

A Qualitative Study on Perspectives of Retailers about RFID System in Turkey

Seda Yıldırım^{*1} Kenan Aydın^{**2}

**Asst.Prof., International Trade and Logistics, Recep Tayyip Erdogan University, Turkey*

***Prof., Business Administration, Yıldız Technic University, Turkey*

Abstract: Technological innovations and developments force businesses to be much more aware about global developments. Because real competitive advantage is dependent on technologic differences of the business. For example, with the help of IT (information technology) technology, new marketing and sales method can be used in every kinds of business sector such as database marketing, relationship marketing, viral marketing. Businesses which adapted themselves for new technologies, can have a great market share. So there is no suspicion about the need of technological innovations for businesses. Technology helps businesses to improve their functions and reduce their costs. In this point, RFID (Radio-Frequency Identification) technology is one of technological innovations that businesses have just began to use it. Because RFID technology is still a new system for retail businesses and this technology isn't known greatly by them. This study aimed to explain RFID implementations and benefits in retail sector. Also it was discussed how could RFID technology help retail businesses. The qualitative data was collected via in-depth interview method. Participants were selected via purposive sampling method and 4 retailers joined to our study from Istanbul in Turkey. We conclude the results of in-depth interview with literature. It is thought that this study can help businesses to know and understand RFID technology for their business.

Keywords: Radio-Frequency Identification technology, RFID system, retail sector, retailers

I. INTRODUCTION

Increasing global competition and advances in technological innovations have affected the operations of businesses and so these businesses have began to adapt themselves for new technology and change their to process [14]. Especially, retail businesses try to catch new technologies to improve their operations and reduce their costs [20]. In this point RFID (Radio-Frequency Identification) technology is seen as one of the latest technology that retail businesses can use it to improve their basic retail operations. But there are some problems about using RFID technology because RFID technology is much more complex system than Barcode, WIFI or Bluetooth system [19]. RFID technology identify objects via radio-frequency transmission [41] and this technology is used in place of barcodes [8].

RFID has moved during the past decade from labs and niche uses into a broader range of applications [26] and this technology has already contributes so many businesses to be much more efficient [21]. There are several advances on RFID forms during the years for retailers. It is assumed that Radio

frequency identification (RFID) technology has a strategic importance for the retail sector and logistic operations, as well as for customer orientation [17]. Because, RFID provides retailers to identify, count, track and trace easily [26]. RFID is an a wireless sensor technology which is based on the detection of electromagnetic signal [9]. RFID identifies specific objects in order to classify, count or organize virtually anything; it allows for a tagged product to become a mobile, intelligent, communicating component [26]. So, RFID uses the radio waves to identify objects and this technology has been widely applied in numerous areas in the supply chain activities such as manufacturing and distribution of physical goods, shipping and port operations and inventory management [7]. RFID was first invented in 1948 and since then it has subsequently undergone several developmental stages. The explorations of RFID technology were confined to laboratory experiments while the development of theory in the 1950s, and field trials with RFID took place in the 1960s. Since then, RFID technology had an explosion in its development. The commercial applications of RFID started in 1980s [11] and in the 1990s, RFID technology entered into supply chain and distribution systems [26]. RFID technology developed in retail business in 2000s. For example, Wal-Mart, Metro and Tesco which are one of the biggest retailers, has been used RFID technology as pioneer business in retail sector [18].

RFID in retail means that products comes from supplier to the warehouses, and goes to the shelves and all following processes to the checkout with provided detailed information, retail manager can make decision better. They should also be careful about stock management. Stock management is an alphabet of retail management. Stock management is also a key element in retail management. The better stock management means the better retail management. That's why RFID technology is so important in retail sector. With this study, it is purposed to explain retailers' perspectives of RFID technology and explain RFID's benefits for retail business.

II. RADIO FREQUENCY IDENTIFICATION (RFID) SYSTEM

RFID system is so close to Barcode system that mostly two of them are confused in practice. Barcode system is used to identify objects but barcode system can only read one object at once. On the other side, RFID system can identify every tagged objects at once [26]; [2]. RFID system communicate between objects and digital platform (computer source) [25] that users can see every information about identifies objects at the digital platform [12]. With RFID technology, both of organic and inorganic objects can be identified remotely [37].

RFID system is known with its three basic components as an RFID tag (transponder), a reader (transceiver), and a database[16]; [31]; [26]. RFID tag includes unique information ID of the item that the reader can receives radio waves to read this ID from the tag(Wu et.al.,2006). RFID tags are placed on every kind of objects and these tags can be designed into various types that some of them can be formed as plastic or paper(http://www.rfid-turkiye.com/). RFID tag consists of an integrated circuit with memory, which is essentially a microprocessor chip. RFID tags can be active (with batteries) or passive (without batteries)[1].Slette-meas(2009) defines three types of RFID tags in operation as active, semi-passive, and passive tags[26]. The active tag has a transmitter and self-battery that it radiates signal strongly[26]. Passive tag has no self battery but this tag is cheaper than active tags. Semi-passive tags aren't similar to passive tags because they use settled power source to reach the chip's circuitry[23]. RFID antennas are also so important for operations of RFID system because antenna design and placement can change power of the signals and performance of reading system[18]; [32].RFID antenna's function is related with the reader that the reader use the antenna to interact with the transponder[5]. RFID reader takes the radio waves and transform it into digital information so the information enters into digital platform[5]. First usage of RFID is known as IFF(Identify Friend or Foe system) [38]. When RFID technology improved and found new areas besides laboratuvar, applications of RFID began to increase. For example, RFID system has been used in supply chain tracking, toll collection, parking access control, retail stock management, ski lift access, tracking library books, theft prevention, vehicle immobiliser systems and railway rolling stock identification and movement tracking[23]. Important fields and industrial sectors for the application of RFID are [10]:

- Manufacturing and production (e.g., the automotive industry),
- Transport and logistics
- Retail and consumer goods
- Public transport
- Health care
- Anti-counterfeiting
- Ticketing
- ePayment
- (National) Security

- Recycling

There are some application of RFID technology in several sector in table 1:

Table 1: RFID System in Various Industries

Industry	Company	Application	Advantage
Military	US Army	During the Persian gulf war, the US military utilized RFID for its inventory supply management to track large volumes of inventories	RFID applied for chain management
Military	Navy	Tracking combat casualties and identifying the wounded arriving for treatment at a field hospital in southern Iraq	Assisted in soldier's personal profile and treatment identification
Retailer	Wal-Mart	Pallets and cases tagged beginning in 2005	Achieved internal efficiencies while meeting requirements from their customers.
Cell phone	Nokia	It easily enabled customers to initiate mobile services, payment solutions, verification, ticketing and exchanging business cards	Provided RFID functions for enterprises and users to save Money and streamline processes
Airlines	Airport	RFID helped airlines improve handling the huge amount of luggage items	More efficiently improved safety and saved expense
Pharmaceutical	Food and Drug Administration	RFID tags attach to genuine drug boxes. When the drug is used at the point of sale , it will check its registration information to verify its authentication	Used in the flight against counterfeit drugs and to verify a drug's authentication

Source: Adapted from Chao, Chia-Chen, Yang, Jiann-Min, Jen ,Wen-Yuan,Determining Technology Trends And Forecasts Of RFID By A Historical Review And Bibliometric Analysis From 1991 To 2005 / Technovation 27 ,2007:275

RFID technology provides a great opportunity to use technology operations of business so consequently[24]. Accordingly, most businesses use RFID system to get better efficiency, accuracy and security in their operations such as supply chain, logistics and transportation [27].

RFID tags are generally used to identify and track products along supply chain in the retail sector[9]. Loebbecke(2005) determined alternative benefits for using RFID tagging system in retail management as these main issues[16]:

- New tools for customer relationship management can be improved and developed,
- Electronic price labeling system can be used easily,
- Theft protection system can be improved and can be get more efficient.

The benefits of RFID technology for retail sector and supply chain can also determined such as below[15]:

- Improving stock management- with RFID technology, stocks can be counted faster,
- When there is RFID system, there aren't be so many personnel to count/control stocks and so the cost of personnel can be reduced,
- Old and new products can be detected easily,
- The movement of stock can be determined both in digital platform and shelf at the same time,
- Lost and stolen can be reduced,
- Every store and warehouse can be monitored,
- The movement of products can be monitored by dealer network and center

III. RESEARCH DESIGN

This study used a qualitative research method and the data was collected via in-depth interview. In qualitative research method, the sampling methods are quite different from quantitative research method and sampling methods in qualitative research has a great flexibility[40]. Purposive sampling is one of the most useful sampling methods in qualitative research that samples are chosen as their power of the presentation[39]. In this study, participants(samples) were selected via purposive sampling method. 4 retailers from Istanbul, Turkey were determined as our sample and some basic questions were asked them to get useful data during in-depth interview. We had mini group with four people because the topic of RFID system is still new for retailers and there aren't so much information about this technology. It was planned to interview every retailers for 2 hours. The shared characteristics of retail businesses were determined as "having average 20 years-old experiences, having other agencies in different locations, having some information about RFID system, being medium-sized enterprises". Interview form was used to get detailed data from participants. Some important topics were determined for questions and 7 questions were asked participants to understand their perspectives of RFID usage in retail business. These topics and questions were presented in table 2:

Table 2: Topics and Questions for Research

Topics	Questions
Cost	What is the cost of RFID technology usage in your business?
	Can RFID technology provide cost benefit for your business?
Adaptation	What kinds of challenges do you think/know for adaptation of RFID technology?
Competition	Does RFID technology have a competitive advantage?
Knowledge	How do you get information about RFID technology?

Demand-Need	Do you need RFID technology in your business?
Benefit	What kinds of benefits do you expect to handle?

IV. FINDINGS

Findings of this study were concluded regarding to answers of participants after in-depth interview. There were 7 basic questions and 6 basic topics that we focused on and discussed. In Istanbul, Turkey, 4 retailers joined to our in-depth interview implementation. We selected these retailers based on their some characteristics. For example, all of them knew RFID system and they had some information about using RFID technology in their business. Also all of them had enough experience in their business. The general information about participants were presented below:

P1: The first participant was a store manager of one domestic supermarket in Istanbul. He was 45 years old and He was working in the same supermarket for 10 years as a store manager. He was responsible for every operations in supermarket. He knew RFID technology and he was interested in RFID system for supermarket.

P2: The second participant was a store manager assistant of one domestic supermarket in Istanbul. She was 32 years old and she was working in the same supermarket since 2006. Also she was responsible for stock management in the store. That's why she joined our study and answered questions about RFID technology.

P3: The third participant was a stock manager of one domestic supermarket in Istanbul. He was 36 years old and he was working in the same supermarket for 5 years. He was responsible for stock management and he controlled operations of supply chain for the store.

P4: The fourth participant was a store manager of one domestic supermarket in Istanbul. He was 41 years-old and he was working in the same supermarket for 12 years. He was the manager of the store and he was interested in RFID technology since 2010.

Topic 1: The Cost of RFID system: The setup cost of RFID technology is so changeable because components and frequencies of RFID technology are changed based on business type and product type. Baysan and Ustundag(2013) determined three basic cost factor for RFID system as "hardware cost, middleware cost and service cost. Baysan and Ustundag(2013:15) explained these costs as below[4]:

- Hardware cost: This cost consist of tag cost and reader cost.
- Middleware cost: Middleware cost is based on specific software programs and needs of RFID system.
- Service cost: Service cost includes every setup costs about RFID technology.

Huber et.al.(2007) studied on RFID technology adaptation and they had determined that the cost of RFID components effected the adaptation of this technology. The software program is an expensive cost factor in addition, tags and readers are also found costly for retailers in general[12]. RFID

readers can be cost almost 1000\$ or upper and sometimes businesses need so many readers to use in its every warehouses, agencies or other stores. When the cost of one tag is 20 cent or upper, RFID system isn't so attractive for businesses to use[35]. However the setup cost of RFID technology is expensive, RFID technology provide some cost benefits when it is working. Levy and Weitz(2003) determined that labour cost can be reduced almost 30 percent and with RFID technology, there will be less inventory losts/errors[15].

Question 1: What is the cost of RFID technology usage in your business?

Table 3: The opinions of participants about setup cost of RFID system

Participants	Some Parts of Answers	Final Decision of Participants
P1	....There are so much cost factors for RFID setup process. I'm collecting different price offers from different IT firms..... also I try to decide what kinds of tags and frequency system should we use.....	RFID technology is still expensive for small or medium sized enterprises. We are still waiting for price fall in RFID setup and RFID components.
P2	....RFID tags, readers and software are expensive investment for us but RFID technology will be widespread in a close future.....We want to use cheapest tags but we can't run away from the cost of readers and software program.....Probably we will have an expensive investment for RFID technology.....	RFID system needs some expensive investments and at the beginning RFID technology usage is seen almost luxury for medium-sized businesses like us.
P3	.....Using RFID system isn't useful for us now because this technology is still too expensive. We keep on with barcode system.....	After we investigated RFID technology, we decided to delay using RFID technology for recently. If RFID technology gets widespread, we can adapt this technology.
P4	....RFID technology is an expensive innovative technology in Turkey. We think about using RFID in our retail operations but the cost of RFID technology doesn't satisfy us to adapt immediately..... We are still thinking and searching the most suitable cost alternative for RFID technology in Turkey.....	When RFID technology gets cheaper and widespread, we will adapt this technology. Because RFID technology has still unknown parts in Turkey. Also I think there isn't enough suppliers for RFID technology in Turkey.

According to in-dept interview results, it was seen that retailers were afraid of using RFID technology although they wanted to adapt this technology. Participants thought that RFID technology adaptation was still too expensive and every cost factor should be controlled and thought carefully. In addition, retailers wanted to wait for price fall in RFID system and RFID components. When RFID technology got

widespread, participants said that they would feel confident to use RFID in their business. But now every participants determined that they had some suspicious about high costs of RFID technology.

Question 2: Can RFID technology provide cost benefit for your business?

Table 4: The opinions of participants about cost benefit of RFID system

Participants	Some Parts of Answers	Final Decision of Participants
P1	.....I know that RFID technology provides cost benefits for so many big businesses in the world. So I expect to get cost benefit with RFID system when we use it.....	RFID technology can reduce some basic changeable and unpredictable costs in retail operations.
P2	..... We use barcode system now. Barcode system is the most widespread tool in retail operations and it is cheap.... But we can't prevent high losts and stolen products in warehouses and stores.....So We think that RFID system can reduce losts and stolen products.....	RFID system is better than barcode system when you want to reduce lost cost and stolen product cost.
P3	.....In stock management, we mostly take care of losts and stolen products.....So we knew that RFID system never miss out losts or stolen products in warehouse or store.....	RFID technology can make control system in stock management and inventory counting better. This will provide cost benefit for the business.
P4	.....Retail management gets successful when you work with zero error.... I think RFID technology provides almost zero error for big businesses and of course, If RFID has no cost benefit, noone uses it.....	When RFID system is working, zero error and right inventory counting can be handled. There won't be any extra cost for the business with RFID system.

RFID system is a quite different system from barcode system. Both of them aim to find and identify object but they work differently. Now barcode system is popular but in the future RFID system will be more preferred system for supermarket chains. Because RFID system can provide some cost benefits that barcode system can't be compete with RFID system for cost benefits. Reducing losts and stolen products can be most useful benefits for retail operations because extra costs can be prevented via RFID system.

Topic 2: The Adaptation Challenges of RFID:

Want(2006) explained challenges of adaptation process for RFID technology in three basic factor. According to Want(2006), the first problem of RFID adaptation is based on cost factor because most of tags and labels are expensive. Also process of setup and design causes new problems for businesses. Lastly, RFID technology is a new tool for businesses and this issue cause innovative businesses to wait for others and usage of RFID technology is still unknown for mass

market[31].According to prior studies, businesses mostly have problems in technic adaptation such as new software programm, new personnel, new patent etc. Barcode system is still working and mass market uses barcode system in general. That’s why, the adaptation of RFID technology is still waiting and probably it will take a long time to entire to the whole market[31]. Standardization problems also effect the adaptation of RFID system. And another problem is related with close cycle system of RFID. For example, If one business wants to work with RFID system in the cheapest way, it should keep products inside warehouses or stores. Every tags can be used for once and this means that business can’t get tagged product when it is sold outside[35].

Question 3: What kinds of challenges do you think/know for adaptation of RFID technology?

Table 5: The opinions of participants about adaptation process for RFID technology

Participants	Some Parts of Answers	Final Decision of Participants
P1	....Adaptation of RFID technology in Turkey has some challenges. The most important challenge is usage of RFID system is so rare....I have some suspicious about using RFID system....I think there aren't enough firms to work together. For example I have a trouble when I look for IT firm that can provide me RFID system in Turkey.....	I think many supermarket chains want to adapt RFID technology but the lack of information and lack of professional RFID business in Turkey. That's why it is too hard process to adapt RFID technology in Turkey.
P2	....RFID system is a new technology for Turkey and it has some problems for adaptation process... We beware of high costs of RFID setup....Also our personnel and agencies aren't ready for RFID system.....	The biggest problem of RFID technology adaptation is high costs for us in Turkey. We will wait until price fall for RFID setup process.
P3	....We can't afford RFID technology now because we are medium-sized firm... When it becomes cheaper, we will get this technology.....The price of tags isn't satisfied for us that's why we are still thinking about RFID system.	High costs and prices of RFID and its components make us troubled for early adaptation in Turkey. The cost of tags is a variable cost for us and we try to find the cheapest one.
P4	....If we buy RFID technology now, we may stand alone in the market.....The cost of RFID components and especially the cost of software programme may cause some problems....	We want to be one of the pioneer firm that is using RFID technology in Turkey but high costs and the lack of information stop adaptation RFID technology as same as European or US firms.

RFID technology is a great tool for supply chain and stock management in supermarket chains but it has so much challenges in adaptation process in Turkey. The most effective challenges are high costs and the lack of information(software programme and services of RFID system). Also this technology is still so rare in Turkey and other firms are afraid

of being a pioneer. Participants were medium sized enterprises and they determined that supermarket chains might be fail when they got RFID technology so early in Turkey. Most of firms doesn't think about using RFID technology or they don't know anything about that. It is thought that Turkey wasn't ready for RFID adaptation now.

Topic 3: Advantage of RFID in competition: RFID technology can provide retailers a great competitive advantage[12].According to Kotler and Keller (2006), retailers are improving their skills in demand forecasting, merchandise selection, stock control, space allocation, and display with use of IT[13]. In addition, It is thought that RFID technology can get better customer satisfaction. For example, some retail operations such as product layout, product counting, stock control, product exchange can be improved by RFID system in retail businesses. In this point, customer complains about product errors may be reduced [34]. RFID is one of the emerging technologies that is being used for a number of purposes in various kinds of retail businesses. In addition to its functional benefits, RFID provides a great stock management with no losts[2].

Question 4: Does RFID technology have a competitive advantage?

Table 6: The opinions of participants about Competitive Advantage of RFID system

Participants	Some Parts of Answers	Final Decision of Participants
P1	(Yes)....I know that the biggest retail brands always get the latest IT implementation in the world. RFID technology is preferred by them and they explain both of qualitative and quantitative results of benefits from RFID usage.....	RFID technology provides competitive advantage in stock management and stock cost because firms can reduce their losts with RFID system. And the future shows that RFID system will be widespread technology in retail sector in Turkey.
P2	(Yes)....RFID technology can provide us an innovative difference and we can reduce product errors, stolen or losts...We can get a great benefit with protecting our inventory.....	Stock management can be improved via RFID system and inventory can be protected greatly. This will contribute our cost savings. Of course, competitive advantage with RFID will improve our business' retail operations.
P3	(Yes)....It is seen that most of retail businesses used RFID technology and they showed that RFID technology could provide some useful savings in costs and provide efficient stock control.....	Cost saving provides us a great competitive advantage in the market. In Turkey, cost saving may increase profits and also less error products will make customer more happy.
P4	(Yes)....In retail sector, maybe stock control is the most important topic. Because inventory should be counted and controlled so carefully. The biggest losts may be caused from wrong counts, stolen	Counting problem and lost of products can be reduced with RFID technology. Store management of supermarket is mostly related with stock management that's why I think RFID technology can

products or other types of losts in store's or warehouse's inventory.....	provide competitive advantage for many supermarket chains in Turkey.
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Participants thought that RFID technology had a competitive advantage for supermarket chains. As being a competitive advantage for supermarket chains, RFID system provide great cost saving and increase profits. When there is a cost saving, maybe the sale price of products fall. Providing same quality with lower price in the market will create competitive advantage for supermarkets. With successful stock management both of retailer and customer can be satisfied.

Topic 4: Knowledge about RFID system: Firms generally have some problems to reach comprehensive information about RFID technology. It is thought that retailers can get RFID technology easily when they get useful information about RFID technology. With this topic, it was investigated how participants could reach useful information about RFID technology.

Question 5: How do you get information about RFID technology?

Table 7: The opinions of participants about Information about RFID technology

Participants	Some Parts of Answers	Final Decision of Participants
P1	.....I searched foreign companies two years ago. Then now, we connect to domestic companies which product RFID technology in Turkey..... We are interested in RFID technology and we try to find more informations about implementing RFID in our business.....	We can get the most useful information about RFID technology from foreign RFID suppliers. Because they are pioneer and they set RFID system at first. In Turkey, We are sometimes suspicious about information that come from domestic RFID suppliers. We're still searching RFID system.
P2	...In Turkey, it is too hard to reach complex knowledge about RFID technology.... I usually meet foreing RFID suppliers and take information from them.....	RFID technology is so new for Turkey so we haven't complete searching RFID technology implementation.
P3	.....We have connected with RFID suppliers in Turkey for 3 years.....We generally take information about RFID system from domestic RFID suppliers.....	Both of foreign and domestic RFID suppliers help us to find the best way for implementing RFID system in our supermarket.
P4	....I have two expertise and they bring me every kinds of information about RFID suppliers and RFID system...	We want to get RFID system but we haven't found the most suitable RFID system for our supermarket. Getting information is so important for us at first. Because RFID system is too expensive during its setup process. We don't want to make a mistake with missing information.

Participants said that they followed new developments about RFID system in Turkey and they connected to foreign RFID suppliers to learn RFID system for supermarkets. Accordingly, it can be said that reaching the information about RFID system was so important for businesses to implement it.

Topic 5: Demand - Need for RFID system: This topic was investigated to find out if retailers wanted to get RFID system for their business.

Question 6: Do you need RFID technology in your business?

Table 8: The opinions of participants about their need of RFID System

Participants	Some Parts of Answers	Final Decision
P1	....Barcode system is used now, but we are open to new technology...We want to get RFID technology as soon as possible....	We need RFID system to reduce our costs and increase our performance. If problems of adaptation RFID system can be eliminated in our supermarket, we can get RFID system.
P2	....RFID system is seen useful tool for most of retail operations such as supply chain, stock control...We don't need it now but in the future, it will be needed....	When RFID system gets widespread, we will get it. For efficient retail operations, RFID system is needed.
P3	....For stock management and inventory control, RFID system is the most useful one to work efficiently.....	To reduce losts and errors in inventory of our supermarket, RFID system is seen as the most useful tool. So there is a need for RFID system in our business.
P4	....I wan to get RFID technology but now I can't get it now... We will wait until the numbers of RFID suppliers increase in Turkey....	We need RFID technology but the usage of RFID technology is probably delayed.

It was seen that participants wanted to get RFID technology for their business. Participants said that they needed RFID system to reduce their costs and increase business performance. With the help of RFID technology, there will be most efficient stock management and inventory control in supermarkets.

Topic 6: The Benefit of RFID system

Question 7: What kinds of benefits do you expect to handle when you implement RFID technology?

Table 9: The opinions of participants about expected benefits of RFID system

Participants	Some Parts of Answers	Final Decision
P1	....I expect to handle cost saving and time saving firstly. Because supermarkets need to reduce extra costs If they want to get much profit...	I think RFID system provides cost and time savings in supermarket as the biggest benefit. For having a great profit, efficient stock management is crucial in supermarket and

		RFID provides a solution in this point.
P2	...We have troubles in stock management and inventory control. Losses, errors, waste of time etc. make our business performance worse... We want to reduce wasted products and losses in inventory....	We are interested in stock management and inventory control at most. RFID system must be helpful for stock management and inventory control in supermarket.
P3	...I don't want to waste so much time with counting products and inventory control. Also we can't have efficient stock management although we pay attention for counting products...So RFID can provide efficient inventory control....	Errors can't prevented when the system works with labor intensive. RFID system can reduce errors significantly and it can help us to reduce costs mostly.
P4	...Getting profit and survive from competition, costs must be reduced in supermarket.I want to get much profit with the usage of RFID system...RFID can be provide efficient inventory control and cost saving in supermarket....	Supermarkets compete each other via low price that's why supermarkets need to reduce excessive costs and control their inventory efficiently. RFID system is expected to be helpful for improving stock management and increasing profits.

It was seen that participants mostly expected RFID system to help them for improving their stock management and making their business performance efficient. In this context, RFID system is seen as a new technology for reducing costs and wasted times or labor intensive. In the competition, RFID technology can provide supermarkets a great advantage.

V.CONCLUSION

New technological developments provides so many advantages for businesses. Especially, cost, time or labor savings increase the profit and provide competitive advantage in the market. One of the latest innovative tool is RFID system in retail sector. RFID system is still unknown for many retailers and there are many missing information about RFID system. In Turkey, RFID technology is seen as unfamiliar technology and usage or implementation of RFID system can be seen so rarely. With this study, it was aimed to find out the main opinions and perspectives of retailers about RFID system. According to this aim, 4 participants were selected in Istanbul, Turkey and we collected the data from these participants via in-depth interview method.

There were 6 basic topics that we tried to get information and 7 questions were asked to participants. The cost of RFID system was investigated with 2 questions that first of them was related with setup cost and second of them was related with cost benefit of RFID system. It was seen that cost of RFID setup was so expensive and high costs frightened to medium sized supermarkets in Turkey. Although it is known that RFID system provides cost saving for supermarkets, high cost and investments aren't seen suitable to get RFID system very soon. It can be said that retailers prefer to wait until RFID system gets widespread and gets cheaper. Because no

one of them wants to take risks of high costs as a pioneer in the market.

The adaptation challenges was investigated as second topic and we asked participants what kinds of challenges did they see for RFID system. It can be said that retailers are mostly afraid of being fail with new technology. In Turkey there are problems in RFID suppliers and RFID technology isn't understood greatly and retailers can't find enough RFID suppliers. On the other side, RFID system can be sustained with great software programme and services. In this point, RFID suppliers are insufficient in Turkey to sustain RFID system successfully in the long term. RFID system provides retailers competitive advantage in the market. In supermarket competition, low prices are so effective tool for competition. When there is RFID system for stock management and inventory control, many errors and losses can be reduced and extra costs can be prevented. RFID system can increase profits in supermarket business and supermarkets can reduce their prices with successful RFID technology. We wondered how could retailers in Turkey get the knowledge about RFID. They said that foreign suppliers and businesses helped them to get useful information about RFID system. It can be said that retailers who are interested in RFID technology, follow foreign businesses and foreign suppliers. But domestic sources aren't enough for retailers and they can't give sufficient information about RFID system in Turkey. In this point, retailers are dependent to foreign sources of information. Participants determined that they wanted to get RFID technology when its setup and implementation costs were lower and it got widespread. Because they knew the main benefits of RFID system and participants thought that RFID system was better than barcode system to get better benefits. For example, waste of time and waste of labor can be prevented via RFID system but barcode system can't solve these problems. In addition, cost savings provide retailers to sell products in a lower price. It can be said that retailers are interested in RFID technology but high setup costs and lack of domestic RFID suppliers force retailers to wait for a long time. If RFID setup costs get lower and sustainability of RFID technology can be guaranteed, the widespread of RFID technology can be provided.

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