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Procuring Accessible Third-Party Web-Based Software Applications for Inclusivity: A Socio-technical Approach

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Abstract:

The accessibility of web-based software applications is critical, particularly in tertiary education. This is important given the imperative for inclusivity, driven by the increasing diversity of the student population, including individuals with disabilities. Despite this, the procurement process for Third-Party Web-Based Software Applications (TPWBSA) in universities often fails to adequately consider web accessibility standards. This study investigates how universities can enhance decision-making processes related to TPWBSA procurement to improve accessibility for both students and staff. Using a socio-technical systems (STS) framework, we utilise the SEIPS 2.0 model to evaluate and assess accessibility compliance within the procurement process. Through a case study at a single university, we conducted ten qualitative interviews with procurement experts and experienced users (students and staff), followed by thematic analysis to explore current practices in assessing web accessibility. Our findings highlight the potential of the SEIPS 2.0 model to map work systems, processes, and outcomes, offering a structured approach to improving accessibility evaluation in TPWBSA procurement. This research fills a critical gap in understanding how accessibility compliance is addressed in procurement, advocating for the integration of equality, diversity, and inclusion by design as a fundamental aspect of technology-related decision-making in higher education.

Keywords: Web Accessibility (WA), Procurement, Web-Based Software, Socio-Technical Systems, Higher Education Institutions (HEIs).

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1 Introduction

Over the past 20 years, accessibility awareness and development have improved. Yet users still encounter barriers when it comes to using information technology (IT) artifacts (Mäkipää et al., 2022). During this period, the Web Accessibility Initiative's Web Content Accessibility Guidelines (WCAG) have had two major updates: WCAG 2.0 (2008) and WCAG 2.1 (2018). The ISO accessibility standard was last updated in 2019 (ISO/IEC 30071-1:2019). Compliance with WCAG 2.1, an ISO standard, mandates content accessibility to accommodate a spectrum of disabilities (ISO, 2012). The EU Directive 2019/882 (European Union, 2019) also known as the European Accessibility Act (EAA), which is due to become law in June 2025, aims to establish standardised accessibility regulations for products and services in the EU's private sector. This directive seeks to enhance accessibility across the EU, thereby fostering inclusivity for differently abled individuals and ageing populations. Emphasising the integration of accessibility considerations from the procurement stage, the EAA underscores the importance of designing products and services to be inherently accessible. Thus, it mitigates against the higher costs and complexities associated with retrofitting for accessibility. This proactive approach aligns with the Act's objective of fostering a more inclusive market and society, in compliance with legal standards. The scope of the directive encompasses a wide array of products and services, encompassing both digital and physical environments, such as payment terminals, ATMs, smartphones, e-readers, as well as electronic communications and consumer banking services (European Union, 2019). Given that web-based software might first be developed within the private sector, it is crucial for vendors to meet the accessibility requirements outlined in this directive.

The EU Directive 2016/2102 (European Union, 2016) aims to enhance the accessibility of public sector websites and mobile applications by implementing common accessibility standards across the EU. By harmonising these standards, it seeks to eliminate market fragmentation, provide clarity for developers, promote interoperability, and encourage innovation without hindering technological advancements (European Union, 2016, p.3). By identifying and incorporating accessibility features early in the procurement process, organisations can effectively adhere to the requirements, thereby promoting equality and reducing barriers for differently abled individuals (Adam & Kreps, 2006; Destounis et al., 2004; Kamoun & Almourad, 2014). Notably, the benefit accrued through this initiative extends beyond those differently abled, catering to the needs of older individuals and those with temporary impairments, thus fostering a universally inclusive environment (Johnson & Kent, 2007). Further, in the Republic of Ireland (ROI), the National Disability Authority's (NDA) Code of Practice on Accessibility of Public Services and Information provided by Public Bodies mandates Level AA conformance to the WCAG for public bodies' websites. This is enshrined in legislation, specifically the Disability Act 2005 (Irish Statute Book, 2005), which requires Higher Education Institutions (HEIs) to ensure their procurement processes adhere to accessibility standards. Universities typically involve diverse stakeholders, including administrators, faculty, IT professionals, and students in decision-making processes, necessitating an understanding of their interactions and decision-making dynamics regarding software procurement. With 13.9% of new entrants with a disability (HEA, n.d.) accessing HEIs in the Republic of Ireland, and approximately 19% of new university entrants in the United States reporting a range of disabilities—including physical, sensory, cognitive, and mental health conditions (Erickson et al., 2024)—achieving website accessibility standards in HEIs is crucial. Ensuring these standards are met is essential for providing equal access to TPWBSA. As the funding sources and goals of IT products in business and the public sector differ, the promotion of accessibility requires collaboration, including understanding and trust between researchers, developers, and disability advocacy organisations (Neufeldt et al., 2007; Stienstra et al., 2007).

Research to date (Neufeldt et al., 2007) highlights the challenges in engaging private-sector firms in accessibility research, noting discrepancies in language, motivations, and priorities between business and research communities. Businesses prioritise profitability and competitive advantage, whereas accessibility initiatives, such as those that exist in HEIs, align with regulatory compliance or corporate social responsibility. This divergence contributes to fragmented accessibility efforts, where compliance is reactive rather than proactively embedded in procurement and design processes. There is often little involvement from disabled students, faculty, or accessibility specialists in the software selection process. Research lacks insights into how user feedback can shape procurement policies to better meet accessibility needs. It is also evident from the literature that the existing body of research focuses on accessibility compliance, legal frameworks rather than the practical challenges of evaluating for accessibility in the procurement stage of the process (Acosta-Vargas et al., 2018; AlMeraj et al., 2021; Laufer-Nir & Rimmerman, 2018).

Subsequently, this research aims to explore the current procurement process for TPWBSA in a university setting. A social-constructivist approach is used to create awareness of two organisational contexts and how TPWBSA, when procured, are assessed and continue to be shaped by the university's social practices and interpretations (Leonardi, 2009). A socio-technical perspective supports this view by enabling researchers to examine not only the technical capabilities of TPWBSA but also how these systems align with institutional norms, values, and power dynamics. It highlights the co-evolution of technology and social structures, recognising that procurement decisions are shaped by stakeholder negotiations, legacy systems, and embedded organisational routines. By acknowledging the mutual shaping of technology and organisation, this approach reveals how user interpretations, governance, and cultural assumptions influence the procurement, implementation, and ongoing use of third-party systems. This approach is utilised to aid in the deconstruction of existing website accessibility evaluation and assessment of practices to answer the following research questions:

RQ1: How is TPWBSA currently assessed for website accessibility during the procurement process?

RQ2: How can we create awareness of individual expertise when evaluating and assessing TPWBSA for website accessibility, which in turn may lead to improved practice?

In this study, we consider the concept of website accessibility through two primary lenses. Firstly, we examine website accessibility within the framework of HEIs procuring TPWBSA. Secondly, we explore website accessibility from an individual standpoint, emphasising the imperative to provide "equal or equivalent access" (Jaeger, 2008) to information, services, and experiences within the virtual environment of universities. For this study, TPWBSA refers to software sourced from external vendors and developed utilising web-specific technologies that can be tested using Web Content Accessibility Guidelines (WCAG) or similar accessibility evaluation tools.

The remaining sections of this paper are organised as follows: Section 2 considers previous studies concerning website accessibility in HEIs and government bodies. Section 3 presents a social constructivist approach and a Socio-Technical Systems theory (STS) lens to view the procurement process, and from this, the SEIPS 2.0 model is utilised. Sections 4 and 5 respectively present the methods and findings. The discussion, section 6, presents theoretical and practical implications, including limitations and future work. Section 7 concludes with opportunities for future research.

2 Background

Website accessibility in the context of HEIs, public service, and government bodies are widely considered in the literature. Existing research focuses on country specific contexts, identifying how HEI and government websites are meeting the necessary accessibility criteria (Acosta-Vargas et al., 2018; Harper & DeWaters, 2008; Laufer-Nir & Rimmerman, 2018). From a HEI perspective, education-related services are increasingly available online, making services accessible to all users is an imperative (Adam & Kreps, 2006; Akgül, 2021; Laamanen et al., 2024). When services are not accessible, users encounter perceptual, operability, technical, cognitive, and comprehension barriers, for example, those with visual impairment may struggle to locate essential information due to poor content structuring (Lazar et al., 2004; Mäkipää et al., 2022). This can occur when adaptive technologies are unable to access web pages and convert them to a usable format (Whitney, 2020). Thus, denying users, specifically those with visual impairment, access to the medium has positively impacted their education and quality of life (Gerber, 2003). 'Blind users' not only encounter accessibility issues from a technology perspective but also encounter cognitive usability challenges (Babu et al., 2010). When testing usability criteria of learnability, efficiency, errors, satisfaction, and memorability (Nielsen, 1993; Xie et al., 2023), blind users encounter numerous usability issues. People with cognitive or intellectual disability may face comprehension barriers when they encounter overly complex design layouts that lack simplified and structured information overloaded with content (Król & Zdonek, 2020).

Existing research highlights how legislation is used as a benchmark for HEIs and/ or governments on web accessibility criteria standards. This can act as an impetus to prioritise website accessibility at earlier stages of the design and development process (Hackett & Parmanto, 2005) and may hold federally funded institutions accountable in terms of meeting such standards (Bradbard & Peters, 2008). Other studies suggest that educational institutions should enforce compliance with website accessibility standards through increased awareness amongst developers and IT managers (AlMeraj et al., 2021). As HEIs now utilise web-based applications to disseminate information to large groups, i.e., staff and students, it is critical that universal access can be achieved. Yet results from empirical studies indicate continued low compliance with website accessibility standards (Acosta-Vargas et al., 2018; AlMeraj et al., 2021; Laufer-Nir & Rimmerman, 2018).

For individuals with a disability to access courses and other service content in a HEI, they are highly dependent on the level a web application conforms to WCAG and whether effective accessibility assessment and evaluation procedures are implemented as part of the procurement process. When considering accessibility from a compliance perspective, the consensus is that third-party web-based applications need to meet minimum WCAG (Acosta-Vargas et al., 2018; Adam & Kreps, 2006; AlMeraj et al., 2021; Bradbard & Peters, 2008; Kamoun & Almourad, 2014; Laufer-Nir & Rimmerman, 2018; Lazar et al., 2004; Whitney, 2020). In the context of investigating accessibility, assessment and evaluation activities are interconnected yet independent. While assessment involves the identification of accessibility issues (Acosta-Vargas et al., 2018), evaluation goes beyond identification, typically providing qualitative and quantitative evidence that characterises the overall level of conformance and usability of a website or application according to existing guidelines such as WCAG (Acosta-Vargas et al., 2018; AlMeraj et al., 2021).

The act of ensuring that technical guidelines are adhered to not only ensures a level of compliance, but it also actively promotes social justice (Hackett & Parmanto, 2005), preventing inadvertent discrimination. Although existing research focuses on website accessibility in terms of meeting specific WCAG with a focus on compliance (Li et al., 2012), little research has been conducted to understand the evaluation process prior to software procurement using a socio-technical lens. When considering website accessibility as a critical IS issue (Mäkipää et al., 2022), it is seen as a socio-technical problem where technical development and standardisation must go together with critical discourse (Adam & Kreps, 2006). This shifts website accessibility, not only to be viewed in terms of technical factors, but in terms of social factors such as the evaluation and assessment tasks required as part of the related procurement processes and the rich interplay between the social and the technical. This also highlights the uniqueness of the procurement process and the diverse stakeholders who contribute to the design of accessible software.

Prior research highlights that within the IT artifact design process, several stakeholders contribute to the design of accessible interfaces and that exposure to education and training may influence a web developer's perception of web accessibility (Lazar et al., 2004). Based on Ryan and Deci’s (2000) Self-Determination Theory (SDT), motivations and challenges are explored when influencing web practitioners' motivation to implement accessibility. From this research, ethical conflicts were found when intrinsic and extrinsic motivations do not align. This research highlighted that an emphasis should be placed on accessibility as a fundamental aspect of IT development early in the design process (Mäkipää & Vartiainen, 2023). Other studies have investigated web practitioners' intention to consider website accessibility standards in their development process through the lens of the Theory of Planned Behaviour (TPB). One such study highlights how three salient beliefs may positively influence this intention, first, user advocacy, where users directly promote their needs, second, self-perception as a specialist, where website developers/ practitioners prioritise accessibility as part of their professional role, and third, perceived product quality, where web developers/ practitioners believe accessibility improves the overall quality of a product. This highlights the tension between conflicting and competing business priorities and its influence on website accessibility and how it is addressed during design and development (Vollenwyder et al., 2019).

3 Theoretical Background

A review of alternative theories including Expectancy Theory (Vroom, 1964), Theory of Motivation (Porter & Lawler, 1968) and Self-Determination Theory (Deci & Ryan, 1985) reveal a focus on the motivation of the decision-maker and detracted from the IS or work process of interest, in this case our focus was on HEI technology procurement processes. Subsequently, we identified STS theory as an appropriate lens to encompass the social, technical, and socio-technical characteristics at play in the TPWBA procurement process to guide future decision support requirements.

3.1 Socio-Constructivist Approach

Social constructivism (Leonardi, 2009) integrates social construction of technology theory concepts and other constructivist theories such as Actor-Network Theory (Callon, 1986; Latour, 2005) and structuration theory (Giddens, 1984). Leonardi (2009) highlights how technology is both constructed and shaped by social processes, negotiations, institutions, context, and interaction of users making them prone to interpretive flexibility (Bijker et al., 1994; Pinch & Bijker, 1984). Social construction of technology theory highlights the way social groups assign different meanings to technological artifacts, which have the power to affect the technologies' development (Pinch & Bijker, 1984). Actor-network theory (Callon, 1986; Latour, 2005) argues that technological development comes from the interplay of different social and non-social actors in the world and emphasises the artificial separation between the social and the material, arguing that technological development is the result of dynamic, heterogeneous networks of human and non-human actors. From an organisational perspective, structuration theory (Giddens, 1984) highlights how its adaptation into adaptive structuration theory (DeSanctis & Poole, 1994) provide a framework for understanding how individuals' appropriate technologies within institutional settings, thereby shaping and reshaping organisational structures (Orlikowski, 1992). Building on these foundations, research contends that technology and organising are mutually constitutive, wherein technologies emerge within social processes and, in turn, recursively influence those very processes (Leonardi, 2007; Orlikowski, 2000; Poole & DeSanctis, 2004). In the context of this research, a social constructivist approach provides a better understanding of how TPWBSA sheds light on the two different organisational contexts at play, that of the vendor, that of the HEI, and how website accessibility evaluation and assessment practices may benefit from the mapping within the procurement process.

3.2 Socio-Technical Systems Theory

STS Theory acknowledges the intricate interplay between social and technical components in organisational contexts (Appelbaum, 1997). Originating in the mid-20th century, primarily through the pioneering work of Eric Trist and Fred Emery at the Tavistock Institute in the UK (Emery & Trist, 1965), STS has evolved and garnered significant attention across various disciplines, including IS, organisational theory, management studies, and human-computer interaction (Klein & Lyytinen, 1985; Mumford, 1983; Sandberg, 1985). Mohr and van Amelsvoort (2016) define a contemporary socio-technical approach as "The participative, multidisciplinary study and improvement of how jobs, single organisations, networks, and ecosystems function internally and in relation to their environmental context, with a special focus on the mutual interactions of the entity's … value-creation processes" (p.2).

One foundational aspect of STS is its emphasis on understanding how social and technical factors interact to shape work processes and outcomes (Winter et al., 2014). Central to this perspective is the notion that organisational effectiveness emerges not solely from optimising technical systems but also from aligning these systems with social structures, values, and human needs (Winter et al., 2014). According to Winter et al. (2014), emphasis on the optimisation of social and technical elements distinguishes STS from purely technical or social approaches to organisational design and management. Existing STS research highlights several key principles and concepts. Firstly, the concept of "joint optimisation" underscores the need to balance the requirements of both social and technical systems to achieve goals (Davis, 1977; Appelbaum, 1997). This involves designing work processes, technologies, and organisational structures that accommodate both technical efficiency and human satisfaction. Secondly, STS emphasises the importance of participatory design and employee involvement in decision-making processes (Mumford, 2006). By involving workers in the design and implementation of technology and work systems, organisations can harness the collective expertise of employees, enhance job satisfaction, and foster a sense of ownership and commitment (Bednar & Welch, 2020). Furthermore, STS recognises the dynamic nature of organisational systems and the necessity of ongoing adaptation and flexibility (Appelbaum, 1997). Organisations must be responsive to changing technological landscapes, market demands, and socio-cultural contexts. This necessitates a continuous process of reflection, learning, and adaptation to ensure the ongoing alignment of social and technical elements. STS literature explores the implications of technological advancements, such as automation, AI (Makarius et al., 2020), and digitalisation (Kopp et al., 2019), on work design (Appelbaum, 1997). While these technologies offer potential benefits in terms of efficiency and innovation, they also raise concerns regarding job displacement, skill requirements, and the impact on employee well-being (Appelbaum, 1997). STS provides a valuable integrated lens through which to analyse and address these complex socio-technical challenges (Bednar & Welch, 2020).

STS offers a holistic perspective on organisational design and management, focusing on the interconnectedness of social and technical elements. Procurement, when viewed through an STS lens, consists of both social and technical components. Consideration should be given to procurement systems as a social system that can pertain to the different stakeholders involved in decision-making, specific (Bostrom & Heinen, 1977) to the evaluation and assessment of TPWBSA. These include awareness and attitude to website accessibility, skillsets required at various stages of the procurement process, and how website accessibility impacts users. This may also involve authority structures in the form of legal obligations and compliance (Bostrom & Heinen, 1977). Procurement as a technical system may be described as tasks and technologies required for evaluating and assessing TPWBSA. It may also be characterised as the work system that enables the evaluation and assessment of TPWBSA and how, through the procurement process, TPWBSA integrates into the HEI environment (Bostrom & Heinen, 1977).

A STS perspective has been adopted due to its suitability in the mapping of the interwoven and complex systems within the boundary of the procurement process (Winter et al., 2014), where social, technical, and socio-technical elements exist. By mapping an existing procurement process in terms of how it evaluates and assesses TPWBSA, we aim to shed light on the key components of this procurement process to better understand how decision-makers can be supported during the evaluation and assessment phase to enhance accessibility.

3.3 Towards a Model of Website Accessibility in Procurement

STS theory acknowledges that the work system is an open system, influenced by various environmental factors, such as technological advancements and regulatory changes, while also consisting of interconnected individuals and their relationships (Eason, 2014). STS theory informed the development of the Systems Engineering Initiative for Patient Safety (SEIPS) model, introduced by Carayon and colleagues (Carayon, 2006a; Carayon et al., 2006b; Carayon et al., 2014). The model was expanded and adapted to support the changing environment and to bring modern ideas into human factors research and application (Holden et al., 2013). Maintaining the key properties, the socio-technical work system has six interacting components of *person(s), tasks, tools and technologies, organisation, internal environment*, and *external environment*. Together, this contributes to work processes which can be characterised to aid in the achievement of a specific goal or outcome (Holden et al., 2013). Based on empirical research, the SEIPS 2.0 model has applications outside of a healthcare setting and has been used in the working arrangements in the Norwegian engineering, procurement, and construction industry (Høyland et al., 2019; Selvik et al., 2022).

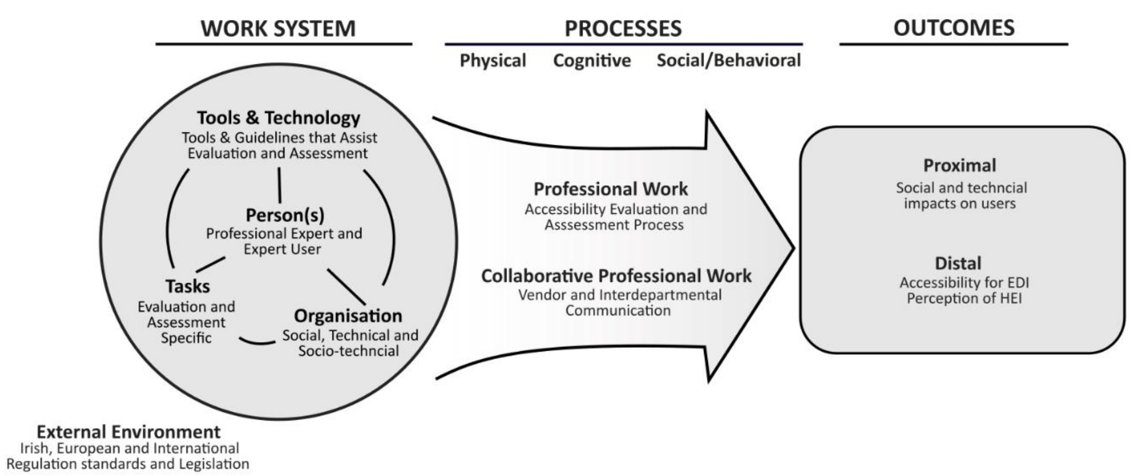

Figure 1. SEIPS 2.0 Model (Source: Holden et al., 2013)

In this research, the SEIPS 2.0 model serves the HEI environment and the procurement process specific to evaluation and assessment of TPWBSA (Figure 1), as a work system, where multiple factors interact to influence the software selection process.

Most notably, patient outcomes have been replaced with user outcomes for a differently abled individual, and the impact of the internal environment on the outcomes of users.

3.4 Work System

Within the HEI setting, the work system (Figure 1) consists of six interacting components characterised as *person(s), tasks, tools and technologies, organisation, internal environment,* and *external environment* (Holand et al., 2013). *Person(*s) relate to the people involved in procurement as a socio-technical system. The *person(s*) can be both professional experts and expert users, either directly or indirectly involved in the procurement evaluation and assessment of TPWBSA. *Person(s)* can be recognised as the collective team involved with tasks, with factors such as awareness and knowledge amongst team members to be considered. Characteristics and attributes of *person(s)* can be specific to users of TPWBSA and the professional background of *person(s)* performing the task (Høyland et al., 2019). *Task*s consist of the characteristics of the task being explored with examination of specific task attributes such as task difficulty, ambiguity, timeline, and sequence of events, and complexity (Holand et al., 2013; Høyland et al., 2019). Using the SEIPS 2.0 model (Figure 1), the task of evaluating and assessing TPWBSA will be isolated from within the procurement process.

Tool and technology factors within the HEI setting are characterised as the accessibility, functionality, and portability of TPWBSA for differently abled individuals and the usability, familiarity, and level of automation for professionals involved with tools and technologies used for evaluation and assessment of TPWBSA. The *organisation* consists of factors external to the *person(s)* but that occur within an organisation that coordinates space, time, activity, and resources. Within HEIs, organisational factors surrounding the procurement process can be characteristics of “assignments, management and incentive systems, organisational culture, training, policies, and resource availability” (Holand et al., 2013, p.5; Høyland et al., 2019, p.75). To *person(s)* described as being the user of TPWBSA the organisation can consist of external factors that can occur both within a HEI setting and within users’ homes or remote areas when accessing TBWBSA. These can include communication infrastructure or access infrastructure, the support roles of family or peers or work colleagues, and assistive resources. The *internal environment* includes characteristics of the physical environment, and in the context of this research are perceived not to impact procurement as a socio-technical system or the outcomes for users when using TPWBSA. The *external environment* is made up of factors that occur outside of the organisation and incorporate more “macro-level societal, economic, ecological, and policy factors” (Holand et al., 2013; Høyland et al., 2019). Within HEIs, the external environment plays a critical role with consideration given to governance and regulation, compliance with public procurement legislation, and the EU Directive 2016/2102 (European Union, 2016).

Processes (Figure 1) comprise aspects of physical, cognitive, and social/ behavioural performance and include classifications of ‘professional work’, ‘patient work’, and ‘professional-patient work’ (Holand et al., 2013). The factor of ‘patient work’ has been replaced by ‘user work,’ and ‘collaboration professional-patient work’ has been replaced by ‘collaboration professional work’, with the logic of the model remaining.

Within SEIPS 2.0 (Figure 1), outcomes relate to “states or conditions resulting from the work process” (Holden et al., 2013, p.9) and can be described as an outcome based on the interaction of the work system components based on individual or collective performance, taking the physical, cognitive, and social/ behavioural aspects into account. Outcomes specifically relate to the impacts of the evaluation and assessment of TPWBSA for differently abled individuals. Outcomes are considered as desirable and undesirable with the aim of proposed changes to the system consisting of decreasing the disparity between actual accessibility verses ideal accessibility. Outcomes can also be classified as having distal and proximal characteristics. Proximal characteristics are those characteristics of differently abled individuals’ experiences when using and accessing TPWBSA. Distal characteristics consider broader social contexts such as equality, diversity, and inclusion (EDI). The SEIPS 2.0 model highlights how accessibility is evaluated and assessed within procurement and aids in mapping and analysing the existing procurement process and system, and the interwovenness of the evaluation and assessment of TPWBSA.

4 Methods

Using the SEIPS 2.0 model as a lens, we pursue an exploratory case study in which ten semi-structured interviews were conducted with decision-makers classified as professional experts, either directly or indirectly involved in the procurement process, or differently abled expert users of TPWBSA. All participants are based within a single HEI. Using a single case study (Eisenhardt, 1989), the focus of the research is to explore the current procurement process to understand how website accessibility is currently assessed and evaluated (Mintzberg, 1979) when considering TPWBSA. The selected case took place in a publicly funded third-level university in the Republic of Ireland, with approx. 3,500 staff and 25,000 students. This case was interesting as there was an ongoing university-sponsored project underway since 2021 dedicated to promoting digital inclusion for all students, aiming to position the university as a leader in digital accessibility and ensure equal access to learning resources. This is important as it meant that stakeholders were amenable to considering the concept of inclusivity when it came to the university procurement processes.

The SEIPS 2.0 model was utilised as a data collection instrument through analysis (Eisenhardt, 1989; Gioia et al., 2013), with an inductive approach to aid in the generation of new theory and reflexivity of the researchers.

4.1 Data Collection

Social research ethics approval was provided by REMOVED FOR REVIEW, and data were collected between January 2023 and April 2023, through semi-structured interviews (Myers & Newman, 2007). A purposeful sampling approach was adopted (Knoke, 1993) with experts involved in the evaluation and assessment of TPWBSA and experienced direct users of these systems (Table 1 and Table 2). These respondents are representative of stakeholders typically engaged in the procurement and evaluation of TPWBSA in a HEI. A 5-point Likert scale (Likert, 1932) was used to capture the frequency of involvement in evaluation and assessment of website accessibility, ranging from 1 (Never) to 5 (continuous) from the interviews conducted. A 5-point Likert scale (Likert, 1932) was also used to assess frequency of usage of TPWBSA, ranging from 1 1 (Never) to 5 (continuous). Theoretical saturation was reached within the pool of participants.

Table 1. Overview of Experts Workers Interviewees

ID	Professional Background	Frequency of Involvement	Type of Involvement
Professional Expert 1	Information Technology	4	High level overview of process and what is required. Has nominated an accessibility champion for which to do so.
Professional Expert 2	Information Technology	2	High Level knowledge of website accessibility and is involved in evaluation and testing of TPWBS and websites. More so in a past role.
Professional Expert 3	Disability Support Services	3	Directly involved in evaluation and testing of some not all.
Professional Expert 4	Disability Support Services	2	Evaluation and testing
Professional Expert 5	Procurement	5	High level and detailed knowledge of procurement processes. Assigns evaluation and assessment to team.
Professional Expert 6	Website Administration	4	Evaluation of websites, sites, content management systems.
Professional Expert 7	Administration	2	Utilised AAA, AA Websites Accessibility standards

Table 2. Overview of Differently Abled individual User Interviewees

ID	Background	TPWBSA usage	Contexts for use of TPWBSA
Differently Abled Expert User 1	Student and member of faculty, high frequency user of TPWBSA and experienced user	5	Capturing college notes, lecture notes, accessing recordings, assignment work, project work and email.

Differently Abled Expert User 2	Student and member of faculty, high frequency, and experienced user of TPWBSA	5	Viewing Academic material, Class presentations. aid other users to make TPWBSA more accessible, assignments, writing essays and spreadsheets.
Differently Abled Expert User 3	Past student and member of faculty	5	Teaching, meetings, email.

Through the lens of the SEIPS 2.0 model, this research seeks to explore the evaluation and assessment of TPWBSA, by identifying the boundaries of the relevant encapsulating system (Winter et al., 2014) to reveal gaps between existing outcomes against ideal or perceived outcomes with the overarching aim of better supporting decision makers through increased awareness of expertise of individuals involved in the procurement process. The interviews sought to gain insight into participants' understanding and awareness of website accessibility, web-based software applications, and existing evaluation procedures. Interviews ranged from 15 to 40 minutes in duration and were conducted via Microsoft Teams at a time convenient for participants. Prior to the interview, participants provided written consent and were asked permission to record the interview for the purpose of transcription and analysis. The interview guide (Appendix A) was informed by our analysis of the existing relevant literature.

4.2 Data Analysis

After collecting data, thematic analysis techniques (Gioia et al., 2013; Miles & Huberman, 1994) were used. Data reduction was conducted through transcription of interviews (Miles & Huberman, 1994). Following Gioia et al. (2013), phase one consisted of reading and rereading all ten interviews to allow for familiarisation and a holistic grasping of phenomena. Phase two consisted of coding data into meaningful codes, which were initially assigned into conceptual classifications of people, process, and technology to align with the IS domain. From professional expert interviews, 54 codes were generated, while 27 codes were derived from interviews with differently abled individuals for TPWBSA. In phase three, data coding continued as an iterative process following several discussions among the research team. The codes were further refined within the same conceptual categories, resulting in 34 codes from professional expert interviews and 22 from differently abled expert users. Meetings lasted about one hour, discussing the phenomena perceived from initial codes. In phase four, themes were reviewed and systematically compared. The SEIPS 2.0 model served as a framework for further refining the identified themes. Codes were categorised into three high-level conceptual classifications: 'work system,' 'work process,' and 'outcomes,' resulting in the creation of 89, 28, and 33 codes, respectively. Phase five consisted of formalisation of findings and re-evaluation of codes to include the refinement of the research objective.

To illustrate the coding process (Figure 2), the following excerpt is provided with an explanation of how this mapped to identified themes:

> *"Suppose the people on the project in general, broad sweeping terms will be able bodied, neurotypical in general, but not always. So, they're not testing the products with screen readers. They're not testing the products in that way, they're just, is it usable for me?"* (Professional Expert 2)

In phase one, this quote was initially coded as "Evaluation based on staff as user" under 'process' classification. In the next iteration, having observed the phenomena in more depth, the code was aggregated to form "Perception based testing" under 'task' within the work system. The following sections outline the findings based on the proposed SEIPS 2.0 model. These findings act to create visibility for a previously underexplored socio-technical system.

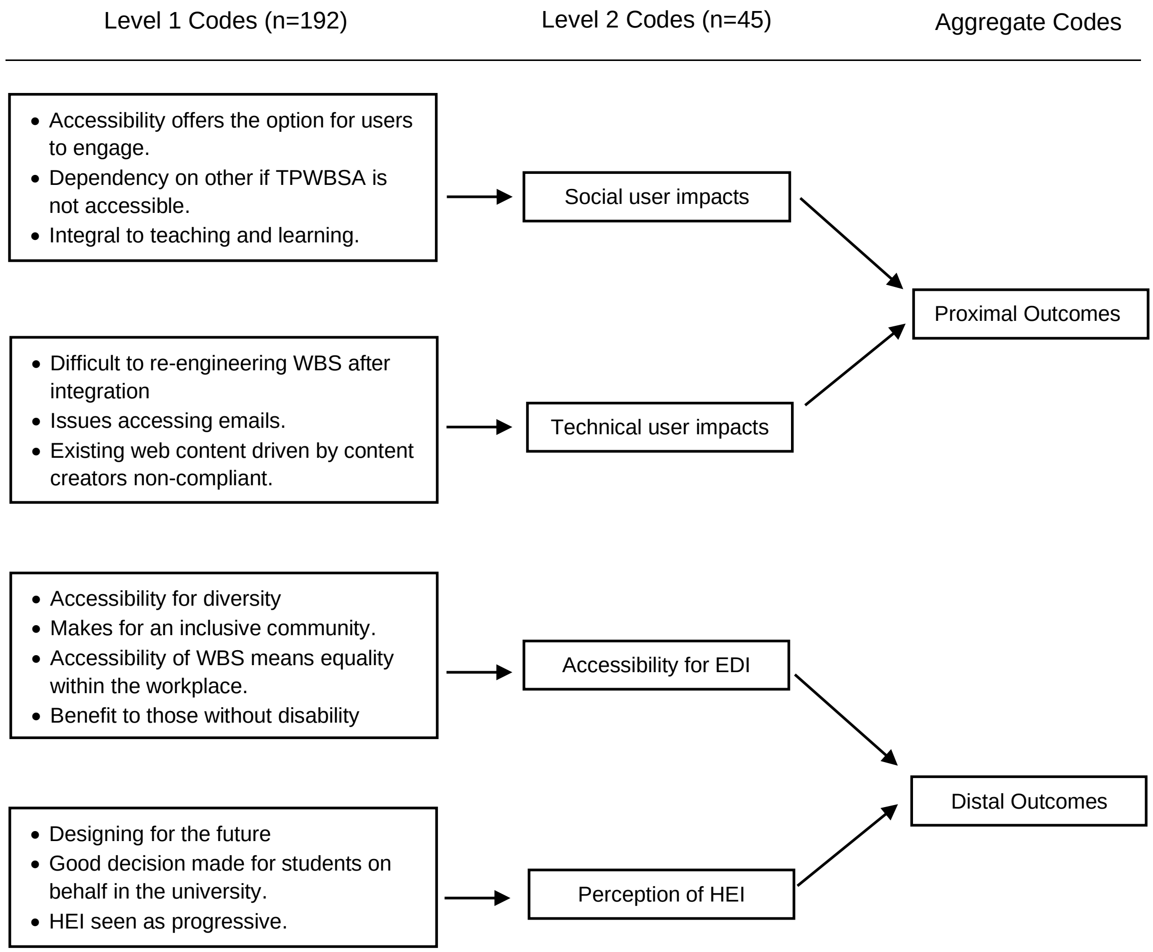

Figure 2. Snapshot of Data Analysis using Gioia Methodology (Source: Gioia et al., 2013)

5 Findings

5.1 Evaluation and Assessment of Accessibility within the Procurement Work System

An expert's level of involvement specific to the evaluation and assessment of accessibility can vary, ranging from once a month to once a year, depending on the types of software being procured. The nature of involvement can vary, with some professional experts required to have a high-level overview of the process, with a view to assigning detailed accessibility and evaluation assessment champions or teams to take a more detailed look at the system under investigation.

> *"I don't think I necessarily need to know the details of it, and that is why you have an evaluation team who have expertise in various areas, and they bring that level of expertise to them."* (Professional Expert 5)

Other types of involvement can be considered specialist, representing skillsets within IT and web administration to include an in-depth understanding of WCAG 2.1 and technologies such as website evaluation tools. One professional expert with a disability support service background specifically requests access to TPWBSA to test and understand issues or barriers encountered. As stated by Professional Expert 4:

> *"We would also then ask to ensure that we are working with software that our students with disabilities use …and we'd also ask for access to a copy of the software so we can test it ourselves."* (Professional Expert 4)

Whilst differently abled individuals are not directly involved in the evaluation process during the procurement phase, they are occasionally asked to provide feedback. The contexts for use can be deemed as core to daily university business including capturing college and lecture notes, accessing recordings, assignments, project work, etc.

> *"As I said for capturing my own notes whether being in class or after class. And then working on assignments, project, things like that."* (Differently Abled Individual Expert User 1)

Collectively person(s) within the work system have varying levels and types of awareness of website accessibility and what constitutes web-based software. Even when a person has a low level of awareness of the technical aspect of website accessibility and web-based software, an understanding exists of the obligation to participate in the collective journey of achieving website accessibility standards through interdepartmental communication and having champions and expert groups in place.

> *"We have to make sure…we've linked with IT services, and we've also linked with procurement even if it's under the threshold just to make sure that we're crossing our I's and dotting our T's."* (Professional Expert 3)

When the tasks associated with evaluating website accessibility are viewed in isolation from the procurement process, findings show that difficulty can arise when testing web-based software or websites that are not publicly available and that may require login credentials. Findings suggest a lack of representation from disability services in accessibility evaluation. As stated by a Professional Expert 4:

> *"We're not involved in any procurement that goes on, let's say, campus wide. So, we'll have no say in that until the software actually arrives."* (Professional Expert 4)

A misalignment of testing and evaluation practices between vendor and HEI is highlighted by some interviewees, with a call for more rigorous accessibility testing by HEIs and more detailed reporting of the type of accessibility and testing being conducted by the vendor. Tasks are described as ambiguous and not well-defined.

> *"Really the requirements gathering is key and I do think that's somewhere that needs to be worked more on because I think sometimes the requirements aren't set; they're not defined enough."* (Professional Expert 1)

Uncertainty also exists with the task of evaluation using WCAG 2.1, one interviewee described it as confusing, dense, and legalistic:

> *"The challenge, I suppose, is that … they are very detailed and they're very kind of legalistic as well at times and they're quite dense. Which doesn't necessarily meet the accessibility guidelines for plain language."* (Professional Expert 6)

From an awareness perspective, not all stakeholders are aware of the tools needed for effective evaluation and assessment (Professional Expert 5). A lack of awareness was also found relating to how TPWBSA are tested, with evaluation being conducted by people without a disability. This has led to acceptance and scoring of TPWBSA being specific to projects and the individuals connected to them (Professional Expert 2) rather than a standardised website accessibility evaluation procedure.

It has been stated that checks and testing do not occur early enough in the process; in some instances, evaluation occurs after the software application has been procured. Then, when issues are found, stakeholders' questions as to how the vendor is challenged and held accountable. Some professional experts have stated that feedback given to vendors is not resolved, raising questions as to what types of guidelines or structures are in place.

> *"In my experience, when I do give feedback, I'll hear nothing more. I'll just basically hear back from the department and that's university wide, regardless of what department, okay, thanks for your input and that's the last I will hear of it. Generally, then if I look back at the active solution that's running, the issues I would have raised initially are still there. I don't see them. I don't see the concerns actually being solved."* (Professional Expert 5)

On the one hand, there is not sufficient reprimand with a tougher approach being required for vendors where certain accessibility standards are not being met. Whilst on the other hand, others have found vendors to be very cooperative when it comes to changes to software to promote accessibility, "to be honest, when it comes to accessibility, a lot of vendors, they're very accommodating" (Professional Expert 4).

5.2 Organisational Impacts on Accessibility within the Procurement Work System

Social factors include the overall need for a HEI to increase understanding and promote accessibility as part of a universal design for learning approach in higher education. One professional stated that this should move beyond achieving minimum standards to benefit the wider HEI community through increased visibility.

> *"You're designing in accessibility from day one, if it's back-office staff that are here now… who don't yet have an accessibility needs but may have in the future and as well as…the new entrants into the university…if they see we're actually living our own values around inclusivity it might give them more confidence, that it's actually part of our psyche."* (Professional Expert 7)

At a high level, the organisation takes guidance and is reliant on the rules embedded in public procurement processes to ensure there are equal opportunities for suppliers, with procurement acting to keep departments within the HEI accountable and enforce compliance internally.

> *"We are aware of the web accessibility standards, and we are compliant with those standards, and we build those requirements into our procurement tenders, and we hold vendors to account for those standards."* (Professional Expert 1)

The organisation is bound by the external environment with statutory adherence to Higher Education Authorities (HEA) and public procurement processes. For example, HEIs are required to advertise externally for services costing over €25,000. According to one professional expert:

> *"We put that finalised specification together into a tender document and the tender document then gets advertised on the government portal 'etenders.gov.ie' generally, it is advertised in an open manner, but there are various procedures that can be used as well."* (Professional Expert 5)

Other external factors include the role of European and international guidelines, legislation-led processes, and auditing of accessibility compliance (Professional Expert 4). Due to the nature of the socio-technical system being explored, internal environmental factors are difficult to discern and therefore should be explored more specifically in future research.

5.3 Work Process Performance

The performance of work processes may depend on and be shaped by the unique configuration of work system factors (Holden et al., 2013, p.29), and this is contingent on how TPWBSA is evaluated and assessed. Professional work processes focus on functional requirements to meet business needs and rely less on competitive dialogue with vendors due to the existing open procedures in place.

> *"By and large, the vast majority of our tenders are done on the open procedure and that is just a simple one step process whereby you advertise the tender and if the suppliers think that they meet all of the selection and the award criteria then they have the ability to make the decision to respond to that document and send in a submission."* (Professional Expert 5)

Lower purchase items are considered outside of the centralised contracts as they are below certain procurement value thresholds, with the potential value determining if a main vendor is used. Turnover thresholds exist where a potential vendor company needs to meet certain thresholds of turnover and profitability.

> *"We did kind of a text-based evaluation on functional, non-functional requirements and size and capabilities and maybe some commercial stuff as well. Like their turnover and profitability."* (Professional Expert 7)

In some instances, evaluation and assessment occur directly after the tender has run to include checking that TPWBSA meet certain IT gateways and whether they work with assistive technologies. Failures to advance to the next stage occur when TPWBSA does not meet functional and accessibility requirements. Scoring of TPWBSA occurs towards the end of the procurement process after a series of stages and rounds.

When considering the 'agents' specifically the professional experts and users impacted by the performance and outcomes of the system, the social/ behavioural component is seen to aid HEI achieve its accessibility in TPWBSA. Whilst cognitive and physical performance also contribute to the social/

behavioural outcomes, in the context of this research, it is understood that social/ behavioural outcomes are the relationships with HEI and vendors.

> *"If something goes wrong with the platform or with the product completely or if it's a bug or a defect or a feature request, then we would have direct reports to the supplier. We'd have a relationship with the supplier."* (Professional Expert 7)

Existing relationships between procurement and vendors have created opportunities to communicate issues directly and in some instances Disability Services acts on behalf of the students and goes directly to vendors if issues occur.

> *"What we've done up until now is link with a company that we've bought the software from and see if we can sort it out."* (Professional Expert 3)

The performance of the work system can be reliant on collaboration between professional experts. Collaborations in the form of working groups aid in scoring accessibility specific requirements with communication to vendors of areas where they have failed or been successful.

> *"Putting in a tender submission takes time and effort and to be fair to suppliers, they need to have good feedback in order to learn from the process as well as to particularly the unsuccessful suppliers who need to understand why they weren't successful."* (Professional Expert 5)

Collaboration also occurs after TPWBSA has been procured, when professional experts from the procurement department collectively liaise with vendors when issues are found. Collaboration in the form of interdepartmental communication indicates how department-specific expertise is relied upon. For example, Disability Services looks to other functional areas for guidance when issues specific to accessibility arise or when new accessibility requirements become known.

> *"We'd look to get support from procurement and also from IT services just to make sure that what we're doing is correct."* (Professional Expert 3)

IT and website administration look to experts within procurement for guidance and procurement professionals rely on the technical architecture team to offer specific guidance on the university technology infrastructure, with IT aiding in the management of infrastructural issues. The building of requirements is a highly collaborative process and requires procurement to work with "all stakeholders in the registry and across the university to compile a catalogue of requirements" (Professional Expert 9). This ensures that vendors are accountable based on the standards developed within the requirements.

5.4 Outcomes Based on Existing Work System and Process

5.4.1 Proximal Outcomes

Outcomes are "states or conditions resulting from the work process" (Holden et al., 2013, p.9) and are classified as proximal or distal. Through the analysis conducted, proximal outcomes can be characterised as the social and technical impacts when users are unable to access elements of TPWBSA. From a user social perspective, accessible TPWBSA enables heightened student engagement (Professional Expert 7).

> *"One main advantage I've noticed is that I now want to actively participate in class. I'm just not sitting there panicked because I haven't gotten the presentation uploaded properly or I haven't done the reading before class because it's such a big thing. I now realise that I know what I'm doing, and I can participate easier."* (Differently Abled Expert User 2)

Inaccessible TPWBSA creates difficulty reengineering and fixing issues once these solutions have been procured and integrated into the organisation.

> *"You won't ever really get that back from the supplier because it's not in their product. If it's not in their product from day one, it's unlikely they're going to reengineer it just for you."* (Professional Expert 7)

Other technical issues that can occur after procurement relate to non-compliance of content contributors when updating website content. This can occur due to a lack of training in specific website accessibility techniques and the lack of HEI cohesion in website accessibility standards (Professional Expert 6). One user also reported that challenges occur when email is inaccessible, as stated: *"emails that go around the* *college … most of the time they're good. Now and again … you can have bad experiences as well"* (Differently Abled Individual Expert User 3).

5.4.2 Distal Outcomes

From an EDI perspective, accessibility is perceived as creating the potential for "more diversity in who can access third level education" (Professional Expert 6). It was also stated that it affords the capability for both staff and students to "work in a better, more inclusive ecosystem" (Professional Expert 1) by creating equality within the workplace. An inclusive approach is seen as improving TPWBSA.

> *"However, we've embraced universal design learning principles with a view that it makes the content more accessible to all the community. So, when we make the content more accessible for a more inclusive community, we also enhance the quality of the content for all of the community if that makes sense."* (Professional Expert 1)

Website accessibility extends beyond the needs of individuals with a disability to include a universally accessible and usable TPWBSA offering. It was indicated in the interviews conducted that HEI, through embracing accessibility, will design for the future to benefit all. It is also perceived that HEIs are taking a progressive course of action and improving accessibility standards, thus providing better support for students. Accessible TPWBSA is seen to improve access to education and communication services, as well as enhance quality for the entire HEI community.

> *"A company that does really work with website accessibility in mind is a company that actually does really care about their software and support…good development team solution will inherently have that in place."* (Professional Expert 4)

Findings reveal that if accessibility is not fully supported by those involved with the evaluation and of TPWBSA at the procurement stage, barriers are created. This disimproves the user experience and creates challenges for both students and staff in a HEI (Professional Expert 6).

6 Discussion

6.1 Theoretical Implications

6.1.1 Adapted SEIPS 2.0 Model

Through the SEIP 2.0 model, we have made salient the current evaluation and assessment processes within a university setting, specifically regarding the procurement of TPWBSA. The adapted SEIPS 2.0 model provides a focused, boundaried STS-inspired lens to consider the evaluation and assessment of TPWBSA independently from the procurement process. Thus, creating a rich understanding of the roles professionals and their different expertise play in this decision-making process. The SEIPS 2.0 model maps a top-down approach to analyse the roles of professional experts when evaluating and assessing website accessibility in TPWBSA. It supports the design of a bottom-up decision support system that is sustainable and aligns with evolving organisational goals (Vessey & Ward, 2013). Proximal outcomes of this research indicate that the intersection of top-down and bottom-up approaches should lead to increased student participation, demonstrating that TPWBSA are integral to teaching and learning outcomes, with a strong reliance on accessibility. This intersection further underscores the need for an effective design of an evaluation and assessment tool that supports decision-makers in the accessibility evaluation process. By embracing both approaches, the co-evolutionary theory can be utilised to ensure ongoing alignment with changing organisational goals related to web accessibility, equity, diversity, and inclusion (Olbrich et al., 2015), allowing the information system to adapt accordingly (Vessey & Ward, 2013). This means that this work system remains adaptive and responsive to changing organisational priorities (e.g., new accessibility mandates or DEI initiatives), technological advancements (e.g., emerging web accessibility standards), regulatory changes (e.g., updates to WCAG or legal frameworks), and user needs (e.g., feedback from students and faculty with disabilities).

6.1.2 Awareness Framework of Individual Expertise when Evaluating and Assessing TPWBSA

Findings suggest that accessibility should be prioritised early in the procurement process, supported by training for key stakeholders with the aim of increasing awareness of website accessibility tools as well as the social and educational implications of accessibility for differently abled individuals. Figure 3 presents a 2 x 2 matrix that identifies the level of accessibility decision guidance needed depending on where experts fall against the level of expert knowledge required.

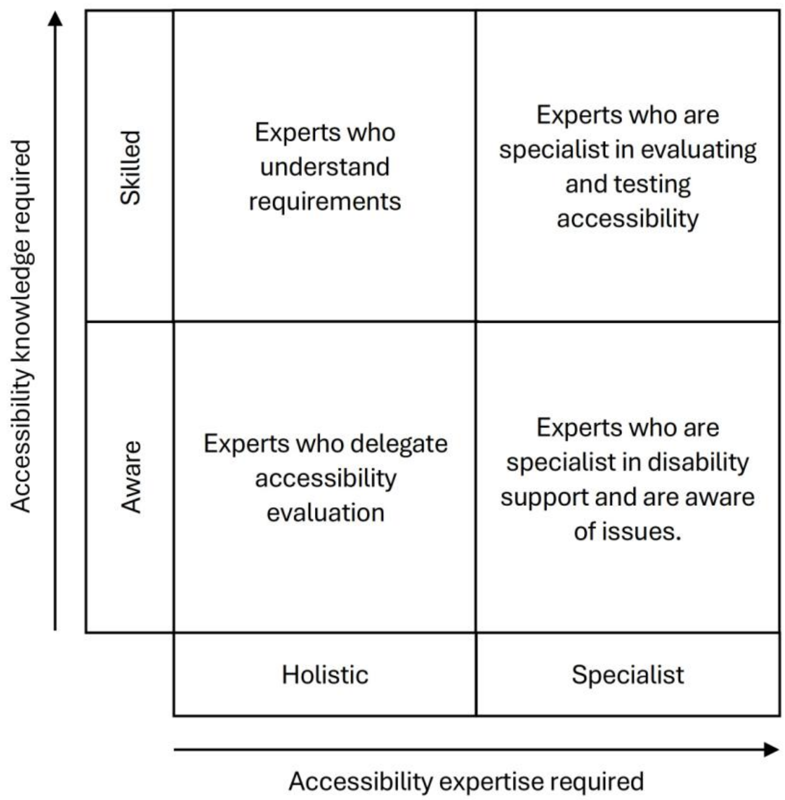

Figure 3. A Framework for positioning accessibility expertise

Winter et al. (2014, p.257) purport that “STS and IS research embraced a view that balanced agency and action (joint optimisation) and inherent complexity (interrelated parts and emergent whole) with an implicit assumption of hierarchy and control that is consistent with a managerial mindset”. The accessibility/ expertise matrix (Figure 3) captures the need for joint agency and action, while procurement experts require a holistic understanding of accessibility within the procurement process. This depends on the procurement decision - they may delegate to other experts within the matrix as needed, each having different skillsets and expertise. In this case, decisions are made through a cooperative process, involving input from all relevant parties, such as IT professionals, end-users, and business managers. In one scenario, procurement experts may need a holistic overview of accessibility and awareness of the potential impacts TPWBSA accessibility outcomes may have on users and their lived experiences. In others, delegation could occur between different experts. This covers interdepartmental communication. The matrix also helps to bound and focus on the needs of each group of stakeholders. For example, accessibility testers and evaluators need to be proficient in WCAG AA testing and other tools and assistive technologies that need to be tested. All stakeholders share accountability for the performance and outcomes of the system. This often leads to improved alignment with organisational goals and user needs (Gebauer et al., 2023). Combining expertise from different fields (e.g., IT/IS, business, operations) to evaluate, assess, and contribute to the procurement decision making process. Subsequent research could observe organisational utilisation of the Framework for positioning accessibility expertise (Figure 3) to assess the degree to which it can identify the level of accessibility decision guidance needed.

6.2 Practical Implications

In HEIs, accessibility is treated as a legal or compliance box-check, rather than as a core design value. Our findings suggest that unless accessibility is foregrounded as a strategic criterion in the earliest stages of procurement (e.g., needs assessments and Request for Proposal (RFP) drafting), it is unlikely to be meaningfully integrated into final outcomes.

By mapping the socio-technical interactions across procurement stages, this study highlights specific phases where accessibility considerations typically degrade, particularly during the requirements specification and vendor evaluation stages. These stages are often dominated by IT and procurement professionals, with limited input from disability officers, end users, or pedagogical experts. Our analysis shows a gap between institutional accessibility policies and the everyday practices of procurement teams. This misalignment results in well-meaning policies that fail to influence actual product choices or configurations that enable accessibility and inclusion. We propose the following practical recommendations:

1. Embed inclusive procurement as a foundational principle within an organisation's digital infrastructure roadmap/strategy.
2. Revise procurement policies to explicitly score vendor responses on accessibility and inclusivity, not only in technical terms (e.g., WCAG compliance) but also in terms of user engagement, testing practices, and long-term adaptability for diverse learners and staff.
3. Ensure cross-functional representation on review panels that include accessibility advocates and users with lived experience to co-develop procurement requirements and assess vendor solutions.
4. Implement new procurement guardrails such as checklists, accountability checkpoints, or decision-making templates that embed accessibility considerations at every phase of the procurement lifecycle, from tender to post-implementation.
5. Reframe IT procurement not just as a cost or efficiency concern, but as a strategic lever for educational equity and institutional values, aligning decisions with the university's broader mission for inclusion and accessibility.
6. Develop training modules or capacity-building workshops that equip procurement stakeholders with the tools to identify and evaluate socio-technical issues, using scenarios or lessons from this study to guide reflection.

6.2.1 Professional Experts

Professional experts involved in the evaluation of website accessibility come from different areas of expertise and varied levels of awareness and interpretation of TPWBSA. Many experts are unfamiliar with accessibility evaluation tools and tests, and there is a lack of diversity among evaluators (Gonçalves et al., 2018), especially in terms of those with different abilities. Despite these differences, all experts acknowledge the importance of accessibility and collaborating across departments to meet standards. Challenges for these experts include limited access to necessary resources, the complexity of WCAG 2.1, and delayed accessibility checks. Issues with vendor accountability and communication are noted, although established relationships between vendors and procurement can facilitate issue identification and resolution. Effective accessibility evaluation relies on collaboration among stakeholders with varying expertise, emphasising the importance of increasing awareness of each other's roles rather than uniform knowledge.

6.2.2 Organisational Context

Through the social constructivist approach, our findings suggest a significant misalignment between the testing and evaluation practices of HEIs and software vendors. This raises critical questions concerning authority and locus of accountability for these important procurement decisions. The effective implementation of website accessibility standards relies on both procurement professionals and vendors. Although both parties share accountability, enforcement of these standards typically occurs at the European and national levels. To ensure the appropriate alignment, vendors must be made aware of and held accountable to conform to WCAG. Proof of this conformance should be provided in formats like the Voluntary Product Accessibility Template (VPAT) or Accessibility Conformance Report (ACR) (GSA, 2024), or by detailing proof of achieving WCAG conformance to a minimum AA standard before procurement proceedings commence. Once a TPWBSA is purchased and integrated, maintaining compliance with current accessibility standards should be a shared responsibility between the vendor and the HEI, emphasising the importance of the recursive influence (Leonardi, 2007; Orlikowski, 2000; Poole & DeSanctis, 2004). It is crucial to recognise that while WCAG provides a valuable framework, it can often be perceived as complex and legalistic. Therefore, experts on both vendor and HEI sides should either be specifically assigned to keep up to date with these guidelines or those involved in procurement processes should receive appropriate and regularly updated training to conduct these evaluations effectively.

6.3 Limitations and Future Work

Future work should consider how HEIs are accountable through public procurement processes and must comply with cost thresholds. For example, Irish Higher Education Institutions (HEIs) are required to comply with procurement regulations set by the Higher Education Authority (Higher Education Authority [HEA], n.d.) which mandate that any expenditure exceeding €25,000 must follow specific public procurement procedures to ensure transparency, value for money, and legal compliance. Our findings point to the need to improve accessibility assessments for TPWBSAs procured below this threshold. Observations imply that procurement cost thresholds may directly impact accessibility outcomes due to EU regulations determining the procedures or standards used, whether the TPWBSA are advertised using a public procurement process, and if a main supplier/vendor is utilised. Future research should explore how these cost thresholds affect the degree to which website accessibility is achieved in these procurement processes. HEIs should evaluate the percentage usage of TPWBSA and categorise these according to specific cost thresholds to ensure existing evaluation procedures meet all accessibility requirements.

7 Conclusion

The Association of Information Systems (AIS) code of ethics states that “Technologies and practices should be as inclusive and accessible as possible and scholars and computing professionals should take action to avoid creating systems or technologies that disenfranchise or oppress people” (Association for Information Systems, 2021; Hanson, 2017). In today's global landscape, we strongly believe that addressing inclusivity issues in educational technology must be a priority. Conducting high-quality research on this issue is essential to developing accessible learning environments that empower all students, regardless of their abilities or circumstances. Recent seminal IS research highlights the importance of investigating accessibility issues (Mäkipää et al., 2022).

Utilising the socio-technical systems (STS) lens and utilising SEIPS 2.0, we introduce a novel approach to evaluating accessibility in technology procurement. The STS approach contributes to advancing the IS field’s understanding of how to systematically incorporate accessibility considerations into human decision-making vis-a-vis technology evaluation and selection. The theoretical implications of this research highlight how the SEIPS model enables us to bound factors such as work system, process, and outcomes, providing valuable insights into the key components that shape and impact the inclusivity of TPWBSA for users in a HEI. By adopting this theoretical lens, the study captures the nuanced interactions and shared meanings constructed between stakeholders involved in procurement decision making. This perspective underscores how perceptions of accessibility and compliance can evolve collaboratively, influencing the effectiveness of the procurement outcomes in meeting accessibility standards.

By analysing qualitative data, we find that work systems consist of tools and technologies that aid professional experts in procuring and assessing TPWBSA. However, the primary limitation of the research is the scope of data collection, which is focused on a single organisation, which is not exhaustive in terms of observable work systems, as these are likely to vary across different institutions and sectors. Despite these limitations, the study reveals that the SEIPS 2.0 model is effective in delineating the evaluation and assessment of TPWBSA from the procurement process through the mapping of work systems, work processes, and outcomes. According to Davis (1971), interesting theories, at least interesting social theories, constitute an attack on the taken-for-granted world of their audience. Through this research, we apply the SEIPS model in a novel context to illuminate the importance of placing people at the centre of both the work system and its outcomes, thereby challenging the prevailing norms in IT procurement processes within HEIs.

SEIPS reveals potential process hidden inefficiencies—such as the lack of accessibility audits, limited stakeholder engagement (e.g., students with disabilities), and reactive rather than proactive compliance. Further, Mäkipää et al. (2022) purport that potential accessibility problems may occur at the individual, technological, or organisational level, or somewhere in between these. This research emphasises the complex interplay between social, technical, and socio-technical organisational factors that impact the work system.

The practical implications of this research are significant. By making the accessibility evaluation and assessment practices more visible, it becomes easier to understand where decision support and additional expertise is needed and to identify training gaps necessary to address these. The evaluation process and the expertise of the evaluators are important. There is a strategic decision around the membership of procurement panels; we need to move beyond ticking the box when populating these evaluation panels. The study suggests codifying the knowledge bases at each level of the procurement process for software under a 5k value threshold and engaging all decision-makers outside the formal process to consider baseline WCAG, prompting them to ask the right questions early in the process.

Fragmentation and interoperability are not isolated technical issues but symptoms of underlying social and organisational disconnection. By applying a socio-technical lens, this study not only diagnoses these challenges but also illuminates actionable strategies to address them, from adopting an intentional inclusive approach to IT procurement as part of the organisation's digital roadmap, including rethinking procurement governance, to embedding interoperability in procurement artifacts, to fostering cross-unit collaboration.

Future research could explore the application of the SEIPS 2.0 model for TPWBSA procurement processes in diverse settings, such as other public services and healthcare settings. This could further validate the model and provide additional insights into improving procurement practices. Additionally, expanding the study to include quantitative data and a broader range of institutions could enhance the generalisability of the findings. Management and developers in the public and private sectors are in a key position to develop accessible IT artifacts (Mäkipää et al., 2022). The procurement of accessible IT takes this responsibility one step further by explicitly embedding accessibility considerations throughout the entire IT selection and procurement process. Studying the procurement process for TPWBSA in a university setting not only offers practical insights for improving processes but also contributes to the academic understanding of technology procurement dynamics in complex organisational environments.

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Appendix A: Interview Guide Questions

Interview Questions: Professional Expert

Section 1: Process of Procurement

7. How often are you involved in the procurement process?
   a. Can you explain the existing procurement process?
8. Have you ever been involved in the procurement of web-based software applications?
   a. Can you explain the existing process of procurement for third-party software?
9. If any/ what is the existing evaluation criteria when precuring third-party software that are specific to accessibility?
   a. If yes, at what stage in the procurement process is evaluation conducted?
10. If issues arise with third party software after procurement, are there steps in place to communicate this to the vendor?

Section 2: Web Accessibility Awareness

11. What is your level of awareness of web accessibility?
12. Are there any web accessibility guidelines/ requirements are standards in place when precuring third-party software?
13. If yes, can you please describe?
14. If no, how do you feel about having web accessibility guidelines in place?
    a. In what way can web accessibility guidelines be incorporated into the existing process?
15. Who do you believe will benefit from having web accessibility assessment tools in place?

Section 3: Technical Awareness

16. Are you aware of web-based software applications?
    a. If yes, can you explain your understanding of this?
17. Are you aware of any web accessibility evaluation tools for assessing web-based applications?
    b. If yes, have you at any point used them and can you describe what they were assessing?

Interview Questions: Individual with a Disability Expert User

18. As a UCC student/staff member, what systems do you currently use?
    a. What do you use these systems for?
19. From the systems you have mentioned, what if any, assistive technologies do you use?
20. What has been your experience of using these systems?
21. Based on your experiences, what are the advantages and disadvantages of using these systems?

How could your experiences using these systems be improved in the future?

About the Authors

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