caused increased indirect competition for Martin's. More people are looking for more affordable shopping outlets to make their purchases. These locations include dollar stores, Wal-Mart, Target and K-mart. Also the increase in online shopping since 2000, has caused more indirect competition for Martin's. Although Martin's does have an online shopping option, they really want customers to come into the stores to get the right fit, style and the personal interaction.

4. MARTIN'S CUSTOMERS

Martin's Department Stores have attracted a wide range of customers. The average customer tends to have an annual family income of over $75,000. Martin's attracts the customers that want to spend the extra money on exclusive brands. Through the higher prices that Martin's tends to offer, shoppers also want to get personalized attention from trained employees. Most of Martin's customers who shop frequently live between 0-45 miles away from a store location. Customers tend to be in the age range between 30-60 years old. This age range represents the adults who still are working and have disposable income from their careers. Customers of Martin's are generally married, have children, a house, or are single and just beginning their professional careers and want to 'dress for success'. The customers at Martin's extend to children, males, and females. Females make up 70% of the purchases made, while males make up remaining 30% of the purchases. Most of Martin's customers are brand loyal and often only choose to shop at their locations compared other mid-to-high end department stores.

Originally, Martin's believed the current economic recession was the reason for the decrease in sales. However, Martin's research and development department had surveyed customers and found that the recession was not the reason customers were turning away from their favorite department store. In general, customers that shop at Martin's still had their jobs and were not affected by the poor economic conditions. Through research, employees found out that some loyal customers were no longer making purchases at Martin's because of decrease in customer service in the stores. Repeat purchasers have slowly decreased as well since 2005. Exhibit 5 shows the percentage of shoppers that plan on coming back for future purchases to Martin's.

Exhibit 5: (referring the percentage of once loyal shoppers who plan on coming back to Martins)

Year	% of Shoppers who will return in the future
2005	98%
2006	92%
2007	87.5%
2008	80%
2009	77%

By analyzing this data it draws attention to a major concern that Bill Martin and his marketing department need to address. Martin's was established on its core benefit proposition as being a personal customer service department store. That is how the company originally took market share away from national department store chains. Brand equity and Martin's core benefit proposition are being ruined at the expense of expansion. Through expansion it has been harder for employees to establish and keep personal relationships with shoppers that help drive sales. Bill Martin is hesitant to slow the company's expansion plans but knows if his marketing team and himself do not address the current issue, then the future of his department chain could be in jeopardy.

5. THE DAY AFTER LABOR DAY MEETING

After the long weekend, the board got together. There were a variety of suggestions – including new slogans, different advertising emphasizing the 'personal touch' of Martin stores.

The most interest suggestion came from Rich Ferguson, CIO. His suggestion was to install a Facial Recognition package.

He went on to explain the following:

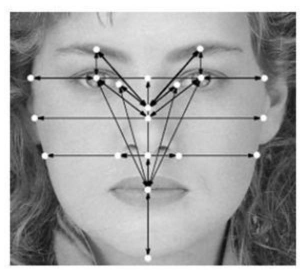
Facial recognition technology is believed to be the most powerful technologically advanced security solution to date. It is also one of the most widely used security systems currently which has been integrated mainly into the corporate and government sector. Facial recognition technology is based on the "no human touch" technology. This technological innovative invention provides the ultimate form of security because individuals are free from the threat of buddy punching.

In straightforward form, a facial recognition system is a computer application that automatically identifies or confirms an individual from a digital representation or a video frame. Once an individual's image is uploaded to the programmed database, a file regarding their personal information is stored. Stored information can be anything pertaining to what the company is using the facial recognition technology for. Like previously mentioned, facial recognition technology is typically used for security purposes. Identifying individuals in the past tended to be through fingerprints or the eye iris recognition technology. The United States government has utilized facial recognition in airports and border stations very successfully. It even has been used at the Superbowl to scan attendees against the FBI criminal database and Department of Homeland Security database of potential terrorists.

A facial recognition system works by using algorithms to identify faces by extracting facial features from an image of the individual's face. An algorithm can examine the relative size, position, and shape of the individual's eyes, nose, jaw, ears, or cheekbones. Once the features are indentified in the computerized database, a search begins. The search process involves looking for other images with matching features. A gallery of facial images is filed on the company's database and searched through to find matching features from the image being analyzed. Then the probe image is compared with the facial data provided. Once there is a facial match, personal information pertaining to that individual is released. An employee in a company can access the information retrieved on an individual through the facial recognition software.

Generally the computerized program that recognizes the individual's faces is in the form of what looks like a security or video camera on a ceiling. People tend to forget that this feature is even present in a company once it is installed. Like mentioned before, this type of technology is mainly used for security purposes and has recently been used for government processes including border control. Large corporations create a partnership with a facial recognition technology provider and install this feature. Once the feature is installed the company is allowed to use the information retrieved through the database of facial images for whatever purposes they desire as long as it does not go against the law or human rights.

With the recent launch of this new technology, there has been mixed feelings about its use from the general public. This technology is still new to the market and is not perfectly reliable for use. It sometimes is unable to perform in certain conditions which might lead to problems for the company using the service. Facial recognition technology has a hard time of recognizing individuals when there is only a profile view of them. Therefore, unless there is a full frontal image, the technology is sometimes unable to identify an individual and cannot perform the identification service. Lighting, clothing that covers a face, sunglasses, long hair, and other objects are conditions that affect the results of a facial recognition test. Facial recognition technology is also criticized as being an invasion of privacy. People have spoken out about their concerns regarding the involuntary submission of their faces to a company-wide database.



Despite the concerns and problems that might arise from using a facial recognition technology; there are also many advantages. Security and the ability to recognize individuals are much easier by using this technology. Like previously mentioned this technology does not allow buddy punching to occur. It is also a quick and effortless way to identify individuals. Employees no longer need to physically identify individuals as they enter or exit a company's location. This will reduce the cost of paying wages for employees and eliminates the chance that an employee might make a human error during an identification process.

Despite the benefits or concerns in regard to this new technology, more companies are adopting this system into their business processes. As more companies adopt this technology, technicians and researchers will be able to perfect the problems that relate to the use of the technology.

6. CUSTOMER RELATIONSHIP MANAGEMENT

The board was very interested in this technology. Bill Martin thought about the affect it could have on his company's customer relationship management. CRM is a term used to describe methodologies, software, and usually internet capabilities that help a company manage customer relationships and interactions in an organized way. Sometimes CRM is used to organize, computerize, and synchronize business processes for activities that include marketing, technical support, customer service and others. The goal of CRM is to attract new customers and make them brand loyal. This system helps matching customer needs with product plans and offerings, remind customers of service requirements, and know what other products a customer had purchased.

Bill Martin asked Iva Lacey, the Vice President of Customer Support if she thought that facial recognition technology might improve his customer relationship management. Due to expansion, customers felt there was a decrease in Martin's personalized customer service and therefore went to other department stores for their purchases. Bill Martin had to find a way to combine both his growth plans with a plan to improve his customer relationship management on an organizational wide level. Brand loyalty helps increase profits which is why CRM is an important methodology to any successful company. Martin's brand loyal customers will continue to decrease if top level management did not improve their CRM.

Iva was in favor of further study, but wanted to make sure the technology didn't negatively impact the customers.

Bill (and the others) asked "What could that mean to us?"

Rich explained farther. "We already have a sophisticated customer database with a history of purchases, sizes, colors, etc. Picture this: Jane Doe, a customer walks in to one of our stores. Our security camera at one of our entrances picks up their image and runs it through the image database until we get a hit. If it is an existing customer, great – and if not – we'll just have to work on making them a customer with us. Jane's data will be available on all customer service screens (but screened from customer viewing). As Jane comes into one of our departments (say women's wear), a customer rep can quickly scan the current customer's images and identify this as Jane – and quickly get the basic information on Jane.

The rep (say Susie Salesperson) approaches Jane and says "may I help you?". But from that point the customer experience is different. Without being too overt, Susie might point out some styles that are similar to what Jane has purchased in the past. She will directly go to the right size for Jane. We could also build in an artificial intelligence aspect that could have Susie suggest some additional accessories – shoes, sweaters, etc. Jane would get a superior experience – and excellent customer service – and (after spending money with us) walks away very satisfied and will tell her friends how Martin's really gave her great service.

Bill and others had a lot of questions:

- "What will that cost?"
- "Won't that be an invasion of privacy?"
- "Will the customers know that we are photographing them?"
- "Would this really work?"
- "Would you do a trial run first?"
- "How would our sales associates like it?"
- "Will we have to have new computers at the sales counters?"

- "Will we need new servers?"
- "What if a customer is visiting another one of our stores?"
- "What about new customers?"
- "What training will we need to give to sales representatives?"
- "How will we know if it has been successful?" (like ROI – and how quickly)
- "What if there is a negative backlash on this?"
- "Will there be other notes in the system – like 'I showed Mrs. Smith this outfit, and she said she would come back tomorrow' or 'Mrs. Smith liked this outfit, but wanted it in a different color' or 'Mrs. Smith shared that they were moving to Roanoke Virginia – make sure our store there is ready for her'?

Rich did have answers for most of the questions. What would be your answers?

7. STUDENT CASE STUDENT QUESTIONS

1) Should Martin's move towards adopting a company-wide facial recognition technology?
2) What are the pros and cons of adopting a facial recognition technology (in terms of marketing/customer service)?
3) What can top level management do to alleviate some of the fears employees or customers might have associated with the facial recognition technology?
4) What are the benefits of having top level management focus part of their organizational-wide structure on customer relationship management?
5) Is there another way to improve their customer relationship management and save their brand loyal customers (instead of adopting facial recognition technology)?
6) Are there any other types of technologies or IT related ideas that Martin's could use to stop their sales from decreasing?

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