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QUALITY OF ENTERPRISE RESOURCE PLANNING IN THE LOCAL AUTHORITIES IN MALAYSIA

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Abstract
The public sector is expected to provide higher service standards to meet citizens' demands. Therefore, to meet those expectations, the Malaysian public sector must implement robust systems like enterprise resource planning (ERP), which is called e-Pihak Berkuasa Tempatan (e-PBT). The e-PBT, one of the ERP initiatives, was created by the local government and the Malaysian Administrative Modernization and Management Planning Unit (MAMPU) to improve local authorities' (LA) performance. Although numerous studies have highlighted the advantages of ERP systems, especially in the private sector, there is still a lack of discussion on the quality of ERP systems implemented. Thus, this study aims to study employees' perceptions regarding the quality of the e-PBT system in LA in Malaysia using three dimensions adopted from DeLone and McLean IS Success model: system quality, information quality, and service quality. Data were collected from an online questionnaire survey distributed to LA in Peninsular Malaysia. The finding reveals that most respondents gave reasonably good ratings on the system quality, information quality, and service quality of the e-PBT system. However, there is still room for improvement, particularly regarding system security, updating information, and operation of the e-PBT system.

1 Introduction

The internet and information technology not only change the way government operates but also create a demand for better services by the public for better and more efficient services [1]. These demands create challenges for the public sector, including in Malaysia, which is often criticized for lack of competency, inflexibility, poor accountability, and red tape, resulting in low performance. In order to overcome this criticism, e-government was introduced in Malaysia in the 1990s as a part of public sector reform to address the issues of inefficiency and improve public service delivery [2] [3].

Enterprise Resource Planning (ERP) systems were introduced as a part of the e-government program. This system helps to coordinate and integrate data across departments, improving public services, increasing data processing efficiency, enhancing communication, and supporting better decision-making [4]. However, implementing an ERP system in an organization is not an easy task because it involves both human and technological factors. These two factors are often intertwined and difficult to manage. Therefore, in order to ensure the successful implementation of an ERP system in the governmental sector, it is crucial to understand and manage these technical and social

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factors within an organization [5]. Therefore, this study will explore the perception of government employees in the local authorities of Malaysian authorities based on three technical aspects: system quality, information quality, and service quality.

2 Literature Review

2.1 DeLone and McLean IS Success Model

The DeLone and McLean IS Success model was founded by William H. DeLone and Ephraim R. McLean in 1992. This model initially had six main variables to measure IS success factors: system quality, information quality, system use, user satisfaction, individual impact, and organizational impact. However, in 2003, DeLone and McLean added another main variable to study the effectiveness of the IS system, which is service quality. Three main constructs used for this study are (i) system quality, which assesses the usability, flexibility, and reliability of the system and how users can quickly learn how to use it; (ii) information quality, which will measure the timeliness, accuracy, clarity, and relevance of system output such as webpages and reports. Furthermore, (iii) service quality will assess the quality of support provided by the IT staff in relation to their responsiveness, reliability, and technical knowledge [7]. Several studies have been conducted to study the success factor of ERP systems using the Delone and McLean IS success model. Tsai et al. [6] conducted a study on 207 Taiwanese companies using the DeLone and McLean IS Succes Model and found that service quality, information quality, user satisfaction, and system use improve system performance during ERP implementation. Another study conducted by Wibowo and Sari [8] used the IS Success model and the Technology-Organization-Environment (TOE) model to study the success of ERP in Indonesia revealed that system quality, information quality, service quality, external pressure, and top management support all of which important factor which contribute to the ERP success. Using Delone and McLean's IS Success model, Irawan and Syah [9] discovered that system quality, information quality, and service quality significantly influence user satisfaction with ERP systems among users in PT Telkom, Indonesia.

2.2 A Brief on Malaysian Public Sector Modernization

To improve public sector efficiency and performance, Malaysia has adopted New Public Management (NPM) reforms emphasizing outcomes, cost-efficiency, and performance improvements by integrating private sector management practices [10]. Consistent with the objectives of the reforms, in the late 1990s, e-government projects were introduced as part of the Multimedia Super Corridor (MSC) initiative utilizing the internet and technology to enhance government management and public participation [11]. As globalization drives a renewed focus on improving urban services in Malaysia, particularly in information delivery, Local Authorities (LAs) play a crucial role. LAs represent the government at the grassroots level, as the third-tier level responsible for implementing policies and delivering services according to the Local Government Act 1976 (Act 171). Malaysia LAs include 149 agencies across Malaysia, including Peninsular Malaysia, Sabah, and Sarawak, comprising 12 City Halls/City Councils, 39 Municipal Councils, and 98 District Councils. To further enhance the delivery of urban services in the LAs, the federal government introduced an ERP system called e-Pihak Berkuasa Tempatan (e-PBT) [12]. The e-PBT system is expected to provide a convenient, accessible, and quality service between LAs and the public through various online applications such as e-complaint and e-licensing [13].

2.3 Enterprise Resource Planning (ERP)

Initially evolving from Material Requirement Planning (MRP) and Manufacturing Resource Planning (MRPII), Enterprise Resource Planning (ERP) systems were developed in the 1990s to integrate and automate internal business processes across various organizational functions [14]. ERP system is a complex system that consolidates data from these diverse areas into a unified database managed through interconnected software modules [16]. Furthermore, ERP systems cover various functions such as finance, human resources, manufacturing, sales, and marketing [15].

ERP systems offer significant advantages, such as improving competitiveness, enhancing overall business performance, and streamlining processes, which boosts productivity through better

process management and key performance indicator (KPI) analysis [4]. They improve customer experiences, strengthen relationships, and support the development of new operating models [4]. Additionally, ERP systems facilitate seamless integration across departments, providing real-time data access and automating the flow of materials, information, and financial resources, which is crucial for maintaining competitiveness in both global and local markets [8] [16].

Despite their benefits, ERP systems face several challenges. Successful implementation depends heavily on user adoption, with a significant failure rate noted, especially in developing countries [4]. The complexities of ERP implementation, such as system compatibility, integration challenges, and high maintenance costs, further complicate their adoption [5]. These challenges highlight the need for a rigorous framework to evaluate ERP effectiveness and ensure their successful integration into business operations [4] [16] [17].

3 Research Methodology and Sample

This study was conducted for three months, from July to September 2023. There are 149 local authorities in Malaysia, including Peninsular Malaysia and Sabah and Sarawak. This study population consisted of staff working in local government councils in Peninsular Malaysia, which consists of 99 local government councils, including 16 city councils, 34 municipal councils, and 49 district councils [18]. This study did not include Sabah and Sarawak because this e-PBT system is only used by municipalities in Peninsular Malaysia. The study population consists of staff who are users of the e-PBT system. An online questionnaire was distributed to these officers, composed of two parts: Part A, which covered basic demographic questions, and Part B, which included questions related to three main variables: service quality, system quality, and information quality based on the Delone and McLean [19] model. The survey used a 5-point scale (between 1 = strongly disagree and 5 = strongly agree). A total of 609 respondents participated in the survey. Data were analyzed using the Statistical Program for Social Science (SPSS 25.0), with descriptive analysis applied.

Figure 1 shows the type of local authorities of the respondent. The types of organizations involved are 6% city council, 41% town council, and 53% district council, which shows that the sample includes all representation from all types of LAs. Figure 2 portrays that respondent consists of more than 16 years of working experience (30%), followed by 0-5 years (24%), 11-15 years (23%), and 6-10 years (22%) of working experience in the LA.

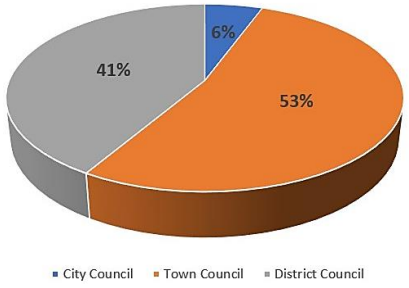

Figure 1. Responses by the type of local authorities (authors' edition)

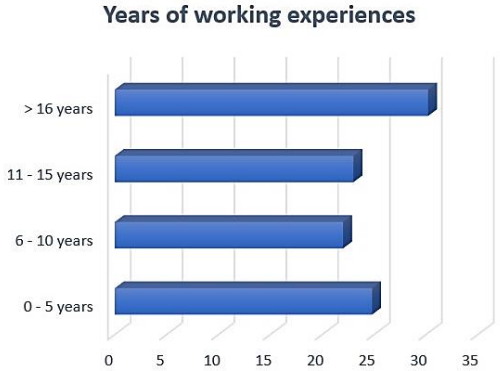

Figure 2. Working experience of the respondent (%, authors' edition)

4 Findings and Discussion

4.1 System Quality Findings and Discussion

Most respondents gave the e-PBT system a fair rating (Table 1), with a total mean score of 3.82 (n=609). Additionally, it appears that the majority of respondents agreed to some extent that the e-PBT system is user-friendly (3.85), easy to use (3.88), and has an acceptable response time (3.81). All three constructs also show the highest ratio, from 4 to 5 (agree to strongly agree), of responses (79.5%-74.1%) by respondents. This result indicates that the e-PBT system is simple to use, user-friendly, and has a quick response time, all of which are crucial markers of a well-designed system because they directly affect the user experience and impact system adoption and usage. A system that performs well in these areas is likely to be seen as reliable and efficient, promoting increased user trust and widespread use.

Furthermore, the lowest score is the e-PBT system, which is always up and running as necessary, with a score of 3.74. The highest response was the disagree (7.2%) from respondents. That demonstrates that, despite the system being simple to use and having a quick response time, it does not constantly satisfy user expectations, which is a critical factor that could disrupt the user's smooth daily operation and, as a result, impede the system's adoption by its users. These features necessitate additional attention from the IT developer to ensure that the system is always operational as required.

Table 1. Descriptive Statistic of System Quality Construct

	Construct	*Mean*	*Std. Deviation*	*Ratio of 1 and 2 responses (%)*	*Ratio of 4 and 5 responses (%)*
SQ1	e-PBT is user-friendly	3.85	.759	4.7	77
SQ2	e-PBT is easy to use	3.88	.696	3.6	79.5
SQ3	The response time of e-PBT is acceptable	3.81	.718	3.9	74.1
SQ4	e-PBT is always up and running as necessary	3.74	.787	7.2	71.6
	Total	3.82	.740		

4.2 Information Quality Findings and Discussion

Table 2 shows that information quality ranked moderately compared to system quality, with a mean score of 3.73. The information provided by the e-PBT system was found to be the most understandable, with a mean of 3.81, followed by information that is relevant (3.72) and accurate (3.70). Meanwhile, the e-PBT system's information has been updated and has the lowest score of 3.68. Most of the respondents also disagree with this construct, which is the highest in the group ratio 1 to 2 (5.9%).

Employees who utilize the e-PBT system have a strong expectation of receiving high-quality information because the accuracy, relevance, and timeliness of this information are critical to the organization's overall performance. Poor-quality information can lead to misguided decisions, inefficiencies, and potentially costly errors, which could hinder the organization's ability to meet its objectives and serve the public effectively. To address this, it is essential for the system provider and stakeholders to actively consider and implement enhancements to the system's information management capabilities. That could involve integrating advanced data validation processes, improving user interfaces to ensure clarity and ease of access, and regularly updating the system to incorporate new data sources or analytics tools. By focusing on these improvements, the e-PBT system can better support informed decision-making, ultimately contributing to the organization's success and the satisfaction of its employees and the public it serves.

Table 2. Descriptive Statistic of Information Quality Construct

Construct	*Mean*	*Std. Deviation*	*Ratio of 1 and 2 responses (%)*	*Ratio of 4 and 5 responses (%)*

IQ1	The information provided by the e-PBT system is updated	3.68	.737	5.9	65.4
IQ2	The information in the e-PBT system is always relevant	3.72	.745	5.6	68.3
IQ3	Information provided by the e-PBT is accurate	3.70	.751	5.1	65.4
IQ4	Information from the e-PBT is easy to understand	3.81	.730	4.8	74.6
	Total	3.73	.740		

4.3 Service Quality Findings and Discussion

Table 3 reveals that the five service quality attributes of the e-PBT system received a generally satisfactory average score of 3.76. Most employees expressed confidence in the IT staff, noting that they are not only knowledgeable about the e-PBT system but also responsive and attentive to their issues, addressing concerns within the promised time frame. This level of trust in IT support is crucial, as it encourages continued use and reliance on the system. However, it is worth noting that the aspect of transaction security and privacy within the e-PBT system received a slightly lower score of 3.72, and the lowest score ratio of 4 and 5 (agree to strongly agree) compared to other factors with 67.8%, indicating some concerns or areas for improvement in ensuring users feel fully secure when using the system.

Table 3. Descriptive Statistic of Service Quality Construct

	Construct	*Mean*	*Std. Deviation*	*Ratio of 1 and 2 responses (%)*	*Ratio of 4 and 5 responses (%)*
ServQ1	The responsible service personnel/ IT staff are always highly willing to help whenever I need support with the e-PBT system	3.83	.878	9.5	76.4
ServQ2	The responsible service personnel/IT staff have sufficient knowledge to answer my questions with respect to the e-PBT	3.78	.865	8.5	73.1
ServQ3	Transactions within the e-PBT system are secure and protect privacy	3.72	.810	7.2	67.8
ServQ4	The responsible service personnel/ IT staff provide personal attention when I experience problems with the e-PBT system	3.75	.842	8.9	71.8
ServQ5	The responsible service personnel/IT staff provide services related to the e-PBT system at the promised time	3.73	.873	9.2	71.3
	Total	3.76	.850		

5 Conclusion

This study focuses on understanding the perceptions of local authority employees in Malaysia regarding the quality of the e-PBT system. The findings reveal that the system is user-friendly, straightforward, and offers quick response times, making it accessible and efficient for daily use. Additionally, the information provided by the e-PBT system was assessed as understandable, relevant, and accurate, which are crucial factors for effective decision-making and operations. However, the study also highlights some areas for improvement. The system is not always operational as needed, the information is not consistently updated, and there are concerns about the security of transactions. These issues point to a need for ongoing enhancements to ensure the system meets users' expectations and requirements.

The insights gained from this study are intended to guide local authorities and stakeholders in improving the e-PBT system's performance in the future. Furthermore, this research addresses a literature gap by examining the quality of ERP systems from a public sector perspective, offering

valuable insights beyond the typically studied private sector context. This study comes with limitations. First, the study primarily focuses on the perceptions of employees within local authorities, which may not fully capture the experiences of all user groups, such as the general public or businesses that interact with the e-PBT system. For further study, it is recommended to include citizens and businesses as respondents to capture a holistic perception of the system. Second, the study reflects the system's performance and user experience at a particular point in time. Changes or updates to the system after the study was conducted are not accounted for, which may affect the relevance of the findings over time.

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