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System Efficiency, Challenges, and User Satisfaction of the Environmental Management Bureau-MIMAROPA Online Permits Application in San Jose, Occidental Mindoro

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***Abstract*: Utilizing descriptive research, this study assessed the system efficiency, challenges, and user satisfaction of the Online Permits Application System of the Environmental Management Bureau (EMB) MIMAROPA under the Department of Environment and Natural Resources (DENR) in San Jose, Occidental Mindoro. The randomly chosen 180 business owners, pollution control officers, environmental consultants, private citizens, and local government personnel who applied for permits online and had used the system served as the respondents. Data was collected using a structured survey questionnaire. The respondents confirmed the very high efficiency (mean=4.56) and very high user satisfaction (mean=4.58) of the online application system. They likewise reported the slightly serious challenges (mean=1.67) encountered in its use. Correlation analysis revealed the negative relationship between system efficiency and challenges (r=-0.443), and between challenges and user satisfaction (r=-0.282) which emphasized that the optimization of system performance would help reduce barriers and enhance user contentment. In contrast, the positive correlation (r = 0.442) between satisfaction and efficiency indicates that efficient processes, accessibility, and timely service delivery are associated with user appreciation of the online permit application system. Although rated highly efficient, it is necessary to provide continuous system maintenance, performance monitoring, and user feedback mechanisms. To sustain long-term efficiency, reliability, and successful delivery of e-government services, training and seminars are needed for the system administrators. Strengthening support services, digital assistance, system guidance, enhanced user-centered system features, regular updating of security measures, and an integrated system improvement framework are likewise recommended.**

***Keywords*: system efficiency, challenges, user satisfaction, online permits application.**

1. Introduction

Digital technology has a significant role in the Philippine government services, especially in digitizing and automating government processes that are previously manual and bureaucratic (Burrows, 2016). The introduction of online permit applications streamlines the process, minimizes inefficiencies, and increases the accuracy of services and their accessibility (DICT, 2024). These digital platforms have significantly improved local governments and regulatory agencies in managing permit processing by addressing persistent issues of bureaucratic delays and lack of transparency. Having complex manual workflows, online systems can enhance operational efficiency, promote user satisfaction, and strengthen overall governance performance (De Villa et al., 2025).

The Department of Environment and Natural Resources, through the Environmental Management Bureau MIMAROPA (EMB-MIMAROPA), is the primary agency responsible for sustainable development while protecting the environment and its natural resources. The EMB today has already adopted e-government platforms that bring environmental services to the people in an easy, effective, and efficient way. Through its Online Permitting and Monitoring System (OPMS) in line with the Ease of Doing Business Act (RA 11032), this digital platform was created by the bureau to accept, process and approved the environmental permits or clearances, such as Certificate of Non-Coverage (CNC), Environmental Compliance Certificate (ECC), Waste Water Discharge Permit (WWDP), Permit to Operate (PTO), Registrations under RA 6969 as well as Pollution Control Officer Accreditation and others (DENR-EMB MIMAROPA, 2024; DENR, 2003; DENR-EMB, 2023). Digitalization is considered the best innovation by the government because it is designed to reduce processing time, minimize errors, and streamline administrative tasks (Goffin & Voss, 2018). However, the success of the e-government depends on the users' satisfaction and system interaction. Factors that would affect user satisfaction and the effectiveness of the e-government services are the system accessibility, ease of use, and responsiveness (Teng et al., 2019; Sadeghi et al., 2020).

Studies from local and international sources revealed that using an online permitting system would promote transparency, cost efficiency, and improved service delivery (GOGov, 2023; Cloudpermit, 2020). However, there is no empirical research conducted to examine the efficiency and user satisfaction of DENR-EMB MIMAROPA's online permit application system.

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Localized studies in smaller municipalities such as San Jose, Occidental Mindoro, remain scarce. To address this gap, this study integrated system performance analysis, user surveys, administrator interviews, and usability testing to evaluate the system's overall efficiency, challenges and user satisfaction.

Evaluation of how efficiently the EMB MIMAROPA online permit application operates and how satisfied the users are with its services are the focus of this study. It also aimed to identify technical, operational, and user-related challenges that influence system performance and service delivery. The findings would help improve system efficiency, enhance user experience, and support the agency's goal of promoting effective e-governance in San Jose, Occidental Mindoro.

2. Materials and Method

This study utilized a descriptive research design to assess users' perceptions and experiences in using the online permit application system of EMB MIMAROPA. A total of 180 respondents including business owners, pollution control officers, environmental consultants, personal citizens and local government personnel who submitted their online application from January 2020 to September 2025 were selected using random sampling.

A constructed questionnaire was used by the researcher. This instrument was validated by experts to ensure the clarity and relevance of each item and measures what it ought to measure. After incorporating all comments and suggestions, the instrument was pilot tested for reliability analysis in terms of internal consistency. The reliability coefficient, Cronbach's alpha, was recorded at 0.95, indicating that the instrument is reliable. It consisted of items measuring system efficiency, challenges, and user satisfaction, and responses were rated using a five-point Likert scale. The survey was administered online via Google Forms in January 2026.

Data were organized, processed, and analyzed statistically using a software. Mean and standard deviation were used in the assessment of the system efficiency, degree of challenges, and level of user satisfaction. Pearson's Product-Moment Correlation at 0.05 level of significance was used to test the interrelationships among variables. Ethical considerations were strictly observed, participation in the study was voluntary, and informed consent was obtained. Confidentiality and anonymity were also maintained.

3. Results

A. System Efficiency

System efficiency of the online permit application system of the EMB MIMAROPA was evaluated in terms of processing time, ease of use, accessibility, and cost efficiency (Table 1). Generally, it was rated highly efficient (mean =4.56; SD = 0.56) as time, cost, and effort are reduced, and the system is user-friendly and accessible. Specifically, the processing time is 7 to 20 days, significantly faster than the manual transaction of 30 to over 60 days. The response time, turnaround time, and overall process duration indicate smooth and timely workflow. The system was also described as highly user-friendly. Uploading of required documents, handling errors, and system interoperability are its convenient features. The system's ability to perform tasks consistently and restore lost data also contributed to a positive user experience. It was also rated highly accessible as it has downloadable user guides, and progress updates. Cost efficiency is also high with savings in transportation and communication expenses.

Table 1
System efficiency of the online permit application

Indicators	Mean	SD	Description
Processing Time	4.41	0.71	Highly Efficient
Ease of Use	4.53	0.66	Highly Efficient
Accessibility	4.72	0.54	Highly Efficient
Cost Efficiency	4.59	0.58	Highly Efficient
Grand Mean	4.56	0.56	Highly Efficient

B. Challenges

The EMB MIMAROPA online permit application system was rated efficient and reliable. Challenges exist but did not seriously affect the operation and limit full potential (mean=1.67; SD=0.99; Table 2). While issues on digital divide, technical problems, user experience, security, and system integration exist, they occur infrequently and do not impede the system's functionality. Digital divide remains notable, as limited digital literacy, geographical barriers, and unequal access to devices or reliable internet are some concerns. Technical problems of system outages, downtime, slow system response during peak hours, server overload, and inconsistent functionality, are also rarely experienced.

Security issues are rarely experienced in authentication, phishing, data breaches, and unauthorized access. Effective cybersecurity measures are in place, instilling user confidence. Problems with slow loading, unclear instructions, and difficulties with navigation occur infrequently. There were also a few integration-related issues, which show that the system works well with the existing system. Though this does not accept certain common data formats and occasionally has difficulties in linking to older systems or databases, these were not significant issues. System performance can be further maximized by increasing automation and interoperability.

Table 2
Extent of challenges in the online permit application of EMB MIMAROPA

Indicators	Mean	SD	Description
Technical Problems	1.64	1.06	Slightly serious
Digital Divide	1.98	0.95	Slightly serious
Security Concerns	1.55	1.17	Slightly serious
User Experience	1.63	0.99	Slightly serious
Integration with Existing Systems	1.55	1.05	Slightly serious
Grand Mean	**1.67**	**0.99**	**Slightly serious**

C. Level of User Satisfaction

The respondents were highly satisfied with online permit application (Table 3). The overall mean of 4.55 (SD = 0.63) proved that the system is valid, user-friendly, and efficient. Its usability is one of the sources of high satisfaction. Clear instructions and forms made it easy to complete the tasks. The system is very easy to use, and only minimal technical knowledge is needed. Some respondents expressed their willingness to use the system in their online applications.

Table 4
Relationships among system efficiency, challenges, and user satisfaction

Variables	Correlation Coefficient	p-value	Relationship
System Efficiency and Challenges	-0.443	0.000	Moderate Negative
Challenges and User Satisfaction	-0.282	0.000	Weak Negative
User Satisfaction and System Efficiency	0.442	0.000	Moderate Positive

The timely and effective service delivery, reasonable application fee, and immediate notifications about lacking documents and status updates were also rated positively. This implies efficiency, transparency, and good communication of the system. Also, the level of access to, availability and usefulness of technical support including help desk support and friendly personnel added to the overall level of satisfaction. The transaction was made efficient with easy and clear instructions.

The satisfaction of users is high in terms of trust and security. Users were assured that the system secures personal information, guarantees privacy and eliminates unauthorized access. The system complies with the Data Privacy Act of 2012, with strong data safety measures, and is maintained by administrators. Consistent system performance and quick response to address the errors further strengthen the users' perceptions of reliability.

Table 3
User satisfaction in the online permit application system of the EMB MIMAROPA

Indicators	Mean	SD	Description
System Usability	4.54	0.66	Highly Satisfactory
Service Efficiency	4.47	0.72	Highly Satisfactory
User Support	4.55	0.70	Highly Satisfactory
Trust and Security	4.64	0.66	Highly Satisfactory
Grand Mean	**4.55**	**0.63**	**Highly Satisfactory**

D. Interrelationships among System Efficiency, Challenges, and User Satisfaction

Table 4 shows the correlation between system efficiency, challenges, and user satisfaction. The significant relationships ($p<0.05$) indicated the strong statistical support of the interrelationships among variables.

There is a moderate negative relationship between the efficiency of the system and challenges ($r= -0.443$). This implies that the more efficient the system is, fewer problems may arise. Therefore, a more productive system implies better user experience and reduced operational challenges or problems reported by users. This optimizes system performance and minimizes barriers.

There is also a weak negative correlation ($r=-0.282$) between challenges and user satisfaction. This means that the higher the difficulties are met by the users, the lower their satisfaction levels are. This observation highlights the idea that reducing the technical and operational challenges can be used to augment the user satisfaction and online application process of the EMB MIMAROPA online application system.

On the other hand, user satisfaction and system efficiency have a moderate positive relationship ($r=0.442$). It indicates that the more efficient the system, the more user satisfaction. Therefore, the effective procedures, availability, and timeliness of the service provision facilitated the positive perception of users and the valued online permit application system.

In conclusion, the inter-relations between system efficiency, challenges, and user satisfaction were confirmed. Programs to enhance the efficiency of the system and overcome operational issues can significantly augment user satisfaction and ultimately enhance the performance of the online permit application system.

4. Discussion

The EMB MIMAROPA online permit application system was identified as very efficient as it streamlined the processes, enhanced accessibility, and lowered costs to the users. It allows the applicants to receive services at any time and place without geographical or time restrictions. These are the reasons why e-government service delivery is effective and inclusive (Gil-Garcia and Pardo, 2005; Alomari, Woods, and Sandhu, 2012). The ease of use promotes more users to utilize the system and user satisfaction (Morgeson and Mithas, 2009). The system is also found to be economical, reducing transport, communication, and loss of productivity. This makes services more affordable and beneficial for both applicants and the government (AlAwadhi & Morris, 2009; Carter & Belanger, 2005). It has an easy-to-use design that minimizes mistakes and enhances sustained use. It is in line with the principles of technology acceptance (Davis, 1989; Venkatesh et al., 2003). Processing time, however, was rated lower, meaning there remains a need to improve it through automation and updating the process. Delays may affect the perception of efficiency and user trust (Gil-Garcia and Pardo, 2005). Commonly, the system facilitates more affordable, accessible, and responsive delivery of public services. This corroborates with the prior research on e-government (Alateyah, Crowder, and Wills, 2013; United Nations, 2022; Ndou, 2004; Moon, 2002).

Challenges of digital divide, technical, usability, security concerns, and system integration are minimized and not viewed as problems. Nevertheless, ongoing monitoring and evaluation play a vital role in maintaining efficiency and satisfaction for users. The digital divide is not a frequent issue, but it remains present, especially in rural areas, and it is necessary that the infrastructure and digital literacy be improved to make it as inclusive of all (van Dijk, 2020; Wei and Hindman, 2011). In addition, there is a low level of technical problems, although system reliability should be maintained for user trust (Gefen et al., 2003). The user experience and security issues are also low, which is beneficial to adoption, but constant improvements and effective data protection measures should be ensured (Carter and Bélanger, 2005). There are minimal system integration problems, which help in the smooth and effective service delivery (Gil-Garcia and Pardo, 2005). Typically, there are no severe effects, but this is a problem when not tackled, so it is important to continuously improve the system to maintain its adoption and fair use (Aldrees and Gračanin, 2021; Djatmiko et al., 2025; Febrianty et al., 2024). As such, by constantly enhancing technical reliability, interface design, security, and

integration, it will contribute to long-term success and broader system adoption.

The users of EMB MIMAROPA online permit application system are very satisfied, suggesting that the system is efficient in providing users' needs. The system also provides high levels of security, such as encryption of data and against unwanted access by other parties, which boosts the confidence of users-a mandatory requirement in e-government (Carter & Bélanger, 2005). The importance of readily available user support is emphasized by high satisfaction with user support, properly defined instructions, and immediate feedback, as well as enhancing user confidence and lowering abandonment (Venkatesh et al., 2003). The usability of the system also makes the users satisfied with the system because its simplicity and convenience promote its use, and as such, it is in line with technology acceptance principles (Davis, 1989). Efficiency of services is usually on the positive side; but processing time and workflow are yet to be improved since delays may influence the perceived quality of services (Gil-Garcia & Pardo, 2005). The system typically provides good user experience that is likely to be characterized by trust, ease of use, effective support, and efficiency, but it requires constant monitoring and improvement to maintain a high level of satisfaction and adoption.

The study found a moderate negative relationship between system efficiency and challenges, which means that the fewer system issues, the higher the efficiency is. Technical, usability, security, and integration issues are resolved to boost system performance and delivery of services (Gil-Garcia and Pardo, 2005; Gefen et al., 2003; Carter and Bélanger, 2005). There is also a poor negative correlation between the issues and the satisfaction of the users, which implies that a small problem can slightly decrease satisfaction and user engagement (Carter and Bélanger, 2005; Venkatesh et al., 2003; McKnight et al., 2011).

On the other hand, system efficiency and user satisfaction have a strong positive correlation, indicating that easy-to-use and efficient systems will enhance satisfaction and subsequent use (DeLone & McLean, 2003; Alalwan et al., 2017). Typically, it is necessary to reduce system challenges to enhance efficiency and user satisfaction.

Hence, enhancing system stability, interface design, security, and integration can result in a positive feedback loop whereas efficiency increases, so does user satisfaction, so they will continue to use and have more positive attitudes toward the system. This is in line with the evidence that both system efficiency and user satisfaction are complementary and lead to increased acceptance and continued usage of e-government services (Bélanger and Carter, 2008).

5. Conclusions

Based on the pertinent findings of this study, the following conclusions are made:

1. The EMB MIMAROPA online permits application system is highly efficient in providing e-government services that satisfy the expectations of the users in terms of convenience, cost efficiency, responsiveness, and reliability.
2. The online permit application system of EMB MIMAROPA has several serious challenges. Although these challenges are slightly experienced by the respondents, apparently, the system is generally stable, reliable, and user-friendly, though continuous monitoring remains necessary.
3. The EMB MIMAROPA online permit application system is reported as very high in terms of trust and safety, user support, system usability, and efficiency of the system.
4. There are significant interrelationships among system efficiency, challenges, and user satisfaction. Reduced system challenges experienced result in increased efficiency of systems and increased user satisfaction.

6. Recommendations

To maintain high satisfaction of the online permit application system of EMB MIMAROPA, continuous system maintenance and frequent monitoring and feedback mechanism are imperative. Training and seminars for system administrators would be likewise helpful in ensuring e-government service efficiency, reliability, and successful delivery in the long run. Moreover, processing time must also be taken into consideration and optimized. Although system challenges are low, it is suggested to have preventive maintenance, and frequent security audits. Improving user support services, providing digital instructions and providing clear instructions to the system users will help reduce any potential obstacles. Usability, trust, and effective user support should be upheld. Equally, user-centered system functionality, timely technical assistance, and the updated security process must be continuously enhanced to ensure user confidence and encourage further use of digital services. It is also suggested that EMB MIMAROPA adopt a combined improvement framework to improve system performance and usability and mitigate the challenges proactively. Institutionalized regular assessment and data-driven decision-making will sustain its use and achieve the long-term use of the e-government.

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