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BEYOND FUNCTIONALITY: THE GAP BETWEEN MATERIALITY AND COMPENSATORY EXPECTATIONS IN E-PROCUREMENT

Y.K. Delpachitra[1], H.S. Jayasena[2], and C. Wijekoon[3]

ABSTRACT

E-procurement is increasingly adopted in construction to improve efficiency and compliance; however, limited understanding of how material affordances align with users' expected affordances constrains its overall utilization. This research evaluates the extent to which e-procurement systems' material affordances meet user expectations across procurement stages. Given the fragmented nature of affordance theory applications in this domain, an exploratory literature review utilising purposive sampling and manual qualitative content analysis was adopted. Material affordances were mapped across procurement planning, supplier selection and bidding, contract management, delivery and payment, and procurement closure. Conversely, expected affordances were systematically derived from documented adoption challenges, including security, infrastructure, supply chain interoperability, human capacity, and legal uncertainty. Comparative analysis reveals significant gaps between expected and material affordances, particularly regarding system resilience, accessibility under limited connectivity, usability, and long-term adaptability to dynamic project variations. The study concludes that while e-procurement offers compliance benefits, a critical misalignment persists users theoretically expect systems to compensate for environmental deficits, yet current material affordances presuppose ideal operating conditions. Addressing this design-reality gap is essential for the sustainable adoption of e-procurement systems.

Keywords: *E-procurement; Expected affordances; Materiality; System resilience; User perception.*

1. INTRODUCTION

The concept of affordance originates from the action possibilities offered to an individual, simply defined as the relationship between the abilities of the user and the features of the surrounding environment (Gibson, 2014). Refining this concept for sociotechnical systems, affordance is defined as the inherent capabilities or any physical properties of the system which are available within itself, existing independently of a specific user's

[1] Post Graduate Student, Department of Building Economics, University of Moratuwa, Sri Lanka, delpachitrayk.24@uom.lk
[2] Senior Lecturer, Department of Building Economics, University of Moratuwa, Sri Lanka, suranga@uom.lk
[3] Senior Lecturer, School of Civil Engineering and Built Environment, Liverpool Jhon Moores University, United Kingdom, K.A.Wijekoon@ljmu.ac.uk

skills or any other contextual limitations (Jayasena et al., 2023). In contrast, the technology is often understood in terms of the functionality and features it provides, representing what the system is design to do (Faraj & Azad, 2013). However, unlike 'functionality,' which describes what a system is designed to do, an 'affordance' represents the complementarity between the system's material properties and the user's ability to perceive and use them for action (Evans et al., 2017; Gibson, 2014).

Building on this sociotechnical perspective, recent Information Systems (IS) research highlights that IT affordances extend beyond static system features to represent relational action potentials emerging between technology and organisational context (Pedrola et al., 2023). To accurately distinguish these affordances from basic system functionality (Valbø, 2021), the affordance process is often conceptualised as a continuum comprising existence, perception, actualisation, and effect (Pedrola et al., 2023; Pozzi et al., 2014). While this framework is increasingly utilised to evaluate digital transformation within logistics and supply chain management (Albrecht et al., 2024), a significant gap remains in understanding the actualisation phase when environmental constraints, such as poor digital infrastructure, limit system operation. Under these constrained conditions, this study posits that users formulate "compensatory expectations," wherein they anticipate the technical system to compensate for external deficits and bridge the gap between materiality and successful actualisation. This concept draws upon established principles of compensatory expectations in behavioural psychology, which describe how individuals anticipate specific mechanisms to counterbalance perceived deficits or a lack of control (Seta et al., 2010). By translating this psychological framework into the domain of Information Systems and sociotechnical affordances, this study explores how operational barriers theoretically shape user expectations in restrictive environments.

On the other hand, expected affordances represent users' expectations of the technology based on their requirements or previous understanding. This distinction is commonly used by practitioners to develop solutions that can achieve user expectations (Cook, 2022). To establish a clear structural comparison between the system's inherent capabilities and the users' needs, this study will henceforth use the term "material affordances" interchangeably with materiality.

However, organizations often operate under significant constraints, such as fragmented infrastructure, limited digital skills, and regulatory uncertainty, which limit the ability to reach some expected affordances (Laryea & Ibem, 2014; Yevu et al., 2023). This gives rise to compensatory expectations, where users expect technological systems to compensate for such external constraints.

While e-procurement is widely adopted in the construction industry to increase efficiency and compliance, existing studies primarily focus on system functionality and adoption barriers, with limited attention given to how material affordances align with users' expected affordances across procurement stages within the construction industry. Furthermore, the role of compensatory expectations in explaining this misalignment remains underexplored. This represents a critical research gap, as such misalignment can significantly affect the effective utilisation of e-procurement systems, which constrains the overall use of e-procurement. Addressing this alignment is critical to identifying functional gaps that hinder adoption. Therefore, this paper aims to evaluate the extent to which the materiality of e-procurement systems meets user expectations.

2. METHODOLOGY

To achieve the research aim, a comprehensive review of existing literature was conducted. While a systematic literature review is often the standard for evidence-based analysis (Mengist et al., 2020; Purssell & Mccrae, 2020), the emerging and fragmented nature of affordance-based research limits its applicability and necessitates a more adaptive approach. Consequently, an explorative literature review approach was adopted, as it effectively maps uncharted theoretical landscapes and organises new research directions (Asmussen & Møller, 2019). Instead of exhaustive sampling, purposive sampling was employed to identify literature discussing specific phenomena related to e-procurement challenges and affordances. Literature was sourced from Scopus, Web of Science, and Google Scholar.

The search was restricted to English-language publications from the year 2000 onwards. Inclusion criteria prioritized peer-reviewed journal articles, conference proceedings, and authoritative institutional frameworks (such as the PMBOK Guide) to ensure academic rigor. Documents were initially screened and prioritised by thematic relevance through title and abstract review. The search process concluded upon reaching data saturation: the point at which new sources yielded no novel themes regarding e-procurement limitations or materiality. Ultimately, a sample of 40 unique documents was selected for analysis.

Under this approach, the research was conducted in three distinct phases utilising manual qualitative content analysis:

1. Identification of Material Affordances: Standard procurement guidelines and established e-procurement literature were reviewed to catalogue the inherent system capabilities across the procurement lifecycle.
2. Derivation of Expected Affordances: Literature documenting adoption challenges was sourced using keywords such as “e-procurement,” “digital procurement,” “challenges,” “limitations,” and “construction.” It should be mentioned that this derivation is interpretive rather than deterministic. When users encounter challenges, these act as indicators of anticipated affordances. In such contexts, users formulate “compensatory expectations,” anticipating that the system’s materiality will bridge environmental gaps. Thus, challenges were analytically coded as unmet user expectations to generate the summarized findings presented in Table 1.
3. Comparative Evaluation: A comparative analysis was performed to identify alignment gaps between the material affordances of the system and the expected affordances of the users. To operationalize this, a tick (✓) was assigned if the reviewed literature provided explicit evidence that the system’s capabilities fulfilled the expected affordance. A cross (✗) was assigned if the literature indicated an unmet need or a reliance on ideal environmental conditions that the system could not independently compensate for. The results of this coding process are aggregated and presented in Table 2.

3. ANALYSIS AND FINDINGS

This section presents the findings derived from the manual qualitative content analysis, wherein the selected literature was utilised as qualitative data sources to map the material and expected affordances.

3.1 MATERIALITY OF E-PROCUREMENT

E-procurement is an internet-based technological solution that uses information technology to support and streamline the procurement process (Presutti, 2003), managing purchasing phases such as need identification, negotiation, sourcing, ordering, receipt (Croom & Brandon-Jones, 2005). To effectively evaluate these phases, it is necessary to examine the materiality of e-procurement.

In this context, PMBOK, alongside the 2024 procurement guidelines of Sri Lanka, makes a significant contribution to the field of project management by defining the essential materiality required within a general procurement system. These affordances are categorised by using PMBOK and the 2024 procurement guidelines into five distinct phases of the procurement process (National Procurement commission, 2024; Project Management Institute, 2021), as illustrated in Figure 1.

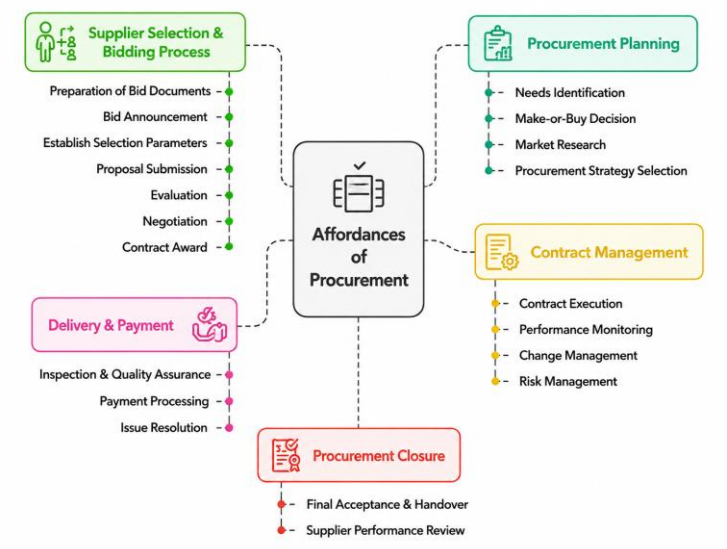

Figure 1: Affordances of procurement

The identification of materiality across procurement stages was conducted through a structured coding process. Recurring system functionalities were extracted from the reviewed literature and grouped according to their functional relevance to procurement stages. This approach enabled the systematic mapping of capabilities of procurement across the e-procurement lifecycle and is consistent with exploratory literature review approaches that emphasise pattern identification and thematic organisation.

3.1.1 Procurement Planning (A)

Procurement planning involves planning purchasing activities within a specified timeframe (Agaba & Shipman, 2007). E-procurement systems afford several key capabilities at this stage, particularly regarding information retrieval and decision support, enabling need identification, make-or-buy decision-making, market research, and procurement strategy selection (Chan & Lee, 2003). The assessment of system benefits against implementation costs contributes to the system's materiality (Panda & Sahu, 2012), while application of e-design enables the digital setting of purchasing requirements (Chang et al., 2013). Rather than replacing expert judgment, e-procurement affords enhanced need identification through expanded information access and efficient workflows (Chan & Lee, 2003; Kumar et al., 2017; World bank Group, 2011). The

systems afford a robust information base, providing historical data and market details research and analysis (Chan & Lee, 2003; Premathilaka & Fernando, 2020). This capability for information retrieval enables buyers to collect data on market conditions and potential suppliers, affording supplier selection (Choi & Chang, 2006), price bidding (Stein & Wyld, 2003), and contract negotiation (Bichler et al., 2002). Properly configured, these tools afford market awareness, improving customer-supplier relationships (Bartezzaghi & Ronchi, 2005). Ultimately, e-procurement affords the evaluation and setting up of trading partner groupings and efficient supplier performance rating to support procurement strategy selection (Abu Bakar et al., 2016; Presutti, 2003). While this materiality primarily supports accessing information and making decisions, it is less effective in handling contextual challenges such as user limitations or unstable environments.

3.1.2 Supplier Selection & Bidding Process (B)

Supplier selection is the process by which purchasers find, assess, and enter into contracts with suppliers (Beil, 2011). The system affords electronic tendering, sourcing, auctions, marketplaces, and catalogue purchasing (Aboelmaged, 2010; Vaidya et al., 2006). This materiality is achieved through e-sourcing and e-evaluation capabilities that gather comprehensive supplier data, allowing construction businesses to choose suppliers directly via the digital platform (Chang et al., 2013). Tools such as e-RFQs, and e-catalogues facilitate supplier evaluation against predefined criteria (Aboelmaged, 2010; Vaidya et al., 2006). Furthermore, these systems afford secure proposal submissions and online bidding mechanisms, including reverse auctions with pre-qualified suppliers (Schrader et al., 2004). Overall, they afford enhanced competition, broader supplier participation, streamline the submission, and more competitive pricing (Davila et al., 2003; Schrader et al., 2004). Additionally, the system affords transparent negotiation and contract awarding through digital platforms using digital contracts and order processing, reducing administrative costs (Aboelmaged, 2010). While this materiality enhances the effectiveness and transparency of supplier engagement, it relies heavily on dependable digital infrastructure and system interoperability, offering limited solutions for accessibility, integration difficulties, and different supplier capabilities.

3.1.3 Contract Management (C)

Contract management encompasses the contractual requirements that both parties must fulfill (Cruz & Marques, 2013). Procurement technologies afford streamlined contract execution by minimizing the time and cost required to create purchase orders (Aboelmaged, 2010). Management information systems afford robust procurement monitoring, enabling organisations to evaluate compliance with service-level agreements (Vaidya et al., 2006). Additionally, organised processes, such as formal bid review and comprehensive request-for-proposal systems, afford controlled variation and support efficient contract administration (Schrader et al., 2004). However, given the highly dynamic nature of construction projects, characterised by frequent design variations and material price fluctuations tied to global logistics, effective contract management necessitates rapid, transparent adjustments. While this materiality primarily supports administrative control, compliance, and monitoring, there is limited evidence of affordances enabling flexibility or adaptation to dynamic project conditions commonly seen in construction.

3.1.4 Delivery and Payment (D)

Digital solutions afford procedural transparency and compliance, increasingly supporting delivery, payment, and quality assurance process (Croom & Jones, 2007). This enables a material post-procurement environment focused heavily on delivery tracking and work performance improvement (Kademaunga & Phiri, 2019; Chang et al., 2013). the system affords the capacity to confirm supplier certifications, manufacturer capabilities, and past on-time delivery performances (Schrader et al., 2004). Data security is important to afford online payments, and the system ensures that the online purchases are appropriately documented in organizational financial systems and communicated to suppliers (Vaidya et al., 2006). These features decrease transaction costs (Davila et al., 2003) and reduce the time required to establish purchase orders, process payment, track shipments, and service registration (Aboelmaged, 2010). Ultimately, e-procurement platforms afford improved coordination, and the timely identification of delivery and payment issues through increased supply chain visibility (Aboelmaged, 2010; Davila et al., 2003). While this materiality improves transaction efficiency, traceability, and financial compliance, it relies heavily on secure system environments and provides limited support for managing disruptions, delays, or failures.

3.1.5 Procurement Closure (E)

E-procurement systems afford procurement closure by offering accessible management data to analyse supplier performance and track adherence to service-level agreements (Vaidya et al., 2006). The system affords early performance indicator creation, outcome monitoring, and post-award evaluations to ensure delivery reliability and quality capability (Vaidya et al., 2006; Schrader et al., 2004). This efficiency allows procurement personnel to focus on strategic closure tasks, such as supplier ratings and performance reviews. Long-term strategic efficiency is achieved when joint-learning techniques, such as mutual competency creation, are utilised (Chang et al., 2013). Finally, the system affords the integration of procurement activities with core organisational processes (Mora Cortez et al., 2023). Materiality at this stage mainly support supplier assessment, documentation, and performance evaluation. Nevertheless, there is little evidence of affordances that facilitate feedback integration, organisational learning, or continuous system improvement, which remains essential for sustained efficacy.

3.2 CHALLENGES IN E-PROCUREMENT

Despite its potential, e-procurement faces several challenges and limitations that hinder its utilisation. Prominent among these are security-related challenges, including access control, data protection, and system recovery, alongside the complexity and cost, and mandatory digital signatures, which clashes with users' preference for traditional methods (Mohungoo et al., 2020). Vulnerabilities such as data breaches, hacking, transaction errors, and unauthorised access significantly reduce organizational confidence and decision-making (Gilbert & Celestin, 2025; Huber et al., 2004; Saeed & Leitch, 2003; Yen & Ng, 2002). Furthermore, the ease of information leakage and disclosure of sensitive material exacerbates confidentiality issues, erode user trust and increase risk of financial loss (Makoba et al., 2017; Ting & Wong, 2003).

Technical infrastructure presents significant barriers. Constraints in ICT infrastructure, characterised by limited broadband coverage, unreliable internet connectivity, high internet costs, and outdated equipment, impact small and medium-sized businesses as

well as rural areas (Gilbert & Celestin, 2025; Huber et al., 2004; Inusah et al., 2025; Toktaş-Palut et al., 2014). In the construction context, these constraints are particularly acute at the "edge" of operations, i.e., on temporary or remote project sites where digital infrastructure is rarely established prior to mobilisation. The implementation of e-procurement systems in the construction industry is constrained by low digital capacity and limited access to technology resources under the ICT infrastructure (Laryea & Ibem, 2014). Additionally, firms operating in remote areas are severely impacted by unpredictable internet access, power shortage, and poor network conditions, which hinder their ability to participate effectively in e-procurement procedures (Makoba et al., 2017). The adoption of e-procurement technologies in developing nation contexts has also been shown to be severely restricted by inadequate ICT infrastructure and unstable power supplies (Ibem & Laryea, 2015). Furthermore, construction relies heavily on a tiered network of subcontractors and localised material suppliers (SMEs), exacerbating integration challenges. Additionally, poor system interoperability between legacy and new e-procurement platforms, as well as incompatible supplier systems across this fragmented network, leads to workflow disruptions, complex system integration, and frequent system failures (Huber et al., 2004; Toktaş-Palut et al., 2014). This is in line with research showing that two of the biggest problems with construction e-procurement systems are inability to integrate different web-based applications into a single platform (Gurgun et al., 2024; Laryea & Ibem, 2014). Additionally, disparities in software systems and technological incompatibilities lead to operational inefficiencies and challenges in managing procurement papers, raising the risk of system failure and malfunction (Makoba et al., 2017).

Organisational and human factors also constrain adoption. These include resistance to updating systems from traditional manual procedures, driven by poor digital skills, insufficient training, limited technical expertise, and high staff turnover (Eadie et al., 2010; Toktaş-Palut et al., 2014). In addition, mandatory documentation requirements, bureaucratic rigidity, inconsistent organisational priorities, and poor leadership commitment further restrict the adoption of e-procurement systems (Eadie et al., 2010; Toktaş-Palut et al., 2014). Further indicates that inadequate knowledge of e-procurement systems, lack of user competence, and resistance to technological change, and insufficient understanding of e-procurement systems hider the adoption, especially in settings where old methods are firmly established (Laryea & Ibem, 2014). Furthermore, established cultural factors have been found to be important barriers affecting system implementation and user acceptance (Ibem & Laryea, 2015).

From a legal perspective, challenges in e-procurement include variations in traditional practices, unclear electronic contract enforceability, ambiguous electronic signature procedures, and limited policy support, all of which create uncertainty in implementation (Eadie et al., 2010; Yevu et al., 2023). Moreover, traditional government requirements, such as compulsory printed documentation, conflict with electronic tendering principles and delay digital transformation (Nawi et al., 2017). Legal jurisdictional inconsistencies, legal liability issues, electronic transaction insecurity, and dangers related to data privacy and confidentiality in digital procurement environments all contribute to these difficulties (Ting & Wong, 2003).

Finally, e-procurement adoption is further limited by systemic issues, including a lack of clear guidance and benchmark models due to its comparatively recent development. External factors beyond organisational control, such as material supply chain volatility

and rapid technological shifts, hinder implementation (Nawi et al., 2017). Moreover, adoption is severely constrained by industry-wide fragmentation, conservative methods, limited IT investment, and the fundamentally project-based character of construction activities (Laryea & Ibem, 2014)

Collectively, these recurring challenges highlight not only barriers to adoption yet reveal underlying mismatches between system capabilities and user expectations. Therefore, rather than being treated as isolated issues, they are interpreted in this study as analytical indicators of expected affordances, forming the foundation for the subsequent comparative analysis between expected and material affordances.

3.3 DERIVING EXPECTED E-PROCUREMENT AFFORDANCES

By analysing the identified challenges discussed in the previous section, expected affordances can be systematically derived. This approach posits that where users face a challenge, they inherently hold an expectation for a specific affordance to overcome it. However, a critical distinction must be made between facilitating conditions, such as internet connectivity or legal frameworks, and the material affordances of the system. While facilitating conditions are environmental factors required for action capability, in contexts where these conditions are lacking, users often expect the technical subsystem to compensate. For instance, stability under poor connectivity is interpreted here not as a demand for better infrastructure, but as an expectation for specific system capabilities (e.g., offline functionality or low-bandwidth resilience) that afford operation despite environmental limitations. Consequently, the derived expectations in Table 1 reflect the system properties users anticipate will bridge these environmental gaps.

Table 1: Summary of expected affordances listed through challenges

Challenge Category	Expected Affordances of E-Procurement	Referred Sources
Security-related challenges	• Secure access control	1, 11
	• Data protection, confidentiality and privacy assurance	3, 4, 5, 6
	• System recovery resilience	1
	• Cybersecurity assurance	2, 6, 11
Digital signature complexity	• User-aligned electronic authentication	1
	• Simplified digital signature execution	1
ICT infrastructure limitations	• Reliable system performance under connectivity constraints	2, 6, 8, 10, 11,
	• Accessibility under limited broadband conditions	2, 8, 9, 14
System interoperability issues	• Compatibility between legacy and new systems	10, 11, 12, 14
	• System reliability through error handling and fault tolerance	6
Human capacity limitations	• Intuitive ease of use for users with limited digital skills	10, 12, 14
	• Reduced reliance on manual processes	10, 13

	• Operational continuity in high staff turnover environments	10, 13
Organizational rigidity	• Streamlined procedures to reduce bureaucratic burden	10, 13
	• Consistent organizational engagement	10, 13, 14
Legal and regulatory uncertainty	• Electronic contract enforceability	5, 7, 13
	• Consistent electronic signature procedures	7, 13
	• Regulatory compliance alignment	5, 7
Traditional government practices	• Electronic tendering compliance with institutional standards	15
	• Digital transformation facilitation	15
Lack of benchmark Materiality models	• Clear guidance on system capabilities	15
	• Structured implementation pathways	15
External environmental factors	• Adaptability to market conditions	15
	• Resilience to fast technological advances	14,15

Sources: 1: Mohungoo et al., (2020), 2: Gilbert & Celestin, (2025), 3: Saeed & Leitch, (2003), 4: Yen & Ng, (2002), 5: Ting & Wong, (2003), 6: Makoba et al., (2017), 7: Yevu et al., (2023) , 8: Ibem & Laryea, (2015), 9: Inusah et al., (2025) 10: Toktaş-Palut et al., (2014) ,11: Huber et al., (2004) ,12: Gurgun et al., (2024) , 13: Eadie et al., (2010), 14: Laryea & Ibem, (2014), 15: Nawi et al., (2017)

With this understanding, users expect the system to afford a secure, reliable platform that aligns with their operational needs, specifically requiring robust access control, system recovery, data protection, and cybersecurity assurance to mitigate risks and unauthorised access.

Regarding ICT limitations, users expect stable system performance, compatibility with legacy platforms, and seamless interoperability with supplier to ensure resilience against workflow disruptions, especially for rural or SME users facing connectivity constraints.

To addressing human and organisational challenges, users expect intuitive systems that reduce manual processes, accommodate limited digital skills or higher staff turnover, and streamline procedures to reduce bureaucratic rigidity and documentation burdens.

From a regulatory perspective, expectations centre on reliable electronic contracting, consistent e-signature processes, and proper alignment with legal requirements.

Finally, users expect clear guidance on system capabilities, flexible implementation pathways, and adaptability to shifting market conditions and rapid technological advancements to effectively manage systemic uncertainty.

A summary of the expected affordances derived from the identified challenges is shown in Table 1.

3.4 MATERIAL AFFORDANCES VS EXPECTED AFFORDANCES

Having identified the expected affordances, they were compared with the material affordances across each stage, as shown in the Table 2.

Table 2: Comparison between expected affordances and the material affordances in each stage

Expected Affordances	Procurement Stages					Referred Sources
	A	B	C	D	E	
Secure access control	✗	✓	✓	✓	✗	1, 2, 3
Data protection and confidentiality	✗	✓	✓	✓	✗	1, 3
System recovery resilience	✗	✗	✗	✗	✗	-
Cybersecurity assurance	✗	✓	✓	✓	✗	1, 3
User-aligned electronic authentication	✗	✓	✓	✓	✗	1, 2, 3
Simplified digital signature execution	✗	✓	✓	✓	✗	2
Reliable system performance under connectivity constraints	✗	✗	✗	✗	✗	-
Accessibility under limited broadband conditions	✗	✗	✗	✗	✗	-
Compatibility between legacy and new systems	✗	✗	✓	✓	✓	3, 4
Seamless interoperability with supplier systems	✗	✓	✓	✓	✗	1, 3
Intuitive ease of use for users with limited digital skills	✗	✗	✗	✗	✗	-
Reduced reliance on manual processes	✓	✓	✓	✓	✓	2, 5
Operational continuity in high staff turnover environments	✗	✗	✗	✗	✗	-
Streamlined procedures to reduce bureaucratic burden	✓	✓	✓	✓	✗	2, 6, 11
Consistent organizational engagement	✓	✓	✓	✗	✓	3, 4, 5, 7
Electronic contract enforceability	✗	✓	✓	✗	✓	1, 2, 3
Consistent electronic signature procedures	✗	✓	✓	✓	✗	2
Regulatory compliance alignment	✗	✓	✓	✓	✓	2, 3, 8
Electronic tendering compliance with institutional standards	✗	✓	✗	✗	✗	2
Digital transformation facilitation	✓	✓	✓	✓	✓	2, 4, 5
Clear guidance on system capabilities	✗	✗	✗	✗	✗	-
Structured implementation pathways	✗	✗	✗	✗	✗	-
Adaptability to market conditions	✓	✓	✗	✗	✓	1, 5, 9
Resilience to fast technological advances	✗	✗	✗	✗	✗	-

Source: 1: Schrader et al., (2004), 2: Aboelmaged, (2010), 3: Vaidya et al., (2006), 4: Mora Cortez et al., (2023), 5: Chang et al., (2013), 6: Davila et al., (2003), 7: Panda & Sahu, (2012), 8: Croom & Brandon-Jones, (2007), 9: Chan & Lee, (2003) ,10: Abu Bakar et al., (2016), 11: Kumar et al., (2017).

As shown in Table 2, e-procurement systems mainly support regulatory compliance, security, and administrative efficiency; however, there are differences between the expected affordances and material affordances of e-procurement systems in several areas. These key gaps are evident in system resilience, accessibility, usability, long-term adaptability, and organizational support, especially in situations with limited resources

and limited connectivity. Although current e-procurement systems have streamlined procurement procedures, limitations remain in supporting organizational learning, systematic technological evaluation, and sustained capability development, highlighting the need for further development to meet users' expectations. Ultimately, the synthesis of these findings directly addresses the research objective by demonstrating that while materiality aligns with functional and compliance-driven expectations, a persistent gap exists where users theoretically expect the system to compensate for the fragmented and resource-constrained realities of the construction environment.

4. CONCLUSIONS

This study evaluates the extent to which the materiality of e-procurement systems meets users' expectations and was conducted through an exploratory literature review. The findings show that e-procurement satisfactorily covers most expectations related to security, administrative efficiency, and regulatory compliance, which reduces the use of manual procedures and bureaucratic burdens. However, key expected affordances related to system resilience, accessibility, usability, adaptability to market conditions and technological change, and organisational support remain unmet, especially in contexts with limited resources and connectivity. Most importantly, this research highlights a theoretical distinction in that users often expect the system's materiality to compensate for environmental limitations. For instance, expectations for stability under poor connectivity or legal enforceability reveal that users anticipate the technical subsystem (i.e., the e-procurement system) to bridge gaps in the external environment. Current e-procurement systems, however, largely presuppose an ideal operating environment, resulting in a design-reality gap where these compensatory expectations are left unsupported.

Therefore, to fully integrate e-procurement sustainably, it is necessary for future research and development to move beyond functional compliance and focus on context-aware affordances. Specifically, solutions must be identified that enable systems to function resiliently within constrained environments, to fulfil these remaining expectations and reduce constraints on the sustainable adoption of e-procurement systems.

5. LIMITATIONS AND FUTURE RESEARCH

Mapping documented challenges to user expectations, this research relies on the compensatory expectation framework for its key findings. As an exploratory study, it identifies the potential spectrum of user expectations rather than claiming universal prevalence. For instance, users facing systemic barriers, such as poor internet connectivity, might seek manual workarounds or abandon the system entirely. Within this theoretical framework, such actions are interpreted as symptoms of latent compensatory expectations. While this approach effectively models what users theoretically expect systems to overcome, future empirical research is required. Specifically, user surveys and observational case studies in construction environments are needed to quantify the frequency of these expectations and determine the specific thresholds at which unmet expectations lead to system abandonment.

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