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Intelligentization: A Key to Traditional Media Transformation (Postprint)

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Abstract

In the era of intelligent media, traditional media encounters three problems: the volume of information is difficult to rival that of commercial new media, the advantage in information quality is being challenged, and the capability for information matching is insufficient.

To achieve a “breakthrough,” traditional media can enhance their level of intelligence through the following pathways: employing intelligent technologies to improve news gathering capabilities, increasing the degree of intelligence in content production, enhancing algorithm-based information distribution capabilities, increasing the technical content of news products, improving big data storage and development capabilities, vigorously developing platform-based media, and building user sedimentation platforms.

Full Text

Intelligence: A Key to Traditional Media Transformation

Abstract: In the era of intelligent media, traditional media faces three critical challenges: an inability to match commercial new media in information volume, threatened advantages in information quality, and insufficient capacity for information matching. To achieve a breakthrough, traditional media must enhance their intelligence capabilities by: employing smart technologies to improve news gathering, increasing the intelligence level of content production, leveraging algorithms for information distribution, boosting the technical content of news products, improving big data storage and development, vigorously developing platform-based media, and building user 沉淀 platforms.

Keywords: intelligence; traditional media; transformation

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In recent years, with the rise of commercial new media, traditional media such as television, radio, and newspapers have suffered successive heavy blows. In the Web 1.0 era, the emergence of portal websites, with their advantages in information volume and timeliness, caused massive audience loss for traditional media. In the Web 2.0 era, the prevalence of relationship-based social media and interactive communication represented by blogs, Weibo, and WeChat left traditional media, accustomed to one-way communication, trailing behind once again. Beginning in 2017, the era of intelligent media—Web 3.0—arrived, bringing data-driven and intelligent advantages. Companies like Toutiao and Yidian Zixun gained momentum, and human-machine symbiosis with everything as media became the new trend. After 2019, the impact of intelligence on media became increasingly pronounced, placing traditional media at a critical juncture that will determine their future.

In July 2017, the State Council issued the *New Generation Artificial Intelligence Development Plan*, clearly outlining China’s strategic goals and key tasks for AI development, demonstrating national-level commitment. As “internet prophet” Kevin Kelly stated, “Artificial intelligence will be the most important technology in the next 20 years” [1]. As a field directly affected by AI, the media industry must embrace artificial intelligence to keep pace with technological development. After repeated setbacks in the Web 1.0 and Web 2.0 stages, traditional media must strive to enhance their intelligence level to break through transformation dilemmas, avoid marginalization, and usher in new opportunities.

1. Three Major Problems of Traditional Media in the Intelligent Media Era

1.1 Insufficient Information Volume to Compete with Commercial New Media As the main body of news production, traditional media should theoretically possess advantages in information volume. However, due to low intelligence levels and outdated scraping and push models, they are instead at a disadvantage. Despite strong news production capabilities, the total amount of information traditional media can push through various terminals daily cannot match the massive volume of commercial new media like Toutiao.

First, traditional media’s information sources are relatively singular. In addition to their own editorial teams, their content primarily comes from professional news organizations such as Xinhua News Agency, failing to effectively activate the power of individuals on the internet. Commercial new media, by contrast, not only rely on intelligent machines to search and scrape news but also aggregate large numbers of content producers, achieving a “we have what others have, and we also have what others don’t” advantage.

Second, traditional media’s distribution models are relatively backward. As noted by scholars, “Currently, there are three main forms of information distribution: professional media editors, social relationship dissemination, and algorithmic push” [2]. These three models represent progressive advancement, with

each being more sophisticated than the last. Commercial new media employ algorithms to activate the vast amount of information on the internet, delivering “thousand faces for thousand people” personalized pushes, demonstrating advantages in both total information volume and user base. Most traditional media, however, remain at the professional editor stage, or although they adopt social relationship dissemination and algorithmic push, their low intelligence level results in limited push volumes.

1.2 Challenged Information Quality Advantage Traditional media has always emphasized “content is king,” believing that legitimate interview rights and professional news teams capable of providing original, high-quality content are the foundation of their existence. This is actually a misconception. In news production and dissemination, content, channels, medium, and users are all important. When the latter three are constants, the “content is king” logic holds. However, compared to commercial new media, traditional media lags behind in all indicators except content, making the “content is king” mantra insufficient to mask fundamental problems.

First, news accuracy is being challenged. In the past, news conclusions were typically drawn through sampling surveys that examined only a portion of the population. Today, big data-based analysis examines the entire population, making it more persuasive. Data journalism possesses unique advantages: its display methods are more intuitive, easier to understand and disseminate, and highly valuable for news narrative and predictive judgment. If traditional media cannot master and utilize big data, they will be unable to maintain their advantage in news accuracy.

Second, traditional media must improve news experiences. Marshall McLuhan argued that “the medium is the extension of man” [3]. Newspapers extend human vision through text and images, radio extends hearing through audio, and television extends both hearing and vision, but all present users with a two-dimensional world. New media, utilizing VR and AR technologies, can present three-dimensional scenes with stronger sense of presence, transforming users from news “observers” into “on-site witnesses”—an experience traditional methods cannot achieve.

1.3 Insufficient Information Matching Capability The ability to effectively match information resources and deliver valuable information to those who need it is crucial for media development. Traditional media currently shows clear deficiencies in this area.

First, they lack effective user connections. At its root, traditional media’s predicament stems from insufficient user connection capabilities. While many traditional media outlets are keen to maintain a presence on “two micro-platforms and one app” and emphasize producing superior content, they know very little about their audiences. Although they have numerous readers, viewers, and listeners, they are not adept at converting them into highly 粘

性 users, making it difficult to provide a basis for “tailor-made” information products and failing to meet the requirements of segmented communication.

Second, they have insufficient information sorting capabilities. To achieve effective matching between information and user needs requires powerful content processing capabilities. Commercial new media use keywords to tag massive amounts of news content, then combine this with user information for targeted pushes. For traditional media, relying solely on human editors to process content information is unsustainable.

Additionally, traditional media’s news push precision is inadequate. Currently, most traditional media still adopt a “flood irrigation” approach in news distribution, lacking personalized distribution methods that often result in a mismatch between content and audience preferences. Moreover, traditional media’s scenarization is relatively low; pushed news fails to account for spatial and environmental factors, status and preferences, and social atmosphere. Since scene perception and analysis depend on intelligent sensing technology, traditional media lag in this area and need to address this weakness.

2. Paths for Traditional Media to Enhance Intelligence Levels

In the era of intelligent media, technology plays a crucial role in information production and dissemination, and traditional media transformation cannot succeed without technological support. Professor Peng Lan has identified three characteristics of the intelligent media era: first, humans are no longer the sole media drivers, as other material tools gradually join until everything becomes media; second, future media will become an intelligent fusion of humans and machines; and third, intelligent media possess the potential for self-evolution through continuous learning [4]. Against these three characteristics, traditional media still face an arduous task in achieving intelligence. While central media and a few local media outlets like Zhejiang Daily have explored intelligent media more extensively, many provincial media outlets, despite actively pursuing media convergence and building central kitchens, remain at the stage of operating several newspapers, television stations, and websites plus “two micro-platforms and one app,” having barely entered the Web 2.0 era. Traditional media must enhance their intelligence level across multiple dimensions to cross the threshold into the intelligent media era.

2.1 Using Intelligent Technology to Improve News Gathering Capabilities News gathering capabilities are crucial for media. Early Republican-era journalist Huang Yuansheng proposed that journalists must possess “four abilities” : “brains that can think, feet that can run, ears that can listen, and hands that can write” [5]. These traditional skills relying on journalists’ senses remain important pathways for news gathering. However, relying solely on these conventional skills is now far from sufficient. Empowering journalists’ senses through technology is an effective way to improve news gathering capabilities.

Using artificial intelligence to improve news 线索 collection capabilities: Traditional news 线索 collection relies on large correspondent networks and web browsing. In an era of information overload, traditional methods alone are inadequate. With AI's power, online information can be quickly searched and identified, providing timely alerts. In November 2016, Reuters announced its AI technology-powered product, the Reuters News Tracer, which monitors social media, classifies and merges relevant information into effective intelligence, saving tedious manual monitoring while being more effective and timely [5]. Xinhua's "Media Brain" possesses powerful information gathering capabilities. During the 2018 Two Sessions coverage, after nearly a month of learning, "Media Brain" could not only rapidly scan hundreds of millions of web pages to collect text, images, and video data but also determine which news was related to the Two Sessions and which topics would become hot issues.

Using smart devices to expand news gathering dimensions: News gathering through sensors can obtain more timely and abundant information. During the August 2015 Tianjin Binhai New Area hazardous materials explosion, the presence of large quantities of toxic and harmful gases prevented journalists from accessing the scene, threatening their lives and health, and making traditional manual image collection impossible. At this time, small drones equipped with image sensors proved invaluable. On August 14, 2015, Xinhua's news drone team penetrated the core area of the fire and explosion, sending back many valuable photos. In June 2018, after Xinhua released Media Brain 2.0—the "MAGIC" intelligent production platform—smart collection devices like cameras became journalists' "eyes." This intelligent media production platform can monitor news events in real time through cameras, sensors, drones, dashcams, and other smart collection devices, combined with multi-dimensional data near news locations, providing journalists with news 线索 and raw materials.

2.2 Improving Intelligence Level of Content Production In traditional media production processes, whether writing, filming, video recording, editing, or 剪辑, humans have always been the decisive factor. However, with the arrival of the intelligent media era, some content production functions will be replaced by machines.

Robot writing has already made its mark in content production. Since 2017, the number of writing robots has increased significantly, sparking heated debate about whether robot writing will replace human writing. Currently, many media outlets have their own writing robots: Tencent has "Dreamwriter," Alibaba and Yicai jointly launched "DT 稿王," Toutiao has "Xiaomingbot," Xinhua has "快笔小新," Guangming Daily has "光明小明," and Southern Metropolis Daily has "小南." Indeed, writing robots cannot possess professional journalists' value judgment, emotions, and experience for a long time to come, but their advantages are obvious: they are fast, have strong data analysis capabilities, and produce astonishing volumes, excelling at assisting journalists.

Alibaba and Yicai's jointly launched "DT 稿王," which mainly reports on stock

market anomalies, can publish an average of 1,900 announcements daily—a task that would take a senior securities editor 100 hours to complete. More importantly, as writing robots continue to upgrade, they will become increasingly intelligent with continuously improving learning capabilities. If traditional media cannot participate in this development, they will likely fall behind in content production capacity in the near future.

Additionally, relying on robots for news editing offers unique advantages. Video 剪辑, for instance, is labor-intensive, while AI can save substantial time and effort. A trailer for the thriller film *Morgan* was edited by IBM's AI system, delivering both speed and quality. Such intelligent “scissors hands” will become valuable assistants for video editors.

2.3 Improving Algorithm-Based Information Distribution Capability

Currently, algorithm-based news distribution models face much criticism. Indeed, algorithms distribute content based on users' interests, behavioral habits, and browsing history, easily falling into the trap of vulgar content and even creating “information cocoons.” However, we must understand that no newborn entity is perfect at birth; what matters is whether it possesses advanced DNA. As a young information distribution method, algorithms can better match information with user needs, achieving “thousand faces for thousand people” personalized recommendations—far more advanced than relying on editors to guess audience psychology.

For traditional media, blindly rejecting algorithms is unwise. Using and improving algorithms to serve traditional media is the correct choice. The media convergence currently underway in traditional media aims to absorb and learn from new media's communication methods and concepts, and algorithms are undoubtedly one of new media's core communication technologies. Moreover, as algorithms improve, they will play an even more important role in the future.

Some traditional media have already experimented with algorithmic recommendations. Xinhua's “Media Brain” uses user profiling to provide detailed, precise information about readers' reading habits, location changes, and behavioral preferences for intelligent distribution and precise news 推送. Cover News, a new-generation client under Sichuan Daily, continuously strengthens algorithm-based personalized recommendations as a “content plus technology” platform. In addition to algorithmic recommendations based on individual reading interests, it has added location-based news pushes, allowing users in different locations to read news of concern in real time; added interest tag maintenance portals for users to adjust content types in smart recommendations; and added keyword-based recommendations for more precise content delivery based on user browsing behavior and content choices. These efforts have made Cover News' s “personalized” features prominent among similar domestic media.

2.4 Increasing Technical Content of News Products

Traditional news producers have always believed that “good wine needs no bush.” With today'

s rapid development of media technology, this view can no longer adapt to the “information overload” era. Since users are exposed to excessive information daily, only a small portion can attract attention, requiring not only quality content but also technical means to enhance appeal.

Technology can enhance user experience. The 2014 Pulitzer Prize-winning work *Snow Fall* delivered an unprecedented experience to users. Opening the work’s webpage showed video of snow rolling down a mountain slope; scrolling down revealed text interspersed with videos, photos, and infographics. This disruptive news presentation was stunning. During the 2018 Two Sessions, Xinhua’s short video *Reading the Report as if on Paper* used 3D 立体画 and origami animation to present the Government Work Report in 3D visualization, becoming an instant hit upon release. In the 2019 Two Sessions coverage, CCTV News New Media used VR panoramic cameras, significantly enhancing user experience.

Technology can also enhance interactivity. To celebrate the 90th anniversary of the founding of the People’s Liberation Army, People’s Daily launched the H5 product *Look! This Is My Military Uniform*, displaying military uniforms from across 90 years. Users could upload photos to generate military uniform photos from different eras. This H5 exceeded 200 million views within two days, exploding across social media. In 2019, Xinhua’s new media product *Holographic Interaction to View the Report* used holographic projection technology to restore production information and life scenarios based on key data from the Government Work Report, creating an immersive and refreshing experience.

2.5 Improving Big Data Storage and Development Capabilities In the information dissemination field, big data plays a prominent role—some scholars have even compared data’s significance for media production to oil’s significance for industrial production, highlighting its importance. Improving traditional media’s big data storage and development capabilities is a required course for moving toward intelligence.

Big data is the foundation of robot writing. Only backed by big data can writing robots produce articles according to programmed procedures. This is because the core of robot writing is cloud computing and big data analysis; without this foundation, even the smartest robots cannot produce work. Tencent’s robot Dreamwriter wrote its first article in 2015, *August CPI Up 2.0% YoY, a 12-Month High*, based on economic data using cloud computing programs.

Big data can facilitate information retrieval. Traditional media must have their own databases to attract users during development. This requires digitizing previously accumulated print content and continuously digitizing the large amount of content produced daily, then tagging the entire collection. Tianjin Daily has built such a database containing two parts: a newspaper database and an image database. The former uses China’s most advanced newspaper digitization technology to digitize all newspapers since the founding of Tianjin Daily, offering content classification retrieval, page browsing and downloading, and other

functions; the latter puts all precious photos preserved since the newspaper' s founding online, forming a searchable database. Overall, traditional media' s development and utilization of big data remain weak and require further improvement.

2.6 Vigorously Developing Platform-Based Media Today' s media competition is largely platform competition. Looking across the industry, leaders are mostly platform-based media—aggregation platforms like Sina and Sohu, search engine platforms like Baidu, social platforms like WeChat, personalized recommendation platforms like Toutiao and Yidian Zixun, and video platforms like Kuaishou and Douyin. Platform-based media possess advantages in media content 规模化 that significantly enhance their information distribution capabilities. Traditional media should also learn from relevant technologies to build platforms during transformation, as this is the only way to activate individuals and increase the 增量 of traditional media news information.

In the past two years, some traditional media have begun exploring and experimenting. On February 19, 2017, CCTV News Mobile Network launched, serving as both a news application covering hundreds of millions of users and a platform for professional journalists' live broadcasts, original content copyright protection, shared platforms for television news organizations, and interactive platforms for user-generated content. CCTV News Mobile Network opened a CCTV News matrix account, absorbing institutional accounts to become an important carrier for platformization. On its launch day, 37 provincial and municipal TV stations joined. On the same day, Xinhua launched the “Live Cloud” national service platform; media only need to sign an agreement to access Live Cloud and enjoy “on-site news” mobile editing services. By January 2019, 400 matrix accounts had joined, conducting over 5,000 live broadcasts and publishing more than 240,000 articles. Xinhua' s “Media Brain” is also an open platform. After authentication with Xinhua, other media can use Media Brain' s various functions and products. By early 2019, Tianjin' s “Jinyun” Central Kitchen had not only gathered professional media like Tianjin Daily, Tianjin TV, Tianjin Radio, Tonight News, and North Net but also attracted nearly 2,000 institutional media and self-media accounts from party and government organs and universities.

2.7 Conducting User Profiling and Establishing User Precipitation Platforms To achieve effective user connections, traditional media must have accurate user profiling. Only through user profiling—recording and classifying high-quality user data, enhancing users' trust and satisfaction with the media, and creating media 粘性—can they establish user precipitation platforms.

Commercial new media research and 沉淀 users through user profiling. By July 2018, Ximalaya FM had 470 million registered users, 5 million hosts, and over 100,000 audio uploads daily. Such a massive user base exists because Ximalaya FM adopted big data technology early, established a dedicated algorithm team

for user profiling, understood user preferences and usage habits, and conducted targeted content recommendations to achieve continuous user growth.

Some traditional media have begun user profiling. Among the eight functions of Xinhua's "Media Brain," user profiling is one. However, overall, few traditional media have mastered and applied user profiling technology, and even fewer have built user precipitation platforms. Traditional media still have a long way to go in this regard.

Since the birth of internet-based new media, traditional media has been struggling to keep pace—first by building websites to move news content online, then by developing “two micro-platforms and one app” to improve news distribution capabilities. While these measures have enhanced traditional media's influence to some extent, they have not changed the overall decline. Now, with the arrival of the intelligent media era, traditional media face even greater challenges. Some scholars argue that “if traditional media do not seize the development trend of artificial intelligence, they will encounter a ‘dimensionality reduction strike’ from new technological development” [6]. During this critical transformation window, only by using the “key” of intelligence can traditional media establish a firm foothold in the intelligent media era and find opportunities for “corner overtaking.”

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