Asian Journal of Accounting and Governance 24(2025) ISSN2180-3838
e-ISSN2716-6060
(http://dx.doi.org/10.17576/AJAG-2025-24-7)

Interorganisational Collaboration Workflow Challenges and the Potential of Technology Integration for E-Payment Process Improvement: A Case Study of a Malaysian Public Sector Agency

KHAIRIL FAIZAL KHAIRI & NAHARUDIN SAADAN

ABSTRACT

The Internet revolution has transformed payment systems globally, accelerating the adoption of electronic payments and advancing the agenda of a cashless society. In Malaysia, this shift has gained momentum in both public and private sectors, with Bank Negara Malaysia reporting over RM551 billion in electronic payment transactions in 2024. However, persistent challenges in interorganisational collaboration workflows among government agencies in Malaysia, acquiring banks, and accounting offic's continue to hinder post-collection efficiency. The Auditor General's 2022 report highlighted over RM6 billion in delayed fund transfers, leading to late revenue recognition and operational inefficiency. Employing a qualitative case study approach, this study explores the challenges of interorganisational collaboration workflows within the Transport License Department's electronic payment process. Four major themes emerged: non-integrated operations, operational inefficiencies, service level discrepancies, and communication barriers. Four human-centred themes such as brain drain, individual effort, personal traits, and the need for appreciation revealed the socio-organisational dimensions influencing workflow performance. The study contributes to the body of knowledge by extending the interorganisational collaboration framework with a fifth dimension: human attributes. Practically, it advocates for integrated digital systems, service level agreement enforcement mechanisms, and institutional recognition strategies. At the same time, the findings are based on a single case and offer a valuable reference for the broader public sector agencies. Future research should explore the suitability of technology, particularly blockchain technology, artificial intelligence, cloud computing and big data, in strengthening interorganisational workflows. Overall, this study offers a holistic view of structural and human attributes essential for optimising public sector e-payment systems.

Keywords: Electronic payment; interorganisational collaboration workflow; Malaysian public sector; qualitative case study

INTRODUCTION

Payment systems are a medium of interaction that facilitate the exchange process between customer-to-business, business-to-business, government-to-business, and government-to-government transactions (Md Rashid & Abdul Razak 2023). Since ancient periods, the payment system has evolved from bartering to minted coins, then to paper money and plastic money, and today, the trend is dominated by digital currency (Aldaas 2021). The emergence of new technologies such as big data, artificial intelligence, machine learning, cloud computing, and blockchain technology has expedited the digital transformation in payment systems. For instance, big data is used for fraud detection, artificial intelligence and machine learning power chatbots for customer service, cloud computing enables mobile payments, and blockchain technology secures cryptocurrency transactions (Fong et al. 2021). In Malaysia, the government actively promotes and advances a cashless society. According to a report by The *The Star* (2023), Malaysia is projected to achieve this transformation by 2030.

TABLE 1. Payment instrument statistic from Bank Negara in 2024

Year	Transaction in Million							
	Credit Card		Charge Card		Debit Card		E-Money	
	Vol.	RM	Vol.	RM	Vol.	RM	Vol.	RM
2020	489.3	126,995.40	3.3	10,252.60	497.9	59,502.30	1827.7	27,695.30
2021	556.0	38,179.60	3.4	10,934.90	736.8	78,212.00	2108.0	49,800.20
2022	715.4	77,637.90	5.4	14,025.40	1200.4	118,820.20	3186.7	71,183.20
2023	825.2	199,889.00	6.0	15,966.40	1598.5	138,178.90	4023.3	106,658.10
2024	928.1	216,239.40	7.2	16,487.79	1989.3	155,224.18	5024.4	164,085.53

**Source:* Central Bank of Malaysia (2024)

To facilitate this transformation, the Malaysian government has strategically developed policies such as the National 4IR Policy and the Malaysian Digital Economy Blueprint to establish and enable a cashless ecosystem through digital empowerment (Economic Planning Unit 2021). These initiatives, coordinated by government clusters under the Digital Economy Council and the country's 4IR framework, are leading in driving digitalisation within the public sector (Business Today 2021). In 2024, Bank Negara Malaysia reported that e-payment transactions had surpassed RM551 billion (see TABLE 1). This trend reflects the increasing adoption and widespread acceptance of e-payment channels among Malaysian citizens. This trend is also evident within the Federal Government of Malaysia (FGOM).

FIGURE 1 presents revenue collection via e-payment from 2021 to 2023, as the Accountant General's Department of Malaysia (AGD) reported. In 2021, the FGOM achieved an impressive RM76.83 billion in collections through e-payment platforms. Although collections declined slightly to RM66.45 billion in 2022, they remained stable in 2023 at RM66.60 billion, demonstrating the resilience and growing trend of e-payment collections within the Malaysian public sector.

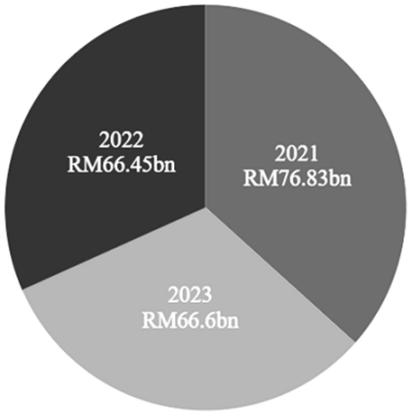

FIGURE 1. E-payment collection in the Federal Government of Malaysia from year 2021 – 2023

Nevertheless, despite the benefits of e-payment systems, significant challenges persist within the interorganisational collaboration (IOC) workflows at post-collection stages. The interaction between multiple entities, including acquiring banks and accounting offices, introduces operational complexities, often hindering the seamless execution of transactions and overall workflow (Vedapradha & Ravi 2023). Fragmented operating systems pose considerable obstacles to the IOC workflows (Prewett et al. 2020). The lack of process integration among multiple parties impedes operational efficiency and affects value creation to the organisation (Harakeh et al. 2024). In their study, Kang et al. (2022) argue that fragmented operation systems necessitate manual tasks for the reconciliation process, resulting in time-consuming and less productive workflows in the IOC. Hence, these challenges lead to delays and inefficiencies, as real-time access to information from counterparties is obstructed.

In general, the e-payment process (see FIGURE 2) at the FGOM begins when individuals or businesses transact via e-payment channels, such as debit and credit cards, mobile banking, and internet banking. Upon completion, the acquiring bank manages the settlement process, facilitating the transfer of collected funds from the payer to the appropriate government agency. Based on the operational guidelines in the *Surat Pekeliling Akauntan Negara Malaysia Bilangan 3 Tahun 2019*, the acquiring bank must transfer the collected funds to the small treasury receipt account and the main revenue account within one working day. Despite the structured and systematic operational instructions, the operational challenges continue to affect the IOC workflows in the e-payment process at the FGOM agency.

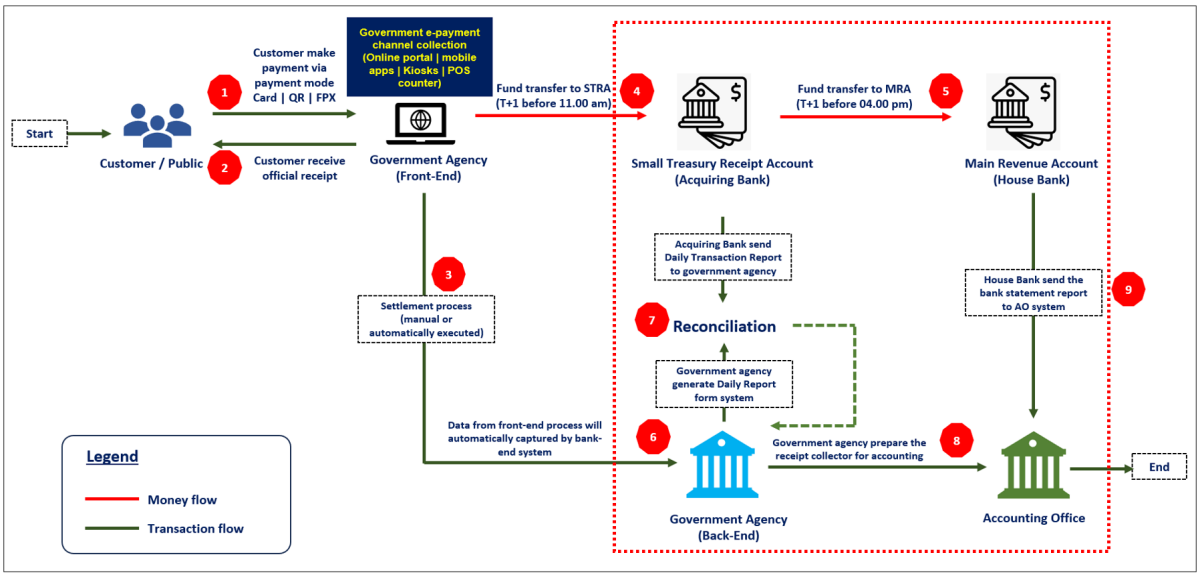

FIGURE 2. E-payment process flow at the Federal Government of Malaysia

Several reports have documented significant findings within the e-payment collection at the FGOM agency. In 2022, the Auditor General of Malaysia reported the discrepancy in the service provisions of acquiring banks and collection agents

(Jabatan Audit Negara Malaysia 2022). The report disclosed the failure of the collection agent and the acquiring bank to remit collected money on time. The Transport License Department (TLD), one of the FGOM agencies, has been highlighted in the report. TABLE 2 depicts the findings on the late remittance of revenue for TLD from 2021 to 2022. The amount shows RM38.9 million in late fund remittance, which incurred RM1.56 million penalty charges to the collection agent and acquiring bank.

TABLE 2. Late revenue remittance for the Transport License Department

Year	Amount (RM) in million	Delay in days	Penalty (RM) in million
2021	10.52	01 to 08	0.42
2022	28.42	06 to 12	1.14
Total	38.94		1.56

**Source:* Jabatan Audit Negara Malaysia (2022)

Previous studies have highlighted significant challenges within IOC workflows across various domains, including supply chain management, banking, and trade financing. Initially, the literature mainly focused on the relational dimensions of IOC, emphasising formal contracts, strategic alignment, and network governance (Dekker 2004; Ring & van de Ven 1994). Furthermore, these dimensions are often treated as static constructs, rather than being examined as dynamic, situationally contingent mechanisms (Das & Teng 1998; Gulati et al. 2012). In their study, Kostić and Sedej (2022) extend the interorganisational theoretical lens in the core dimensions of collaboration, trust, control, and information exchange in the potential of blockchain technology integration. For example, trust is frequently positioned as a precondition for collaboration, with insufficient attention to its development as an outcome of the performance of IOC workflows (Shivaraj 2024). Control mechanisms, particularly in service level agreements (SLA), are typically assumed to be effective by their mere existence, with little scrutiny of their actual enforceability or contextual responsiveness (Atiyah et al. 2023; Upadhyay et al. 2021). Similarly, information exchange is often narrowly framed in terms of system integration (Caglio & Ditillo 2012), but less attention is given to the impact of decentralised communication protocols, which lead to tension on organisational relationships (Centobelli et al. 2022; Karajovic et al. 2019).

However, this theoretical framing overlooks the complexity of a high-volume, highly regulated domain such as the e-payment process at a public sector agency. As a result, a notable gap persists in exploring how these interorganisational collaboration dimensions interact with the operational realities of the digitally mediated public sector e-payment environment. Therefore, this study explores how the dimensions of interorganisational collaboration such as collaboration, trust, control, and information exchange that manifest the challenges of IOC workflows within the e-payment process at the public sector agency. It also seeks to develop an empirically grounded and process-sensitive extension of the interorganisational collaboration framework that reflects the unique operational dynamics of the public sector context. The significance of this study lies in its contribution to the theoretical extension of interorganisational collaboration, while also providing a foundational basis for public sector agencies to explore the suitability of technology integration in addressing IOC workflows challenges and improving inter-entity coordination in the e-payment process.

LITERATURE REVIEW

Public service delivery is complex and interdependent, necessitating robust coordination across organisations. Traditional governance, centred on market or hierarchical mechanisms, cannot capture dynamic interorganisational collaboration such as strategic alliances and partnerships (Banerjee & Chandani 2022; Ganeshu et al. 2024). This collaboration, understood as interorganisational collaboration, reflects structured efforts to coordinate operational processes across organisational boundaries. In their study, Kostić and Sedej (2022) provide a comprehensive framework for understanding interorganisational collaboration through four dimensions: collaboration, trust, control, and information exchange. FIGURE 3 shows a framework offers critical insights into exploring the challenges of IOC workflows in the e-payment process at a public sector agency in Malaysia.

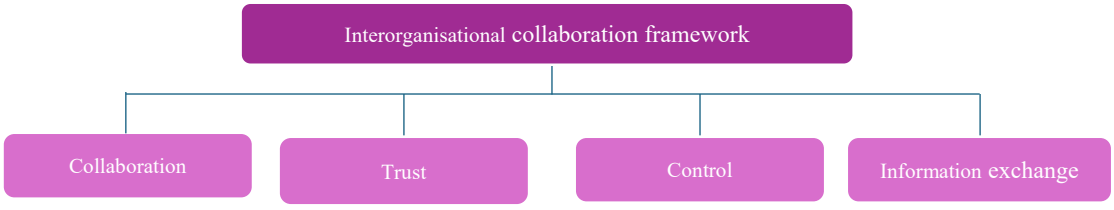

FIGURE 3. Interorganisational collaboration framework adopted from Kostić and Sedej (2022)

COLLABORATION

Collaboration is the deliberate alignment of activities, resources, and goals between autonomous organisations to achieve shared outcomes (Adomako & Nguyen 2023). The application is beyond transactional cooperation, including joint

problem-solving and synchronised interdependence (Kshetri 2023). In the public sector context, collaboration often spans ministries, agencies, and private entities (Gaur 2020), yet its implementation is hindered by fragmented systems that obstruct IOC workflows' coordination (Reindersma et al. 2022). Furthermore, Hubenova et al. (2024) and Prewett et al. (2020) argue that siloed operations result in operational duplication, communication failures, and inefficiencies. Judi and Mustaffa (2023) mention that limited access to inter-entity data disrupts the IOC workflows process. In the same vein, Kang et al. (2022) illustrate the administrative burden of non-integrated systems, including repeated data entry and manual reconciliation in the construction industry in Hong Kong.

Nevertheless, empirical studies on collaboration within IOC workflows have predominantly focused on commercial and industrial contexts, with limited application in the public sector domain. In public sector e-payment operations, collaboration among government agencies, acquiring banks, and accounting offices is not optional but essential. However, siloed operations and non-integrated platforms often render collaboration inefficient. This study addresses the gap by re-examining the collaboration dimension of IOC workflows as a workflow-level phenomenon shaped by daily operational realities in the e-payment process.

TRUST

Trust underpins effective interorganisational collaboration, defined as the willingness to rely on others' uncertain circumstances, based on perceived fairness, consistency, and mutual benefit (Kowalski et al. 2021). Trust reduces the need for excessive oversight and toughens enhances coordination (Shivaraj 2024). It is vital when interdependent tasks and information asymmetry prevail (Sandner et al. 2020). However, Trust may be compromised due to fragmented operation systems in interorganisational collaboration that require additional tasks such as tick monitoring and reconciliation (Vedapradha & Ravi 2023). In addition, Handoko and Lantu (2021) argues that siloes operation and information asymmetry contribute partner reliability. In the finance supply chain, manual data reconciliation tasks lead to additional burdens, increase errors and erode stakeholder confidence (Rijanto 2021).

In the public sector e-payment process, the absence of unified monitoring tools, reliance on manual reconciliation, and late fund transfer have generated mistrust among parties. Dixit et al. (2024) and Gomaa et al. (2023) contend that the lack of transparency and non-integrated systems degrade mutual Trust. However, past literature often views Trust as a relational virtue but less attention on discussing real operational occasion (Muller et al. 2021), which therefore, this study reframes Trust as an outcome of systemic reliability in the operational view that earned through consistent execution and data sharing time frame, and transparent communication and extends interorganisational theory by highlighting Trust’s dependency on performance in real-time, digitally mediated workflows.

CONTROL

Control is crucial for coordinating actions, enforcing standards, and managing risk in interorganisational collaboration (Jovanovic et al. 2022). Its implementation can include contracts, operating procedures, and monitoring tools (Anderson & Dekker 2014; Dekker 2004). Rather than undermining trust, control complements it by ensuring predictability (Kostić & Sedej 2022). In the digital realm, SLA play a pivotal role as an official control mechanism that codifies responsibilities, timelines, and penalties (Ubani & Emenike 2023; Upadhyay et al. 2021). In a digital environment, SLA terms can be embedded in computerised code to govern structured and standard operational guidelines (Nguyen et al. 2023).

In the Malaysian public sector, the SLA terms upon fund transfer guideline is mentioned in the *Surat Pekeliling Akauntan Negara Malaysia Bilangan 3 Tahun 2019* and must be included in the agreement. Nonetheless, SLA enforcement often fails in practice. Based on the Auditor General’s reports, the reports reveal breaches involving acquiring banks and collection agents, such as failing to meet fund transfer guidelines. These issues stem from a lack of real-time monitoring, escalation protocols, and adaptive enforcement mechanisms (Engel et al. 2022; Kumar & Kumar 2021). The past literature tends to assume that a formal contract is a sufficient control mechanism (Yaseen 2023), yet overlooks examining its challenges in real practice, particularly in interorganisational collaboration. Hence, this study advances the concept of control as a continuous governance process, requiring technological integration and institutional responsiveness to manage evolving IOC workflows effectively.

INFORMATION EXCHANGE

Information exchange is defined as the structured flow of data and communication between agencies that provide a foundational element of interorganisational collaboration (Caglio & Ditillo 2012; Kostić & Sedej 2022). It enables coordination, adaptability, and transparency. However, outdated communication methods, incompatible systems, and institutional misalignment frequently disrupt this exchange (Kowalski et al. 2021; Tsai et al. 2020). In addition, Centobelli et al. (2022) and Karajovic et al. (2019) demonstrate how fragmented operations hinder effective communication, which delays responses and obscures accountability. Although digital platforms such as phone, email and other mobile apps can expedite the transmission of information, their effectiveness is still limited due to fragmented and manual operations. However, the past literature typically frames information exchange as a technical issue of system integration, overlooking

institutional coordination and governance (Lazo & Casu 2017). This study expands the concept to include formal communication protocols, standardised data practices, and real-time visibility, essential for managing digital public finance ecosystems.

In conclusion, this study addresses a notable gap by shifting the focus of interorganisational collaboration from predominantly commercial domains to workflow-level phenomena within the public sector, specifically in e-payment processes. While existing literature extensively discusses interorganisational collaboration through dimensions such as trust, control, collaboration, and information exchange, these constructs are often treated as static and abstract, with limited attention to how they manifest in the daily operations of IOC workflows, particularly in public sector e-payment systems. This study reframes IOC workflows as dynamic, performance-dependent constructs by grounding these dimensions in the operational realities of Malaysian public sector agencies. This theoretical repositioning underscores the need for more context-sensitive frameworks to evaluate and improve interorganisational collaboration. Furthermore, the findings highlight the imperative for strategic technology integration to address fragmentation, enhance transparency, and automate key aspects of the post-e-payment collection process. As such, this study advances theoretical discourse and provides a practical foundation for future innovations in digital public finance.

RESEARCH METHODOLOGY

This research employs a qualitative case study methodology, well-suited for exploring complex real-world phenomena such as IOC workflows in the e-payment processes of a Malaysian public sector agency (Creswell & Creswell 2018; Yin 2016). The qualitative case study approach allows for in-depth exploration into IOC workflows challenges within the e-payment process at the TLD. This approach offers context-specific insights into how organisational structures and processes interact, particularly in an operational and institutionally unique environment (Merriam 2013; Yin 2018). It enables the identification of meaningful patterns and themes, contributing to both theoretical understanding and practical improvements in public sector e-payment systems.

DATA COLLECTION

Data collection for this study was conducted through semi-structured interview questions through face-to-face and online sessions to accommodate participants' preferences (Heiselberg & Stępińska 2023; Saarijärvi & Bratt 2021). The combination of structured inquiry and contextual flexibility ensured the collection of nuanced, relevant data critical for understanding the phenomena of the study (Brinkmann & Kvale 2014; Creswell 2014). This approach was particularly suitable as the exploratory study focuses on the complexities of IOC workflows in e-payment processes at TLD. This methodological design improved participation rates and enriched the dataset by capturing a broad range of operational contexts from the participant experience.

PARTICIPANT SELECTION

This study involved four purposively selected participants from the TLD who were directly involved in daily operations in e-payment collection processes, each representing a distinct operational cluster from a large, medium, small, and headquarter which derived from annual e-payment collection volumes. While the number of participants may appear modest, it aligns with qualitative studies that suggest an adequate range of three to twelve participants for interpretive case studies (Adu & Miles 2024; Guest et al. 2006). Qualitative research does not prescribe a predetermined number of participants; instead, it emphasises information richness, relevance, and depth over quantity (Patton 2002). The credibility of qualitative data is thus determined by the ability of the sample to provide meaningful insights, not statistical generalisability. Malterud et al. (2016) and Morrow (2005) further contend that adequacy must be evaluated based on the study's aim, sample specificity, theoretical grounding, and data variability. In this study, saturation was reached after four interviews, with no new insights emerging, indicating sufficient in-depth exploration to meet the study's objectives. Accordingly, the sample size was deemed adequate to capture multiple perspectives and uncover the challenges of IOC workflows in TLD's e-payment processes.

DATA ANALYSIS

Thematic analysis was used to analyse the interview data, providing a structured yet flexible approach to identifying and interpreting patterns within qualitative responses (Braun & Clarke 2006). Interviews were conducted in *Bahasa Melayu*, the participants' mother tongue. The conversation was transcribed and then translated into English to ensure consistency in analysis. Member checking was conducted to validate transcriptions, while peer debriefing reviewed the coding and proposed themes to enhance the trustworthiness. The six-phase process by Braun and Clarke (2006) guided the analysis, from familiarisation and coding to theme refinement and reporting. ATLAS.ti software was employed to organise and code the data analysis, supporting systematic theme development and enhancing analytical rigour (Zairul 2023). This approach enabled a nuanced understanding of the challenges and dynamics within IOC workflows in TLD's e-payment processes.

The Thematic Analysis Matrix (see Appendix 1), as proposed by Zairul (2025), presents the summarisation of theme development.

THE SUBJECT OF CASE STUDY

The Transport License Department was purposefully selected as the single case study due to its critical role in managing the highest volume of e-payment transactions within the Federal Government of Malaysia (Yin 2018). As a federal agency responsible for transport licensing and enforcement, TLD operates a complex, decentralised revenue collection network across 14 state offices, 68 branches, 22 Urban Transformation Centres, 201 kiosk machines, and 37 mobile van counters. Its commitment to digital transformation, as outlined in the Digital Plan Blueprint 2021–2025, and its strategic goal of becoming a fully digital agency by 2025 further highlight its relevance in this study context. The scale, diversity, and intensity of its operations offer an ideal context for exploring the IOC workflows' challenges in the e-payment process.

RESULT AND FINDINGS

The research findings centre on four key themes: non-integrated operations, operational deficiencies, SLA discrepancies, and communication challenges within the IOC workflows of TLD's e-payment process. These interrelated themes underscore inefficiencies that hinder streamlined, accurate transactions and compromise operational effectiveness and accountability. The summary of theme development is presented in the Thematic Analysis Diagram (see Appendix 2)

NON-INTEGRATED OPERATION IN IOC WORKFLOWS IN E-PAYMENT PROCESS

TLD operates within a complex IOC workflows characterised by non-integrated operational systems. The findings highlight how siloed structures and workflow complexity contribute to inefficiencies and increase the risk of errors in the e-payment process. A key challenge is the fragmentation of systems, forcing personnel to cross-check data across multiple platforms manually. Participant 1 noted that this includes verifying information across different payment channels and modes.

"…every day at 7.30 am, I will print this report (TLD system), and compare it with this report Bank Report), are they the same or not? If they're not same, there's something wrong. Then, I have to check again, whether Kiosk machine, Mobile, or Counter is not the same. Besides, I have to confirm that this amount is mixed with other transaction from finance unit…" (P1-TLD1-0:13:20).

These practices underscore the complexity of TLD's workflows, where operational intricacies intersect with technological limitations. Repeated reconciliation tasks are labour-intensive and prone to discrepancies that disrupt subsequent processes. Due to siloed operations, the Revenue Unit must manually verify system integration between TLD's platform and the accounting office system within specific time windows where a process that, as Participant 2 explained, requires ongoing manual oversight.

"…We will also receive the relevant supporting documents. After verification, partial of transaction receipts from the TLD system will be posted to the accounting office system. Usually, this operation integration occurs at 10:30 PM. The next morning, we will check the cash book in accounting office system. If there is a difference in the amount, we will find manually the transaction does not match…" (P2-TLD-0:05:01)

Although receipt information integration occurs automatically, TLD officers must manually verify reports the following working day. This manual task limits flexibility, consumes time, and contributes to revenue recording delays. The process complexity, marked by multiple verification steps for each transaction, also demands continuous and meticulous monitoring. The need to reconcile reports from the acquiring bank portal, the TLD system, and the accounting office system results in redundant work. As Participant 4 noted, this duplication exacerbates the operational burden.

"…There are several reports that we will use: - Daily Counter Report, kiosk machine report, merchant report, bank portal report. For the bank portal report, we will use it reference as the bank slip number for preparing the collection statement…" (P4- TLD-0:07:26)

One recurring issue is the inconsistent records. This is due to human error, particularly when a front-line officer fails to cancel void transactions in the TLD system and Electronic Data Capture machines. Participant 2 highlighted this challenge, stating:

"... for instance, if the counter staff cancels a receipt in the TLD system but does not perform void the transaction on the EDC machine, there will be an excess in the bank report in the next day. Sometimes, the counter staff manually cancels but does not perform the void process on the EDC machine..." (P2- TLD-0:13:04)

Challenges arising from non-integrated operations in the IOC workflows are multifaceted. Siloed systems and complex workflows lead to inefficiencies, necessitating manual reconciliation that escalates the risk of errors and delays. This not only strains resources but also increases the potential for financial penalties. The workflow's complexity further amplifies the likelihood of human error, demanding repeated verification and reducing overall efficiency.

OPERATIONAL DEFICIENCY ON IOC WORKFLOWS IN E-PAYMENT PROCESS

The data integrity is compromised due to mismatches in transaction records between TLD system, the acquiring bank system and the accounting office system. The data mismatch occurs when the TLD and the acquiring bank operations have different cut-off times. Participant 3 mentioned:

"...there are instances where transactions recorded are not the same between Bank Portal and TLD System. This mismatch occurs when collections occur from 10:30PM onwards. Those amounts will not be included on the same day; they will be posted in the next day. This is due to early bank's cut-off time…" (P3- TLD-0:05:56)

The bank's cut-off time excludes these late transactions from being recorded on the same day, resulting in inconsistency in day-to-day reporting. This lack of data synchronisation impedes data accuracy on daily transaction records. It is creating continuous challenges for TLD's accounting records. However, Participant 4 mentioned that he is not facing a significant issue with data integrity, although it occasionally happens because the acquiring bank officer often quickly responds to resolve the issues. Participant 4 states:

"...So far, our problems are all okay (resolved). However, with the acquiring bank, if they can provide solutions faster, that would be better…. at the end of the month, we are pressured to expedite the accounting process even though the issues are unsettled, so we have to find our own solutions to solve these issues..."(P4-TLD-0:26:12)

Delays in these updates are attributed to differences in timing protocols across regions and states, complicating data synchronisation. These data integrity issues and the manual interventions required to verify the transaction accuracy are not isolated. Reliance on manual processes for managing data further disrupts operational efficiency, illustrating a weakness in IOC workflows. The manual process will disrupt and prolong the reconciliation process for TLD. This statement supported by Participant 3 quotation:

"...The challenge is when there are system errors, even minor ones, they can cause calculation errors. We use Ms Excel to compare transactions in TLD System and the Bank Portal. The transactions involved are not trivial; they can amount to millions of ringgits. So, if there is even a slight change in the TLD system, the impact can be severe, involving 2-3 days. That's why we always pray that no errors occur in the TLD system…" (P3- TLD-0:08:25)

The operational deficiencies in TLD's e-payment IOC workflows reflect operational challenges to data integrity and required manual processes and human effort. The persistent discrepancies in data integrity, combined with an over-reliance on human intervention, contribute to delays and inefficiency in IOC workflows.

RISK EXPOSURE OF SLA DISCREPANCIES IN IOC WORKFLOWS IN E-PAYMENT PROCESS

The findings reveal significant risk exposure from non-compliance with SLA within the IOC workflows. Although operational guidelines mandate fund transfers by the acquiring bank within one working day (T+1), enforcement remains absent, with penalties applicable for delays. Participant 1 and Participant 2 noted that while TLD headquarters had communicated the penalty provisions to state offices, they were never enforced due to a perceived lack of necessity

".... Yes, we are aware of that; during the last meeting, TLD HQ informed all state offices about these penalty charges. We didn't see it as an issue…" (P2- TLD-0:30:44)

"...we never execute the penalty because maybe they didn't see that the delays were happening…" (P1- TLD1-0:31:16)

As acknowledged by TLD headquarters, one underlying reason for the lack of enforcement is the language barrier where the contract is drafted in English, making it difficult for some operational staff to fully comprehend and enforce. Although the agreement was shared with regional and branch offices, the responsibility to interpret and uphold its terms

has not been fully realised. Participant 3 noted that many state and branch officers struggle to understand the contractual provisions.

"...I understand why they haven't enforced those penalties because they have no guidance to implement it; they just keep the agreement documents. I don't think they've read the agreement; in addition, the agreement was written in English. Furthermore, there is no template for penalty charge reports that they can use. Also, even at TLD HQ, this has never been implemented…If there is a delay in bank transfers, they (State TLD & Branches) will email the bank or seek assistance from TLD HQ..." (P3- TLD-0:13:40)

Furthermore, minimal oversight of SLA compliance is compounded by a broader reliance on discretionary negotiation rather than strict enforcement; Participant 3 highlighted that TLD and the bank favour negotiation over enforcement, as exemplified by the waiving of EDC terminal rental fees, which demonstrates the bank's preferential treatment of TLD due to their significant transaction volume.

"...We also raised this issue in a meeting with bank. However, the bank prefers the concept of negotiation in resolving these issues. For example, they have granted exceptions for EDC terminal rental. TLD is among the departments that conduct the most transactions with bank. Bank has given special treatment to TLD..." (P3- TLD-0:16:48)

Monitoring and enforcement limitations also extend to TLD headquarters, where insufficient human resources hinder the department's capacity for continuous monitoring. TLD headquarters only provides the standard guideline to the state and branch as a reference. Participant 3 explains that TLD headquarters only provides feedback upon receiving complaints from state offices or the accounting office.

"...from the perspective of TLD HQ itself, with the resources we have, we are unable to monitor everything. At the TLD State and Branch levels, they rely on their respective accounting office. We can't arbitrarily interfere with their operations. In terms of workflow, TLD HQ will issue SOPs…" (P3- TLD-0:25:56)

Consequently, the IOC workflows within the TLD remain largely decentralised, relying heavily on self-reporting mechanisms by state branches and the accounting office to ensure compliance. Currently, TLD adopts a negotiation-based approach to resolve issues, rather than enforcing penalties on the acquiring bank for service lapses. This lack of stringent SLA enforcement poses a significant operational and reputational risk, potentially leading to adverse audit findings that may undermine the department's accountability and public trust.

COMMUNICATION DIFFICULTIES IN IOC WORKFLOWS IN E-PAYMENT PROCESS

The findings highlight significant communication challenges within the IOC workflows in the e-payment process. Communication between TLD, the acquiring bank, and the accounting office is predominantly manual, relying on formal and informal channels such as email, WhatsApp, and phone calls. As Participant 4 noted, while they officially use email, they often resort to WhatsApp or phone calls when responses are delayed.

"...Usually, we will use email as the communication medium, other platforms like WhatsApp are also used. bank provides a PIC number. So, if email does not work, we will try to contact the bank through WhatsApp or phone…" (P4- TLD-0:14:33)

The process, although adaptable, poses delays when immediate contact with bank officers is needed, impacting the overall process. For instance, Participant 2 reports that while bank support is adequate once contact is established, reaching a bank officer often takes considerable time, as Participant 2 explains,

"...Based on my experience, dealing with bank officer, when I contact him, he is very helpful, although initially getting through to him can sometimes be difficult. But after speaking with him, he usually resolves the issues raised…" (P2- TLD-0:23:25)

This communication hurdle varies across TLD offices, as observed by Participant 1, who attributes these differences to individual personalities within the bank's support staff. For example, while communicating with bank officer X proved challenging due to unresponsiveness, bank officer Y's involvement markedly improved ease of communication, illustrating how bank personnel shifts can influence communication efficacy at different TLD locations.

"...Dealing with Mr. X was difficult before, he didn't even reply to my messages. Only the machine operator replied. But dealing with the bank is easy, if you follow TLD Johor it's easy, I'm not sure about other places. If I don't get help from Bank HQ, I ask for help from Mr. Y..." (P1- TLD2-0:05:21)

The ramifications of communication delays within TLD's IOC workflows extend to reputational risks at the operational level, as unresolved operational issues may trigger queries from the accounting and audit offices. Participant 4 highlights this concern, noting that slow bank responses have led to accountability inquiries, such as from the Auditor General's office, questioning delays in accounting for revenue collections at TLD Kedah.

"…The challenge in dealing with the bank is their slow response. When they (the bank) respond slowly, we will be queried by accounting office, why TLD is slow in accounting for the collection…" (P4- TLD-0:15:51)

These communication difficulties impede prompt issue resolution and expose TLD to scrutiny, underscoring the need for more streamlined and responsive communication channels within its e-payment workflow.

Finally, the findings reveal four interrelated challenges within the IOC workflows of TLD's e-payment process: non-integrated operations, operational deficiencies, risk exposure on SLA discrepancies, and communication difficulties. These challenges disrupt transaction accuracy, delay revenue recording, and compromise accountability. Manual reconciliation, fragmented systems, and inconsistent data management highlight the operational burden TLD officers face. Furthermore, weak SLA enforcement, decentralised monitoring, and reliance on informal communication channels exacerbate risks and hinder responsiveness. In conclusion, these findings underscore the urgent need for systemic improvements and technology integration to enhance workflow efficiency, data integrity, and inter-agency coordination.

DISCUSSION

The study identifies that TLD's IOC workflows are fragmented due to non-integrated operational systems, inhibiting effective collaboration across entities. Participant 1 highlighted the need for repeated manual cross-checking across payment channels, while Participant 2 confirmed that, despite overnight automation, reconciliation with the accounting office still required manual checking. Similarly, Participant 4 reported the task duplication in compiling multiple reports from unconnected platforms. These observations reflect the lack of a shared platform necessary for interdependent coordination, consistent with Reindersma et al. (2022), who argue that fragmented systems obstruct collaboration by creating procedural redundancies. In interorganisational settings, collaboration involves aligning systems, processes, and goals to enable joint problem-solving and mutual efficiency (Adomako & Nguyen 2023; Kshetri 2023). However, in the TLD context, IOC workflows are reactive and constrained by siloed operations, echoing findings by Hubenova et al. (2024) that siloed systems lead to inefficiencies and hinder collective responsiveness. Therefore, effective collaboration in IOC workflows requires digital interoperability that supports shared visibility, real-time coordination, and process standardisation.

Next, trust within IOC workflows is compromised by operational inconsistency, particularly due to non-synchronised cut-off times and manual reconciliation. Participant 3 noted the risks introduced by even minor system errors, which can disrupt workflows for days, while Participant 4 described the recurring pressure to meet reporting deadlines despite unresolved data mismatches. This aligns with Rijanto (2021), who argues that trust in financial collaboration deteriorates when error-prone due to manual tasks persist without systematic safeguards. Trust is not merely a relational construct but a function of system reliability, transparency, and consistency in execution (Kowalski et al. 2021; Shivaraj 2024). In a public sector context, trust is weakened when performance outcomes rely heavily on personal effort rather than institutional mechanisms. Vedapradha and Ravi (2023) argue that repeated human intervention in data reconciliation signals systemic fragility and lowers stakeholder confidence. Hence, the research underscores the need for improved systems to enhance trust and reliability, such as integrating real-time data validation and automated reconciliation tools (Gomaa et al. 2023; Muller et al. 2021), ensuring continuity and reducing dependency on individual resilience.

Meanwhile, lack of control in IOC workflows reveals a critical challenge in SLA monitoring. Participant 1 and Participant 2 acknowledged that penalties for delayed fund transfers were never applied, and Participant 3 attributed this to the absence of procedural guidance, language barrier, and insufficient monitoring capacity. This reflects broader issues noted by Engel et al. (2022), who found that SLA in the TLD often fail due to inadequate operational mechanisms rather than flaws in the contractual design itself. Control in IOC workflows ensures predictability and standardised performance, particularly through codified mechanisms like SLA (Anderson & Dekker 2014; Jovanovic et al. 2022). However, Yaseen (2023) contends that control mechanisms must be actively implemented, not merely documented. In TLD's case, the disconnect between SLA policy and practice reinforces the argument that static contractual tools are ineffective without dynamic, system-supported enforcement, a need that cannot be overstated. Nguyen et al. (2023) and Upadhyay et al. (2021) advocate embedding SLA compliance into digital infrastructures, such as smart contracts and automated monitoring dashboards, to institutionalise control and close enforcement gaps.

Communication across IOC workflows is currently inconsistent and over-reliant on informal platforms. Participants 4 reported frequent use of WhatsApp and phone calls instead of formal email channels, mainly when delays occurred. This practice has led to variations in responsiveness among bank personnel, introducing coordination uncertainty. These insights are supported by Centobelli et al. (2022), who argue that fragmented communication practices contribute to response delays and accountability breakdowns in multi-agency environments. Effective information exchange depends on structured,

timely, and traceable communication processes (Caglio & Ditillo 2012; Kostić & Sedej 2022). However, the overuse of informal channels undermines the institutional memory and consistency needed in interorganisational settings. Karajovic et al. (2019) emphasise that the absence of formal communication protocols increases reliance on personal relationships, which may fluctuate with staff changes. To address these issues, TLD must urgently adopt a centralised communication platform that ensures message traceability, enables standardised reporting, and supports real-time inter-agency coordination, which is crucial for maintaining transparency and responsiveness in IOC workflows.

TECHNOLOGY POTENTIAL IN IMPROVING IOC WORKFLOWS

Addressing the challenges identified in IOC workflows, such as fragmented operations in collaboration, trust deficits, weak control mechanisms, and inconsistent information exchange, requires the integration of advanced digital technologies. Emerging solutions such as Artificial Intelligence (AI), Big Data analytics, and Blockchain Technology (BCT) offer significant potential to restructure interorganisational collaboration in the public sector. AI and predictive analytics can support real-time decision-making by automating anomaly detection and improving forecasting accuracy across IOC workflows (Bailey et al. 2022; Elsa & Halil 2024). These capabilities can reduce dependency on manual reconciliation while enhancing operational responsiveness. Simultaneously, Big Data and cloud computing provide scalable, interoperable environments that enable seamless data sharing and process automation, mitigating redundancy, enhancing coordination, and improving data integrity (Cepa & Schildt 2019; Onyshchenko et al. 2022)..

However, among these technologies, BCT emerges as a promising solution for addressing the IOC workflows challenges identified at TLD. Its decentralised and immutable ledger enables real-time data visibility, secure multi-party access, and enhanced audit trails. BCT can facilitate automated reconciliation, smart contract-based SLA enforcement, and secure, traceable communication across agencies (Dowelani et al. 2023; Faisal et al. 2024). Prior study demonstrates BCT's effectiveness in automating settlement processes and improving coordination in logistics and banking sectors (Spahiu et al. 2024; Tan & Sundarakani 2021; Vedapradha & Ravi 2023) both comparable to the public sector e-payment context. Moreover, in Malaysia, the Ministry of Science Innovation and Technology (2021) in the National Blockchain Roadmap (2021–2025) underscores the BCT's potential in improving public sector governance, enhancing transparency, reducing fraud, and improving service delivery (Ibiyemi & Olutimehin 2024). Recently, the government affirmed the strategic direction toward BCT integration, particularly in mission-critical areas such as financial oversight. In conclusion, AI, Big Data, and BCT technologies present viable pathways to overcome the coordination, control, and transparency issues observed in TLD's IOC workflows. Future implementation efforts should prioritise piloting blockchain-enabled frameworks tailored to the IOC workflows and specific reconciliation and SLA challenges within Malaysia's public sector finance ecosystem.

EMERGING THEME

As part of the central theme, this study also identifies four emerging themes such as Brain Drain, Own Effort, Personal Traits, and Want to Be Appreciated highlighting critical human and organisational factors beyond the technical challenges. Brain Drain signals the risk of institutional knowledge loss due to staff turnover. Own Effort reflects reliance on individual initiative to address workflow gaps, while Personal Traits, such as resilience and adaptability, are essential for navigating systemic inefficiencies. Want to Be Appreciated underscores the role of recognition in sustaining motivation. These findings align with studies emphasising the importance of retention (Nurcahyo & Putra 2021), personal agency (Koghut et al. 2021), and employee engagement (Ramli & Hamzah 2021). They suggest practical interventions such as strengthening retention strategies, fostering a culture of recognition, and enhancing soft skills training to support the IOC workflows. Overall, these human-centric insights deepen understanding of the socio-organisational dynamics within the public sector domain and reinforce the need to balance system reforms with workforce empowerment (Al-Omoush et al. 2020; Shonubi 2023).

CONCLUSION

This study explored the IOC workflows in the e-payment process at the TLD, identifying four core themes: non-integrated operations, operational deficiencies, risk of SLA discrepancies, and communication challenges. These themes acknowledge systemic issues in collaboration, trust, control, and information exchange across TLD with the acquiring bank and the accounting office. In addition to these core findings, the study identified four emerging human-centric themes such as Brain Drain, Own Effort, Personal Traits, and Want to Be Appreciated that reflecting the socio-organisational dimensions influencing workflow performance and resilience.

In terms of theoretical view, this study extends the interorganisational collaboration framework proposed by Kostić and Sedej (2022), emphasising collaboration, trust, control, and information exchange as foundational dimensions. While their model focuses primarily on structural and systemic coordination mechanisms, this study introduces human attributes as a fifth, cross-cutting dimension that shapes and sustains IOC workflows. The findings demonstrate that individual agency, recognition, adaptability, and institutional memory are critical enablers or inhibitors for effective

interorganisational collaboration in public sector workflows. This human-centric perspective enhances the conceptualisation of IOC workflows by framing it not only as a technical or organisational process but also as a socially embedded practice reliant on workforce dynamics. Practically, this study contributes actionable insights for public sector agencies. It highlights the urgent need for system integration, real-time reconciliation tools, and structured communication platforms to address inefficiencies in IOC workflows. Moreover, it underscores the value of investing in staffing, recognition systems, and capacity-building programmes to mitigate brain drain, foster trust, and enhance collaboration. Embedding these strategies into policy and operational frameworks can significantly improve the reliability, transparency, and accountability of e-payment processes.

However, the study is limited by its single-case design, focusing exclusively on the TLD. While the case offers depth and context-specific insight, the findings may not be fully generalisable across all public sector agencies. Institutional culture, system maturity, and stakeholder dynamics may vary significantly across departments. Therefore, the conclusions drawn here should be tested and validated through comparative studies in other public organisations. Therefore, future studies should focus on assessing the suitability and scalability of digital technologies such as Blockchain Technology, Artificial Intelligence, and Big Data analytics to strengthen IOC workflows. Comparative evaluations across agencies and sectors can uncover best practices and adaptability thresholds for these tools. Moreover, studies examining the integration of human attributes design principles into public sector digital transformation initiatives will enrich the evolving discourse on collaborative governance. In overall, this study advances theory and practice by revealing the complex interplay between structural systems and human agency in shaping IOC workflows within Malaysia's public sector. Framing collaboration as both a technical and human process opens new pathways for understanding and improving the design of inter-agency operations. The findings signal a strategic imperative for public institutions to adopt integrated, intelligent technologies while concurrently nurturing the human capital that sustains them.

REFERENCES

Adomako, S. & Nguyen, N.P. 2023. Digitalization, inter-organizational collaboration, and technology transfer. *Journal of Technology Transfer* 49(4): 1176–1202.

Adu, P. & Miles, D.A. 2024. *Dissertation Research Methods. Dissertation Research Methods*. London: Routledge.

Aldaas, A. 2021. A study on electronic payments and economic growth: Global evidences. *Accounting* 7(2): 409–414.

Al-Omoush, K.S., Simón-Moya, V. & Sendra-García, J. 2020. The impact of social capital and collaborative knowledge creation on e-business proactiveness and organizational agility in responding to the COVID-19 crisis. *Journal of Innovation & Knowledge* 5(4): 279–288.

Anderson, S.W. & Dekker, H.C. 2014. The role of management controls in transforming firm boundaries and sustaining hybrid organizational forms. *Foundations and Trends® in Accounting* 8(2): 75–141.

Atiyah, G.A., Abdul Manap, N. & Abd Aziz, S.N. 2023. Legitimacy of smart contracts written in encrypted code on blockchain technology under current contract law: A comparative study. *Intellectual Discourse* 31(2): 421–444.

Bailey, D.E., Faraj, S., Hinds, P.J., Leonardi, P.M. & von Krogh, G. 2022. We are all theorists of technology now: A relational perspective on emerging technology and organizing. *Organization Science* 33(1): 1–18.

Banerjee, S.S. & Chandani, A. 2022. Challenges of blockchain application in the financial sector: A qualitative study. *Journal of Economic and Administrative Sciences* 41(2): 658-679.

Braun, V. & Clarke, V. 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology* 3(2): 77–101.

Brinkmann, S. & Kvale, S. 2014. *Interviews: Learning the Craft of Qualitative Research Interviewing*. 3rd Ed. SAGE Publications, Inc.

Business Today. 2021. National 4IR Policy: Quick Facts. https://www. Businesstoday.com.my/2021/07/04/nati onal-4ir-policy-quick-facts/

Caglio, A. & Ditillo, A. 2012. Opening the black box of management accounting information exchanges in buyer–supplier relationships. *Management Accounting Research* 23(2): 61–78.

Centobelli, P., Cerchione, R., Del Vecchio, P., Oropallo, E. & Secundo, G. 2022. Blockchain technology design in accounting: Game changer to tackle fraud or technological fairy tale? *Accounting, Auditing and Accountability Journal* 35(7): 1566–1597.

Central Bank of Malaysia. 2024. BNM Payment Statistic (T2 Report). Report No. https://www.bnm.gov.my/pa yment-statistics.

Cepa, K. & Schildt, H. 2019. Technological embeddedness of inter-organizational collaboration processes. In *Managing Inter-Organizational Collaborations: Process Views*. pp. 91–115.

Creswell, J.W. 2014. *Research Design Qualitative, Quantitative and Mixed Methods Approaches*. 4th Edition. SAGE Publications, Inc.

Creswell, J.W. & Creswell, J.D. 2018. *Research Design Qualitative, Quantitative, and Mixed Methods Approaches.* 5th Edition. SAGE Publications, Inc.

Das, T.K. & Teng, B.-S. 1998. Between trust and control: Developing confidence in partner cooperation in alliances. *The Academy of Management Review* 23(3): 491-512.

Dekker, H.C. 2004. Control of inter-organizational relationships: Evidence on appropriation concerns and coordination

requirements. *Accounting, Organizations and Society* 29(1): 27–49.
Dixit, P., Harwani, H., Kachhi, P., Amarsela, R., Patel, K. & Patel, M.J. 2024. Incorporating triple entry accounting as an audit tool—enhancing modern accounting systems. *Journal of Informatics Education and Research* 4(2): 1362–1372.
Dowelani, M., Okoro, C. & Olaleye, A. 2023. Blockchain technology in the clearing and settlement industry in South Africa. *Acta Commercii - Independent Research Journal in the Management Sciences* 23(1): 1–12.
Economic Planning Unit. 2021. Malaysia Digital Economy Blueprint. Report No. Economic Planning Unit, Prime Minister's Department. https://www.epu.gov.my/sites/default/files/2021-02/malaysia-digital-economy-blueprint.pdf.
Elsa, J. & Halil, H. 2024. *Digital Transformation in Finance: The Role of Accounting Technology*. EasyChair Preprint 12112.
Engel, R., Fernandez, P., Ruiz-Cortes, A., Megahed, A. & Ojeda-Perez, J. 2022. SLA-aware operational efficiency in AI-enabled service chains: challenges ahead. *Information Systems and E-Business Management* 20(1): 199–221.
Faisal, M.N., Sabir, L. Bin, AlNaimi, M.S., Sharif, K.J. & Uddin, S.M.F. 2024. Critical role of coopetition among supply chains for blockchain adoption: Review of reviews and mixed-method analysis. *Global Journal of Flexible Systems Management* 25(1): 117–136.
Fong, D., Han, F., Liu, L., Qu, J. & Shek, A. 2021, November. Seven technologies shaping the future of fintech. McKinsey Analysis November. McKinsey & Company. https://www.mckinsey.com/cn/~/media/mckinsey/locations/asia/greater%20china/our%20insights/seven%20technologies%20shaping%20the%20future%20of%20fintech/seven-fintech-trends.pdf
Ganeshu, P., Fernando, T., Therrien, M.-C. & Keraminiyage, K. 2024. Inter-organisational collaboration structures and features to facilitate stakeholder collaboration. *Administrative Sciences* 14(2): 1-16.
Gaur, N. 2020. Blockchain challenges in adoption. *Managerial Finance* 46(6): 849–858.
Gomaa, A.A., Gomaa, M.I., Boumediene, S.L. & Farag, M.S. 2023. The creation of one truth: Single-ledger entries for multiple stakeholders using blockchain technology to address the reconciliation problem. *Journal of Emerging Technologies in Accounting* 20(1): 59–75.
Guest, G., Bunce, A. & Johnson, L. 2006. How many interviews are enough? An experiment with data saturation and variability. *Field Method*s 18(1): 59–82.
Gulati, R., Wohlgezogen, F. & Zhelyazkov, P. 2012. The two facets of collaboration: Cooperation and coordination in strategic alliances. *Academy of Management Annals* 6(1): 531–583.
Handoko, B.L. & Lantu, J.E. 2021. UTAUT 2 model for predicting auditor's blockchain technology adoption. *ACM International Conference Proceeding Series* 82–89.
Harakeh, M., Diri, M. El, Lambrinoudakis, C. & Tsileponis, N. 2024. The impact of blockchain adoption on corporate investment efficiency. *Economics Letters* 236(November 2023): 0–3.
Heiselberg, L. & Stępińska, A. 2023. Transforming qualitative interviewing techniques for video conferencing platforms. *Digital Journalism* 11(7): 1353–1364.
Hubenova, T., Lindeque, J.P. & Peter, M.K. 2024. Explaining the non-adoption of blockchain technology in global value chains: a micro-foundational perspective. *Journal of Industrial and Business Economics* 51: 397-429.
Ibiyemi, M.O. & Olutimehin, D.O. 2024. Blockchain in supply chain accounting: Enhancing transparency and efficiency. *Finance & Accounting Research Journal* 6(6): 1124–1133.
Jabatan Audit Negara Malaysia. 2022. Laporan Ketua Audit Negara 2021 Siri 1 - Aktiviti Kementerian/Jabatan Kerajaan Persekutuan Dan Badan-Badan Berkanun Persekutuan. Report No. Percetakan Nasional Malaysia Berhad. https://www.audit.gov.my.
Jovanovic, M., Kostić, N., Sebastian, I.M. & Sedej, T. 2022. Managing a blockchain-based platform ecosystem for industry-wide adoption: The case of TradeLens. *Technological Forecasting and Social Change* 184.
Judi, S.S. & Mustaffa, N.E. 2023. Development of a proactive preventive late payment and underpayment solution model for the construction industry. *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction* 15(2): 1–12.
Kang, K., Liu, X., Jiang, Y., Lee, K.K.H., Wan, S.K.W., Huang, G.Q. & Zhong, R.Y. 2022. Blockchain opportunities for construction industry in Hong Kong: a case study of RISC and site diary. *Construction Innovation* 23(2): 443–466.
Karajovic, M., Kim, H.M. & Laskowski, M. 2019. Thinking outside the block: Projected phases of blockchain integration in the accounting industry. *Australian Accounting Review* 29(2): 319–330.
Koghut, M., Al-Tabbaa, O., Lee, S.H. & Meyer, M. 2021. A Blockchain-based inter-organisational relationships: *Social and innovation implications. Academy of Management Proceedings* 2021(1).
Kostić, N. & Sedej, T. 2022. Blockchain technology, inter-organizational relationships, and management accounting: A synthesis and a research agenda. *Accounting Horizons* 36(2): 123–141.
Kowalski, M., Lee, Z.W.Y. & Chan, T.K.H. 2021. Blockchain technology and trust relationships in trade finance. *Technological Forecasting and Social Change* 166.
Kshetri, N. 2023. Blockchain's role in enhancing quality and safety and promoting sustainability in the food and beverage industry. *Sustainability* 15(23): 1-23.
Kumar, S. & Kumar, N. 2021. Conceptual service level agreement mechanism to minimize the SLA violation with SLA

negotiation process in cloud computing environment. *Baghdad Science Journal* 18(2): 1020–1029.
Lazo, E. & Casu, O. 2017. Towards a new transformation of epayments paradigm: A case study on Moldovan public services. *KTH Industrial Engineering and Management* 1–48.
Malterud, K., Siersma, V.D. & Guassora, A.D. 2016. Sample size in qualitative interview studies. *Qualitative Health Research* 26(13): 1753–1760.
Md Rashid, N.I. & Abdul Razak, F. 2023. E-commerce: Contract and transaction. *International Journal of Law, Government and Communication* 8(31): 89–96.
Merriam, S.B. 2013. *Qualitative Research A Guide to Design and Implementation*. John Wiley & Sons, Inc. 2nd Edition. John Wiley & Sons, Inc.
Ministry of Science Innovation and Technology. 2021. National Blockchain Roadmap 2021-2025. Report No. https://www.mosti.gov.my/wp-content/uploads/2022/08/National-Blockchain-Roadmap-2021-2025.pdf.
Morrow, S.L. 2005. Quality and trustworthiness in qualitative research in counseling psychology. *Journal of Counseling Psychology* 52(2): 250–260.
Muller, M., Ostern, N., Koljada, D., Grunert, K., Rosemann, M. & Kupper, A. 2021. Trust mining: Analyzing trust in collaborative business processes. *IEEE Access* 9: 65044–65065.
Nguyen, T.-V., Lê, L.-S., Shah, S.A., Hameed, S. & Draheim, D. 2023. PenChain: A blockchain-based platform for penalty-aware service provisioning. *IEEE Access* 12: 1–1.
Nurcahyo, R. & Putra, P.A. 2021. Critical factors in indonesia's e-commerce collaboration. *Journal of Theoretical and Applied Electronic Commerce Research* 16(6): 2458–2469.
Onyshchenko, O., Shevchuk, K., Shara, Y., Koval, N. & Demchuk, O. 2022. Industry 4.0 and accounting: directions, challenges, opportunities. *Independent Journal of Management & Production* 13(3): 161-195.
Patton, M.Q. 2002. *Qualitative Research and Evaluation Methods*. (3rd ed.). SAGE Publications.
Prewett, K.W., Prescott, G.L. & Phillips, K. 2020. Blockchain adoption is inevitable—Barriers and risks remain. *Journal of Corporate Accounting and Finance* 31(2): 21–28.
Ramli, F.A.A. & Hamzah, M.I. 2021. Mobile payment and e-wallet adoption in emerging economies: A systematic literature review. *Journal of Emerging Economies and Islamic Research* 9(2): 1-39.
Reindersma, T., Fabbricotti, I., Ahaus, K. & Sülz, S. 2022. Integrated payment, fragmented realities? A discourse analysis of integrated payment in the Netherlands. *International Journal of Environmental Research and Public Health* 19(14).
Rijanto, A. 2021. Blockchain technology adoption in supply chain finance. *Journal of Theoretical and Applied Electronic Commerce Research* 16: 3078–3098.
Ring, P.S. & van de Ven, A.H. 1994. Developmental processes of cooperative interorganizational relationships. *The Academy of Management Review* 19(1): 90-118.
Saarijärvi, M. & Bratt, E.-L. 2021. When face-to-face interviews are not possible: tips and tricks for video, telephone, online chat, and email interviews in qualitative research. *European Journal of Cardiovascular Nursing* 20(4): 392–396.
Sandner, P., Lange, A. & Schulden, P. 2020. The role of the CFO of an industrial company: An analysis of the impact of blockchain technology. *Future Internet* 12(8): 1-16.
Shivaraj, G. 2024. Optimizing rebate management in supply chain operations. *International Journal of Advanced Research in Engineering and Technology* 15(3): 110–118.
Shonubi, O. 2023. The impact of innovation adoption of emerging digital technologies within a collaborative ecosystem on firm innovation performance- focus on emerging economies (Middle East, Africa, and Asia). *European Journal of Business and Innovation Research* 11(4): 74–104.
Spahiu, E., Spagnoletti, P. & Sposito, A. 2024. Building a blockchain-based platform for interbank collaboration. *International Journal of Electronic Commerce* 28(2): 269–291.
Surat Pekeliling Akauntan Negara Malaysia (SPANM) Bil. 3 Tahun 2019 - Tatacara Pengurusan Terimaan. https://www.anm.gov.my/pekeliling/surat-pekeliling-akauntan-negara-malaysia
Tan, W.K. & Sundarakani, B. 2021. Assessing blockchain technology application for freight booking business: a case study from technology acceptance model perspective. *Journal of Global Operations and Strategic Sourcing* 14(1): 202–223.
The Star. Cash is no longer king for payments in Malaysia. 2023, The Star, 5 July. https://www.thesta r.com.my/ news/nation/2023/07/05/cash-is-no-longer-king-for-payments-in-malaysia
Tsai, W.T., Luo, Y., Deng, E., Zhao, J., Ding, X., Li, J. & Yuan, B. 2020. Blockchain systems for trade clearing. *Journal of Risk Finance* 21(5): 469–492.
Ubani, R.C. & Emenike, A. 2023. The impact of service level agreement (SLA) on the performance of transmission company of Nigeria (TCN) Abuja. *European Journal of Marketing and Management Sciences* 6(6): 21–43.
Upadhyay, A., Ayodele, J.O., Kumar, A. & Garza-Reyes, J.A. 2021. A review of challenges and opportunities of blockchain adoption for operational excellence in the UK automotive industry. *Journal of Global Operations and Strategic Sourcing* 14(1): 7–60.
Upadhyay, K., Dantu, R., He, Y., Badruddoja, S. & Salau, A. 2021. Can't understand SLA? Use the smart contract.

Proceedings - 2021 3rd IEEE International Conference on Trust, Privacy and Security in Intelligent Systems and Applications. TPS-ISA 2021 129–136.
Vedapradha, R. & Ravi, H. 2023. Blockchain: an EOM approach to reconciliation in banking. *Innovation and Management Review* 20(1): 17–27.
Yaseen, S.G. 2023. Guest editorial: Digital accounting, financial technology and data analytics. *Journal of Financial Reporting and Accounting* 21(1): 1–4.
Yin, R.K. 2016. *Qualitative Research from Start to Finish. The Guilford Press.* Second Edi. The Guilford Press.
Yin, R.K. 2018. *Case study research and applications: Design and methods*. SAGE Publications, Inc. SAGE Publications, Inc.
Zairul, M. 2023. *Memahami Asas Penyelidikan Kualitatif dan Analisis Tematik dengan Atlas.ti 23*. Universiti Pendidikan Sultan Idris.
Zairul, M. 2025. Enhancing qualitative research with thematic analysis matrix (TAM): A systematic approach to thematic analysis in architectural research. *ALAM CIPTA International Journal of Sustainable Tropical Design & Practice* 18(1): 1–17.

Khairil Faizal Khairi
Faculty of Economics and Muamalat
Universiti Sains Islam Malaysia
71800 Nilai, Negeri Sembilan, MALAYSIA.
E-mail: khairil@usim.edu.my

Naharudin Saadan*
Accountant General Department of Malaysia
Presint 2, Kompleks Kementerian Kewangan
62594 WP Putrajaya, MALAYSIA
E-mail: nahar.saadan@anm.gov.my

* Corresponding author

APPENDIX 1. Thematic analysis matrix (TAM)

1. Main RQ
   What are the challenges on IOC workflows in e-payment process at TLD?

2. Aim of research
   To explore the challenges within the IOC workflows in the e-payment process at TLD

3. Research inquiry
   Case study

4. Respondent
   TLD officers who involves in daily routine work in e-payment process

Research Questions	Deductive codes / Theories	Strategy of inquiry	Inductive codes			Emerging themes
			Coding	Category	Theme	
What are challenges on IOC workflows in e-payment process at TLD?	Collaboration Trust Control Information Exchange	Face to face interview, online google meet interview by using semi-structured interview questions Secondary document such as operational guidelines, daily-routine reports, and operational process template file	Delay; Fragmentation; Misalignment; Siloes; Data Sharing; Limited Data Access; Process Redundancy; Multiple System; Incompatibility; Integration; Complexity; Management; Non-Finance People; Volume; Human Error; Process Flow; Payment Mode; Payment Channel; Missing; Standardization; Disagreement; Integrity; Reconciliation; Shifting; Verification Burden; Error Propagation; Resource Strain; Delayed Rectification; Discrepancy; Error; Data Inconsistency; Incomplete Records; Unauthorized Alterations; Delayed Data Updates; Lack of Audit Trail; Data Entry Errors; Accountability; Disputes; Enforcement; SLA; Audit Readiness; Non-Compliance Incidents; Monitoring Deficiency; Penalty Enforcement Gap; Lack of Corrective Actions; Contractual Vagueness; Visibility; Tracking; Communication; Limitation; Information Delay; Message Distortion; Platform Fragmentation; Traceability Issues; Dependence on Individuals; Brain Drain; Own Effort; Personal Traits; Want to be Appreciated	C1: Siloes IOC operation system (Delay; Fragmentation; Misalignment; Siloes; Data Sharing; Limited Data Access; Process Redundancy; Multiple System) C2: Complexity on IOC workflows (Incompatibility; Integration; Complexity; Management; Non-Finance People; Volume; Human Error; Process flow; Payment Mode; Payment Channel) C3: Manual and human effort in IOC workflows (Missing; Standardization; Disagreement; Integrity; Reconciliation; Shifting; Verification Burden; Error Propagation; Resource Strain; Delayed Rectification) C4: Data Integrity issues on IOC workflows (Discrepancy; Error; Data Inconsistency; Incomplete Records; Unauthorized Alterations; Delayed Data Updates; Lack of Audit Trail; Data Entry Errors) C5: Accountability and compliance on IOC workflows (Accountability; Disputes; Enforcement; SLA; Audit Readiness; Non-Compliance Incidents; Monitoring Deficiency; Penalty Enforcement Gap; Lack of Corrective Actions; Contractual Vagueness) C6: Manual communcation plaftorm (Visibility; Tracking; Communication; Limitation; Information Delay; Message Distortion; Platform Fragmentation; Traceability Issues; Dependence on Individual)	Theme 1 The challenges of non-integrated operation in IOC workflows in e-payment process at TLD Theme 2 The operational deficiency on IOC workflows in e-payment process at TLD Theme 3 The risk exposure of SLA discrepancies in IOC workflows in e-payment process at TLD Theme 4 The communcation difficulties in IOC workflows in e-payment process at TLD	ET1: Brain Drain ET2: Own Effort ET3: Personal Traits ET4: Want to be appreciated

APPENDIX 2. Thematic Analysis Diagram