Information Systems at McDonald’s

This case was written by Koti Vinodbabu, under the direction of Debapratim Purkayastha, IBS Hyderabad. It was compiled from published sources, and is intended to be used as a basis for class discussion rather than to illustrate either effective or ineffective handling of a management situation.
Information Systems at McDonald’s

McDonald’s Corporation (McDonald’s), a US-based global hamburger and fast food restaurant chain, had installed several Information Systems to for the operational convenience of its employees and to help them in their decision making. It had implemented these information systems to store and leverage customer information, provide quick service to the customers, impart training to its employees, etc. These systems were used to make it more convenient for customers to buy food through electronic payments. Also, an effective customer relationship management strategy was implemented to retain customers. The information systems were also used to generate timely reports about the HR, finance, sales, and production departments. Analysts felt that McDonald’s required a proper data security system to safeguard its information and the staff needed technical expertise to repair the systems in case of breakdowns. They also contended that McDonald’s needed to upgrade the information systems to keep up with the changes in the buying behavior of customers.

ABOUT MCDONALD’S

As of 2017, McDonald’s was one of the world’s largest restaurant chains. The company had its roots in a small fast food joint started by two brothers named Richard James McDonald and Maurice James McDonald in San Bernardino, California in 1940. A businessman Ray Croc was associated with the rapid growth of the fast food retail chain in the US and globally in the subsequent years. It took 33 years for McDonald’s to open its first 10,000 restaurants. While it touched the 20,000-restaurant mark in mid-1996, the total surpassed 23,000 by the end of 1997. McDonald’s celebrated its 50th anniversary on April 15, 2005.

According to a 2012 British Broadcasting Corporation (BBC) report, McDonald’s was the world’s second largest private employer with 1.9 million employees – 1.5 million of them working for franchises. McDonald’s had segregated its revenues into four sections: the United States, Europe, the APMEA (Asia, Pacific, Middle East, and Africa segment), and other countries (i.e. Canada and Latin America and corporate sales). McDonald’s functioned through numerous formats including standalone restaurants, drive-thru, 24/7, McDelivery, Web and Mobile ordering, and Breakfasts and Dessert Kiosks. The menu featured burgers, finger foods, and wraps, hot and cold beverages and also desserts. A number of the McDonald’s restaurants featured an in-house McCafé. By December 2016, McDonald’s was serving around 68 million customers daily in 120 countries through more than 36,899 outlets. It posted revenues of US$24,622 million for the year ending December 31, 2016 (Refer to Exhibit I).

INFORMATION SYSTEMS AT MCDONALD’S

McDonald’s controlled many of its self-operated and franchised restaurants globally, managing the marketing, restaurant operations, HR, real estate development training, as well as quality control. As a consequence, the network was huge and the amount of information was massive. The company encountered many challenges in developing and preserving the information needed for effective decision making. To solve this problem, McDonald’s developed Information Systems to maintain and leverage the customers’ information across the globe.

*a The British Broadcasting Corporation is the public service broadcaster of the UK.*
Made for You System (MYS)

MYS was introduced in McDonald’s restaurants in 1998 across the US. MYS was employed to enhance efficiency and safeguard customer contentment. It served as a communication gateway between the cash counter and kitchen staff. When an order was placed, the cashier input it into the system and it appeared on the computer screen in the kitchen as there were different workstations in the kitchen such as grill side, chicken side, fries, etc. Thanks to MYS, the kitchen staff had to just check the computer screen to commence their work for the order. This saved on the total time taken to deliver an order.

MYS allowed storing information about the quantity of each product sold, and the hours of a day in which a particular item was getting more orders. This data was used to estimate the number of orders and get items ready to serve. MYS was also used to raise the output of the staff and to ensure customer satisfaction by delivering fresh food. MYS facilitated better communication between the front staff and kitchen staff in such a way that the meal was prepared after the customer placed an order rather than being prepared before the customer ordered so that the meal could be delivered to the customer within a short time.

Points of Sale System (POS)

In 2008, McDonald’s launched a POS called NP6 to serve the specific needs of customers. McDonald’s developed it to manage supply chain and staff efficiency and to quicken customer services. The POS consisted of a customer operated touchscreen. There were images of the food items, which were easier to identify, and which were used instead of the abbreviations of items in the old system. NP6 could also calculate the exact amount of change to be given to a customer. There were different menus loaded on the screen for different situations, as for instance, breakfast, lunch, favorites, and discounts for its employees. Once the orders were placed on the NP6, they were instantly sent to the kitchen. The customer waiting time also was displayed on the kitchen computer screen.

Analysts opined that McDonald’s employed the POS to ensure maximum customer satisfaction by letting customers order quickly with minimum error. POS could classify data into type of sales, taxation status, and inventory levels. However, in most cases, POS required manual data entry and it required electronic payment to be made by the customers. POS stored and processed vital information of the customers and it transmitted information to the company’s main servers, which facilitated decision making by the top management. Analysts pointed out that POS was intended to present exact ordering data of the customers which would remove the possibility of inexperienced staff understanding something wrong. POS was targeted at reducing the possibilities of error by the staff.

McDonald’s had designated eMac Digital LLCb (eMac) to develop the POS. Wayne Wolf, President of eMac’s Restaurant Technology Solutions division, commented, “We’ve been successful in deploying our NewPOS software within a number of McDonald’s markets outside the United States and that certainly gave us credibility in McDonald’s next generation selection decision, Today, NewPOS is a great fit for restaurant companies with international operations that require local country flexibility while maintaining core standards.” Nilo Mismetti, President of eMac’s NewPOS subsidiary and the original architect of the NewPOS system, added, “NewPOS can help customers improve operating results, reduce ownership and support costs and simplify deployment.”

Hyperactive Bob System (HBS)

HBS was an information system which provided important information to the employees of McDonald’s (Refer to Exhibit II). HBS consisted of roof mounted video surveillance cameras and monitors connected to them. The cameras were installed outside the restaurant and two monitors

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b eMac Digital is a US-based technology solutions provider for the restaurant and retail industries.
were installed at different stations inside the kitchen and one screen in the office. The cameras scanned incoming vehicles and the visuals were conveyed to all the screens at once. After watching the customer traffic, the staff and kitchen employees would estimate the number of orders.

For instance, if there was a visual displaying a vast number or cars coming in the ‘drive in through’ section, the kitchen staff would ensure that they were prepared and could serve the orders as soon as they came in. They would make sure that there was an adequate supply of food ready for the orders. In certain cases, employees were assigned responsibilities according to their speed and aptitude to perform in a busy setting. HBS was used to find the number of cars that had gone through the ‘drive in through’ section or were parked in the parking lot. This information was used to estimate the amount of business on similar days or in similar situations in future. According to The Associated Press, “The system uses rooftop cameras that monitor traffic entering a restaurant’s parking lot and drive-through. Currently, the system is all about volume: If a minivan pulls in, there’s apt to be more than one mouth to feed.”

**Touch Interface Ordering System (TIOS)**

In 2011, McDonald’s replaced many of the cashiers at its 7,000 European restaurants with TIOS which had touch-screen stations that permitted customers to order and pay electronically. Analysts felt that this strategy of McDonald’s made consumers’ experience at the fast food chain similar to their experience at supermarkets, gasoline stations, and retailers that had resorted for self-checkout to save on labor costs and that this decision was being driven by profit margin apprehensions. Experts opined that this would help McDonald’s to stabilize menu prices and to enhance the appeal of its restaurants to customers. By implementing a swipe payment system, McDonald’s was also able to collect information about its customers, such as their ordering habits and which items would sell more in which region.

In TIOS, for instance, customers could personalize their orders by selecting a bun and a protein and adding different toppings like grilled onions. According to a spokesperson from McDonald’s, “We are finding that customers are enjoying the whole experience — including the kiosks that allow customer to customize their sandwich with their choice of bun, protein, and additional ingredients. Also, there are McDonald’s crew members to help guide their experience with the kiosks if needed.”

**Transaction Processing System (TPS)**

TPS referred to the system of data collection from a transaction (Refer to Exhibit III). It involved collecting, storing, modifying, and retrieving the transactions of an organization. It helped to maintain employee and supplier records. Each time McDonald’s procured raw material from its suppliers, TPS recorded the pertinent information such as supplier name, address, the quality of the items acquired, the date of purchase, and the invoice amount. At McDonald’s, TPS was used to collect and scrutinize the information that was produced during the day to day transactions. TPS also helped McDonald’s to maintain information about its suppliers. Analysts opined that TPS helped McDonald’s in decreasing the probable complications that the employees might encounter in maintaining the customer and supplier records.

**Customer Relationship Management (CRM)**

CRM was a vital instrument for contemporary businesses. It could develop a company’s relationship with its customers, help to get in new prospective customers, and support in increasing profits. McDonald’s aimed at a steady customer relationship throughout its restaurants. For this purpose, it used a method which delivered superior data collection, faster reporting, and speedy issue resolution. It implemented a program called PowerCenter, provided by Astute Solutions
d. This software facilitated a data internment and information database which could be used to control and measure the customer relationship in all its franchises.

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*Astute Solutions is a US-based software company that deals with customer service and knowledge management software for consumer-centric medium and large companies.*
The PowerCenter software carried the data from all over the company and contained both positive and negative evaluations about the operations of the company. By evaluating the restaurants by region or individually, McDonald’s could rapidly find prospective customer relationship issues and resolve them before they became major problems. The information containing the key results of the company’s operations was distributed to the management quickly. Christopher Garrity, senior director, Customer Satisfaction at McDonald’s, commented, “We have more than 15,000 restaurants just in the U.S., and ePowerCenter provides us the ability to integrate into our CRM system. This combination of databases gives us the power to measure customer satisfaction results both from the national level, right down to the individual restaurants. Ease and flexibility make ePowerCenter the perfect choice for McDonald’s.”

**Office Information system**

The office information system was essentially an information system that leveraged a collection of hardware, software, and networking systems to develop the workflow and improve communication among the employees in what was known as office automation. Computers were used to complete tasks and gather information in the place of manual activity. The vital information such as emails and official papers were sent to a group of employees at once to save time. Analysts felt that McDonald’s made effective use of different electronic devices such as computers, networking devices, cameras, electronic order screen, etc. as part of the office information systems.

**Management Information System (MIS)**

MIS provided the required information to the management to run the organizations successfully and increased productivity and efficiency. The MIS at McDonald’s was used to make periodic reports on the number of employees and the hours they worked, or a monthly report of expenses. McDonald’s used MIS to provide information to managers and staff to help them in designing future strategies. There were different departments in McDonald’s for generating the reports concerning the MIS such as the human resource department, financial department, purchasing department, and sales and marketing department.

The HR department emphasized reporting about the levels of staffing, skills, and absenteeism, as well as shortage of human resources. MIS was also used to create periodic reports such as a daily list of employees and the hours of work performed by them or a monthly report of the total expenses incurred by the organization. The financial department concentrated on the different reports vis-à-vis accounts and payroll. The purchasing department focused on the stock selection and orders and the sales and marketing department generated reports regarding the sales ratios, turnover, and market intelligence. These reports evaluated the overall performance of the company that could help in the future decision making process. Apart from these departments, MIS was used in Inventory Management, Technical Foundation, Asset Management, Forecasting, Time and Expense management, Procurement etc. The information based on the decisions made by MIS system was used to guide the employees and staffs by letting them know what to expect and how to handle different situations.

**Business Intelligence (BI)**

The network of McDonald’s restaurants produced millions of transactions pushing McDonald’s to adopt business intelligence. McDonald’s had established a BI strategy known as the ‘Plan to Win,’ with the key metrics revolving around place, people, products, and promotions. McDonald’s had put up queries and scorecards for anonymous shoppers at its various locations. It had also set up a toll-free phone number for customers to talk about their experiences at McDonald’s like good or bad. Julio Ortiz, senior director of IT business intelligence at McDonald’s, commented, “We needed a way to accurately measure the customer experience. We wanted to review everything from top to bottom from an internal perspective.” McDonald’s used 130 metrics to produce 80 different reports.
McDonald’s had associated with Fujitsu Australia Software Technology Ltd. (FAST) in 2004 using an ETL (Extract Transform Load) and business intelligence system (eOPS) to store and evaluate the millions of records collected by McDonald’s throughout its network. FAST had chosen the Microsoft .NET framework due to its extensiveness, its backup material, and its strong web application architecture which suited the McDonald’s IT infrastructure. The .NET framework was incorporated with the Windows and Active Directory network domains at McDonald’s. The eOPS application was initially installed in Australia and New Zealand and later extended globally. It had the flexibility to operate with any language, date format, or currency.

**Decision Support System (DSS)**

DSS was a system that supported management in making resolutions about business strategies by analyzing data and taking appropriate decisions. McDonald’s leveraged DSS to analyze the competition and framing business strategies (Refer to Exhibit IV). The main objective behind DSS was gaining competitive advantage over other fast food companies by evaluating their strategies and choosing the best course of action required to maintain a leading position. McDonald’s facilitated independent data management at its franchises, so that it could accumulate the data about the customers’ usage of services, length of stay at the restaurants, deals utilized, etc. by connecting the main server to the franchise systems. The DSS would inspect the information and provide the inputs for further developments in the respective franchise. McDonald’s maintained accurate information about purchasing inventories as DSS would collect the information from external sources such as product, price, competitor, and demand.

**Nintendo DS System**

Earlier in 2005, Nintendo had associated with Wi-Fi provider Waypoint and McDonald’s to offer free DS Wi-Fi hotspots in McDonald’s restaurants. The Wi-Fi service was offered free for Nintendo DS owners who were playing Nintendo’s games in McDonald’s restaurants. McDonald’s launched a program in 2010 in Japan using the Nintendo DS devices. McDonald’s had developed a software for the Nintendo DS that used the stylus as an input device to train employees in several kitchen jobs like deep-frying vegetables and how to behave with customers. Since the Nintendo DS console was popular in Japan, McDonald’s used the consoles in the training to make it more effective. It thereby shortened the duration of training to half the earlier duration. The plan was such that each restaurant would be given two Nintendo DS consoles along with the software package of McDonald’s. And the training program was designed in such a way that it would save on the duration of training.

The training program was called “eSmart” and cost McDonald’s 200 million Japanese yen or about US$2 million. According to McDonald’s blog, “Nintendo DS system is an e-learning training tool used for the new employees in the staff, this system used to train the new employees and put grades for their performance, so they compare between the employees. This system has many advantages such as using less paper and provides such fun to the work environment for the employees and also let the employees to get more experience.”

**CHALLENGES**

Analysts felt that erratic electric power supply would pose a challenge to the functioning of the McDonald’s restaurants as the total information systems relied on power supply. Another challenge was the staff lacking technical knowledge in case of information system failure. For

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d Fujitsu Australia Software Technology is an Australian based e-Services organization.

e ETL is a process in data warehousing which gets the data out of the source systems and places it into a data warehouse.

f The Nintendo DS is a dual-screen handheld game console developed and released by Nintendo.

g Stylus is a computer accessory for marking or shaping on a touch-screen of a computer.
instance, McDonald’s POS application ran on SCO Unix\(^h\) which was highly technical and difficult for the staff to understand. The McDonald’s employees would need access to Windows business productivity applications for efficiency of operations.

Due to the absence of IT staff on site and lack of technical knowledge on the part of the staff, the maintenance of systems was a costly affair. Analysts opined that by using a faster broadband connection, McDonald’s could reduce the time required to process card payments from thirty seconds to just four seconds. McDonald’s could also introduce Radio Frequency Identification (RFID) tagging in its supply chain management system which would be beneficial for the company to maintain its massive supplier data. Another concern was data security and danger from hackers who stole information from the systems. Furthermore, there would be differences among the countries such as the language, Internet connection speed, as well as custom-made and adapted information systems. Analysts felt that implementation of Information Systems would create a sense of job insecurity in the employees as automation would replace the manual operations. They also contended that execution of Information Systems was a costly affair and needed huge budgetary allocations.

**THE ROAD AHEAD**

McDonald’s used Information Systems to increase efficiency and deliver quality food to its customers with advanced technology so that the food would be fresher, tastier, and hotter each time they delivered it. The Information System was also leveraged to decrease the effort, cost, and time involved in the procedures. Analysts felt that McDonald’s had the capability to sustain its customer base and entice more customers by using Information Systems as it was adopting new tools and styles of management. Analysts felt that with a combination of well-trained staff and updated technology, McDonald’s could leverage the Information System to the optimum in future.

It would also be important to McDonald’s to develop the security and privacy issues of the information of the company in order to ensure that no confidential information could be stolen. Analysts suggested that anti-virus and firewall applications be upgraded on a timely basis so that there would be no illegal or unauthorized entities accessing the files and data of the company. Mark Fabes, director of IT and digital at McDonald’s Restaurants UK, commented, “Our customers have technology at their fingertips and expect to engage with our business using technology. How do you make the experience seamless and exciting at the same time? We’re not doing it in isolation – we’re trying to join it up in a digital ecosystem.”\(^10\)

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\(^h\) SCO UNIX was the successor to the Santa Cruz Operation's variant of Microsoft Xenix, derived from UNIX System V Release 3.2 with an infusion of Xenix device drivers and utilities.

\(^i\) Radio-frequency identification (RFID) uses electromagnetic fields to automatically identify and track tags which contain electronically stored information attached to objects.
Exhibit I

Key Financials of McDonald’s

(Amount in US $ Millions)

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<td><strong>REVENUES</strong></td>
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<tr>
<td>Sales by Company operated restaurants</td>
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<td>18875</td>
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<td>Revenues from franchised restaurants</td>
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<td>Total revenues</td>
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<td>7146</td>
<td>7949</td>
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<tr>
<td>Net Income</td>
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<td>4529</td>
<td>4758</td>
<td>5586</td>
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*For the years ended December 31.

Source: http://d18rn0p25nwr6d.cloudfront.net/CIK-0000063908/62200c2b-da82-4364-be92-79ed454e3b88.pdf

Exhibit II

Hyperactive Bob System at McDonald’s

Source: http://mcdonald11.blogspot.in/p/how-information-systems-are-helping.html
Exhibit III
Transaction Processing System at McDonald’s


Exhibit IV
Decision Support System at McDonald’s

Source: https://prezi.com/mujxzhq4nqmu/copy-of-mcdonalds-information-system/
End Notes:

1. Randy James, “A Brief History of McDonald’s Abroad”, www.time.com, October 28, 2009
3. Ibid.