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Enhacing Efficiency: Assessing the Impact of the Single Window Electronic System at the Ministry of Housing Guyana

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Abstract

In response to the challenges posed by traditional bureaucratic practices, the Ministry of Housing, a key stakeholder in urban development and housing initiatives, has embarked on a journey of profound transformation through the implementation of the Single Window Electronic System (SWES). This digital framework aims to consolidate administrative procedures, simplify processes, and expedite services within the ministry's operational landscape. This transformation is essential for addressing the increasing demands in the housing sector.

Guided by the New Public Management theory, the paper sought to answer the following questions: (1) what is the rationale for the Single Window Electronic System in the context of the government's efforts to digitize operations at the Ministry of Housing? (2) what is the impact of the Single Window Electronic System on land distribution efforts at the Ministry of Housing? and (3) what are the challenges involved in the implementation of the Single Window Electronic System at the Ministry of Housing?

The research followed a mixed method approach where qualitative and quantitative techniques were used to both collect and analyse the data. The qualitative approach entailed a systematic review of the literature. The quantitative element was based on a survey using purposive sampling, that was conducted with staff across all departments within the Central Housing and Planning Authority.

The paper found that the implementation of the SWES has led to notable improvements in administrative efficiency, transparency, and service delivery in land distribution. However, overcoming technological and human resource challenges is crucial to fully harness the system's potential and sustain its benefits in the long term. It is therefore recommended that the government first address human resource challenges by focusing on comprehensive staff training and establishing a dedicated support team. Strengthening technological infrastructure through regular updates and adequate data storage is also crucial for system reliability and efficiency. Additionally, the government should develop a strategic plan for expanding the system to meet growing user demand and extend its applications beyond land distribution.

Keywords: Single Window Electronic System (SWES), Public Service Digitization, New Public Management (NPM), Land Distribution, Administrative Efficiency, Government Digital Transformation

Preface

This thesis examines the implementation of the Single Window Electronic System (SWES) within the Ministry of Housing Guyana, a subject of increasing relevance in the context of public administration's digital transformation. Guided by the principles of the New Public Management theory, this study explores the rationale behind the system's introduction, evaluates its impact on land distribution efforts, and identifies the challenges encountered during its implementation. The study is intended to contribute to ongoing discussions about the digital transformation of public services, particularly in developing countries. The research offers insights that may be valuable for policymakers, public administrators, and scholars interested in the field of governance and technology, particularly in developing countries.

Introduction

In an era characterized by rapid technological advancements, governmental institutions are actively seeking ways to redefine administrative paradigms. Traditionally known for its rigid bureaucratic practices, which often hinder timely and effective service delivery, the public sector is embracing digital transformation to optimize operational processes, and meet the growing demands of citizens in service delivery. A key initiative in this transformation is the adoption of Single Window Electronic Systems (SWES). These systems offer a centralized digital platform designed to consolidate and streamline administrative processes across various government services. By integrating multiple services into a single interface, SWES have the potential to significantly reduce processing times, enhance transparency, and improve overall efficiency in public administration.

The Ministry of Housing Guyana, a critical institution in urban development and housing, has long been confronted with inefficiencies in land distribution, delays in service delivery, and a lack of transparency, hinder its ability to meet the demands of an expanding population. As these issues persist, there is a widening gap between the Ministry's objectives and its performance, resulting in growing frustration among citizens and stakeholders. Recognizing the imperative to modernize its operations to improve service delivery, the Ministry has initiated the implementation of the SWES. Despite the promising potential gains of the SWES to the Ministry of Housing, implementation has not been without its challenges. Persistent issues in land distribution and administrative inefficiencies raise critical questions about the system's efficacy.

Understanding the extent to which SWES has succeeded in enhancing operational efficiency, improving transparency, and addressing the longstanding issues within the Ministry is essential for both policymakers and practitioners. This study seeks to explore the rationale, impact, and challenges associated with the implementation of the SWES within the Ministry of Housing Guyana. The research is guided by the principles of New Public Management (NPM) theory, which advocates for the adoption of private sector management principles within the public sector, emphasizing the reduction of bureaucratic complexity, a focus on performance outcomes, and improved responsiveness to citizens' needs; it endeavours to answer the following research questions:

1. What is the rationale for the implementation of the Single Window Electronic System in the context of the government's efforts to digitize operations at the Ministry of Housing?
2. What is the impact of the Single Window Electronic System on land distribution efforts at the Ministry of Housing?
3. What are the challenges involved in the implementation of the Single Window Electronic System at the Ministry of Housing?

The Primary Research Objectives Are

1. To examine the rationale behind the implementation of the Single Window Electronic System within the Ministry of Housing.
2. To assess the impact of the Single Window Electronic System on land distribution efforts at the Ministry of Housing.
3. To identify and analyze the challenges encountered during the implementation of the Single Window Electronic System at the Ministry of Housing.

By addressing these research questions and objectives, this study aims to provide a comprehensive evaluation of the role of SWES in transforming the Ministry of Housing Guyana. Through an in-depth analysis, the research will offer valuable insights into the effectiveness of digital transformation initiatives within the public sector, with a particular focus on land distribution processes. This study not only contributes to the academic discourse on public sector digitalization but also offers practical recommendations for enhancing the efficacy of such initiatives in similar contexts.

Literature Review

The implementation of SWES has become increasingly prevalent as part of broader government efforts to modernize public services. This literature review delves into three interconnected aspects: the rationale for the implementation of SWES, the impact of SWES on service delivery, and the challenges encountered in the implementation of SWES. The review aims to provide a comprehensive understanding of SWES, examining both the benefits and limitations of these systems, while identifying gaps in the current research.

Rationale for the Implementation of SWES

The United Nations Department of Economic and Social Affairs (2018) asserts that governments worldwide are increasingly recognizing the imperative to modernize public service delivery to effectively meet the changing needs of citizens and businesses [1]. Central to this modernization effort, as noted by the United Nations Conference for Trade and Development (2015), is the implementation of SWES. The reliance on hard-copy documents poses significant challenges to the effective exchange of information and complicates coordination across departments and agencies [2]. SWES aim to simplify and harmonize administrative procedures by offering a centralized platform for the submission of all necessary information and documents, fostering a more transparent and business-friendly environment.

Goh (2017) highlights the inefficiencies of traditional processes, where service users are compelled to make multiple submissions due to a lack of integration among regulatory agencies, leading to redundancy and increased time and costs [3]. Johnson et al. (2018) found similar inefficiencies in international trade, where fragmented regulatory processes necessitated duplicative submissions by traders, increasing overall compliance time and costs [4]. Wang et al. (2020) also observed that decentralized and

disjointed regulatory processes in multiple countries resulted in significant administrative burdens, delays, and additional financial costs [5].

UNCTAD (2015) highlights how consolidating multiple government agencies and processes into a single platform through SWES reduces redundancy and simplifies administrative procedures. Singapore's SWES for Construction and Real Estate Network (CORENET) has profoundly impacted housing development by digitizing and streamlining processes related to building plan submission, approval, and overall project management. Case studies on Singapore's TradeNet and South Korea's Single Window for Trade by Lee & Lee (2018) and Lee et al. (2019) demonstrate how SWES significantly boosted economic activity and facilitated cross-border trade by integrating various regulatory and administrative processes into a single platform [6, 7].

Choi (2011) notes that SWES streamline administrative processes by automating routine tasks and facilitating seamless information sharing and collaboration among stakeholders [8]. Zhang and Chen (2016) emphasize the role of SWES in enhancing data sharing among government agencies, reducing duplication, and improving decision-making processes [9]. Ahmed et al. (2017) also highlights the role of SWES in promoting transparency and reducing corruption through standardized procedures and increased accountability [10].

Despite the generally positive outlook, the literature also presents contrasting views, as Smith et al. (2020) contends, while SWES can streamline administrative processes, they may face challenges related to interoperability and compatibility with existing systems, leading to delays and increased costs [11]. Jones (2018) suggests that SWES may not always effectively address the diverse needs of all stakeholders, potentially leading to dissatisfaction among certain user groups [12]. Wang et al. (2019) highlight instances where the centralized nature of SWES could inadvertently create bottlenecks and delays in complex regulatory environments or high-volume transaction contexts [13]. Although the success of Singapore and South Korea's models serves as a blueprint for modernizing struggling systems elsewhere, these findings raise questions about the scalability and adaptability of SWES across different administrative settings.

Impact of SWES on Public Service Delivery

Advocates of SWES argue that these systems have significantly enhanced efficiency in public service delivery. McLinden et al. (2011) posit that bringing together various functions into a single platform eliminates the need for citizens and businesses to navigate multiple departments, reducing processing time and improving efficiency of service delivery [14]. The Organization for Economic Cooperation and Development (2016) points out that integrating services reduce the complexity of interactions with the government, making it easier and faster for users to complete necessary processes.

A McKinsey & Company (2020) report highlights how India's National Single Window System has revolutionized administrative processes in key areas such as land acquisition, construction permits, environmental clearances, and labour regulations, leading to enhanced efficiency and reduced bureaucratic red tape. Hoque et al. (2015) also noted that the implementation of Bangladesh's National Single Window (NSW) system led to a 30% reduction in processing time for import and export documentation, attributing this efficiency gain to the automation and integration of various government agencies [15]. Lõhmus and Raudla (2018) highlights Estonia's e- tax system as a prime example of how SWES can revolutionize public service delivery, allowing citizens and businesses to complete their tax obligations quickly and efficiently, reducing errors, and improving compliance rates.

Moreover, SWES have emerged as powerful tools for enhancing transparency and accountability in government processes. Janssen and Estevez (2013) found that SWES reduce opportunities for corrupt practices by minimizing direct contact between citizens and public officials [16]. Hofmann et al. (2020) assert that the digitization of services creates an audit trail, making it easier to detect and address fraudulent activities. The United Nations E-Government Survey (2016) highlights Singapore's TradeNet's role in creating a transparent trading environment, enhancing accountability and reducing corruption in trade processes.

SWES also improve accessibility to public services, the digital nature of these systems facilitates remote access, particularly in rural or underserved areas. Gupta and Jana (2018) highlight that India's e-District project has significantly expanded access to government services for rural populations, reducing disparities in service delivery [17]. The United Nations E-Government Survey (2020) emphasizes the role of SWES in bridging the urban-rural divide, noting similar initiatives in other countries that have made it easier for rural residents to access necessary documentation, permits, and welfare programs, ensuring more equitable service delivery.

While SWES are praised for enhancing efficiency and transparency, critics highlight several challenges these systems introduce. Heeks (2013) notes that the implementation of SWES requires substantial financial investments in technology, infrastructure, and training, which can be burdensome for developing countries. The complexity of integrating multiple agencies often leads to delays and cost overruns, potentially outweighing the benefits. Moreover, SWES can also deepen digital divisions, Madon et al. (2018) argue that rural or underserved populations may struggle to access these systems due to poor internet connectivity, lack of digital literacy, and inadequate infrastructure, perpetuating inequalities in service access. Additionally, McLellan and Shaw (2015) raise concerns about data security and privacy, as centralizing services increases the risk of data breaches and misuse, raising issues of surveillance and privacy [18]. SWES can also create overdependence on technology, which can be problematic during system failures. Huyer and Hafkin (2017) warn that technological glitches can disrupt service delivery, leading to delays and neglect of traditional service methods, leaving some populations underserved [19].

Challenges in the Implementation of Single Window Electronic Systems

Smith et al. (2020) argue that one of the primary challenges in implementing SWES is interoperability with existing systems [21]. Many governments operate legacy systems that may not easily integrate with new digital platforms like SWES, leading to data silos, redundant processes, and increased costs. The Aus-

tralian Government's National Water Initiative faced interoperability challenges when harmonizing water management systems across different states and territories, each with its legacy systems and regulations, making cohesive national framework creation difficult. Similarly, the City of Los Angeles encountered significant challenges integrating its existing water management systems with new smart technologies, leading to data silos and redundant processes. Jones (2018) suggests that interoperability challenges can hinder information exchange across government departments and agencies, citing New York City's Department of Environmental Protection's coordination issues when implementing SWES due to different systems and processes [12]. Abu-Shanab et al. (2019) note that effective integration is further complicated by variations in standards and protocols, exacerbating the difficulty of achieving seamless data exchange.

Resistance to change is another significant challenge to SWES implementation. Abu- Shanab et al. (2019) note that this resistance can stem from various sources, including employees' reluctance to adopt new technologies, fear of job loss, and discomfort with altering established workflows. For example, India's Goods and Services Tax Network (GSTN) highlights the complexities of integrating disparate systems and overcoming resistance from stakeholders. Heeks (2006) discusses how resistance can be compounded by a lack of adequate change management strategies, necessary to address employee concerns and ensure smooth transitions to new systems. Digital divide is another notable challenge, disproportionately affecting marginalized communities with limited internet access and digital literacy, as highlighted by UNCTAD (2019). Heeks (2002) supports this contention, noting that the benefits of SWES may not be evenly distributed, potentially marginalizing those without adequate access to technology [20].

Additionally, the initial cost and complexity of setting up SWES can be prohibitive for some governments, particularly in developing countries. Zheng et al. (2013) study on China's single-window system highlighted significant financial and logistical challenges during the implementation phase, including substantial investment in ICT infrastructure, training for public officials, and integration of disparate legacy systems [21]. Heeks (2006) underscores the importance of not underestimating the costs associated with training and infrastructure development, which are critical for successful SWES implementation.

Factors such as political will, institutional capacity, and the broader socio-economic environment also play crucial roles in determining the success of SWES implementations [22-25]. Ndou (2004) notes that in some African countries, the lack of sustained political support and entrenched bureaucratic practices have hindered the effective deployment of SWES. Bannister and Connolly (2011) emphasize that the customization of SWES to fit local needs is critical, as a one-size-fits-all approach may not be suitable. As such, the successful implementation of SWES depends on how well they are tailored to the specific administrative and cultural context in which it operates.

Despite these challenges, the literature reveals promising prospect for SWES, suggesting that with adequate planning, stakeholder engagement, and context-specific adaptations, the benefits of these systems can be realized. However, gaps remain in the research, including change management approaches, diverse stakeholder perspectives, comparative studies, user satisfaction, and practical solutions for interoperability and bridging the digital divide [26-28]. Addressing these gaps through future research will provide a more nuanced understanding of SWES and inform better implementation strategies. As technology evolves, the potential for SWES to revolutionize public service delivery remains significant, offering a pathway to more efficient, transparent, and accessible public administration globally.

Research Methodology

This section of the research paper outlines the research methodology adopted for the assessment of the SWES within the Ministry of Housing, it encompasses the research design, sampling method, data collection strategies, data analysis approach(s), ethical considerations, and the limitations of the study. This comprehensive approach aims to deliver a thorough and objective evaluation of SWES within the Ministry of Housing, contributing valuable insights into its implementation and impact.

Research Design

The assessment of the implementation of the SWES within the Ministry of Housing combined elements of both exploratory and descriptive research. The exploratory aspects endeavored to understand the complexities and nuances in the implementation of the SWES, while the descriptive aspects involved the comprehensive documentation and analysis of the SWES's current state within the ministry. The research further employed a mixed methodology, incorporating both qualitative and quantitative research techniques. Content analysis served as the main qualitative research tool for understanding the nuances, perceptions, and experiences related to the SWES implementation. Quantitative tools such as surveys and statistical analysis provided numerical data for measurement and comparison. The combination of these approaches maximized the strengths of each method, compensating for their respective weaknesses and providing a holistic understanding of the SWES's implementation and impact within the Ministry of Housing.

Sampling Method

A total of 40 surveys were distributed, representing 36% of the population. Purposive sampling was used to select participants, with the sampling frame focusing on identifying and selecting stakeholders directly or indirectly involved in the SWES processes within the Ministry of Housing. The sample population included participants from the administrative, human resources, ICT, urban planning, and other relevant departments involved in SWES-related activities. These stakeholders' involvement spanned system usage, decision-making, and oversight of housing initiatives and urban development in Guyana, capturing a broad spectrum of perspectives and experiences related to the SWES implementation.

Data Collection

Data were gathered using both quantitative and qualitative research tools. Quantitative data collection was primarily derived from SWES system logs and administrative records within the Ministry of Housing. The SWES logs provided essential metrics on system performance, user engagement, and processing times before and after implementation, offering insights into efficiency gains or potential bottlenecks. Administrative records

offered additional quantitative data on changes in paperwork, application processing times, error rates, and overall operational efficiency, allowing for longitudinal comparisons to assess the impact of SWES on administrative processes. Qualitative data were collected through structured surveys distributed to administrative staff, service users, and other relevant stakeholders. This approach facilitated an in-depth exploration of experiences, challenges, and perceived impacts of SWES implementation from various perspectives. These qualitative insights added contextual depth and subjective perceptions that quantitative data alone might not capture.

The data collection process spanned three weeks to ensure sufficient participation and comprehensive data gathering. A triangulation approach was used to cross-reference data from multiple sources, enhancing credibility and reliability. Periodic checks and audits during data collection helped identify and address any issues early, ensuring data integrity. These measures contributed to minimizing errors and maintaining the reliability of the collected data in assessing SWES implementation within the Ministry of Housing. Any issues or biases encountered during data collection were considered in the limitations section to ensure transparency about their potential impact on the study's outcomes.

Data Analysis

The analysis utilized both quantitative and qualitative methodologies to derive comprehensive insights and effectively address the research objectives. Descriptive statistics, such as means, frequencies, and percentages, summarized and characterized survey responses concerning system usability and perceptions of the SWES' impact. The Statistical Package for the Social Sciences (SPSS) was employed for this quantitative data analysis. Thematic analysis was used to code and analyze the qualitative data from the surveys, aligning with the study's exploratory nature and allowing for an in-depth examination of diverse perspectives and experiences related to the SWES. This analysis complemented the quantitative findings by providing nuanced insights into system implementation and impact. The combined approach aimed to triangulate findings from both data sources, offering a comprehensive understanding of the SWES's effects on the Ministry of Housing. By integrating statistical and thematic analyses, the method supported the research objectives and facilitated a multifaceted exploration of stakeholder experiences and system effectiveness, thereby enhancing the study's depth and validity.

Ethical Considerations

Ethical considerations were paramount to protect participant rights throughout the research process. In evaluating the implementation of the SWES within the Ministry of Housing, the following ethical aspects were addressed:

• Informed Consent: All participants provided informed consent and reserved the right to withdraw without consequences. The researcher provided details of the study's purpose, participation expectations, and confidentiality measures.

• Privacy and Confidentiality: Given the sensitivity of collected data on user experiences and SWES operational efficiencies, stringent measures were taken to anonymize or pseudonymize data to prevent individual identification.

• Transparency and Honesty: The researcher was transparent about the study's objectives, methodologies, and potential implications of findings. Any conflicts of interest were disclosed to uphold research integrity.

Addressing these ethical considerations ensured research integrity, respected participant rights, and fostered trustworthiness in the research process and outcomes.

Limitations of the Study

Recognizing limitations is crucial for understanding potential constraints on study outcomes. Assessing the implementation of the SWES within the Ministry of Housing encounters several limitations that may have impacted the findings of the research:

• Sampling Bias: Although the sampling method provided in-depth insights from stakeholders closely associated with the SWES, the representativeness of the sample was limited due to the non-random selection of participants. This approach inadvertently excluded the perspectives of less visible stakeholders or those with differing experiences or opinions about the system. Additionally, the small sample size further constrained the generalizability of the findings to the broader population.

• Reliance on Self-Reported Data: Survey responses may have been influenced by social desirability or recall biases, potentially affecting data accuracy, particularly in assessing user satisfaction and system usability.

• Access to Historical Data: Challenges in accessing historical system logs or reports within the Ministry hindered a comprehensive analysis of system performance metrics, thereby limiting the ability to accurately assess the operational efficiency of the SWES. These data limitations impacted the evaluation of how effectively the system has been functioning over time.

• Participant Reluctance: Hesitancy to participate due to time constraints or confidentiality concerns resulted in a biased sample, affecting the diversity of perspectives gathered. This reluctance led to the underrepresentation of certain stakeholder groups, potentially skewing the findings and limiting the overall accuracy of the insights.

Acknowledging these limitations promoted transparency and a critical assessment of the study's boundaries. Mitigation strategies included diversified sampling criteria, survey validation checks, and data source triangulation to enhance validity while interpreting results. This integrated approach ensured a robust evaluation of SWES implementation within the Ministry of Housing, providing valuable insights into system effectiveness.

Results

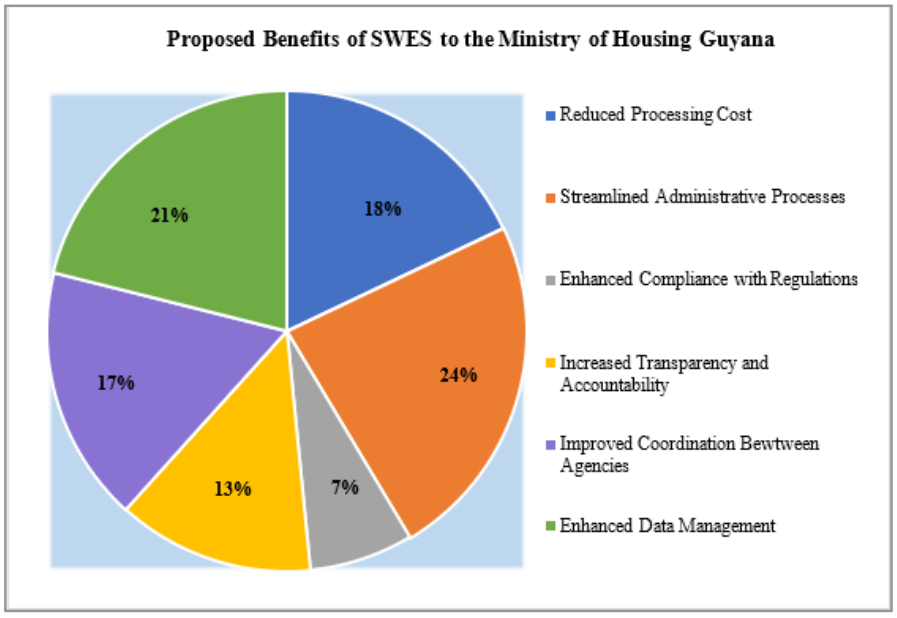

Figure 1: The pie chart illustrates the proposed benefits of the SWES to the Ministry of Housing Guyana. 24% of respondents identified streamlined administrative processes as the primary benefit. Enhanced data management was recognized by 21% of respondents as the second most significant benefit. 18% of respondents viewed transparency and accountability as a notable benefit. Reduced processing cost was selected by 17% of respondents, while 13% of respondents considered enhance compliance with regulations to be a key benefit. Improved coordination between agencies was the least frequently cited benefit, acknowledged by only 7% of respondents.

The recognition of streamlined processes as the primary benefit aligns strongly with the core rationale of the SWES. The literature supports this view, as SWES are known for simplifying and harmonizing administrative procedures by offering a centralized platform for submitting information, thereby reducing operational inefficiencies, as noted by UNCTAD (2015) and Goh (2017). Moreover, the efficiency-driven focus of NPM is evident, as the reduction of bureaucratic red tape and the streamlining of processes are key goals of NPM- inspired reforms [5].

Enhanced data management, the second most recognized benefit, underscores the critical role of accurate and integrated data systems within the Ministry. This finding aligns with literature that emphasizes the importance of effective data management for informed decision- making and policy formulation. From an NPM perspective, improved data management is not only about enhancing the quality of decision-making but also about increasing transparency and accountability. SWES can significantly improve data management by providing a unified platform for data collection and analysis, which is essential for reliable housing policy development. This strong emphasis on data management might also suggest that current data practices are perceived as inadequate, indicating a specific area where SWES could have a substantial impact, furthering the NPM agenda of better governance through data-driven decision-making.

The identification of transparency and accountability as benefits of SWES is notable but not as high as might be anticipated, given the global emphasis on these aspects in public sector reforms, particularly those inspired by NPM. SWES can enhance transparency and accountability by standardizing procedures and creating an audit trail, which can reduce opportunities for corruption and improve public sector governance, as posited by Ahmed et al. (2017) and Hofmann et al. (2020) [1]. However, the moderate recognition of these benefits may reflect either a lack of awareness about how SWES can enhance transparency or a belief that existing systems already provide sufficient transparency. This points to a potential gap in understanding or communication about the full capabilities of SWES in promoting good governance, a core tenet of NPM, which seeks to make public institutions more transparent, accountable, and responsive to citizens' needs.

Moreover, despite cost reduction often being a key motivator for adopting new technologies, the lesser emphasis on reduced processing costs compared to process efficiency and data management suggests that respondents prioritize operational improvements. This could reflect a broader NPM perspective, where the focus is often on achieving outcomes and performance improvements rather than just cutting costs. They may either see current costs as

manageable or believe that the efficiency gains from SWES will naturally result in cost savings, which aligns with NPM's belief that better management practices lead to better outcomes, including financial savings.

The least recognized benefits, enhanced compliance with regulations and improved coordination between agencies, raises concerns about the potential challenges in SWES implementation. The low recognition of enhanced compliance may indicate that respondents are confident in their current compliance processes or are not fully aware of how SWES could improve regulatory adherence. This could suggest that while there is a move towards modernization, there might be resistance to fully embracing the compliance and regulatory aspects that are also critical for achieving the broader goals of public sector reform. Similarly, the limited emphasis on inter-agency coordination, despite its

recognized importance in literature, may indicate skepticism about SWES's ability to facilitate coordination or a lack of understanding of the benefits of such integration. These findings highlight the need for further investigation of how SWES can effectively address these areas and improve communication about its full benefits.

While the recognition of streamlined processes and enhanced data management aligns with the literature on SWES advantages and NPM's focus on efficiency and effectiveness, the differing levels of awareness regarding transparency, cost reduction, compliance, and coordination suggest that additional education, clearer communication, and potential system enhancements may be needed to fully maximize the benefits of SWES in line with NPM principles. The mixed responses underscore the importance of aligning SWES implementation strategies with NPM's broader objectives of improving public sector performance through better management practices, transparency, and accountability.

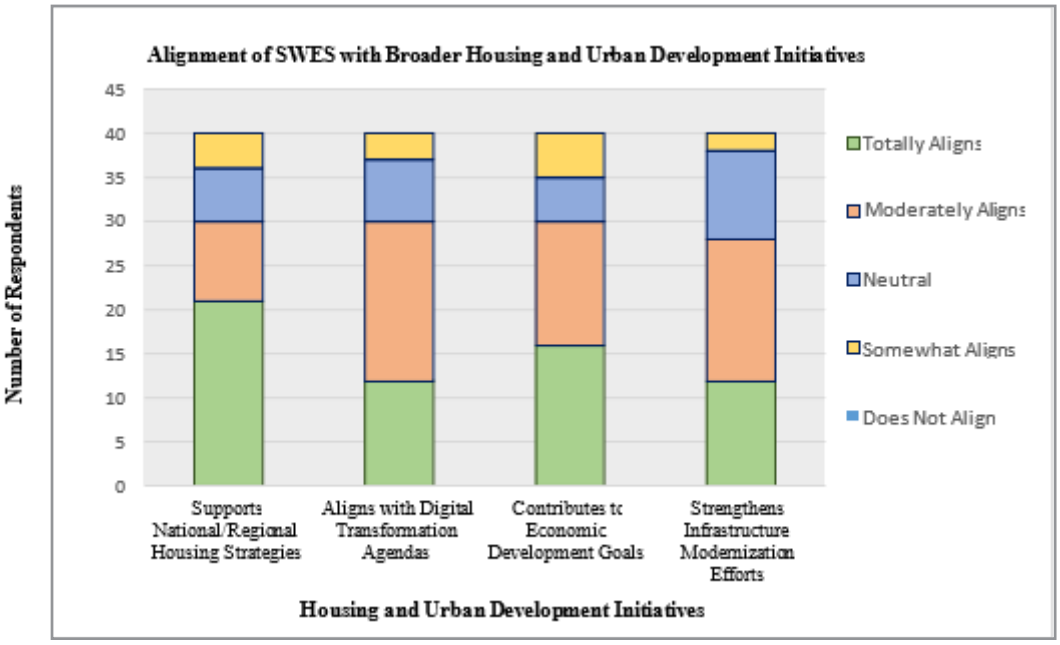

Figure 2: The stacked Bar chart provides a detailed overview of how respondents perceive the alignment of the SWES across four broader housing and urban development initiatives using a scale of five categories. 21 respondents indicated that the SWES totally aligns with supporting national/regional housing strategies. Approximately 9 respondents felt it moderately aligns, while 6 respondents were Neutral. 4 respondents indicated that the SWES somewhat aligns, while no respondents selected does not align. 12 respondents felt that the SWES totally aligns with digital transformation agendas, 18 respondents indicated moderately aligns, 7 respondents were neutral, while 3 respondents selected somewhat aligns. There were no responses in the does not align category. When considering the SWES's contribution to economic development goals, 16 respondents indicated totally aligns, while 14 selected moderately aligns. Approximately 5 respondents were neutral, and 5 respondents felt the SWES somewhat aligns, with no responses indicating it does not align. 12 respondents believed that the SWES totally aligns with strengthening infrastructure modernization efforts, while 16 indicated that it moderately aligns. Around 10 respondents were Neutral, and 2 respondents felt it somewhat aligns, with no responses in the does not align category.

The results indicate a generally positive perception of the alignment of the SWES with key housing and urban development initiatives. This aligns well with existing literature on the effectiveness of SWES in streamlining administrative processes and integrating multiple government functions to support broader policy goals. The majority of respondents' belief that SWES totally or moderately aligns with supporting national/regional housing strategies is consistent with the findings of UNCTAD (2015), which highlight that SWES systems can support national development objectives by centralizing processes and enhancing administrative coordination. This positive perception suggests that SWES is seen as a valuable tool in achieving broader housing objectives, particularly in managing data and streamlining processes to better meet housing needs.

The frequency of respondents indicating that the SWES aligns either totally or moderately with digital transformation agendas highlights the system's pivotal role in advancing digital governance. SWES are essential in public administration's digital transformation, as they streamline and digitize services, making them more accessible to citizens. This is consistent with other case studies, such as Singapore's CORENET system, which demonstrate the effectiveness of such systems in facilitating more efficient, digital government services. However, the significant number of neutral responses suggests that, while the SWES is recognized for its contribution to digital transformation, there may be a need for further education or system improvements to enhance user experiences and ensure better integration with other digital tools.

Moreover, respondents view that the SWES aligns well with economic development goals, is consistent with the contention of McLinden et al. (2011), who argue that SWES can significantly boost economic development by reducing transaction times, cutting costs, and enhancing public service efficiency [17] s. By simplifying housing application processes and minimizing administrative burdens, SWES can promote economic activity

in the housing and construction sectors. Similar findings in trade noted that streamlining and automating processes has a direct positive effect on economic performance. The perception that SWES supports economic development initiatives emphasizes its role in fostering a more efficient, business- friendly environment within the housing sector. The perception of SWES's alignment with infrastructure modernization reflects the role of SWES in supporting the digitization of infrastructure-related services, as noted by Lõhmus and Raudla (2018) in their study on Estonia's e-government systems. The alignment with infrastructure modernization efforts can also be attributed to the system's ability to integrate different regulatory and administrative processes related to housing and urban development, creating a more efficient and responsive service environment. However, the neutral and somewhat aligns responses could reflect challenges in integrating SWES fully into complex infrastructure projects, which often require coordination across multiple agencies.

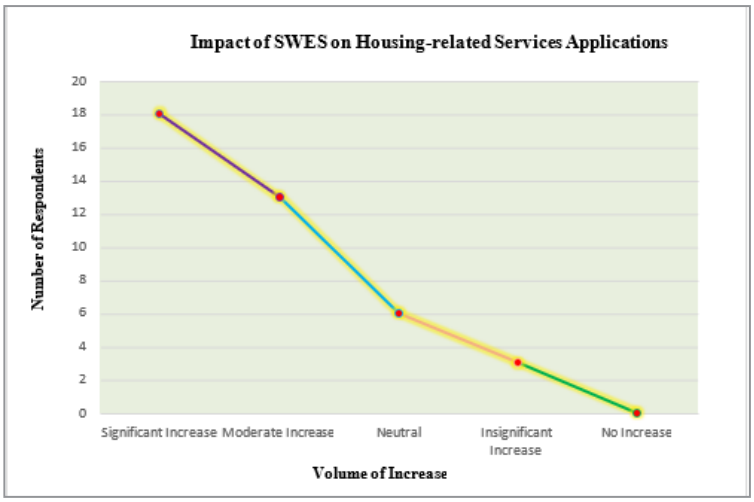

Figure 3: The line graph demonstrates the impact of the SWES on the application volume of housing related services post implementation. 18 respondents indicated a significant increase, 13 reported a moderate increase, while neutral responses were given by 6 respondents. Insignificant increase was noted by 3 respondents. No respondents selected no increase.

The generally positive impact on the volume of housing-related service applications aligns with the literature's assertion that SWES enhance both efficiency and accessibility in public services. By centralizing and digitizing processes, SWES reduces administrative burdens

and improve service delivery, leading to an increase in applications, as noted in several studies, including McLinden et al. (2011) & Lee et al. (2019). The moderate increases reported by some users reflect the literature's recognition that while SWES offer significant benefits, their impact may vary depending on user demographics and service types [17]. This variation suggests the need for continuous evaluation and potential system adjustments to meet diverse user needs.

Neutral responses from some users may indicate that they are still assessing the full benefits of SWES, which is consistent with the literature's view that the advantages of such systems may take time to fully manifest. Additional enhancements or system improvements could help these users experience the full potential of SWES. Minimal increases in application volume, reported by a few respondents, may suggest challenges such as system integration issues or unequal adoption rates, which are also identified as common hurdles in implementing large- scale digital systems. Despite these challenges, the absence of any reports of no increase in applications supports the literature's overall positive assessment of SWES, emphasizing their role in improving service delivery and public administration efficiency.

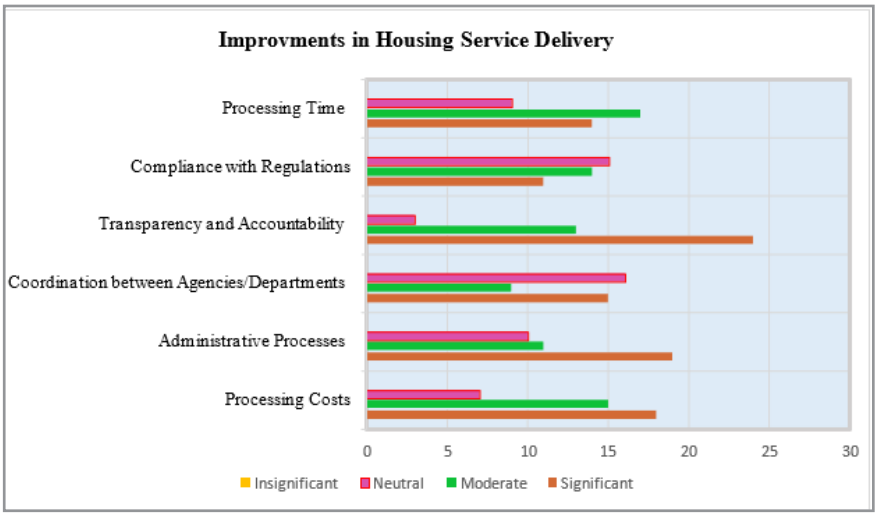

Figure 4: The Grouped Bar Chart Illustrates the Perceived Improvements in Various Areas of Service Delivery at the Ministry of Housing Guyana Following the Implementation of the SWES.

18 respondents perceived significant improvements in processing costs, while 15 viewed the improvements as moderate, and 7 remained neutral. 19 respondents noted significant improvements in administrative processes, 11 saw moderate improvements, while 10 were neutral. Coordination between agencies and departments revealed a split in perceptions: 15 respondents acknowledged significant improvements, 9 considered them moderate, while a higher number of 16 remained neutral. Transparency and accountability recorded the highest positive feedback, where 24 respondents indicated significant improvements, 13 viewed them as moderate, and only 3 were neutral. In the area of compliance with regulations, opinions were more evenly spread with 11 respondents indicating significant improvements, 14 viewed them as moderate, and 15 were neutral. 14 respondents perceived significant improvements in processing time, 17 considered them moderate, and 9 remained neutral. There were no recorded insignificant responses across the 6 areas of service delivery.

The substantial improvements in processing costs demonstrate a clear benefit of SWES to the Ministry. The reduction in processing costs can be primarily attributed to the system's ability to streamline workflows, eliminate redundant procedures, and reduce the time required for transactions. This aligns with the findings of Goh (2017) and Johnson et al. (2018), who emphasize that SWES reduces operational inefficiencies by minimizing the need for multiple submissions across different departments [5]. From an NPM perspective, this improvement is significant as it reflects the theory's focus on efficiency and cost-effectiveness in public administration [11]. By cutting costs and speeding up processes, SWES contributes to a more agile and responsive government, capable of meeting the demands of citizens and businesses with greater efficacy. Similarly, the positive feedback on administrative processes reinforces the effectiveness of SWES in automating and integrating various administrative functions. As Choi (2011) discusses, the automation of routine tasks through SWES reduces the potential for human error, speeds up decision-making, and enhances overall administrative efficiency [2]. This outcome is also in line with NPM's emphasis on improving the operational efficiency of government agencies through technological innovations.

Perhaps most striking is the overwhelmingly positive feedback on transparency and accountability, which resonates with the work of Janssen and Estevez (2013) and Hofmann et al. (2020), who underscore the role of SWES in reducing opportunities for corruption by minimizing direct contact between citizens and officials and creating a transparent audit trail [10]. In this context, SWES not only enhances efficiency but also aligns with NPM's goal of increasing transparency and accountability in government operations, thereby fostering greater public trust [11]. The varied responses in areas such as coordination between agencies and compliance with regulations suggest that SWES has not fully addressed all challenges. The mixed perceptions in these areas, with a significant number of respondents remaining neutral, indicate ongoing issues related to the integration and interoperability of the system as noted by Smith et al. (2020) and Jones (2018) who point out that one of the primary challenges in implementing SWES is achieving seamless interoperability between different government departments and agencies [12]. The complexity of integrating multiple functions and legacy systems into a single platform often leads to data silos, redundant processes, and communication gaps, which can hinder the overall effectiveness of SWES.

The split in responses on coordination between agencies/departments suggests that while some progress has been made, full integration across all relevant entities has yet to be achieved. This issue is particularly critical within the NPM framework, which stresses the importance of coherence and collaboration in public service delivery. Without effective coordination, the benefits of SWES may be limited, potentially leading to inefficiencies and bottlenecks in service delivery. Similarly, the mixed responses regarding compliance with regulations highlight the challenges of ensuring that SWES effectively supports regulatory adherence across diverse administrative contexts. While SWES is designed to streamline regulatory processes, the system's centralized nature may not fully accommodate the specific needs and complexities of all regulatory environments, as noted by Wang et al. (2019). This can result in dissatisfaction among certain user groups and a perception that the system has not fully delivered on its promise of simplifying regulatory compliance.

Beyond the specific issues of coordination and compliance, the literature also points to broader challenges that may be influencing the mixed perceptions observed in the survey. The risk of a digital divide and resistance to change are particularly pertinent. In regions with limited internet connectivity, inadequate digital literacy, or insufficient infrastructure, the benefits of SWES may not be fully realized, potentially perpetuating inequalities in service delivery. Additionally, resistance to change, as discussed by Abu-Shanab et al. (2019), can significantly impact the adoption and effectiveness of SWES. Employees who are accustomed to traditional workflows may be reluctant to embrace new technologies, fearing job loss or discomfort with altering established practices. Without adequate change management strategies to address these concerns, the implementation of SWES may encounter significant obstacles, leading to suboptimal outcomes and neutral or mixed perceptions among users

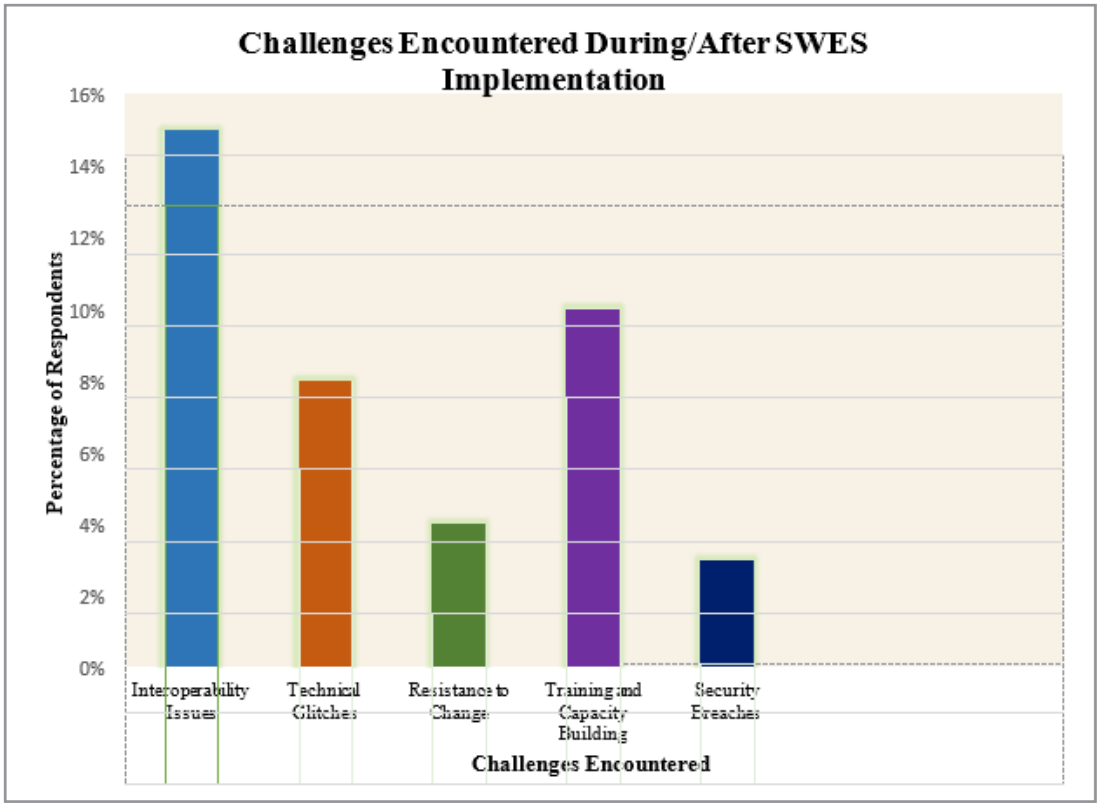

Figure 5: The Bar chart illustrates the challenges encountered by the Ministry of Housing Guyana during and/or after the implementation of the SWES. Respondents were allowed to select multiple options. Interoperability Issues was the most frequently encountered challenge, with approximately 15% of respondents identifying this as a significant problem. Training and Capacity Building was the second most reported challenge, as indicated by 10% of respondents. Technical Glitches was reported by approximately 8% of respondents. Resistance to Change was identified by 4% of respondents, while Security Breaches accounted for 3% of respondents.

The challenges reported by the Ministry reflect broader issues commonly associated with the implementation of SWES globally. The most frequently reported challenge, interoperability issues, aligns with the existing literature that highlights the difficulty of integrating new digital platforms like SWES with legacy systems. This challenge highlights the tension between the push for modernization, a key NPM principle and the reality of existing infrastructures that may not be fully compatible with new technologies. The difficulty in achieving seamless interoperability could suggest that the planning phase did not adequately address the existing technological infrastructure, which is crucial for ensuring that the SWES could deliver on its promise of improved efficiency

Another significant challenge is the need for training and capacity building, underscoring the importance of human capital in the success of the SWES. Implementing such a system requires more than just technological upgrades; it necessitates comprehensive training programs to equip staff with the necessary skills to operate the new system effectively. The Ministry of Housing's experience suggests that insufficient investment in training may have left staff unprepared to manage the SWES, thus hampering its effectiveness. This underinvestment in human capital is contrary to NPM's advocacy for a well-trained and adaptable workforce as a critical component of public sector reform.

Technical glitches present another significant challenge, reflecting the inherent risks of relying heavily on digital systems. While the SWES is designed to streamline processes, overdependence on technology can lead to disruptions in service delivery and undermine the benefits of digital transformation. The presence of technical glitches may indicate that the SWES at the Ministry was either not fully tested before its launch or that the existing IT infrastructure is insufficient to support the system's demands. This could be interpreted as a failure in the project management aspect of the NPM framework, where thorough testing and risk assessment are essential to prevent such issues.

Resistance to change is another well-documented challenge in the literature. The introduction of the SWES often requires significant shifts in established workflows and mindsets, which can lead to resistance from employees. This resistance may stem from fear of job loss or discomfort with new technologies, as noted by Abu-Shanab et al. (2019). The relatively low incidence of resistance to change is encouraging but suggests that ongoing efforts to engage and support staff will be crucial in ensuring the system's long-term success. Security breaches raise concerns about the robustness of the SWES in protecting sensitive information at the Ministry of Housing in Guyana. The low percentage of respondents reporting security issues may indicate that the system has not yet experienced widespread breaches, but the potential risks should not be overlooked. As the system matures, continuous monitoring and upgrading of security protocols will be essential to maintaining trust in the SWES.

Figure 6: The Bubble graph illustrates the Ministry of Housing's approach to addressing short- term SWES related challenges or concerns. Continuous training and development was selected by 15 respondents followed by capacity building (human resources) with 10 respondents. Technical Support System(s) and Stakeholder Consultations were chosen by 8 and 4 respondents respectively, while resource allocation was selected by 3 respondents.

The prominence of continuous training and development underscores the critical role of human capital in navigating the complexities of new system implementations. Continuous training ensures that staff remains up-to-date with the latest technological advancements and system updates, reducing the likelihood of errors and improving overall system efficiency. The literature supports this emphasis, arguing that capacity building is essential for the successful adoption of new technologies like SWES. Moreover, continuous training and development initiatives are pivotal in adapting to the rapidly evolving digital landscape, where technology and processes are constantly updated. However, continuous training and development sessions require consistent investment in both time and resources, which can strain the Ministry's budget and workforce availability. Moreover, if not tailored to the specific needs of different user groups, training programs may result in superficial understanding rather than deep, functional knowledge of the SWES.

The next most selected strategy, capacity building (human resources) further highlights the importance of equipping staff with the necessary skills and knowledge to manage the SWES effectively. Capacity building is not just about technical skills but also includes developing a deeper understanding of how the new system integrates with existing workflows. Comprehensive capacity-building programs are necessary to ensure that all stakeholders can effectively contribute to and benefit from new digital initiatives. However, if existing bureaucratic structures are resistant to change, even the most well-trained staff may struggle to apply their new skills effectively. This indicates that while capacity building is essential, it must be accompanied by efforts to foster a culture of innovation and adaptability within the Ministry.

The selection of technical support systems underscores the recognition that technological challenges are an inevitable part of any digital transformation, as emphasized by Huyer and Hafkin (2017). Technical support is essential for addressing immediate issues that may arise, ensuring that the SWES remains functional and effective [9]. The literature highlights the importance of robust technical support mechanisms to prevent disruptions and maintain system reliability. The Ministry's emphasis on this area reflects an understanding that, despite thorough training and preparation, technical issues are unavoidable and must be resolved promptly to ensure the system's smooth operation. However, the literature also cautions that over-reliance on technical support can lead to user complacency, where individuals become dependent on external assistance rather than developing their own problem-solving abilities. To mitigate this risk, technical support should be combined with training programs that empower users to independently troubleshoot basic issues.

While this approach was less frequently selected, the recognition of stakeholder consultations indicates an awareness of the importance of engaging with those affected by the SWES implementation. Its inclusion in the Ministry's strategy highlights a commitment to ensuring that the system meets the needs of its users. The literature suggests that stakeholder engagement is critical in the success of digital initiatives. Engaging stakeholders in consultations can help identify potential issues early on and foster a sense of ownership among those who will be using the system. Resource allocation, although selected by only a few respondents, is a critical component of any digital transformation initiative. The literature underscores the importance of ensuring that sufficient financial, human, and technological resources are available to support the implementation and ongoing

operation of digital systems. Inadequate resource allocation can lead to system failures, delays in service delivery, and ultimately, the failure of the entire project. Public sector organizations often face budgetary constraints that force them to make difficult trade-offs. Therefore, the Ministry must carefully assess its resource needs and prioritize accordingly to ensure the successful implementation of the SWES.

Conclusion

The implementation of the SWES within the Ministry of Housing in Guyana represents a critical advancement in the modernization of public sector operations, aligning closely with the principles of New Public Management (NPM). The adoption of SWES is not just a technological upgrade but a strategic response to the inefficiencies and challenges that have long plagued traditional bureaucratic processes. This system's deployment signals a shift towards more efficient, transparent, and service-oriented governance, particularly in the context of land distribution, a sector that has historically been burdened by delays, inaccuracies, and administrative bottlenecks.

One of the most significant impacts of SWES has been the improvement in administrative efficiency. Before the implementation of the system, many processes within the Ministry were manually executed, leading to extended processing times and increased potential for human error. The digitization of these processes through SWES has markedly reduced the time required to complete housing-related services. This acceleration is particularly vital in a rapidly growing sector like housing, where timely decision-making and action can significantly influence development outcomes. Additionally, the system has enabled more accurate data management, reducing redundancies and ensuring that information is consistently up-to-date across all departments.

Another critical benefit of SWES is the enhancement of transparency. In the past, opaque procedures and a lack of accountability were significant challenges within the Ministry, often leading to public distrust and dissatisfaction. With the implementation of SWES, the processes have become more transparent, as stakeholders can now track the progress of their applications and access information about the steps involved. This increased transparency not only fosters greater public trust but also reduces opportunities for corrupt practices, as all actions taken within the system are logged and can be audited if necessary.

The system has also improved coordination among the various departments within the Ministry. Prior to SWES, the siloed nature of departmental operations often led to communication breakdowns and inefficiencies. For example, delays in information sharing between the Land Registry and the Planning Department could hold up entire projects. SWES has created a more integrated operational environment, where information is readily accessible to all relevant parties, facilitating better coordination and collaboration. This integration is crucial in a ministry where inter-departmental cooperation is necessary for the successful execution of projects.

However, the research also highlights several challenges that have emerged during the implementation of SWES. One of the most pressing issues is the technological constraints that the Ministry faces. The system's reliability is a significant concern; frequent downtimes and slow performance can frustrate users and undermine the benefits that SWES is supposed to provide. These technological issues are often exacerbated by the lack of adequate infrastructure to support the system. Insufficient server capacity or outdated hardware can cause delays in processing and retrieval of information, leading to operational inefficiencies.

Human resource constraints are another major challenge. While SWES has the potential to greatly enhance the Ministry's operations, its success largely depends on the capacity of the staff to effectively utilize the system. Unfortunately, the research indicates that there has been insufficient training provided to staff, which has resulted in a steep learning curve and suboptimal use of the system's features. Many employees struggle to adapt to the new system, and without adequate support, this can lead to resistance to change and reliance on old, less efficient methods. Furthermore, the lack of a dedicated support team means that when issues arise, they are not addressed promptly, leading to frustration and decreased productivity.

The challenges identified suggest that while the implementation of SWES has been a step in the right direction, there is still much work to be done to ensure its long-term success and sustainability. Moreover, while the initial implementation phase has focused primarily on land distribution, the potential for SWES to be expanded to other areas of the Ministry's operations and possibly other government agencies remains largely untapped. The success of such expansion will depend on careful planning, resource allocation, and continuous improvement efforts to address any emerging challenges. Careful consideration must be given to the need for additional training, support, and infrastructure upgrades.

Recommendations

While the implementation of SWES has brought about substantial improvements in the Ministry's operations, realizing its full potential requires a concerted effort to overcome the existing challenges. To fully capitalize on the benefits of the SWES and ensure its long-term sustainability, several strategic actions are recommended:

1. Comprehensive Staff Training: The Ministry should prioritize extensive training programs for all staff members to build their capacity in using the SWES. This training should not only focus on technical skills but also address change management to overcome resistance and foster a culture of digital literacy.
2. Dedicated Support Team: Establishing a specialized support team within the Ministry is crucial to provide ongoing assistance, troubleshoot issues, and ensure smooth operation of the system. This team should be equipped to handle both technical and user-related challenges.
3. Strengthening Technological Infrastructure: The government must invest in upgrading the technological infrastructure supporting SWES. This includes regular software updates, expanding data storage capabilities, and ensuring that the system is scalable to accommodate future growth.
4. Regular Monitoring and Evaluation: Implementing a framework for continuous monitoring through key performance indicators (KPIs) and regular audits will help track the system's performance, identify areas for improvement, and ensure that it continues to meet the Ministry's objectives.

5. Strategic Expansion: Given the success of SWES in land distribution, the government should develop a strategic plan for expanding the system's applications to other areas of the Ministry's operations and potentially to other government agencies. This expansion should be guided by a clear vision and supported by the necessary resources to ensure seamless integration.

By addressing these recommendations, the Ministry of Housing can overcome existing challenges and further enhance the effectiveness of the Single Window Electronic System, ultimately contributing to more efficient and responsive public service delivery in Guyana.

Instructions: Please answer all questions as accurately as possible by ticking the boxes provided, and/or writing in the dedicated spaces.
Confidentiality: All responses will be kept confidential and used solely for the purposes of this research project. Individual responses will not be disclosed or shared outside of the research context.
Time Required: Completing this questionnaire will take approximately 10-15 minutes.
How to Submit: Please complete the questionnaire by August 21, 2024. The researcher will retrieve the completed questionnaires on the mutually agreed date August 22, 2024, at 4:00 pm.
Difficulties: For any questions or issues, contact the researcher via the e-mail or telephone number provided.

Thank you for taking the time to participate in this important research. Your feedback is invaluable and will play a significant role in enhancing our understanding of the SWES and contribute to the formulation of recommendations for its improvement.

Declaration

I hereby declare that this EM 22 ER2 Research Project is my original work except for quotations, statements, explanations and summaries, for which I have already mentioned their sources. No portion of this Research Project has been submitted in support of any application for any other degree or qualification of this or any other university or institute of learning.

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