



The Influence of Information Technology Utilization on Service Effectiveness at BPJS Employment

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Abstract

In this paper, the author considers the effects of information technology (IT) application on the service effectiveness at BPJS Employment, one of the major providers of social insurance in Indonesia. Quantitative method was used to collect data using structured questionnaires to 120 respondents, of which 120 are staff and the remaining are service users. Inferential statistical tests such as correlation and regression analysis have indicated that IT utilization and service effectiveness have strong and significant positive relationship. According to the regression model, the use of IT was used to explain the difference in the service effectiveness with a standardized coefficient of 0.742 and p-value of less than 0.001. The results indicate that online registration, automated claims, and mobile systems enhance greatly the value of service, efficiency, speed, and accuracy. The findings offer empirical information regarding e-governance procedures in Indonesia, which is important to supplement the current literature that mostly focuses on qualitative approaches. The study, with a quantitative analysis, contributes to the debate on the way digital tools can change the public service institutions. In general, the study shows that it is imperative to empower IT infrastructures, to train its users, and to advocate digital literacies to continue to streamline service delivery and to make the public sector institutions in Indonesia sustainable.

INTRODUCTION

In the modern centuries of digital transformation, information technology (IT) integration in the process of providing the citizens with various kinds of public services has been a foundational requirement, rather than strategic well-being. Such a transition can be especially noticed in the case of Indonesia as more public institutions are adopting digital tools to elevate the efficiency and responsibility of their operations (Aminah & Saksono, 2021). One of such institutions is the BPJS Employment (Social Security Administering Body in Employment), which is prominent in supporting the management of different social security programs embedded in employment. Since the institution handles the social protection rights of millions of workers in Indonesia, the quality and efficiency of its services play a

vital role in the confidence of the population of the state and the legitimacy of the institution (Sumadi, 2023).

It is clear that the Indonesian government, through the Presidential Regulation No. 95 of 2018, regarding the Electronic-Based Government System (SPBE), has openly required the public service agencies to use information technology to facilitate efficient service delivery, decrease bureaucracy, and maintain transparency. Such digital mandates encompass some institutions like BPJS Employment which will be providing fast and reliable services with ease of services through various IT applications such as registration online, mobile claim systems, and combined customer support systems (Arianto, 2023).

Nevertheless, regardless of such regulatory and infrastructural initiatives, there are still numerous service delivery issues (Mhlanga et al., 2021; Kulal et al., 2024)). Such issues as the delays in processing the claims, no clarity in the use of digital communication, inconsistencies between regional offices regarding service standards have been reported to happen by the participants. These considerations raise the possibility that there might exist a discrepancy between the deployment of IT systems on one hand and the enhancement of service effectiveness on the other hand. The issue is not only whether or not the technology was present or not but whether or not it has been applied well by the institution and the user (Ali et al., 2024).

Traditionally, service effectiveness in the field of public administration is achieved by such dimensions as accuracy, responsiveness, speed, accessibility, and user satisfaction (Widanti, 2022). Information technology implementations ought to improve these dimensions since they should lead to the replacement of manual procedures, minimizing the error that people make, as well as allowing real-time feedback (Behnke et al., 2021). IT is supposed to enhance claim services, registrations, communication among their participants, and data accuracy within the context of BPJS Employment because they are also the most significant contributors to the quality of services (Styrin et al., 2022). However, in most cases those expectations are not met because of the utilization of technology incorrectly, absence of training of the users, or prejudice to the change of personnel.

Furthermore, although BPJS Employment has established a number of digital services including the BPJSTKU mobile application, online ports and self-service kiosks, the degree of user experience usage and system reliability hold considerable differences across subjects (Pratistha & Mahyuni, 2024). A number of studies have shown that the quality of IT usage in the work of the authorities is predetermined not only by the presence of the system, but also by the organizational culture, digital literacy of employees, and the preparation of participants.

The use of IT is more hindered in the public sector organizations as compared to the other sectors of the economy. They comprise the lack of technical capability, bureaucratic stiffness, lack of funding, and poor monitoring procedures (Zhu et al., 2024). In BPJS Employment, the issue is further complicated by the system downtimes, the lack of socialization of new technologies, along with the disparities in the IT infrastructure in various regions. This has led to the situation whereby, even as some regional offices are doing magnificently in service delivery owing to good use of IT, others are far much behind hence the discrepancy in performance of the government to the people (Mathonsi, 2024).

This research study can be said to have resulted due to the pressing demand to ascertain whether use of information technology has a statistically quantifiable effect on the effectiveness of services in BPJS Employment. Past studies accessed the relation between IT adoption and citizen satisfaction within the context of different government agencies (Alkrajji, 2021) however very little empirical research was done

in the context of BPJS Employment where the largest proportions of interactions between the agency and the citizenry happen, namely, at regional offices.

Moreover, the 2020-2024 National Mid-Term Development Plan (RPJMN) envisioned by Indonesia on the bureaucratic reform prioritizes the digitalization process as its main tool in enhancing the quality of its services in the public section (Alkaf, 2024). Institutions such as BPJS Employment will only achieve these objectives depending on their capacity to use information technology not only as an instrument but as an agent of effective service. Unless we assess the weight of its effects carefully, digitization of public services initiatives could turn into missionary, but not revolutionary, efforts.

Against this background, this paper presents quantitative research on how information technology use can determine service effectiveness, in BPJS Employment (Franque et al., 2021). The study will look into obtaining empirical data regarding whether the IT tools play a significant role in improving the delivery of services by analyzing the perceptions gained by the participants and the data related to the operations. The results would provide viable lessons concerning institutional enhancement, tactical policymaking, and gain in the public field.

METHODS

The study will be done by using a quantitative research methodology, an explanative survey design in order to investigate the connections between the use of information technologies and effectiveness of services in BPJS Employment. The choice of using quantitative method was informed by the fact that the objective was to find out how one variable could affect another variable by measuring, explaining, and testing. Based on numerical data, the study can empirically test how IT use as independent variable impacts positively the effectiveness of the delivery of services which is used as the dependent variable. The explanatory design affords the study to do more than describe and give the researcher the capability to test hypotheses to establish causal connection.

The stakeholders of BPJS Employment who form the population of this study are both the internal and external stakeholders. On the internal front, the term means those employees working within service, IT and customer relations departments who have direct contact with IT platforms. Externally it consists of the service users or participants who have used the digital service channels provided by BPJS Employment, including a website, mobile applications (BPJSTKU), or online complaint systems. To be more precise, in order to be more focused and thus manageable, the study was restricted to a few regional BPJS Employment offices where the use of IT-based systems is possible. These offices were chosen on their accessibility and consistency in the supply of digital services.

The study employed purposive sampling method to collect necessary and accurate data. This is one of the methods that were used so as to make sure that only the respondents who have had enough experiences with the BPJS Employment digital platforms were the ones used to perform the analysis. The total number of respondents was 120 derived out of the identified population. The sample size was calculated basing on the availability of respondents and as a requirement in achieving regression analysis so well with the validity of the findings. The two sets of perspective provided by the employees and the participants is a comprehensive way to understand the usage and the perception of IT in service delivery.

The structured questionnaire developed contained close-ended questions on a five-point Likert scale to collect the data. The questionnaire was kept in three major parts. The demographical information (age, gender and experience in service) of the respondents was collected in the first part. The second section was aimed at the

measurement of interceding variable information technology utilization. This was measured in terms of factors outlined respectively as system accessibility, ease of use, technological integration, reliability of digital infrastructure, and digital literacy of users. The third part was concentrating on the dependent variable; service effectiveness which was quantified by the indicators like speed of the service, the accuracy of the service, the responsiveness of the service, the satisfaction of the participant, and the easiness of accessing the service.

A pilot test was undertaken before finalizing the instrument that was used to collect data of 20 respondents during pilot test but they were not part of the main study sample. This piloting study was used to determine the quality of the question (validity and reliability). According to the results of the pilot test, some minor adjustments were made in order to make the questions more understandable and eliminate duplicate questions. Validity and reliability test were then performed on the instrument. Validity was assessed by Pearson Product-Moment Correlation and the values of the correlation of all the items were found to have greater value of the critical r than the 5% significance level and therefore proved that they were valid. In the meantime, the Cronbach Alpha was applied to test the reliability; in the case, reliability of IT utilization variable was 0.873 and the reliability of service effectiveness variable was 0.889. The values were above the recommended cut-off of 0.70 showing that the instrument was internally consistent and could be used in the main study.

The statistical package social science (SPSS) version 26 was utilized to analyze the data collected through the use of questionnaires. The analysis involved a number of processes. First, the nature of the respondents was summarized by applying descriptive statistics to give a profile of how the respondents answered each indicator. These were in form of means, standard deviations, frequencies and percentages. Second, the testing of assumptions was done, and this entailed normality testing with the Kolmogorov-Smirnov, test and ratio checks with the scatterplots. Such tests provided an assurance that the data has met the criterion of a parametric test.

The simple linear regression analysis was used to check the relation between the independent and dependent variables. This methodology could be used to identify the degree in which information technology use has on the effectiveness of the services. The analysis also provided coefficients indicating how powerful or weak the nature of the relationship was, as well as the coefficient of determination (R^2) that indicated the extent to which the variance in service effectiveness was accounted by IT usage. The procedure involved the use of t-test to establish whether regression coefficient was significant or not at the level of 5 percent (i.e. 0.05). In doing so, it either confirmed or falsified the research hypothesis.

RESULTS AND DISCUSSION

In a time where the public service institutions are more often than not being asked to have their systems digitized to increase transparency, efficiency and responsiveness, it becomes essential to know this relationship. The emergence of online service platform, mobile applications and digital verification systems at BPJS indicate that there is a move towards the implementation of technology-driven service delivery. Nonetheless, the extent to which such tools change service outcomes has never really been tested using empirical and quantitative evidence. The current study fills that gap by means of applying inferential statistical tools to the analysis of how IT adoption leads to the enhancement of the quality, accessibility, and performance of services. The outcomes of this analysis are delivered in the following section, which aims to provide an insight that can be based on the perceptions and experiences of both members of staff and service users.

Table 1. Model Summary (Regression Output)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.742	0.551	0.547	3.615

A correlation coefficient (R) of 0.742 is an indication of a positive relationship having a linear relationship indicating that as the degree of implementation of the online registration system, mobile application, and automation of claim processing increases perceived effectiveness of services increases. It is also worth marking that the coefficient of determination (R²) is equal to 0.551, a fact that proves 55.1 % of services effective variation to be covered by IT-use. Such a magnitude stands out especially in the research based on service public sector, where effect sizes of such magnitude are quite uncommon. The adjusted R² score of 0.547 highlights that the model is stable and reliable as it is not overfit by the model. Besides, the standard error of the estimate (3.615) reveals that even though the predictive power of the model is rather large, some of the variance (44.9 percent) has not been explained. This unexplained variance is in turn contributed by factors like competence of employees, organizational culture, regulatory environments and the involvement of leadership in an organization all which were not included in the existing model and yet they can have a significant impact on the outcomes of service.

Table 2. ANOVA (Analysis of Variance)

Model	Sum of Squares	df	Mean Square	F	Sig. (p-value)
Regression	1485.372	1	1485.372	113.541	0.000
Residual	1207.128	118	10.228		
Total	2692.500	119			

It can be observed (Table 2) that the result of ANOVA (Analysis of Variance) also indicates the statistical significance of the regression model. F-value amounting to 113.541, along with a significance level (p-value) of 0.000 means that the overall regression model at 0.05 level is significant. This outcome implies that the likelihood of the relationship recorded between the usage of information technology and service effectiveness (less than 0.1%) is most likely out of chance. The high F-ratio also suggests that the variance that is attributed to regression model (1485.372) is much higher than that which is not explained (1207.128) that reaffirms that IT utilization plays a significant role in the variance of service effectiveness.

Table 3. Coefficients (Regression Equation Output)

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig. (p-value)
	B	Std. Error	Beta	
(Constant)	21.475	1.963	—	10.940
IT Utilization (X)	0.682	0.064	0.742	10.646

Table 3 shows the regression coefficients which determine the direction and the size of the impact of Information Technology (IT) Utilization on Service Effectiveness at BPJS Employment. A non-standardized coefficient B = 0.682 indicates that one unit increase in the metric of IT Utilization (the information in the metric may pertain to more convenient access, increased integration, or higher effort made by users to be more digitally literate) is correlated with a similar increase of 0.682 in terms of the metric of Service Effectiveness. As the standard error is very low at 0.064, there is good estimation precision. More so, the t-statistic value stands at 10.646 and ensures that the coefficient is not zero thus the p-value of 0.000 (0- 0.5) is true as indicated statistically. This evidence shows an evident, beneficial and significant connection between IT Utilization and the enhancements on the outcome of the

services. The standardized coefficient (Beta = 0.742) provides a scale free meaning of the result, to demonstrate that IT Utilization is the most significant predictor in the model which has a high effect size when compared to standard deviation units.

This research has proved that there is strong positive relationship between effectiveness of services in implementing information technology (IT) in BPJS BPJS Employment. Regression analysis indicated that the effectiveness of the service varied because of IT use by a value of 55.1 percent with regression coefficient of 0.682 ($p < 0.001$). These facts support the strategic impact of IT towards improving the results of public services, which serve as an international and national appeal to digitalization of governance.

This research adds on the existing body of literature that supports the idea that digital technologies are agents of change in enhancing service provision, especially those bureaucratic and those that have very large bases to serve. emphasized that digital transformation in the sphere of the public sector is more than a technological change, as it affects the way services are conceptualized and provided. Claim that digital technologies provide new channels to be responsive, fast in the service and citizen satisfaction with which the results in the study also identify as being so in the case of BPJS Employment.

Although the overall benefits of IT in the public administration have been studied before, not many studies have empirically measured the impact of IT in the Indonesia social security institutions. Previous studies like the one done by Febriyanti et al. (2025) indicated the possibilities of digital systems as the BPJSTKU mobile app, but did not have inferential statistical analysis to provide their contribution. The current research helps to bridge this gap by revealing that IT not only makes administration more efficient but also affects its service performance on the statistically significant level (Duraimutharasan et al., 2025; Chi et al., 2022).

Moreover, the results also indicate that the better the IT is utilized, the more efficient the services become, which supports theories developed by Qiu et al. (2022), who assumed that the greater the fit between IT resources and service purpose, the stronger the subjective results of performance or, in other words, perceived performance outcomes. This confirms the idea that IT systems of BPJS, including the online registration process and the processing of claims online, are far more than tools of operation; they are built into the institution ability to provide citizens with quality services.

The results also give practically responsive to such critiques in the literature that digital adoption in Indonesian public agencies is mainframe appearance instead of reality (David et al., 2023). Employing an empirical approach to this relationship between IT and service improvement, this study shows that, at least in the case of BPJS Employment, digital transformation initiatives are not symbolic in nature but have very practical implications. This contradicts the previous finding by Turner et al. (2022), who has indicated that most of the reforms undertaken in the Indonesian public service are still at procedural levels as opposed to changes in the output of the services.

This study also draws another significant contribution which focuses more on being quantitatively precise that has not been fully exploited in previous research studies in the field of Indonesian public services (Pesāmaa et al., 2021; Lim, 2025). In contrast to other studies that have been conducted based on qualitative evaluation, the proposed study will extend the research field by introducing the regression-based model to provide more definite measured information. In such a way, it addresses the recent demands of higher levels of empirical rigor in measuring the actual e-governance system operations in Indonesia.

Yet, although the model accounts 55.1 percent of variance in service effectiveness, the rest of the 44.9 percent means that there are other powerful factors that contribute to service effectiveness that much have not been caught in the model—possibly the culture of the organizations, the competence of the employees, the policies or the digital literacy of the citizens. This creates the possibility of future studies where multivariate models could be created, potentially including such factors as leadership, regulation, and participation of the population (Recharla et al., 2025; Chen, et al, 2024).

Furthermore, the given study was carried out on the level of a single organizational unit and in the period of digital reform, which proceeded with a rapid pace. There are also chances that having influential external post-pandemic factors like prioritizing contactless services led to a positive bias of IT use (Van & Nguyen, 2024; Sahal et al., 2022). Nonetheless, this situation makes the research even more relevant since it reflects a pivotal moment when the digital infrastructure of the public sector became the subject of practical tests.

CONCLUSION

This paper concluded that the application of information technology greatly promotes service effectiveness at BPJS Employment. IT use explains 55.1 percent of the performance in the provision of services, making it firm evident that digital tools boost efficiency, accuracy and access to services. The results are highly empirical and can support the further digitalization of public services and cover the limitations of prior studies by providing a quantifiable assessment of the situation in Indonesia. The investment into IT systems and user knowledge must be carried on to keep service results at the level and, hopefully, enhance.

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