IT and Gender: Applying Website Project Management Tools

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Abstract
IT-projects in the field of e-governance in correlation with the Sustainable Development Goal 5 "Gender Equality" are considered. The digital component of local governance aims the expansion of citizens' access to resources and especially empower all women. The technology ability of the digital city to ensure gender-equitable admission to various online services emphasized. The decomposition of the gender-sensitive content of the municipality website carried out on the example of Vienna city, a recognized leader both in the application of gender mainstreaming practices and e-governance. Project management tool for assessment of gender sensitivity municipal website developed and considered through the technological and social indicators. It is proposed approach based on assess the gender mainstreaming level in the municipal management system by analyzing the context of official website. For this purpose, six categories are used: mission and strategic planning, management structure and management styles, ability to adapt, partnership and cooperation, role in the sector, provision of services. It was tested by assessing the content information posted on the official websites of the three big Ukrainian cities – Kyiv, Kharkiv and Dnipro. Content analysis of municipal websites and assessment on six parameters was carried out. The degree of gender orientation of websites visualized using a profilogram. The developed assessing tool for gender sensitivity might be useful for IT-project management methodology, specifically the model "Software Development Life Cycle (SDLC) Phases". For new IT projects, gender sensitivity assessment can be integrated as a component of the requirements gathering process at the "Planning and analysis" phase. As it is a website improvement project, then gender sensitivity assessment will be useful in the "Maintenance" phase.

Keywords 1
IT-project, website, project management, e-governance, digital society, gender, sustainable development

1. Introduction

The digital technologies and tools are drivers for sustainable development [1], including achieving the Global goal 5 "Gender equality". Currently, the issue of a wider women's participation in the digital economy becomes relevant. According to European Commission (EC), women account for more than half of the European population but only around 17% of the ICT specialists are women [2]. EC emphasizes that both men and women use digital technologies and need to be involved in building a sustainable and equitable digital economy and society. To monitor progress, EC have launched the Women in Digital Scoreboard, which is part of Digital Economy and Society Index (DESI). Based on 2021 data, women are the most digital in Finland, Sweden, Denmark, Estonia and the Netherlands, and the lowest on female participation in the digital economy and society was in Romania, Bulgaria,

Poland, Hungary and Italy [3]. Like most countries, Ukraine will grow digital society and economy [4] using gender-sensitive IT.

However, the digital divide, known as the gap in terms of accessibility and use of digital technologies, among individuals, communities and countries, needs carefully considered. In particular, the gender digital divide refers to the inequalities between women and men with relation to resources, capabilities and opportunities to access and effectively utilize digital technologies. The digital divide is actually several gaps in one. There is a technological divide (great gaps in infrastructure), and a content divide [5–7] when a lot of web-based information is simply not relevant to the real needs of people, including gender sensitive.

Digital cities represent the best entry point for pursuing Sustainable Development Goals [8]. They are able to ensure gender-equitable admission to various online municipal services. On the part of local government, this requires foremost the using these different needs to inform all local governance processes – policymaking, planning, budget allocation, programme development, local service delivery and performance monitoring, etc. [9].

However, the insufficient level of e-governance is a challenge facing towns and cities globally. The municipal website is an important IT tool which able to support gender sensitive activity in all city life fields. Nevertheless, the road to women's empowerment still features some major obstacles. The different needs, interests, priorities and concerns of women and men are not properly considered. In such a situation, scientific and practical developments in assessing the municipal websites in context their gender activity become extremely valuable.

This article aims to develop project management tools for gender sensitive assessment of municipal websites.

2. Municipal website as an IT project

The role of municipal websites as a tool for equitable digital society development has attracted the attention of the researchers over recent years [10]. The authors note that municipal websites are able not only to reduce the operational costs of management, but also to increase the transparency of government and improve the quality of services to citizens. At the same time, a higher digital level of the website's functioning requires both appropriate technical transformation and the readiness of the municipal employees to support new online services. That is why it is necessary to use the knowledge of IT project management for the operation of municipal websites.

Website project as an IT project is a set of interrelated measures coordinated in time, logistical, informational, human, financial and other resources and with the goal of creating certain ICT, informatization tools and information resources that meet certain technical conditions and quality indicators [11–13]. A website is a set of web pages and related content that is identified by a common domain name and is published on at least one web server. The municipal website must deliver excellence in customer service, functionality, convenience and government transparency [14]. Municipal websites need to function on many levels with multiple objectives. They need fine-tuned solutions that combine to create web experiences for both stakeholders and users of municipal websites.

Achieving a clean and uncluttered user experience can feel like a challenge when a depth and breadth of features, functions, updates, and data, need to be accommodated. Therefore, it is required proper project management (supported by the right software for website project management). The development of the website of the municipality follows the general model "Software Development Life Cycle (SDLC) Phases" [15–16]. Firstly, all necessary information is collected from stakeholders and analyzed (phase "Planning and analysis"). In the next Design phase, the project team generates requirements specifications and develops solutions. Since the website of the municipality is a complex and multi-level IT project, the Design phase may contain a Prototyping sub-phase. A site prototype is a sketch and/or HTML documents that gives a visual vision of the location of the main elements: menus, buttons, forms, etc. It is important that all stakeholder groups take part in the discussion of the prototype website. The completion of the "Design" phase is characterized by conceptual decisions and understanding of all stakeholders how the product (website) will look. In the next phase "Implement (or Coder)", the website develops using a programming language. The team of developers includes

front end developer; back end developer; web app developer; full stack developer; DevOps developer; big data developer; mobile app developer; desktop developer; data scientist; desktop developer. After the development of the website is completed, it is necessary to test all its elements (menus, buttons, forms, etc.) to spot any defects, bugs, or other problems. Moving to the "Deployment" phase means that the website has been developed in accordance with the goals, objectives, specifications, requirements and constraints. It is important that the quality of the final product satisfy all stakeholders and users of digital municipal services.

In long-term IT projects, there is also a sixth Phase "Maintenance". It involves making changes to the content of the IT product, updating and supporting. Maintenance of a municipal website mainly involves updating it (version, extension – plugins, backups, cybersecurity, etc.). If the site requires significant changes and (or) the embedding of radically new digital municipal services, such innovations should be considered as a separate IT project. The new project requires the creation of a new team capable of creating a new IT product (digital municipal service) that will increase the digital maturity of the municipality as a whole. Website project management breaks down the various requirements from internal (or external) team members into specific tasks and subtasks. Then they are solved in a collaborative process [17].

Website project management is more often than not a collaborative team effort. In this job have a moving parts that require work other teams like design or content. It is important that a municipal site meet the needs of every demographic within a city. Therefore, it is necessary to diligent analyses the needs of the community [18]. Tor this gathering citizen input via focus groups, individual interviews, or some other means are used. It should be noted that every community has a unique culture with distinct expectations for how their website should serve their needs, including issues relating to equality between women and men.

3. Gender content of the municipal website

In the conditions of development of digital society, the municipal website is a necessary element of effective activity, including gender policy. The digital technology adoption coupled with gender knowledge creates a combined capability, which may be unique and valuable [19]. When digital technologies are combined with human resource intangible assets such as a culture that values the role of women and equal opportunity, the combination of such resources may lead to a sustained development [20]. The United Nations also uses such IT tool. The UN inter-agency website on gender equality (WomenWatch) created in 1997. It was as a "gateway" to information on work carried out to promote gender equality across the entire UN system. Through WomenWatch, information is disseminated on intergovernmental processes, in particular the Commission on the status of women, the work of the "Convention on the elimination of all forms of discrimination against women", research and statistics and operational activities within the UN system [21]. WomenWatch provides an online database-driven mechanism, which links to websites and webpages, and in some cases to specific documents, on gender equality produced by UN entities.

The adoption of IT in local governance enables to interact with employees and facilitating better sharing of gender sensitive information with a wide range of people. In particular, it is proposing to assess the gender orientation of local management systems for the following parameters: Gender Focal Point (in the organizational structure), gender sensitive leadership style, gender budget, gender statistics, and gender planning, gender-responsible performance. The use of such qualitative characteristics of gender orientation in the local management system allows for both internal introspection and external monitoring [9]. Then, municipal website can lead to greater empowerment for women because it changes the way of build relationships with them and support [22]. Furthermore, digital technology not only provides women with access to valuable information but also facilitates their efforts to balance their work and life.

The creation of a gender sensitive information resource, which is focused on ensuring safe and high-quality living conditions for every inhabitant (regardless of gender and gender+), is one of the urgent tasks of the municipality. A well-designed municipality website provides comprehensive information on the implementation of gender principles both at the level of individual initiatives and

at the level of the municipality as a whole. For instance, it is the foundation of a strong and sustainable city development:

- inclusion of a gender component (gender sensitivity) in city development strategies;
- observance of gender partnership (gender participation) in the organizational structure of the municipality, city council, deputy commissions, teamwork [23];
- conduct of gender audit and monitoring as a systematic activity [24];
- implementation of national and local programs to ensure equal rights and opportunities for women and men;
- presentation of achievements in the implementation of gender mainstream practices, benchmarking of gender-responsive management;
- provision of gender-sensitive services, achievement of gender-balanced results;
- maintaining gender balance in financing resilience and mobilizing resources.

The gender-sensitivity of municipal websites used also in relation to Sustainable Development Goal № 11: Sustainable cities and communities. For example, concerning:

- online information and service provision in the sectors of health, education, social, labor, finance and housing maintenance utilities;
- open access of GIS applications for everyone, with possibility to use databases of various contextual data for create safe mobility by public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons;
- city GIS map with indicators of unique environment contexts and stakeholders needs;
- online information and service provision with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons [25].

The experience of Vienna is among the best practices of integrating gender issues into the city's electronic governance [26]. The city's official website indicates the priority of integrating gender-mainstreaming approaches into Vienna's governance system. The third link on the main page of the section "Politics & Administration" (Figure 1) is gender aspects (Gender Mainstreaming). The city administration created a "Gender Focal Point (GFP)" to implement gender mainstreaming in all areas of governance, which in turn ensured equal access to public administration services, openness budgeting processes, a high level of gender culture. The main function of GFP is "gender filtering" of proposed decisions. It is this municipal structural unit that checks: the needs of various gender groups are taken into account; how the implementation results will affect different gender groups, to what extent, etc. GFP engages experts in gender mainstreaming (gender budgeting, gender audit, gender planning) to make informed and balanced decisions in accordance with the specifics of the problem being solved. In addition, GFP provides financial confirmation of the fairness of the distribution of budget funds for the implementation of project activities.
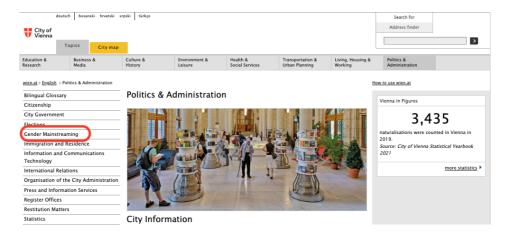

Figure 1: Gender mainstreaming in the Vienna municipality website [27]

Vienna – a model city for Gender Mainstreaming [28]. It is noteworthy that the website of the City of Vienna has information about the Integration and Diversity Department and the Municipal

Department of Vienna Women's Affairs. It informs for creating conditions for a gender-just society and offers women and men equal opportunities to live and work. This website has also content about activities of Vienna municipality conducts awareness-raising campaigns, develops proposals to address various gender issues, identifies areas for action and participates actively in national and international working groups to promote equal living conditions for women and girls.

The website presents separately a functional unit The Integration and Diversity Department (Gender Mainstreaming), which is responsible for the systematic implementation of gender initiatives and projects in the organizational structure of the municipality (Figure 2). This unit carries out activities aimed at raising community awareness of gender (inclusion, human orientation), the formation and transfer of knowledge, as well as the development of methods of gender-sensitive assessment and reporting on urban project and programs. "Gender Mainstreaming" webpage contains separate tabs: "Equality action plan", "Examples", "Objectives", and "Principles".
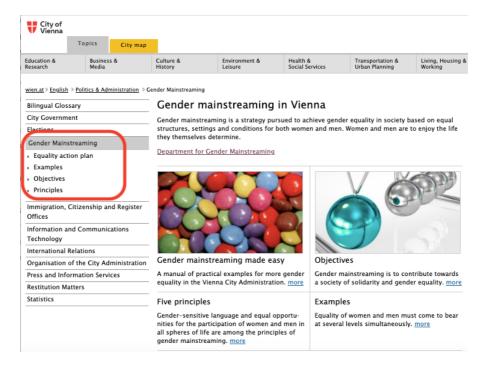

Figure 2: Web page structure "Gender Mainstreaming" in the architecture of the official Vienna website

It is important that on the first (main) page of the municipality's website, it is the GFP unit that informs the public about municipal services during a coronavirus pandemic COVID-19. The section "Health & Social Services" contains a separate web-page "Integration and Diversity", which contains information on municipal counseling services for immigrants, refugees (including women, families, elderly migrants, youth).

The results of the monitoring of integration and diversity (tab "Facts and figures") have become of particular value for this study. The document [29] presents factual data in the context of:
1 – Demography and migration law;
2 – Equality and participation;
3 – Education;
4 – Employment and labor market;
5 – Income and social security;
6 – Health;
7 – Housing;
8 – Public space and coexistence.

These data are an important basis for decision-making, policy-making, and contribute to the objectification of public discussions on migration and gender mainstreaming. The webpage "Women" also deserves special attention.

The website provides a detailed coverage of the activities of the Municipal Department "Vienna Women's Affairs" is implementing several projects. It conducts a gender audit of advertising and responds to complaints about sexism in the city's visual space, as part of the interactive campaign "A clear position: against violence".

An annual Women's Award has also been introduced to improve the "visibility" of women's achievements. The Department of Vienna Women's Affairs cooperates with similar divisions of other cities in Central and Eastern Europe within the international network FemCities. This allows the exchange of best practices on regional and local policy issues for gender mainstreaming [30].

Vienna's gender mainstreaming approach is based on five principles [27].

1. Application of gender-sensitive language to all forms of documents, telephone directories, texts on the internal network and the Internet, advertising messages and news. Gender-sensitive choice of images is used in the preparation of visual materials.

2. Collection and analysis of data on specific gender issues. Gender segregation of all data (as far as possible) with the separation of social aspects (age, ethnicity, income level, level of education) is envisaged. Gender-sensitive statistics, analytics is a mandatory component of determining the status quo.

3. Equal access and access to services. All municipal services are evaluated taking into account the differences in their impact on women and men, namely:
- who is the user of the service (woman, man);
- differences in the needs of women and men;
- the degree of consideration of the differences in the circumstances of women and men in the planning and design of services;
- the level of access of all target groups to the same sources of information;
- which gender group of users is most discriminated against in provision of services;
- accessibility and accessibility barriers (inclusiveness) provision of services.

4. Women and men are equally involved in decision-making at all levels. The principles of gender balance are guided in the formation of working and project groups, the composition of commissions and advisory councils, as well as in the organization of events (selection of speakers, participants of the event). It is important that workplaces are also "free of gender barriers" (for example, adequate lighting, architectural and spatial barriers, the availability of a children's room, etc.).

5. Integration of gender-sensitive decision-making tools. The main tools of gender-oriented management are considered to be "quality management" and "gender budgeting". Focusing on the differences in the circumstances of women and men in design decisions provides an increase in the value of project results, the efficiency of the use of human and financial resources.

Overall, the gender-responsive local e-governance is about making sure that all local governance processes, procedures and systems are developed and implemented in ways that take into account the different needs of women and men [31]. Therefore, it is also about making sure that municipalities, highlighting their activities on their official website, take into account existing gender gaps and reduce these through their policies, programmes and activities.

4. Gender sensitive website project management

The author's approach is based on an attempt to assess the level of gender mainstreaming in the municipal management system by analyzing the context of its official website. To this end, it is necessary to develop a model of rapid assessment of gender maturity of the website of the municipality on compliance with the gender principle of "gender-balanced management and leadership". It is proposed to assess the gender sensitivity of the municipality's website in the following categories:
1. Mission and strategic planning;
2. Management structure and management styles;
3. Ability to adapt;
4. Partnership and cooperation;
5. Role in the sector;
6. Provision of services.

Characteristics of municipality website content for each of the six categories are proposed in Table 1.

Table 1

General structure of parameters for assessing gender sensitivity of the municipality's website

Categories of gender sensitivity	Characteristics of the gender content of the municipality's website
1. Mission and strategic planning	1.1. Mission and development strategy contain a gender component (takes into account gender diversity).
	1.2. Authors-developers of strategic plans, projects, programs are representatives of different gender groups.
2. Management structure and management styles	2.1. The presence of a separate structural unit "Gender Focal Point".
	2.2. Mayor's Gender Adviser or Local Gender Representative.
	2.3. Observance of gender balance in the composition of the top management of the municipality, the deputy council and professional commissions (gender profile of the decision-maker).
	2.4. Availability of procedures (regulations, rules) for the prevention of gender-based discrimination and conflict resolution on the basis of gender (gender+).
	2.5. Center for empowering victims of gender-based violence.
3. Ability to adapt	3.1. Report on the results of gender audit of management and management style. Gender portrait of the municipality.
	3.2. Gender segregation of statistical data (including gender+).
	3.3. A system of measures for the inclusion/integration of the principles of gender equality, gender-segregated statistical data in decision-making processes, implementation of projects and programs.
4. Partnership and cooperation	4.1. The municipality has regular contacts (actively participates) in associations of equal rights and opportunities at the international, national levels, as well as with municipalities in other cities.
	4.2. Implementation of the local program for ensuring equal rights and opportunities within the framework of the implementation of the national social program for ensuring equal rights and opportunities for women and men.
	4.3. The municipality encourages businesses (advertising campaigns) to be socially responsible (including non-discrimination, inclusiveness, women's empowerment).
	4.4. Partnership with non-governmental public organizations in the implementation of projects (initiatives) to achieve gender equality.
5. Role in the sector	5.1. The municipality demonstrates an active position in the implementation of gender strategies.
6. Provision of services	6.1. The municipality improves the qualifications of workers in the application of gender-oriented practices in accordance with the areas of application (construction of infrastructure facilities, city improvement, development of public transport, etc.).
	6.2. The municipality has gender-sensitive service standards that meet the best international practices/standards for providing quality municipal services.
	6.3. The municipality demonstrates the ability to use methods/tools of gender-oriented management for the development of new projects, programs, services.
	6.4. Information on information events, trainings, schools on the implementation of gender equality principles.

The assessment of gender maturity of a municipality website can be carried out using the following scale:

"0" – non-compliance with the criterion (information is not available on the website);

"1" – compliance with the criterion (information is posted on the website).

The proposed tool for assessing the gender orientation of the municipality website should become an effective tool for enhancing the gender culture of the municipality's management system. The use of qualitative characteristics (Table 1) allows municipalities to assess (self-assess), establish "the state as it is", and outline the trajectory for improving municipal services, urban infrastructure, and the quality of life in the city.

5. Gender sensitivity assessment of website project management: case study of Ukrainian municipalities

The empirical base of this study was formed by content information posted on the official websites the three major cities of Ukraine – Kyiv, Kharkiv and Dnipro.

Thus, when searching for the word "gender" on the website of the municipality of Kyiv, the system will offer most results on the topics "Kyiv and city authorities" – 37 results, "Benefits, subsidies and social protection" – 29 results, "Management" – 26 results [32]. The Kyiv Municipality website on "Kyiv and the City Authority" and "Benefits, Subsidies and Social Protection" contains information (statistical data) on domestic violence, as well as municipal services provided to women victims of violence.

The "Department for Interaction with Public Organizations of Veterans and Disabled Persons of the Department for Gender Issues and Interaction with Public Organizations for Disabled, War and Labor Veterans" performs the role of GFP in the structure of the Kyiv City State Administration. In addition, the job of a leading specialist of the monitoring department of the state of monitoring the interests of the executive body provides for gender legal examination.

The Municipality of Kyiv has experience in implementing gender-sensitive projects: "Forum of Equal Rights and Opportunities", "Gender-Oriented Budgeting", "Kyiv Woman of the Year Competition", "Kyiv Gender Passport" and others, but the "critical mass" of gender mainstream municipal practices has not yet acquired.

Kharkiv is the second most populous city in Ukraine, a large scientific, cultural and industrial region. The structure of the Kharkiv municipality is not conceptually different from the Kyiv municipality. The implementation of the national social program to ensure equal rights and opportunities is entrusted to the Department of Social Policy [33]. The Municipality of Kharkiv has been developing a portfolio of gender mainstreaming practices since 2003 [25, 34–36]. The city's Gender Passport has been developed, a network of University Gender Centers and the Gender Culture Center have been established. Lecture forums and trainings on gender issues are held regularly. Gender-sensitive projects become winners annually and receive funding under the Public Budget (Participation Budget) of Kharkiv city [37–39]. A significant event in the introduction of a gender mainstreaming approach in Kharkiv municipal projects is the arrival of the Vienna City Council Commissioner [26].

Dnipro is the fourth most populous city in Ukraine. According to the information posted on the official website, the Department of Social Policy is responsible for preventing domestic violence, ensuring equal rights and opportunities for women and men, and combating trafficking in human beings [39]. The municipality has implemented a comprehensive program on family, gender policy, demographic development, prevention of domestic violence and combating trafficking in human beings for 2018–2022.

There are almost no search results for the query "gender" on the website of the Dnipro municipality. However, this does not indicate the absence of gender practices in the municipality, but the non-disclosure of information on the implementation of gender mainstreaming local initiatives. In particular, in December 2017, a gender audit of the accessibility of urban space was conducted (part of Dmytro Yavornytsky Avenue). At the same time, the Dnipro municipality website contains a significant amount of content on the implementation of inclusion projects in the field of education, sports and healthcare.

Detailed analysis of the municipality's website and assessment of parameters (Table 1) allows visualizing the degree of gender orientation using a profilogram (Figure 3).
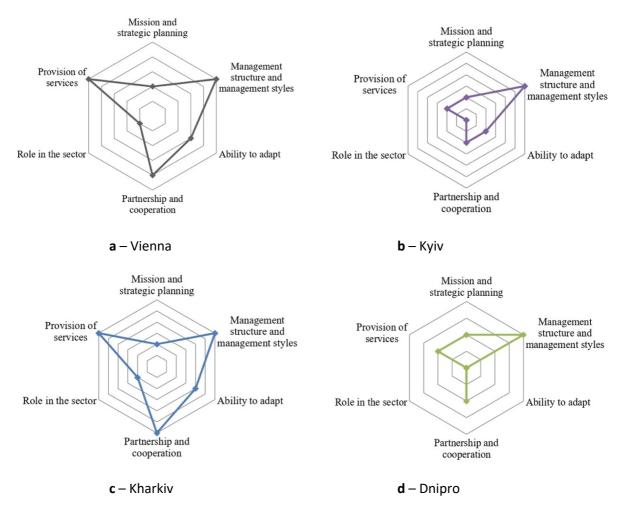

a – Vienna

b – Kyiv

c – Kharkiv

d – Dnipro

Figure 3: Profilogram of gender sensitivity assessment of the municipality's website

6. Conclusion

The gender context in website project management presented with outlining the role of women in the digital economy. There are gender gaps in the digital economy, which are also reflected in the content of IT products, in particular in the field of municipal digital services. The development and improvement of municipal services considered in accordance with website project management, which takes into account the different needs, interests, priorities and concerns of women and men. This research approach allows for the creation of gender-sensitive content of the municipal website. It is highlighted that the gender sensitivity of the website contributes to the sustainable development of the city.

The content analysis of the gender sensitivity of the Vienna municipal website carried out. The central location of the "Gender Mainstreaming" web page is indicated, as well as the presence of a special unit "Gender Focal Point" in the municipal management system. This indicates the implementation of gender mainstreaming in all areas of e-governance. A comparative analysis of the municipal websites of Ukrainian cities (Kyiv, Kharkiv, Dnipro) showed their digital and gender gaps in comparison with Vienna.

The general structure of parameters for assessing gender sensitivity of the municipal website developed. It is proposed to lay the requirements for the project management website as the basis of gender-sensitive assessment, namely: 1 – Mission and strategic planning; 2 – Management structure

and management styles; 3 – Ability to adapt; 4 – Partnership and cooperation; 5 – Role in the sector; 6 – Provision of services. The use of such characteristics by municipalities can be both for internal monitoring and for external monitoring. With the help of such an evaluation tool, it becomes possible to build a perspective on the improvement of municipal sites. In particular, through the development of online services, it is possible to ensure greater involvement of women in the digital economy.

The developed assessing tool for gender sensitivity might be useful for IT-project management methodology, specifically the model "Software Development Life Cycle (SDLC) Phases". For new IT projects, gender sensitivity assessment can be integrated as a component of the requirements gathering process at the "Planning and analysis" phase. As it is a website improvement project, then gender sensitivity assessment will be useful in the "Maintenance" phase.

The author's approach needs further scientific and practical development in the direction of working with specific data. The empirical basis for further research should include analytical reports on the functioning of the GFP in selected municipalities. This, in turn, provides for detailed control measurements (estimations) of parameters to identify the sensitivity of the municipality's website. A promising direction of the relevant theoretical research can be the use of the apparatus of fuzzy logic, as well as the development of an appropriate software product.

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