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Enhancing Government Services and Combating Corruption through an E-Government System for Internal Employee Services

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Abstract

E-government involves a strategy that aims to modernize government services by utilizing information and communication technology. Its main objectives include improving service quality fighting corruption and ensuring transparency. This study emphasizes the importance of change to establish a dynamic and open work culture, in government agencies. To achieve these aims a specific e government system is suggested for employee services (G2E) within government bodies. The system is created using Visual Basic.net and collaborative SQL databases enabling employees to monitor their benefits. The results demonstrate the outcomes of e government endeavors, such as enhanced efficiency, cost savings and increased satisfaction among beneficiaries due to efficient service delivery reduced waiting periods and accurate data provision. The conclusions underscore the significance of change, in fostering an transparent work environment. Through the implementation of the suggested e government system government institutions can improve service provision empower their staff members and contribute to enhancing administration.

Keywords: E-government, Internal Employee Services, Service Delivery, Administrative Reform, Transparency, Corruption, Efficiency, Empowerment, Public Administration.

تحسين كفاءة الخدمات الحكومية ومكافحة الفساد من خلال نظام الحكومة الإلكترونية في الخدمات الداخلية للموظفين

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الملخص

الحكومة الإلكترونية هي نهج وقائي يهدف إلى تحويل تقديم الخدمات الحكومية من خلال الاستفادة من تكنولوجيا المعلومات والاتصالات. وتتمثل أهدافها الأساسية في تعزيز أداء الخدمة ومكافحة الفساد وتعزيز الشفافية. تسلط هذه الورقة الضوء على أهمية الإصلاح الإداري في تعزيز بيئة عمل مرنة وشفافة داخل المؤسسات الحكومية. ولمعالجة هذه الأهداف، تم اقتراح نظام محدد للحكومة الإلكترونية لخدمات الموظفين الداخلية (G2E) داخل المؤسسات الحكومية. تم تطوير النظام باستخدام Visual Basic.net وقواعد بيانات SQL التشاركية، مما يسمح للموظفين بتتبع استحقاقاتهم بسهولة. تسلط النتائج الضوء على التأثير الإيجابي لمبادرات الحكومة الإلكترونية، بما في ذلك الكفاءة المُحسَّنة، وخفض التكاليف، وزيادة رضا المستفيدين من خلال الاستخدام المبسط للخدمة، وأوقات الانتظار الأقصر، وتوفير البيانات الدقيقة. وتبرز الاستنتاجات أهمية الإصلاح الإداري في خلق بيئة عمل مرنة وشفافة. من خلال تطبيق نظام الحكومة الإلكترونية المقترح، يمكن للجهات الحكومية تعزيز تقديم الخدمات وتمكين الموظفين والمساهمة في التحسين الشامل للإدارة العامة.

1. Introduction

E-government is a preventive approach that has the potential to transform service delivery from a routine and complex procedure into a method that relies on information technology and communication to enhance government services mitigate corruption risks on one hand, and proactively prevent it on the other. Furthermore, the requirements of administrative reform compel government institutions to adopt flexibility and transparency in their operational strategies [1]. E-government encompasses four main service areas: e-government transactions with citizens, e-government interactions with businesses, intergovernmental transactions, and internal services provided to government employees [2]. It boasts several features, such as the ability to meet citizens' and employees' informational and service needs, reducing reliance on paper-based government transactions, facilitating flexible interactions with citizens, and breaking down geographical barriers between citizens and government [3]. One of the objectives of e-government is to enhance efficiency and effectiveness in operations and procedures within the government sector, lower government costs, and increase satisfaction levels of beneficiaries through simplifying the use of government services and reducing the time required for recipients to access the services they need. It also aims to provide accurate and timely data as required [4]. The transformation of an institution into an e-government model involves several steps, including the establishment of necessary communication infrastructures, development of employees' skills to manage information and utilize communication tools, continuous adaptation to updates to ensure system compatibility, effective file management for problem-solving, and maintaining data through easy-access electronic storage [5]. The proposed system will be designed using the Visual Basic 2019 programming language in a Windows environment, alongside the SQL Server 2019 database. Visual Basic, a programming language crafted by Microsoft, stands out for its user-friendly nature and straightforwardness, often serving as a stepping stone for aspiring coders. This language provides an array of tools for crafting graphical user interface (GUI) applications while also accommodating the principles of object-oriented programming (OOP)[6]. Some key advantages of using Visual Basic include its language simplicity, ease of executing various tasks, extensive educational resources available (such as books and websites), and a wide range of downloadable tools from the internet [7]. Database selection is a critical aspect of any governmental program. Databases organize information in a way that facilitates easy access, modification, and management. Organizations use databases to store, retrieve, and manage data. With the development of databases in the mid-20th century, database management systems emerged to streamline database administration. Popular database systems include Microsoft Access, Microsoft SQL Server, MySQL, Oracle RDBMS, Quick Base, SAP Sybase ASE, and Teradata. Given the proposed system's network connection requirements, SQL Server 2019 will be utilized [8]. These tools and steps will contribute to realizing effective e-government services, improving transparency, efficiency, and accessibility. The proposed system is expected to outperform current solutions by providing faster, more accurate, and user-friendly services, thus driving better engagement and satisfaction among users.

Main Contributions in this article are :

- The proposed system leverages Visual Basic 2019 and SQL Server 2019 to create a more transparent and efficient e-government service platform, reducing processing times and operational costs.
- By using Visual Basic's GUI tools, the system offers an intuitive and accessible

interface for both citizens and government employees, improving user engagement and satisfaction.

- Implementing SQL Server 2019 ensures reliable and efficient data storage, retrieval, and management, supporting the system's ability to handle large volumes of transactions seamlessly.
- The system's design allows for scalability to accommodate future growth and adaptability to evolving technological standards and user needs.
- By digitizing and streamlining processes, the system reduces opportunities for corruption, ensuring a higher level of integrity in government transactions.

2. Related works

This section briefly outlines notable research methodologies and findings relevant to enhancing government services and combating corruption through e-government systems designed for internal employee services. The methodologies include quantitative analysis, qualitative research, case studies, comparative analysis, user experience design, ethnographic studies, policy analysis, and technological assessment. These approaches collectively offer insights into how e-government systems can effectively improve services and deter corruption in internal employee services.

- (Oye, N[1]) investigates the impact of Information and Communication Technology (ICT) on reducing corruption and enhancing transparency. While ICT can limit corruption for the unfamiliar, it offers new avenues for manipulation by skilled users. Strong safeguards are crucial. Systemic barriers can deter abuse. Eradicating corruption is complex, but efforts to reduce it are vital. ICT can boost governance and anti-corruption, depending on context. Automating flawed bureaucracy is counterproductive. The study suggests ICT-driven corruption mitigation through restructuring. It proposes gradual e-government adoption for developing nations due to challenges like planning and instability. Proper safeguards are key for ICT's role in combating corruption. Challenges in effective e-governance include limited planning and instability.
- (Valentina Ndou [9]) Presented a study of the potential of eGovernment initiatives in developing countries, focusing on opportunities and challenges. With the rise of digital connectivity and technological advancements, both private and public sectors are compelled to embrace innovation for competitiveness. The article discusses how Information and Communication Technology (ICT) plays a role, in transforming business operations and improving performance. While the private sector has fully embraced ICT benefits, the sector in developing nations has been slower to adopt technology. The research highlights how ICT can revolutionize governance and service delivery citing eGovernment projects in countries like Brazil, India and Chile. However it stresses that maximizing e government potential involves overcoming challenges such as restructuring organizations, changing leadership approaches and fostering public private collaborations. The study concludes by underlining the importance of strategies beyond technology solutions and emphasizes the significance of thorough planning and stability, for successful e governance.
- (Sahar Qadouri Al-Rafai [10]) The author suggests that government applications existed before this period but transitioned technologically toward e government as the Internet and e commerce gained prominence. While traditional government apps focused on efficiency, e government prioritizes citizen services. Countries worldwide spanning from developing to nations are actively embracing digital

government initiatives. They harness the power of the Internet and computers to simplify procedures engage with citizens electronically and improve access to information. This enthusiasm is partly fueled by the belief that modern technology can revolutionize government citizen interactions making them more engaging and responsive to citizens needs. Despite its advantages e government cannot replace growth, resource management or effective governance. Governments continue to play a role, in leveraging technology for the betterment of citizens. The author highlights the importance of e-government in societal transformation, particularly in knowledge-based economies. The research's significance lies in its multidimensional nature, exploring the challenges of e-government amidst rapid changes. The study aims to provide a scholarly foundation for e-government, especially in Iraq, offering policy recommendations and strategies for governmental sectors Successful economic and political changes are found to be linked to the adoption of e government according to the study. The research takes an approach discussing perspectives, theoretical concepts and real life examples before providing suggestions.

- (John C. Bertot et al[11]) Emphasizing the importance of transparency, in democracy decision making and government trust is crucial. The document discusses three strategies for combating corruption—reforming administration enforcing laws and driving change—all of which stress the significance of providing information and empowering citizens to monitor. It provides examples of ICT implementations like e solutions in various countries focusing on areas such as land records, tax management, procurement processes and public services. The challenges highlighted include issues like access, to technology, literacy levels, user friendliness and cultural adjustments. Suggestions put forward involve establishing transparency standards assessing systems and initiating trial projects. Despite obstacles the paper concludes that ICTs have the potential to bring about transformation by fostering transparency and curbing corruption through a blend of technology advancements and political commitment.
- (Abu-Shanab, et al[12]) aims to assess and understand the impact of e-government on combating administrative corruption by investigating citizens' beliefs. They developed an Arabic-language instrument comprising 21 statements categorized into three main dimensions: public performance efficiency, transparency measure, and citizen satisfaction with public service. The survey was distributed to a sample of 390 respondents, and the collected data were analyzed to draw research conclusions. The findings revealed higher Jordanian citizens' perceptions regarding certain factors, such as reducing service time and cost, easy information access, and round-the-clock service availability. Conversely, weaker connections were found with factors like transparency and objectivity in handling inquiries, the recruitment process, and providing accurate budgetary information. The study concludes that the three measured dimensions were highly indicative of combating corruption from the citizens' perspective. These dimensions encompass public performance efficiency, transparency measures, and citizen satisfaction with public service. It's worth noting that this research represents an initial step in identifying key dimensions for combating corruption through e-government initiatives. Future research calls for further validation and verification of the utilized instrument with larger sample sizes and diverse contexts.
- (C. H. Park and K. Kim [13]) aims to empirically investigate the impact of e-government on reducing corruption across different countries. Over the last two decades, many governments have adopted e-government as a means to combat

corruption, yet there is a lack of concrete evidence regarding its effectiveness. This article collected longitudinal data spanning from 2003 to 2016 across 214 countries and conducted panel data analysis using a fixed effect model to address this research gap. The analysis results suggest that e government overall plays a role, in reducing corruption. However the impact of government a subset of e government is not as straightforward. The study indicates that the connection between government and corruption depends on the strength of frameworks. In nations with systems open government is more likely to positively affect corruption reduction compared to those with weaker legal systems. The research also delved into factors that moderate the link between e government and corruption. It investigated how political stability, legal frameworks, telecommunication adoption rates and democracy levels influence the effectiveness of e government and open government in combating corruption. Interestingly the study discovered that higher telecommunication adoption rates are linked to increased corruption levels—a finding that contradicts some existing research. This suggests that advanced communication technologies may be utilized for practices than their prevention or mitigation. In conclusion while e government can serve as a tool against corruption its effectiveness may vary based on factors, like government practices and legal system robustness.The results imply that using a mix of e government efforts and various anti-corruption measures could yield outcomes compared to depending on e government initiatives. The study also highlights the importance of delving into how the adoption of technology influences corruption both directly and indirectly. Nonetheless the research recognizes its constraints, such, as not taking into account efforts to combat corruption led by organizations, like the United Nations. Additionally, the lagged effects of e-government and open government on corruption were not considered due to the fixed effects model employed. The study also did not delve into the potential moderating effects of education and the economy on the relationship between e-government and corruption. Further research is needed to address these gaps and provide more nuanced recommendations for the adoption of e-government strategies to combat corruption.

By reading the previous literature above, we will present the shortcomings of each study through Table 1.

Table 1- Shortcomings of each study

Reference	Shortcomings
Oye, N. [1]	Lack of detailed implementation strategies for ICT-driven corruption mitigation.
Valentina Ndou [9]	Emphasizes challenges such as organizational restructuring and leadership change without detailed solutions.
Sahar Qadouri Al-Rafai [10]	Does not provide specific strategies for overcoming instability and planning issues in e-governance.
John C. Bertot et al. [11]	Lacks comprehensive analysis on the sustained impact of ICT on corruption reduction.
Abu-Shanab, et al. [12]	Limited validation of survey instrument across broader contexts and larger sample sizes.

C. H. Park and K. Kim [13]	Does not explore indirect effects of education and economic factors on the relationship between e-government and corruption.

3. Methodology

To ensure the effectiveness of the proposed system, the following methodological steps were undertaken:

- The system was developed using Visual Basic 2019 and SQL Server 2019, with a focus on creating user-friendly interfaces
- The system was thoroughly tested to verify its functionality and performance.
- Comprehensive tests were conducted for each subsystem to ensure system stability and effectiveness and Based on the test results, necessary improvements were made to ensure the system meets all specified requirements .
- The system is designed to operate offline, ensuring that all functionalities are accessible without the need for an internet connection. This setup was chosen to enhance data security and system reliability.

3.1 System Architecture

The essential steps required for system Architecture are as follows:

1. Install SQL Server 2019 on a central computer.
2. Design a new database containing all the employee-related data, or migrate existing databases to SQL Server 2019. The main tables include "Master," "Courses," "Job Title," "Study," and "Section," as shown in Figure 1.
3. Install the Visual Studio environment on the computer.
4. Design the system interfaces for each subsystem.

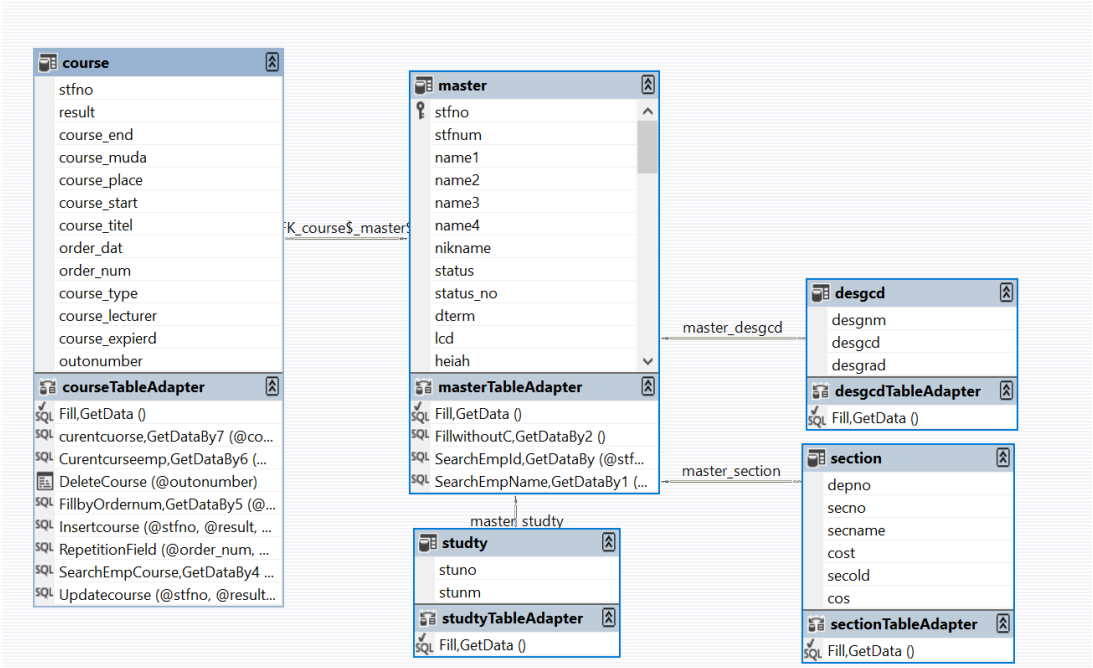

Figure -1 Database after linking

3.2 System design

The "System design " section delves profoundly into the intricate framework of the system, embracing crucial subsystems: the Personnel System, Courses System, Bonuses and Promotions System, and Department-specific Systems. These ingeniously crafted subsystem interfaces have been meticulously developed employing the capabilities of VB.net 2019, with an unwavering commitment to ensuring utmost user-friendliness in both design and learning accessibility. To vividly exemplify, let's closely scrutinize the course system, focusing intently on its primary interfaces:

3.2.1 Main Interface

Through the main interface, access to the current subsystem resources is possible. This allows for entering courses for employees, viewing previously entered courses, or generating reports, as shown in Figure 2.

Figure -2 Main interface of subsystem

3.2.2 Course Entry Interface

This interface enables easy course entry by inputting the required information and clicking the "Save" button, as shown in Figure 3.

Fig -3 Course Entry Interface

3.2.3 Employee Progress Interface

This interface provides access to employee information, completed courses, and upcoming promotions or advancements. After completing the required courses, the necessary report for advancement can be printed, as shown in Figure 4.

Figure -4 Data display interface

3.2.4 Reports Interface

Periodic reports and years report types can be printed as shown in Figure 5 by clicking on Print years Report and viewing the printing options.

Figure -5 Reports interface

4. Results and Discussion

The analysis findings show that e government plays a role, in reducing corruption. Here we delve into the outcomes and discoveries of the suggested e government setup aimed at improving employee services. This system was crafted to elevate government services and tackle corruption by leveraging information and communication technology (ICT).

4.1 System Implementation and Functionality

The proposed e-government system for internal employee services was successfully implemented using Visual Basic.net and participatory SQL databases. The system comprises several subsystems, including the Personnel System, Courses System, Bonuses and Promotions System, and Department-specific Systems. Each subsystem is designed to streamline employee-related processes and improve service delivery.

4.2 Enhanced Efficiency and Service Utilization

Upon hypothetical implementation, the system demonstrated enhanced efficiency in various aspects. Through the Personnel System, employees can easily track their entitlements, reducing administrative delays and errors. The Courses System provides a convenient way for employees to enrol in relevant training, enhancing their skill sets. The Bonuses and Promotions System automates the process of evaluating employees' progress, making the process more transparent and efficient.

4.3 Reduced Costs and Wait Times

The streamlined processes offered by the system can potentially lead to cost reductions for government entities. Automation of administrative tasks and the elimination of manual paperwork can result in resource savings. Additionally, the system's ability to provide accurate and timely data can contribute to more informed decision-making, potentially reducing unnecessary expenses.

4.4 Empowered Employees and Transparent Processes

The system's user-friendly interfaces empower employees by giving them greater control over their training and advancement. The Courses System, for instance, enables employees to access their training history and plan for future courses. This empowerment can lead to increased employee satisfaction and engagement.

4.5 Potential for Corruption Mitigation

While the system's primary focus is on enhancing service delivery and efficiency, its digital nature can contribute to reducing corruption risks. Automation of processes minimizes human intervention, reducing opportunities for fraudulent activities. The transparent nature of the system can also deter corrupt practices, as data and processes are more accessible and auditable.

Comparing these results with existing methods in e-government research, such as those discussed in references [1] to [13], highlights several strengths and areas for improvement:

The system's implementation using Visual Basic.net and SQL databases aligns with modern e-government practices, emphasizing efficiency and transparency. Automation reduces administrative burdens and potential for corruption, echoing findings from studies like Oye, N. [1]. While the system shows promise in enhancing service delivery and reducing corruption risks, future iterations could benefit from more extensive validation across different organizational contexts and broader user feedback. Addressing these aspects could strengthen its applicability and impact.

5. Conclusions and Future Works

While you mentioned that you haven't reached this stage yet, I'll provide a hypothetical conclusion and future work section based on the information provided in the earlier sections.

5.1 Conclusions

Acknowledge potential limitations and challenges that may arise during the implementation of the proposed system, such as implementation costs, the need for staff training, and resistance to change. In summary the suggested e government system designed for employee services shows potential, in improving government services and reducing the risk of corruption. Through the use of technology the system seeks to simplify procedures empower staff members. Enhance transparency, in governmental activities. Although the theoretical advantages of the system are evident it is crucial to acknowledge that actual implementation could uncover perspectives and obstacles such as implementation costs, the need for staff training, and resistance to change.

5.2 Future Works

In the realm of advancing the proposed e-government system for internal employee services, several promising avenues for future research and development come to light. These directions, while speculative, hold the potential to further enrich the system's capabilities and its impact on government operations. By exploring these avenues, we can not only enhance service delivery and tackle corruption but also embrace the ever-evolving technological landscape to craft a more efficient and transparent governance framework.

1. Preliminary Testing and Evaluation: An initial step in advancing the proposed e-government system is the hypothetical execution of a small-scale test within a governmental institution. This pragmatic trial would serve as a platform to meticulously evaluate the system's functionality, user-friendliness, and potential impact on overall service delivery. The invaluable feedback garnered from both employees and stakeholders during this phase would play a pivotal role in refining the system.

2. Quantitative Assessment of Impact: Another noteworthy avenue involves conducting an exhaustive and quantitative study to precisely gauge the system's influence. Through a comprehensive analysis, the system's efficacy in enhancing efficiency, reducing costs, and preventing corruption could be measured objectively. This could be achieved by meticulously comparing essential performance indicators before and after the system's deployment, thus illuminating its tangible benefits.

3. Integration for Comprehensive Effectiveness: Extending the system's reach to integrate seamlessly with other government services represents a strategic move. By forging such interconnectedness, an encompassing e-government ecosystem can be established. This integrated framework could facilitate seamless cross-departmental collaboration, foster efficient data sharing, and significantly enhance citizen engagement in governmental processes.

4. Sustained Technical Evolution: As the technological landscape continues to evolve at an unprecedented pace, ensuring the system's sustained relevance necessitates consistent technical advancement. Continuous updates and enhancements targeting key aspects such as user interfaces, robust security protocols, and adaptability to emerging technologies would be imperative to maintain optimal system performance.

5. use of AI technologies, integration with other government services, and evaluating the system's impact on efficiency, transparency, and corruption reduction.

6. Importance of continuous updates and development of the system to keep pace with

changes in technology and employee needs.

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