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Abstract

With the development of information technology, media convergence has become an important trend in the field of journalism and communication. Objective: To explore the application and impact of the Palm Media Convergence System in the development of media convergence through practices in the geological survey industry. Method: The system was constructed by integrating the characteristic functions of Palm Media Convergence with application strategies for geological science and technology publicity work and the promotion effects in practical applications. Results: The system demonstrates significant effects in improving information transmission efficiency and enriching user interactive experiences. Conclusion: The study clarifies the innovative contributions and practical value of the Palm Media Convergence System in promoting the integrated development of geological survey media, and provides prospects for system optimization directions and future research directions.

Full Text

Research on the Application of Mobile Media Convergence Systems in Media Convergence Development

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Abstract: With the development of information technology, media convergence has become a significant trend in the field of news communication. This study aims to explore the application and impact of mobile media convergence

systems within the context of media convergence development, drawing on practices from the geological survey industry's integrated media operations. The research methodology involves constructing a system that integrates the distinctive features of mobile media convergence with application strategies for geological science and technology publicity work, alongside an analysis of promotional effectiveness in practical applications. The results demonstrate that the system yields significant improvements in information transmission efficiency and enriches user interactive experiences. The study concludes by clarifying the innovative contributions and practical value of mobile media convergence systems in advancing media convergence within the geological survey sector, while providing prospects for future system optimization and research directions.

Keywords: media convergence; mobile media convergence system; system application; information transmission; user experience

1.1 Media Convergence Background

The rapid development of information technology and the widespread adoption of internet technologies have become crucial drivers for the deep integration of traditional and emerging media. As illustrated in Table 1, the profound convergence of new and traditional media represents not merely a technological intersection, but a comprehensive integration of content production, consumption patterns, and user participation modalities. Building upon this theoretical foundation, mobile media convergence systems place user needs at their core, revolutionizing media management concepts through big data, artificial intelligence, and large-scale models that assist in intelligent topic selection, AI-generated content, and dissemination evaluation, thereby substantially enhancing information production efficiency. The strategic initiative of media convergence aims to establish a comprehensive full-media communication system where various media platforms operate without rigid categorical boundaries, enabling mutual coordination and resource sharing while preserving their distinct attributes and characteristics [1]. By designing application strategies and service models that align with users' daily habits and offer both personalization and interactivity [2], these systems not only provide a diversified content platform but also foster a multi-party participatory and interactive media environment [3].

1.2 Overview of Mobile Media Convergence System

Mobile media convergence systems, as the name suggests, are platform systems that enable the integration, publication, and dissemination of media resources through handheld mobile devices. By supporting mobile office operations, flexibly integrating client business systems, and providing collaborative office functions, instant communication, and task response capabilities, these systems offer unparalleled advantages in transmission speed and coverage compared to traditional media, thanks to the widespread use of mobile devices and ubiquitous

network connectivity. The convergence of artificial intelligence with big data will drive the technological development of media convergence, assisting media organizations in building intelligent new mainstream media production platforms and creating intelligent media matrices for public information services—a crucial direction for media convergence development. In this context, media convergence is demonstrating unprecedented development trends and advantages, with the emergence of mobile media convergence becoming a practical embodiment of convergence media theory. These systems will profoundly impact the existing news communication landscape, providing new growth points and transformation opportunities for the media industry [4]. Globally, the revolutionary shift in media production and consumption patterns driven by the leapfrog development of internet and mobile communication technologies has made media convergence an irreversible trend [5].

1.3 Research Purpose and Significance

The purpose of this research is to construct a platform that supports real-time multimedia content production, efficient management, and personalized push services. Through a comprehensive examination encompassing system implementation, performance evaluation, and user experience, this study delves into the distinctive features of mobile media convergence and their promotional effectiveness in practical applications. This research provides new perspectives and methodologies for the path of media convergence in Shaanxi’s geological survey sector, enhancing the effectiveness of Shaanxi geological survey integrated media in leading public communication resources. By establishing the Shaanxi geological survey integrated media platform, a new production model of “integrated planning, one-time collection, multiple generation, diversified dissemination, scientific evaluation, and effective application” has been constructed, effectively supporting innovative operations of the geological survey industry’s proprietary media platforms and promoting in-depth development of integrated media. Exploring the innovative aspects and optimization directions of mobile media convergence systems holds significant theoretical and practical value for media convergence in the Shaanxi geological survey industry and beyond.

As technological iteration accelerates under economic development, society’s “social relationships and subject-object relationships between humans and nature” are progressively “built upon digital production, storage, flow, and control,” necessitating the reconfiguration of social organization forms, management models, personnel management, resource allocation, and rule-based processes through integrated media [6]. This research focuses on the design and application of mobile media convergence systems to provide references for constructing modern communication systems, helping information dissemination achieve the social goal of effective governance and harmony, responding to market trends of diversified information acquisition needs, and providing pathways for the application of Shaanxi geological survey integrated media. Continuously exploring and improving the implementation mechanisms and application effects of mobile media

convergence systems to enhance their core role in media convergence represents a critical step in advancing the entire media industry [7], holding considerable theoretical and practical significance for promoting media convergence development.

2.1 Design Methodology for Mobile Media Convergence System

As new media technology has become not only a key indicator of China's media industry convergence development but also a structural element in the global communication order reconstruction process [8], mobile media convergence technology, as a core force in media convergence, drives the integration of traditional and new media while facilitating technological innovation and communication pattern reshaping. In designing collaborative systems for media projects, mobile media convergence system design must center on user needs and operational convenience while incorporating cutting-edge technologies to achieve efficient, stable, and secure information transmission. This study proposes a design methodology specifically for mobile media convergence systems, beginning with structured analysis to determine system requirements and detailed modeling of user scenarios and functional needs. For instance, the content production and distribution workflow of Shaanxi geological survey media platforms employs modular design principles to construct the system architecture, where each module assumes different functions to vividly convey scenarios to users and establish strong resonance [9].

Furthermore, considering the particularities of mobile systems, this study proposes a cloud computing-based server architecture design scheme capable of effectively handling high concurrency situations. The system employs multi-layer firewalls and data encryption technologies to ensure secure data transmission and storage, along with message encryption and access control (preventing message tampering and illegal access) to guarantee data security and privacy. The system also pays special attention to mobile user experience, implementing responsive design for mobile applications and establishing an efficient front-end data flow management architecture through frameworks and state management patterns to support cross-platform mobile application development. In content dissemination strategies, the system designs multi-channel content synchronization release functions, using message queues to manage distribution across different channels, ensuring information consistency and timeliness. Relying on artificial intelligence technology, the system can intelligently analyze user behavior to achieve personalized recommendations, further improving information acquisition accuracy and efficiency [10].

In summary, the mobile media convergence system's architecture design and technology selection combine current technological development status and future trends, employing modular, distributed, and microservices design concepts and advanced technology stacks to ensure efficient operation and long-term evolutionary capability. Simultaneously, through adaptable technology selection and human-centered interaction design, the system promotes the in-depth de-

velopment of media convergence theory and practice [11][12].

2.2 Module Construction and Characteristics

The implementation of mobile media convergence systems lies in constructing efficient and stable functional modules that validate system performance in practical applications and user feedback. The system provides core functional modules including content publishing, user interaction, and data analysis for the Shaanxi geological survey integrated media platform, supporting seamless integration with news gathering and editing workflows. This research embeds the Shaanxi geological survey integrated media workflow into the mobile media convergence system, serving the entire process of news planning, collection, editing, publishing, management, monitoring, and feedback, achieving full-business integration. The system offers users a “multi-template, multi-component, multi-scenario, multi-channel” integrated intelligent editor, enabling convenient clue reporting, content production, review processing, and message reception anytime and anywhere. Integrating multiple core segments and business processes including media asset management, topic planning, manuscript creation, one-click multi-channel distribution, and collaborative office work, the system aims to enhance work efficiency, optimize content creation and management workflows, and provide comprehensive support and services for integrated media professionals.

The characteristics of mobile media convergence lie in the content management module’s optimization through corresponding processing engines, enabling efficient handling of news text, images, audio, and video in multiple formats to ensure accurate content delivery and high-quality presentation, thereby effectively enhancing the intelligent management and application of Shaanxi geological survey media resources. The data analysis module analyzes user behavior, establishing a tagging system to achieve precise push notifications. Through sentiment analysis of user comments and feedback, the system helps media platforms grasp public opinion trends and adjust content strategies [3]. Multi-modal content security intelligent review provides users with intelligent auditing capabilities for error checking, proofreading, politically sensitive, pornographic, violent, vulgar, and advertising content, effectively reducing business compliance risks. System implementation effectiveness is ensured through comprehensive testing including broadband traffic monitoring, server log analysis, and user feedback collection, guaranteeing system stability and user satisfaction and strongly supporting the daily operation of mobile media convergence systems.

2.3 System Performance Evaluation

In terms of system performance evaluation, the mobile media convergence system employs advanced data compression algorithms in data exchange efficiency measurement, achieving an average compression ratio of 5:1, which significantly reduces data transmission latency and increases information update speed by 50%, substantially outperforming comparable products. When resisting exter-

nal attacks, the system can detect abnormal behavior in real-time and take effective measures. Experimental results demonstrate that after undergoing various network attack tests including DDoS attacks, the system's security protection capability maintains a 99.9% online rate, exceeding industry security standards. In data analysis and evaluation, the system incorporates a powerful data analysis engine. Through in-depth analysis of user behavior, the system can accurately profile user preferences and push more personalized content accordingly. This strategy improves content push accuracy by 30%. Meanwhile, system performance reports show that after applying optimized push strategies for one month, users' average dwell time increased by 40%, effectively enhancing user stickiness and activity.

In summary, the mobile media convergence system demonstrates excellent performance in evaluation, with its efficient information processing capabilities, superior user experience, and stable security protection mechanisms, fully proving that the system's design and application possess significant innovation and practical value in promoting media convergence development, providing reliable technical support for deepening integrated media communication strategies [4][13].

3.1 User Interface Design

The user interface design of mobile media convergence systems is a critical component for enhancing user experience and system practicality. When designing the interface, both aesthetic appeal and functional practicality must be considered to ensure reasonable layout, smooth interaction, and compliance with user operation habits. Given current user demands for information acquisition convenience and personalization, functional blocks including news reading, interactive communication, personalized recommendations, and user settings are clearly divided into modules, enabling users to quickly locate desired sections and features.

The home page displays commonly used module entrances for users (Figure 1 [Figure 1: see original paper]) and integrates the latest to-do items and meeting notifications, improving user efficiency in processing tasks and obtaining messages. Users can customize the homepage display modules according to their business needs (Figure 2 [Figure 2: see original paper]). The system workbench is divided into four modules based on Shaanxi geological survey integrated media business scenarios, with each module interconnected throughout the entire business production process, providing convenient mobile gathering and editing tools for users. The user interface not only enhances the overall user experience but also provides personalized services according to the characteristics of Shaanxi geological survey integrated media, achieving efficient information transmission and barrier-free interactive communication.

3.2 Content Management and Editing

Content management represents the core competitiveness of mobile media convergence systems. The system supports efficient data retrieval and storage, automatically classifying and tagging massive amounts of information to enable intelligent content distribution and rapid retrieval. Simultaneously, the system can link related content to provide multi-angle, in-depth reading experiences, effectively enhancing the intelligent storage of Shaanxi geological survey integrated media resources. The system also supports multi-person collaboration and mobile gathering and editing, enabling real-time task assignment, progress tracking, and feedback collection on mobile devices, with team members sharing information and collaborating in real-time to ensure successful task completion, thereby effectively improving the intelligent application of Shaanxi geological survey integrated media resources. Today, a single smartphone integrates the functions of microphones, cameras, and other equipment previously used by newspaper reporters, enabling journalists to discover news anytime, conduct tracking recordings, and easily complete content organization, review, and rapid publication on new media platforms [14].

The resulting digital assets possess characteristics of convenience, flexibility, instant upload, rapid review, and real-time updates, addressing pain points including limited topic selection timeliness, inconvenient digital asset return transmission management, restricted content editing and distribution workflows, untimely access to hot information, inability to improve team collaboration efficiency, and inconvenient task progress tracking. This functionality effectively meets the differentiated needs of Shaanxi geological survey integrated media work for both indoor and fieldwork scenarios. Because scenario-based media and users maintain high matching degrees, users pay greater attention to relevant information when using the network [15].

3.3 Communication Mode

Mobile media convergence systems emphasize social media integration, breaking traditional information transmission barriers and leveraging the extensive coverage of social networks to track hot information across major platforms in real-time. Centering on users as the core of all development, the system seeks integration points that align with user thinking. It maintains synchronized push notifications to keep pace across platforms while emphasizing different media audience needs, implementing segmented communication and precise delivery to maximize audience media dependency [16]. Shaanxi geological survey teams can distribute manuscripts to multiple platforms with one click, centrally capturing cutting-edge geological survey-related information to ensure timely access to the latest hot events and topics, rapidly identifying valuable clues and topics that can be transformed into story frameworks after analysis, significantly shortening content creation cycles. Users are not only content recipients but also disseminators. Based on user interest areas and platforms, the system employs big data intelligence to provide users with comprehensive, diversified, and targeted

hot information customization, helping users understand and analyze hot events from multiple perspectives, thereby creating more in-depth and extensive content that precisely meets user needs, improves user satisfaction, and increases manuscript exposure and dissemination effectiveness. This promotes horizontal and vertical information circulation, effectively solving the problem of lacking diversified distribution channels for Shaanxi geological survey-related information and popular science works, and achieving “circle-breaking” dissemination.

3.4 User Experience Research

In the two core metrics of information transmission efficiency and user interactive experience, mobile media convergence system performance is particularly critical. Therefore, this study conducted extensive and in-depth research on user experience within the system to ensure that service content and interaction design align with real user needs and usage habits. Through random sampling, a user group of 2,000 participants covering different ages, professions, and educational backgrounds was constructed to ensure representativeness and breadth of research data. Standardized questionnaires were used to organize users’ perceptions, emotions, and behavioral responses when using the mobile media convergence system. The questionnaire design focused on user satisfaction with system functional modules, information push accuracy, response time, and interface usability, employing a 5-point Likert scale for quantitative scoring. The questionnaire specifically collected user feedback on personalized recommendation algorithms to evaluate whether the algorithms could accurately mine user preferences and achieve precise content matching (Figure 3 [Figure 3: see original paper]).

3.5 Media Convergence Case Analysis

Through horizontal comparative analysis of different types of media convergence cases, this study deeply examines the underlying integration mechanisms, development models, and faced challenges. Typical mobile media convergence cases were selected for detailed analysis. Regarding the Guangdong Provincial Government’ s prominent media convergence practice of City Pictorial, which profoundly reflects modern youth lifestyles, an in-depth analysis of its new media branch Cityzine reveals its development history and business strategy, including achieving RMB 2 million net profit and an annual innovation award in 2014 [4]. Another case is the Bingodu application under *Southern Metropolis Daily*, which analyzes its frequent attempts at media convergence and market achievements, dissecting the operational characteristics of new media laboratories and their effective transformation into independent profit-making companies [4]. Simultaneously, the mobile media convergence system under the Shaanxi geological survey integrated media platform has effectively improved platform efficiency in planning, gathering, editing, distributing, storing, managing, using, and feeding back, with proprietary media account feedback data showing effective improvements in information transmission efficiency and enriched user

interactive experiences. In-depth analysis reveals that user demand for diversified content and preferences for interactive functions guide the design of mobile media convergence's distinctive features. This analysis helps understand how mobile media convergence has transformed traditional news business models, providing compelling evidence for understanding its development momentum and implementation pathways.

By selecting mobile integrated media application cases covering different regions, scales, and user groups for in-depth analysis, case selection bias was eliminated, and combined with experimental data, the universality and representativeness of identified patterns and characteristics were enhanced. Furthermore, the construction of the integrated media theoretical framework is based on advanced convergence media theory, ensuring theoretical research depth and breadth [17]. Synthesizing case analysis and user behavior research results, we conclude that mobile media convergence possesses unique advantages in improving information sharing and breaking time and space constraints [5].

3.6 Application Promotion and Market Feedback

During the application promotion process of the mobile media convergence system, efficient market penetration was achieved through precise marketing strategies and user demand research. Based on user feedback, system functions were continuously optimized, user interface design improved, and user habit profiles refined. Multi-round user satisfaction surveys indicate that overall user satisfaction with the mobile media convergence system reached 85%, with particular praise for content recommendation algorithm accuracy and personalized services. The system's built-in real-time news update and push functions meet users' strong demand for timeliness, with system notification open rates maintained above 90%. Additionally, according to user behavior data analysis, the average daily active user growth rate reached 12%, demonstrating continuously increasing system popularity and stickiness. Resource integration maintains stronger vitality both online and offline, complementing each other and attracting high user attention, making everyone a media dissemination individual [18]. Market feedback also indicates that the mobile media convergence system's operational model highly aligns with digital era user habits, with existing users gradually transforming into core users and actively recommending the system to others, demonstrating good market acceptance and promotion potential [8].

4. Conclusion

Through case analysis of mobile media convergence system practices in platforms such as Shaanxi geological survey integrated media, this study demonstrates that cross-platform, cross-channel, and cross-business integration operations break the temporal and spatial constraints of traditional communication models, promote information sharing and real-time interaction, and redefine user experience and participation methods. In the application to Shaanxi geological survey integrated media platforms, the system effectively improves publicity

work efficiency, unblocks information source, production, distribution, review, and feedback links in publicity work, and promotes in-depth platform convergence. This provides an effective pathway for the transformation and upgrading of news media. Overall, the mobile media convergence system not only demonstrates significant technical implementation effects but also continuously optimizes according to evolving user needs, showing its indispensable role in news communication and media convergence development, injecting more innovative vitality into the in-depth development of media convergence.

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