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The Effect of the Implementation of Online Single Submission (OSS) on the Effectiveness of Business Licensing Programs in the Marine and Fisheries Sector at the Investment and One-Stop Integrated Service Agency of West Sumatra Province

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Abstract

The implementation of Online Single Submission (OSS) has become an important component of digital public service reform in Indonesia, particularly in simplifying business licensing procedures. However, empirical research examining the influence of OSS implementation on the effectiveness of business licensing programs in the marine and fisheries sector remains limited. This study aims to analyze the effect of OSS implementation on the effectiveness of business licensing programs in the marine and fisheries sector at the Investment and One-Stop Integrated Service Agency of West Sumatra Province. A quantitative approach with an associative survey design was employed, involving 100 business actors selected through purposive sampling. Data were collected using a structured questionnaire and analyzed using descriptive statistics, validity and reliability tests, classical assumption tests, simple linear regression, t-test, and coefficient of determination with SPSS. The findings indicate that OSS implementation has a positive and significant effect on program effectiveness, with a regression coefficient of 0.610, a t-count value of 15.212, and a

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significance value of 0.000. The coefficient of determination shows that OSS implementation explains 70.2% of the variance in the effectiveness of business licensing programs. These findings suggest that digital licensing systems play a strategic role in improving service accessibility, procedural efficiency, and administrative effectiveness in the marine and fisheries sector. This study concludes that OSS contributes substantially to strengthening business licensing services in West Sumatra Province. The findings contribute to the literature on digital governance and public service effectiveness and provide practical implications for improving system stability, user literacy, service quality, and institutional coordination in digital licensing implementation.

Keywords: Business Licensing; Digital Governance; Marine And Fisheries Sector; Online Single Submission; Program Effectiveness

INTRODUCTION

The rapid advancement of information and communication technology (ICT) has transformed public administration systems across the world (Gavkalova et al., 2022; Prayitno, 2023; Uzun, 2023). Governments increasingly utilize digital technologies to improve public service delivery, enhance transparency, and increase administrative efficiency. Digital government initiatives have become an essential component of public sector modernization and good governance practices (Affairs, 2024; OECD, 2024). The integration of digital platforms into public services is also viewed as a strategic instrument for reducing bureaucratic complexity and strengthening citizen trust in government institutions (Bank, 2020; Mergel et al., 2019). Consequently, digital transformation has become a major agenda in both developed and developing countries to improve public service performance.

In the context of business licensing, digitalization plays an important role in facilitating investment and supporting economic development. Several countries have adopted integrated electronic licensing systems to streamline administrative procedures and create a more conducive business environment (Bank, 2020; Janssen & Lazonder, 2016). Efficient licensing systems contribute to investment growth by reducing transaction costs and increasing legal certainty for business actors (Sørensen & Torfing, 2022). Therefore, governments are increasingly encouraged to modernize licensing services through digital platforms that can support economic competitiveness and sustainable development.

Indonesia has responded to these global challenges through various bureaucratic reform policies aimed at improving public service quality (Mujahidin & Kusuma, 2025). One

of the most significant innovations is the implementation of the Online Single Submission (OSS) system, an integrated electronic licensing platform that enables business actors to process permits through a single online portal. The OSS system was introduced to simplify administrative procedures, improve investment services, and support the national Ease of Doing Business agenda (Kementerian Investasi/BKPM, 2024; Ropiko et al., 2024). Through this system, licensing procedures are expected to become faster, more transparent, and more accountable than conventional administrative mechanisms.

The implementation of OSS was strengthened through Government Regulation Number 5 of 2021 concerning Risk-Based Business Licensing (Khomeni & Atmoko, 2025; Parikesit & Dewi, 2025; Zahara et al., 2023). This regulation introduced a risk-based licensing approach that classifies business activities according to their level of risk and determines licensing requirements accordingly (Government of Indonesia, 2021). Risk-based licensing is intended to increase regulatory efficiency while maintaining adequate supervision of business activities (Satria et al., 2023). This policy reflects a shift from traditional bureaucratic procedures toward a more adaptive and responsive governance model capable of supporting economic growth and investment expansion.

Although OSS offers various advantages, its implementation has not been entirely free from challenges. Previous studies indicate that technical problems, inadequate infrastructure, low digital literacy, and weak coordination among government institutions continue to affect the effectiveness of digital licensing services (Huda et al., 2024).Similar findings were reported by Hasibuan et al. (2025), who found that system disruptions and administrative synchronization issues frequently hinder service delivery. Furthermore, digital transformation in public organizations often faces resistance to change and limitations in human resource capacity (Mergel et al., 2019).

Several studies have examined the implementation of OSS in different regions of Indonesia. Research conducted by Putri et al. (2024) found that OSS contributes positively to licensing efficiency and service accessibility. Likewise, Wibowo (2015)reported improvements in transparency and accountability after OSS implementation. Meanwhile, Syaiful et al. (2024) highlighted that successful OSS implementation depends largely on institutional readiness and stakeholder collaboration. These findings suggest that OSS has substantial potential to improve public services, although implementation outcomes may vary depending on local conditions.

Despite the growing body of literature on OSS, previous studies still exhibit several limitations. Most studies focus on describing implementation processes, user perceptions, or administrative challenges without empirically measuring the influence of OSS implementation on licensing program effectiveness (Edo Yondha Wibowo, 2023; Putri et al., 2024). In addition, empirical research specifically examining the marine and fisheries sector remains limited. This gap is important because licensing characteristics differ across sectors, particularly in sectors that require extensive inter-agency coordination and technical verification processes.

The novelty of this study lies in its effort to analyze the influence of OSS implementation on the effectiveness of business licensing programs in the marine and fisheries sector using the organizational effectiveness framework proposed by Campbell (2005) in Mutiarin (2014). According to Campbell's theory, organizational effectiveness can be assessed through several indicators, including program success, goal achievement, user satisfaction, efficiency, and overall organizational performance (Mutiarin & Arif, 2014). This framework provides a comprehensive approach for evaluating the effectiveness of digital public services beyond merely measuring administrative outputs.

The marine and fisheries sector represents one of the most strategic economic sectors in West Sumatra Province. Data from the Investment and One-Stop Integrated Service Agency (DPMPTSP) indicate that this sector consistently records the highest number of licensing applications compared to other sectors, making it a relevant context for evaluating OSS implementation effectiveness . Therefore, this study aims to analyze the influence of Online Single Submission (OSS) implementation on the effectiveness of business licensing programs in the marine and fisheries sector at the Investment and One-Stop Integrated Service Agency (DPMPTSP) of West Sumatra Province. The findings are expected to contribute to the development of digital governance literature and provide practical recommendations for improving public service delivery in Indonesia.

METHODS

This study employed a quantitative approach using an associative research method to examine the influence of Online Single Submission (OSS) implementation on the effectiveness of business licensing programs in the marine and fisheries sector. Quantitative research is appropriate for testing hypotheses and examining relationships among variables

through statistical analysis (Creswell & Creswell, 2018; Sugiyono, 2022). The study adopted a survey design because it allows researchers to collect data from a relatively large number of respondents and measure perceptions regarding OSS implementation and licensing effectiveness systematically. Similar survey-based designs have been widely applied in studies evaluating public service quality and e-government implementation (Hasanah et al., 2024; Ropiko et al., 2024). The research was conducted at the Investment and One-Stop Integrated Service Agency (DPMPTSP) of West Sumatra Province, Indonesia.

The population consisted of all business actors in the marine and fisheries sector who had processed business licenses through the OSS system at DPMPTSP West Sumatra Province. Based on administrative records, the population totaled 12,886 business actors during the 2023–2025 period . The sample size was determined using the Slovin formula with a 10% margin of error, resulting in a minimum sample of 100 respondents. A purposive sampling technique was employed because only respondents who had direct experience using the OSS system and possessed a registered Business Identification Number (NIB) were considered relevant to the objectives of the study (Sugiyono, 2018). Data were collected through structured questionnaires using a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). The OSS implementation variable was measured using indicators adapted from the DeLone and McLean Information Systems Success Model, including system quality, information quality, service quality, use, user satisfaction, and net benefits (DeLone & McLean, 2003). Meanwhile, the effectiveness variable was measured using Campbell's organizational effectiveness indicators, namely program success, target achievement, user satisfaction, input-output efficiency, and overall goal attainment (Campbell, 2005; Mutiarin, 2014).

Prior to data collection, the research instrument was tested for validity and reliability using Pearson Product-Moment correlation and Cronbach's Alpha coefficient. Items with significance values below 0.05 and reliability coefficients above 0.60 were considered valid and reliable (Ghozali, 2022; Sugiyono, 2022). Data analysis was conducted using IBM SPSS Statistics version 26. Descriptive statistics were first employed to describe respondent characteristics and research variables. Subsequently, classical assumption tests consisting of normality, linearity, heteroscedasticity, and autocorrelation tests were performed to ensure compliance with regression assumptions (Ghozali, 2022). Hypothesis testing was carried out using simple linear regression analysis, followed by t-tests to determine the significance of the influence of OSS implementation on licensing effectiveness and coefficient of

determination (R^2) analysis to assess the contribution of the independent variable to the dependent variable.

RESULTS

1. Respondent Characteristics

The respondents in this study were 100 business actors in the marine and fisheries sector who had used the Online Single Submission (OSS) system in processing business licensing at DPMPTSP West Sumatra Province. The characteristics of respondents were classified based on gender, age, and type of business. These characteristics are important to describe the profile of OSS users and to understand the background of respondents involved in this study.

Table 1. Gender of Respondents

No.	Gender	Frequency	Percentage
1	Male	92	92%
2	Female	8	8%
Total		100	100%

Based on Table 1, most respondents were male, totaling 92 respondents or 92%, while female respondents amounted to 8 respondents or 8%. This result indicates that business actors in the marine and fisheries sector are predominantly male. This condition is related to the characteristics of the marine and fisheries sector, which often involves field activities, fishing, fish distribution, and other physically demanding work. However, the presence of female respondents also shows that women are involved in this sector, particularly in fish processing, small-scale trading, and household-based fisheries businesses.

Table 2. Age of Respondents

No.	Age	Frequency	Percentage
1	20–30 years	19	19%
2	31–40 years	34	34%
3	41–50 years	27	27%
4	51–60 years	20	20%
Total		100	100%

Table 2 shows that the largest group of respondents was aged 31–40 years, totaling 34 respondents or 34%. This was followed by respondents aged 41–50 years with 27 respondents or 27%, respondents aged 51–60 years with 20 respondents or 20%, and

respondents aged 20–30 years with 19 respondents or 19%. These findings indicate that most respondents were in the productive age group, particularly between 31 and 50 years old. This condition suggests that OSS users in the marine and fisheries sector are generally active business actors who have experience in managing business licensing and operational activities.

Table 3. Type of Business of Respondents

No.	Type of Business	Frequency	Percentage
1	Fish agent	35	35%
2	Fishing vessel business	14	14%
3	Fisherman	43	43%
4	Fish cultivator	8	8%
Total		100	100%

Based on Table 3, most respondents were fishermen, totaling 43 respondents or 43%. The second-largest group was fish agents, with 35 respondents or 35%. Furthermore, 14 respondents or 14% were involved in fishing vessel businesses, while 8 respondents or 8% were fish cultivators. These results indicate that the OSS system is used by various types of business actors in the marine and fisheries sector, including capture fisheries, fish distribution, vessel-based fisheries, and aquaculture. The dominance of fishermen indicates that capture fisheries remain an important business activity in the marine and fisheries sector in West Sumatra.

2. Instrument Validity Test

The validity test was conducted to determine whether each questionnaire item was able to measure the intended variable. The test used Pearson Product Moment correlation. With 30 respondents in the instrument trial, the degree of freedom was df = n – 2 = 28. At a significance level of 5%, the r-table value was 0.361. An item was declared valid if the calculated r-value was greater than the r-table value.

Table 4. Validity Test of OSS Implementation Variable (X)

Item	r-count	r-table	Description
X1	0.719	0.361	Valid
X2	0.711	0.361	Valid
X3	0.587	0.361	Valid
X4	0.782	0.361	Valid
X5	0.620	0.361	Valid
X6	0.653	0.361	Valid
X7	0.699	0.361	Valid

Item	r-count	r-table	Description
X8	0.767	0.361	Valid
X9	0.741	0.361	Valid
X10	0.807	0.361	Valid
X11	0.539	0.361	Valid
X12	0.541	0.361	Valid

Based on Table 4, all items in the OSS implementation variable had r-count values greater than the r-table value of 0.361. Therefore, all 12 items were declared valid and suitable for measuring the OSS implementation variable.

Table 5. Validity Test of Program Effectiveness Variable (Y)

Item	r-count	r-table	Description
Y1	0.737	0.361	Valid
Y2	0.605	0.361	Valid
Y3	0.707	0.361	Valid
Y4	0.735	0.361	Valid
Y5	0.802	0.361	Valid
Y6	0.786	0.361	Valid
Y7	0.694	0.361	Valid
Y8	0.583	0.361	Valid
Y9	0.479	0.361	Valid
Y10	0.678	0.361	Valid

Table 5 shows that all items in the program effectiveness variable had r-count values greater than 0.361. Thus, all 10 items were declared valid. This means that the questionnaire items were appropriate for measuring the effectiveness of business licensing programs in the marine and fisheries sector.

3. Reliability Test

The reliability test was conducted using Cronbach's Alpha to measure the internal consistency of the questionnaire. An instrument is considered reliable if the Cronbach's Alpha value is greater than 0.60.

Table 6. Reliability Test Results

Variable	Cronbach's Alpha	Reliability Standard	Description
OSS Implementation (X)	0.894	0.600	Reliable
Program Effectiveness (Y)	0.872	0.600	Reliable

Based on Table 6, the Cronbach's Alpha value for the OSS implementation variable was 0.894, while the program effectiveness variable had a Cronbach's Alpha value of 0.872. Both values were greater than 0.60. Therefore, the research instrument was reliable and could be used for further data analysis.

4. Descriptive Analysis of OSS Implementation

Descriptive analysis was used to describe respondents' perceptions of OSS implementation. The score interpretation was based on a five-point Likert scale. The interval range was calculated as follows:

$$RS = (\text{highest score} - \text{lowest score}) / \text{number of classes}$$

$$RS = (5 - 1) / 5$$

$$RS = 0.80$$

Thus, the interpretation criteria were as follows: 1.00–1.80 = very low, 1.81–2.60 = low, 2.61–3.40 = moderate, 3.41–4.20 = high, and 4.21–5.00 = very high.

Table 7. Respondents' Responses to OSS Implementation (X)

No.	Statement	Mean	Category
X1	The OSS system is easy for business actors to use.	3.29	Moderate
X2	OSS has good system speed and stability.	3.09	Moderate
X3	The information provided by OSS meets user needs.	3.14	Moderate
X4	Licensing data and results from OSS are accurate and easy to understand.	3.23	Moderate
X5	OSS officers respond quickly to user problems.	3.23	Moderate
X6	OSS provides clear guidance and assistance during the licensing process.	3.23	Moderate
X7	I find it easy to use OSS to process licenses.	3.17	Moderate
X8	I feel comfortable and able to operate OSS independently.	3.23	Moderate
X9	I am satisfied with licensing services through OSS.	3.21	Moderate
X10	OSS helps me process business licenses more easily than manual procedures.	3.34	Moderate
X11	OSS helps save time and costs in the licensing process.	3.28	Moderate
X12	OSS improves the effectiveness and productivity of my business.	3.35	Moderate
Average		3.23	Moderate

Table 7 shows that the average score of the OSS implementation variable was 3.23, which falls into the moderate category. This finding indicates that respondents perceived OSS implementation as fairly good, but not yet optimal. The highest mean score was found in item X12, with a mean of 3.35, indicating that respondents considered OSS to contribute to business effectiveness and productivity. Meanwhile, the lowest mean score was found in item X2, with a mean of 3.09, indicating that system speed and stability remain aspects that need improvement.

5. Descriptive Analysis of Program Effectiveness

Table 8. Respondents' Responses to Program Effectiveness (Y)

No.	Statement	Mean	Category
Y1	OSS provides real benefits in completing business licensing processes.	3.22	Moderate
Y2	The use of OSS makes business licensing faster than before.	3.32	Moderate
Y3	OSS can be used in the licensing activities of my business.	3.44	High
Y4	The features available in OSS are suitable for my licensing needs.	3.49	High
Y5	I am satisfied with the licensing service results provided through OSS.	3.23	Moderate
Y6	OSS services meet my expectations as a user.	3.33	Moderate
Y7	The licensing process through OSS provides more optimal results.	3.25	Moderate
Y8	The costs and effort I spend are proportional to the OSS licensing service results.	3.31	Moderate
Y9	OSS implementation improves business licensing services.	3.40	Moderate
Y10	I can clearly understand the stages of the licensing process through OSS.	3.21	Moderate
Average		3.22	Moderate

Based on Table 8, the average score of the program effectiveness variable was 3.22, which is categorized as moderate. This indicates that the effectiveness of business licensing programs through OSS was perceived as fairly good by respondents. The highest mean score was found in item Y4, with a mean of 3.49, indicating that OSS features were considered suitable for users' licensing needs. Meanwhile, the lowest mean score was found in item Y10, with a mean of 3.21, suggesting that clarity of licensing stages through OSS still needs to be improved.

6. Classical Assumption Tests

Before conducting simple linear regression analysis, several classical assumption tests were performed, including normality, linearity, heteroscedasticity, and autocorrelation tests. These tests were conducted to ensure that the regression model met the statistical requirements for further analysis.

7. Normality Test

The normality test was conducted using the Kolmogorov-Smirnov test. The decision-making criterion was that if the significance value was greater than 0.05, the data were normally distributed.

Table 9. Kolmogorov-Smirnov Normality Test

Component	Value
N	100
Mean	0.0000000
Std. Deviation	2.21052786
Absolute Difference	0.118
Positive Difference	0.118
Negative Difference	-0.043
Kolmogorov-Smirnov Z	1.177
Asymp. Sig. (2-tailed)	0.125

Based on Table 9, the Asymp. Sig. (2-tailed) value was 0.125. Since this value is greater than 0.05, the residual data were normally distributed. Therefore, the regression analysis could be continued. The normality result was also supported by the histogram graph, which showed a bell-shaped distribution pattern.

8. Linearity Test

The linearity test was conducted to determine whether the relationship between OSS implementation and program effectiveness was linear. The test was observed through the scatterplot or P-P plot output. The distribution of points showed a pattern close to a straight line, indicating that the relationship between the independent variable and the dependent variable was linear.

9. Heteroscedasticity Test

The heteroscedasticity test was conducted to determine whether there was unequal variance in the residuals. A good regression model should not show heteroscedasticity. The scatterplot showed that the points were spread randomly and did not form a specific pattern, such as waves, narrowing, or widening.

10. Autocorrelation Test

The autocorrelation test was conducted using the Durbin-Watson value. A Durbin-Watson value close to 2 indicates that there is no autocorrelation in the regression model.

Table 10. Autocorrelation Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.838	0.702	0.699	2.222	1.724

Based on Table 10, the Durbin-Watson value was 1.724. This value is close to 2, indicating that the regression model did not experience serious autocorrelation problems. Therefore, the regression model was considered feasible for further analysis.

1. Simple Linear Regression Analysis

Simple linear regression analysis was used to determine the influence of OSS implementation on program effectiveness. The general regression equation is shown below:

$$Y = a + bX \quad (1)$$

Where Y represents program effectiveness, X represents OSS implementation, a represents the constant, and b represents the regression coefficient.

Table 11. Simple Linear Regression Analysis

Model	Unstandardized Coefficient B	Std. Error	Standardized Coefficient Beta	t	Sig.
Constant	11.578	1.439	-	8.048	0.000
OSS Implementation	0.610	0.040	0.838	15.212	0.000

Based on Table 11, the regression equation obtained is as follows:

$$Y = 11.578 + 0.610X \quad (2)$$

The equation shows that the constant value is 11.578. This means that if OSS implementation is assumed to be zero, the program effectiveness score is 11.578. The regression coefficient of OSS implementation is 0.610, meaning that every one-unit increase in OSS implementation will increase program effectiveness by 0.610 units. The positive coefficient indicates that OSS implementation has a positive effect on program effectiveness.

2. Hypothesis Testing

The t-test was used to determine whether OSS implementation had a significant influence on program effectiveness. The decision-making criteria were as follows: if the significance value is less than 0.05, the alternative hypothesis is accepted; if the significance value is greater than 0.05, the null hypothesis is accepted.

Based on Table 11, the t-count value for OSS implementation was 15.212, with a significance value of 0.000. With 100 respondents, the degree of freedom was df = n – 2 = 98, and the t-table value at a significance level of 0.05 was 1.984. Since the t-count value of 15.212 is greater than the t-table value of 1.984, and the significance value of 0.000 is less than 0.05, H_0 is rejected and H_a is accepted. Thus, OSS implementation has a positive and

significant influence on the effectiveness of business licensing programs in the marine and fisheries sector.

3. Coefficient of Determination

The coefficient of determination was used to determine how much OSS implementation contributed to program effectiveness.

Table 12. Coefficient of Determination

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.838	0.702	0.699	2.222

Based on Table 12, the R value was 0.838, indicating a very strong relationship between OSS implementation and program effectiveness. The R Square value was 0.702, meaning that 70.2% of the variation in program effectiveness can be explained by OSS implementation. Meanwhile, the remaining 29.8% is influenced by other variables not examined in this study. The Adjusted R Square value of 0.699 also indicates that the regression model has a strong explanatory power.

The coefficient of determination can be expressed using the following formula:

$$KD = R^2 \times 100\% \quad (3)$$

$$KD = 0.702 \times 100\% = 70.2\% \quad (4)$$

Thus, OSS implementation contributes 70.2% to the effectiveness of business licensing programs in the marine and fisheries sector at DPMPTSP West Sumatra Province.

4. ANOVA Test

The ANOVA test was used to determine whether the regression model was statistically feasible.

Table 13. ANOVA Test

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1142.243	1	1142.243	231.397	0.000
Residual	483.757	98	4.936	-	-
Total	1626.000	99	-	-	-

Based on Table 13, the F-count value was 231.397 with a significance value of 0.000. Since the significance value is less than 0.05, the regression model is statistically significant and feasible to use. This means that OSS implementation can be used to predict the effectiveness of business licensing programs. Therefore, the empirical findings confirm that

the better the implementation of OSS, the higher the effectiveness of business licensing programs in the marine and fisheries sector at DPMPTSP West Sumatra Province.

Overall, the results show that OSS implementation is in the moderate category, while program effectiveness is also in the moderate category. However, the inferential analysis indicates a strong, positive, and significant influence of OSS implementation on program effectiveness. These findings demonstrate that improving OSS system quality, information quality, service quality, user assistance, and system stability can significantly enhance the effectiveness of business licensing services in the marine and fisheries sector.

DISCUSSION

The results of this study show that the implementation of Online Single Submission (OSS) has a positive and significant effect on the effectiveness of business licensing programs in the marine and fisheries sector at DPMPTSP West Sumatra Province. This finding is supported by the simple linear regression test, which produced a regression coefficient of 0.610 with a significance value of 0.000. This means that the better the implementation of OSS, the higher the effectiveness of business licensing programs. The t-test result also showed that the t-count value of 15.212 was greater than the t-table value of 1.984, confirming that the proposed hypothesis was accepted. In addition, the coefficient of determination showed an R Square value of 0.702, meaning that OSS implementation explains 70.2% of the variation in program effectiveness, while the remaining 29.8% is influenced by other variables outside this study .

These findings indicate that OSS plays an important role in supporting the effectiveness of business licensing services. Through OSS, licensing procedures can be conducted electronically, thereby reducing administrative complexity, shortening service time, and increasing transparency in public service delivery. In the context of the marine and fisheries sector, the use of OSS is highly relevant because this sector involves various types of licenses, such as Business Identification Number (NIB), fisheries business permits, vessel permits, and aquaculture-related permits. Therefore, an integrated digital system is needed to simplify coordination between business actors and government agencies.

However, the descriptive analysis shows that the implementation of OSS was still in the moderate category, with an average score of 3.23. Likewise, the effectiveness of the business licensing program obtained an average score of 3.22, which was also categorized as

moderate. This indicates that although OSS has a significant influence on program effectiveness, its implementation has not yet reached an optimal level. Several aspects still need improvement, particularly system stability, user assistance, clarity of licensing stages, and users' ability to operate the system independently. These results suggest that the effectiveness of digital licensing services depends not only on the availability of technology but also on the quality of implementation, user readiness, and institutional support.

The findings of this study are consistent with Junaini et al. (2020), who found that OSS implementation can improve the effectiveness of licensing services by accelerating administrative processes and reducing direct contact between users and service officers. This study also supports the findings of (Herawati et al., 2025), who stated that OSS contributes to improving public service quality through easier access, faster processing, and more transparent licensing mechanisms. Similarly, Hidayat et al. (2023) found that digital licensing services have a positive impact on service efficiency and accountability. The similarity between these studies and the present research confirms that OSS is an important instrument in strengthening digital-based public service reform.

Nevertheless, the results of this study also support the findings of Nugraha et al. (2025), who emphasized that the success of OSS implementation is strongly influenced by the readiness of human resources, supporting infrastructure, and coordination among institutions. Khomeni & Atmoko (2025); Parikesit & Dewi (2025); Zahara et al. (2023)also found that technical constraints, limited digital literacy, and weak socialization can reduce the effectiveness of OSS implementation. In the context of DPMPTSP West Sumatra Province, these challenges are reflected in the moderate score of OSS implementation, indicating that users still experience several obstacles, including system errors, unstable internet networks, and limited understanding of OSS procedures.

Theoretically, the results of this study support Campbell's organizational effectiveness theory, which explains that the effectiveness of a program can be assessed through program success, target achievement, user satisfaction, input-output efficiency, and overall goal attainment. In this study, OSS has contributed to program effectiveness by improving service efficiency, simplifying procedures, and supporting the achievement of licensing service objectives. However, the moderate level of user satisfaction shows that effectiveness has not been fully achieved. Therefore, the implementation of OSS needs to be

continuously improved to ensure that the system is not only available but also easy to use, reliable, and responsive to user needs.

The findings can also be interpreted through the Technology Acceptance Model (TAM), which explains that technology acceptance is influenced by perceived usefulness and perceived ease of use. The results show that business actors have perceived the benefits of OSS in simplifying licensing procedures, but some users still face difficulties in using the system. This means that increasing perceived ease of use is essential to strengthen OSS acceptance. Practical efforts such as user training, clearer technical guidance, helpdesk services, and regular socialization are needed to improve user experience and increase the effectiveness of OSS-based licensing services.

Practically, this study implies that DPMPTSP West Sumatra Province needs to strengthen the implementation of OSS through several strategic steps. First, technical assistance should be improved to help business actors understand and operate OSS properly. Second, coordination between local agencies and the central OSS system manager needs to be strengthened, particularly when technical problems occur. Third, digital literacy programs for business actors in the marine and fisheries sector should be expanded because not all users have the same ability to access and operate online licensing systems. Fourth, system monitoring and evaluation should be carried out regularly to identify service obstacles and improve user satisfaction.

Theoretically, this study contributes to the development of digital governance and public service effectiveness studies by showing that OSS implementation has a strong influence on licensing program effectiveness. Unlike previous studies that mostly described OSS implementation qualitatively, this study provides empirical evidence through quantitative testing. The use of the marine and fisheries sector as the research context also provides a more specific contribution because this sector has complex licensing characteristics and involves various types of business actors, including fishermen, fish agents, fishing vessel owners, and fish cultivators.

Despite its contributions, this study has several limitations. First, the research was conducted only at DPMPTSP West Sumatra Province, so the findings cannot be generalized to all regions in Indonesia. Second, the study focused only on the marine and fisheries sector, while other sectors may have different licensing characteristics and implementation challenges. Third, the study used a quantitative survey approach, so it did not explore in

depth the experiences of users and officers in dealing with OSS constraints. Fourth, the study examined only one independent variable, namely OSS implementation, while other factors such as digital literacy, service officer competence, infrastructure quality, and inter-agency coordination may also influence licensing effectiveness.

Based on these findings, it can be concluded that OSS implementation has made a significant contribution to improving the effectiveness of business licensing programs in the marine and fisheries sector. However, the effectiveness of OSS remains dynamic and contextual. Its success depends not only on the digital system itself but also on the readiness of users, the capacity of service officers, the stability of technological infrastructure, and the strength of institutional coordination. Therefore, continuous improvement is required so that OSS can function optimally as an instrument of bureaucratic reform and digital public service transformation.

CONCLUSION

This study concludes that the implementation of Online Single Submission (OSS) has a positive and significant effect on the effectiveness of business licensing programs in the marine and fisheries sector at the Investment and One-Stop Integrated Service Agency (DPMPTSP) of West Sumatra Province. The descriptive analysis showed that OSS implementation obtained an average score of 3.23, while program effectiveness obtained an average score of 3.22, both of which were categorized as moderate. These findings indicate that OSS has been implemented and has provided benefits in terms of easier access, time efficiency, administrative simplification, and improved transparency in licensing services. However, the implementation has not yet reached an optimal level due to several obstacles, including technical system disruptions, limited user understanding, unequal service quality, and the need for more consistent service performance.

The regression analysis showed a coefficient value of 0.610, indicating that every improvement in OSS implementation increases the effectiveness of business licensing programs. The hypothesis test confirmed that OSS implementation had a significant effect, as shown by the t-count value of 15.212, which was higher than the t-table value of 1.984, with a significance value of 0.000. Furthermore, the coefficient of determination showed an R Square value of 0.702, meaning that OSS implementation contributed 70.2% to program effectiveness, while the remaining 29.8% was influenced by other factors outside this study.

These results demonstrate that OSS is an important instrument for improving digital-based licensing services. Therefore, future improvements should focus on strengthening system stability, increasing user literacy, improving service quality, and enhancing institutional coordination so that OSS can function more optimally in supporting business licensing services in the marine and fisheries sector.

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