

Design and Implementation of Enterprise Office Automation System Based on Web Service Framework & Data Mining Techniques

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Abstract

The advancement of science and technology has introduced the concept of big data, which has significantly transformed the business management environment of enterprises. Currently, most administrative tasks in companies heavily rely on human resources, with skilled management staff using their expertise to oversee business operations. However, this approach is susceptible to human subjective biases. The method assists managers in formulating efficient strategies for implementing management measures and enhancing the effectiveness of production, sales, financial, and people organization structure management. This ultimately leads to a more evidence-based approach to corporate management. This technique expands the utilization of Web services from a strategy focused on integrating services to a comprehensive framework for Service-Oriented Computing (SOC). The primary focus is implementing WS-session to manage sessions in general Web services applications, defining a bidirectional entire duplex interface for communication in Web services, and developing the Web Services Initiation Protocol, presenting WIP, a thorough multimedia and voice communication framework constructed using Web services and Service-Oriented Architecture (SOA). The office automation management system, created utilizing ASP.net and SQL Server technology, encompasses the evaluation of viability, analysis of needs, and system design. Office automation refers to using equipment with computing capabilities to carry out various office tasks and utilize associated tools and applications. Office automation uses computer-based systems to collect, organize, and modify visual and auditory information to enhance business energy efficiency and time management. Office automation

refers to auto-mating essential tasks employees perform, including identification, automatic appointment reminders, and automatic power management for personal computers. The employee image is obtained through the utilization of the Java media framework. Attendance data for all employees are collected and methodically examined. The database enables the retrieval of these records monthly or weekly. An office automation system offers organizations enhanced features for managing office information, significantly improving office efficiency and quality. Moreover, it improves office administration and decision-making procedures by automating and strengthening the scientific elements of office functions. The ongoing progress of organizational information technology has led to a strong focus on sharing information resources in scientific research initiatives. Conventional firms exhibit intricate company processes, inadequate managerial efficacy, and unnecessarily elevated operational expenses, resulting in diminished competitiveness. Thus, using an ERP management system is the optimal decision for organizations to restore their crucial competitive advantage. This technology enhances their operational methods, streamlines their operations, and enhances transparency in their operational approaches. The system comprises six modules: buy plan, purchase order, purchase contract, purchase document inquiry, purchase to order, and purchase return. These modules effectively meet the operational needs of enterprises.

Keywords

SEO, SQL, DAO, ERP, Service-Oriented Computing (SOC), Web Services, Office Automation, ASP.Net, SQL Server, ERP Management System, Operational Efficiency

1. Background

As information technology progresses quickly and big data technology takes longer to develop fully, business management is increasingly encountering numerous challenges. Implementing a business management analysis framework employing big data technology has become crucial for corporate advancement in this setting. Conventional enterprise management mostly depends on manual collection, examination, and decision-making based on data, resulting in inefficiency and a higher likelihood of mistakes. Simultaneously, firms often face the challenge of fragmented and decentralized internal data due to its diverse sources and formats, making it difficult to integrate and utilize effectively. This has greatly influenced the effective functioning and continuous growth of enterprises. Nevertheless, implementing big data technology has presented numerous prospects for business administration. By accumulating, retaining, manipulating, and examining internal and external data, one can understand the business's internal workings, market forces, consumer requirements, and other facets. This offers robust backing for strategic planning, operational enhancement, and product innovation. By incorporating big data technologies into artificial intelligence, machine

learning, natural language processing, and other domains, businesses can enhance their data mining, analysis, and decision-making processes, resulting in more efficient company management with improved quality and efficacy. Hence, it is crucial to prioritize the creation of a framework that employs big data technology to enhance corporate management analysis and ultimately enhance organizations. Firms can enhance their decision support by meticulously extracting and analyzing internal and external data and thoroughly examining intricate information, resulting in a more comprehensive, accurate, and beneficial outcome. In order to stay ahead in future market competitiveness, organizations need to possess a distinct level of technology expertise, data management capabilities, and talent reserves. Scientists have made significant progress in studying how to adapt to the rapid growth of science and technology, especially in organizational and economic progress. Their goal is to maintain a position of power and gain a competitive advantage, enhancing company management's business benefits. There is a dearth of comprehensive solutions that rigorously examine the correlation between the daily tasks of knowledge workers in gathering information and the perceived or actual value of that information to the company, as determined by the established content management strategy. Several technologies and theories about big data are currently in the conceptual phase. Therefore, substantial time will be required to execute big data technologies effectively. This component integrates both a comprehensive architectural design and a meticulous module design derived from prior investigations of all systems. This design serves as a complete blueprint for the program's future development. It is crucial to break down complex functions into simpler components to understand the system's structure. Typically, a module within a system performs a single and relevant sub-function. Organizing the modules in a hierarchical structure is essential. The top-level module calls upon its subordinate modules to carry out the program's overall purpose in this system. Afterwards, every lower-level module calls another lower-level module to complete a specific program part. The module at the lowest level performs the most accurate and specific function. Each of these options facilitates convenient user access to the system. The primary purpose of the system login module is to authenticate the user's credentials, specifically their username and password, during the login procedure [1]. Access to the system is granted to users only after the accurate login and password are submitted. The interfaces in the next section will not be displayed individually. Users are automatically sent to the system's homepage upon successful identity verification. The homepage presents a collection of system menu options that users can activate by clicking with the mouse. Composing new outgoing messages mostly involves determining the message's receiver, subject, and content. The interface for adding conference information comprises three components: conference change, deletion, and release. By selecting the URL of the conference title, users will be directed to an interface that provides comprehensive information about the individual conference, allowing them to navigate through all the relevant components easily. The user interface

for inputting employee information is a human resources management module constituent, allowing users to inspect, navigate, and enter employee data. Regular employees have limited access to only their personal information. The system administrator has the power to input employee data. The email interface primarily comprises modules that manage the transmission and reception of emails. These modules provide functions for deleting personal emails, generating new emails, and retrieving emails (after opening a newly received email). WIP's ability to optimize communication through service hosting improves the interoperability between WIP and SOC. A web services platform designed specifically for hosting non-communication services. In addition, WIP effortlessly adheres to the structure and foundation of the World Wide Web. Web resources can be accessed as endpoints that are currently under development. These documents are available to the public, easily located, connected to a network, and can be used with CEBP and other advanced communication applications, including those in social networking and intelligent communication services. In the following sections of this article, we will present the concept and structure of WIP and lay the groundwork for its comprehensive communication paradigm, which is based on Web services and service-oriented architecture. WS-session allows for the direct creation of sessions via Web services. Web services utilize session establishment to create a distinct session for the client [2]. The session is contained within the SOAP message headers. Additional instances of using sessions can be observed in the ongoing conversation presented below. The establishment of WS-session application sessions relies on Web services and is dictated by the established Web service specifications (SOAP/WSDL). WS-session processes are not affected by the specific transport protocol being used. The Server SQL provides a notable benefit by seamlessly integrating with commonly used client/server programming tools and desktop apps. Programming languages can connect to the Server SQL database, including Visual Basic, C++, Access, Visual Builder, Power, Delphi, and Visual Fox-Pro. When developing database applications, many technologies such as data access objects (DAO) [3] [4], remote data objects (RDO), ActiveX controls, DB OLE, ODBC, DB-Library, and other third-party development tools can be used to access the Server SQL database. Server SQL client programs can access data from the server by utilizing the application interface provided by Server SQL. The system can be accessible by four main methods: API OLE, DB Transact-SQL, ODBC, and DB-Library. These APIs can function as a dynamic link library for a client to establish contact with the Server SQL server using the client's network library. The organization's internal workforce can collaborate remotely and across several locations via the network. Integrating the exchange network into the office automation system increases the speed and convenience of information transfer, resulting in enhanced managerial capabilities and improved operational efficiency. The document provides a detailed description of the structure and execution of an office automation management system that utilizes ASP.net and SQL Server technology. Office automation involves utilizing computer-based tools and processes

to manage written, visual, and auditory information in office tasks. Office automation aims to provide components that simplify, enhance, and automate organizational processes. The office automation systems encompass various functionalities, specifically: i) Electronic publishing, ii) Electronic communication, iii) Electronic collaboration, iv) Image processing, and v) Office management. A local area network (LAN) typically serves as the central component of these systems. A Local Area Network (LAN) enables efficient transmission of data, voice, mail, and photos to any desired location, whether within the LAN's local office or in a different country or continent, by utilizing a connected network. An office automation system (OAS) enhances office efficiency and boosts productivity. Office automation utilizes computer hardware and software to carry out necessary duties and accomplish goals by digitally generating, gathering, storing, altering, and transferring office data. An office automation system largely involves the handling, transferring, and arranging raw digital data and corporate information [5]. In its fundamental state, information takes the shape of letters, notes, graphs, records, communications, and similar entities. When data is transmitted electronically, unprocessed information is shared between two or more office personnel who may be in the same or different places. The office automation system mainly consists of three main activities: 1) the storage and manipulation of data, 2) the transfer of data, and 3) the management of data.

2. Preview

Procurement can be seamlessly integrated into an ERP system. The operational procedure involves identifying supplier resources, gathering extensive business information on materials, conducting a thorough screening process for chosen vendors, creating a detailed form to specify material details, and confirming important factors that contribute to developing a purchasing plan. This plan considers the warehouse's inventory capacity and order demand, forecasts the quantity of goods purchased in advance, and calculates the necessary inventory space to be allocated. Subsequently, it is imperative to choose a suitable mode of transportation and formulate a purchasing strategy that may be adjusted as necessary. Commence dialogue and bargaining with suppliers to verify the procurement strategy. By comprehensively analyzing the prices of similar materials available in the market, the company's staff can negotiate with suppliers to ascertain the quantity of items to be procured. This procedure involves the identification of all potential suppliers based on their material quality and technical standards. In order to commence commercial transactions, it is crucial to generate purchase orders determined by factors such as quantity, purchase date, warehouse capacity, delivery schedule, and economic plan set by the supplier. Afterward, it is necessary to send these orders to the provider for additional verification. Once the purchasing plan is completed, the webpage will instantly create the contractual order. Afterward, the contract will undergo another verification round with the supplier, and the purchase order will be closely watched. Accepting arriving materials involves

corporate staff transporting raw supplies by accepting the purchase order and verifying the previous agreement. The inspection staff are responsible for verifying and authorizing the orders by the benefits of the ERP procurement management system and the company's acceptance procedure. Upon receiving the supplies, the business personnel in the purchasing department collaborate with the finance department to reconcile accounts and compute expenses, finally resulting in the resolution of expenditures. Therefore, these factors add to the overall cost of acquiring and completing the purchase order by the mutually agreed contract. Once the delivery order is fulfilled, the item is included in the inventory, the payment is remitted to the supplier, and an inspection is conducted.

System core data maintenance: The procurement management system is responsible for maintaining vital data, such as salesperson information, raw material supplier details, and material specs, for the company's purchasing processes. Timely updating of the data is of utmost importance. Integrating government and enterprise information systems entails the assimilation of office automation, business management, leadership decision-making, and other applications, creating a comprehensive information management system. The OA information management platform will be categorized into three domains: general office applications, business management, and decision assistance. General office applications encompass a range of technologies that fulfill the fundamental information requirements for routine business activities. These occupations involve sharing and retrieving information, supervising documents, handling emails, giving suggestions and authorizations, processing papers, supervising shared information, scheduling meetings, planning work strategies, and overseeing corporate operations [6]. Every component involved in developing the information management system must efficiently arrange these operations to fulfill the managerial requirements of the unit. The business management system is highly adaptable and may be utilized across several sectors, such as industry, government departments, companies, research institutes, and educational institutions. Every sector possesses unique business demands. A decision support system is a technological tool that utilizes a thorough examination of data from many departments inside a company to offer evidence-based support for decision-making. The study's system framework effectively integrates three aspects, providing a solid foundation for system expansion. The establishment of a solid framework is crucial for the process of software design. In order to mitigate issues related to scalability and future development, the architecture must prioritize the concept of reusability. An information management platform. Utilizing the browser as a consolidated tool for accessing information eliminates the necessity of accessing many business systems. Data is a software system that requires multiple programming tools for designing. Business leaders who use computers to access large amounts of corporate data will find it particularly beneficial. Users encountered a unified browser interface for conveniently accessing, sharing, and executing applications. This interface eliminated the requirement for clients to have more sophisticated specifications or often update while significantly

reducing user training expenses. To enable the development of web-based applications and ensure efficient information sharing within an organization, systems must utilize a web server for storing data and applications. The client program offers users a diverse range of services. The apps serve as a centralized repository for shared information and software. Furthermore, they serve as a gateway for contacting the application server, providing different combinations of applications to particular users.

Application Layer: The application server is utilized to execute certain programs. A web server facilitates data transmission between the client and the application server. It is responsible for overseeing complex business operations and computational tasks. When a client interacts with the web server, it establishes a connection with the application server to fulfill particular requirements. The SQL statements and data layer are utilized in the database system to facilitate the exchange of information between each other via the application server. An application server is considered a client in the context of database servers.

Data Layer: The data obtained from various departments is consolidated and stored in a unified database to ensure organization and maintenance. Each department has distinct databases that can be interconnected through a data exchange platform or other data interfaces. This allows different departments to organize cross-database access utilizing database connectivity methods. Automation application development software is a highly advanced and respected platform for large-scale business communication, collaboration, and Internet/Intranet activities. The system offers diverse capabilities, such as sophisticated workflow management, state-of-the-art database replication technology, and robust safety mechanisms, ensuring the highest level of reliability. This software can effectively handle diverse unorganized and partially organized document data. It can be employed to create process apps and diverse web-based applications. Contemporary document management solutions now aid in overseeing the complete life cycle of information kept within documents. Researchers worldwide have undertaken numerous studies to evaluate the benefits of newly created electronic systems with traditional document management systems and electronic document management systems regarding user performance. Due to technological progress, organizations have transitioned from conventional document management systems (DMS) to electronic ones. The reason for this decision is its convenience in streamlining administrative tasks by integrating and managing files. Prior research has demonstrated that an electronic document management system (DMS) offers numerous benefits, encompassing financial, administrative, protective, collaborative, operational, confidential, and technical integration advantages. Hence, every firm must use an electronic Document Management System (DMS) to provide an efficient framework for categorizing and supervising documents. An electronic document is a digital repository that consolidates material from several sources, in diverse formats, about a specific topic to meet a particular individual's requirements. An Electronic Document Management System (EDMS) is a repository of data that encompasses a diverse range of document types inside a network.

It enables several users to access, modify, and revise these documents concurrently. The demand for an electronic document management system (EDM) has increased due to the need for efficient organization and control of documents, regardless of their volume. This system should include electronic storage, search capability, distribution, and other essential features [7]. The primary objective of this project is to create and execute a user-friendly web-based system that effectively facilitates the categorization and management of documents and records. This assignment includes analyzing existing systems and developing and implementing the necessary components of the document management system [8]. The process will involve using a unified modeling language to gather requirements. Furthermore, the study would involve the establishment of a document system and the evaluation of its efficacy. Implementing an automated document management system that handles operations like receiving, dissemination, distribution, and retrieval can enhance the efficiency and productivity of employees, staff, and the firm. Presently, most firms heavily depend on the manual transportation of processing papers without utilizing technology [9]. Implementing WBEDMS will expedite task completion, facilitate seamless cooperation with other departments, enhance efficiency, deliver up-to-date and precise data, and provide user-friendly functionalities.


3. Methodology

To accomplish the study's objectives of developing a web-based electronic document system, the researchers analyzed the existing system and utilized an object-oriented hypermedia design methodology (OOHDM) to design the proposed web-based document management system. Model-driven development uses models to construct extensive and high-quality hypermedia applications, information systems, multimedia presentations, and other similar projects. The process encompasses many tasks, including conceptual design, navigational design, abstract interface design, and implementation [10].

The purpose of the e-commerce website shown in **Figure 1** is to represent the system's front-end architecture and user interface precisely. The database repository, middleware, and client interface make up most of it. Receiving and processing all communications is the job of the middleware layer. The implementation was done using the React framework. HTML created the system's user interface, while MySQL, the database, and Apache functioned as the system's middle layer and database access through the PhpMyAdmin tool [11]. Collaboration diagrams fall under interaction diagrams, much like sequence diagrams do. The way the information is presented is similar to that of sequence diagrams. Instead, they put the functional purpose of items first by illustrating it with a schematic that shows actors, objects, and arrowheads to show navigation according to the methods used. **Figure 1**'s image depicts the many collaboration structures that symbolize each system action. The user interface displays the steps for creating a new document, adding a new item, searching, examining recently added

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PRICE: ₳ 1,000 — ₳ 75,000

FILTER

Product Categories

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 - Air Mattress
 - blood pressure machine
 - digital blood pressure monitor
 - Glucose Meter
 - Parameter Patient Monitor
 - Weight Scale
- Oxygen
 - Oxygen Cylinder
- Pumps
- Stirrers
- Uncategorized

VIEW: 12 / 24 / ALL

 <p style="font-size: x-small;">Medical Equipment, digital blood pressure monitor</p> <p style="font-weight: bold; font-size: small;">Automatic Digital Wrist Blood Pressur...</p> <p style="font-size: x-small;">₳ 3,000.00 ₳ 2,800.00</p> <p style="text-align: center; font-size: x-small;">Add to cart</p>	 <p style="font-size: x-small;">Medical Equipment, blood pressure machine</p> <p style="font-weight: bold; font-size: small;">Blood Pressure Machine</p> <p style="font-size: x-small;">₳ 3,000.00 ₳ 3,000.00</p> <p style="text-align: center; font-size: x-small;">Add to cart</p>	 <p style="font-size: x-small;">Medical Equipment</p> <p style="font-weight: bold; font-size: small;">Contec Pocket Fetal Doppler Sonoline ...</p> <p style="font-size: x-small;">₳ 6,000.00 ₳ 5,500.00</p> <p style="text-align: center; font-size: x-small;">Add to cart</p>
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 <p style="font-size: x-small;">Medical Equipment</p> <p style="font-weight: bold; font-size: small;">Hospital Bed 2 Function</p> <p style="font-size: x-small;">₳ 30,000.00 ₳ 27,500.00</p> <p style="text-align: center; font-size: x-small;">Add to cart</p>	 <p style="font-size: x-small;">Uncategorized</p> <p style="font-weight: bold; font-size: small;">Hospital Bed 3 Function</p> <p style="font-size: x-small;">₳ 60,000.00 ₳ 45,500.00</p> <p style="text-align: center; font-size: x-small;">Add to cart</p>	 <p style="font-size: x-small;">Stirrers</p> <p style="font-weight: bold; font-size: small;">INTLLAB Magnetic Stirrer Stainless...</p> <p style="font-size: x-small;">₳ 3,000.00</p> <p style="text-align: center; font-size: x-small;">Add to cart</p>

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Figure 1. Showing the login page of the web-based document management system.

documents, and managing internal workflow. It serves as the main page on the website that directs users to other pages inside the system. There is a classified form on the website dashboard with four sections: “search for a document,” “view the recent document,” “insert new entry,” and “create a new document.” Using the “insert new entry” page, users can submit papers to be received by the department. The user carefully records all pertinent information about the document, including its classification, subject or title, author, date, and any other relevant details. Once all the necessary information has been gathered, the user uploads and saves the document into the system. Customers can choose between this system’s two search options: an advanced search and a basic one. The user can input the precise topic of the document they wish to look for in the text field of the primary search screen. The user can then enter multiple text fields in the advanced search tool to limit the number of results returned after the search. Comparable to the External Process page, the Internal Workflow page shows the flow of documents inside and outside the department (see **Figure 1**). The workflow system displays the document’s current location when a user uses an arrow to deliver a document to another staff member. A different user sends the same document to another staff member, resulting in this circumstance [12].

Furthermore, the user can import any newly built departmental portal by choosing the first option in the menu, Insert New Entry. The user notes the document’s type or format, subject, source, and production date as essential details. Once photographed, the document can be scanned and converted into a format that permits revisions and amendments, especially concerning binding. The scanned documents are then carefully rearranged and stored in repositories to ensure long-term preservation. Now, users can submit scanned papers for review and participate in related activities. Comparably, a “Create New Document” page offers a location for users to enter text using an already-installed text editor. Most developing countries still use antiquated document management systems (DMS) that are based on paper.

Nonetheless, there is an increasing movement toward computer and server storage of electronic content, including emails, webpages, and database packages. An electronic document management system (EDMS), frequently used to collect and organize aggregated data within a facility or firm, is essential for efficient administration. However, it is crucial to execute the adoption of these criteria with caution, taking into account the specific requirements of the institution or organization. The various methodologies for document management systems encompass conventional, internet-based, integrated, model-based, and enterprise approaches. Document management systems (DMSs) [13] often employ a client-server architecture as its operational approach. Customers utilize their exclusive software to offer a user interface and access to documents, while the Document Management System generally functions on an enterprise server system. The establishment of a link between clients and the server occurs through the utilization of a local area network. However, this approach necessitates using costly client

software on each computer. The document management system employs a web-based methodology organized around a three-tier architecture to support its distribution strategy. The system consists of databases, document servers, and clients, categorized as tiers 1, tier 2, and tier 3. Users have the option to make connections with the server via either the local network or the global network. The server is equipped with document management software and a document repository [14]-[16]. This Document Management System (DMS) software is utilized in decentralized organizations to enhance operational efficiency, streamline processes, oversee documentation, and execute other functions. Moreover, users can utilize the document client software to retrieve and analyze documents stored in one or multiple document repositories. This software typically includes desktop and intranet (or internet) clients, which personal computers or web browsers can access.

The freedom to reorganize the processes is made possible by the modular architecture shown in **Figure 2**, which allows using several tools and input sources. The proposed technique was assessed using several essential criteria in the current study, such as standards for system features, environmental standards, and standards for methodology assessment. This experiment was carried out to demonstrate how the system was designed to meet the application's requirements. A numerical figure can approximate the extent of coverage and compare it with the standards by which the suggested method is judged and the conditions under which it is implemented. This study used a seven-representation framework to assess the effectiveness of the OOHDM [17] approach. The OOHDM's illustrations skillfully displayed a variety of categories and stage counts. The representations represent the comprehensive category covering client-server architecture, other tool integration, quality, and extensibility. They also include the design of the user interface and run-time behavior, conceptual design model, abstract navigational model, and conventional criteria {8}. A Data Flow Diagram (DFD) was used during the study phase to show the system's boundaries and distinguish the target application system from outside environments. Additionally, a scenario is provided to determine the informational and navigational needs of the users. An action sequence makes up a scenario similar to a use case.

Application systems and object data models are developed and built during the object-modeling phase [18] utilizing Class diagrams that illustrate different scenarios. Developers establish the pathways for hypermedia navigation during the navigational design phase. A comprehensive examination is done on the class diagram, explicitly focusing on each associative relationship. Subsequently, the conditions are modified and employed to ascertain the prerequisites for navigation. Deploying Enterprise Information Systems in distance learning units can result in optimized administrative processes, seamless data integration, enhanced organizational efficiencies, and decreased operational costs.

Moreover, this would improve the caliber of services and streamline efficient communication among staff members and students. Regarding this matter,

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1 <?php
2 /**
3  * XML-RPC protocol support for WordPress
4  *
5  * @package WordPress
6  */
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8 /**
9  * Whether this is an XML-RPC Request.
10 *
11 * @var bool
12 */
13 define( 'XMLRPC_REQUEST', true );
14
15 // Discard unneeded cookies sent by some browser-embedded clients.
16 $_COOKIE = array();
17
18 // $HTTP_RAW_POST_DATA was deprecated in PHP 5.6 and removed in PHP 7.0.
19 // phpcs:disable PHPCompatibility.Variables.RemovedPredefinedGlobalVariables
20 // .http_raw_post_dataDeprecatedRemoved
21 if ( ! isset( $HTTP_RAW_POST_DATA ) ) {
22     $HTTP_RAW_POST_DATA = file_get_contents( 'php://input' );
23 }
24 // Fix for mozBlog and other cases where '<?xml' isn't on the very first line.
25 if ( isset( $HTTP_RAW_POST_DATA ) ) {
26     $HTTP_RAW_POST_DATA = trim( $HTTP_RAW_POST_DATA );
27 }
28 // phpcs:enable
29
30 /** Include the bootstrap for setting up WordPress environment */
31 require_once __DIR__ . '/wp-load.php';
32
33 if ( isset( $_GET['rsd'] ) ) { // https://cyber.harvard.edu/blogs/gems/tech/rsd
34     .html
35     header( 'Content-Type: text/xml; charset=' . get_option( 'blog_charset' ),
36           true );
37 }
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101
102
103
104
105
106 $ptype_for_id = sanitize_html_class( $ptype );
107
108 $menu_icon = 'dashicons-admin-post';
109 if ( is_string( $ptype_obj->menu_icon ) ) {
110     // Special handling for an empty div.wp-menu-image, data:image/svg+xml,
111     // and Dashicons.
112     if ( 'none' === $ptype_obj->menu_icon || 'div' === $ptype_obj->menu_icon
113         || str_starts_with( $ptype_obj->menu_icon, 'data:image/svg+xml'
114             ;base64,' )
115         || str_starts_with( $ptype_obj->menu_icon, 'dashicons-' )
116     ) {
117         $menu_icon = $ptype_obj->menu_icon;
118     } else {
119         $menu_icon = esc_url( $ptype_obj->menu_icon );
120     }
121 } elseif ( in_array( $ptype, $builtin, true ) ) {
122     $menu_icon = 'dashicons-admin-' . $ptype;
123 }
124
125 $menu_class = 'menu-top menu-icon-' . $ptype_for_id;
126 // 'post' special case.
127 if ( 'post' === $ptype ) {
128     $menu_class .= ' open-if-no-js';
129     $ptype_file = 'edit.php';
130     $post_new_file = 'post-new.php';
131     $edit_tags_file = 'edit-tags.php?taxonomy=%s';
132 } else {
133     $ptype_file = "edit.php?post_type=$ptype";
134     $post_new_file = "post-new.php?post_type=$ptype";
135     $edit_tags_file = "edit-tags.php?taxonomy=%s&post_type=$ptype";
136 }
137
138 if ( in_array( $ptype, $builtin, true ) ) {
139     $ptype_menu_id = 'menu-' . $ptype_for_id . 's';
140 } else {
141     $ptype_menu_id = 'menu-posts-' . $ptype_for_id;
142 }
143
144 /*
145  * If $ptype_menu_position is already populated or will be populated
146  * by a hard-coded value below, increment the position.
147  */
148 $core_menu_positions = array( 59, 60, 65, 70, 75, 80, 85, 99 );

```

```

96
97 require_once ABSPATH . 'wp-admin/includes/admin.php';
98
99 auth_redirect();
100
101 // Schedule Trash collection.
102 if ( ! wp_next_scheduled( 'wp_scheduled_delete' ) && ! wp_installing() ) {
103     wp_schedule_event( time(), 'daily', 'wp_scheduled_delete' );
104 }
105
106 // Schedule transient cleanup.
107 if ( ! wp_next_scheduled( 'delete_expired_transients' ) && ! wp_installing() ) {
108     wp_schedule_event( time(), 'daily', 'delete_expired_transients' );
109 }
110
111 set_screen_options();
112
113 $date_format = __( 'F j, Y' );
114 $time_format = __( 'g:i a' );
115
116 wp_enqueue_script( 'common' );
117
118 /**
119  * $pagenow is set in vars.php.
120  * $wp_importers is sometimes set in wp-admin/includes/import.php.
121  * The remaining variables are imported as globals elsewhere, declared as
122  * globals here.
123  *
124  * @global string $pagenow      The filename of the current screen.
125  * @global array  $wp_importers
126  * @global string $hook_suffix
127  * @global string $plugin_page
128  * @global string $typenow     The post type of the current screen.
129  * @global string $taxnow      The taxonomy of the current screen.
130  */
131 global $pagenow, $wp_importers, $hook_suffix, $plugin_page, $typenow, $taxnow;
132
133 $page_hook = null;
134
135 $editing = false;
136 if ( isset( $_GET['page'] ) ) {

```

Figure 2. Context source model based on the calibration of the web-based document Management system.

implementing EIS can be accomplished by utilizing pre-packaged systems from suppliers or developing unique systems internally. The initial stage in prototyping the reengineered process is the implementation and assessment phase, which aims to tackle the particular challenges and concerns of users and stakeholders. The upgraded methodology is wholly implemented and consistently monitored during the subsequent phase to guarantee its effective functioning. A summative evaluation is performed to examine the degree of accomplishment and results.

The provided code in **Figure 3** includes a Laravel routing configuration that creates two main route groups, specifically 'accounts' and 'employees.' Every group is allocated a dedicated middleware to manage authentication and regulate access control. These groups establish distinct pathways for handling dashboard displays, profile password modifications, and CRUD operations on roles and menu configurations. This is accomplished by employing dedicated controllers such as "Dashboard Controller", "Profile Controller", "Role Controller", and "MenuSettingController". In addition, there is a distinct mail test route that is accessible and makes use of Laravel's "Mail: raw ()" function to dispatch a test email. The "Common Controller" is responsible for managing commonly used routes, including phone checks and verification of various assignments. This

```

Route::group(['as' => 'accounts.', 'prefix' => 'accounts', 'middleware' =>
  ['auth', 'accounts']], function () {
  // no delete mail send with database config value
  Route::get('/test-mail', function () {
    $message = "Testing Mail Message";
    Mail::raw('Hi, welcome!', function ($message) {
      $message->to('robeul.starit@gmail.com')
        ->subject('Test mail sub');
    });

    dd('Sent');
  });
  // no delete mail send with database config value
  // dashboard
  Route::get('/dashboard', [DashboardController::class, 'index'])->name
    ('dashboard');
  Route::get('/dashboard/{id}', [DashboardController::class, 'show'])->name
    ('dashboard.show');

  // profile
  Route::get('changepassword', [ProfileController::class, 'changepassword']
    )->name('changepassword');
  Route::post('updatepassword', [ProfileController::class, 'updatepassword']);
  // roll
  Route::resource('roles', RoleController::class);
  Route::resource('menu-settings', MenuSettingController::class);

Route::group(['as' => 'employee.', 'prefix' => 'employee', 'middleware' =>
  ['auth', 'employee']], function () {
  // dashboard
  Route::get('/dashboard', [DashboardController::class, 'index'])->name
    ('dashboard');
  Route::get('/dashboard/{id}', [DashboardController::class, 'show'])->name
    ('dashboard.show');

  // profile
  Route::get('changepassword', [ProfileController::class, 'changepassword']
    )->name('changepassword');
  Route::post('updatepassword', [ProfileController::class, 'updatepassword']);
  // roll
  Route::resource('roles', RoleController::class);
  Route::resource('menu-settings', MenuSettingController::class);

  // common route start
  Route::post('/check-phone', [CommonController::class, 'checkPhone'])->name
    ('check.phone');
  Route::get('/check-van-driver-salesman-route', [CommonController::class,
    'checkVanDriverSalesmanRoute'])->name('check.van.driver.salesman.route');
  Route::get('/check-van-driver-salesman-route-sale', [CommonController::class,
    'checkVanDriverSalesmanRouteSale'])->name('check.van.driver.salesman.route
    .sale');
  Route::get('/check-supplier-type', [CommonController::class,
    'checkSupplierType'])->name('check.supplier.type');
  Route::get('/check-already-salesman-assign', [CommonController::class,
    'checkAlreadySalesmanAssign'])->name('check.already.salesman.assign');
  Route::get('/check-already-driver-assign', [CommonController::class,

```

Figure 3. Laravel route definitions written in PHP.

systematic methodology ensures clear, organized, and secure routing throughout the application.

Laravel is a PHP web application framework that simplifies the development process for programmers by creating two main route groups with separate setups and middleware. The code defines two main route groups: accounts and employees. Route Group 1, referred to as “Accounts”, defines the routes that provide access to the dashboard and certain dashboard items based on their unique identification numbers. The Dashboard Controller manages these routes and employs

the ‘index’ and ‘show’ methods. Route Group 2: Employee Route Group 2 defines routes for employee-related operations, utilizing the Dashboard Controller and its “update password” and “change password” methods. Route Group 3, the “Employee” group, is responsible for designing routes that manage various tasks, including phone verification, van driver-salesman routes, supplier classification, and assignment status. These routes are used by the Common Controller, which includes distinct methods for each route. Route groups classify routes according to standard middleware and URL prefixes.

Route definitions specify which HTTP method [19]-[22], URL, controller, and method to use. The specified middleware protects the routes. The email-sending feature demonstrates the email-sending procedure using Laravel’s mail functionality. Resource pathways allow for creating, retrieving, updating, and deleting (CRUD) resource routes, ensuring that the codebase is structured and easily manageable.

In summary, Laravel’s route groups and middleware enhance the development of a structured and systematic route system, ensuring the product’s clarity and ease of management. By creating pathways within these categories, developers can optimize the efficiency and efficacy of apps.

Organic Search Performance Overview

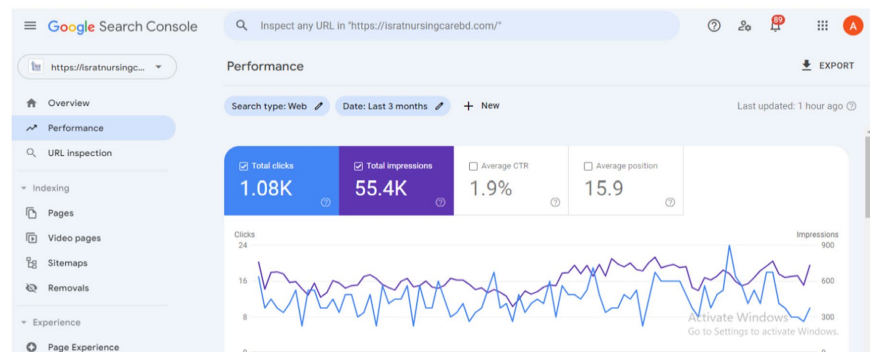


Figure 4. On-page SEO scenario of the web-based document management system.

The system’s primary function entails the system administrator or normal users gaining access to the system through the login module. After successfully logging in, users can choose the relevant function for managing their personal information, as depicted in **Figure 4**. The main functionalities of the system can be summarized as follows. The user identification verification module detects the kind of person who is currently logged in. If the user is a regular user, they are given permission to use the front office interface and the associated limitations. Suppose the system administrator wants to access the background administration interface. The user identity management module enables the inclusion, alteration, and removal of user IDs. The primary function of the system is to act as the system administrator. The communication record management module oversees the administration of the employee address book, encompassing the functionalities of

adding, editing, and removing entries. The primary function of the system is to act as the system administrator.

The system is constructed based on the three-tier architecture. The three-layer structure typically consists of the Presentation layer (sometimes called the Application layer), the Data layer, and the Access layer. The objective of identifying the level is to attain a high degree of cohesion and a low amount of coupling. The layered structure is the dominant and essential element of software architecture design. Microsoft's suggested hierarchical framework is commonly divided into three tiers, organized in increasing order: the data access tier, the business logic tier (sometimes called the field tier), and the presentation tier. This approach combines structural and prototype methodologies, drawing inspiration from the office automation system commonly used by small and medium-sized enterprises. The advantage of this technique lies in its careful consideration of the distinct characteristics of the structure of the development process control and the brief development cycle, leading to a prompt response time. The system combines two development approaches: the structured life cycle technique and the top-down design strategy. This involves breaking the system into logical components and establishing a database model. We utilize the prototype approach to develop the basic model during the system analysis and preliminary design phase. Given the current circumstances, we advance to the specific stages of designing, implementing, transforming, maintaining, and evaluating the system. Applying a well-rounded strategy improves the adaptability of the development process and often results in better outcomes. Public and private equity are highly responsive to credit risk, but the PCA model suggests that public equity is more susceptible to this risk than private equity. The BASE and alternative scenarios have a significant percentage effect, with the PCA model showing a maximum discrepancy of 72.83% for public equality.

4. Results

Analyzing the credit risk associated with public and private equity offers valuable insights into the advantages and disadvantages of both asset categories under varying economic conditions. The results, obtained from sophisticated financial models such as CoVar (Conditional Value at Risk), DECO (Decomposition of Systematic Risk), Z-Score, PCA (Principal Component Analysis), and Logistic Regression, illustrate the divergent reactions of public and private equity to credit risks between 2003 and 2023. Public stock markets are vulnerable to credit risk, as seen by the continually higher percentage impacts observed in various models. According to the CoVar model in the BASE scenario, a projected impact of 70.41% suggests a significant vulnerability to credit shocks. The heightened sensitivity can be attributed to many inherent characteristics of the public markets. The success of publicly traded corporations is heavily influenced by macroeconomic factors and investor mood, which are closely connected to the state of the credit market. In periods of economic upheaval or limited credit availability, publicly traded companies may see substantial declines in the value of their stocks. This

exemplifies the swift response of the whole market to apprehensions over the potential hazards linked to taking out loans.

Furthermore, public corporations are legally obligated to disclose financial and operational information regularly. This renders them more susceptible to abrupt fluctuations in market value when credit conditions deteriorate. The PCA and DECO models highlight the significant impact of credit risk on the pricing of publicly traded shares. The PCA model demonstrates a statistically significant impact of 72.83%, highlighting the critical influence of credit conditions on public equity performance. This study provides evidence that public markets inherently entail risks, particularly concerning credit markets, which can result in substantial fluctuations in stock values. Private equity (PE) continues to have a significant susceptibility to credit risk but with a reduced level of sensitivity. In the BASE scenario, the CoVar model has a substantial influence of 60.12% on private equity, albeit this impact is somewhat less pronounced than its effect on public equity. The enhanced resilience of private equity investments can be ascribed to their distinctive and exceptional characteristics.

Private equity investments typically exhibit less liquidity and are not subject to the same market dynamics as publicly traded equities. These investments often need extended financial commitments and must be regularly assessed in terms of their worth. This attribute offers a safeguard against transient market fluctuations resulting from credit-related issues. Furthermore, private equity firms can exercise significant control over the companies they invest in, allowing them to implement strategies that mitigate the adverse effects of financial difficulties, such as restructuring debt or improving operations.

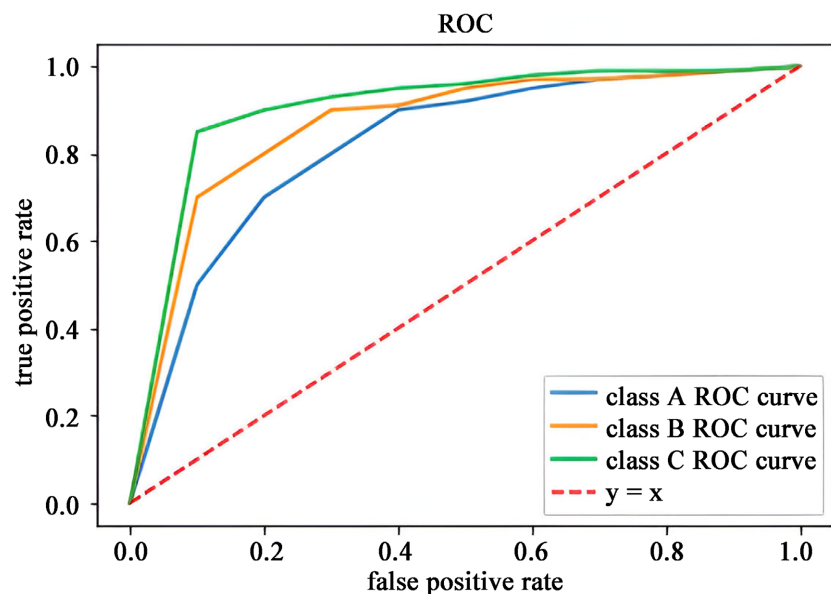


Figure 5. AUC-ROC of the market research.

The AUC-ROC curve, shown in **Figure 5**, offers a graphic depiction of the effectiveness of the categorization models employed in the investigation.

Different degrees of model accuracy in projecting credit risk related to public and private equities are shown by the curves for Classes A, B, and C. The more closely the curve traces the upper and left borders of the ROC space, respectively, the more precise the model. The greater true positive rates and lower false positive rates in comparison to private equity in the figure show that public equity is more responsive to changes in credit risk. PCA model still maintains a significant impact of 61.02%, suggesting that while private equity is somewhat shielded, it is not entirely immune to the risks associated with credit. This emphasizes the importance of credit market conditions in impacting private equity performance, particularly during periods of economic stress. The safeguarding of private equity from swift market responses only partially eradicates the underlying credit risk, especially in leveraged buyouts, where credit conditions substantially influence the long-term financial viability of the assets. The distinction between public and private equity highlights a crucial observation: while all forms of investments are exposed to credit risks, public equity is more susceptible to rapid market reactions to credit conditions. Despite having intrinsic structural elements that provide more resilience, private equity faces significant credit risk, particularly when considering prolonged investment timelines. These findings have important implications for investors and governments. Investors should thoroughly understand public and private equity's unique susceptibility to credit risk to improve their portfolio diversification strategies and risk management methods. When assessing the possible risks that credit markets may provide to the whole economy, policymakers should consider these considerations. The resilience of private equity and its significant susceptibility to credit risk suggests that this sector might have a stabilizing impact during times of credit market disruptions.

Nevertheless, it is essential to exercise meticulous supervision to avert any possible risks to the system. In summary, the results emphasize the significant impact of credit risk on public and private equity performance. Public markets see immediate effects, but private equity has a delayed but significant amount of responsiveness. A thorough comprehension of these components is crucial for making educated investment choices and carrying out efficient financial oversight.

5. Limitations and Future Work

The current system's reliance on structured data is a fundamental limitation as it ignores unstructured data sources that may improve decision-making, such as emails and social media inputs. Further studies might look into using natural language processing (NLP) techniques to handle disorganized data, which would broaden the system's use. Moreover, system testing was conducted only in one medium-sized firm. It will be beneficial to conduct more testing in various industries and company sizes to evaluate its scalability and adaptability. Another possible research topic is using predictive analytics to provide quick decision support for office automation.

6. Policy Implications

Adopting the recommended office automation system would have many policy implications for companies. Since the system collects and analyzes sensitive employee and company data, it is imperative to develop robust data governance policies to ensure compliance with data privacy laws like GDPR. In order to ensure that employees have the skills needed to operate automated systems and adequately handle any risks associated with an over-reliance on automation, companies should also invest heavily in training and development initiatives. Additionally, putting this technology into practice could need adjustments to organizational structures and policy changes to account for how automation has changed worker duties and responsibilities.

7. Conclusions

The login interface module primarily serves to authenticate the user's username and password during the user's system login. In order to obtain access to the system, users must provide an accurate username and password. Upon successful authentication, users are granted access to the system's home interface, which will direct them to the system homepage. The homepage presents a collection of system menu options that users can activate by clicking with the mouse. Conference information input interface: Conference Management comprises three components: conference review, removal, and publication. Upon clicking on the conference title hyperlink, users will be directed to an interface that provides comprehensive information about the conference. They will possess the ability to navigate through all the pertinent information quickly. The Local Area Network (LAN) serves as the fundamental infrastructure for office automation, enabling efficient data transmission for users. An office automation system relies on three main components: the individuals involved, the technologies utilized, and the organizational structure. The following system will cater to the end customers, who are individuals. The users will employ a variety of software tools. The effectiveness of the established system will ultimately rely on the company, regardless of its size. This system utilizes a hybrid approach that combines elements of both structure and prototype methodologies. It is specifically designed for small and medium-sized organizations and is based on the office automation system.

One benefit of this technique is that it considers the distinct features of the structure of the development process control and the particularities of the short development cycle, allowing for a prompt response. The system is constructed by blending two development methodologies: the structured life cycle methodology and the top-down design strategy. This entails decomposing the system into coherent components and designing a database schema. The enhanced work-in-progress (WIP) endpoints were showcased in an IP call center application. This presentation showcased the seamless transfer of a multimedia WIP call between

two agents, encompassing audio and video. The transfer was facilitated by the presence-aware services available on the WIP endpoint. This transfer was conducted without any media loss.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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