Analysis the rfid application use in zara essay sample

1. Introduction

ZARA, a chain of apparel brands owned by the Spanish company Inditex Group, Inditex is Spain’s number one apparel retailer with more than 2, 000 locations in 52 countries. Inditex Group also owns such as Massimo Dutti, Pull and Bear, Uterque, Stradivarius and Bershka. ZARA is one of the most successful, is considered one of Europe’s most research value of the brand.

Headquartered in A Coruña, Spain, ZARA opened its first branch in 1975. Today, Inditex Group is probably the fastest-growing retailer in the world more than 70 countries worldwide, more than 2213 stores are ZARA’s brands Branch and generated more than 15 billion sales in 2016 worldwide.

The purpose of this research to analysis the following

Analyze the function of RFID

How RFID works

Advantage and disadvantage in supply chain and application use in ZARA

2. Literature Review

2. 1 What is RFID

RFID stands for Radio Frequency Identification uses radio waves to automatically indentify physical objects. RFID is a form of wireless communication that incorporates the use of electromagnetic or electrostatic coupling in the radio frequency portion of the electromagnetic spectrum to uniquely identify an object, animal or person. RFID is very valuable business and technology tools. It holds the promise of replacing existing identification technologies like the bar code. RFID offers strategic advantages for business

because it can track inventory in the supply chain more effectively, provide real time in transit visibility and monitor general enterprise assets.

2. 2 How is RFID works

RFID systems consist of three components: an RFID tag or smart label, an RFID reader, and an antenna.
RFID belongs to a group of technologies referred to as Automatic Identification and Data Capture (AIDC). RFID works need all system and service. AIDC methods automatically identify objects, collect data about them, and enter those data directly into computer systems with little or no human intervention.

A common modern RFID system is mainly made up of four parts: computer system host, reader, antenna, and tag. Depending on how the user set up the system, the reader sends out specific electromagnetic waves through the attached antenna. The antenna of the targeted tag is tuned to receive these waves, and it draws power from the received field to activate the circuitry of its microchip that will modulate new waves to send back to the reader. The reader then converts the radio waves to a more usable form of data. Information collected from the tags is then transferred through a communications interface to a host computer system, where the data can be stored in a database and analyzed at a later time. This is the simply introduce of how does RFID work.

The RFID process basically involves an RFID reader receiving information from an RFID tag

The reader’s antenna broadcasts radio waves through the air

The radio waves hit a small circuit on the tag that momentarily powers the tag

The tag sends its information via radio wave

2. 3 RFID Advantage

The benefits to the supply chain may be immediate, but other areas such as merchandising and marketing can take advantage of item-level RFID technology as well. For example, promotion planning and execution and customer service could potentially be enhanced with RFID.

These operations include backstore management as well as shelf management.

Retailers can take advantage of item-level RFID to track their individual products both on shelves and in the backstore (1. Kambil & Brooks, 2002).

RFID enhances information visibility and captures customer demand, thus decreasing uncertainty in the supply chain (Gaukler et al, 2007; DeHoratius & Raman,

2008; Zhou, 2009). In the supply chain management literature, most analytical models measure the benefits of RFID through simulation (Fleisch & Tellkamp, 2005). Lee & Ozer (2007) introduced a guideline to measure the benefits of RFID in the supply chain. Rekik et al (2008, 2009) built a simulation model to measure the benefits of RFID in reducing errors due to theft and misplacement. Gruen & Corsten (2008) examined OOS attributes, such as the rate of lost sales caused by being OOS and OOS duration, to calculate and quantify the effect of RFID.

Item-level RFID provides different levels of information visibility depending

on the deployment level. We look at three levels: enhanced inventory visibility, enhanced
shelf visibility, and enhanced storewide visibility. These visibility levels all lead to the same type of benefits but do so to different extents (see Table 1). Next, we review RFID enabled changes in inventory, shelf, and shrinkage management processes at three levels of RFID implementation (initiatives) as listed in Table 1.

At the lowest level of enhanced visibility, the backstore inventory management process is improved by providing RFID readers in the backstore and at POS (Table 1).

Inventory records are updated at the backstore entrance/ exit doors and at POS when an item is purchased.
Perpetual Inventory (PI) – that is, what the information system thinks is on hand – is updated automatically based on this visibility. The visibility of items in inventory improves inventory accuracy, and the record of items on the shelves is more accurate. Shrinkage, including theft and misplacement, is detected easily and more often through automatic PI. This level of deployment seems to have the lowest cost and fewest technical restrictions among the three levels. Several case studies from Dillard's (Hardgrave, 2009a), American Apparel (2009), and Bloomingdale's (Hardgrave, 2009b) have provided evidence of the benefits of item-level RFID on inventory management in retail stores.

The second level of enhanced visibility occurs when smart shelves are added to the previous level (Table 1). This level provides real-time shelf visibility on

the store floor as well as in the backstore and further improves inventory accuracy, shelf replenishment, and loss detection compared to the first level (Doerr & Gates, 2003).

The visibility of items on shelves leads to real-time detection of misplacement and theft and, thus, adjustment of the inventory level. Shelf visibility also allows retailers to monitor customer shopping behavior to some extent. However, the cost of deploying smart shelves is significant. In addition, some practical issues with smart shelf mobility have delayed their use.

Analytical research shows that RFID adoption at the shelf level can release shelf space and reduce inventory holdings (Szmerekovsky et al, 2009) because shelves can be replenished more frequently. In addition, inventory inaccuracy is reduced because misplacement and theft are detected faster and there are fewer execution errors. In particular, when retailers face high demand uncertainty, enhanced item-level visibility on shelves enables retailers to reduce the impact of this demand variation and thus improve performance compared to retailers without such visibility.

The storewide level of RFID implementation provides maximum information visibility and contributes to inventory management to an even greater extent than do the other two levels (Table 1). Items can be tracked not only on shelves and in the inventory but at any place on the sales floor. In addition, benefits such as identifying customer shopping behavior and preventing theft by detecting patterns are achieved at a much higher rate.

2. 4 RFID Disadvantage

Security risks. Security risks in the RFID literature are often discussed as attacks against organizations by their competitors, opponents, or criminals. Various types of attacks are possible with the use of RFID. One type is referred to as “ data eavesdropping,” which is the interception of communications between RFID tags and readers. Through data eavesdropping, a military security breach may occur if enemy forces detect troop locations and monitor their movements by tracking RFID tags within a military supply chain (Juels, 2006; Zuo, 2010). Corporate espionage is also possible through data eavesdropping. For example, by tracking RFID tags through the retail supply chain, competitors may spy on one retailer’s sensitive business data, such as sales trends, pricing trends, stock selections, and stock turnover rates (Juels, 2006; Li & Visich, 2006; Shih et al., 2005). A seller organization may also attempt to gain visibility into the downstream of the supply chain by monitoring RFID tags on the sold items after the seller no longer has physical access to the items (Kapoor et al., 2009).

Another type of attack against organizations is referred to as “ data corruption,” which erases or modifies RFID tag contents. If the tag contents include price information, then, through data corruption, hackers could lower the price of expensive retail items, and then use an RFID-enabled self-checkout counter to avoid detection by store employees (Li & Visich, 2006). Spoofing, another type of attack, involves the retrieval of confidential information by impersonating authentic readers (Shih et al., 2005). Spoofing can lead to, for example, counterfeiting of retail products by falsely authenticating fake products using stolen authentication information. Finally,

denial of service is a type of attack that renders RFID tags temporarily or permanently incapacitated (Zuo, 2010). Denial of service can cause a loss of business data and operational disruptions to an organization.

Privacy risks. While security risks typically affect organizations and result in financial losses, privacy risks affect individuals and result in ethical issues. The literature discusses three main issues that are specifically related to RFID’s ability to provide supply chain visibility that includes end-consumer information.

The first issue relates to the collection of personal data without an individual’s knowledge or consent. This concern stems from the fact that the size of RFID tags can be as small as grains of sand, making it possible to inconspicuously attach the tags on products. Also, the scanning of RFID tags is a wireless process that cannot be detected by human eyes or ears. Hence, a retailer is technically able to conduct market research, for example, by tracking RFID tags on pre-sale items inside the store without the knowledge or consent of the consumers (Jones et al., 2004).

The second ethical issue relates to the infringement on individual anonymity. In the context of supply chain management, RFID tags are traditionally associated with product information but not with consumer information. However, since an RFID tag is capable of providing a unique identifier to a product, any association between the product and an individual can in turn become the unique identifier of the individual. For example, a female customer with a previously purchased item carried in a purse can be identified as a returning customer if the tag on the item is read upon her

return to the store. Even if the retailer does not possess full information on her identity, the anonymity of this customer can still be infringed upon since it is possible to build a personal profile based on information such as the frequency of the store visit, the time and day of the visit, and the history of other purchases made by this customer (Wasieleski & Gal-Or, 2008). Such consumer profiles could then be exploited for price differentiation strategies or could be sold to third parties (Jones et al., 2004; Peslak, 2005). Moreover, if the item in question was, for example, a prescription drug bottle being carried by an individual, then the product information itself could represent a piece of sensitive personal data.

The third ethical issue, the surveillance of individuals, also stems from the association made between a product and an individual by the use of RFID. By tracking RFID tags on products that are owned by individuals, people may be tracked in the stores, on the streets, and even in people's homes (Jones et al., 2004; Rutner et al., 2004). This issue is often discussed in relation to the idea of " Big Brother," where the authority monitors civilians' every move.

All the ethical issues discussed above have been fueling an opposition to RFID from various consumer advocacy groups, such as Consumers Against Supermarket Privacy Invasion and Numbering (CASPIAN), the American Civil Liberties Union, the Privacy Rights Clearinghouse (PRC), all of which are generally against the use of RFID (Barut et al., 2006; Jones et al., 2004).

3. Case study

From the group case study we went through our store visit of Hong Kong Pacific Place with the Zara store manager Yan Wong in October 2017, we

learn from her to know the actual practiced their RFID operation in store. RFID technology started to implement on each garment tags since 2014. RFID chips can store information about whatever item they are attached to and, when prompted, emit that data via radio signals to a scanner. Inditex is tag the chips inside its garments' plastic security tags, an innovation that allows the " fast fashion" chain to reuse them after the tags are removed at checkout. The security tag's plastic case would protect the chip, allowing for reuse, and it would be removed at checkout.

Appropriate connections

From the store visit we found the actual strategic flow of Zara is from The designer, supplier, manufacture, distribution, logistics centre, hubs, retail store. (Figure 1)

Figure 1. Strategic flow of RFID in Zara

The RFID application will start from logistics Center to use RFID tag when all the manufactured clothes are shipped back to Spain. They will tag and programmer each garment with hang by RFID tag and it can help to stock allocation.

It will start to distributed in different countries and hubs are based on individual requirements and needs of the particular locality. It also can help to keep real time trace the delivery status around the world.

Hubs will split the produce into several retail stores that require location it can make agile replenishment and fulfill customer requirement and make sure the retail shops receive their demand produce.

However RFID can work in every single retail store for stock check and floor check. It can provide the real time data inventory control and

Practical contribution

Zara has maintained it’s stand as a leader in the apparel industry and what makes it so profitable is it’s unique supply chain strategies. After implement RFID Zara uses the following principles to increase their net income and maintain a standing of being a brand that is both fashion forward and affordable.

Quick response to Demand – Zara follows a pull model in their inventory and supply chain management. They create up to 1000 designs every month based on store sales and current trends. They monitor customer spending’s in the store to evaluate and understand what types of designs are being consumed and then accordingly iterate on their next designs.

Small Batch Productions – Zara has a fast turnover, they produce small number of quantities for every product. This gives them the opportunity to quickly understand what designs are successful. It is also a great way to explore new designs and understand its acceptance rate in the market. This also heavily reduces the risk of producing large quantities of something that the customer does not want. Even though it might seem like a bad idea to invest in different designs, Zara optimizes by using the same material only in different ways.

Central Distribution Center – Zara has very strong IT systems that back it’s distribution. All the clothes are shipped back to Spain, the central location.

From here, it is distributed to different countries and stores are based on individual requirements and needs of the particular locality.