Tesco : POS System

Business Informatics

Assignment

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Tesco Plc.

Tesco is Britain's leading food retailer and the third largest in the world. Its first store was opened in 1929 in London and by the early 1960s Tesco was a familiar feature of most UK high streets. After joining the eighties trend for large out-of-town supermarkets, in the 1990s the company started pioneering many new innovations. It developed new store concepts such as Tesco Metro, a city centre store meeting the needs of local shoppers, and Tesco Express, the first UK petrol station convenience store. In 1995 the company introduced its ClubCard, the UK's first customer loyalty card, and two years later formed a joint venture with the Royal Bank of Scotland to offer a range of financial services. 2000 marked the start of Tesco.com which was built on the back of existing stores and, with low capital spend, was profitable from the start – a key internal requirement. Tesco's international operation, which started in 1994, has steadily expanded and now accounts for half of its total retail space. Since 2000 there has also been an increasing focus on building non-food sales both in store and online with the result that, for example, Tesco is now the UK's largest CD retailer.

Innovation in Tesco is seen as key for its customers and also to its business. As such the company focuses equally on product as well as process innovation. Core to Tesco's innovation success has been its focus on managing margins. Right from the start the company's obsession with efficiency has been used to keep prices low and, in 2007, Tesco managed 1.8% deflation across its product lines. The company has also focused on making the shopping experience as easy as possible for customers – be it in hypermarkets, small stores or online. Tesco Express has led the move of food retailing back into the community and Tesco.com now generates sales of more than £700 million and profits of more than £35 million for the business. In the UK, the service reaches 96% of the population and handles more than 170,000 orders a week.

Like some of its peers, Tesco also aims to improve service and provide better value rather than concentrate on pricing alone. These principles are carried across the business into non-food, services and its international operations. To enable this, the company pays considerable focus on harnessing the creativity of its workforce and encourages staff to come forward with ideas. The company's prowess in process management applies just as much to its idea management as it does to logistics and store layout.

Role of Information Technology in Tesco's Success

Information Technology systems have played a key role in helping Tesco deliver strong profits. Without The Tesco website, in which it has invested heavily in during recent years, saw profits leap by 21 per cent to £48 million, on the back of an almost equal percentage sales rise. Online grocery orders lifted by 10 per cent to £7.5 million.

Praising the success of its web sales operation, Tesco said it will open a second "dot.com only" store next month, in Kent, which will solely exist to pick online orders. This follows the success of its Croydon online store, which serves much of south-east London and is now trading at over £1 million per week. Tesco overall operating profits grew 9 per cent to £1.4 billion in the six months to 23 August, on the back of £28.1 billion revenues. It said its broad base of items on sale, as well as its extensive geographic reach, had kept profits strong.

Advanced in-store queuing systems had improved shopping for 26 million of its customers by reducing checkout lines, Tesco said. The supermarket chain is using heat-sensing technology to monitor lines at tills. It also said improved scanners, better self service tills, and checkout cameras were helping it reduce queues. Self-service checkouts now account for a fifth of all of Tesco transactions. Having invested heavily in its supply chain, Tesco said on-shelf availability, measured through the in-store picking of tesco.com orders, had also been strengthened. Tesco has an ongoing efficiency programme, known as Step Change and involving IT improvements as well as general process efficiencies. The programme is on course to deliver savings of £450 million this year, Tesco said. The supermarket has already taken steps to ready its technology for the Christmas sales peak, implementing ExpeTune performance management software from Macro 4 to manage its mainframe servers.

POS System- Overview

In this report I have chosen to study Tesco's Point Of Sale (POS) System. Point of sale (POS) (also sometimes referred to as Point of purchase(POP)) or checkout is the location where a transaction occurs. A "checkout" refers to a POS terminal or more generally to the hardware and software used for checkouts, the equivalent of an electronic cash register.

A POS terminal manages the selling process by a salesperson accessible interface. The same system allows the creation and printing of the receipt. When a customer would like to purchase an item or pay a bill a POS system is extremely useful to register the purchase, keep track of inventory, purchase details such as time, date and store location and input all this data into a database which then can be used for data mining purposes. POS systems have changed the face of business. Now, Tesco can easily keep track of what products customers buy. The business can keep data of all purchases and compare this data from a year earlier or other stores that they own within or outside of a region.

POS systems usually work via infrared bar code readers, a register and bar code reader are hooked into a computer terminal. For instance, when you go to a Tesco supermarket, you place your items on the conveyer belt, the register assistant then scans your item with the use of the infrared bar code reader. At this time, you see the price of the item and it is added to the total of all items purchased, however on the backend of the system, lots of data including all the information about the product (the price, size, brand name, etc) and the time and date of the purchase is recorded onto the computer for later analysis.

With POS systems everybody wins. The consumer wins because the check out is fast, reliable and accurate. The retailers win because they are able to keep track of sales easily, inventory and have tons of data available for further analysis.

Tesco EPOS System

With Retalix StoreLine, Tesco found a single POS platform that works in any store format, in any country. Retalix software is installed in Tesco stores throughout Europe and Asia, and installations will continue as Tesco expands globally. With its seamless support of local language, currency and fiscal requirements, Retalix Store- Line helps Tesco bring stores up to speed quickly, avoiding what could be an arduous and lengthy configuration and customization process. Not only did Retalix StoreLine help Tesco avoid hardware replacement costs for 32,000 POS lanes, but the company estimates that Retalix StoreLine will extend the life of the POS hardware.The Retalix StoreLine POS solution is integrated with the Retalix back office system, including Cash Office, Receiving, Inventory Management, and Shelf Labeling. The complete system streamlines store operations and inventory management, thus allowing employees to spend more time on the sales floor, providing better service to customers. The mobile solution Retalix PocketOffice™ for handheld devices is fully integrated into the system, and is used for receiving and counting stock, enabling employees to update critical information from anywhere in the store. In addition, the Retalix Fuel™ module connects and manages the forecourt as a pre-integrated solution with the in-store POS.The new Retalix solution will helped Tesco improve availability and price integrity in its stores across the world.

POS systems continue to become more powerful in Tesco. With its customer loyalty rewards program “Clubcard”, Tesco can now keep track of their customers by starting customer . Most supermarket customers join the rewards programs and they receive a small key fob with a barcode to distinguish them in the computer. Now supermarkets are not only able to keep track of which items are purchased, but who purchased them. These innovations have made marketing to customers extremely focused and profitable.

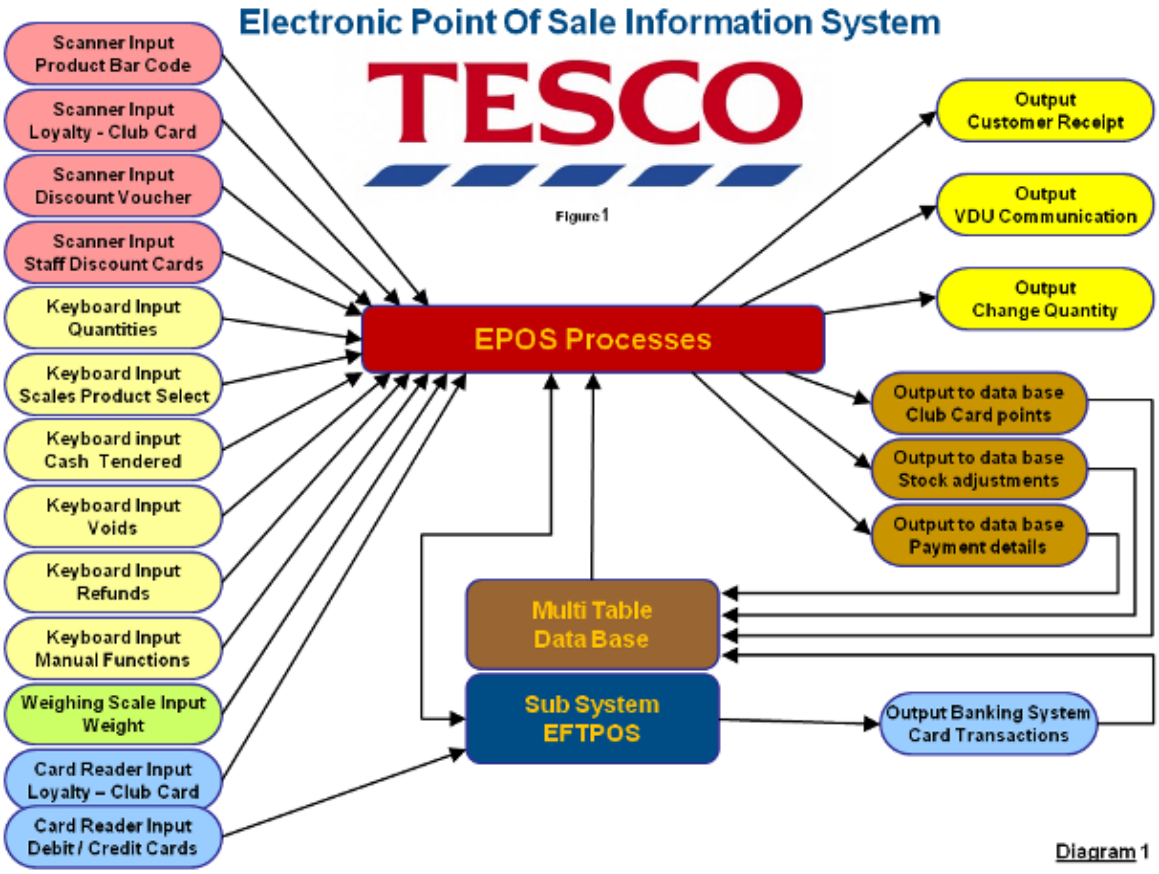
Bar Codes are part of the POS process. A bar code is a bunch of vertical lines that an infrared reader can read and interpret as data. The bar code includes a UPC number which stands for Universal Product Code. Most items that are sold in a retail environment have their own UPC so they can be purchased and tracked efficiently by the POS and computer system. Besides bar code readers, a UPC can also be input directly into the cash register or computer. Sometimes if a bar code is unreadable, the assistant will manually input the code using a keypad.

Tesco: Success through EPOS

Through automating the POS system, achieving organisational objectives has been made easier and more efficient for Tesco. By eliminating the functions at POS, the staff can now deliver more accurate calculations and they can now shift their focus into serving the customer better from accuracy of operations. Also doing so has helped Tesco manage all its branches more cost effectively. By cutting down such costs, Tesco could provide better service quality to customers without increasing the prices of products. Additionally, with the introduction of ClubCard, customers were offered extra value for staying loyal to Tesco through collection of points for purchases. These points could further be collected to redeem exciting gifts by the card holders. From Tesco's point of view, it gets loyal customers and can track consumer behaviours.

Tesco has installed the Axiohm A756, the revolutionary hybrid printer designed specifically for the point-of-sale market. The development of EFTPOS in the Retail area has been reflected within the financial and banking sectors, allowing retailers to transfer money from the customers bank account or credit card automatically. This brings increased purchasing freedom for shoppers whilst providing retailers with increased opportunities for sales, with the two main developments being the debit card and 'cashback' facility, at the point of sale. The smooth and almost silent thermal printing of the A756 at 18lps provides receipts quickly and efficiently.

Input, Process &Output



Input

At Tesco's POS system, there are multiple inputs through scanners, keyboards, weighing scale and card readers. The inputs through infra red scanners are : product barcode, staff discount card, discount voucher and loyalty card. Keyboard is used to give other inputs like quantities, scales product select, cash tendered, refunds, manual functions and other voids. For billing products that are priced based on weight, there is a weighing scale input. Card readers are used to read debit/credit cards for bill payment and for reading and adding points to loyalty card.

Processes

Conversion of the collected input into desired output is termed as processing. Tesco uses Electronic Point Of Sale (EPOS) system and Electronic Funds transfer POS (EFTPOS) subsystem for generating the desired outputs. A number of processes are performed by EPOS System. The input and output devices are linked to the EPOS system.

The products are scanned using the barcode scanner. Each products barcode is identified by the barcode scanner software. The scanner reads the barcode and transfers this into electrical pulses. The software then reads these signals and converts them into readable text. The readable text is then used to find and display the product on the customer and operator displays. This process only takes a few milliseconds to complete.

As the products are being scanned, the computer totals up the price of the products. Once all of the products have been scanned, the computer then carries out the necessary calculations, deductions, special offer deductions, etc. to the total. The computer refers to the branch server to check for the special offers which may be in effect and any products which have been lowered in price.

Once the total has been calculated, the customer has 3 different options. These are: provide Clubcard details, pay by cash or pay be card. If the customer has a Clubcard, then this is usually what is provided at this stage. The Clubcard is linked to the transaction by swiping the magnetic stripe on the back of the Clubcard through the card reader.The card reader will pick up the magnetic signals and register the customer to the transaction. The computer will generate the amount of points that should be added to the Clubcard for the transaction.

The customer now has two different methods of payment. These are: pay by cash or pay be card.

- If a cash payment is made to a cashier checkout then the customer would hand the money to the cashier. The cashier then will input the amount handed to the computer. The computer will then carry out the calculations of the amount of change due back to the customer. Once this is done the cash drawer will open so the cashier can place the money handed to them into the drawer and give the change necessary.
- If the customer is using a self-service checkout then the customer will have to feed the money into the terminal. The computer will read how much money has been given and calculate the amount of change that is due back to the customer. If change is due back then, the coins will drop into a bowl and note output notes from the notes dispenser.
- If the customer is paying by credit/debit card then there will be a EFTPOS Pin terminal placed in a convenient location for the customer. The customer will be requested to insert their card into the terminal. Once they have done that, the card

details will be checked. This is done by the terminal connecting to the required bank and checking the details. When that is complete, the terminal will request the customer to input their PIN number. Once they have done that, the terminal will once again connect to the bank to check the PIN number against the card. If it is correct then the transaction will be made. If not then the PIN code will be rejected and the customer will be asked to enter it again. Once the transaction is complete the system notifies the customer and the cashier through their respective VDU (Visual Display Unit), else the failure is notified.

Once the transaction is complete a receipt will be printed, usually using a thermal printer. The customer then takes this with them to keep as a record. At the end of every night, the terminals will transfer the transaction records to the branch server. This will then connect to the HQ server using a VPN to transfer all of the records. The HQ staff will use this data to determine what changes are necessary in the branches. If the branch is a 24 hour store, then the server will have a set time to which it will upload the data to the HQ server or every record will be uploaded in real time. This depends on the type of store.

Output

One of the obvious output is printing of receipt for the customer. There are several other outputs include VDU communications (output displays through cashiers screen) and change of quantity. The output of subsystem EFTPOS is that bank transaction between customer's account and Tesco's account is facilitated. Internal outputs in the system are updating of database for stock adjustments, club card points and payment details. The staff can monitor the databases as make appropriate future decisions. If any item is running out of stock the concerned officer is notified and necessary actions can be taken. Similarly, items that are not moving from shelf can also be reconsidered and so on.

Technologies

The technical equipments that aid the implementation of POS system at Tesco are listed below. There are two types of POS terminals at Tesco ; cashier operated and customer operated. Both systems use similar technologies like a computer, barcode scanner, printer, scales, card readers, Electronic Funds Transfer POS (EFTPOS) Pin Pads.

- A barcode reader (or barcode scanner) is an electronic device for reading printed barcodes. Like a flatbed scanner, it consists of a light source, a lens and a light sensor translating optical impulses into electrical ones. Additionally, nearly all barcode readers contain *decoder* circuitry analyzing the barcode's image data provided by the sensor and sending the barcode's content to the scanner's output port.
- Card readers are generally used to scan clubCard, Staff discount cards etc. Magnetic stripe card readers are used.
- EFTPOS pin pads are used to conduct credit or debit card payments. Telephone lines, dedicated to EFTPOS are required for communicating with the bank’s server.
- Scales used to measure the weight of commodities that are priced on weight.

A customer operated POS system additionally has touch screen display. Also, only card payment is facilitated at customer operated POS counters, whereas in a cashier operated POS system both cash and card payment is facilitated and therefore cashier operated POS counter also have a cash drawer. Other technologies used to run the POS systems are:

- Servers
    - In each branch
    - Head Quarters (HQ)
- Networks
- Internet connections
- Phone lines
- Virtual Private Networks (VPNs) : The virtual private network (VPN) technology that enable cost-effective, secure remote access to private networks. VPN allows administrators to take advantage of the Internet to help provide the functionality and security of private WAN connections at a lower cost. In Windows Server 2003, VPN is enabled using the Routing and Remote Access service. VPN is part of a

comprehensive network access solution that includes support for authentication and authorization services, and advanced network security technologies.

Apart from all this, Tesco has been conducting Research on implementing **RFID** (Radio Frequency Identification) technology in innovative ways to attract more customers. Tesco has begun work to roll out an RFID network that track shipments from its central distribution centre to all 98 of its Tesco Extra superstores in the U.K. by Christmas this year. In line with the retailer's Secure Supply Chain initiative (using RFID technology to track shipments of high-value non-food goods), the retailer will attach RFID tag to its own shipping trays and dollies at its national distribution centre in Milton Keynes before they are loaded and sent through its supply chain to retail stores. The contents of those trays will include perfume and aftershave, beauty products, packs of razor blades, pharmaceuticals, batteries, electric toothbrushes, cameras, phones and computer accessories. As part of this rollout, Tesco will also equip its 40 Tesco trunk distribution centres with RFID technology in order to arrival and departure of the tagged trays and dollies. Tesco's own IT staff will be responsible for deploying the software, which will connect RFID readers to Tesco's existing warehouse and enterprise management applications.Tesco has already started using RFID tags on DVDs and CDs at its Extra superstore in Leicester to help its distribution process and to "improve availability for customers".