

Radio frequency identification rfid tourism essay



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Chapter 1

Introduction

The 21st century has experienced massive changes and growth in several fields of the world economy. International trade, communication, technology, financial services, manufacturing, and other fields of business have recorded immense growth. To this end, competition is cutthroat as businesses become global and multinational conglomerates dictate business trends. In this regard, international transport, both human and commodity, has immensely increased. The number of ships, airlines, cross-border railways, international highways, and other forms of transport are recording immense volumes of transportation. Such colossal volumes create identification and tracking headaches for businesses as they strive to meet the needs of the customers. Commodities in transit tend to get lost in huge piles of baggage, creating a nightmare for both the client and the business.

In the past, several technologies have been used to identify and track baggage. One such technology has been the use of a bar code system, a collection of unique numbers that identifies the specific baggage. While this technology may be effective in identifying items, it was found wanting when it comes to tracking.

To solve this, Radio Frequency Identification (RFID) has been introduced as a means of solving both the identification and tracking requirements. The RFID system is composed of two basic units, the tag and the receiver unit. The tag is a device that contains a small, inexpensive, programmable memory chip and a transponder unit that is attached to the commodity to be transported.

The chip is a memory unit that contains unique information regarding the baggage, and the transponder transmits that information to a receiver.

Hence, when the baggage or commodity passes through a magnetic reader, the information regarding the baggage is captured and retrieved via the transponder. This information not only identifies what the baggage is and who the owner is, but it also provides information regarding where the baggage has originated (Garfinkel, Juels, & Pappu, 2005).

The receiver unit is composed of an interrogator which emits a signal that activates the transponder. Once the transponder has forwarded data to the interrogator, the receiver unit has an inbuilt decoder that translates the data and relays it in a manner that can be understood.

The RFID concept has since become the preferred tracking technology for most shipments. However, the technology has not been implemented in consumer goods found in stores. This is because tags are still comparably expensive when it comes to consumer goods. Huge shipments such as shipping containers have employed RFID technology as international sea ports have increased their annual luggage capacities. In the aviation industry, much controversy surrounds the use of RFID technology. Some airlines are finding it expensive to introduce, while leading airlines are introducing RFID with a competitive edge in mind. There are also social issues that surround the implementation of RFID. These social issues range from human tracking to tracking baggage even after it has left the airport. Opponents of RFID technology argue that such tracking infringes on privacy and should therefore not be used in any of its forms. While the above

argument may be true, RFID provides unrivalled efficiency in handling goods in transit.

History

Roberti (2011) explains that RFID technology has been in use for quite a few years now. It is noted that RFID technology was employed in the Second World War in order to identify enemy gunships and fighter planes. In 1980, RFID tags were used to identify military equipment. Garfinkel et al. (2005) assert that recent growth can be attributed to the rise of invasive commerce. In this way, businesses make use of RFID technology to track movement of commodities and by extension understand consumer behavior. These businesses are able to do this by embedding smart readers and transmitters onto commodities in order to track them over a wider distance using a networked system to gather data from different locations. This information provides businesses with a clearer view of which consumers prefer what commodity. This allows businesses to align their production with consumer preference.

Uses of RFID

As previously mentioned, RFID was first used in warfare to discern friend from enemy. Similarly, the military used the RFID system during the cold war era to identify, manage, and track nuclear weapons. Today, there are several applications of RFID, which may include:

- Supermarkets and retail stores use RFID to manage inventory, equipment, and staff.
- Airports and airlines use RFID to manage staff, passengers, and baggage.

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- Hospitals have used the technology to manage key equipment, inventory, and staff.
- Manufacturing businesses have used RFID to manage inventory and employees.
- The military uses the technology to track and monitor personnel and dangerous material such as nuclear weapons.

Advantages of RFID

One of the greatest advantages of RFID tags is the ability to track consumer goods right from the manufacturer to the point of sale. In general, most goods are produced in foreign nations and shipped to destination countries. However, due to a lack of tracking systems, some goods are lost during transportation, and this is a huge loss for businesses. RFID will give such businesses the opportunity to track shipments.

Another advantage of RFID is the ability to decode past information regarding where a person or goods have been. Such historical information is important in providing crucial information regarding past occurrences.

The third advantage is that RFID is automated technology that does not require a human being to actively read it, as the bar code system does. Therefore, it eliminates the human error element in tracking and managing movement of goods.

Disadvantages of RFID

In general, RFID can be dangerous technology if not properly managed. For instance, if RFID is embedded in shoes or clothing, such pieces of clothing

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can be used to track the movements of an individual around the world. Such tracking highly invades the privacy of an individual without that individual's knowledge or consent. Such tracking may also be a dangerous security risk for individuals.

Emirates Airlines

The airline industry is one of the most rapidly growing industries in the world. As international commerce has rapidly increased, so has the airline industry. Asia, in particular China, India, South Korea, Singapore, the Arabian Gulf, and Malaysia, has spurred growth. The United Arab Emirates has also experienced immense growth, and Emirate Airlines is right in the middle of this growth.

Emirates Airlines is the biggest airline in the Middle East with more than two thousand flights per week. The airline prides itself on a 50, 000 staff base and long-range flights (emirates. com, 2008).

The airline started off as a business of necessity. The company website explains that in the mid-1980s, the top airline at the time, Gulf Air, reduced flight services into Dubai. Thus, the royal family in Dubai decided to invest in a new airline, and in March 1985, emirates airlines started operating (emirates. com, 2008).

The airline has since registered rapid growth, becoming one of the biggest purchasers of aircrafts. It prides itself on a long-range fleet of both Boeing and Airbus aircrafts. In its hangers are the dream liners Boeing 777 and the magnificent Airbus A380. Such immense growth and investment has led the airline to be a major player in the airline industry. emirates. com (2008)

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confirms this by asserting that in 2011, the airline was the fourth largest airline in the world. This success has been attributed to excellence in in-flight service and consistent profits. The company expects to receive an order of 90 Airbus A380 aircraft by 2017. This is the single largest purchase of passenger aircrafts in aviation history securing, its future in the aviation industry.

Dubai International Airport “DXB”

Dubai is one of the seven emirates making up the United Arab Emirates and one of the fastest developing locations in the globe. At the center of this development is the Dubai International Airport, referred to as DXB in the aviation world. The airport is the biggest aviation hub in the Middle East, handling 65% of all passengers travelling through the Middle East. The airport handles over 130 airlines that make about six thousand flights per week (emirates. com, 2008). Home to emirate airlines, DXB has committed an entire terminal to the airline.

Dubai International Airport sits about 4km north of central Dubai and handles over 50 million passengers annually. Similarly, it is also the sixth busiest airport in terms of cargo, handling slightly over 2. 2 million tons annually.

The airport is an important economic establishment in the UAE. The airport provides over 58, 000 jobs with hundreds of thousands of indirect employment opportunities. With rapid growth in international tourists visiting Dubai, the airport forecasts that by 2017, it will handle three times the number of passengers visiting today. Similarly, as China and the rest of Asia lead the world in economic growth, Dubai is seeking a more central role as

the linkage between the Far East and the rest of the world. Cargo haulage is set to increase at incredible rates. Dubai international airport is constantly looking to expand in order to meet its future needs. A second airport that seeks to complement DXB is Al Maktoum International Airport.

Problem Statement

With the recent rise in terrorism, drug smuggling, and huge numbers of passengers and cargo, Dubai International Airport and Emirates Airlines are looking to turn to RFID technology. While the concept of RFID may be both timely and necessary, several pertinent issues impact the implementation of RFID at both DXB and Emirates airlines. This research reviews the controversial issues surrounding RFID implementation. The result of this research is to establish whether implementing RFID will be beneficial to DXB and Emirates Airlines.

The reason RFID is the preferred technology for the airline and the airport is the ease with which the technology improves management and efficiency. The technology could be used to manage both cargo and passengers. With increasing volumes of baggage, the cost of monitoring such luggage has kept increasing as well. This cost is draining company resources and leading to continually diminishing efficiency. A shift to RFID would help the airline and DXB to become the leading airline and location, respectively, in terms of efficiency in handling both passengers and luggage.

Benefits of RFID to Emirates Airlines

Emirates airlines has been experiencing an increasing number of passengers and by extension baggage. In addition, with the introduction of Boeing

Dreamliners and Airbus A380, airlines have to find a means of bettering their passenger and baggage handling efficiency. With the introduction of RFID technology, Emirates Airlines will shift its business efficiency to new heights.

Furthermore, the airline has been experiencing increasing numbers of barcode misreads, and tracing such lost baggage has been a headache. The airline finds such baggage and, at its own cost, ships the baggage to the customer's preferred destination. RFID provides effective tracing mechanisms, and the number of such mistakes will be greatly reduced.

Benefits to DXB

There are several advantages that DXB would accrue by implementing RFID technology. Some of the advantages include:

Security: RFID has the advantage of tagging both employees and baggage, and the chips contain information about the state and the location of the subjects. This provides effective security management throughout the entire airport. The tags may also be used as security keys for staff, hence managing the movement of both staff and passengers.

Managing Equipment: RFID chips could also be used on equipment and other important airport tools. The technology will provide better equipment management for the airport.

Situational Analysis

In February 2008, Emirates Airlines announced its first trials with RFID. The airline was to partner with London's Heathrow, DXB, and Hong Kong

International Airport in testing early uses of RFID technology (emirates. com, 2008).

The airline in partnership with DXB and the other airports was going to invest nearly AED 2 million in the technology. The airline was targeting nearly half a million bags over a six-month period. According to Emirates Airlines, RFID not only helps the airline run the business more effectively, but it also gives customers some peace of mind knowing that their baggage is properly and securely handled.

Premise

This research is based on RFID and the different aspects and the challenges that come with implementing RFID technology both at the Dubai airport and at Emirates Airlines. This paper will explore the different aspects regarding RFID technology, its current applications and the need for the technology at the airport. This paper will delve into the advantages that will accrue upon adopting RFID technology.

Definitions

Decoder- device translating radio waves to data.

DXB- Dubai International Airport

RFID- Radio Frequency Identification technology

RFID chips- programmable silicon devices that hold subject information.

Transponder- transmitter devices that emit radio waves with subject information.

Delimitation

One of the main limitations is the lack of resources to perform live tests of the different versions of RFID technology. Thus, for the purpose of results and recommendations, this research will rely on scholarly works and case studies on the same. Another limitation that is likely to hamper the project is the time constraints required to evaluate the entire project. Implementing RFID at an international airport and such a massive airline will have several impacts over a long period of time. This project may not have sufficient time to evaluate the challenges and results of implementing RFID.