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Using a Holistic Approach to Evaluate the Digital Humanities System for Parliamentary Information

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【Abstract】

In recent years, legislatures worldwide have promoted projects for constructing digital humanities systems for parliamentary information. However, studies have yet to perform in-depth investigations on the overall effectiveness of such systems from a user perspective. Therefore, this study used a holistic approach and chose the "Taipei in the Making," maintained by the Taipei City Council, to evaluate its performance. Specifically, Google Analytics (GA) was used to collect statistics on website use and user participation from 2016 to 2021. A usability assessment questionnaire was distributed randomly to different user groups, including councilors, to perform a usability and satisfaction survey. The results revealed that the website's user base grew from 2016 and peaked in 2018 but decreased precipitously after 2018, and the returning users only comprised ≈ 25% of users, indicating that user engagement could be enhanced through a strategy such as interface improvements. In addition, the results of the usability assessment among respondents revealed that the satisfaction construct had the highest score, followed by memorability and learnability constructs,

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indicating that the system can satisfy the respondents' search for parliamentary information needs. In conclusion, the Taipei City Council and government departments are recommended to combine various assessment methods to devise a holistic approach to develop the system further and facilitate public use of parliamentary information.

【Keywords】

Digital Humanities; Google Analytics; Parliamentary Information; Usability Assessment; User Perspectives

1. Introduction

Parliamentary information is text or other records created during parliamentary proceedings that are related to the operation of a parliament or handling public affairs. This information records agendas, decision-making processes in meetings of various levels, and interactions between the public and government. Therefore, this information is a crucial cultural asset that details the democratic process of a country. To adequately archive parliamentary information and increase its value, digital humanities systems for this information have been established in countries globally. However, the mere digitalization of parliamentary information does not guarantee its effective use. The effectiveness of digital humanities systems in organizing parliamentary information, the system content, and the interface design substantially affect user satisfaction with these systems (Kelly, 2014).

The objective of these systems is providing services to a wide range of users. The intention to use a system is affected by not only the content and quality of its information but also the comprehensibility and usability of its interface. The concept of user experience has received growing attention in recent years and has become a key factor affecting the success of a digital humanities system. Zha, Wang, Yan, Zhang, and Zha (2015) explored the information seeking behavior of users of digital humanities system and observed that if users could easily familiarize themselves with a system, they could quickly learn to operate the system and could more easily conduct information queries. Therefore, an understanding of user experience is key for system design. Usability assessment is a common approach among system

assessment methods. It can be applied in website testing and user experience evaluation to analyze, from a user perspective, the needs and opinions of specific user groups toward a website (Covey, 2002; Krug, 2000). Google Analytics (GA) is another common method for assessing websites and systems. GA provides quantitative analyses of explicit user behaviors with data collected on these behaviors and level of user participation (Gooding, 2016; Vecchione, Brown, Allen, & Baschnagel, 2016). System assessment methods have strengths and weaknesses; thus, integrating multiple assessment methods enables a multifaceted and comprehensive understanding of a system through providing diverse analyses.

In this study, GA and a usability assessment were used to evaluate a famous parliamentary information system in Taiwan from a user perspective, namely Taipei in the Making, maintained by the Taipei City Council. Specifically, GA was used to compile user behavior and website records, and a usability assessment questionnaire was distributed randomly to different user groups, including councilors, governmental personnel, and academic researchers, to perform an empirical user assessment. The goal was to improve the system quality and to provide suggestions for improving user satisfaction. The research goals are as follows:

(1) To understand the user behavior of the "Taipei in the Making" website.
(2) To understand user perspectives on the system interface design, functions, and efficiency.

2. Literature Review

2.1 Introduction to digital humanities system for parliamentary information

Parliamentary information is a key component of democracy and is an essential cultural asset that reflects local politics and parliamentary affairs. Parliamentary information is a critical part of a country's historic record, is essential for academic research, and encourages the continued implementation of democratic education (Hsiang, Peng, Tung, & Hsiao, 2010). Digital humanities systems for distributing parliamentary information include various records (including text, images, videos, and audio records) generated during the process

of interpellation. These systems adopt digital humanities technology to store and display these records and provide various value-added digital and analysis functions. In contrast to the one-way services provided by governmental departments, digital humanities systems for parliamentary information serve as a platform for effective and frequent two-way interaction between a parliament and the public. Through these platforms, parliaments or legislative units can encourage public participation in public affairs, such as politics and civil society. Granting the public access to parliamentary information archives encourages individuals interested in public policies to contribute to the deliberation of major national topics. This also increases the public's participation in political affairs and policy formulation. Therefore, governments should provide this free service that enable citizens to easily access original, complete, credible, and consistent parliamentary information (Brown, 2003; Eschenfelder & Miller, 2007; Fagan & Fagan, 2001; Khoo et al., 2008).

These systems include American Memory, which was constructed in the 1995 National Digital Library Program initiated by the US Library of Congress. Its main subprogram—entitled A Century of Lawmaking for a New Nation—focused on the digitalization of *Congressional Record*, parliamentary journals, and other governmental files. The subprogram archived all documents produced between 1774 and 1875 of the Continental Congress, Constitutional Convention, Journals of Congress, and Debates of Congress as well as other relevant statutes and documents, resulting in an accurate record of the democratic process and reformations in the United States (Desmarais, 2011; Ridgway, 2011; The Library of Congress, n.d.).

In Taiwan, the Legislative Yuan Parliamentary Library created a digital humanities system in 1999. The system integrates all online databases and parliamentary information services created since the 1980s. The information includes official documents and reports, such as interpellation records, parliamentary journals, legal data (e.g., the enactment of new regulations), and selected articles composed by parliamentary librarians regarding novel legislative topics or published papers. The system website provides access to digital archives and online services, enabling users to browse parliamentary information. It also serves as the online interaction and dissemination center for the Parliamentary Library with the goal of knowledge sharing and information exchange (Ku, 2001).

A multitude of parliamentary information resources exist and contain various records on the handling of public affairs. In this study, parliamentary information was classified into six types: (1) Parliamentary journals, including councilor attendance records, proceedings schedule records, policy address reports, resolution records, interpellation documents, and replies to interpellation. (2) Parliamentary gazettes that are officially published by a parliament and contain the latest proceedings, policy addresses, resolutions of local and department heads. (3) Budget documents, including annual administrative plans and budget proposals submitted by governmental departments to the parliament for review, feedback provided from parliamentary review, and approvals of budgetary and financial statements. (4) Video and audio records, including those taken during parliamentary meetings. (5) Administrative letters detailing communications between the parliament and governmental departments at various levels; these include the official administrative documents of each committee and department and replies to interpellations. (6) Parliamentary photographs, including those taken during various events hosted by the parliament (Ku, 2001; Taipei City Council, n.d.; The Library of Congress, n.d.).

2.2 A system evaluation based on user perspectives

A digital humanities system usually involves three core elements: content, the system technology, and users. A constructed system should contain the information desired by users. In addition to attracting users, the system should clarify the methods by which users can locate information and should address deficiencies in these methods. The user experience is another key aspect. Digitalization of information alone does not guarantee that it can be used effectively. A common error is to treat the system users as general Internet users; this assumption overlooks the unique needs of heterogenous user groups and the context of user behavior. Therefore, digital humanities systems should be assessed from a user perspective to optimize their effectiveness. To facilitate improving the system design, this assessment should focus on understanding the use of different information resources; the selection, organization, and retrieval of information; and interactions between users and systems (Chang, 1999; Gibbs & Owens, 2012; Kelly, 2014).

Previous studies have rarely explored assessments of digital humanities

systems for parliamentary information. Relevant research includes that of Lu and Liang (2014), who examined the e-government platforms of 31 countries to identify key factors affecting the establishment of e-parliament websites and development of parliamentary information technology. They suggested that the assessment of such systems should focus on the following areas:

(1) System quality: ease of use, retrieval, and browsing
(2) Information transparency: ability to download various types of data and information
(3) Online services: provision of online forms, feedback mailboxes, and message boards
(4) Online interaction and consultation: forums, announcement boards, and online voting

The suggestions of Lu and Liang (2014) focus only on the information and technological aspects of digital humanities systems. Zhang (2010) asserted that because system assessments places little emphasis on information content and context, holistic models should be used instead to determine the effectiveness of digital humanities systems. These models should evaluate the aspects of context, content, technology, interface, user, and service to provide comprehensive and flexible standards and frameworks for creating digital humanities systems.

System assessment is multifaceted. Kelly (2014) adopted document analysis to compile papers discussing the assessment of digital humanities systems between 2004 and 2014 and reported that usability and user studies and web analysis are the two main assessment approaches. Other methods include altmetrics, the reuse of digital library materials, cost benefit analysis, and holistic approaches.

Usability assessment is a system assessment method on the basis of user experience. It explores the user experience and uses website testing to determine the needs and perspectives on the system website of specific user groups. Nielsen (1993, p.26) defined usability as being easy to learn, use, and memorize efficiently while also preventing serious errors and achieving subjective user satisfaction. He recommended using usability testing methods to assess the usability of a system by observing and recording interactions between users and the system during a series of hands-on operations. In addition, this assessment can be integrated with data collected from

questionnaires, interviews, focus groups, user logs, and user feedback to conduct a comprehensive usability evaluation. Afterward, Nielsen (2020) proposed 10 usability principles as reference standards for user interface design. These are visibility of system status; match between the system and real world; user control and freedom; consistency and standardization; error prevention; recognition rather than recall; flexibility and efficiency of use; aesthetically pleasing and minimalist design; assistance with error recognition, diagnosis, and recovery; and help and documentation.

Usability assessment can be used to understand the usability, efficiency, and user satisfaction of a system (Covey, 2002; Krug, 2000). For example, Wusteman (2017) conducted a usability assessment to assess Remembering the Rising: Letters of 1916, a crowdsourced digital humanities project in Ireland. The project created a website digitizing letters sent and received by the Irish people. These letters detail their daily lives, including topics such as romance, businesses, and politics. The study indicated that digital humanities users, professional and academic users, and the public have similar information needs.

Huang and Benyoucef (2014) also conducted an empirical study to explore the relationship between the usability and credibility of three local e-government websites from the United Kingdom. Their results indicated a close association between usability and credibility, indicating that if e-government websites have high usability, users tend to perceive the websites to be highly credible and vice versa. They also suggested that the user interface design of e-government websites should aim to be aesthetic and minimalistic, facilitate real-world user behavior, and prevent errors, such as displaying outdated information or invalid links.

In Taiwan, Lin and Fan (2013) explored the usability performance of the Humanities and Social Sciences (HSS) Information System. This system archives the research reports, conference proceedings, books, images, and event video and audio records of humanities and social sciences research projects promoted by the Ministry of Education. They identified low usability as the primary problem of the system interface design; this poor design was often the cause of user error. Therefore, the interface should be adjusted to incorporate functions that users are familiar with, reduce the likelihood of user errors, and simplify its visual design and content display.

In addition to usability assessments, GA is another essential system assessment method. The service began in 2005, is free of charge, and is open to the public. It can be used to conduct quantitative analysis on explicit user behaviors and serves as a supplementary method to web log analysis for collecting statistics on website use and user participation (Gooding, 2016; Vecchione et al., 2016). For example, Zavalina and Vassilieva (2014) compared two digital humanities systems in the United States, namely the National Science Digital Library and Opening History, by using GA to collect their user search logs and compare the information seeking behaviors of specific user groups in the two systems.

Each assessment method has strengths and weaknesses. Cohen and Thorpe (2015) stated that usability assessment usually involves a series of missions assigned by website designers or experts. Although these missions can test the effectiveness of a website, they might not reflect real user needs. A common problem in GA is that it can only access website or system use logs; it cannot reveal the reasons or factors underlying user phenomena (Gooding, 2016). To address this problem, Fagan (2014), Kelly (2014), and Yang and Perrin (2014) proposed the use of holistic approaches that combine web log analysis and usability assessments to examine the problems of why and how. This method enables understanding and testing a system more comprehensively and provides a variety of analysis results. To perform an in-depth analysis of the effectiveness of digital humanities systems for parliamentary information, an assessment approach that involves a mix of different methods can be used to perform holistic analysis. Accordingly, references can be provided to further develop the system and facilitate public use of parliamentary information.

3. Methodology

This study used GA to collect and analyze the user logs of a digital humanities system for parliamentary information. The logs contain information including user location, gender, and age. A structural questionnaire was also distributed to perform a usability survey on user needs for searching and using parliamentary information; the results were used to compile data on user satisfaction with the system.

3.1 Case website

The case website, the parliamentary information system Taipei in the Making (Figure 1), was established through the "Taipei in the Making" project, which was executed by Professor Shiao-Feng Su, the Graduate Institute of Library and Information Science of National Chung Hsing University, and her research team after 2008. The project was one of the digital learning and archive projects under the National Digital Archives Program and focused on the digitalization and value-added application of parliamentary records kept by the Taipei City Council. In total, these records contained 255,982 pages of parliamentary journals, 266,644 pages of parliamentary gazettes, 1,249 digitalized versions of old photographs and illustrations, and over 65,000 min of council chamber video and audio records. The project led to the construction of a full-text retrieval and online interaction digital archive platform accessible to the public (Digital Taiwan, n.d.; Su, Chiu, Xi, & Chen, 2012). In 2011, Professor Su and her team completed the scheduled milestones of the project. Subsequently, the Taipei City Council has taken over the management of the website to ensure its continued sustainable development. After the revision of the new system in 2015, it has become a sizable digital humanities system for parliamentary information in Taiwan. The system includes over 50 years of data and enables cultural preservation, academic research, education, and learning. These data include parliamentary journals, parliamentary gazettes, video and audio records, and historical photographs. The system enables multiple information search methods and combines visualization methods to present search results. It also provides data including images of digitized parliamentary records, photographs and interpellation data for current and past councilors, and historical documents specific to essential parliamentary topics (Taipei City Council, n.d.).

3.2 Google analytics

First, GA Tracking Code was installed on each page of the Taipei in the Making website. Logs between January 1, 2016 and December 31, 2021 (6 years) were collected and analyzed (Figure 2), and seven indicators, namely page views (PV), visits (V), average visit duration (AVD), pages per session (PPS), bounce rate (BR), new visit (NV), and return visit (RV), were used to

examine the behavior of users on the website. The collected data were cleaned before subsequent comparison and analysis.

Figure 1. Homepage of Taipei in the Making

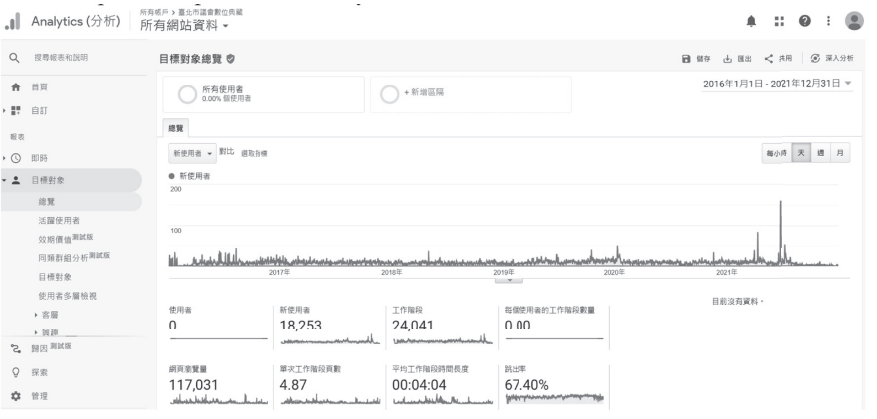

Figure 2. GA Analysis of the Taipei in the Making Website

3.3 Usability assessment

This study referenced research and websites related to usability assessment, including the 10 usability heuristics for user interface design and relevant suggestions proposed by Nielsen (1993, 2020). Five usability research constructs and corresponding dimensions are designed based on these heuristics. In addition, this study referenced empirical usability and reliability research performed by Huang and Benyoucef (2014) and usability research performed by Lin and Fan (2013) in Taiwan to create the items of a usability assessment questionnaire. This study uses the questionnaire to analyze the service quality and user satisfaction for the Taipei in the Making website. Table 1 presents the five constructs of the questionnaire.

The usability questionnaire has 21 items scored with a 5-point Likert scale. In accordance with their experiences of using the Taipei in the Making website, respondents described the level of website usability and their

Table 1. Constructs of the Usability Assessment Questionnaire

No.	Construct	Description	Dimensions
1	Learnability	Whether the system is easy to learn, enabling users to quickly achieve a task	Visibility of system status Match between system and the real world Help and documentation
2	Efficiency	Whether the system is flexible and has a high usage rate	Consistency and Standards Flexibility and efficiency of use
3	Memorability	Whether the system controls and operations are easy to memorize; users do not need to repeatedly relearn the system	Recognition rather than recall Aesthetic and minimalist design
4	Errors	Whether the system has a low user error rate and possesses correction mechanisms	User control and freedom Error prevention Help users recognize, diagnose, and recover from errors
5	Satisfaction	Whether users are satisfied with the system and enjoy using the system	User satisfaction with other system constructs, namely learnability, efficiency, memorability, and errors

Source: Compiled by the present authors

satisfaction using the scores of 5 (*strongly agree*), 4 (*agree*), 3 (*neither agree nor disagree*), 2 (*disagree*), and 1 (*strongly disagree*). A high score indicates that the respondent strongly agrees with an item.

A pretest with the designed questionnaire was distributed to three experts to improve the item wording. The questionnaire was revised in accordance with the suggestions provided by the experts, and the 5 constructs and 21 items were retained in the final questionnaire.

The formal questionnaire was distributed online to sample randomly. System users may freely decide whether to complete the questionnaire. The questionnaire was hosted on Google Sheets, and a link to the questionnaire was posted on the homepage of the Taipei in the Making website. Between January 3 and February 28, 2022, and 210 respondents completed the questionnaire.

3.4 Reliability and factor analysis

Internal reliability was examined using Cronbach's α, which was determined to be 0.838 for all items. The corrected item–total correlation was greater than 0.2 for each item (an item is deleted if its correlation is lower than 0.2), and the Cronbach's α after deleting any item was lower than that if all items were retained. This indicated that the retention of any item would not reduce the overall reliability of the questionnaire; thus, all items were retained (Table 2).

The Kaiser–Meyer–Olkin (KMO) and Bartlett's Sphericity Test were conducted to determine whether the questionnaire is suitable for factor analysis. The KMO value was determined to be 0.851, which is within the threshold proposed by Kaiser and Rice (1974), who suggested that a KMO value between 0.8 and 1.0 indicates adequate sampling and that sufficient correlation exists among variables. The Bartlett's Sphericity Test yielded a significant result ($p < 0.001$), verifying that the questionnaire is suitable for factor analysis.

Principal component analysis (PCA) and varimax rotation were performed to extract five components with eigenvalues > 1. The obtained components were consistent with the five research constructs of this study (Table 3). Therefore, the communality of individual items was examined.

Table 4 reveals that the three items with the lowest communality value of < 0.5 were, in ascending order, Item 20 (0.420), Item 09 (0.432), and Item

Table 2. Cronbach's α of the Questionnaire

No.	Cronbach's α: .838	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's α if Item Deleted
1	The system homepage displays clear information, enabling me to easily use the system.	.395	.365	.832
2	Each page of the system displays a clear title, enabling me to understand the type of information provided by the page.	.418	.377	.831
3	The labels and technical terminology on each page are easy to understand.	.475	.430	.829
4	Clear instructions on how to use the system are provided.	.462	.402	.829
5	The functions and links of the system work properly most of the time.	.356	.326	.834
6	The system has a short response time, allowing me to quickly obtain the search result.	.329	.518	.835
7	The system provides multiple search functions and methods, allowing me to quickly search for information.	.368	.466	.834
8	Each page of the system is displayed with fonts of different sizes and colors, allowing me to easily view the page and select items.	.412	.463	.832
9	The icons and functions used in the system are intuitive and easy to understand.	.392	.302	.832
10	The "main function menu" of the system is easy to find, and no special memory is required.	.470	.386	.829
11	The functions on each page are associated with their respective icons and are easy to understand.	.390	.337	.832

Table 2. Cronbach's α of the Questionnaire (continued)

No.	Cronbach's α: .838	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's α if Item Deleted
12	The content of each page is simple, clear, and does not contain excessive information.	.499	.429	.828
13	The correct function can be easily selected in the main function menu.	.436	.407	.830
14	The system enables me to search for information in any sequence and by any method without needing to follow a specific procedure.	.405	.391	.832
15	When needed, I can return to the previous search page or system homepage at any time.	.375	.341	.833
16	I can easily locate the online help (instruction) function on the system homepage.	.508	.493	.827
17	I enjoy the simplicity of the system interface, which enables me to locate information quickly.	.444	.374	.830
18	I enjoy the multiple search functions and methods provided by the system that allow me to acquire various types of information.	.425	.343	.831
19	I like the system interface arrangement and design, which are easy to understand and use. I do not need to put in a lot of effort to learn the system.	.379	.344	.833
20	I like the system's multiple information prompts and query results, which enable me to view and modify query tasks easily.	.320	.238	.835
21	Overall, I enjoy using the Taipei in the Making website to search for parliamentary information.	.273	.351	.837

Table 3. Rotated Component Matrix (21 items)

	Component Loading				
Construct	1	2	3	4	5
Learnability					
Q2	0.798				
Q3	0.699				
Q1	0.681				
Q4	0.654				
Efficiency					
Q7			0.779		
Q6			0.778		
Q5			0.727		
Q8			0.614		
Memorability					
Q11					0.795
Q12					0.720
Q9					0.562
Q10					0.514
Errors					
Q13				0.775	
Q14				0.743	
Q15				0.678	
Q16				0.663	
Satisfaction					
Q21		0.763			
Q19		0.703			
Q18		0.690			
Q17		0.639			
Q20		0.427			

Table 4. Communalities (21 Items)

Items	Initial	Extraction
Q6	1	0.699
Q13	1	0.683
Q2	1	0.669
Q11	1	0.668
Q7	1	0.667
Q16	1	0.642
Q12	1	0.636
Q21	1	0.607
Q14	1	0.604
Q8	1	0.593
Q4	1	0.585
Q3	1	0.579
Q5	1	0.556
Q18	1	0.540
Q1	1	0.539
Q19	1	0.535
Q17	1	0.520
Q15	1	0.510
Q10	1	0.496
Q9	1	0.432
Q20	1	0.420

10 (0.496). Mooi, Sarstedt, and Mooi-Reci (2018, p.277) suggested that the communality of each item should be at least 0.5. Accordingly, these three items were excluded to ensure that the remaining items met this threshold and that a stable data structure was obtained (Table 5).

PCA of the 18 items revealed that the factor loading of each item was > 0.6, verifying that the validity of the five questionnaire constructs. The efficiency, learnability, errors, satisfaction, and memorability constructs accounted for 24.82%, 16.20%, 9.22%, 6.02%, and 5.71% of the variance, respectively, yielding a total explained variance of 61.97%.

Table 5. Communalities (18 Items)

Items	Initial	Extraction
Q11	1	0.754
Q13	1	0.708
Q6	1	0.705
Q12	1	0.693
Q2	1	0.682
Q7	1	0.675
Q16	1	0.645
Q21	1	0.623
Q14	1	0.616
Q3	1	0.614
Q8	1	0.604
Q4	1	0.585
Q5	1	0.569
Q1	1	0.558
Q18	1	0.547
Q19	1	0.542
Q17	1	0.527
Q15	1	0.503

4. Findings

4.1 Google analytics

Table 6 presents the cumulative statistics of five GA indicators during the 6-year period. These indicators are PV = 117,031; V = 23,257, PPS = 4.84 pages, AVD = 244 s, BR = 67.40%.

The results revealed that the website's userbase grew from 2016 and peaked in 2018. PV increased from 19,938 in 2016 to 27,377 in 2018. PPS increased from 5.08 pages in 2016 to 6.91 pages in 2018. A notable increase was also observed in AVD from 182 seconds in 2016 to 480 seconds in 2018.

After 2018, the use of the website declined precipitously. Between 2018 and 2021, the five indicators all indicate a decrease in website activity; BR

Table 6. Data Overview/Year (2016–2021) of Taipei in the Making Website Usage

Year	PV	V	PPS	AVD	BR
2016	19,938	3,922	5.08 pages	182 seconds	61.91%
2017	25,136	4,218	5.96 pages	241 seconds	62.35%
2018	27,377	3,964	6.91 pages	480 seconds	59.84%
2019	18,833	4,512	4.17 pages	311 seconds	68.09%
2020	14,483	3,312	3.54 pages	123 seconds	77.15%
2021	11,264	3,329	3.38 pages	100 seconds	76.36%
Total	117,031	23,257	4.84 pages	244 seconds	67.40%

Note. PV = page views; V = visits; PPS = pages per session; AVD = average visits duration; BR = bouncing rates. Duration of site: 20160101–20211231, six years.

increased from 59.84% in 2018 to 68.09% in 2019, 77.15% in 2020, and 76.36% in 2021, indicating a substantial decrease in user engagement.

Age, region, device and user were also used as dimensions for further analysis. Most users were aged 25–34 years old (26.91%), followed by those aged 35–44 years old (24.00%), indicating that young adults constituted the largest user group (Table 7). Dividing users by region revealed that most users were from Taiwan (90.23%), followed by the United States (2.87%), Russia (1.53%), the United Kingdom (1.37%), Hong Kong (0.48%), and Japan (0.40%). Most users accessed the website from a desktop (64.81%); few used mobile devices, such as smartphone (32.29%) and tablet (2.90%). Finally, an analysis of user groups revealed that most users were new visitors (75.99%); approximately one in four visitors were returning users (24.01%).

An analysis of BR revealed that most mobile device users, including both smartphone (BR = 82.43%) and tablet (BR = 82.52%) users, left the website shortly after visiting it. These figures were notably higher than that of desktop users (59.24%). The BR of new visitors (75.30%) was also substantially higher than that of returning users (42.39%). The BR of users aged ≥ 35 years old was higher than that of users aged ≤ 34 years old, and the BR of users in the United States, United Kingdom, and Hong Kong was higher than that of users in other regions by > 10%.

Table 7. Dimension Analysis-Age, Region, and Device Group of Taipei in the Making Website

Age group			Region group			Device group		
D	V	BR	D	V	BR	D	V	BR
18–24	9.86%	63.99%	Taiwan	90.23%	66.71%	Desktop	64.81%	59.24%
25–34	26.91%	63.35%	US	2.87%	83.02%	Smartphone	32.29%	82.43%
35–44	24.00%	72.97%	Russia	1.53%	44.14%	Tablet	2.90%	82.52%
45–54	18.61%	71.59%	UK	1.37%	85.15%	User group		
						D	V	BR
55–64	12.86%	74.91%	HK	0.48%	81.90%	NV	75.99%	75.30%
65+	7.76%	75.71%	Japan	0.40%	64.95%	RV	24.01%	42.39%

Note. D = dimension; V = visits; BR = bouncing rates; NV = new visitor; RV = returning visitor; US = United States; UK = =United Kingdom; HK = Hong Kong. Duration of site: 20160101–20211231, six years.

4.2 Usability assessment

4.2.1 Descriptive statistics

Table 8 presents the descriptive statistics of the respondents. The respondents were 53.81% male and 46.19% female, indicating a nearly equal gender ratio among website users. The respondents were divided into six age groups; those aged 41–50 years old were the largest group (33.81%), followed by those aged 31–40 years old (24.29%), > 51–60 years old (21.90%). The smallest group was respondents ≤ 20 years of age (2.38%). Most respondents had an undergraduate degree (51.90%), followed by those with a master's or doctoral degree (45.24%); these respondents accounted for 97.14% of all respondents, indicating that most website users were highly educated. For occupation, governmental personnel were the largest group of respondents (27.14%), followed by councilor's assistants (24.76%). Councilors comprised the smallest group (7.61%). Among all respondents, most used the website at least 2 to 3 times per week (45.71%), and 18.57% of respondents used the website at least once per day; these two groups comprised 64.28% of all respondents, indicating that most respondents frequently used this system to search for information. A small number of respondents used the website

Table 8. Descriptive Statistics of Usability Assessment Questionnaire Respondents (*N* = 210)

Sample size	All samples	
	n	Percentage
Gender		
Male	113	53.81
Female	97	46.19
Age		
≤ 20 years old	5	2.38
21–30 years old	20	9.52
31–40 years old	51	24.29
41–50 years old	71	33.81
51–60 years old	46	21.90
> 60 years old	17	8.10
Educational attainment		
High school (including vocational school)	6	2.86
Undergraduate degree (including junior college)	109	51.90
Master's degree	81	38.57
Doctoral degree	14	6.67
Occupation[a]		
Councilor	16	7.61
Councilor's assistant	52	24.76
Academic researcher	43	20.48
Journalist	40	19.04
Governmental personnel	57	27.14
Usage frequency		
At least once per day	39	18.57
At least 2 to 3 times per week	96	45.71
At least 2 to 3 times per month	55	26.19
Less than twice per month	20	9.52

[a] Missing value = 2

less than twice per month (9.52%). Analyzing the relationship between occupation and usage frequency revealed that 81.25% (13/16) of councilors, 71.12% (37/52) of councilor's assistants, and 85.96% (49/57) of governmental personnel used the website at least 2 to 3 times per week (including those who used the website at least once per day). The high usage frequency observed in these respondents could be attributable to their work, which frequently involves the generation or utilization of parliamentary information.

4.2.2 Satisfaction analysis

A satisfaction analysis based on the five constructs was conducted after excluding Q9, Q10, and Q20. The results revealed that the user satisfaction scores for the 18 items were ≥ 3.42, indicating that the respondents were moderately satisfied with the website on average (Table 9). Q21, which surveys the overall satisfaction with the system, had the highest score (4.02). Of the five constructs, satisfaction had the highest score (3.84), indicating that the respondents were most satisfied with the sense of satisfaction provided by

Table 9. Scores for the 18 Items on the Usability Assessment Questionnaire (after Excluding Q9, Q10, and Q20)

No.	Item	*M*	Mode	*SD*
1	The system homepage displays clear information, enabling me to easily use the system.	3.78	4.00	0.970
2	Each page of the system displays a clear title, enabling me to understand the type of information provided by the page.	3.77	4.00	0.946
3	The labels and technical terminology on each page are easy to understand.	3.75	4.00	0.992
4	Clear instructions on how to use the system are provided.	3.77	4.00	0.905
5	The functions and links of the system work properly most of the time.	3.46	4.00	0.929
6	The system has a short response time, allowing me to quickly obtain the search result.	3.42	4.00	0.986
7	The system provides multiple search functions and methods, allowing me to quickly search for information.	3.44	4.00	0.992

Table 9. Scores for the 18 Items on the Usability Assessment Questionnaire (after Excluding Q9, Q10, and Q20) (continued)

No.	Item	*M*	Mode	*SD*
8	Each page of the system is displayed with fonts of different sizes and colors, allowing me to easily view the page and select items.	3.42	4.00	1.042
11	The functions on each page are associated with their respective icons and are easy to understand.	3.87	4.00	0.903
12	The content of each page is simple, clear, and does not contain excessive information.	3.74	4.00	0.964
13	The correct function can be easily selected in the main function menu.	3.49	4.00	0.94
14	The system enables me to search for information in any sequence and by any method without needing to follow a specific procedure.	3.42	4.00	1.052
15	When needed, I can return to the previous search page or system homepage at any time.	3.44	4.00	1.025
16	I can easily locate the online help (instruction) function on the system homepage.	3.47	4.00	1.003
17	I enjoy the simplicity of the system interface, which enables me to quickly locate information.	3.77	4.00	0.947
18	I enjoy the multiple search functions and methods provided by the system that allow me to acquire various types of information.	3.82	4.00	0.871
19	I like the system interface arrangement and design, which are easy to understand and use. I do not need to put in a lot of effort to learn the system.	3.76	4.00	0.855
21	Overall, I enjoy using the Taipei in the Making website to search for parliamentary information.	4.02	4.00	0.824

the system. Efficiency had the lowest score (3.44), followed by errors (3.46), indicating that the respondents were less satisfied with system efficiency and error correction function (Table 10).

4.2.3 Difference tests

The independent samples *t*-test and one-way analysis of variance (ANOVA) were performed to analyze differences in perceived usability (the five constructs) with respect to respondent attributes.

Gender differences were examined with the independent samples *t*-test. Levene's test of equal variances yielded nonsignificant results for the five constructs ($p > 0.05$), verifying that the homogeneity of the variance in the gender data. Accordingly, the *t*-test was conducted under the assumption of equal variances and revealed that the five constructs differed nonsignificantly ($p > 0.05$). This result suggests that respondent gender does not affect scores on the five constructs.

Next, one-way ANOVA was conducted with age, educational attainment, occupation, and usage frequency as independent variables and the five constructs as dependent variables. If the *F* value reached statistical significance ($p < 0.05$), a post hoc comparison was conducted. Because the number of samples differed between the attributes, Scheffe's test was used for post hoc

Table 10. Mean Satisfaction Scores of the Five Constructs

No.	Construct	Description	*M*	*SD*
1	Learnability	Whether the system is easy to learn, enabling users to quickly achieve a task	3.77	0.726
2	Efficiency	Whether the system is flexible and has a high usage rate	3.44	0.771
3	Memorability	Whether the system controls are easy to memorize; users do not need to repeatedly relearn the system	3.80	0.811
4	Errors	Whether the system has a low user error rate and possesses correction mechanisms	3.46	0.671
5	Satisfaction	Whether users are satisfied with the system and enjoy using the system	3.84	0.645

comparisons. In addition, Levene's test was conducted; a significant result rejects the assumption of equal variances in an attribute data, and the Games–Howell method can be used for post hoc comparison.

Analysis of the age groups (≤ 20, 21–30, 31–40, 41–50, 51–60, > 60 years of age) revealed nonsignificant differences for the five constructs (learnability: $F = 0.733$, $p = 0.599$; efficiency: $F = 1.282$, $p = 0.273$; memorability: $F = 0.401$, $p = 0.848$; errors: $F = 1.619$, $p = 0.156$; and satisfaction: $F = 1.177$, $p = 0.322$). Thus, age did not significantly affect respondent perspectives on the five constructs. Notably, respondents aged ≤ 20 years old had the highest satisfaction score (4.05), whereas those aged 41–50 and 51–60 years old reported the lowest satisfaction score (3.6).

Analysis of educational attainment (high school or vocational school, undergraduate or junior college, master's, and doctoral degrees) revealed significant differences in learnability ($F = 3.297$, $p = 0.021$) and errors ($F = 3.348$, $p = 0.020$). The result of Levene's test was nonsignificant, indicating equal variances in the attribute data. Scheffe's test further revealed that the learnability score for respondents with an undergraduate degree was significantly higher than that of respondents with a master's degree, also higher than those with doctoral degree or high or vocational school degree only; thus, those with an undergraduate degree find the system easy to learn. Of the various educational attainment groups, respondents with a high or vocational school degree only had the highest score for errors construct; those with a doctoral degree had the lowest score. The scores of these two groups differed significantly. Thus, those with a doctoral degree were significantly more unsatisfied with the system error correct function than those with less educational attainment.

Analysis of the occupational groups (councilors, councilor's assistants, academic researchers, journalists, and governmental personnel) revealed significant differences in learnability ($F = 4.010$, $p = 0.004$) and efficiency ($F = 4.089$, $p = 0.003$). The result of Levene's test was nonsignificant, indicating equal variances in the attribute data. Scheffe's test revealed that learnability differed nonsignificantly between the occupation groups. Thus, although some disparities exist between the groups, they were similarly satisfied with the system learnability in general. By contrast, the efficiency score for journalists was significantly higher than that of academic researchers. In terms of overall

satisfaction, councilors had the highest score, followed by governmental personnel; academic researchers had the lowest score.

Analysis of usage frequency (at least once per day, at least 2 to 3 times per week, at least 2 to 3 times per month, and less than twice per month) revealed significant differences for learnability (F = 3.087, p = 0.028), memorability (F = 3.204, p = 0.024), and satisfaction (F = 2.730, p = 0. 045). Levene's test revealed a significant result for satisfaction (F = 3.968, p = 0.009), indicating the presence of unequal variances and the need to use a post hoc test compatible with the assumption of unequal variances. Scheffe's test revealed that respondents who used the website at least 2 to 3 times per week had significantly higher learnability scores than those who used the website at least 2 to 3 times per month. The learnability score of respondents who used the website at least once per day was the second highest. Thus, respondents who used the website frequently were more satisfied with system learnability. For memorability, respondents who used the website at least once per day had the highest score and significantly higher than those who used the website at least 2 to 3 times per month, followed by those who used the website at least 2 to 3 times per week was the second highest. Thus, respondents who used the website more frequently were more satisfied with system memorability. The Games–Howell method was conducted for a post hoc comparison of system satisfaction. The results revealed that respondents who used the website at least 2 to 3 times per week had the highest score, which was significantly higher than those who used the website at least 2 to 3 times per month.

5. Conclusions

This study combined GA and usability assessment to evaluate the Taipei in the Making website and drew the following conclusions based on the proposed research questions.

Regarding user behavior on the website and website performance, the GA analysis revealed that the use of the website peaked between 2016 and 2018 but decreased rapidly after 2018. This is a noteworthy warning sign for the website. The rapid decrease in the use rate of the website might be because the system data was no longer updated after 2015. In addition, the Taipei City Council launched the Taipei City Councilor Portal (https://councilor.tcc.gov.

tw/) in 2018, which enables users to browse information on the interpellation, proposals, and services of any current or former councilors. Users may turn to this portal to search for recent parliamentary information, reducing the use rate of the Taipei in the Making website. In terms of user composition, the most users were between 25 and 54 years old (69.52%) and were from Taiwan (90.23%), with smaller numbers of users from the United States, Russia, the United Kingdom, Hong Kong, and Japan. Most users accessed the website through a desktop (64.81%) and were new visitors. Returning users only comprised ≈25% of users. Notably, BR was high regardless of user age, region, and device. This highlights importance of usability assessment, which indicates that user engagement could be enhanced through a strategy such as interface improvements.

The results of the usability assessment revealed the efficiency and errors constructs received the lowest scores—respectively 3.44 and 3.46—indicating that respondents were relatively unsatisfied with the response time of the system and with the feedback mechanisms for system malfunction. The scores for learnability (3.77) and memorability (3.80) were higher, indicating that the system information framework was perceived as clear, easy to understand, and easy to use, enabling users to quickly complete tasks. The respondents were also satisfied with the memorability of the system, including the locations of icons and function menus and the associations between them. The respondents gave the highest scores for the satisfaction construct (3.84). Although respondents were less satisfied with system efficiency and error correction function, the higher scores for learnability and memorability still indicate that the system met the needs of respondents searching for parliamentary information.

The satisfaction scores for the five constructs did not differ significantly with gender or age. This result indicates that age may not be a key factor affecting the system use. Nevertheless, respondents aged ≤ 20 years old gave the highest satisfaction scores, whereas those aged 41–50 and 51–60 years old gave the lowest satisfaction scores. Younger respondents had higher satisfaction scores than older respondents; this difference might be attributable to younger respondents learning how to use the system more quickly. Middle-aged and older respondents were less satisfied in terms of system efficiency construct and errors construct, indicating that these age groups experience difficulty using the system. Therefore, the system interface should be improved

to meet the needs of these age groups. Respondents with an undergraduate degree were more satisfied with learnability compared with other user groups. Respondents with a high or vocational school degree had the highest satisfaction for errors construct, whereas those with a doctoral degree reported lower satisfaction on this metric. For different occupations, councilors reported the highest overall satisfaction for system usability, followed by governmental personnel. By contrast, academic researchers reported the lowest overall satisfaction. Journalists gave high satisfaction scores for system efficiency. The satisfaction scores given by academic researchers might be associated with their research needs. Councilors, Councilor's assistants, governmental personnel, and journalists mostly used the system to acquire information required for their work. Therefore, they were more likely to obtain their desired information. By contrast, academic researchers mostly used the system to conduct research, and the system functions might not be helpful for research purposes. Consequently, these respondents were less satisfied with the system. In terms of usage frequency, respondents who more frequently used the system were more satisfied with its learnability and memorability and agreed that the system satisfied their information needs.

In recent years, legislatures worldwide have promoted projects for constructing digital humanities systems for parliamentary information. However, studies have yet to perform in-depth investigations on the overall usability and user satisfaction of such systems. This study focused on the practical problems of these systems from a user perspective to examine the usability of a digital humanities system for parliamentary information. The results provide new insights and are a valuable contribution to relevant fields. The GA analysis and questionnaire survey performed in this study verified that both approaches can be used to understand different aspects of digital humanities systems. GA focuses on examining user behavior on a website by collecting large volumes of data, whereas questionnaires can provide a more precise understanding of the relationship between users and system constructs. The combined methods used in this study for system assessment can serve as a reference for devising holistic approaches for comprehensive system assessments, thereby improving the engagement of different user groups.

This study has some limitations. First, questionnaire responses were only collected from 210 respondents, which limits the power of the statistical

inferences. Future researchers should include more participants in their usability surveys to obtain more generalizable and comprehensive results. Second, this study attempted to integrate Google Analytics data and a usability assessment to perform a comprehensive system assessment. However, a lack of time limited the research to quantitative data collection, preventing further insight into the qualitative reasons behind specific phenomena, such as the decrease in the website use rate and the different results for occupations, age groups, and use frequencies. Subsequent studies should incorporate qualitative approaches, such as interviews and focus groups, to further delve into user behavior and viewpoints, thereby ensuring that adjustments and improvements of system services are effective. Despite these limitations, the Taipei City Council and government departments are recommended to combine various assessment methods, particularly the progressive implementation of quantitative website analysis, to effectively analyze website user logs. In addition, user satisfaction can be analyzed using usability tests, interviews, and questionnaire surveys to adjust these digital humanities systems.

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References

Brown, A. (2003). Preserving the digital heritage: Building a digital archive for UK government records. *Online Information-International Meeting*, *2003*, 65-68.

Chang, S.-J. L. (1999). Digital libraries for humanities scholars: An empirical study of users' information behaviors. *Journal of Library and Information Studies*, *14*, 33-48. doi:10.6182/jlis.1999.14.033 (in Chinese)

Cohen, R. A., & Thorpe, A. (2015). Discovering user behavior: Applying usage statistics to shape frontline services. *The Serials Librarian*, *69*(1), 29-46.

doi:10.1080/0361526X.2015.1040194

Covey, D. T. (2002). *Usage and usability assessment: Library practices and concerns*. Washington, DC: Digital Library Federation; Council on Library and Information Resources.

Desmarais, N. (2011). A century of lawmaking for a new nation: US congressional documents and debates. *Reference Reviews*, *25*(8), 55-56. doi:10.1108/09504121111184633

Digital Taiwan. (n.d.). *The "Taipei in the making" project: Taipei city parliamentary information*. Retrieved from https://culture.teldap.tw/culture/index.php?option=com_content&view=article&id=1848%3Athe-taipei-in-the-making-project-taipei-city-%20parliamentary-information&catid=158%3Aarchives-and-databases&Itemid=210

Eschenfelder, K. R., & Miller, C. A. (2007). Examining the role of web site information in facilitating different citizen–government relationships: A case study of state Chronic Wasting Disease web sites. *Government Information Quarterly*, *24*(1), 64-88. doi:10.1016/j.giq.2006.05.002

Fagan, J. C. (2014). The suitability of web analytics key performance indicators in the academic library environment. *The Journal of Academic Librarianship*, *40*(1), 25-34. doi:10.1016/j.acalib.2013.06.005

Fagan, J. C., & Fagan, B. D. (2001). Citizens' access to on-line state legislative documents. *Government Information Quarterly*, *18*(2), 105-121. doi:10.1016/S0740-624X(01)00064-8

Gibbs, F., & Owens, T. (2012). Building better digital humanities tools: Toward broader audiences and user-centered designs. *Digital Humanities Quarterly*, *6*(2). Retrieved from https://dhq-static.digitalhumanities.org/pdf/000136.pdf

Gooding, P. (2016). Exploring the information behaviour of users of Welsh Newspapers Online through web log analysis. *Journal of Documentation*, *72*(2), 232-246. doi:10.1108/JD-10-2014-0149

Hsiang, J., Peng, H.-H., Tung, C.-E., & Hsiao, I.-L. (2010). Taiwan fa zhan de li shi mai luo—Jian zhi Taiwan sheng zi yi hui shi liao zhi zong guan. *Taiwan Sheng Zi Yi Hui Hui Xun*, *18*, 34-41. (in Chinese)

Huang, Z., & Benyoucef, M. (2014). Usability and credibility of e-government websites. *Government Information Quarterly*, *31*(4), 584-595. doi:10.1016/j.giq.2014.07.002

Kaiser, H. F., & Rice, J. (1974). Little Jiffy, mark IV. *Educational and Psychological Measurement*, *34*(1), 111-117. doi:10.1177/001316447403400115

Kelly, E. J. (2014). Assessment of digitized library and archaterials: A literature review. *Journal of Web Librarianship*, *8*(4), 384-403. doi:10.1080/19322909.2014.954740

Khoo, M., Pagano, J., Washington, A. L., Recker, M., Palmer, B., & Donahue, R. A. (2008). Using web metrics to analyze digital libraries. In R. Larsen (Ed.), *Proceedings of the 8th ACM/IEEE-CS Joint Conference on Digital Libraries* (pp. 375-384). New York, NY: Association for Computing Machinery. doi:10.1145/1378889.1378956

Krug, S. (2000). *Don't make me think! A common sense approach to web usability*. Indianapolis, IN: New Riders.

Ku, K. M. (2001). The website library and its parliamentary information & dissemination service. *Journal of Library and Information Studies*, *16*, 161-169.

Lin, C.-M., & Fan, W.-Y. (2013). Usability test for a digital archival system in Taiwan: A case of the Humanities and Social Sciences (HSS) information system. *Journal of Library and Information Science*, *39*(1), 46-63. doi:10.6245/JLIS.2013.391/598 (in Chinese)

Lu, H.-P., & Liang, S.-W. (2014). Global development of parliamentary websites and key factors of influence. *Journal of Internet Technology*, *15*(5), 733-749. doi:10.6138/JIT.2014.15.5.04

Mooi, E., Sarstedt, M., & Mooi-Reci, I. (2018). Principal component and factor analysis. In *Market Research: The process, data, and methods using stata* (pp. 265-311). Singapore: Springer. doi:10.1007/978-981-10-5218-7_8

Nielsen, J. (1993). *Usability engineering*. San Francisco, CA: Morgan Kaufmann.

Nielsen, J. (2020). *10 Usability heuristics for user interface design*. Retrieved from https://www.nngroup.com/articles/ten-usability-heuristics/

Ridgway, W. H. (2011). A century of lawmaking for a new nation: U.S. congressional documents and debates, 1774–1875. *The Journal of American History*, *97*(4), 1196-1197. doi:10.1093/jahist/jaq046

Su, S.-F., Chiu, Y., Xi, D.-L., & Chen, Y.-H. (2012). *Taipei in the making* (III). (Report No. NSC99-2631-H005-001). (in Chinese)

Taipei City Council. (n.d.). *Taipei in the making*. Retrieved from http://taipeiinthemaking.tcc.gov.tw/cgi-bin/gs32/gsweb.cgi/login?o=dwebmge&cache=1553221726637 (in Chinese)

The Library of Congress. (n.d.). *National Digital Library Program*. Retrieved from https://memory.loc.gov/ammem/dli2/html/lcndlp.html

Vecchione, A., Brown, D., Allen, E., & Baschnagel, A. (2016). Tracking user behavior with Google Analytics events on an academic library web site. *Journal of Web Librarianship*, *10*(3), 161-175. doi:10.1080/19322909.2016.1175330

Wusteman, J. (2017). Usability testing of the letters of 1916 digital edition. *Library Hi Tech*, *35*(1), 120-143. doi:10.1108/LHT-10-2016-0111

Yang, L., & Perrin, J. M. (2014). Tutorials on Google Analytics: How to craft a web analytics report for a library web site. *Journal of Web Librarianship*, *8*(4), 404-417. doi:10.1080/19322909.2014.944296

Zavalina, O., & Vassilieva, E. V. (2014). Understanding the information needs of large-scale digital library users. *Library Resources & Technical Services*, *58*(2), 84-99. doi:10.5860/lrts.58n2.84

Zha, X., Wang, W., Yan, Y., Zhang, J., & Zha, D. (2015). Understanding information seeking in digital libraries: Antecedents and consequences. *Aslib Journal of Information Management*, *67*(6), 715-734. doi:10.1108/AJIM-12-2014-0167

Zhang, Y. (2010). Developing a holistic model for digital library evaluation. *Journal of the American Society for Information Science and Technology*, *61*(1), 88-110. doi:10.1002/asi.21220

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利用整體性評估法進行議事資訊數位人文系統評估

Using a Holistic Approach to Evaluate the Digital Humanities System for Parliamentary Information

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【摘要】

近年來世界各國民意機關均推動議事資訊數位人文計畫，然尚未有研究深入調查議事資訊數位人文系統效益。因此本研究選擇臺北市議會的「Taipei in the Making」進行整體性評估，除採用Google 分析（Google Analytics）蒐集系統網站於2016年至2021年間的使用者使用紀錄，另透過好用性評估問卷調查系統好用性滿意度。研究結果顯示，系統網站使用量從2016年逐年增長，於2018年達到高峰，之後急劇下降，且回訪客比例僅約25%，表示系統介面設計在提升使用者參與度上有待改善；而好用性評估結果

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顯示填答的使用者對系統整體表現感到滿意，表示系統能滿足其議事資訊搜尋需求。本研究結果建議未來臺北市議會及政府部門可嘗試結合不同評估方法，建立完整的系統評估機制，據以改善系統讓議事資訊廣為大眾利用。

【關鍵詞】

數位人文；Google 分析；議事資訊；好用性評估；使用者觀點