The Deep Linking Model of Knowledge Payment Driven by Data--A Breakthrough Perspective Based on Communication Theory

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Abstract. In the post pandemic era, paid knowledge received widespread attention as a mainstream learning model, but still faces challenges brought by algorithms. This article analyzes how algorithms promote the commercialization of knowledge products from three aspects: knowledge payment platforms, knowledge disseminators, and knowledge payment users, as well as the inherent linking patterns among the three. Based on the current situation, a breakthrough method for the sustainable development of the paid knowledge industry is proposed by using "deep linking" instead of an efficiency-oriented algorithm derivation. The analysis in this article concludes that due to technical issues with algorithms, platform power is gradually solidifying, and users who pay for knowledge are trapped in information cocoons, leading to these challenges. Based on this, this article proposes the following suggestions: "Deep linking" needs to rely on a triple path of algorithm transparency, community mutual benefit, and diversified evaluation to reconcile the contradiction between commercial interests and long-term user growth.

Keywords: Paid knowledge, algorithm recommendation, deep linking, information cocoon, Media Theory

1. Introduction

The history of paid knowledge services in China can be broadly separated into the stages of the nascent stage, the explosive growth stage, and the rapid growth stage, with 2016 being known as the Year Zero of the paid knowledge services. Since the early days of free sharing of content to the booming industrialization, paid knowledge services have received a welcoming reception by a large scope of users. To illustrate, the fact that platforms such as Zhihu and Himalaya have become successful proves that knowledge as a commodity has been well accepted. In the post-pandemic period, especially, the demand to continue learning online has escalated especially among the young users who are used to the online and fragmented type of learning and this has spurred the trend of the popularization of paid knowledge services and the diversification and innovation of the paid knowledge service models. This has changed with the emergence of the paid knowledge service industry which has brought about numerous shortcomings. Knowledge services, v are insufficiently explored in terms of cultural phenomena, overlooking the subjectivity of consumers to a degree [1].

Meanwhile, seeking traffic and conversion platforms apply the over-packaging and market capabilities of algorithms and cross boundaries between, on the one hand, knowledge, on the other hand, experience, and on the other hand, motivation, chicken soup, and even on the other hand, anxiety. It is also true that " lemon markets and silos of personalized recommendation information are also felt by users when masses of courses are given a push. That is, the unequal possession of information between buyers and sellers could inhibit the performance of the market and lead to shocks [2]. The data on learning behavior of users is also becoming an asset to platforms silently, and this results in an increasing degree of passivity and narrowed thinking.

It is on this background that the fundamental question of this study becomes: how do knowledge-paid platforms employ algorithmic technology in order to create a model of shallow linking? In this paper, the researcher will integrate communication theory to review the influence of this shallow linking model and in the process, a deep linking model will be proposed. The phenomenon of the so-called deep linking is not only technically a matching but also a crucial, a relational, and developmental relationship. It implies that the platform, knowledge producers, and users need to be beyond the relations of the data tracking and consumption, where the information becomes more open, the real emotional relationships are integrated, and a virtuous circle of a win-win environment is formed.

2. Building commercialized links on paid knowledge

The precise push system is the one used by the knowledge-paid platform. In this process, the knowledge consumers are developed into user personas, knowledge products are packaged in a media-friendly way, and finally, the matching is achieved through exact matching algorithms.

2.1. Constructing a measurable knowledge consumer

To begin with, the platform creates user personas via data mining. User persona construction is a process of developing a collection of typified virtual user models through user behavior information, individual attributes, and psychological traits, among other information. In the sphere of paid knowledge, the platform process to attain data extraction and user persona building is started by data gathering, data modeling, and the development of user personas, which create a complete technical closed loop. The paid knowledge platform builds a social network model to excavate nodes of importance and applies natural language processing, social network analysis, and other patterns to get and analyze user characteristics on dimensions including theme, emotion, and relationship structure, and offers methodological support on how to identify users [3]. Possibly using the example of Wei Wei, a researcher at Zhihu community in the Nanjing Forestry University, he indicated that the creation of the user personas engages data collection, data modeling, and creation of user personas [4]. The primary method of collecting the data is the use of crawlers and SnowNLP sentiment analysis technology. Crawler technology can be modified to suit various websites based on requirements, as the technology is flexible and it is possible to customize the content of data being crawled, the depth of the crawlers, and anti-crawling methods used [5]. The mining of this data is unspoken but all-inclusive. Besides, user actions update their digital profiles on a continuous basis. The creation of digital values takes place in the process of data extraction in the long run by the users, and data is converted by the platform into learning experiences in order to be able to make more accurate predictions of the demands, eventually serving market profit interests.

2.2. Media-based knowledge product packaging: emotional consumption, emotional product, and emotional labor

On the knowledge-paid platform, knowledge has to recalibrate on the data-driven push logic. Creation of the content is not limited to the transmission of information, but also involves the involvement of the emotional aspect. The emotional labor theory is particularly important in this process: whereas the knowledge producers generate professional knowledge, they must deliver some kind of positive, comforting, or motivating emotional experience. Emotion is the basic motivation behind the behavior of user consumption. The essence of this kind of consumption may be to fulfill material needs, but to address emotional needs [6]. Emotional labor is behind this experience of consumption. Platforms are designed in a way to provide an immersive experience with aspects and features of interfaces like: check-in mechanisms, progress bar, and leaderboard, that point a user towards engaging in further interaction. Learning is a well-thought-out emotional process. Although it addresses the emotional needs of users and privacy, emotional labor indirectly fosters the establishment and maintenance of consumption behavior [7].

2.3. Algorithms matched with accuracy

Once the digitization and commoditization of both the supply and demand side is completed, matching will become more efficient because of algorithm recommendations. Such superficiality does bring about personalized learning. Nevertheless, out of critical thinking, the gist of this linking is the docking of goods and consumers efficiently. The artificial algorithmic learning need is also chosen frequently on past behavioral data to forecast the consumption possibility of the consumer user himself. It also pays attention to the immediacy of interest or worry of the user, which is not prolonged towards expansion demands. Thus, the existing knowledge flow can be described as the data-driven product circulation system, and incorporating the ultimate objective of reshaping the real feelings of users, the algorithm is the core of such a system.

3. Dilemma of algorithms: alienated links propagation dilemma, along with limitations

Several problems arise when algorithms take over the paid knowledge sector. This part stories together algorithm bashing and the theory of the lemon market, in order to examine how such a connection of commoditization destabilizes the knowledge dissemination environment, its impact on the independent thinking capacity of consumers of knowledge, and explores its constraints.

3.1. Content ecosystem perversion and dilemma of technology

Content ecology distortion is highly likely to produce the phenomenon of the lemon market. The lemon market can be described as a condition in which the market has information asymmetry, which results in fewer quality products in the market. In the paid knowledge sector, this might look as follows: due to the natural tendencies of the algorithm recommendation mechanism to promote its content that better grasps the rules of the platform and excellence in the field of marketing planning, the concentration of much of the resources in the hands of known and rather sufficient knowledge influencers, who know how the system works, strongly strains the space of creators of good content but poor promotion. In the process of driving up traffic, clickbait titles, overblown promises, and the selling of anxiety become the new modes. There is also a dual effect of this phenomenon. To the users, they find it hard to adequately differentiate the plethora of excellently packaged knowledge products that is a wide range of products. In the case of the industry, the quality content gets blocked

out. The shape of the market of lemons now is getting more complicated, and the existing governance techniques are restricted and cannot be fully implemented in every situation in a digital market.

3.2. Technical complexity of implementation

The trick to realizing deep linking in knowledge payment is to measure properly the cognitive gains brought about by content or the long-term growth of users. This, however, is at such a stage that it remains overly idealistic and cannot be accomplished with much difficulty. Such a problem is mainly reflected in the fact that the majority of current studies on knowledge payment users rely on the traditional analytic models (namely, technology acceptance model, the perceived value theory, and the expectation confirmation theory) [8]. Although such theories are helpful in defining user behavior, they do not really feel their empathies with users and it is hard to quantify the profound cognitive transformations as well as the actual development of users.

3.3. Domestication of cognitive subjects: cognitive silos and inactive thinking

The logic of algorithms is such that it is constantly encouraged to deliver content that is liked by users, not what information is desired by users or is necessary to advance the cognitive growth of users. The user can be easily lured to reside in the cocoon of information, his/her preferences after long term dipping. Within the realm of learning knowledge, this contributes to the fact that there is less opportunity for people experiencing opposing knowledge or interdisciplinary knowledge; they find it hard to open up their minds, but in return defend a closed mindset. More importantly, when guessing what people like is exceptionally correct, the urge to be actively exploratory is demotivational among the users, and they can hardly elucidate what they require or carry out critical and backward meditations. Individual learning becomes more passive, enjoyable, than active and painful. In the course of time, emotional commitment of users to groups of people influencing their knowledge might lead to deterioration of their rationality as they are enveloped in a fantasy of being tutored in learning, and their minds are closed.

Although users are later likely to be exposed to information outside the cocoon, some would have become used to passive reception and entertainment-infused learning, and it is incredibly hard to alter their way of thinking.

3.4. Power relations consolidation: platforms as uncoding bridges

It is algorithmic machines of paid knowledge platforms that further cement the relationships of power, where the platforms become the so-called knowledge gatekeepers. This relation is reflected in simplifying various and contingent knowledge relationships into effective but single data streams. Such inherent contradictions are based on the business logic of the platforms. On the one hand, the deep-linking supporters believe in transparency, fairness, and long-term user growth. Conversely, the main engine of the platform business, which is to maximize profits, poses a fundamental contradiction between the two. Further, the existing legislation and policies in major fields like algorithmic governance, data property rights, and digital labour rights are not perfect yet, as they do not provide a proper set of external checks and balances. In order to inspire the paid knowledge ecosystem shift towards deep linking, platforms must have an intention of self-innovation, secured by authoritative intervention and institutional norms at the institutional level to stimulate changes in the structures in a sustainable manner.

3.5. Social perspective

In a societal determinant, the constant perspective of paid understanding is inseparably combined with widespread social attitudes of university anxiety and insufficiency of time. Platforms can only change the current state of affairs through unilateral reforms. The solution of the problem will be concerned with the question whether users and knowledge disseminators could be more concentrated on the learning worthiness of fragmented time. More critical thinking, developing the ability to distinguish in an age of information overload and marketing wrapping and not aiding into shallow consumption and narrow thinking is both required of the users as well. Only by making society, platforms, disseminators, and users engage in participative collaboration, paid knowledge can overcome short-term stress relief and proceed to long-term cognitive improvement and build a knowledge ecosystem in the community.

4. Cutting the stalemate: the construction route, efficacy, and constraints of deep linking

As argued in the critical analysis above, the current systemic issues cannot be resolved by mere technical improvements. A "deep link" needs to be built, and the way it can be built according to the communication theory needs to be estimated; its potential effectiveness and the limitations to its practical use must be considered.

4.1. The connotation of deep linking: transactional relationship into knowledge symbiosis

The principle of deep linking is grounded on a notion of shallow linking. Deep linking has 3 facets, namely, the transformation of trading goods into trusting relationships, the transformation of passive content consumption into active content criticism, and the conversion of short-term traffic into long-term cognitive development and sustained development. These are centered on making the people in the field of knowledge dissemination more subjective, the relationship between dissemination and dissemination more interactive, as well as the value of knowledge itself.

4.2. Construction path: global governance on the communication theory

4.2.1. Algorithm transparency and interpretability: restoring faith in technology

It is possible to resolve the problem of information asymmetry and restore trust between users and platforms by improving the transparency of algorithms and developing a credible evaluation system. Most of the algorithm systems are usually vague in nature. Nevertheless, platforms are able to describe their recommendation logic in a simple manner (e.g., recommendations made based on the things people follow) and create a transparent and authentic system of evaluation feedback. This will go a long way towards enhancing user experience and assisting users in making better decisions. A survey by Dai Yao, a reporter in China Youth Daily, and others also reveals that 68.4 per cent of the interviewees expressed a desire that such a system could be established by the platform, which denotes that, through this measure, people have a general expectation [9,10]. Short prompts or clarifying labels can be used within platforms to clarify the reason behind particular content being recommended. With the establishment of openness and a real user evaluation and feedback system, it will be a valuable source of content quality, which will help users to filter. Integrating the evaluation mechanism with optimization of the algorithm can encourage the process of transforming the logic of recommendation, attempting to pursue traffic only, into the logic of taking into account both content quality and traffic.

4.2.2. Engage in community interaction: direct emotional labor at the win-win

Turn the emotional energy on the platform or single-sided consumption to community co-benefits, and encourage the shifting of emotional labor on the platform as a possible exploitative relationship into the force behind co-creations and co-learnings of joint values. The existing platforms are designed in a manner that tempts people to keep engaged by emotionally acknowledged design, but are mostly focused on emotional work for individual consumption and profit generation by the platform. In the case when the platform can reinvent the work of the learning communities, it would be possible, in part, to convert unilateral emotional reliance of the users on the content creators (i.e., "quasi-social interaction") into horizontal support and knowledge sharing among learners, thus, emotions are a hidden energy that fosters deep learning. The platform is supposed to strategically plan and run activity or theme-based learning communities that promote profound learning content and supportive interactions. Interface- Design- shift Interface design Deepen interface design. The design of interfaces is more about how to encourage individual consumption, rather than how to encourage collective participation and cooperative problem-solving. Channel the emotions raised in the intra-social interaction (quasi-social interaction) to stream into the learning community, which, in a way, will be converted into social support and knowledge collisions, generating a net worth in the learning process.

4.3. Reconstruction of the value objectives of the algorithm: implementing diversified evaluation dimensions

Change the value objective of algorithms not only to the short-term traffic measurements but also to a multi-faceted assessment system that considers both the quality of the contents and the increase of users and the health of the ecology. At the moment, the majority of algorithms are preoccupied with shallow data, click-through rate, and dwell time being their central interests, resulting in content that is more or less entertainment-oriented and marketing-driven, thus pushing the high-quality content to the edge. Provided that it has an opportunity to be instructive, based on platforms like Himalaya with their professional assessment models, like WebQual and KANO, on the quality of the contents and user satisfaction, as well as other aspects of assessing content quality, which are practicality, objectivity, and content accuracy, and the so-called cognitive gain, which is included in the consideration of the algorithm, it will be possible to offer more opportunities to be exposed to high-quality content, encourage the long-term growth of user cognition, and achieve a balance between the commercial interests of the platform and social value. Design and include such indicators as cognitive diversity in the development of the algorithm, and suggest the content that alters the existing cognition of the users and encourages them to think more moderately. New creators with concrete content and a lack of exposure are provided with traffic support, and the head monopoly of the lemon market is broken. Introduce metrics of long-term user growth and content cognitive gain into the objectives of the core values of the platform, and encourage algorithms to find a more optimal compromise between profit and long-term growth.

5. Conclusion

The current circumstances of algorithm functioning in post-pandemic knowledge-paid platforms are marked by the phenomenon of constructing the problem of shallow links with the help of user personas and the commercialization of packaging. This may cause negative alternatives in selecting the quality of the content, users stuck in information silos, and cognitive narrowing, among others.

The innovative concept that may help to break this scenario is the concept of deep links that is proposed creatively in this paper. Knowledge-paid services can be both critical and sustainable by applying transparent algorithms, by encouraging interaction of the community, and by various assessments to rebuild trust in the users. Deep links must be analyzed in detail; thus, the elimination of conflicts of interest in the process of attaining deep links is still required. They are applied based on the three paths of transparency of the algorithm, mutual benefit of the community, and alternative assessments, so that the contradiction between the commercial interest and the long-term growth of users can be resolved. The theories of the practical mechanisms and evaluation systems of the deep links can be refined in future research. It is believed that the knowledge-paid industry will cease to be traffic-oriented and develop into a sustainable ecosystem based on establishing the authentic cognition of the users.

References

[1] Yan, J. (2025). Lifelong Learning: Consumption Narratives and Meaning Production of Knowledge Payers - A Fantasy Theme Analysis Based on Zhihu's Knowledge Payment Topics. Digital Publishing Research, 4(03), 94-102.

[2] Zhang, S., & Cai, Y. (2023). Design of Governance Mechanism for "Lemon Market" in Big Data Trading. Journal of Zhengzhou University of Aeronautics (Social Science Edition), 24(02), 63-74.

[3] Shi, X., Wu, H., Yu, T., & Hu, L. (2025). Research on Identifying Key Users in Knowledge-Paid Platforms Based on Multi-dimensional User Feature Fusion. Intelligence and Documentation Work, 1-20.

[4] Wei, W. (2025). Research on User Preference Mining and Platform Strategy for Knowledge Payment Based on Topic Sentiment and User Personas. Master's Degree Thesis, Nanjing Forestry University.

[5] Sheng, J., Xu, C., & Zhou, T. (2024). Analysis of Python Web Scraping Technology. China Information Industry, (06), 210-212.

[6] Xu, X., Li, R. (2022). New Trends, Causes, and Guidance of Contemporary Youth Consumption Behavior: An Analysis Based on Weibo Hot Search Consumption Events in 2021. Social Sciences of Chinese Youth, (4), 59-65.

[7] Yu, J., & Chen, G. (2026). Capital Accumulation and Liberation in Platform Emotional Labor. Southeast Academic Journal, (01), 124-131.

[8] Zhang, X. (2025). Research on the Factors Influencing the Continuous Use Intention of Knowledge Payment Users Based on the UTAUT Model. Master's Degree Thesis, Guizhou University of Finance and Economics.

[9] Dai, Y., & Wang, P. (2025-11-06). What are the Issues with Paid Knowledge? Nearly 70% of the Young People Surveyed Believe that the Quality of Content Varies Greatly. China Youth Daily, 004.

[10] Zhang, Z., & Ni, B. (2025). From "Establishing Diplomatic Relations" to "Breaking Off Diplomatic Relations": An Investigation of the Whole Life Cycle of Human-Machine Quasi-Social Interaction. Modern Communication (Journal of Communication University of China), 47(10), 1-12.