

**DIGITAL TRANSFORMATION FOR VIETNAM  
SCIENCE AND TECHNOLOGY JOURNALS CURRENT  
SITUATION, SOLUTIONS**

**Ngo Quang Son<sup>1</sup>**

**Vu Thi Thanh Minh<sup>2</sup>**

<sup>1</sup>Trung Vuong University

<sup>2</sup>Thanh Do University

Email: ngoquangson2018@gmail.com<sup>1</sup>; vtminh@thanhdowni.edu.vn<sup>2</sup>.

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**Abstract:**

*Digital transformation for Science and Technology Journals is the process of actively applying digital technology to all activities of Science and Technology Journal, from production, distribution to content consumption. The goal of digital transformation for the Science and Technology Journals is to improve the quality, efficiency, and competitiveness of the Science and Technology Journals in the context of the digital era, changing the way the editorial office operates to provide greater value to the readers that the editorial office is serving. Thus, the essence of the Digital Transformation Journal is the application of modern technology to editorial offices, helping the Journal ecosystem to be enriched with superior features, improving the quality and effectiveness of communication. The article has deeply analyzed the current situation, opportunities and challenges of digital transformation, thereby proposing a system of digital transformation solutions for Vietnam's Science and Technology Journals in the current period.*

**Keywords:** *Digital transformation solution system; Vietnam Science and Technology Journals; Challenges in digital transformation; Current status of digital transformation.*

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**1. Introduction**

Digital transformation is an inevitable trend and an urgent requirement for all industries and fields of activity, including the Journal of Science and Technology. Digital transformation brings huge changes in labor productivity, user experience, creates new business models and has a strong impact on all industries and all fields of activity such as: management activities, production and business activities, social activities, industry, agriculture, trade and services...Vietnam is making efforts to implement digital transformation according to Decision No.749/QĐ- Circular dated June 3, 2020 of the

Prime Minister, approving the "National digital transformation program to 2025, orientation to 2030".

Vietnam's Science and Technology Journals play an extremely important role in science and technology, education and training activities. Science and Technology Journal publishes, disseminates and preserves scientific research works of scientists, researchers, lecturers...and is also an important input for science and technology news. Currently, in the context of the Fourth Industrial Revolution taking place strongly around the world, digital transformation is becoming a growing trend in Science and

Technology Journals around the world. Digital transformation for Vietnam's Science and Technology Journals is no exception to that trend. Science and Technology Journal is not outside the pivot of today's comprehensive digital transformation. Now, digital transformation is considered a mandatory approach to be able to change with the new movement of the digital era.

Digital transformation for Science and Technology Journals includes using digital technology to produce content, distribute on platforms such as websites, social networks, phone applications and create business models. New business based on digital technology. Digital transformation for the Journal of Science and Technology is a difficult and challenging process, but this will be an inevitable trend that the Journal of Science and Technology needs to follow to survive and develop in today's digital era. The application of techniques and technologies such as AI, IoT, Big Data,...in the products of multi-platform Science and Technology Journal, Printed Science and Technology Journal, and Electronic Science and Technology Journal helps create diverse, intelligent products that are increasingly relevant to readers.

### 2. Research overview

Around 2015, the concept of digital transformation began to appear in the world, and by 2017, the word had become a popular term. In Vietnam, digital transformation was officially mentioned a lot in 2018 and on June 3, 2022, the Prime Minister approved the National Digital Transformation Program.

Digital transformation is the next development step in computerization. Digital transformation is possible thanks to the remarkable progress of breakthrough technologies, especially digital technology. Digital transformation is the process of comprehensive change for individuals and organizations in the way of working, living and production methods based on digital technology.

In May 2018, Google introduced a virtual assistant capable of speaking like a human and being flexible in responding to unexpected

situations in conversation. The birth of this virtual assistant has quickly spread and been widely applied in newsrooms globally, from leading journal agencies in the UK, France, USA, Germany, Italy, Japan, China, Korea to developing countries such as Brazil, Argentina and Vietnam.

2018 is considered an important milestone, opening phase 3 in the process of digital transformation of the Journal of Science and Technology. But up to now, the use of AI in Vietnam's Science and Technology Journal is still simple and has not been fully exploited. Thus, the essence of the digital transformation of Science and Technology Journal is the application of modern technology to editorial offices, helping the Science and Technology Journal ecosystem to be enriched with superior features, improve the quality and effectiveness of communication.

Johnson R et al (2018): In 2018, the world published more than 33,100 English-language, peer-reviewed science and technology journals, publishing about 3 million articles per year. However, only the top 10 publishers account for 45.5% of the first titles of Science and Technology Journals published. This facilitates digital transformation in science and technology journal publishing because large publishers have enough potential to invest in digital infrastructure.

Ponte Diege (2017); Digital transformation in publishing science and technology journal is shown through many aspects such as:

- Increasingly interactive and Web-based in searching and looking up information, scientific and technological knowledge;
- The physical barrier that exists in the traditional publishing market is broken when shifting from paper publishing to electronic publishing (based on digital platforms, based on the web);
- Increase investment in the digital publishing infrastructure of leading publishers;
- Many mechanisms to evaluate the achievements of authors and the quality of scientific journals based on digital technology have been established;

– The way scientists find and disseminate information and scientific knowledge has changed because of social networks.

Azmabanu (2021) emphasized that: Digital transformation has had a strong impact on scientific literature publishing, as demonstrated through:

– Faster publishing cycle (Turnaround): With digital publishing, publishing time has been significantly shortened. Whereas before, it took about 1 to 2 years for an article to be reviewed, accepted, and published in print format, now it takes an average of only 6 to 8 weeks with digital;

– Wider reach: If in the past, to access magazine articles, people often had to go to the library, but today with digital publishing, accessing specific information is easy and fast from anywhere, at any time (24/7). Active indexing by publishers makes retrieval of scholarly articles now simple, making articles more discoverable online;

– Easier customized information retrieval with artificial intelligence (AI) tools: With the help of AI tools, one can quickly and easily scan through millions of academic articles to retrieve the appropriate documentation required;

– Better citation management: Citations play an important role in academic or scholarly publishing. With digital technology, tracking and evaluating article citations becomes easy and fast. Impact factor (IF) - a reputational index that determines the ranking of a journal in a more easily defined field;

– Detect plagiarism quickly: With modern digital technology, digital publishing helps detect plagiarism quickly, helping to determine whether the article is original or not;

– Multimodal communication of information: Multimodal communication involves using multiple senses to enhance written information. It includes audio, visual, spatial, gestural and alphabetic notation modes. Thanks to digital technology, effects such as sound and video are also integrated into digital documents, helping to improve the effectiveness of content; more supportive and user-friendly; supports better search and navigation features;

– Interactive content: The content of scientific articles becomes lively and interactive with 3D images, animations and data visualization tools. It allows readers to interact, explore and change dynamic settings to see different results;

– Open access: Open access publishing in academic journals helps remove barriers in the scientific community, granting full access to research articles without paying a fee;

– Multi-author collaboration: Digital technology enables collaboration with co-author(s) using platforms such as Google Docs or Microsoft OneDrive.

Rallison S.P (2015) said: With modern digital infrastructure, major scientific journal publishers in the world have provided many new services for journals such as:

– Social network and file sharing service for scientists and researchers;

– Preprint servers;

– Post-publication evaluation;

– Data sharing;

– Text and data mining;

– Access by mobile phone and mobile application.

Spezi V. and colleagues (2016) emphasized: Developing open access journals (Open Access Journals) is an important trend in the digital transformation of science and technology journal publishing. People have seen the formation of a type of open access mega-journals (Open Access Mega-Journals) based on open access publishing (OA publishing).

According to Ho Tu Bao (2018): Digital transformation is a profound transformation and acceleration of activities, processes, capabilities and business models to fully take advantage of the changes and opportunities of digital technology and their impact across society in a strategic and prioritized way [i-SCOOP]. Digital transformation can be generalized with a simple formula: Digital transformation = Digitalization + Digital technology. Digital transformation requires foundational elements (infrastructure), including digital infrastructure, human resources with digital skills, research and development of new digital technologies and a suitable legal

environment, in which digital infrastructure plays a key role.

The research so far still has gaps such as not highlighting the nature of digital transformation in science and technology journals? What is different from digital transformation in other fields? What are the main difficulties that journal agencies will encounter when digitally converting science and technology journals? How can we make digital transformation in Science and Technology Journals highly effective?

This study has confirmed that digital transformation is an inevitable trend and a prerequisite for all fields, especially the field of scientific publishing, specifically the Science and Technology Journals. However, digital transformation, in addition to providing advantages in terms of speed and scale of access and ease of access, also brings challenges from the perspective of technical proficiency, the impact of social networking platforms and copyright issues. To adapt to the new context, the Journal of Science and Technology itself needs changes in both thinking and technology.

### 3. Research methods

#### *Group of theoretical research methods*

Research documents on world and Vietnamese experiences on the digital transformation in science and technology journals. Research Documents, Circulars, Directives, Resolutions...of the Party and State on digital transformation for Science and Technology Journal. Research domestic and foreign books, newspapers and scientific conference proceedings on digital transformation for the Science and Technology Journals.

*Group of practical research methods (Actual observation method; Expert method, Digital transformation product research method for science and technology)*

*Group of statistical methods, data processing using mathematical formulas (Excel)*

Use statistical methods to synthesize and analyze the data and information obtained from the survey.

### 4. Research results

#### **4.1. Current status of digital transformation for**

#### ***Science and Technology Journals***

According to the Ministry of Information and Communications (May 2020), the majority of journal agencies in the country already operate on the Internet, specifically: 149/673 Journals operate electronically. Electronic Journal agencies have been inspected and evaluated by the Ministry of Information and Communications. Thus, the essence of the Digital Transformation Journal is the application of modern technology to editorial offices, helping the Journal ecosystem to be enriched with superior features, improving the quality and effectiveness of communication.

In Vietnam, there are currently nearly 400 Science and Technology Journals included in the list of reviewed and scored articles published by the State Council of Professors (State Council of Professors, 2021). A characteristic of Vietnam's Science and Technology Journal publishing is that the Journals are mostly published by the Journal's managing agency or scientific associations. There are not many Science and Technology Journals published by publishers. In general, the majority of Vietnam's Science and Technology Journals are still published in the traditional method on paper. A survey in early 2019 by the National Department of Science and Technology Information showed that the majority of journals are published in paper form (102/155 magazines); There are 33% (52/155 journals) published in both paper and electronic form and 1% of surveyed journals are published only in electronic form (Quyen and Phuong, 2019).

With electronic publishing, the issuance of identifiers for digital objects - referred to as DOI - is an issue of great concern to Science and Technology Journals around the world. Most reputable Science and Technology Journals in the world have applied DOI identifiers to their journal articles. However, in Vietnam, the issuance of DOI codes for scientific articles in journals is still very limited. Survey results in early 2019 from the National Department of Science and Technology Information show that only about 27% of journals have applied DOI identifiers (42/155 journals) for articles, the

remaining 73% of journals have applied DOI identifiers (42/155 journals) for articles DOI has not yet been applied (Quyen and Phuong, 2019).

In general, Vietnam's Science and Technology Journals have not been published on a dedicated electronic publishing platform, in accordance with the requirements of the Electronic Science and Technology Journal/Digital Journal. The dissemination and communication of Vietnamese science and technology results through Science and Technology Journal to the world is still very limited. Very few Vietnamese Science and Technology Journals are selected to be processed into the database by reputable citation databases in the world (Scopus, Web of Science), which shows their reputation. The reputation of Vietnam's Science and Technology Journal compared to the world is still very limited. Searching the journal database of Web of Science (ISI Journal) found that only 5 Vietnamese journals were selected for processing into the database, of which only 2 journals were published by Vietnam edition and 3 other magazines published by foreign publishers. Author Tran Van Nhung and his colleagues said that only 6 journals were included in the list of journals selected to be processed into the SCOPUS database (Nhung et al, 2019 a, b). The reason may be due to publishing language problems, or the article selection/evaluation process does not meet the standards of the Journal, or there are problems with the scientific quality of the Journal.

Regarding the quality of Vietnam's Science and Technology Journal, author Tran Van Nhung and colleagues (2019 a, b) said that Vietnam's Science and Technology Journal:

- Although there is a lot in quantity, the quality is still low;
- The nature of propaganda information sometimes overwhelms the nature of discovery, criticism and scientific debate;
- Forum and scientific system, specialization and interdisciplinary nature are still weak;
- The composition of the editorial board and review team is not diverse and has not expanded to other units. The number of foreign scientists or overseas Vietnamese joining the editorial board

and participating in criticism is very limited. The article appraisal process is also inadequate and does not follow international practice;

- The format of many magazines is outdated, lacking much information according to international practices;
- Articles are published mainly in Vietnamese;
- Vietnam does not have a set of national criteria, no national evaluation system and no process for evaluating the quality of Science and Technology Journals in the direction of international integration.

Electronic information page of Vietnam Science and Technology Journal online with support for digital conversion of Vietnam Science and Technology Journal. Digital transformation is currently an urgent requirement for Vietnam's Science and Technology Journal agencies. In recent years, the National Department of Science and Technology Information has actively supported Science and Technology Journals through the online information website Vietnam Science and Technology Journal (Vietnam Journals Online, abbreviated as VJOL). This is a digital platform that allows synthesizing, storing and introducing information about scientific articles published on paper by scientific journals that voluntarily participate in providing information on the VJOL Website. Over the past years, the National Department of Scientific and Technological Information has been active in maintaining and developing the number of magazine members who voluntarily participate in providing information on the VJOL Website. By December 2021, 130 Vietnamese Science and Technology Journals had registered to participate, posting full-text data in PDF format on the VJOL Website.

Currently, the number of Vietnamese scientific journals that have applied DOI is still small. Journals that have applied DOI are mainly concentrated in two large units, Hanoi National University and Vietnam Academy of Science and Technology (Nguyen Thi Tu Quyen and Duong Thi Phuong, 2019). Also according to the 2019 survey results of the National Department of Science and Technology Information, the

majority of journals believe that DOI application is necessary and that there should be a national focal point agency to guide, support and manage the DOI allocation.

#### **4.2. Digital transformation opportunities for Science and Technology Journals**

The digital transformation in the Journal industry has given Journals a new look. Some outstanding changes can be listed as follows:

Firstly, the Newsroom Convergence model - Convergence of working space, operational methods and product content, with digital journal products as the center, has almost become a model for publishers. With this model, journal agencies apply a content management system based on the Web platform, creating multimedia products.

Second, various types of digital journals were born.

Third, many journal agencies have taken advantage of social networks to increase interaction with the public, spread and disseminate information on a large scale.

Fourth, digital newsroom management software (digital internal management) is applied in some newsrooms.

Fifth, the appearance of digital journals. Many journal agencies have used AI to filter reader comments, produce news content, turn Text into Voice automatically in Video, Podcast, Audio news or search, understand user habits...

Sixth, there is a strong presence of Mobile Journal. Mobile journal is the process of collecting, producing and transmitting information using a smartphone or tablet. Along with technology integration, media content on mobile devices also moves in a more concise, focused and attractive way.

Seventh, some e-Journals use Website analytics software to measure readers and at the same time, attract strong interaction.

The application of digital technology has fundamentally changed the Journal's operations. The digital media ecosystem was born, more open and flexible than ever, with the participation of a smart public, diverse types of media, diverse forms of exchange and interaction...

#### **4.3. Challenges in digital transformation for the Journal of Science and Technology**

- Insufficient awareness of the benefits and importance of digital transformation among the leadership and management team of the Journal, especially for leaders, managers and editors who are reluctant to change, move, value experience.

- Lack of technological autonomy

The lack of technological autonomy is a huge challenge for the Journal's digital transformation. Currently, Extended Reality (XR) technology, also known as extended virtual reality and Facebook with Metaverse - virtual universe, will become a reality in the next 3-5 years. Thus, the advantages mixed with technological difficulties are challenging the State's policies and the strategic thinking of the Editor-in-Chief. The digital transformation of journals is closely tied to the Internet and technology software. Therefore, network security issues, copyright infringement... bring many risks.

- Influenced by social networks

Journal agencies that are operating on multiple platforms are also strongly influenced by information on social networks. There is a risk of being led by fake news, a lack of verification, etc. Verifying news sources and shaping trends in cyberspace is very difficult, even impossible, without appropriate tools.

- Copyrighted

Journal agencies often encounter copyrighted content that has no reliable solution to prevent it. Producing elaborate Journal works requires a large investment in human resources, finance and time, in order to serve readers and build the brand. However, within just a few minutes of being posted, many Web sites, general news sites and social network groups copied and posted the content without asking permission or citing the original source.

- Compete with social networking platforms

Currently, global online content platforms such as Facebook, Google and YouTube are causing a loss of revenue and reducing the influence of domestic Journals in transmitting information. This is also the reason why many journals have to focus on traffic, leading to a

decrease in content quality and not meeting the original principles and purposes.

- Human resources for digital transformation are not strong

First, the human resources are lacking in technical mastery, and secondly, content creation skills. Technology and operational skills for digital transformation journals are mainly imported and adapted from abroad. Technology is just a lever, but how to make a difference, so that each Journal has its own identity, not being mixed in with the downstream information chorus, is the essence of digital transformation.

- Digital transformation material resources are still weak

Most Journal agencies are currently "living" on advertising, media sponsorship... - resources that are not proactive and easily changed by objective external factors. Taking care of income sources to pay fixed and stable payments has long been difficult. In that vicious cycle, many Journal agencies are not stable or financially strong enough to apply modern technology, hire software engineering teams and train adaptive human resources.

- Lack of State policies to orient and support digital transformation

With specific regulations on implementation processes and methods of exploiting network data resources in accordance with the law, ensuring network safety and security. Currently, although the Journal's practice is moving and changing, the Press Law basically "stands still", not mentioning digital transformation with operating rules, technology platforms and human resources, management methods..., therefore, it has not created a solid legal framework for journal agencies.

#### **4.4. Digital transformation solution system for Vietnam Science and Technology Journal**

##### **4.4.1. Solution 1: Increase propaganda to raise awareness**

Raising awareness of the important role and urgency of promoting digital transformation in the journal sector for information managers, media managers, leaders, reporters and editors from central to local levels. The national digital

transformation program is being implemented and the Journal also needs to follow this trend to ensure synchronization and development. Strengthen propaganda activities, praise and honor organizations and individuals who have made achievements and initiatives in the process of digital transformation of the Journal. Sharing experiences, spreading and replicating these successes will contribute to promoting the digital transformation process and improving quality.

##### **4.4.2. Solution 2: Promote online publishing of Science and Technology Journals**

Publishing and disseminating online journals is an inevitable trend that Vietnam's Science and Technology Journals need to implement soon. One of the online Journal publishing systems that should be researched and used is the OJS Online Journal management software developed by the Public Knowledge Project and distributed for free under the Open License. OJS is also used by INASP to develop online scientific journal portals in many countries, including Vietnam.

In the coming time, in order for Vietnam's Science and Technology Journal system to be fully and synchronously digitally transformed, the digital transformation of Journals through the VJOL platform needs to be further promoted. As soon as possible, all Vietnamese Science and Technology Journals will have electronic versions, aiming to form a basic digital transformation infrastructure for Vietnam's Science and Technology Journals. On that basis, propose solutions to apply appropriate technology to create a database of scientific publications and citations, as a basis for evaluating and ranking journals and at the same time contribute to improving quality. Scientific research activities in Vietnam are also the first step for many Vietnamese Science and Technology Journals to have more opportunities to be included in the lists of ACI, Scopus and Web of Science.

Digital transformation of Science and Technology Journals should be aimed at enhancing online publication of the Journal with open online publishing software that complies with widely accepted standards.

### 4.4.3. *Solution 3: Increase the application of DOI digital document identifiers for articles of Science and Technology Journals*

DOI is understood as "the digital identifier of an object" (TCVN 12198:2018). The DOI identifier is a number that identifies the permanent path to an information resource (file) on the World Wide Web (Wikipedia). If the file's web address (URL) changes, visitors using the DOI are still automatically redirected to the new address. DOIs are important in academic citations because they are more durable than URLs, ensuring that users/readers can reliably locate the source. The structure of a DOI identifier has been specified in National Standard TCVN 12198:2018 (ISO 26324:2012) Information and documents – Digital identifier for objects. Today, registering to use the digital identification system - DOI for online articles to preserve and manage each article in a long-term and consistent manner worldwide is considered an important criterion of the law. If an online journal does not have a DOI identifier for its articles, it is difficult to be considered a reputable scientific journal.

### 4.4.4. *Solution 4: Build a Vietnamese citation index database*

Building a citation database has been of interest for quite some time. Currently, there are two large citation databases in the world: the Web of Science database of Clarivate Company (Clarivate) and the Scopus database of Elsevier Corporation (Elsevier). However, these databases have only selected and processed a few Vietnam's Science and Technology Journals to include in their database. Therefore, the vast majority of Vietnam's Science and Technology Journals are still outside of citation databases.

There have been efforts to form an ASEAN Citation Index (ACI). ACI is a citation database designed and established to index all bibliographic descriptions and citations of all quality ASEAN research outputs appearing in ASEAN academic journals.

In Vietnam National University, Hanoi has experimented with building a citation index database for Vietnamese scientific documents (Vietnam Citation Gateway, 2021).

VcitationGate is designed as a bibliographic database and tool to support the analysis and evaluation of research activities (scientometrics) in Vietnam. Clearly, it is time for Vietnam to build a national citation index database to evaluate the impact and rank scientific journals; Support evaluation of research activities.

### 4.4.5. *Solution 5: Review and improve legal regulations and the role of state management agencies on Journals*

Review, develop, and propose amendments and supplements to legal documents related to the Journal to promote and support the digital transformation process of Journal agencies.

The digital transformation management of the Journal requires the role of the state management agency for the Journal and the role of the Editorial Board at the Journal agency - The highest representative is the Editor-in-Chief.

- For the State:

+ Support technology infrastructure, ensure information security. Not only does it create a legal corridor for testing new technology, but the State also needs to support the construction of infrastructure, technology platforms, information security support, warnings and troubleshooting of information technology problems...

+ Have policies and guidelines to support the construction, processing and sharing of national databases. During the digital transformation process, the national database and accurate database processing will help the Journal agency exploit and use it.

+ There is a journal ordering mechanism. The State should have a mechanism for ordering and assigning tasks to journal agencies from the state budget, focusing on a number of key national and local journal agencies and journal agencies with great influence in society, both helping to ensure the direction of information and helping journal agencies have the right conditions for digital transformation.

+ Loan support for Journal agencies. The problem of funding for digital transformation Journal agencies is very difficult to solve without the support of the State and competent agencies. The State should have a policy of capital support



and loans at a 0% interest rate for 15-20 years so that the Journal agency can equip facilities and invest in appropriate equipment.

- For state management agencies regarding Journals:

+ Develop appropriate mechanisms and policies for the digital transformation of the Journal. To properly manage the digital transformation of the Journal, first of all, there must be appropriate policies and laws. The Ministry of Information and Communications flexibly grasps practical movements and promptly proposes a draft revised Press Law to submit to the National Assembly for consideration and supplements to sub-law documents for digital transformation, creating conditions for journal activity.

+ There is a consulting and advisory department on digital transformation for the Journal agency. The consulting and advisory department was established by the Ministry of Information and Communications and the People's Committees of provinces and cities, including experts, technology businesses, management units, and representatives of agencies.

+ Set up appropriate technology software

As the state management agency for Journals, the Ministry of Information and Communications needs to be the leading agency, supporting and guiding digital transformation for Journal agencies.

- For the Editor-in-Chief of the Journal

+ “Digital First” thinking. The first condition for the successful digital transformation of journal agencies is a change in the perception of the head. The editor-in-chief must consider digital transformation as a mandatory, irreversible choice.

+ Plan digital transformation according to an appropriate roadmap. Digital transformation cannot be done at the same time. The Journal Agency can conduct digital transformation in 4 regions. First of all, digitize all information assets; The second is restructuring operational processes; The third is to restructure the organization and appropriate personnel; The

fourth is to transform relationships (economic relations, partnerships, and public relations) from the traditional environment to the digital environment.

*4.4.6. Solution 6: Improve the quality of human resources*

It is necessary to develop and approve training programs in the field of Journals and information at all levels of higher education, to meet the requirements of the digital transformation process. At the same time, it is necessary to update the statistical list of training industries in the field of Journals and information to comply with current regulations. Organize training for information and communication managers and leaders of agencies. Develop training courses and improve knowledge and skills in information technology, network security, data collection, analysis and processing, to support the process of innovation in production and content distribution, as well as monitoring and evaluating information quality. Strengthen international cooperation, learn from experiences from countries with strong development of digital Science and Technology Journals, in order to grasp trends and new achievements in this field.

## **5. Discussion**

The digital transformation does not start with a technology issue, but must first start with a change in thinking, especially the thinking of leaders. In Journal agencies, if leaders have a mindset about digital transformation and want to transform digitally, the success rate is 60%. If you spread the digital transformation mindset to every corner and activity in the newsroom, you will be able to successfully transform digitally. Along with content transformation, the digital transformation of Science and Technology Journals is also a cultural transformation in the editorial office, from infrastructure management with artificial intelligence systems to operating procedures from management administrator to editor. Each journal agency has a different way of digital transformation, whichever technology is suitable for the editorial office should be invested in and applied, not following world trends.

Changing perception to make science and

technology journals suitable for the 4.0 era; Applying digital technology platforms in the process of making Science and Technology Journal; Applying digital technology, digital platforms and the digital environment to reach a large number of readers and grasping readers' needs to attract more and more readers. Equipment such as firewalls are devices that are renewed, licensed to be used annually, promote their effectiveness and are good at protecting the information systems of science and technology journals against attacks. Scans and attacks by hackers in cyberspace, using QR Code to introduce content and restructure content. The "Digital First" concept is being applied thoroughly at science and technology journals, promoting information on digital platforms to reach readers faster in a "multi-platform" manner...

In the coming time, the Science and Technology Journal will apply new technologies (Artificial Intelligence - AI, Big Database - Big Data, Internet of Things - IoT, Statistical Analysis and Reporting...) in the software of Science and Technology Journals to serve exploitation and publishing.

### 6. Conclusion

The digital transformation is one of the pillars of the fourth industrial revolution that is creating unprecedented changes in socio-economic life in each country today, a process of overall change and comprehensiveness of individuals and organizations in terms of living, working and production methods based on digital technologies, bringing great values and breakthrough opportunities for the country's development goals. This is a trend that Vietnam cannot stand aside from. Digital transformation is taking place strongly in all aspects of social life, requiring each industry and each field, including the Journal of Science and Technology. There must be a strategy to join the digital transformation "race", because otherwise there will be setbacks and slow development. The digital transformation is a remarkable development step for all of humanity. In Vietnam, the digital transformation of Science and Technology Journals is part of the national digital transformation roadmap.

We need to understand that digital transformation is not a project but a journey. However, this will not be a simple journey and will certainly encounter many barriers and challenges.

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## CHUYỂN ĐỔI SỐ ĐỐI VỚI TẠP CHÍ KHOA HỌC VÀ CÔNG NGHỆ CỦA VIỆT NAM THỰC TRẠNG, GIẢI PHÁP

Ngô Quang Sơn<sup>1</sup>  
Vũ Thị Thanh Minh<sup>2</sup>

<sup>1</sup>Trường Đại học Trung Vương

<sup>2</sup>Trường Đại học Thành Đô

Email: [ngoquangson2018@gmail.com](mailto:ngoquangson2018@gmail.com)<sup>1</sup>; [vttminh@thanhdouni.edu.vn](mailto:vttminh@thanhdouni.edu.vn)<sup>2</sup>.

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### Tóm tắt:

*Chuyển đổi số đối với các Tạp chí Khoa học và Công nghệ là quá trình ứng dụng tích cực công nghệ số vào tất cả các hoạt động của Tạp chí Khoa học và Công nghệ, từ sản xuất, phân phối đến tiêu thụ nội dung. Mục tiêu của chuyển đổi số đối với Tạp chí Khoa học và Công nghệ là nâng cao được chất lượng, hiệu quả, tính cạnh tranh của Tạp chí Khoa học và Công nghệ trong bối cảnh kỷ nguyên số, thay đổi cách tòa soạn hoạt động nhằm cung cấp những giá trị lớn hơn cho độc giả mà tòa soạn đang phục vụ. Như vậy, thực chất của Tạp chí chuyển đổi số là việc ứng dụng công nghệ hiện đại vào các tòa soạn, giúp hệ sinh thái Tạp chí được bồi đắp thêm những tính năng ưu việt, nâng cao chất lượng và hiệu quả của truyền thông. Bài viết phân tích sâu sắc thực trạng, cơ hội, thách thức của việc chuyển đổi số, từ đó đề xuất hệ thống giải pháp chuyển đổi số đối với các Tạp chí Khoa học và Công nghệ của Việt Nam, trong giai đoạn hiện nay.*

**Từ khóa:** *Hệ thống giải pháp chuyển đổi số; Tạp chí Khoa học và Công nghệ của Việt nam; Thách thức trong chuyển đổi số; Thực trạng chuyển đổi số.*