

**REPUBLIC OF TURKEY  
BAHCESEHIR UNIVERSITY**

**ADOPTION OF BLOCKCHAIN  
IN THE BANKING INDUSTRY AND ITS EFFECTS  
TO EMPLOYER BRANDING**

**Master's Thesis**

**ECE GÜLFEM AKINTÜRK ÖZDEMİR**

**ISTANBUL, 2019**



**REPUBLIC OF TURKEY  
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**GRADUATE SCHOOL OF SOCIAL SCIENCES  
MASTER OF BUSINESS ADMINISTRATION**

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**Thesis Supervisor: ASST. PROF. ASLI KUŞÇU**

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## ABSTRACT

### ADOPTION OF BLOCKCHAIN IN THE BANKING INDUSTRY AND ITS EFFECTS TO EMPLOYER BRANDING

Ece Gülfem Akıntürk Özdemir

Master of Business Administration

Thesis Supervisor: Asst. Prof. Aslı Kuşçu

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Purpose of this study is to offer a comprehensive literature research in regard to adoption of Blockchain and how employer branding value is measured, employer branding and Blockchain systems adoption are supported with what sub factors. The factors constituting the effect of employer branding and adoption of Blockchain systems have been tested with the employees in banking sector and results have been shared in the study.

Although there are studies individually measuring employer branding and Blockchain systems, there are a few studies in respect of measurement of the factors affecting one another. For this reason, this study combines the research and literature on measurement of the Blockchain system and employer branding and the effect of adoption of applications having Blockchain sub-structure on employer branding within the organizations.

The reliability of the scales were assessed using factor, reliability and regression analyses. It has been seen that adoption of blockchain positively affects employer branding.

**Keywords:** Blockchain, Employer Branding, Adoption

## ÖZET

### BLOCKCHAIN SİSTEMİNİN BANKA ENDÜSTRİSİNE ADAPTASYONU VE İŞVEREN MARKALAŞMASINA ETKİSİ

Ece Gülfem Akıntürk Özdemir

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Bu çalışmanın amacı; *Blockchain*'in benimsenmesi ve işveren markalaşmasının değerinin nasıl ölçümlendiği, işveren markalaşmasının ve blockchain sistemlerinin benimsenmesinin hangi alt faktörler ile desteklendiği ile ilgili kapsamlı bir literatür araştırması sunmaktadır. Blockchain sistemlerinin benimsenmesinin ve işveren markalaşmasına etkisini oluşturan faktörler banka sektöründe çalışanlar ile test edilmiş ve sonuçlar çalışma da paylaşılmıştır.

İşveren markalaşmasını ve blockchain sistemlerini ayrı ayrı ölçen araştırma olmasına rağmen birbirlerini etkileyen faktörlerin ölçümüyle ilgili az sayıda araştırma vardır. Bu sebeple, bu çalışmada Blockchain sistemi ve işveren markalaşmasının ölçümü ile ilgili araştırma ve literatür çalışmalarını birleştirmektedir ve Blockchain alt yapısına sahip uygulamaların benimsenmesinin organizasyondaki işveren markalaşmasına etkisi değerlendirilmektedir.

Yapılan faktör, güvenilirlik ve geçerlilik testleri sonucunda adaptasyonun benimsenmesinin işveren memnuniyetini pozitif etkilediği görülmüştür.

**Anahtar Kelimeler:** Blockchain, İşveren Markalaşması, Adaptasyon

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## ABBREVIATIONS

<b>AD</b>	: Adoption
<b>AT</b>	: Attitude
<b>DLT</b>	: Distributed Ledger Technology
<b>EB</b>	: Employer Branding
<b>EE</b>	: Effort Expectancy
<b>EV</b>	: External Variables
<b>FC</b>	: Facilitating Conditions
<b>PE</b>	: Performance Expectancy
<b>PEU</b>	: Perceived Ease of Use
<b>POS</b>	: Proof of Stake
<b>POW</b>	: Proof of Work
<b>PU</b>	: Perceived Usefulness
<b>SI</b>	: Social Influence
<b>TAM</b>	: Technology Acceptance Model

## 1. INTRODUCTION

We can notice effects of the advancement of technology in our daily lives especially in recent years, this process is now spreading to the financial sector as well. Concept of money, which has been existed for mankind for generations, now started to change with technological advancement. Because of centralization of the money, which means all money and financial decisions made by central banks, in 2009 Satoshi Nakamoto came up with the idea of crypto money, Bitcoin, this system is used in conjunction with a “Blockchain” which is a mainframe to provide to control and transfer of Bitcoin. This system is not limited with only money transfer, it has an ability to adapt/support anything comes with the digital age. Institutions and Banks, if they wish to survive in this era they can benefit this new system. While renovating the institutions and infrastructures, the desires and expectations of the employees in the institutions and organizations should also show the ability to the continuity of these systems in order to survive. Most importantly, opportunities offered and created by the employee and changing with time perspective is he main factors that will shape the attitude and performance of the employees.

The purpose of this study is to provide a very detailed literature review about, adoption of blockchain and measurement of employer’s branding value, and sub-factors are supported by employer branding and adoption of blockchain systems. Adoption of blockchain systems and employer branding has been evaluated within financial market employees and results were shared in this study.

The second chapter of this study theoretical information will be examined and compiled. The third chapter of this study, hypothesis have been shaped based on research model and literature studies. In chapter four, research methods and measurement performed. Chapter five, according to measured results are analyzed. Results and related analyzes have been represented in chapter six.

## **2. LITERATURE REVIEW**

In this part, the main theoretical and empirical information related to employer branding, importance of employer branding, blockchain, employer branding in banking sector, blockchain technology and application areas and blockchain banking application will be outlined. This section will discuss relation between employer branding and adoption of blockchain technology, determining the main points of the discussion and delivering the framework that will be used for modelling the framework of the research.

### **2.1 EMPLOYER BRANDING**

The brand concept is the most indispensable building block of businesses. Perception about the brand is more than products, services or businesses (Kotler and Pfoertsch 2006). Otherwise, the corporate brand concept that constitutes the identity of the organization Aaker (2004, p. 10) defines the corporate brand “the brand that represents the institution and reflects its heritage, assets, and abilities, people, values and priorities, local or global reference environment, performance records”. According to Ackerman (1998, p. 3), the corporate brand provides managers with a comprehensive discipline for explaining, humanizing, organizing and communicating how the organization creates value. The corporate brand is special because it represents the organization clearly along with the product. It also strives to gain a place in the market with the power of the brand. Hatch and Schultz (2008, p. 7) identify corporate branding as an operation that creates, develops and maintains a mutually rewarding relation between the organization, its employees and its external stakeholders”. Successful corporate brands can be built when there are strong relation between the organization, its members and the brand. Corporate branding, an approach whereby all employees of the organization act in accordance with the desired brand identity should pay more attention to the internal factors in the organization and pay more attention to the role of employees in the brand formation process (Harris and Chernatony 2001). Showing interest in this role plays an important role in the process of corporate branding. Otherwise, according to Balmer (2001, p. 281), the three benefits of corporate brands are to communicate to differentiate and to improve. Differentiating

against the innovations of the age comes first in the ranking. Strong corporate brands are able to retain existing talented employees and make these differentiations. In this process, it is very important to establish their loyalty to the business with the differentiation process that they have shown in the sector they have been created. Companies make a difference to other competitors with their brand, these concepts constitute the indispensable building blocks of enterprises. Even though businesses spread their brand practices mostly in the product or corporate area, brand practices can be adapted to different branches of management.

In order to use this adoption effectively; the biggest strength of enterprises without question is qualified human resources. So human resources; strengthening their financial structures by pursuing new technologies and adapting to competitive conditions in the global dimension is one of the leading factors that will facilitate branding by contributing to the use of production and information for enterprises that carry out similar efforts. This approach is the employer brand. Such as the service and product brands, the employer brand is to ensure the distinctiveness and competitiveness of enterprises in the position of employers and to become choices of the target audience, such as product and service brands. The employer brand concept first appeared in the 1990s during talent warfare.<sup>1</sup> This war occurred when demographic, economic, socio-political and technological changes directed the labor trends. In this sense, the most troubling trend is the decrease in the quantity and efficiency of the qualified labor force. One of the long-term solutions to the talent shortage is employer brand. The creator of the concept is Simon Barrow, employer branding; defined as a package of psychological, economic and functional advantages offered by the employer (Barrow and Mosley 2007, pp. 150-151). According to Kapoor (2010, p. 51); The employer branding is a concept and strategic task to become “a leading employer”. According to Gomes and Neves (2010, p. 225) employer branding is based on improving the identity of the job seekers and increasing their image. According to Ambler and Barrow (1996, p. 187), employer branding is declared as the sum of psychological economic and functional advantages determined by the enterprise and provided by recruitment.

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<sup>1</sup> Clarke, R., 2009. How to maintain the employer brand. People Management Journal, [online], <http://www.cipd.co.uk/pm/peoplemanagement/b/weblog/archive/2013/01/29/how-to-maintain-the-employer-brand-2009-07.aspx> [accessed 1 September 2018].

According to Baş (2011, pp. 29-30), employer brand is a conceptual framework which enables a company to differentiate as an employer. Employer branding management uses fundamental marketing techniques to position an organization as “employer”. Hence, different than consumer branding, the customers are existing/potential employees. So, the aim of employer branding management studies is to retain existing customers, such as employees and to attract potential candidates to the business. In this context, it is possible to state that the emotional and acceptable advantages bidden by the employer to its current employees come to the forefront in the employer brand as in the consumer brand.

According to Dooley et al. (2007, pp. 31-32), employer branding expresses the intentional strategy of the organization to constitute a unique sense of the employee organization, reflecting a particular image as an employer. Every business operating in competitive markets is evaluated in many respects. Businesses are not only evaluated with the services and products they offer but also are increasingly evaluated as employers' brand. Businesses with a strong image in the current market; It is seen as a place of interest to work (Figurska and Matuska 2013, p. 35). Competitive market strategies and successful leadership are essential to understand employer brand perception as an important part of strategic management of human resource (Minchington and Thorne 2007, pp. 2-3). Rosethorn (2009, p. 19) states that the employer brand is a two-way agreement between the company and its employees. The employer branding is an impressive association between the name of the business and the employees in the business. As a brand, a strong employer attracts more sufficient and qualified employees to the business and responds to their expectations. Creating awareness as a company, providing loyalty and satisfaction and developing an emotional connection between the company and the customer are also the main features of the employer brand concept (Davies 2008, pp. 667-668).

Some researchers consider the employer branding as the concept of the internal brand. Other researchers define the concept as the evolved state of psychological contract theory and evaluate it with its effect on organizational relation. The concept is also related to effectual management of human resources and uses methods such as objective audience sampling and promotion for effective management of employees. Goal; to improve the attractiveness and attractiveness of the company to other businesses in terms of both

current and future employees (Kucherov and Zavyalova 2012, p. 87).

Foster et al. (2010, p. 403) associate the concept of employer brand with the corporate brand. The concept of the employer branding and corporate brand have the same characteristics. The concept is a structure that provides functional, economic and psychological advantages and employer organizations are identified and takes care of the needs of its employees. There is a psychological relation between the employee and the employer. It is seen in the literature that many employer brand definitions are made. In this context, employer branding; It is an sensual relation between the employer and the employee. As this compound strengthens, the employer's brand becomes stronger and becomes more preferable to potential employees over time. Makes the institution more attractive. Given the different definitions and characteristics of the concept, it is possible to mention two hidden keywords that the employer brand holds. These two words are thoughts and emotions. In this context; they need an employer brand that can deeply affect the thoughts and emotions of existing employees and potential candidates, and develop and maintain an unbreakable compound between them.

## **2.2 IMPORTANCE OF EMPLOYER BRANDING**

Businesses can achieve their goals only when they have qualified and committed human resources and convince them of these objectives. In this sense, employer branding plays a sensitive role in which the company works together, attaches importance to its ideas and strives to realize these ideas. People prefer to work in a workplace where they trust, feel good, and appreciate their work. As a result of the literature, it is seen that employees are proud to be in the companies that they want to work for a long time and to be proud of themselves and their companies in the face of all opportunities offered by their businesses. Today, the vast generality of employees prefer to make a difference by working in an organization that makes a difference in the world. Employees need to make a difference and businesses must strive to find the resources they will gain from their competitors. The mission of employer branding is to ensure a framework for setting priorities, increasing productivity, engaging employees and improving themselves.

The employer brand is the basis for the competitiveness of enterprises. Talent and development strategy is the core of the competitive environment and the branding strategy is not only to create a corporate brand but also to apply what it brings. One of the most important rules in assessing competitiveness is the difficulty in imitating competitors. The employer brand can affect your expectations and experiments of your employees positively or negatively at every stage of the employment cycle. Chunping and Xi (2011, p. 2088) emphasize the importance of employer branding for businesses as follows; At the top of the items in improving the productivity of its employees, the priority of accomplished employer brands is to ensure that their employees are retained in the absence of potential candidates. For this reason, it should be a priority for the business to motivate and support the efforts to increase the quality of products and services. Synergy of best employer and best employees will take advantage of operational success.

Sullivan's study<sup>2</sup> indicates that successful employer branding is to establish a consensus among the employees of the organization along with increase total labor productivity. Under these circumstances, it will not be wrong to say that employer brand plays an important role in the success of enterprises. Efforts to strengthen this system and effective employer brand management will be the key to maximizing the benefits.

In the management process, businesses are pending to give direction to their work by considering multiple features. Each business is different on its own, so the retrofitting process will also vary. Human resources play an sensitive role in the development of business in the information age and show that employer brand should be given importance as a way of improving the performance of enterprises.

### **2.3 EMPLOYER BRANDING IN BANKING SECTOR**

Banking sector constitutes the most significant part of the financial system and the world is moving towards becoming a rapidly growing sector in Turkey. Since the 1990s, the channels used by banks to continue their activities have been changing and evolving

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<sup>2</sup> Sullivan, J., 2004. The 8 elements of a successful employment brand, <https://www.ere.net/the-8-elements-of-a-successful-employment-brand/>, [accessed 13 November 2018].

against years and developing structures (Pikkarainen et al. 2004). With the advancement of technology, banks have achieved different and new gains in their fields of work. Innovative activities for the development of employer branding have increased in order to be permanent in this developing competitive environment. It aims to create new resources and to continue on the way by finding permanent solutions to the problems of employees during the implementation of these resources.

Planning for technology can take advantage of the workforce and advantages of the bank's resources under the roof of efficiency in the best way. Being recognized as an innovator in the sector, having organizations suitable for creativity, transforms the advantage of its employees to its competitors while maximizing the morale and motivation of its employees. The major reasons for employer branding are to keep talented/willing employees in the company and to ensure their continuity and loyalty in the long term.

## **2.4 BLOCKCHAIN**

The concept of Blockchain was first created in 2008 by Satoshi Nakamoto. The article stipulated that a trust-based exchange could be made between peers without being bound by an authority and that these transactions could be kept in distributed books.<sup>3</sup> Blockchain can be examined in three stages of development. Blockchain version 1.0 is only used in applications related to crypto currencies such as money transfers, wire transfers and digital payment systems. With the development of smart contracts, Blockchain version 2.0 has been used more extensively than simple money transactions in markets and financial transactions such as bonds, stocks, loans, futures, mortgages. The Blockchain version 3.0 is used beyond money, finance and markets, especially in government, science, health, literature, art and culture (Swan 2015).

In 2008, Satoshi Nakamoto published a report called “Bitcoin: Electronic payment system between peers”.<sup>4</sup> For the first time in the report, the concept of blockchain is explained in

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<sup>3</sup> Nakamoto, S., 2017, Bitcoin: A peer-to-peer electronic cash system, <https://bitcoin.org/bitcoin.pdf>, [accessed 25 June 2018].

<sup>4</sup> Nakamoto, S., 2017, Bitcoin: A peer-to-peer electronic cash system, <https://bitcoin.org/bitcoin.pdf>, [accessed 25 June 2018].

detail. Blockchain is a distributed database system that can be treated as a general output protected by a large number of independent users. When a process is written to a block, the process data must be understood by all nodes in the system, and the data cannot be modified by any node. The agreement of all nodes is carried out with an intelligent contract system. If the data of a block in a chain is changed illegally, then the entire chain is affected and the other nodes do not accept the validity of the data in the chain.

Participants or nodes in the system do not need to recognize or trust each other. Additionally, all system rules are general and transparent. At the same time, these rules are accepted by all nodes. Each node maintains an identical record of all data stored in the entire block-based chain. In other words, each node maintains a copy of a database that ensures that the database cannot be changed individually by a single node.

The architecture of the chain-shaped blocks associated with the cryptography ensures distributed security. In the system, all operations are grouped into time-stamped blocks, and each group includes the previous timestamp.

It is a complex structure that contains multiple concepts within a block chain. These structures are briefly mentioned below. Distributed Ledgers are databases containing a complete list of all transactions. All users of the block chain with ledgers have a constantly updated version of all transactions on the network. The ledger is accessible to all users, universal, non-tempered, and independent of central authority (Swan 2015). In order to be identical to the records of each user in the registry, a proof mechanism is required between them. Two of the most commonly used mechanisms are Proof of Stake (PoS) and Proof of Work (PoW). Cryptographic proof documents are required to accept new blocks in the proof of work mechanism. High processing power is required to validate transactions and calculate transaction evidence and are rewarded with crypto money in the system that finds the block. Mathematical algorithms are used for proof of work. Proof of Stake is based on a two protocols. In this protocol, transactions are completed with the support of a supporter who is the oldest in the system and has crypto money in hand. The final of both protocols is used to agree on which block should be added next to the chain (Pilkington 2015). The data in the distributed ledger are kept with

cryptographic hash. This approach is basically to produce a smaller summary information from a large data using mathematical operations. It works one-way, it cannot be returned from summary information to source data. Each block contains a timestamp to determine the time at which the operation is performed. The timestamp is proof that the data is on the marked date and can assure the existence of a document (Swan 2015).

In the literature, we cannot find a definition that the researchers agree on, and the definitions are different, albeit in details. According to Tian's definition; The essence of the BlockChain is a reliable database of a technical plan that is maintained collectively by decentralized and reliable methods (Tian 2016).

## **2.5 BLOCKCHAIN TECHNOLOGY AND APPLICATION AREAS**

Blockchain's popularity has increased in recent years and has attracted attention in significant sectors such as manufacturing, logistics, energy, health, retail, telecommunication, media, insurance, and chemistry as well as in the states. R&D and innovation investments, especially on blockchain and smart contracts led by the USA and European countries, are increasing rapidly. These investments are generally aimed at the creation of business ecosystems targeted to develop through blockchain and its applications. Although blockchain technology is currently at the beginning of the development phase, there are still problems facing the creation of the blockchain network. As a result of research findings, it will create new business models and create a profitable and sustainable ecosystem for many sectors.<sup>5</sup>

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<sup>5</sup> International Finance Corporation, Opportunities for Private Enterprises in Emerging Markets, 2017, <http://www.ifc.org> [accessed 15 June 2018 ], p. 12.

**Table 2.1: Sectors and application areas where blockchain technology is to be used**

Sector	Application Areas
Production Industry	Tracking all components involved in the supply chain (Supply chain management)
Energy Industry	Interconnected factories on the network
Chemical Industry	Interconnected production tools on the network
	DLT based production planning
	DLT based accounting records
	Tracking data such as supply, demand and stock status of products via DLT
	Protection of patents and intellectual property rights over a DLT-based network
	Commercial agreements via smart contracts
Telecommunication Industry	Mobile payment via DLT Authentication Operatorless telecommunication services
Public Health and Pharma Industry	Storage of general health data and personal information (birth, marriage, death, etc.) on DLT
	Detecting the authenticity of drugs against counterfeits through DLT
	Monitoring of drug origin and supply chain data via DLT
Retail Industry	Monitoring of supply, demand and stock status of products via DLT
	Tracking data related to the origin and delivery processes of the products via DLT
	Tracking data related to the production inputs and processes of the products via DLT
Agriculture Industry	Monitoring of data related to seeding, fertilizing and spraying processes of agricultural products through DLT
Logistic Industry	Automate business processes in logistics through smart contracts.
	Increasing transparency in supply chains.
Public Services	Digital ID records via DLT
	Deed / property records and notary transactions through smart contracts
	E-Vote via DLT
	Storing records over DLT (register, population, etc.)
	Protecting critical data against cyber attacks
	Reduction of errors and losses in public transactions
	Reduction of tax losses

*Source:* Richter 2017, p. 15; Natarian et al. 2017, p. 22; Ramachandran and Rehmann 2017, pp. 24-25; Niforos 2017, pp. 45-46; Huawei 2018, pp. 26-27.

## 2.6 BLOCKCHAIN BANKING APPLICATIONS

Apart from the sectors and practices mentioned in the previous topic, it has the feature that it can reshape the service channel in the finance and banking sector applications, which is at the beginning of the main exit points. The creation of centralized networks within the framework of DLT (Distributed Ledger Technology) can make a significant contribution to reducing the complexity of the existing financial system and reducing transaction costs. In the existing system, money transfers (EFT, Electronic Fund Transfer) are carried out through a central institution. This institution keeps all transactions and account records in its own database. Transfers of funds between countries, there is more than one brokerage house among the banks located in different countries. Under these circumstances, it makes it difficult to keep the data related to the transactions simultaneously. In addition to these difficulties, the obligation of the intermediary to have reserve accounts for each fund transferred increases the transaction costs.<sup>6</sup>

When the existence of the DLT-based system is compared with the existing financial system, transactions seem to be significantly simplified. Thanks to the authorized networks to be established between the banks, the banks will assume both the participant and the transaction verifier in the network. In addition, it is pending to reduce costs significantly as it can be completed without intermediaries and in short periods in both domestic and international transfers.<sup>7</sup>

Another costly process for banks and financial institutions in the literature studies is the customer identification process called “Know Your Customer”. When a potential bank customer wants to open an account at any bank, (s)he has to go to the bank and carry out some paperwork. Following this transaction, banks perform the transaction by checking the accuracy of the documents over the public database in order to verify the ID of the customer. However, this is a time-consuming and inefficient process for banks. Using the cryptography technique provided by Blockchain technology, it is possible to create a

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<sup>6</sup> UniCredit, Blockchain Technology and Applications from a Financial Perspective, 2016, <https://www.weusecoins.com/Blockchain-Technology-and-Applications-from-a-Financial-Perspective.pdf> [accessed 19 July 2018], pp. 12-14.

<sup>7</sup> Fintech Network, Four Blockchain Use Cases for Banks, 2017, [https://blockchainapac.fintecnet.com/fintech\\_blockchain\\_report\\_v3.pdf](https://blockchainapac.fintecnet.com/fintech_blockchain_report_v3.pdf), [accessed 19 July 2018], pp. 3-5.

digital identity for each customer in a common network including banks and government agencies. Even if an individual has an account or assets in more than one institution, his/her identity will have a single digital identity/signature, and authentication procedures will take place in a short time.<sup>8</sup>

Commercial activities are generally divided into two as domestic and foreign trade. Especially foreign trade transactions are complicated, costly and time-consuming than domestic trade transactions. Although there are many forms of payment used in foreign trade today, letter of credit, which significantly reduces risks, is extensively used. In this method of payment, banks significantly reduce risks by taking on an intermediary role (Zeynalzade et al. 2016, p. 130). However, the process can be complicated by reasons such as the density of document processing, the high administrative workload and the length of processing times. Although the risk factors in the letter of credit applications are balanced between the parties, this practice cannot be completely eliminated due to the risks arising from fraud and some force majeure as well as political and legal risks (Nagano et al. 2017, pp. 28-29). At this point, using smart contracts, which is one of the blockchain applications, can solve many problems. Problems with the payment method of letter of credit can be mitigated through a network of authorized blockchains including banks, companies and transport companies. In commercial activities to be realized between the parties, the banks may make the transactions faster and automatically by creating and transmitting the smart agreement containing the conditions determined between the parties. Since transactions between buyer, seller and intermediary banks can be followed simultaneously through these agreements, processes such as arranging, receiving and forwarding the bill of lading will be eliminated. In addition, the fact that all the processes of the contracted goods from the seller to the buyer will be signed cryptographically on the blockchain network and recorded in the blockchain will reduce the risk of fraud as well as product and transportation risks.<sup>9</sup>

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<sup>8</sup> UBS, Building Trust Engine: How The Blockchain Could Transform Finance, 2016, <https://www.ubs.com/microsites/blockchain-report/>, [accessed 19 July 2018].

<sup>9</sup> UniCredit, Blockchain Technology and Applications from a Financial Perspective, 2016, <https://www.weusecoins.com/Blockchain-Technology-and-Applications-from-a-Financial-Perspective.pdf> [accessed 19 July 2018], p. 15.

The contribution of innovations such as DLT and smart contracts brought by Blockchain technology to today's financial system has attracted the attention of many sectors. In particular, global commercial banks such as UniCredit, BNP Paribas, Santander and Barclays, which form the basis of the financial services sector, have discovered the potential of DLT and expanded its investments in this field. Blockchain technology provides a faster and more transparent infrastructure in contrast to transactions in today's financial system. The implementation of DLT and smart contracts technology is estimated to save approximately \$ 10 billion by reducing costs and losses by 30 percent to 50 percent in today's financial system.<sup>10</sup>

The most fundamental problem experienced in all economic activities in today's world is the fact of trust. With the innovations brought by developing technologies, internet and internet-based platforms commonly used by individuals have come to the fore. Although these systems try to ensure the security of individuals and institutions in the face of technology-based attacks are causing the data to be stolen. The losses of these data belonging to institutions and individuals are frequently experienced in the banking sector. These deficiencies, which are increasing with developing technology, are tried to be prevented by increasing the awareness of blockchain technology. Infrastructures such as DLT and smart contracts brought by the system have the capacity to solve the problems such as cost, transaction time, transaction errors and data losses in the basic transactions carried out by the banking sector.

Well-known institutions in the banking sector (UniCredit, HSBC, ING, J.P MORGAN) are studying on blockchain technology. These studies are in an effort to create an ecosystem. These studies are in an effort to create an ecosystem. Although the banking sector wants to use this technology in the forefront, in fact, when the technology is considered in general, steps can be taken to use it in multiple sectors in both private and public sectors. This technology will ensure many conveniences when applied and used, including the sectors mentioned in the previous section. In addition to these conveniences, there are also challenges. Bureaucratic and systemic challenges stem from the fact that

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<sup>10</sup> Accenture, Banking on Blockchain, A Value Analysis For Investment Bank, 2017, <https://www.accenture.com/t20171108T095421Z/Accenture-Banking-on-Blockchain.pdf> [accessed 21 July 2018], p. 6.

there is new technology. One of the most important bureaucratic challenges is that the laws, regulations, and regulations used in trade should have a certain standard when applying this system. In order to determine and revise these standards, a structure belonging to the international institutions and organizations is needed. The systemic challenges are the creation of the software process and the preparation of a structure that is appropriate to the action to be taken against any problem that will occur during the integration process (Nagano et al. 2017).



### 3. THEORETICAL MODEL AND HYPOTHESES

While adoptions in information systems improve the efficiency of managers and professional users, what causes them to be reluctant to use and refuse, resist or accept it? By answering these questions, the performance of the new system can be improved, user attitudes can be improved or the negative effects that may arise from use can be minimized. Therefore, the technological problems encountered in the installation of new systems are less than the relative share of the total problems and the human factor is the most important reason. The basic building block for the design, adoption, application and development of information systems is the user. Since users are interested in the impact of the new system on their work, the system that meets users' expectations is successful (Whyte et al. 1997, p. 38).

This study will use technology acceptance model, first announced by Davis in 1989 that was developed to explain and predict the behavior of users (Davis 1989), Technology Acceptance Model has been extensively used to predict individuals' willingness to accept and use information systems. The theoretical foundation of the model is based on the Theory of Reasoned Action developed in 1975 by Fishbein and Ajzen. Abstract concepts such as conviction and values used in the Theory of Reasoned Action have weakened this theory. Understanding this weakening has led to the development of Technology Acceptance Model. Over the years, Technology Acceptance Model has become the most well-liked model in both the use of information technology and the prediction of intent (Lu et al. 2003). This model attempts to predict the behavior of a user who has no prior knowledge of a system. In general, in the literature has focused on accepting technology for the systems currently in use. However, perceptions of potential users from real users may vary. There may be differences in the uses and intentions of first-time users and continuous users of information technologies.

In TAM, it is suggested that individuals' intention towards behavior is determined by both attitudes and aspects of technology where aspects of technology directly affect attitude. Additionally, it claims that the intention towards behavior triggers actual behavior (Lin

2007). The perceived usefulness is considered as the main factor and perceived ease of use as the second variable in the use of the system determined in TAM. The accomplishment and competency of these two factors in measuring personal purpose in the use of technologies have been empirically evidenced by researchers (Legris et al. 2003). Davis (1989) concluded that perceived usefulness and perceived ease of use had an indirect and positive impact on information system use. Venkatesh (2000) shows that perceived ease of use has a direct and positive effect on the user's acceptance of information technology. Technology Acceptance Model has been used in many studies on the adoption of information technologies (Martinez-Torres et al. 2006). Some of these studies significantly explain TAM's actual behavior and change in intention to use (Shang et al. 2005). In some studies, TAM has been used on various types of information technology (Xu et al. 2006, Venkatesh and Davis 2000, Davis and Venkatesh 1996). In the process of using information technologies in education and training, which has become widespread in recent years, TAM constitutes an important theoretical infrastructure in terms of acceptance of these information technologies and determining whether they use them sufficiently (Martinez-Torres et al. 2006). In addition, TAM has been successfully adapted to specific and comprehensive situations in the application of information and communication technologies in information technology research. Thus, TAM has become one of the theories used in many empirical studies in the literature of management information systems (Fu et al. 2004). Igarria et al. (1995) state that TAM is the easiest to use and the simplest and most powerful information technology usage model. Similarly, Chau (1996) and Saga and Zmud (1994) state that Technology Acceptance Model is the most valid models in the use of information technology (J. McFarland and Hamilton 2006).

Usage purpose of the model contains four-stage process. The used behavior of the system includes a four-stage process. In the first stage, there are external variables. The second stage consists of conviction that includes perceived usefulness and perceived ease of use. The third stage is the attitude towards to blockchain. The fourth and last stage is the behavioral intention. These stages measure the effect on employer branding.

### **3.1 PERFORMANCE EXPECTANCY(PE)**

According to Vankatesh, performance expectations of the person is focusing how much help to user's performance with specific system or technology. As a result of studies, the performance expectations have some effect on behavioral intentions (Wong et al. 2015). Performance expectations variable according to TAM defined as most powerful indicator. (Venkatesh et al. 2003). If the users buy in that system will ensure benefit to them (Agarwal and Karahanna 2000). When users start to understand that blockchain technology will ensure benefit to their performance, users will be willing to use the system.

*H1: Performance expectancy has a positive influence on perceived usefulness.*

*H5: Performance expectancy has a positive influence on the attitude towards Blockchain.*

### **3.2 EFFORT EXPECTANCY (EE)**

Venkatesh et al. (2003) define effort expectation as the level of ease relevant with the use of the system. Effort Expectation refers to the level at which a person perceives that a system or technology requires less effort. Adoption of a new system or technology will be as high as the user buys in how easy it is to learn to use the system. The more effort a technology requires, the less likely it is to be used by users. In the study conducted by Zhou et al. (2010), the effects of effort expectation and performance on performance expectation were determined. They have shown that users' intention to adopt blockchain is an important relation between expectation of effort.

*H2: Effort expectancy has a positive influence on the perceived usefulness.*

### **3.3 SOCIAL INFLUENCE (SI)**

Theory of technology acceptance, social influence, which is a direct identifier of behavioral intention, is expressed as the degree to which an individual conviction that

important people should use a new system (Vankatesh et al. 2003). If a person's supervisor or colleague says that a system may be useful and user can take advantage, the user may think that it is really useful and show the intention of using the system (Vankatesh et al. 2000). Accordingly, Lopez-Nicolas et al. (2008) stated that the influence of the user's friends and superiors had an effect on the behavioral intention. The studies on this topic indicate that the perceived usefulness from the use of the system is high, when the users have the power to convince those who have more senior than the other users and who have gained trustworthiness in their work. Hence, users will be highly encouraged to adopt and use the blockchain system.

*H3: Social influence has a positive influence on perceived usefulness.*

### **3.4 FACILITATING CONDITIONS (FC)**

Facilitating conditions refers “to usage of system will require a person’s willingness to support level to believe in existence of organization and technical substructure (Vankatesh et al. 2003, p. 453). This definition includes concepts shaped by three different structures: “perceived behavior control”, “facilitating conditions” and “compliance”. Each of these structures has been functionalized to include organizational and/or technological environmental dimensions designed to remove barriers to use (Vankatesh et al. 2003).

Users will be willing to adopt the systems when users believe in the availability of resources and technical resources, such as the Internet infrastructure that supports the system, the harmony between information, systems and technology needed for online access, and the assistance of others (Wong et al. 2015). In this context, when users ready to buy in that required infrastructure and resources are ready to be utilized.

*H4: Facilitating Conditions have a positive influence on the perceived usefulness.*

### **3.5 PERCEIVED USEFULNESS (PU)**

Keller (2005) stated that perceived usefulness is related to the performance increase that a user will provide to him / her in performing certain tasks and solving problems while using any technology. Perceived usefulness can be defined as the level of belief that a person will benefit by using a particular product (Tzou and Lu 2009). Davis (1989) defines perceived usefulness as the level of belief that an application will help to improve the performance of a task. According to Dnasky et al. (1999), in order to convince end users, builder of the system needs to consider end users' potential needs and additionally organizational requirements. Davis (1989) concluded that perceived benefit has a strong effect on the intention to use. However, Cheng et al. (2005) stated that perceived usefulness does not have a direct effect on behavioral intention, but perceived usefulness affects attitude which has an effect on behavioral intention in system use. As a result of this information, the following hypothesis was developed to measure the effect of perceived usefulness on attitude towards to blockchain.

*H7: Perceived Usefulness has a positive influence on the attitude towards Blockchain.*

### **3.6 PERCEIVED EASE OF USE (PEU)**

PEU can be defined as being easy to use a specific technology and learning without much effort (Davis 1989). When the user perceives the ease of use in technology, it creates the perception that it can get more efficiency from the technology. In particular, prior to direct experiment with the target system, individuals are pending to link the PEU of a new system-specific system to their general conviction about technology and use of technology. Users' perception will change with time when users noticed that system is easy to use, and this will trigger users' willingness to use system. Studies has shown that the adoption and dissemination of technologies is very important for individuals' perceived ease of use against these technologies. Because without the perceived usefulness, TAM's function is unimaginable. Venkatesh (2000, pp. 360-361) tried to explain the function of perceived usefulness in technology acceptance model due to reasons and analyzed the contexts of individuals with previous experiences.

*H6: Perceived Ease of Use has a positive influence on the perceived usefulness.*

*H8: Perceived Ease of Use has a positive influence on the attitude towards blockchain.*

### **3.7 ATTITUDE (AT)**

Attitude towards use is to evaluate the user's desire to use a particular information systems application. Fishbein and Ajzen (1975) show that current attitudes are a prerequisite for individuals to behave in a certain way. Attitude determines the disposition to react negatively or positively and is an important variable and shows intention to use system (Ma et al. 2005). It has been demonstrated that the attitude has a significant effect on the adoption to the information system.

*H9: Attitude towards blockchain has a positive influence on the adoption of blockchain to company.*

### **3.8 ADOPTION (AD)**

TAM, that has been developed by Davis (1989), expresses the factors that has been determining the use of information systems at an individual level. So, after literature study, TAM model has vast use in explaining the adoption of different information systems and revealing the reasons why users should adopt new systems (King and He 2006, p. 740; Lu et al. 2003, p. 207; Dasgupta et al. 2002, p. 87). Empirical research findings show that there is a positive arbiter in the effect of employer branding as a result of system adaptation (Davis 1985). Blockchain supports the adoption process of the system with the concept of employer branding. User perceptions also need to be taken into account to achieve the expected benefits from the adoption of Blockchain (Agarwal and Prasad 1998). When adoption of the blockchain system is planned, it is possible to predict whether users will accept the new system or not. When bank employees are willing to adopt and use the system, implementation success increases, and potential benefits of the system are realized. Announcing that new system will increase the bank's

employees' work efficiency will positively affect the adaptation success of the Blockchain system.

*H10: Adoption of blockchain to the company has a positive influence impact on employer branding.*

### **3.9 EMPLOYER BRANDING (EP)**

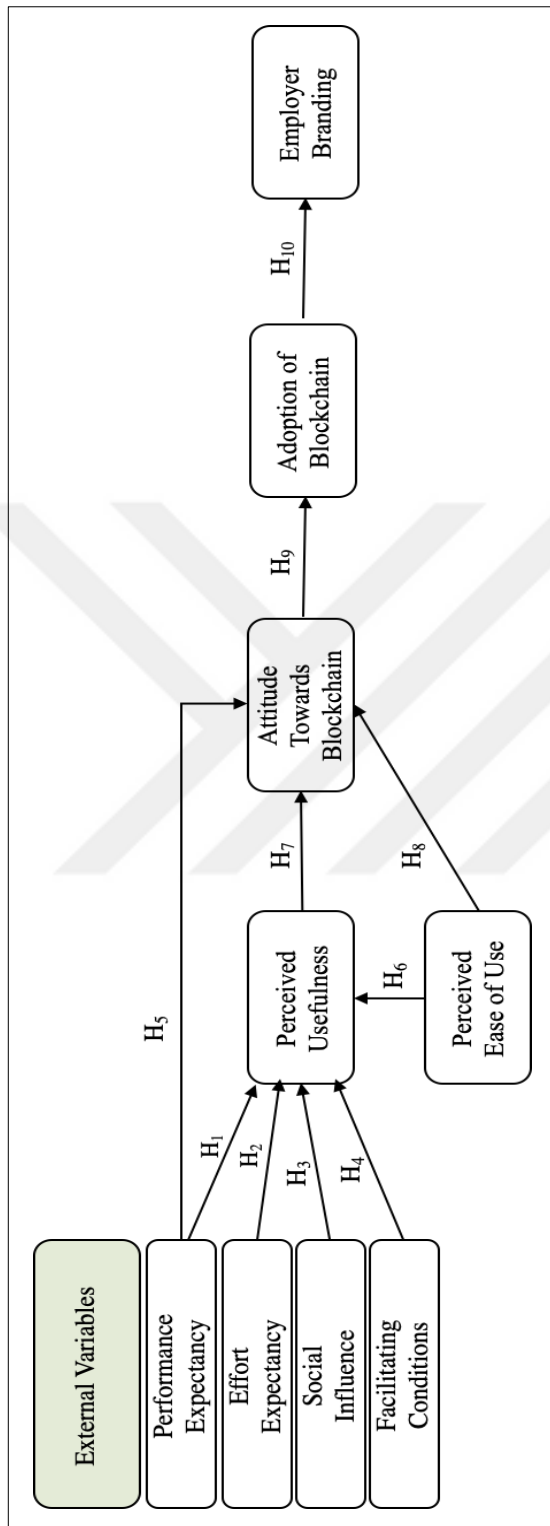
The aim of employer branding is to generate faithful employees that reflect, together with the employer branding, the essence valuation of the company (Moroko and Uncles 2009). This will “attract the best people helping the organization to achieve its business goals” (Moroko and Uncles 2009). Therefore, the companies try to invigorate qualified and committed employees, through emotional engagement and high identification, to stay with the company long-term.<sup>11</sup>

Research model is shown in Figure 3.1.

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<sup>11</sup> (own translation from German) Haldemann, A. & Elbel, M., 2009. Marke such Mitarbeitende: Im Rennen um die Richtigen überzeugen [online], [http://www.metadesign.com/sites/default/files/assets/000/000/008/428/MetaDesign\\_White\\_Paper\\_Employer\\_Branding.pdf](http://www.metadesign.com/sites/default/files/assets/000/000/008/428/MetaDesign_White_Paper_Employer_Branding.pdf) [Accessed 14 May 2018].

Figure 3.1: Research model constructed based on the theory



## **4. METHOD AND DATA**

Methodology part consist of explanation of the research objective, sample selection and data collection, survey design, dependent and independent variables' measurement and definition of the hypothesis regarding to the research model.

### **4.1 RESEARCH DESIGN**

In this study, the adoption and application success of the Blokchain system's effect on employer branding was examined within the frame of Technology Acceptance Model. The external variables was pending to influence the success of Blockchain and employer branding through PEU, PU representing the constructs of the Technology Acceptance Model.

#### **4.1.1 Measurement Instument and Questionnarie Design**

In this analyze, a convineance sampling has been opted and applied that samples were selected because they are reachable and easy to be selected, also this sampling method does not need too much effort, money or time. The elective sample includes banking employees in Istanbul, Turkey.

Research data is collected via online hence the questions were prepared and shared online. 249 banking sector employees filled the questionnaire form and the collected data uploaded to Statistical Package for Social Sciences (SPSS 24.0) platform for making the analysis and assessment.

Questions about the External Variables consistent of four sub-stages: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI) and Facilitating Conditions (FC) were placed. Perceived Usefulness (PU), Perceived Ease of Use (PEU), Attitude towards Blockchain (AT), Adoption of Blockchain (AD) were selected for TAM model. As the dependent variable Employer Branding (EB) was used.

For measuring PE, EE, PU and AD there were four items to be questioned, whereas SI, PEU, and EB constructs/sub-constructs had same amount of items as five to be questioned. Finally, FC and AT were measured with three items. All items were measured on 5-point likert scale defined as 1=Strongly Disagree, 2=Agree, 3=Neither agree nor disagree, 4=Agree and 5=Strongly Agree and were adopted from previous literature. The items were translated and back translated and a total of 249 responses have been collected. In the survey, demographic parts included as gender, education level, age, and income level of participants. Age was questioned under age categories, part of gender includes male or female sections, level of education was ranging from high school degree to PHD degree, and level of income was ranging from 2,001 TL to 10,000+ TL. Table 1 shows the constructs and related items adopted from previous studies in literature, their abbreviations and sources.

**Table 4.1: Independent and dependent variables’ measurement**

Constructs	Abbr.	Items to be Questioned	Source
External Variables	Performance Expectancy	PE1 Blockchain system is useful to carry out my tasks	Venkatesh et al. 2003
		PE2 I think that using blockchain system would enable me to conduct tasks more quickly	
		PE3 I think that using blockchain would increase my productivity	
		PE4 I think that using blockchain system would improve my performance	
	Effort Expectancy	EE1 My interaction with Blockchain would be clear and understandable	
		EE2 It would be easy for me to become skilful at using Blockchain system	
		EE3 I would find Blockchain system easy to use	
		EE4 I think that learning to operate Blockchain would be easy for me	
	Social Influence	SI1 People who influence my behaviour think that I should use Blockchain system	
		SI2 People who are important to me think that I should use Blockchain system	
		SI3 People in my environment who use Blockchain system services have more prestige than those who do not	
		SI4 People in my environment who use Blockchain services have a high profile	
		SI5 Using Blockchain system is a status symbol in my environment	
	Facilitating Conditions	FC1 I have the resources necessary to use Blockchain system	
		FC2 I have the knowledge necessary to use Blockchain system	
		FC3 Blockchain system is not compatible with other system I use (reverse coded)	

**Table 4.1: Independent and dependent variables’ measurement**

Constructs	Abbr.	Items Questioned	Source
Perceived Usefulness	PU1	Using Blockchain system improves my performance in my job	Venkatesh and Davis 2000
	PU2	Using Blockchain system in my job increases my productivity	
	PU3	Using Blockchain system enhances my effectiveness in my job	
	PU4	I find Blockchain system to be useful in my job	
	PEU1	Interacting with Blockchain system does not require a lot of my mental effort	
Perceived Ease of Use	PEU2	I find Blockchain system to be easy to use	Venkatesh and Davis 2000
	PEU3	I find it easy to get Blockchain system to do what I want it to do	
	PEU4	Using Blockchain system reduces the time I spend on unproductive activities	
	PEU5	Using Blockchain system improves the quality of the work I do	
	AT1	In my opinion it is desirable to use Blockchain System	
Attitude towards Blockchain	AT2	I think it is good for me to use Blockchain System	Cheng et al. 2006
	AT3	Overall my attitude towards Blockchain system is favorable	
	AD1	We have implemented Blockchain in all our business processes	
Adoption of Blockchain to Company	AD2	Blockchain has had a very limited impact on our business operations (reverse coded)	Srinivasan et al. 2006
	AD3	Relative to the potential of e-business for our business, our Blockchain implementation is extensive	
	AD4	Blockchain has substantially changed our business processes	
	EB1	The organisation produces innovative products and services	
Employer Branding	EB2	The organisation both values and makes use of your creativity	Berthon et al. 2005
	EB3	The organisation produces high quality products and services	
	EB4	Feeling good about yourself as a result of working for this particular organisation	
	EB5	Feeling more self confident as a result of working for these particular organisations	

## 5. FINDINGS

### 5.1 DESCRIPTIVE STATISTICS FOR DEMOGRAPHIC VARIABLES

Information of the demographic details such as age, gender, marital status, income levels and education were analyzed with descriptive statistics.

Ages of the sample of this research was ranging from 25 to more than 55. From the total number of 249 respondents, generality of the sample were between 35 and 45 years old (51.4 percent), followed by 25 and 34 years old (28.9 percent) and 46 and 54 years old (16.5 percent). The respondents who were more than 54 years old consisted of the minority of the sample with 3.2 percent.

**Table 5.1: Sampling based on age**

	N	%
25-34	72	28.9
35-45	128	51.4
46-54	41	16.5
More than 54	8	3.2
Total	249	100

Out of 249 respondents, 129 were determined as female, and 120 as male respondents. Corresponding percentages of these categories could be defined as 51.8 percent of all respondents were female, and 48.2 percent were male.

**Table 5.2: Sampling based on gender**

	N	%
Female	129	51.8
Male	120	48.2
Total	249	100

148 respondents were seemed to be married, and 101 were single. In terms of percentage, it could be defined as 59.4 percent were married respondents, and 40.6 percent were single. Generality of the sample was defined as married with regard to marital status.

**Table 5.3: Sampling based on marital status**

	N	%
Married	148	59.4
Single	101	40.6
Total	249	100

Education level of the respondents were at least High School Degree. Generality of the sample with had Bachelor Degree (119 respondents were constituted 47.8 percent), 95 respondents had Master's Degree (38.2 percent), and 14 people had Doctorate Degree (5.6 percent), only 4 people had a high school degree (1.6 percent of all). Education level of the sample was defined as quite high regarding to these results.

**Table 5.4: Sampling based on level of education**

	N	%
High School Degree	4	1.6
Associate Degree	17	6.8
Bachelor Degree	119	47.8
Master's Degree	95	38.2
Doctorate Degree	14	5.6
Total	249	100

Income level of the respondents were between 2,001 TL to 10,000+ TL. Generality of the sample with 96 respondents had 4,001-6,000 TL income (38.6 percent), followed by 84 people had an income level of 6,001-10,000 TL (33.7 percent). The other lowest and hishest income groups had approximately similar amount of respondents where 35 people had 2,001-4,000 TL income (14.1 percent), and 34 people had more than 10,000 TL income (13,7 percent).

**Table 5.5: Sampling based on level of income**

	N	%
2,001-4,000 TL	35	14.1
4,001-6,000 TL	96	38.6
6,001-10,000 TL	84	33.7
More than 10,000 TL	34	13.7
Total	249	100

## 5.2 FACTOR ANALYSIS

Explatory Factor Analysis (EFA) is generally used to group the highly related variables, to extracted new components called factors (Hair et al. 2006). The principal objective of this analysis is reveal the hidden structure of the data set and reduce the dimension of the data. For this reason factor analysis was conducted to find out the number of different

dimensions that the respondents of this study perceived comparing to the original data of the scale. Besides, other aim of conducting this analysis is confirming the theoretical content groups.

There are three main assumptions of factor analysis to be satisfied before interpreting the results. Kaiser-Meyer-Olkin Sampling Adequacy (KMO) checks how the data is suited for EFA, the threshold level for KMO is stated as 0.50 (Durmuş et al. 2011). Bartlett's test of sphericity is a hypothesis testing that claims the correlation matrix is an identity matrix that implies the lack of inter-correlation with the variables. For this reason Bartlett's test hypothesis should be rejected to continue factor analysis. In social sciences generally 95 percent confidence interval is adequate for the analyses, and corresponding p-value is stated as 0.05. The third assumption checks the suitability of the variables separately, Anti-Image Correlation matrix diagonal values should be at least 0.50.

To determine the reliability of the factors extracted by exploratory factor analysis, Cronbach's alpha measurement should be calculated and checked and this measurement is recommended to be exceeding 0.70 to obtain consistent factors (Nunnally 1978).

EFA for external variables; PEU, PU, AT, adoption of Blockchain to company and employer branding was fulfilled in this study. Some of the items such as FC3 and AD2 were asked reversely in the questionnaire, for this reason prior to factor analysis these items were re-coded.

### **5.2.1 External Variables's Factor Analysis and Reliability Analysis**

Component analysis of principal and varimax rotation was applied in EFA. Kaiser-Mayer-Olkin and Bartlett test of sphericity measures were calculated to reveal the convenience of the data for EFA. The results of these mentioned measures (KMO=0.873, Bartlett test of sphericity  $\chi^2=1811.344$ ,  $df=78$ ,  $p=0.000$ ) were found as persuasive. The diagonal values of anti-image correlation matrix in EFA for the items in the analysis were all over 0.50, stating all items in EFA were to be remained. One item of Social Influence

(SI2), one item of Effort Expectancy (EE1) and one item of Facilitating Conditions (FC3) were excluded from the analysis because of low factor loadings.

**Table 5.6: External variables’ factor analysis and reliability analysis**

Name of Factor	Item of Factor	Loading of Factor	%Variance	Reliability
Performance Expectancy (PC)	PE2	0.839	21.78	0.851
	PE3	0.767		
	PE1	0.716		
	PE4	0.662		
Social Influence (SI)	SI4	0.875	20.75	0.854
	SI5	0.868		
	SI3	0.820		
	SI1	0.527		
Effort Expectancy (EE)	EE3	0.858	20.54	0.874
	EE2	0.824		
	EE4	0.708		
Facilitating Conditions (FC)	FC2	0.830	11.95	0.635
	FC1	0.751		

Subsequently Reliability Analysis was fulfilled and Cronbach’s alpha parameter was calculated. Except Facilitating Conditions ( $\alpha = 0.635$ ) three of the constructs within the analyses were exceeding 0.70, that was threshold level. Since Facilitating Conditions have two items withing the constructs, Perry et al., (2004) suggested that Cronbach’s alpha value above 0.60 is also sufficient for the contract to be consistent. For this reason Facilitating Conditions was remained in the analysis and as a result four dimensions External Variables were extracted with a 75.01 percent of total variance explained.

### 5.2.2. Perceived Usefulness’ Factor Analysis and Reliability Analysis

Principal ingredient analysis and varimax rotation was applied in EFA. Kaiser-Mayer-Olkin and Barlett test of sphericity measures were calculated to reveal the convenience of the data for EFA. The results of these mentioned measures (KMO=0.775, Bartlett test of sphericity  $\chi^2 = 522.483$ ,  $df=6$ ,  $p=0.000$ ) were found as satisfactory. The diagonal values

of anti-image correlation matrix in EFA for the items in the analysis were all over 0.50, stating all items in EFA were to be remained. None of the items were omitted.

Reliability Analysis was fulfilled and Cronbach’s alpha parameter was calculated and the dimension was found as reliable. As a result only one dimension of Perceived Usefulness was extracted, with a 72.16 percent of total variance explained.

**Table 5.7: Perceived usefulness’ factor analysis and reliability analysis**

Name of Factor	Item of Factor	Loading of Factor	%Variance	Reliability
Perceived Usefulness (PU)	PU2	0.902	72.16	0.868
	PU3	0.856		
	PU1	0.836		
	PU4	0.801		

### 5.2.3 Perceived Ease of Use’s Factor Analysis and Reliability Analysis

Principal ingredient analysis and varimax rotation was applied in EFA. Kaiser-Mayer-Olkin and Barlett test of sphericity measures were calculated to reveal the convenience of the data for EFA. The results of these mentioned measures (KMO=0.744, Bartlett test  $\chi^2=517.883$ ,  $df=10$ ,  $p=0.000$ ) were found as satisfactory. The diagonal values of anti-image correlation matrix in EFA for the items in the analysis were all over 0.50, stating all items in EFA were to be remained. No items were excluded.

Reliability Analysis was fulfilled and Cronbach’s alpha parameter was calculated and the dimension was found as reliable. Again only one dimension of perceived ease of use was extracted with a 57.90 percent of total variance explained.

**Table 5.8: Perceived ease of use’s factor analysis and reliability analysis**

Name of Factor	Item of Factor	Loading of Factor	%Variance	Reliability
Perceived Ease of Use (PEU)	PEU3	0.874	57.90	0.799
	PEU4	0.809		
	PEU2	0.778		
	PEU5	0.754		
	PEU1	0.551		

#### **5.2.4 Attitudes towards Blockchain’s Factor Analysis and Reliability Analysis**

Principal ingredient analysis and varimax rotation was applied in EFA. Kaiser-Mayer-Olkin and Barlett test of sphericity measures were calculated to reveal the convenience of the data for EFA. The results of these mentioned measures (KMO=0.696, Bartlett test  $\chi^2=221.146$ ,  $df=3$ ,  $p=0.000$ ) were found as satisfactory. The diagonal values of anti-image correlation matrix in EFA for the items in the analysis were all over 0.50, stating all items in EFA were to be remained. None of the items were omitted.

Reliability Analysis was fulfilled and Cronbach’s alpha parameter was calculated and the dimension was found as reliable. Again only one dimension for attitudes towards blockchain was extracted with a 70.40 percent of total variance explained.

**Table 5.9: Attitudes towards blockchain’s factor analysis and reliability analysis**

Name of Factor	Item of Factor	Loading of Factor	%Variance	Reliability
Attitudes towards Blockchain (AT)	AT2	0.864	70.40	0.787
	AT1	0.845		
	AT3	0.807		

#### **5.2.5 Adoption of Blockchain’s Factor Analysis and Reliability Analysis**

Principal ingredient analysis and varimax rotation was applied in EFA. Kaiser-Mayer-Olkin and Barlett test of sphericity measures were calculated to reveal the convenience of the data for EFA. The results of these mentioned measures (KMO = 0.652, Bartlett test

$\chi^2 = 149.780$ ,  $df = 3$ ,  $p = 0.000$ ) were found as satisfactory. The diagonal values of anti-image correlation matrix in EFA for the items in the analysis were all over 0.50, stating all items in EFA were to be remained. AD2 was excluded from the analysis because of low factor loadings.

Reliability Analysis was fulfilled and Cronbach's alpha parameter was calculated and the dimension was found as reliable. Again only one dimension for attitudes towards blockchain was extracted with a 63.75 percent of total variance explained.

**Table 5.10: Adoption of blockchain's factor analysis and reliability analysis**

Name of Factor	Item of Factor	Loading of Factor	%Variance	Reliability
Adoption of Blockchain (AD)	AD4	0.846	63.75	0.699
	AD3	0.809		
	AD1	0.737		

### 5.2.6 Employer Branding's Factor Analysis and Reliability Analysis

Principal ingredient analysis and varimax rotation was applied in EFA. Kaiser-Mayer-Olkin and Barlett test of sphericity measures were calculated to reveal the convenience of the data for EFA. The results of these mentioned measures (KMO = 0.787, Bartlett test  $\chi^2 = 370.562$ ,  $df = 10$ ,  $p = 0.000$ ) were found as satisfactory. The diagonal values of anti-image correlation matrix in EFA for the items in the analysis were all over 0.50, stating all items in EFA were to be remained. None of the items were omitted.

Reliability Analysis was fulfilled and Cronbach's alpha parameter was calculated and the dimension was found as reliable. Again only one dimension for employer branding was extracted with a 55.65 percent of total variance explained.

**Table 5.11: Employer branding’s factor and reliability analysis**

Name of Factor	Item of Factor	Loading of Factor	%Variance	Reliability
Employer Branding (EB)	EB4	0.783	55.65	0.800
	EB2	0.766		
	EB5	0.763		
	EB3	0.709		
	EB1	0.705		

### 5.3 EACH CONSTRUCTS’ RELIABILITY ANALYSIS

Cronbach’s alpha scores, also defining the reliability, of Performance Expectancy, Social Influence, Effort Expectancy, Facilitating Conditions, Perceived Usefulness, Perceived Ease of Use, Attitudes towards Blockchain, Adoption of Blockchain and Employer Branding were demonstrated in Table 5.12.

**Table 5.12: Reliability analysis results**

Constructs	Reliability
Performance Expectancy	0.851
Social Influence	0.854
Effort Expectancy	0.874
Facilitating Conditions	0.635
Perceived Usefulness	0.868
Perceived Ease of Use	0.799
Attitudes towards Blockchain	0.787
Adoption of Blockchain	0.699
Employer Branding	0.800

After the EFA and reliability analysis some of the inappropriate items were excluded. Average scale was used to create new variables regarding to the results.

## 5.4 REGRESSION AND CORRELATION ANALYSIS

The variable that the researcher desires to test the effect on dependent variable can be defined as independent variable. On the other hand, dependent variable is the main construct of interest. Cause and effect relation exists between these concepts. The linear relation between independent variable(s) and dependent variable can be examined with Regression Analysis which is one of the most popular method to asses the linear equation between dependent variable and independent variable(s). The impact of each independent variable on dependent variable in terms of magnitude and direction can easily be observed by this analysis.

Multiple linear regression and correlation analysis is fulfilled if only one dependent and independent variable exist in the research model, otherwise multiple linear regression and correlation analysis is preferred if the researcher is examining impact of two or more independent variables on the dependent variable.

Pearson Correlation parameter indicates the linear bivariate association between two variables. Table 5.13 showed bivariate correlation values of each construct in the research model. All the correlations were found as significant.

**Table 5.13: Pearson correlation results**

	EB	PE	EE	SI	FC	PU	PEU	AT	AD
EB	1								
PE	0.365**	1							
EE	0.482**	0.662**	1						
SI	0.249**	0.487**	0.459**	1					
FC	0.236**	0.430**	0.516**	0.187**	1				
PU	0.329**	0.742**	0.674**	0.529**	0.510**	1			
PEU	0.347**	0.599**	0.610**	0.395**	0.534**	0.769**	1		
AT	0.379**	0.622**	0.598**	0.395**	0.419**	0.642**	0.669**	1	
AD	0.449**	0.569**	0.562**	0.317**	0.430**	0.587**	0.561**	0.425**	1

\*\* : All correlation parameters were statistically significant at  $p=0.01$

### 5.4.1 Multiple Regression Analysis between External Variables, PEU and PU

Multiple Linear Regression Analysis was applied to find the relation between and Perceived Ease of Use and the dimensions of External Variables as independent variables and Perceived Usefulness as a dependent variable.

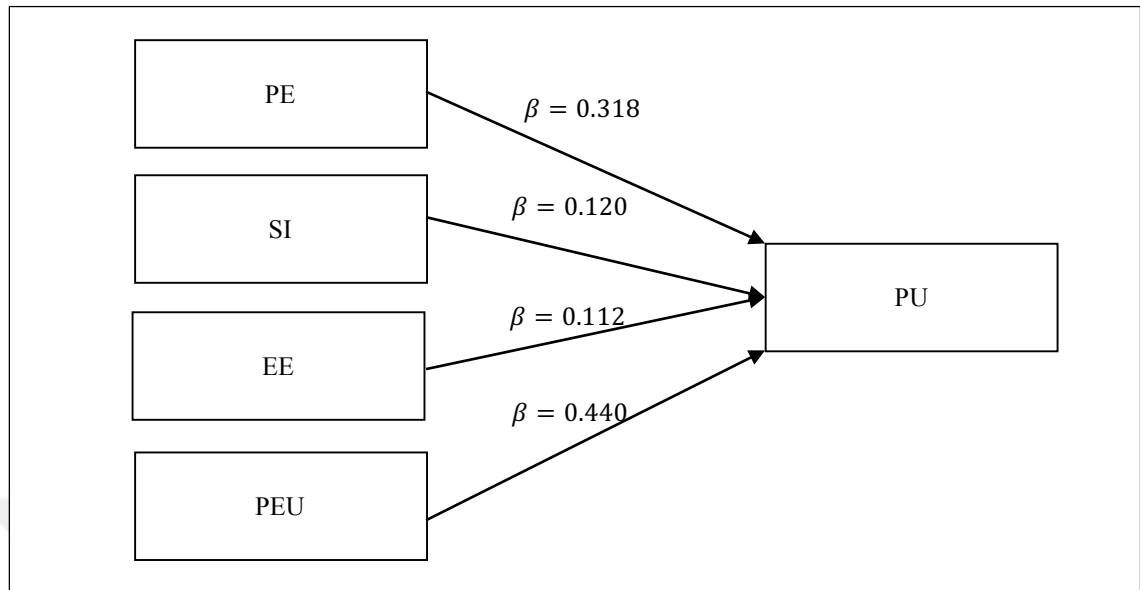
Table 5.14 shows the results of analysis, Performance Expectancy ( $p=0.000$ ), Social Influence ( $p=0.006$ ), Effort Expectancy ( $p=0.031$ ) and Perceived Ease of Use ( $p=0.000$ ) had statistically significant subscription on Perceived Usefulness. The power of overall expository model was 73.4 percent ( $R=0.857$ ;  $R^2=0.734$ ;  $F=130.650$ ,  $p=0.000$ ).

**Table 5.14: Multiple linear regression for perceived usefulness**

Dependent Variable: PU				
Independent Variables	Beta	t-value	p-value	VIF
PE	0.318	6.307	0.000	2.261
SI	0.120	2.785	0.006	1.648
EE	0.112	2.174	0.031	2.362
FC	0.042	0.951	0.343	1.754
PEU	0.440	9.434	0.000	1.937

As it can be seen from Figure 5.1, Facilitating Conditions did not have an impact ( $p=0.343$ ) on PU. There were found to be positive weak relation between the mentioned independent constructs and perceived usefulness. In a descending order of the magnitude of the relation with PU; PEU ( $\beta=0.440$ ), PE ( $\beta=0.318$ ) SI ( $\beta=0.120$ ) and EE ( $\beta=0.112$ ) could be placed.

**Figure 5.1: Multiple linear regression of the hypothesis for perceived usefulness**



#### **5.4.2 Multiple Regression Analysis between PU, PEU and PE and Attitude towards Blockchain**

In order to find the impacts of Perceived Usefulness, Perceived Ease of Use and Performance Expectancy on Attitude towards Blockchain, Multiple Linear Regression Analysis was applied again.

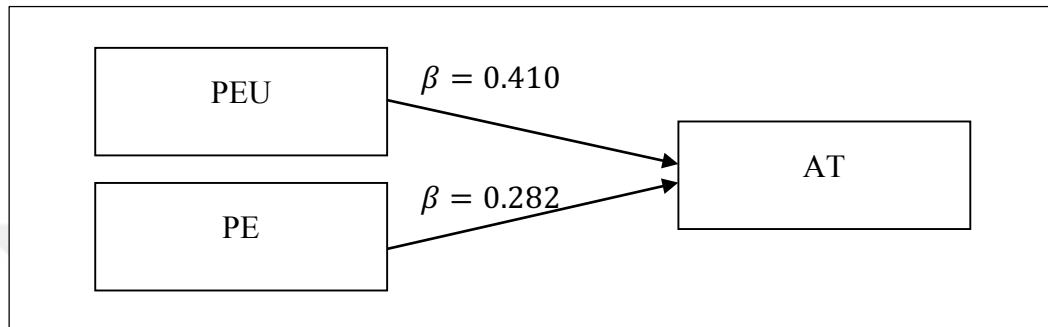
Table 5.15 shows the results of analysis, at least one of the construct among PU, PEU and PE had subscription on AT. The power of overall expository model was 52.3 percent ( $R=0.723$ ;  $R^2=0.523$ ;  $F=87.748$ ,  $p=0.000$ ).

**Table 5.15: Multiple linear regression for attitude towards blockchain**

Dependent Variable: AT				
Independent Variables	Beta	t-value	p-value	VIF
PU	0.117	1.408	0.160	3.488
PEU	0.410	5.856	0.000	2.457
PE	0.282	4.236	0.000	2.226

As it can be seen from Figure 5.2, Perceived Usefulness did not have an impact ( $p=0.160$ ) on AT. There were positive weak impacts of Perceived Ease of Use ( $\beta=0.410$ ,  $p=0.000$ ) and Performance Expectancy ( $\beta=0.282$ ,  $p=0.000$ ) on Attitude towards Blockchain.

**Figure 5.2: Multiple linear regression of the hypothesis for attitude towards blockchain**



### 5.4.3 Simple Regression Analysis between Attitude towards Blockchain and Adoption of Blockchain

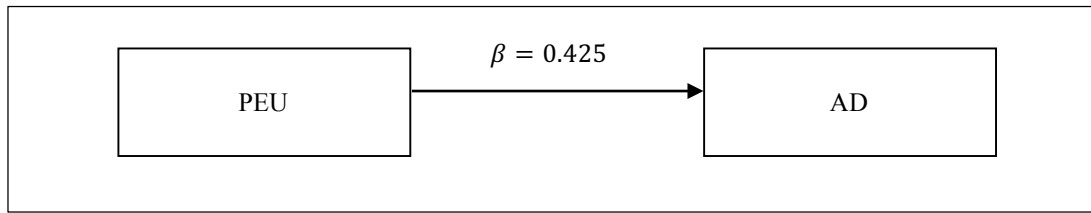
To analyze the relation between Attitude towards Blockchain and Adoption of Blockchain, in this case Simple Linear Regression Analysis was applied. Table 5.16 shows the results of the analysis, AT had a statistically significant subscription on AD. The power of overall expository model was 18 percent ( $R=0.425$ ;  $R^2=0.180$ ;  $F=54.319$ ,  $p=0.000$ ).

**Table 5.16: Simple linear regression for adoption of blockchain**

Dependent Variable: AD			
Independent Variables	Beta	t-value	p-value
AT	0.425	7.370	0.000

As it can be seen from Figure 5.3, there was positive weak relation between Attitude towards Blockchain ( $\beta=0.425$ ,  $p=0.000$ ) and Adoption of Blockchain.

**Figure 5.3: Simple linear regression of the hypothesis for adoption of blockchain**



**5.4.4 Simple Regression Analysis between Adoption of Blockchain and Employer Branding**

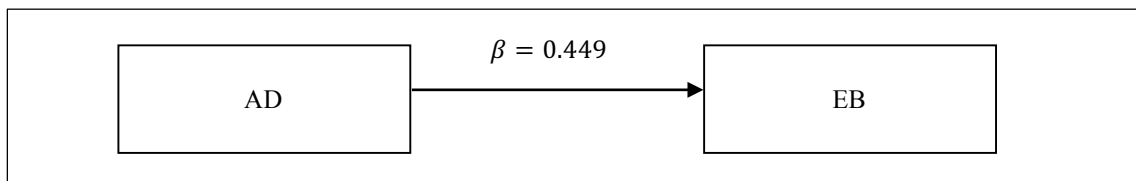
Similarly Simple Linear Regression Analysis was applied to analyze the relation between Adoption of Blockchain and Employer Branding. Table 5.17 shows the results of this analysis, AT had a statistically significant subscription on AD. The power of overall expository model was 20.2 percent ( $R=0.449$ ;  $R^2=0.202$ ;  $F=62.406$ ,  $p=0.000$ ).

**Table 5.17: Simple linear regression for employer branding**

Dependent Variable: EB			
Independent Variables	Beta	t-value	p-value
AD	0.449	7.900	0.000

As it can be seen from Figure 5.4, there was positive weak relation between Adoption of Blockchain ( $\beta=0.449$ ,  $p=0.000$ ) and Employer Branding.

**Figure 5.4: Simple linear regression of the hypothesis for employer branding**



## 5.5 SUMMARY OF HYPOTHESES RESULTS

In the research model all the hypothesis were generated related to the objective of the study, and Table 5.18 shows the summary of all the regression analysis results that tests these proposed hypothesis.

**Table 5.18: Summary of research hypotheses**

<b>Hypothesis</b>	<b>Conclusion</b>
<b>H1:</b> Performance Expectancy has a positive influence on Perceived Usefulness	Supported
<b>H2:</b> Effort expectancy has a positive influence on Perceived Usefulness	Supported
<b>H3:</b> Social Influence has a positive influence on Perceived Usefulness	Supported
<b>H4:</b> Facilitating Conditions have positive influence on Perceived Usefulness	Not Supported
<b>H5:</b> Performance Expectancy has a positive influence on Attitude Towards to Blockchain	Supported
<b>H6:</b> Perceived Ease of Use has a positive influence on Perceived Usefulness	Supported
<b>H7:</b> Perceived Usefulness has positive influence on Attitude Towards Blockchain	Not Supported
<b>H8:</b> Perceived Ease of Use has a positive influence on Attitude Towards Blockchain	Supported
<b>H9:</b> Attitude Towards Blockchain has a positive influence on Adoption of Blockchain to Company	Supported
<b>H10:</b> Adoption of blockchain to company has a positive influence on Employer Branding	Supported

## 6. CONCLUSION AND DISCUSSION

Nowadays, companies have to brand themselves as much as their products; human resources have an sensitive role to play. The necessity of communication practices that companies need to communicate with each passing day necessitated human resources to rebuild themselves. Human resources reproduce the dynamics within themselves; has expanded its boundaries and internalized its employer brand approach. Employer brand management approach; It is possible to accept it as deep insight into human resources. Although the projection of the employer brand to companies is seen in human resources practices; in fact, it has more than a role from the function of human resources. Companies with employer brand management strategies; apply branding practices and brand themselves; they can create the desired image, loyalty, and attractiveness in their messages to their current and potential target groups.

The banking sector is one of the leading sectors that want to make a difference with the developing technological opportunities and want to take a step forward. They want to make the banking sector a part of the system through digital channels, which is the sector where the development and adoption of the digital world is the most intense. In this study, the adoption of the “Blockchain” system, which is named as technological revolution and entered into our lives with the concept of Bitcoin in 2008, and its effect on the employer brand was analyzed.

With globalization, it has always been an indicator of behavior that consumers all around the world want to get better quality products and services and that services and products needed to be align with this expectation. In order to provide these quality products and services to consumers, businesses need qualified and highly skilled expert staff. Especially in recent years, the demand for expert staff and the retention of these expert staff have started to be extremely demanded by the enterprises. Although the desire to meet these expectations is not sufficient at the moment, many companies are trying to close the gap with the vocational trainings they provide to their employees.

It is seen that the concept of employer brand has started to mature in the recent years in order to meet the demands. Simon Barrow mentioned the employer brand in the 1990s, the applications for employer brand are coming to the agenda in our country recent years. Especially in recent years, topic mentioned in theses, articles and books. Considering the situation of attracting and retaining talented employees in the organization, employer brand management and technology infrastructures presented as employers should be mentioned. It is seen that a company that will make the employees feel happy, safe and comfortable, will retain expert staff that can benefit from its organization for a long time.

Nowadays, digitalization concept, as seen everywhere, is still not fully understood by some sectors and the perspective of, process is merely a workflow change is completely is missing thought. These processes mean a change of thought, a change of culture. As a result of the implementation of the crypto-money applications and infrastructures that reveal how financial systems should work in the era of digitalization, it will be possible to work in harmony with all sectors, especially banking. However, the most important point here is to adopt the infrastructure and to understand the technology and mastery of the details and also to make the right decisions when the day comes. Blockchain technology is being adopted day by day in the global economy. Its adoption will have a major impact on how businesses and governments work and how people organize their daily lives. Blockchain can be used for transferring almost any value with its secure, transparent and accountable structure that facilitates business processes. The principle of this technology at the core is that it records every stage of a value that requires reconciliation, security and confidentiality, and from this perspective, the banking and financial sector is seen as the most appropriate sectors in the use of Blockchain. The multidisciplinary interaction of finance and technology requires strong cooperation between producers, users and regulatory authorities, and therefore the employer must work collaboratively to become involved in the employee ecosystem. Blockchain was the first technology to emerge in 2009, it was not discovered and explored by the financial community till 2014. In order to better understand the potential of Blockchain, the application areas have been established to employer branding.

According to the findings of the analyzes, the perceived ease of use shows that the variable has a positive and statistically significant effect on the adoption of the blockchain system and the attitude towards its use. This means that if they perceive it as useful and easily applicable for bank employees, they will create an attitude towards the use of the system and will not resist in any way. This result supports the findings of Davis (1989) and Cheng et al. (2005). On the other hand, perceived benefit and attitudes towards use have a negative effect on behavioral intention. As a result, bank employees do not have a positive attitude because they do not have a good command of the system. Findings do not support Davis's (1989) finding that perceived benefit has a strong effect on behavioral attitudes. Other factors, except facilitating conditions, have been observed to have positive and direct effects. These findings indicate that they believe in the adoption and ease of the system and that learning will be high as a result of these conviction. In the process of adoption to the employer brand influence, the attitudes and behavior show that it has a positive and statistically significant effect on. If the intention of the users working in the banking sector has occurred, this will emerge as the usage behavior and the employer will make a major subscription to the branding process.

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