

Smart Village: Digital Transformation of Public Services Based on Multilingual Website and Community Literacy in Bawang Village, Blado District, Batang Regency.

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Abstract

Smart Village is a rural development approach that utilizes digital technology to improve public services and community empowerment. Bawang Village, Blado District, Batang Regency, with a population of 1,864 residents, faces challenges related to conventional administrative services, limited digital capacity among village officials, low community digital literacy, and suboptimal use of digital media for public information. This community engagement program aims to improve village governance and public services through the development of a multilingual website integrated with village administrative services, while strengthening digital literacy and community participation. The program employed a participatory and asset-based community empowerment approach through direct instruction, hands-on training, Asset-Based Community Development (ABCD), and continuous mentoring. Activities consisted of needs and potential mapping, participatory planning through Focus Group Discussions (FGDs), multilingual website development, training and mentoring for village officials and community members, and program evaluation. The evaluation involved satisfaction surveys, user interviews, and recommendations for service improvement and sustainability. The targeted outputs include a scientific article in a national journal, popular and news articles in mass media, and a video highlighting the community engagement activities. The program is expected to enhance the efficiency, transparency, and accessibility of village public services while strengthening digital capacity and supporting the sustainable implementation of Smart Village.

Keywords: Smart Village; Bawang Village; Multilingual Website; Digital Public Services; Community Empowerment

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1. Introduction

Digital transformation has become an important strategy for improving governance and public service quality at the village level. The use of information technology can support faster, more transparent, efficient, and accessible public services. This approach is consistent with the **Smart Village** concept, which integrates digital technology, innovation, and community empowerment into rural development [2]. Professional, transparent, and accountable public services are also important indicators of good village governance [3][4]. Previous studies have shown that digitalization in village governance, particularly through village websites, can improve information accessibility, service efficiency, transparency, and communication between local governments and

communities [6][7]. Village websites can serve as platforms for public information, data documentation, communication, and administrative services [9]. However, successful digital transformation depends not only on technological availability but also on the capacity of village officials, community digital literacy, and the sustainability of system management [10][11]. Bawang Village, Blado District, Batang Regency, Central Java, covers approximately 2.13 km² and has a population of 1,864 residents distributed across four hamlets [1]. Field observations indicate that administrative services and information dissemination in Bawang Village are still largely conducted through conventional mechanisms, limiting the effectiveness and accessibility of public services [5]. Limited digital capacity among village officials, uneven levels of community digital literacy,

and the absence of an integrated village website constitute the main challenges [6][7]. These conditions also constrain public information transparency and the promotion of village potential [8]. Based on these challenges, this program aims to develop and implement multilingual website-based digital public services as part of the efforts to establish a Smart Village in Bawang Village. Specifically, the program seeks to strengthen the digital capacity of village officials, provide more integrated and accessible public services, and improve community digital literacy and participation. The contribution of this program lies in integrating technological development with human resource capacity building to establish a sustainable Smart Village model that can potentially be replicated in other villages.

2. Methods

2.1 Research Design

This community engagement program employed a participatory, practice-based, and asset-based approach to develop and implement multilingual website-based digital public services in Bawang Village. The proposed model integrates four complementary approaches: Direct Instruction, Hands-on Training, Asset-Based Community Development (ABCD), and Continuous Mentoring. The main innovation lies in combining multilingual digital service development with capacity building for village officials and community empowerment, thereby supporting the sustainable implementation of the Smart Village model. The program involved two primary groups: village officials as system administrators and service providers, and community members as users and beneficiaries of digital public services. Program implementation consisted of five sequential stages: (1) needs and asset mapping, (2) participatory planning, (3) multilingual website design and development, (4) implementation and mentoring, and (5) evaluation and sustainability planning.

2.2 Implementation Methods Programme

The implementation methods were designed to ensure that participants acquired not only conceptual understanding but also practical competencies in managing and utilizing digital public services.

a. Direct Instruction

Direct Instruction was conducted at the initial stage to introduce village officials and community representatives to digital transformation, Smart Village principles, and the functions of a multilingual village website. The sessions focused on the practical relevance of digital public services to administrative processes and public information dissemination. This stage was intended to establish participants' initial understanding and readiness for program implementation [20].

b. Hands on Training

Hands-on Training was conducted through direct practice involving village officials and community members. Participants practiced managing website content, uploading public service information, updating village information, and utilizing multilingual features. Practical exercises enabled participants to develop operational skills and apply the digital system within the context of village public services [21].

c. Asset-Based Community Development (ABCD)

The ABCD approach was applied to identify and utilize existing village assets in developing the digital public service system. Relevant assets included the digital skills of village officials, residents' knowledge and experience, local cultural resources, and available technological infrastructure. This approach encouraged active community participation and strengthened local ownership of the digital service system [22].

d. Continuous Mentoring

Continuous Mentoring was implemented after training to ensure that the system could be operated independently and sustainably. Mentoring focused on strengthening digital literacy, resolving technical problems, managing website content, and optimizing available features. Technical assistance was provided according to the needs identified during implementation [23].

2.3. Stage of Implementation

The program was implemented through the following systematic stages:

Stage 1: Needs and Asset Mapping.

Initial surveys, interviews, and discussions were conducted to identify problems related to public services, digital literacy, human resources, infrastructure, and village potential. The findings were used to determine the technical and functional requirements of the digital service system.

Stage 2: Participatory Planning.

A Focus Group Discussion (FGD) was conducted with village officials, community representatives, and relevant stakeholders to determine priority services, website content, participant responsibilities, and implementation strategies. The final program design was established based on agreement between the implementation team and village partners.

Stage3: Multilingual Website Design and Development.

A multilingual village website was designed as an integrated platform for public services and village information. The development process considered user-friendly UI/UX, accessibility, information structure, administrative services, and public information requirements. The website was subsequently tested before implementation.

Stage 4: Implementation and Mentoring.

Village officials received technical training to operate and maintain the website, while community members received digital literacy training focused on accessing and utilizing digital public services. Continuous mentoring was provided during the initial operational period to address technical problems and improve system utilization.

Stage 5: Evaluation and Sustainability.

Program effectiveness was evaluated through user satisfaction surveys, user interviews, and observation of website utilization. Evaluation results were used to identify remaining problems and formulate recommendations for system improvement, maintenance, and long-term sustainability.

2.4 Evaluation Indicators

Program achievement was assessed using four main indicators: (1) digital competence of village officials, (2) community digital literacy, (3) utilization and accessibility of the multilingual website, and (4) user satisfaction. Changes in participants' competencies were assessed by comparing their conditions before and after training, while website utilization and user experience were evaluated through surveys and interviews. The qualitative findings were used to identify implementation barriers, user needs, and opportunities for further system development.

Needs and Asset Mapping → Participatory Planning (FGD) → Multilingual Website Development → Technical Training → Community Digital Literacy Training → Implementation → Continuous Mentoring → Evaluation → Sustainability Recommendations

This methodological framework provides a reproducible implementation model that integrates **digital technology, capacity building, and community participation**. The resulting model is expected to support sustainable digital public service delivery and provide a practical framework for Smart Village implementation in other villages with similar characteristics.

3. Results and Discussions

The program implementation commenced with partner coordination and needs assessment on June 4, 2026, followed by program socialization on July 9, training and technology implementation on July 30, and website launching, mentoring, and evaluation on August 7, 2026. The activities covered three main aspects: human resource development, management, and community and social development.



Picture 1. Community Engagement Team and Bawang Village Government Officials during the Smart Village Program

3.1 Results of Program Implementation and Resolution of Activity Aspect 1: Human Resources

Human resource challenges included limited digital literacy among village officials and community members, limited capacity of village officials to manage the website, and limited community experience in using digital services. These conditions highlighted the need to strengthen human resource capacity so that technology could effectively support administration, public services, and the sustainability of digitalization initiatives in Bawang Village.

On **June 4, 2026**, the community engagement team conducted coordination and a needs assessment with the Bawang Village Government as the basis for determining capacity-building needs and the implementation of digital technology. Subsequently, on **July 9, 2026**, a socialization session was conducted covering the digital transformation of public services, the *Smart Village* concept, digital literacy, and the functions of a multilingual website as a means of supporting village information dissemination and public services. The session was attended by **30 participants**.

On **July 30, 2026**, training and technology implementation were conducted through instructional sessions and direct hands-on practice. The training materials covered digital literacy, an introduction to the *Smart Village* website, website information and content management, and practical use of digital services. Technical capacity building was provided to 12 Bawang Village officials who

were designated as website managers and key personnel responsible for supporting the sustainability of the village's digital services.

On August 7, 2026, the website was officially launched, followed by mentoring and evaluation activities. The mentoring focused on website operation, content management, and the resolution of basic technical issues. The partners were also provided with digital literacy and website user modules, training materials, video tutorials on website management, and an operational guide for website administrators as supporting resources for the continued implementation of the digital services.

The human resource development targets comprised 12 village officials and 30 participants, with a minimum target of 80% understanding, 100% operational competency among village officials, and a minimum achievement of 85% in service scenario implementation. Based on the attendance records, 12 village officials received capacity-building support, while 30 participants attended the socialization session. The *post-test* results showed an average score of 98.75. Meanwhile, website operation skills and service scenario implementation were assessed through practical worksheets and simulations during the mentoring stage.

3.2 Results of Program Implementation and Resolution of Activity Aspect 2: Digital Management of Village Administrative Services Follow similar approach for your second major finding.

The management-related challenges included the continued use of conventional administrative systems, the absence of standardized digital procedures for administrative services, and limited supporting infrastructure for the operation of village digital services.

On June 4, 2026, coordination and a needs assessment were conducted with the Bawang Village Government as the basis for developing BAWANG ARSA. On July 9, 2026, a socialization and needs identification session was conducted to map the requirements for village administrative and information services, which subsequently served as the basis for website development.

On July 30, 2026, training and technology implementation were provided to village officials through hands-on practice in managing a website based on a Content Management System (CMS). On August 7, 2026, the BAWANG ARSA website was officially launched, followed by mentoring and evaluation activities. The CMS-based Bawang Arsa website comprises nine features supporting digital information and administrative services, as well as multilingual functionality in Indonesian, English, and Mandarin Chinese (ZH-CN). The inclusion of Mandarin Chinese

represents an added value in supporting the dissemination of information and the promotion of Bawang Village. A digital Standard Operating Procedure (SOP) was also developed as a practical guideline for village officials and was followed by ongoing mentoring.



Picture 2. Bawang Arsa's Website

The developed website comprises nine service and information features tailored to the needs of the partner, covering village information, public services, digital administrative services, multilingual content, and information management by village officials.

The program targeted the availability of an active website, the digitization of at least 80% of village administrative services, the optimal functioning of an integrated public service system, the development and implementation of at least five digital service SOPs, the establishment of clear digital workflows for all administrative services, and the routine use of SOPs by village officials.

Based on the documentation of the technology implementation and supporting documents, these targets have been achieved and the resulting systems and resources are available for use by the partner. Subsequent mentoring activities are focused on optimizing digital services, implementing SOPs, managing multilingual content, and maintaining the website.

3.3 Results of Program Implementation and Resolution of Activity Aspect 3: Community and Social Development (Information Dissemination and Digital Technology Utilization)

The social and community-related challenges included limited public knowledge of multilingual website-based public services, which were perceived as complex and difficult to access; the suboptimal presentation of inclusive and functional village information; and the limited availability of digital promotional media to introduce the village's potential. On June 4, 2026, coordination and a needs assessment were conducted with the partner as the basis for developing digital information and promotional media.

On July 9, 2026, a socialization and needs identification session was conducted to introduce the village website and explain the benefits of digital public services to the community. The materials covered the website's functions, methods for accessing village information, the use of digital public services, and the role of technology in improving communication between the village government and the community. The activity was attended by 30 participants.

On July 30, 2026, training and hands-on practice were conducted, providing community members with opportunities to access the website, become familiar with its structure and available menus, and learn how to obtain information and use digital services. A hands-on training approach was employed to provide participants with direct experience in utilizing digital technology.

On August 7, 2026, the website was launched, followed by mentoring and evaluation of digital technology utilization. The mentoring focused on developing and managing informational and creative content to promote the village's potential, particularly its MSMEs, tourism, and cultural resources. The technology implementation stage emphasized the development of village information content that is easily accessible, clearly navigable, and relevant to community needs. The website supports multilingual content in Indonesian, English, and Mandarin Chinese.

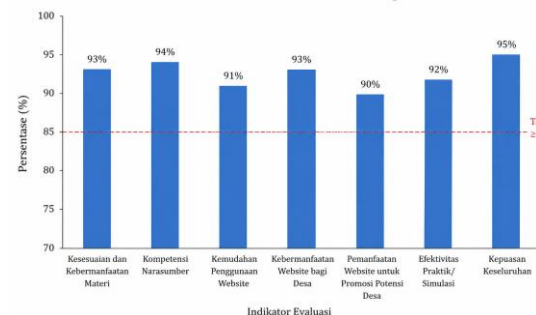
The program targeted the development of at least five village information contents covering tourism, MSMEs, socio-cultural aspects, infrastructure, and human resources. Based on the technology implementation documentation and product recap, a total of 10 digital contents were produced, exceeding the initial target. The partner also received visual and audiovisual content, multilingual website templates, a digital promotion package, and guidelines for content management and digital communication strategies.



3.4 Participant Evaluation and Satisfaction Results

The evaluation was conducted to assess the participants' level of acceptance, perceived usefulness, and satisfaction with the implementation of the program. The evaluation instrument covered the relevance and usefulness of the training materials, facilitator competence, ease of website use, the usefulness of the website for the village, the utilization of the website to promote village potential, the effectiveness of practical activities/simulations, and overall participant

satisfaction. Based on the results of the participant evaluation and satisfaction questionnaire, all indicators exceeded the target achievement level of 85%, with achievement rates ranging from 90% to 95% and an overall average of 92.6%, as illustrated in the following bar chart. highlights the significance of the work, and provides a concise closure to the study. It should be succinct, avoid introducing new information, and reinforce the contributions of your research while pointing to future directions.



Picture 4. Percentage of Participant Evaluation and Satisfaction Results

Based on Figure 4 and the results of the evaluation questionnaire analysis, the achievement levels for each indicator were as follows: training materials, 93%; facilitator competence, 94%; website usability, 91%; website usefulness, 93%; promotion of village potential, 90%; effectiveness of practical activities, 92%; and participant satisfaction, 95%. All indicators exceeded the target of 85%, with an overall average of 92.6%. These findings indicate that the program was well received by the participants.

3.4 Participant Post-Test Results

Participants' understanding was assessed through a post-test consisting of eight questions covering the *Smart Village* concept, digital literacy, village website functions, digital public services, multilingual content, the use of the website to promote village potential, and the management and updating of information on the website. The participants' scores were calculated using the following formula:

$$\text{Score} = (\text{Number of correct answers} / 8) \times 100$$

Based on the recapitulation results, out of 30 participants, 27 participants (90%) achieved a score of 100, while 3 participants (10%) achieved a score of 87.5. The average post-test score was 98.75.

Table 4. Distribution of Participants' Post-Test Scores

Score	Number of Participants	Percentage
100	27 orang	90%

87,5	3 orang	10%
Total	30 orang	100%
Rata-rata nilai	—	98,75

Based on Table 4 and the post-test recapitulation, among the 30 participants, 27 participants (90%) achieved a score of 100, while 3 participants (10%) achieved a score of 87.5. All participants obtained a minimum score of 87.5, with an overall mean score of 98.75. These findings indicate a very high level of participant understanding of digital literacy, village website functions, digital public services, multilingual content, and information and promotion of village potential.

3.5 Recapitulation of Program Achievements and Implementation Evaluation

Overall, the program implementation resulted in achievements across three main aspects: human resource capacity building, the implementation of digitalized administrative services, and the increased utilization of digital technology for village information dissemination and promotion.

Table 5. Recapitulation of Program Implementation Achievements

Aspek	Indikator	Target	Capaian
SDM	Aparatur mendapat penguatan kapasitas	12 orang	12 orang
SDM	Peserta sosialisasi	30 orang	30 orang
SDM	Pemahaman peserta	≥80%	Rata-rata post-test 98,75
Manajemen	Website dan fitur	Tersedia	9 fitur
Manajemen	SOP layanan digital	≥5 SOP	Disusun
Sosial Kemasyarakatan	Konten digital	≥5 konten	10 konten
Evaluasi	Kepuasan peserta	≥85%	92,6%

Based on the recapitulation results, the program successfully strengthened the capacity of 12 village officials, engaged 30 participants in socialization and practical activities, established a village website with nine features, developed digital service SOPs, and produced 10 digital contents. The evaluation results showed a participant satisfaction rate of 92.6%, while the average post-test score reached 98.75. Overall, these results indicate that the program exceeded the predetermined achievement targets across the key indicators.

4. The Conclusion

The community engagement program Smart Village: Digital Transformation of Public Services through a Multilingual Website and Community Digital Literacy in Bawang Village, Blado District, Batang Regency was implemented based on the results of a needs assessment conducted with the partner. In response to the identified needs, BAWANG ARSA was developed as a Content Management System (CMS)-based website featuring nine main functions that support village information dissemination, public services, and the promotion of village potential in Indonesian, English, and Mandarin Chinese.

The program involved 12 village officials and 30 participants through a series of socialization sessions, training, hands-on practice, website launching, mentoring, and evaluation. The measurement results demonstrated a high level of participant understanding, with a mean *post-test* score of 98.75. Of the 30 participants, 27 (90%) achieved a score of 100, while 3 (10%) achieved a score of 87.5. The evaluation of technology implementation also demonstrated high achievement levels, including the relevance and usefulness of the training materials (93%), facilitator competence (94%), website usability (91%), website usefulness (93%), website utilization for promoting village potential (90%), effectiveness of practical activities/simulations (92%), and overall participant satisfaction (95%), resulting in an overall average evaluation score of 92.6%.

The program also produced 10 digital contents and digital service SOPs as supporting instruments for improved administrative governance. Thus, the program not only generated a technological product in the form of BAWANG ARSA but also strengthened partner capacity, technology acceptance and perceived usefulness, digital information productivity, and service governance. These achievements demonstrate that the implementation of BAWANG ARSA contributes to strengthening the digitalization of public services and information management in Bawang Village, supporting its transformation toward a more informative, inclusive, and sustainable Smart Village.

The utilization of digital technology in Bawang Village should be continuously directed toward improving the quality of public services and community access to information. In particular, BAWANG ARSA should be managed and maintained regularly through continuous content updates, consistent implementation of SOPs, and routine technical maintenance of the website. Further development should prioritize **online** administrative services, a community complaint and feedback

channel, and the strengthening of promotional content for MSMEs, tourism, and other village potentials. From a human resource perspective, continued training and mentoring are required to ensure that village officials are able to manage and maintain the website independently. The limited duration of the mentoring period, variations in participants' digital competencies, and the absence of long-term data on website utilization are important aspects that should be considered in future program implementation.

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Finally, the authors appreciate the contributions of everyone involved in supporting the program, particularly in strengthening digital literacy, public service digitalization, and the sustainable development of Bawang Village toward a more informative, inclusive, and sustainable *Smart Village*.

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Ria Riski Marsuki	✓		✓	✓			✓		

Conflict of Interest Statement (mandatory) (10 PT)

The authors declare that there are no conflicts of interest that could have influenced the design, implementation, evaluation, or reporting of this community engagement program. The authors have no financial, personal, or institutional relationships that could be perceived as influencing the objectivity or integrity of the study and its findings.

Informed Consent (if applicable) (10 PT)

Informed consent was obtained from all participants involved in the community engagement activities.

Participants were informed about the purpose and procedures of the program, the use of evaluation data for academic reporting, and the confidentiality of their personal information. No personally identifiable information is disclosed in this article.

Ethical Approval (if applicable)

This community engagement program was conducted in accordance with applicable institutional policies and ethical principles concerning the participation of community members. The activities were non-invasive and focused on training, digital literacy, technology implementation, mentoring, and program evaluation. No clinical intervention or animal-related research was involved in this program.]

Data Availability (mandatory)

The data supporting the findings of this program are available from the corresponding author upon reasonable request. The data include aggregated results of participant evaluations and post-test assessments. Individual-level data are not publicly available to protect the privacy and confidentiality of the participants.

References

- [1] Badan Pusat Statistik. (2024). Kecamatan Blado dalam Angka 2024. BPS Kabupaten Batang.
- [2] Kementerian Desa, Pembangunan Daerah Tertinggal, dan Transmigrasi. (2021). Pengembangan Desa Cerdas (Smart Village) di Indonesia. Jakarta: Kemendes PDTT.
- [3] Asosiasi Penyelenggara Jasa Internet Indonesia (APJII). (2023). Laporan Survei Internet Indonesia 2023. Jakarta: APJII.
- [4] Kominfo Republik Indonesia. (2022). Transformasi Digital Nasional: Arah dan Strategi Pembangunan Digital Indonesia. Jakarta: Kementerian Komunikasi dan Informatika.
- [5] Nugroho, Y., & Prasetyo, D. (2021). Digitalisasi pelayanan publik desa menuju tata kelola pemerintahan yang baik. *Jurnal Administrasi Publik*, 18(2), 145–156.
- [6] Republik Indonesia. (2014). Undang-Undang Nomor 6 Tahun 2014 tentang Desa. Jakarta.
- [7] Suryani, E., & Hidayat, A. (2020). Transparansi dan akuntabilitas pelayanan publik berbasis teknologi informasi. *Jurnal Ilmu Pemerintahan*, 6(1), 33–44.

[8] Rahman, F., & Kurniawan, A. (2022). Pemanfaatan website desa sebagai media pelayanan publik dan partisipasi masyarakat. *Jurnal Pengabdian Kepada Masyarakat*, 7(3), 512–520.

[9] Komisi Informasi Pusat Republik Indonesia. (2020). *Pedoman Keterbukaan Informasi Publik Desa*. Jakarta: KIP RI.

[10] Putri, R. A., & Santoso, B. (2021). Efektivitas sistem informasi desa berbasis website dalam meningkatkan kualitas layanan publik. *Jurnal Sistem Informasi*, 17(2), 89–98.

[11] Pemerintah Kabupaten Batang. (2024). *Profil Desa Bawang Kecamatan Blado*. Batang: Pemkab Batang.

[12] Widodo, T., & Lestari, S. (2022). Kesenjangan digital (digital divide) dalam pelayanan publik desa. *Jurnal Pembangunan Wilayah*, 10(1), 21–30.

[13] Kementerian Komunikasi dan Informatika Republik Indonesia. (2021). *Indeks Literasi Digital Indonesia 2021*. Jakarta: Kominfo.

[14] Prabowo, M., & Setiawan, I. (2023). Strategi implementasi Smart Village berbasis pemberdayaan masyarakat. *Jurnal Pemberdayaan Masyarakat*, 8(1), 1–12

[15] Pratama, A. B., & Nugroho, Y. (2021). Transformasi digital dalam tata kelola pemerintahan desa menuju smart village. *Jurnal Administrasi Publik*, 16(2), 101–113.

[16] Siregar, S.S., Marsuki, R. (2023) Penerjemahan laman situs mikro museum seni rupa dan keramik. *Jurnal Pengabdian Masyarakat Indonesia*, 5(1), 44-52

[17] Siregar, S.S., Prasetyani D. (2024) Penguatan kompetensi terjemahan bahasa Mandarin untuk profesi guna menghadapi dampak globalisasi pada bisnis multibahasa bagi karyawan lokal perusahaan multinasional di Jawa Tengah. *Jurnal Pengabdian kepada Masyarakat*, 6(2), 88-97

[18] Susanto, T. D., Aljoza, M., & Suryanto, T. L. M. (2022). Smart village framework: Digital transformation for rural public services in Indonesia. *Procedia Computer Science*, 197, 700–707.

[19] Wibowo, A., & Raharjo, S. T. (2023). Peningkatan literasi digital aparatur desa dalam

mendukung pelayanan publik berbasis teknologi informasi. *Jurnal Pengabdian kepada Masyarakat*, 8(1), 45–54.

[20] Chui, M., Manyika, J., & Bughin, J., et al. (2021). *The state of digital transformation*. McKinsey Global Institute.

[21] Hargittai, E., & Hinnant, A. (2020). Digital inequality: Differences in young adults' use of the Internet. *Communication Research*, 35(5), 602–621.

[22] Ummah, N., dkk. (2023). Pengembangan layanan publik berbasis digital melalui pendekatan ABCD di desa. *Jurnal Pengabdian kepada Masyarakat*, 10(2), 45–56.

[23] Janssen, M., Charalabidis, Y., & Zuiderwijk, A. (2024). Benefits, adoption barriers and myths of open d

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