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## THE IMPACT OF CORPORATE INFORMATION MANAGEMENT PLATFORM ON E-COMMERCE ENVIRONMENT IN THE CONTEXT OF ENTREPRENEURSHIP

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### Abstract

Addressing the e-commerce environment, this study is designed to validate the feasibility of an enterprise information management platform based on cloud storage technology and system testing. Experimental results show that the platform designed in this article has approximately 195 fluctuating processes per second in the average number of transactions per second, which has a better test effect in terms of business efficiency. In addition, other performance index tests have reached the standard. These include a user authentication time of just 0.96 seconds, a material information input time of 2.54 seconds, a material information query response time of only 0.97 seconds, and a relatively fast response time. The research is limited to Turkey. This research is expected to provide an efficient information management platform for the entire production process for the sales of the enterprise and encourage the development of business management informatics in Turkey. The study is limited to the topic of cloud storage technology and is based on system testing.

**Keywords:** *Management, E-Commerce, Enterprise information, Information Management, Platform.*

## GİRİŞİMCİLİK BAĞLAMINDA E-TİCARET ORTAMINA DAYALI KURUMSAL BİLGİ YÖNETİMİ PLATFORMU

### Öz

E-ticaret ortamına değinen bu çalışma, bulut depolama teknolojisine ve sistem testlerine dayalı bir kurumsal bilgi yönetimi platformunun fizibilitesini doğrulamak için tasarlanmıştır. Deneysel sonuçlar, bu makalede tasarlanan platformun saniyede ortalama işlem sayısında saniyede yaklaşık 195 dalgalı işleme sahip olduğunu ve bunun iş verimliliği açısından daha iyi bir test etkisine sahip olduğunu göstermektedir. Buna ek olarak, diğer performans endeksi testleri standarda ulaşmıştır. Bunlar arasında yalnızca 0,96 saniyelik bir kullanıcı kimlik doğrulama süresi, 2,54 saniyelik bir malzeme bilgi giriş süresi, yalnızca 0,97 saniyelik bir malzeme bilgi sorgusu yanıt süresi ve nispeten hızlı bir yanıt süresi bulunur. Araştırma Türkiye ile sınırlıdır. Bu araştırmanın işletmenin satışları için tüm üretim süreci için verimli bir bilgi yönetim platformu sağlaması ve Türkiye'de işletme yönetimi bilişiminin geliştirilmesini teşvik etmesi beklenmektedir. Çalışma, bulut depolama teknolojisi konusu ile sınırlıdır ve sistem testine dayanmaktadır.

**Anahtar Kelimeler:** *Yönetim, E-Ticaret, Kurumsal bilgiler, Bilgi Yönetimi, Platform.*

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## **INTRODUCTION**

The concept of “globalization” has been integrated into daily lives with the process of integration arising from the exchange of goods and services, thoughts, cultures, and life opinions in the world. Globalization is the abolition of all boundaries between states or individuals and thus the development of economic, political and social relations (Bauman, 2020).

Imperative integration of globalization; has made countries, businesses, societies, and individuals interdependent and has arisen the situation of acting together or acting independently within the framework of certain rules. The unbalanced distribution of natural resources on earth has forced trade between countries. People buy products and services directly or indirectly from another country to meet their needs that they cannot meet in their own country. Developments in information technologies and the internet environment, combined with commercial intelligence, have created a network where buyers and sellers can meet. Today, the businesses that participated in this network and were able to adapt have been successful and have been able to grow their businesses. The fact that trade can now be done over the Internet has made the world more global and accelerated trade opportunities.

In the management of enterprise information, the soul of enterprise management is planned, and its significance is to use enterprise information management concepts and ideas to reflect it, and planning is the key to an enterprise (Momo, Twum-Darko, 2017:3). All resources owned by an enterprise need the role of planning, to maximize the use of resources. In the information age, enterprise information management is particularly important. Therefore, in the context of e-commerce, designing of enterprise’s information management platform is of great significance (Hirakawa et al., 2017:229).

Business innovation should be used most effectively in the field of e-commerce. It is the most effective way to create added value by using existing values (Sipahi, 2017:426). The basic requirements for innovation needed to ensure business sustainability require the establishment of long-term alliances between various stakeholders as the main motivation for open innovation at both macro and micro levels (Huong et al., 2021: 10-11).

Temur & Bolat (2018) has designed a set of information system for manufacturing SMEs based on Ajax technology and MVC mode, to respond to the problems of limited resources, low production efficiency, and difficult cost control for manufacturing SME production management information platforms. Temur & Bolat (2018) focused on describing the ordering of specific business logic within the enterprise, overall system architecture design, Ajax asynchronous interaction technology, and application of the MVC model in the system, etc., to inform the production management process of small and medium-sized enterprises in the manufacturing industry, and improve the company’s market competitiveness and economic benefits. At present, the system has been applied to a refractory manufacturing company. The practical application proves that the system is reliable, efficient, and scalable (Temur & Bolat, 2018).

This work uses cloud storage technology based on the e-commerce environment to design an enterprise information management platform. The paper first introduces the relationship between e-commerce and enterprise informatization, then explains related concepts, and uses cloud storage technology to design an information management platform. The main contribution of the present study is that the system is to be built on a web server. Users only need a browser to complete the use of the entire system, which is very convenient.

## **LEGAL CONDITIONS FOR CLOUD COMPUTING IN TURKEY**

As in the early periods when cloud computing caused much turmoil in the field of law and the banking sector started to serve using internet infrastructure, it is predictable in the face of the lack of existing legal regulations that those who do not have enough power to seek rights can become victims.

In cloud computing, the relationship between service providers and users is limited only to service contracts, and there are no legal grounds for the user to hold on to, especially when it comes to resolving disputes arising from the service provider. There are no legal regulations regarding the confidentiality of personal information and the protection of data in cloud computing in Turkey. Under these circumstances, it is not possible to use

service providers who collect, use, and do not take adequate measures to protect personal information as they wish. Changes have been made to the existing “Bill on the Protection of Personal Data” for 15 years. The latest bill, drafted in line with European Commission (EC) data protection directives, has not yet been enacted (KVKK, 2012).

Enactment of the bill; The growth of the exports of the IT sector is also important in terms of seeing Türkiye as a safe country in the relations that enable information exchange with European Commission (EC) countries and ensuring that individuals use information technologies while protecting their constitutional rights.

In addition, it is stated which court will be authorized and in which cases legal rights cannot be claimed in case of any conflict in the service agreements made by cloud computing service providers with the user. To overcome this situation and protect user rights, legal regulations must be made. One example of the issue is that public administrators in the city of Los Angeles insist on a contract that stipulates that data remains within the United States when they start using Google apps, eliminating the possibility of going to courts outside the United States in the event of any conflict with it (Thibodeau & Boroditsky, 2011:1).

The address of a court located out of Türkiye as the competent court in the service contracts means that an international and costly legal battle will be required to claim in the event of any conflict. If the authorized court is not included in the service contracts and the servers of the service provider are located in a different country, only The Turkish Penal Code (TCK)'s 12<sup>th</sup> and 13<sup>th</sup> countries, which individuals may consider applying for such service agreements and crimes committed in a foreign country, shall be subject to the 12<sup>th</sup> and 13<sup>th</sup> districts of the TCK. Substances appear to be present (The Turkish Penal Code, 2004).

However, in crimes against the victim outside Türkiye, the 12th article of the TCK, which is based on the protection of the victim, is not. Since the article stipulates that the perpetrator who committed the crime in a foreign country must be present in Türkiye, the protection of this article in cloud computing depends on the presence of a representative of the service provider in Türkiye. The article includes other crimes committed in a foreign country. However, since the catalog crimes contained in this article do not include IT crimes, they are far from being the solution item in cloud-related disputes. The fact that the competent court is not specified and that service providers provide services by agreement with service providers in different countries that rent data space from a third country is among the issues that have not yet been resolved against disputes in international law.

Türkiye has signed important conventions made by the Council of Europe to protect personal data and individual rights. However, none of this has been implemented under domestic law. The first international law regulation in the field of data protection signed by the Council of Europe is Convention No. 108 (European Commission on the Protection of Persons against Automatic Processing of Personal Data) (European Commission, 1981). In addition to this agreement, in 2001, Additional Protocol 181 (Protocol on Supervisory Authorities and Cross-Border Data Flow) was adopted, which is closely related to cloud computing services (European Commission, 2001).

To ratify the convention no. 108 signed by Türkiye on January 28, 1981, the “Personal Data Protection Bill” must become law, which will ensure compliance with domestic law. The 181 Additional Protocols, which were signed for the standardization of data transfer to another country, the protection of personal data, and the creation of an independent auditing body, were signed by Turkey on November 8, 2001, but were not approved in domestic law. Ratification of Contract No. 108 is a prerequisite for ratification of Additional Protocol 181. Turkey is one of 2 countries in 46 countries, along with Russia, which does not ratify Convention 108 and Protocol 181 in domestic law (European Commission, 2012f).

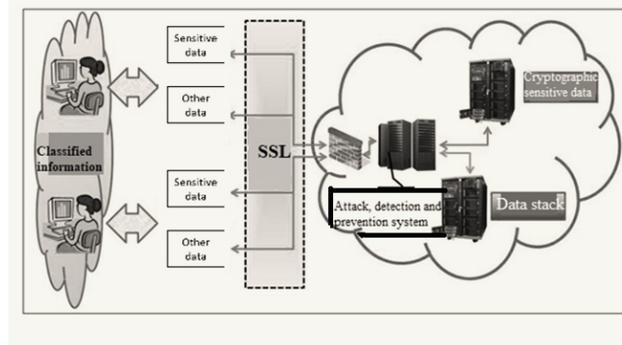
However, Russia has national laws and information security policies related to data protection. Russia ratified European Commission (EC) Convention 108, which includes the Data Protection Act of 1995, on 20 December 2005 and began to implement it in domestic law. The Russian Federation also passed a comprehensive compliance law on the protection of personal data and information and information technologies in June 2006 (Hohlov & Shaposhnik, 2006).

### **Basic Information Security Implementation Model in Cloud Computing Systems within the Framework of Findings**

The classification of information is one of the top steps in cloud computing security because, to protect the security and confidentiality of the information in any electronic environment, the value of that information must be demonstrated first. For example, defining a piece of information as “sensitive information”<sup>3</sup> creates privileges in how and what obligations the security and confidentiality of that information will be protected. Because protecting all data on the cloud using the highest level of techniques (encryption etc.) will not be preferable or realistic, as it will increase costs to very high levels given the daily amount of information production. The classification of information is carried out on the user side before the transfer to the cloud system and cloud service providers provide services taking this classification into account; it is one of the most effective measures that can be taken on cloud computing.

For this structure to work healthily, the simple model shown in Figure1 can be recommended. In the model presented in Figure 1, the path of information in the process until reaching the cloud system is similar to the security measures implemented in the banking system. In this model, users do not know where the servers they are serving are and at what level of secure service, as in banking services; however, it is foreseen that a service provider that does not meet a certain standard will not be able to operate. Security protocols to be used in a secure communication environment (SSL - Secure Socket Layer), login restrictions, authentication, and disposable password implementation; should be implemented by the service provider providing cloud service and must meet sufficient information security standards.

On the model in Figure1; all user-classified information passes through the secure communication environment provided using various security protocols, reaching the area where the cloud service is offered.



**Figure 1: Secure Cloud Computing Model**

Source: Figure 1 created by authors

The information that reaches this area is subjected to a series of security checks, such as detection of malicious code with firewall and intrusion detection/prevention systems, and subsequent authentication. User-classified data is routed to two different servers or storage areas. A high level of information security measures is taken by cryptographicating the area where sensitive information is located. Thus, as a result of malicious code attacks and unauthorized access in this area, vulnerabilities in data integrity and confidentiality are prevented. Since this model envisages standardizing minimal cloud computing information security, details about virtual storage operations and file system security to be used in data storage where sensitive information is located are not included.

It is always possible to find information security risks in shared data storage. For this model to be implemented even at the simplest level, legal regulations and information security policies are needed. As in the regulations prepared within the framework of the Banking Law No. 5411 on Banking (Communiqué on the Principles to Be Based on Information Systems Management in Banks) (BDDK, 2007); setting certain criteria, carrying out information security audits at regular intervals or establishing a certification system will be a challenging element for companies operating in this field to take the necessary responsibility. Even the regulations that set the

boundaries in the banking sector and even in the fields of activity of internet mass use providers have been made and implemented; It is equally important to have an arrangement that shows the procedures and principles that companies that will provide cloud computing services have to follow to manage the information systems they will use when performing their activities.

## **PROPOSED METHOD**

### **E-commerce and enterprise informatization**

#### **The concept of e-commerce**

E-commerce refers to the use of computer networks to achieve online transactions, collaboration, and value exchange between customers, suppliers, and partners. For the successful implementation of e-commerce, the internal resources of the enterprise and the external transaction process must be coordinated to enable the internal and external information flow to be seamlessly connected, to achieve smooth communication of the front and back data (Huang, 2018:1). According to the report of the digital marketing agency "We are Social" Kemp (2021), 4.66 billion people worldwide used the internet in January 2021. Compared to January 2020, 7.3% increase was observed in the number of people using the internet. This situation offers new business opportunities for e-commerce businesses and causes a competitive environment. It seems that the use of e-commerce is increasing in Türkiye.

According to the statistics at Eticaret.gov.tr (2021), the use of e-commerce increased from 15.7% in 2020 to 17.6% in the first six months of 2021. In such a fast-growing market, it is clear that e-service quality has an important role in ensuring customer satisfaction and creating customer loyalty.

#### **E-commerce model**

##### **Business-business model (B2B)**

E-commerce has improved the business efficiency of production enterprises from many aspects such as supply system, inventory, sales, and transportation. It can make enterprises and suppliers more closely connected to meet customer needs more quickly. It also allows enterprises to operate globally, within the selection of the best suppliers to sell products in the global market (Wilt, et al., 2019:1-3).

##### **Business-consumer model (B2C)**

It is an e-commerce model for mass consumption and services (Stratil et al.,2017:809). Although all kinds of online stores and online supermarkets are in full swing, a wide range of products will be displayed at the click of a mouse, but due to various factors such as electronic payment and product distribution, for a long time, the level of business will only account for a small proportion.

##### **Enterprise-government model (B2G)**

Within the last 25 years, the development of e-commerce has attracted the attention not only of companies and consumers but also of governments. In this context, some arrangements have been made for the regulation and promotion of e-commerce. However, retail e-commerce has not developed at the same rate in all countries or even in all sectors of the country. There are many reasons for this. The most important obstacle for companies has been the lack of adaptation and awareness. Many of the companies that trade traditionally have not shown much interest in this sector because they do not know enough, do not understand its importance, or cannot afford additional costs and staff. Until recently, consumers in many countries also showed little interest in e-commerce. With the ongoing use of e-commerce buying products online without physically trying, or touching, just by giving some special information to unrecognized customers, with low income, without having a credit card, etc. has prohibited many consumers from integrating into e-commerce. Although the legal regulations and the assurances, advantages, and improvements offered by the companies are not at the same level in every country over time, they have encouraged companies and people to e-commerce and are more integrated into firms and consumer e-commerce (Delicay, 2021).

## **Concept of enterprise informatization**

The so-called enterprise informatization refers to the digitization of business processes such as production process, logistics movement, transaction processing, cash flow, and customer interaction by various information systems. These digital business processes generate new information resources through network processing. Customers use these information resources to understand the various business activities of the enterprise, so that in the application process, they make decisions that are beneficial to the optimization of the combination of production factors, and achieve the purpose of reasonable allocation of enterprise resources.

## **The relationship between e-commerce and enterprise informatization**

E-commerce, in terms of its formation can be divided into two groups; indirect e-commerce and direct e-commerce. In indirect e-commerce; the order of goods is made electronically and physical delivery is made by traditional means via postal service or commercial courier. Directly into the concept of e-commerce; computer programs, entertainment, and cultural audio and visual goods and services are entered in the digital environment (Ozel, 2013:4 as cited in Akpunar, 2017:24)

### **1. B2B-BUSINESS-TO-BUSINESS**

B2B e-commerce generally involves the process of trading between companies with their providers and distributors through the Internet, such as ordering, billing, and payment.

### **2. B2C-BUSINESS-TO-CONSUMERS.**

B2C, on the other hand, was more limited with the EDI (Electronic Data Exchange) system before the spread of the e-commerce internet. Kalaycı (2008:1) ; Akci & Göv (2015:413), it classifies e-commerce types as follows (Akpunar, 2017:24)

• (Business to Business-B2B) • (Business to Consumer-B2C) • (Business to Government-B2G) • (Consumer to Government-C2G) • (Consumer to Consumer -C2C) • (Government to Government-G2G)

Transactions such as tracking taxes and applying to public tenders electronically are defined as e-commerce (B2G) between businesses and the state. In e-commerce between the citizen-state (C2G), it is aimed to regulate the relations of citizens with the state and to do it over the internet. The "C2C" here is the type of consumer-to-consumer trading that defines electronic commerce between consumers known as end-users. Bucaklı (2007) makes the following classification on the types of e-commerce (Akpunar, 2017:25) :

### **1. TYPES OF E-COMMERCE ACCORDING TO ACTIVITIES:**

Indirect e-commerce, direct e-commerce.

### **2. TYPES OF E-COMMERCE IN TERMS OF RELATIONSHIP BETWEEN PARTIES:**

Intercompany (B2B) e-commerce, Company-to-consumer e-commerce (B2C), Consumer-to-public e-commerce (B2G), Company-to-public e-commerce (B2G), Citizen-to-Government e-commerce (C2G), and Consumer-to-consumer e-commerce (C2C).

The development of e-commerce and enterprise informatization is not only related to the economic development of a country, but also the overall strength of a country, to the status of a country in the world, and the future development fate. Therefore, the development of e-commerce and enterprise informatization is very important for the development of a country and the world, and understanding the relationship between e-commerce and enterprise informatization will help us to carry out related work smoothly in the future. Firstly, enterprise informatization is the basis of the development of e-commerce, and e-commerce has an important role in promoting the development of enterprise informatization. Secondly, e-commerce is an inevitable product of the development of enterprise informatization. It is accompanied by the continuous development of enterprise informatization, and the development of e-commerce can also promote the deep development of

enterprise informatization. Therefore, the relationship between e-commerce and enterprise informatization is related to each other and the relationship is promoted. The two are developed based on mutual development. E-commerce without enterprise informatization loses the carrier of development. Only by integrating into enterprise informatization can e-commerce play its due role and have a broader development space.

### **Realization of enterprise e-commerce**

E-commerce has realized the networked management of corporate procurement and sales. The practice has proved that for enterprises to implement e-commerce truly and effectively, they must first implement internal information management. Through the Internet, enterprises can conduct e-commerce and solve the problems of communication, connection, and transactions with the outside world. It can increase trade opportunities, reduce trade costs, and improve trade benefits, all relying on strong support from the rear (Bolívar, 2017:227).

### **Key Technologies of Cloud Storage**

#### **B/S structure**

Compared with the traditional C/S mode (client/server mode), the B/S mode has its special advantages. Most systems are based on the B/S model, which has a wide range of uses (Usov, et al., 2018). The B/S structure is expanded with interconnection, which makes up for some shortcomings of the C/S model, and gradually replaces the previous C/S model system. In B/S structure mode, the interface is implemented through a browser. It can be a browser on a PC or other mobile terminal. Access to the system can be easily achieved. In this way, the operation and maintenance of the B/S system become very simple, and anyone can access and operate the same data in different ways from different places. This operation is not like the C/S mode, which requires downloading and installing client applications to access server data (Chen, et al., 2019). In the B/S structure mode, functions similar to the C/S structure model can be realized, that is, the traditional C/S structure is well compatible. Although B/S can be said to be omnipotent and has many advantages and disadvantages, any technology has its disadvantages, and B/S is no exception. It is because the network is needed in the B/S mode, so the dependence on the external network of the company is very large. If the power is lost due to other reasons, the system will be paralyzed or the server will be paralyzed for some reason making it difficult for users to use it. In addition, because it is based on the Internet, the security factor of the Internet is also very important. If the system is attacked by illegal users, it may also cause the system to be paralyzed and even cause data corruption.

#### **Webserver**

Web server is where the system programs are stored. Clients can access system functions by accessing the server. Its main function is to provide users with information browsing services on the network (Fardoun, et al., 2017:20). The working principle of the webserver is that the client sends an HTTP request to the server, and the server returns an HTTP response to the client after receiving the request. Generally, an HTML page is returned directly to the client. But most web servers do more than just return a static HTML page, and often have to dynamically generate some pages, so the server will dynamically execute some scripting languages to generate some dynamic pages, and then return to the client program.

#### **Database technology**

Database technology is the latest technology of data management and an important branch of computer science (Sivagami, et al., 2017:1). There are many types of databases, including SQL Server, Access data, Oracle database, MySQL database, and so on. Data Conversion Services (DTS) is an alternative method for moving data from an Access database to a Microsoft SQL Server database.

Note: The previous version of the Microsoft SQL Server 2000 Desktop Engine was called Microsoft Data Engine (MSDE). MSDE does not include the SQL Server 2000 Desktop Engine, DTS, and DTS Import and Export Wizard (Microsoft, 2021).

Note: Unicode character fields nChar, nVarChar, and nText create by default by using DTS to move Access tables. These fields can be encountered with problems when connecting to Access 97, which does not support

Unicode. Microsoft recommends that these fields be converted when connecting from Access 97 for Char, VarChar, and text (Microsoft, 2021).

### **NFS / CIFS protocol**

NFS is short for the network file system. NFS allows a system to share directories and files with others on the network. By using NFS, users' programs can access files on remote systems as if they were local files. Data of cloud storage-based public security management information system is stored in a cloud storage database, which can meet the file system protocol supported by the service provider to access the data like a local file (Zhang, et al., 2017:676).

## **Demand Analysis of Enterprise Information Management Platform Based on E-Commerce Environment**

### **Business needs analysis**

In the process of production and sales, enterprises need to prompt their management capabilities, promote the maximization of enterprise value, and provide high-quality service for corporate customers. With the continuous changing of enterprises, information management enterprises are currently developing in the direction of enterprise management. Information management enterprise projects involve a wide range of aspects. Considering the complexity of enterprise projects, the principles of unified planning and step-by-step implementation are adopted to ensure that one module is online and one module is successful. At the same time, according to the urgent needs of enterprise management and system characteristics, the implementation order of the system is determined. In the implementation process, the relationship between the modules is fully considered to ensure system integration.

Controlling costs, reducing the operating costs and production costs of the enterprise, and improving the profitability of the enterprise are the important parts to establish an enterprise. The enterprise cost needs to be planned, budgeted, monitored, adjusted. In enterprise cost management, the enterprise must be designed cost management.

Exceptional companies do exceptional corporate marketing. Corporate marketing requires establishing a good enterprise information system. As enterprise information is relatively complex, the current reduction of infrastructure in enterprise information can be seen. On the surface, enterprise information is mainly for buying and selling, however, the enterprise informatization methods are different, and in the process of enterprise informatization, it is necessary to manage the enterprise informatization process, and its participants, etc., to provide enterprise informatization finance and its commissions, establish corporate marketing network and improve its capabilities.

Finance is a separate department of the enterprise, and it is also the core department. It manages the finance of the enterprise. Finance is also the lifeblood of the enterprise. Through financial management, people can control various activities of the daily production of the enterprise, such as financial investment in fixed assets. It is possible to establish a control range for the production base of the enterprise. Good financial management must provide the necessary expenses for the enterprise. At the same time, it must ensure that the enterprise has sufficient finances for daily production activities.

### **Functional requirements analysis**

Enterprise information management is the core of enterprise management. This paper mainly focuses on the entire process of the production process of the manufacturing enterprise. The main business of the enterprise information management system includes user login, sales management, procurement management, materials management, production management, and expenses. For reimbursement, the functional requirements of each major function are analyzed as follows:

1) The user login function includes user login, user authentication, and user logout. The main interface implemented by the user login module is the system login interface. At the system login interface, users log in through the user name and user password. The system login module is also the most basic of this system.

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2) Sales management includes sales reservation management, order posting management, sales receipt management, and sales delivery management. The sales order is the basis of sales management. The sales order in this system is an electronic version of the sales order, and the sales order saves the sales-related management information that can be printed on the sales order and other operations to manage sales based on the sales order. Sales reservation is to reserve products for sale through the form of sales orders, and reservations generally need to pay a reservation deposit.

3) Purchasing management includes supplier management, purchase order management, material arrival management, and purchase payment management. Suppliers are manufacturers that provide enterprises to generate raw materials for procurement. Enterprises generally have fixed suppliers in procurement. Among multiple suppliers, supplier information management is mainly to manage the basic information of the supplier. Supplier information management provides the basic data for procurement management.

4) Material management includes material information management, material list management, material transfer management, and material report management. Material management is the performance management of the original materials or intermediate materials during the production process of the enterprise. The core of material management is inventory management. The material information management records the basic information of the material.

5) Production management includes production process management, process route management, production order management, and production data management. The production process refers to which steps need to go through the entire production process. The process is the meaning of the step. The production process of different products is different. For specific production, production managers need to manage the processes in it. In the case of process changes, the production process needs to be modified.

6) Expense reimbursement and scrap expense reimbursement application, expense reimbursement review, and expense reimbursement issuance. Expense reimbursement is made by relevant personnel during the production or sales process, and then the expense invoice is reimbursed. Expense reimbursement needs to meet different requirements according to different enterprises. The system of this article needs to make an application in the expense reimbursement, and the expense reimbursement application was submitted to the finance for review.

7) Account management includes account detailed information, fixed asset information, and station voucher record management. The account detailed information is to record and manage the account status of the bill. In the system to achieve the account detailed information management, the plan is to use the account as a variable. Each subject provides different subject attributes. The subject attribute is the systematic subject information. It provides the management of subject information by managing the subject attributes.

### **System security analysis**

Enterprise management security performance is very important. This paper provides users with a secure enterprise management environment, including enterprise management information security and process security. The basic guarantee of enterprise management security is Türkiye's basic laws and regulations. At the same time, we can use the system to ensure the security of business enterprise management. For example, the supplier's real-name, authentication business is to ensure that the company's material, sellers and purchasers are all under a real-name system. At the level of data security, since the enterprise management in this article needs to provide data security management, especially for user information, it cannot be leaked, and it is also necessary to prevent system operators from leaking user information. We provide role-based permissions access. The security of the sales process is the basis of this article. How to ensure that users can perform product demonstrations according to the contract after the purchase is completed. If there are problems with sales travel, provide security for buyers and sellers through laws and regulations, and system processes. This system also needs to be considered.

## **System Design of Enterprise Information Management Platform Based on E-Commerce Environment**

### **Functional structure design**

The enterprise information management system in this article is divided into the application layer, business layer, and data layer. The business layer mainly provides intranet applications and extranet applications. The business layer is the core layer of the system, including the main business logic. In the enterprise information management system in this article, the main business includes user login, sales management, procurement management, material management, production management, and expense reimbursement. Below the business layer is the data layer. The data layer is used to ensure the persistence of business data. At the same time, it provides data support for business logic.

### **System function design**

Various functional modules of the system:

1) The user login function includes user login, user authentication, and user logout. The main interface implemented by the user login module is the system login interface. In the system login interface, users log in through the user name and password.

2) Sales management includes sales reservation management, order posting management, sales receipt management, and sales delivery management. The sales order is the basis of sales management. The sales order in this paper is an electronic version of the sales order. The sales order saves the sales-related management information that can be printed on the sales order and other operations to manage sales based on the sales order.

3) Purchasing management includes supplier management, purchase order management, material arrival management, and purchase payment management. Suppliers are manufacturers that provide enterprises to generate purchased raw materials. Enterprises generally have fixed suppliers in procurement, and among multiple suppliers select the supplier that best meets the procurement needs of the company for material procurement.

4) Material management includes material information management, material list management, material transfer management, and material report management. Material management is the performance management of raw materials or intermediate materials during the production process. The core of material management is inventory. The material information management records the basic information of the material and is the basis of the material management.

5) Production management includes production process management, process route management, production order management, and production data management. The production process refers to which steps need to be followed through the entire production process. The process is the meaning of the step. The production process of different products is different. For specific production, production managers need to manage the processes in it, and in the case of process changes, the production process needs to be modified.

6) Expense reimbursement and expense reimbursement application, expense reimbursement review, and expense reimbursement issuance. Expense reimbursement is made by relevant personnel during the production or sales process, and then the expense invoice is reimbursed. Expense reimbursement needs to meet different requirements for different enterprises. The system of this article needs to make an application in the expense reimbursement, and the expense reimbursement application will be submitted to the finance for review.

7) Account management includes account detailed information, fixed asset information, and station voucher record management. The account detailed information is to record and manage the account status of the bill. To implement the account detailed information management in the system, it needs to treat the account as a variable. Each subject provides different subject attributes, and the subject attributes are the system's subject information. The subject information management is provided by managing the subject attributes.

## **Experiments**

### **System Test**

#### **Test purpose and requirements**

The system in this paper is based on the network. The system test is different from the traditional software test. It needs not only to check and verify whether it runs according to the design requirements but also needs to test whether the system display is appropriate on the browsers of different users. It is important to conduct security and usability tests from the perspective of the end-user. However, the unpredictability of the Internet and the media makes testing system-based difficult. Therefore, in the testing process, new methods and technologies must be researched for testing and evaluating complex systems, testers must deal with shorter release cycles, and testers and test managers are facing challenges from testing traditional client-server structures and the transition from the framework environment to testing rapidly changing application systems.

#### **Test method**

The system in this paper needs to implement functional and performance tests. In the functional test, the tester mainly operates the system to check whether the system's functional requirements are met. The performance test needs the tool to simulate the performance test environment. Performance testing tools are used in the performance testing of information systems. They are divided into client-side performance testing tools and server-side performance testing tools according to the target system being tested.

#### **Test environment**

The system test has been prepared from the requirement analysis stage of system development. The corresponding system test cases are designed to predict the problems that may occur in the system. In the process of system testing, according to the requirements listed in the test cases, the functional modules of the system are tested one by one and check whether the system can output the correct results to the testers according to the settings of the test cases. If during the testing process, the tester finds a problem in the system, he should contact the developer in time to modify the system problem until the system can completely pass the test case detection. The test environment is shown in Table 1 and Table 2.

#### **Functional Test**

In the functional test, the system is established by a test environment, and the tester performs specific operations on the system in the test environment and compares the operation effect with the expected effect to determine whether the system meets the requirements.

#### **Performance Test**

The performance test of the system in this paper is mainly by testing the performance of the server. The test strategy is to simulate the concurrent access of multiple clients and monitor the response of the server to client requests under the condition of large concurrent access. The system performance analysis in this paper includes quantifiable system performance and system performance that cannot be quantified. The main performance indicators include the following:

- (1) User identity verification time  $\leq 1$  s;
- (2) Material information input response time  $\leq 3$  s
- (3) Response time of material information query  $\leq 1$  s;
- (4) Response time for sales performance inquiry  $\leq 2$  s;
- (5) User account information query response time  $\leq 0.5$  s;

- (6) The time for reviewing the application for the signing of the sales contract is  $\leq 1$  day;
- (7) The time for reviewing the application for submission of production materials is  $\leq 1$  day;
- (8) Reminder time for purchase payment receipt:  $\leq 10$  s;
- (9) New inquiry time for corporate finance  $\leq 5$  s;
- (10) The network speed of user uploading data is  $> 5$  Mbit / s;

**Discussion**

**Platform System Function Test**

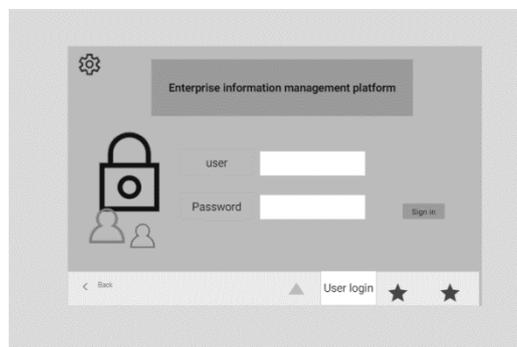
This paper established the system test environment. This test environment allows to compare the operation effect and the expected effect according to the specific operation of the system and determine whether the system meets the requirements. Now two of the functional tests were selected for analysis:

**1.Login function test**

The implementation of the user login module is to verify the user account and password, determine whether the user is legal, and test the login function of this platform. For example, the login function test is shown in Table 1, the login interface is shown in Fig.2, and the function selection module after successful login is shown in Fig.3.

**Table 1: User login test cases**

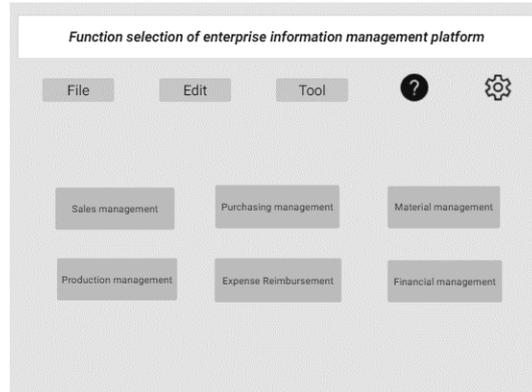
Serial number	1
Testers	A
Operational intention	Check whether the user login of the developed system is consistent with the expectation
Operation process	<ol style="list-style-type: none"> <li>1. The tester uses the correct user name and password to verify the account server and view the returned results.</li> <li>2. The tester uses the correct user name and wrong password to verify the account server and view the returned results.</li> <li>3. The tester uses the wrong user name and correct password to verify the account server and view the returned results.</li> <li>4. The tester uses the wrong user name and wrong password to verify the account server and view the returned results.</li> </ol>
Operation expectation	The login effect of the system is consistent with the expectation
Test summary	The actual operating performance of the system login is consistent with the expectation, and the test is passed



**Figure 2: Login interface**

Source: Figure 2 created by authors

***M. E. Tarkang***



**Figure 3: Function selection module interface**

Source: Figure 3 created by authors

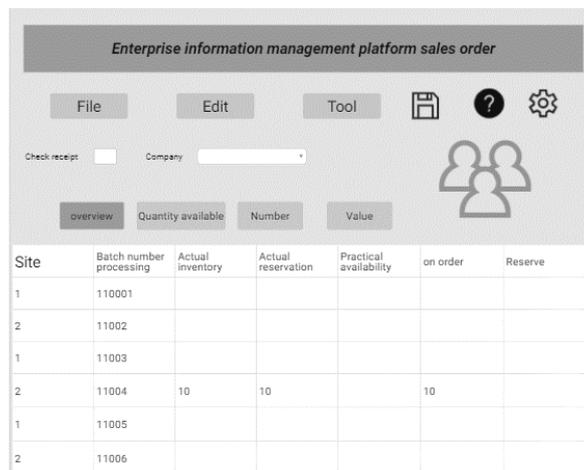
It can be seen from Table 1 that the login test mainly verifies the user account and password to determine whether the user is legal. According to the login interface diagram in Fig.2 and the functional module diagram after the successful login in Fig.3, the platform designed in this paper has passed the test.

**2. Sales function test**

The sales management test is shown in Table 2. The platform test interface is shown in Fig.4. The figure shows the sales reservation test effect.

**Table 2: Sales management test cases**

Serial number	1
Testers	A
Operational intention	Check whether the user login of the developed system is consistent with the expectation
Operation process	1. Testers operate the operation process of reservation management in the test environment. 2. Testers operate on the details of order posting management in the test environment 3. Testers operate the specific process of payment management in the test environment. 4. Testers operate the specific process of delivery management in the test environment.
Operation expectation	The login effect of the system is consistent with the expectation
Test summary	The actual operating performance of the system login is consistent with the expectation, and the test is passed



**Figure 4: Sales reservation test effect interface**

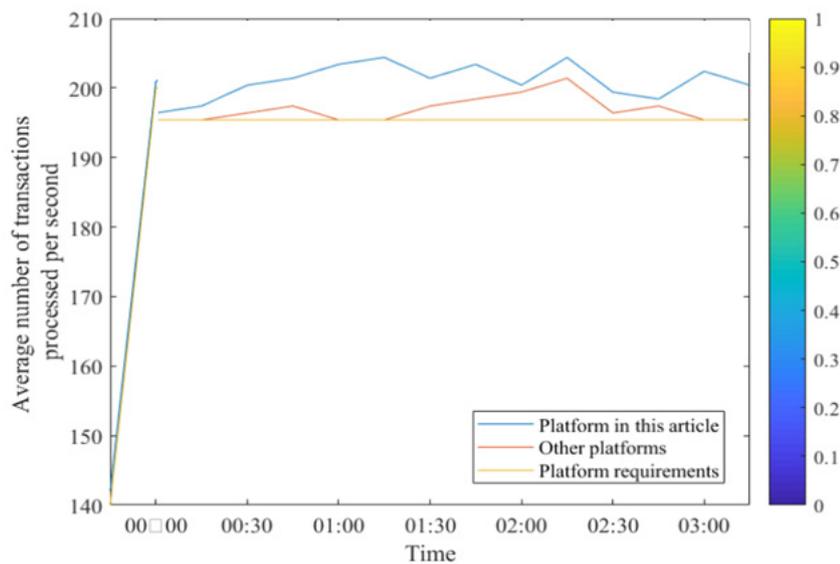
Source: Figure 4 created by authors

According to Table 2 above, the testers tested the functions of sales reservation management, order posting management, sales to payment management, and sales delivery management. As shown in Fig.3 above, the sales function test of this platform passed. Sales order is the basis of sales management. In this work, the system's sales order is an electronic version of the sales order. The sales order saves sales-related information. The management personnel can print the sales order and manage the sales based on the sales order. Sales reservation is to reserve products for sale in the form of sales orders. Generally, a reservation deposit is required.

### **Platform System Performance Test**

#### **Business processing analysis**

To test the average number of services processed per second of the system server. To highlight the advantages of this platform, this paper selects other enterprise management platforms for comparison and compares them with the platform requirements. The results are shown in Fig.5.



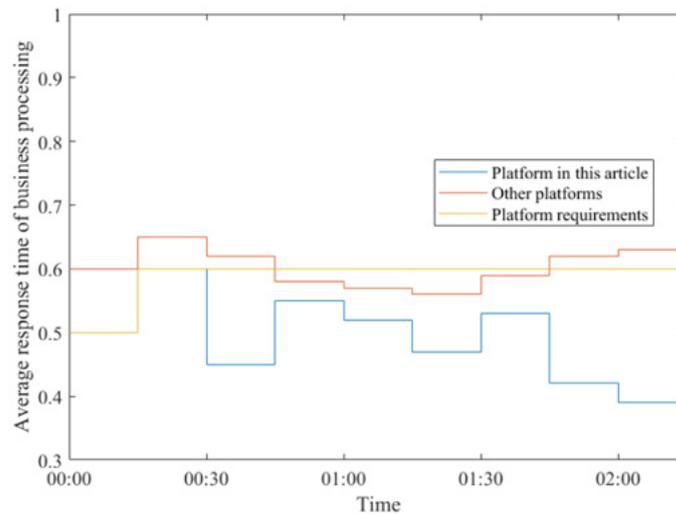
**Figure 5: The average number of transactions processed per second**

Source: Figure 5 created by authors

It can be seen in Fig.5 that in the average number of services processed per second, the average number of services processed per second fluctuates around 195. After the performance test was stopped, the average number of services processed per second of the system was rapidly reduced to 0. This is because the system has not received any requests from clients, while other platforms only deal with a few businesses compared with the platform in this paper, which has no superior performance.

#### **Response time analysis**

The average response time of system server business processing was tested. To highlight the advantages of this platform, we select other enterprise management platforms for comparison and compare them with the platform requirements. The results are shown in Fig.6.



**Figure 6: Average response time of business processing**

Source: Figure 6 created by authors

It can be seen from Fig.6 that the business processing time of the system is basically at a certain value. Because the average response time of business processing is the average value of many business processes, the processing time does not fluctuate much. If it is the processing time of a single business, then the performance result is around a certain range of value fluctuations, compared with other platforms. The platform has an advantage in the average response time of business processing.

**Analysis of other performance indexes**

The system performance analysis of this paper includes quantifiable system performance and unquantifiable system performance. The results are shown in Table 3.

**Table 3: Analysis and comparison of other performance indexes**

performance index	Test normal	Test values of this platform	performance index	Test normal	Test values of this platform
User authentication time	< 1 s	0.98s	Approval time of sales contract signing an application	<=1 days	0.95days
Response time of material information entry	<=3 s	2.56s	Review time of production data submission application	<=1 days	1days
Response time of material information query	< 1 s	0.99s	Purchase payment arrival reminder time	<=10 s	9s
Response time of sales performance query	<=2s	2.01s	New query time of enterprise finance	<=5 s	4.5s
Response time of user account information query	<=0.5 s	0.48s	The network speed of users uploading data	>=5 Mbit / s	4.8 Mbit / s

It can be seen from Table 3 that other performance indicators of the platform in this paper have passed the test. Except for the slightly short response time of the sales performance query, other performance indicators have passed the test. Among them, the user’s authentication time is only 0.98 s, the material information entry time is only 2.56s, the material information query response time is only 0.99s, the user’s query response time is 0.48s, and the sales contract only takes 0.95 days for the same signing application to be reviewed, 1 day for

the production data to be submitted for review, 9 s for the purchase payment to be reminded, 4.5 s for the new enterprise financial query, and 4.8 trillion/second for the user to upload data. Generally, the platform designed in this paper has good performance.

## **Conclusions**

In a global world where e-commerce activities are starting to replace traditional trade activities, it is imperative rather than a necessity for Türkiye to take the necessary steps in e-commerce. Although the steps taken in this regard in recent years have been pleasing, Türkiye's e-commerce volume is far from being satisfactory. If Türkiye wants to be a larger part of the global digital economy, which is the spirit of the time, it should make more easing and encouraging legal arrangements, especially regarding foreign trade and related to the internet, and strengthen the technological infrastructure that will take the internet-economy association to a higher level. For this reason, it is also important to have closer contact with countries with high foreign trade on legal and internet-related technical infrastructure issues.

Cloud computing has become one of the most popular information and communication tools of a rapid transformation that can also be described as the age of mobile communication. In addition to the advantages it offers in terms of reducing costs, access, and ease of use in daily life; the risks of cloud computing are too important to be underestimated. When developing a cloud strategy; as well as being user-friendly, the need for editing is foreseen for an actively used cloud. It is seen that there is no legal infrastructure for ensuring information security and protecting personal data in Türkiye and users are left alone to take measures and responsibility for information security in cyberspace. Although Türkiye has signed many studies and contracts within the European Commission (EC) (contracts no. 108 and 185, etc.), it cannot be implemented because the necessary regulations cannot be made in domestic law. For the security clauses contained in the cloud service agreements, which cover only users of certain countries (such as the USA, Australia, the European Commission (EC), and Switzerland) (related to consumer legal rights and data transfer), to be applied to users using cloud services in Türkiye, necessary legal regulations must be made.

E-commerce is the business model of the information society, the inevitable outcome of economic globalization, accelerating the interaction of economy and information technology, and has been adopted by more and more enterprises. With the development of information technology and e-commerce in Turkey, the achievements brought by information technology are gradually accepted by the world. With the rapid development and popularization of modern information technology, the survival and competitive environment of enterprises have undergone fundamental changes. Information construction has become the final choice for enterprises to obtain competitive advantages. Therefore, this paper designs an enterprise information management platform based on cloud storage technology in the e-commerce environment, which brings convenience to the management of enterprises.

This work uses cloud storage technology to design the enterprise information management platform, analyzes the enterprise information management requirements, and determines the functions of the platform, which establishes the basis for the enterprise management information platform functional requirements. This article analyzes the non-functional requirements of the system and designs the enterprise management information system.

In addition, this paper also tested the function and performance of the enterprise information platform, established the operation environment of this system, manually operated the functions of the enterprise information platform in the operation environment, compared the operation results and expected results, and established the main performance model. The results provide a certain reference value for enterprise information management in the e-commerce environment and provide a solution for enterprise information management.

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