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Research on Chinese Speed Horse Racing Guessing Lottery Issuance Based on Internet Big Data

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Abstract:

The "Guiding Opinions of the Central Committee of the Communist Party of China and the State Council on Supporting Hainan's Comprehensive Deepening of Reform and Opening-up" clearly stated that the development of horse racing should be encouraged. This is the first time that the central government has responded positively to the contemporary social development value of horse racing from the height of national policy. People see it as a signal feedback for the rejuvenation of the horse racing industry. Under the background of the national strategy of "Internet +", the author explained the connotation of "Internet +" and "Internet + horse racing industry", and proposed that policy power, capital power, technology power, cultural power, and talent power are the influences on the "Internet + horse racing industry" The five forces of development. The application of the O2O business model, the integration of Internet smart technology and the horse racing industry, and the establishment of a platform ecosystem will gradually accelerate the innovation of my country's traditional horse racing industry. It is recommended to form a new form of development of the horse racing industry with the Internet as the infrastructure and implementation tool, and continuously promote the transformation and upgrading of my country's traditional horse racing industry.

Keywords:*Internet+, Horse racing industry, Integration, Innovation, Ecology.*

I. INTRODUCTION

"Internet +" is a new form of industrial economic development created by the evolution of the Internet form and its deep integration with traditional industries driven by the innovation of the knowledge society. It is a concentrated manifestation of the optimization and synthesis of the Internet communication technology and platform in the allocation of social resources. According to the latest "Statistical Report on Internet Development in China", as of June 30, 2018, the number of Internet users

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in my country reached 802 million, and the Internet penetration rate was about 57.7%. The wave of Internet thinking is spreading, profoundly subverting all aspects of social and economic development, and also providing impetus to the business models that have swept various traditional industries. On the other hand, on April 14, 2018, the "Guiding Opinions of the Central Committee of the Communist Party of China and the State Council on Supporting Hainan's Comprehensive Deepening of Reform and Opening-up" clearly stated that it is necessary to encourage the development of beach, water, horse racing and other sports, and support the establishment of National Sports Tourism Demonstration Zone, explore the development of guessing sports lottery and large-scale international competition instant lottery. This is the first time that the central government has responded positively to the contemporary social development value of horse racing from a high degree of national policy. It is also regarded by the horse industry as a signal feedback for the rejuvenation of the horse racing industry. As a comprehensive economy integrating sports, tourism, leisure, entertainment, culture, agriculture and other multiple attributes, the horse racing industry is undoubtedly a potential

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II. EXPLANATION OF THE CONNOTATION OF "INTERNET +" AND "INTERNET + HORSE RACING INDUSTRY"

2.1 Connotation of "Internet +"

Since Premier Li Keqiang first proposed the "Internet +" action plan in the government work report, the Internet, cloud computing, big data, and the Internet of Things have been combined with traditional manufacturing to build a new trend of China's economic and social development. Literally, the term "Internet+" consists of two parts: "Internet" and "+". Among them, as the central word and starting point of "Internet+", "Internet" usually refers to a logical single huge national network structure formed by connecting various networks by a set of common protocols. The Internet is now becoming an innovation engine that changes the structure of the world economy and industry with its four essential characteristics: sharing, interaction, vitality, and service. On the other hand, "+" stands for addition and union. Therefore, "Internet +" can be widely understood as "Internet + traditional industries", that is, through the mining of Internet information and communication technology and building network

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platforms, the Internet practice results are deeply integrated into various traditional physical industries, and new development concepts are adopted. And the ecological model continuously promotes industrial upgrading and upgrades the productivity and creativity of the whole society.

2.2 Connotation of "Internet + Horse Racing Industry"

Horse racing usually refers to a competitive sport that compares the running speed of the horse with the rider's ability to control the horse. Competition events include flat horse racing at various distances, hurdle races and obstacle races, as well as fast walks and long-distance endurance races. All production and operation activities derived from the development of horse racing, including the production and operation of horse racing material products and horse racing service products, are what we often call the horse racing industry. At present, the information technology and business model of the Internet have not yet been deeply extended to the horse racing industry. The concept of "Internet + horse racing industry" is also mainly derived from the connotation and development form of "Internet +". Based on this, the author defines "Internet + horse racing industry" as: With the help of modern Internet information technology, on the basis of deep integration with the traditional horse racing industry, reform the past "people and people", "people and horses", "horse and horses". A single trade activity promotes the innovation and upgrading of the traditional horse racing industry by optimizing resource allocation and building a business network platform, and at the same time can further form an emerging horse racing industry ecosystem [2].

As a popular sports and entertainment project in the world, horse racing not only has the characteristics of viewing, interesting and guessing, but also the huge economic benefits it contains is an important driving force for its own development. The industry chain derived from horse racing is relatively long, mainly involving various sectors from upstream animal husbandry to downstream service industry and lottery industry. Race performance is the core of the horse racing industry chain, and horse color has become the main source of income for the horse industry. However, due to the immature conditions in various aspects, the horse racing lottery has yet to be explored in our country. In addition, horse racing has a significant value-oriented role in promoting the market development of extended industries such as urban tourism, leisure, entertainment, transportation, catering, advertising media, and real estate. However, these subdivisions are still in their infancy or even blank in my country. The industrial chain is in urgent need of improvement (see Figure 1). In this regard, the author proposes to build a related platform for the horse racing industry with the help of Internet information technology to accelerate the integration of resources between the upstream, middle and downstream industry sectors, improve the output efficiency of products and services, and form an industrial pattern for the coordinated development of various departments, and finally give play to the impact of horse racing. The positive "spillover effect" thinking of economic and social development provides reference and reference for the development of horse racing and industry.

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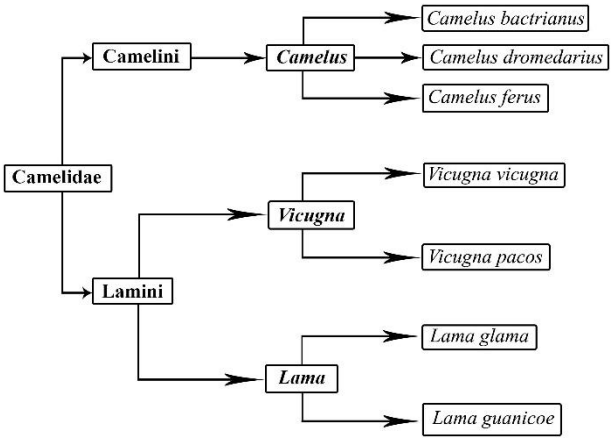

Fig 1: Comparison of domestic and foreign horse racing industry chains

III. THE "FIVE FORCES MODEL" OF THE INTEGRATION OF "INTERNET + HORSE RACING INDUSTRY"

Based on the changes in the scale and degree of corporate competition, Michael Porter proposed five sources of power that affect corporate competitiveness, namely Porter's "five forces model." In the context of the increasingly mature "Internet +" innovative thinking, how to use the "five forces model" to improve the overall competitiveness of the "Internet + horse racing" industry is the focus of this article. Accordingly, on the basis of combining the main development needs of the current horse racing industry, the author proposes the "five forces model" of the integration of "Internet + horse racing industry". These five forces are policy power, capital power, science and technology power, cultural power, and talent power (see Figure 2).

Fig 2: "Internet + Horse Racing Industry" Five Forces Model

Assuming that at the current the iteration, without knowing the true feature vector $U_{t,j}I_{t,j}$ of buyer i and racing jockey j, only their estimated value $\hat{U}_{t,j},\hat{I}_{t,j}$ can be obtained. The purpose of the algorithm

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is to balance exploration and development, and recommend that buyer i does not produce the feedback race j finally minimizes the buyer's long-term cumulative error CumReg T. In order to be closer to the real application scenario, it is set at the iteration, and buyer i can only obtain a certain number of race horses j randomly. These race horses constitute a racehorse set $C(t,i)$, the number of race horses in the middle is $C(t,i)$ far less than the total number of race horses. First, $A_{t,i}$ and $B_{t,j}$ with an initial value of d×d-dimensional unit matrix and a d-dimensional column vector $a_{t,i}$ and $b_{t,j}$ with an initial value of 0 are introduced. The calculation formula is as follows:

$$A_{t,i} = \sum_{j \in N(t-1,i)} \hat{I}_{t-1,j} \hat{I}_{t-1,j}^T + I_{d\times d} \tag{1}$$

$$B_{t,j} = \sum_{i \in M(t-1,j)} \hat{U}_{t-1,i} \hat{U}_{t-1,i}^T + I_{d\times d} \tag{2}$$

$$a_{t,i} = \sum_{j \in N(t-1,i)} \hat{I}_{t-1,j} r_{ij} \tag{3}$$

$$b_{t,i} = \sum_{i \in M(t-1,j)} \hat{U}_{t-1,j} r_{ij} \tag{4}$$

$A_{t,i}, B_{t,j}$ the meaning is to accumulate the characteristics of the horse racing and the buyer to determine the confidence interval. $a_{t,i}$ and $b_{t,j}$ to record the horse racing corresponding to the true feedback of 1, the cumulative value of the buyer's characteristics, respectively, as the bias of buyer i and horse j Set vector. Where N (t, i) represents the set of horses that have been fed back by the buyer i as of the t-th test; M (t, j) represents the set of horses that have been fed back to the t-th test and j Buyer set. Based on the above matrix, using the idea of alternating least squares in the article can update the buyer and horse racing feature estimates:

$$\hat{U}_{t,i} = A_{t,i}^{-1} a_{t,i} \tag{5}$$

$$\hat{I}_{t,i} = B_{t,i}^{-1} b_{t,i} \tag{6}$$

It can be obtained from the theorem in the article that at least the probability of inequality (6) holds

$$\left| \hat{r}_{ij} - r_{ij} \right| \le \beta \left(\sqrt{\hat{I}_{t,j}^T A_{t,j}^{-1} \hat{I}_{t,j}} + \sqrt{\hat{U}_{t,j}^T B_{t,j}^{-1} \hat{U}_{t,j}} \right) \tag{7}$$

Among them, $\beta = \sqrt{\frac{\ln(2/\delta)}{2}}$ is a function related to δ, and the right side of the inequality is the confidence interval between the estimated feedback and the real feedback in the UCB algorithm. According to the UCB algorithm idea, the horse j with the largest value after the estimated feedback plus the confidence interval should be recommended to the buyer i, the formula is as follows, where $\hat{r}_{ij} = \hat{U}_{t,i}^T \hat{I}_{t,j}$

$$j = \underset{j \in C(t,j), j \notin N(t,i)}{\arg\max} \left(\hat{r}_{ij} + \beta \left(\sqrt{\hat{I}_{t,j}^T A_{t,j}^{-1} \hat{I}_{t,j}} + \sqrt{\hat{U}_{t,j}^T B_{t,j}^{-1} \hat{U}_{t,j}} \right) \right) \tag{8}$$

$\hat{r}_{ij}$ corresponds to the result of selecting the optimal value for development based on the currently obtained buyer and horse racing feature vector estimates. $\sqrt{\hat{I}_{t,j}^T A_{t,j}^{-1} \hat{I}_{t,j}} + \sqrt{\hat{U}_{t,j}^T B_{t,j}^{-1} \hat{U}_{t,j}}$ should be exploring

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new horse racing to better estimate the buyer and horse racing characteristics. As the number of tests increases, The value of $A_{t,i}, B_{t,j}$ will increase linearly, and the value of $\sqrt{\hat{I}_{t,j}^T A_{t,j}^{-1} \hat{I}_{t,j}} + \sqrt{U_{t,j}^T B_{t,j}^{-1} U_{t,j}}$ and will continue to decrease, which is consistent with the decrease in the confidence interval value as the number of tests in the UCB idea increases. β is a weight parameter that is weighed in exploration and development. According to the formula (7) The obtained horse racing j, recommend the horse racing j to the buyer i, and get its true feedback r_{ij}. According to the difference between r_{ij} and $\hat{r}_{ij}$, the feature update formula (4)(5) and the above formula (8)(9) The buyer's horse racing characteristics can be updated, the formula is as follows:

$$A_{t+1,i} = A_{t,i} + \hat{I}_{t,j} \hat{I}_{t,j}^T \tag{9}$$

$$a_{t+1,i} = a_{t,i} + \hat{I}_{t,j} r_{ij} \tag{10}$$

3.1 Policy Motivation: Top-Level Design for the Development of "Internet + Horse Racing Industry"

Due to the immature market environment of my country's horse racing industry and the gaming attributes of horse racing itself, the development process of modern commercial horse racing has been iteratively constrained by the horse racing industry policy. In the past, governments at all levels used the term "equestrian" in general to avoid suspicion when releasing policy documents related to horse racing. Until the release of the "Hainan Opinions", the central government for the first time positively affirmed the important value of horse racing to the future direction of the Hainan Special Economic Zone. Today, the official landing of horse racing in Hainan is a major breakthrough in the development of my country's horse racing industry. It also indicates that Ma Cai may break the ice in my country. The development of horse racing with Hainan as a pilot base is expected to become a booster for the national horse industry.

On the other hand, "Internet +" has been included in the national strategic action plan, and pan-Internet thinking has gradually spread to all walks of life. In 2016, the State General Administration of Sports put forward the "Internet + Sports" development policy in the "Thirteenth Five-Year Plan for the Development of the Sports Industry", encouraging sporting goods and sports service companies to use the mobile Internet as a technology carrier to achieve venue reservations, community interaction, and fitness The functions of guidance, event organization, and intelligent equipment research and development actively promote the development and growth of online sports platform companies, thereby forming a new ecosystem for the sports industry. In addition, as an indispensable part of the animal husbandry industry, the Ministry of Agriculture and Rural Affairs clearly proposed that the horse industry cooperation project should be listed as a pilot project of rural industry integration, and the upstream industry chain of horse racing, such as horse breeding, feed processing, and horse trading, has been strongly supported. It is not difficult to find that commercial horse racing under the guidance of policies is the only way for the development of the "Internet + horse racing industry".

3.2 Capital Motivation: Blood Support for the Development of "Internet + Horse Racing Industry"

As the birthplace of modern horse racing, British horse racing has become the second largest sport after football. Its derived horse racing industry also contributes more to the national economy than railway transportation, radio and television, and is listed as one of the top ten industries in China. The

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US and French governments have also adopted clear legal frameworks and sound management systems to make the horse racing industry enter the fast lane of accelerated development (see TABLE I). The successful experience of the operation of the international horse racing industry shows that the modern horse industry with horses and races as the core can revitalize the animal husbandry, service industry, lottery industry and other industries, and create great economic value. For this reason, in our country, with the help of the "Dongfeng" which is rapidly increasing the demand for national fitness and leisure, the horse racing industry has become the "cake" that many capitals are chasing. According to statistics from the "2018 China Equestrian Market Development Report", as of July 31, 2018, there were 1,802 equestrian clubs nationwide, an increase of 350 from 1,452 in 2017, a growth rate of 24.1%. In addition, there were more than 100 major equestrian events (including horse racing) in 2018, covering 20 provinces across the country, and the domestic horse racing industry has gradually expanded. The introduction of the Hainan New Deal has attracted the horse racing concept stock listed companies and many related companies to deploy the horse racing industry and form a strong driving role. From the Hainan Equestrian Association's proposed investment of 20 billion to build an international horse cultural tourism resort, the Hainan Provincial Tourism Investment Holding Group's desire to build a horse cultural tourist town, to the competition of private capital such as Luo Nishan Company, Tianshan Biological Company and Hainan Ruize. Companies claim that they will or have deployed horse racing-related businesses in Hainan, and the horse racing industry market under the surge of capital may usher in the spring of development [3].

TABLE I. Development Benefits of Horse Racing Industry in Britain, France and the United States

Statistical year	country	GDP	employment position	Tax
2012	United Kingdom	£3.45 billion	85 200	7.6 billion pounds
2013	France	11.06 billion euros	100 000 +	1.1.5 billion euros
2005	United States	USD 26.1 billion	383 826	488 million US dollars

3.3 Science and Technology Power: the Innovation Engine for the Development of "Internet + Horse Racing Industry"

Technology is the root of "Internet +" and the innovation engine for the in-depth development of the horse racing industry. At present, the technological innovation of "Internet + horse racing industry" can start from the following five aspects: (1) The rapid popularization of mobile communications and smart terminals is driving the flourishing development of various applications (APP), including event ticketing, racecourse reservations, and Horse gear sales, horse racing information, horse racing games, job recruitment and other aspects of business, to create a comprehensive network service platform for horse lovers; (2) Internet big data, cloud computing technology to store, process, transmit and apply user information, comprehensive Understand the effective needs of users and provide a more objective and accurate decision-making basis for the effective supply of horse racing products and services; (3) The Internet of Things can rely on various wireless or wired remote communication networks to effectively link any item with the Internet, which is an Internet technology upgrade And the performance of the user

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side extension. The horse racing industry uses IoT technology to speed up the development of wearable smart devices, measure and record horse racing speed, collect jockeys' health and fitness data, and create smart horse racing venues. (4) VR technology can generate interactive 3D dynamics. The virtual imaging of the visual scene cannot only help jockeys to simulate on-site horse racing conditions, but also can be applied to the construction of smart horse racing venues, bringing a completely different and fully immersive experience journey for spectators in any position of the stands. The "technological revolution" of the competition performance industry; (5) Blockchain has the advantages of decentralization, information irreversibility, openness, autonomy, etc., which can be used to realize the whole chain connection of the middle and downstream industries of the racing horse and realize the cross-border industry Fusion. In the 2018 Blockchain Economic Summit, the Kazakhstan Horse Racing Association (KHA) launched the Golden Ringgit (PEG) blockchain. This new type of encrypted digital currency uses Kimoto Gravity Well algorithm to create a large open horse racing information database and Golden Horse payment system. The advent of the blockchain era has made the Golden Ringgit become the trend of the horse racing industry's transformation period, and promoted the traditional horse industry to usher in a qualitative leap [4].

3.4 Cultural Power: the Spiritual Core of the Development of "Internet + Horse Racing Industry"

China is the birthplace of horse breeds in the world and one of the first countries to start raising horses. Since ancient times, the horse culture has played a strong role in the process of Chinese civilization with a long history, such as the replacement of human society, production and life, literary works, artistic creation, and sports entertainment. Among them, sports activities in the main forms of equestrianism, horse racing, polo, horse dancing, and horse walking have become an important carrier for the horse culture to maintain its vitality in modern society. For example, in the festivals and ceremonies of ethnic minorities such as Mongolian, Tibetan, Uygur, etc., horse racing culture is still the main symbol of folk culture to show ethnic regional characteristics and spiritual outlook. However, limited by the rapid social and economic development and the differences in the humanistic and historical environment, my country's central and eastern regions once produced a bleak picture of the loss of horse culture. The reason is that, on the one hand, the degeneration of the traditional horse function "servicing" makes horses and people's lives drift away; on the other hand, due to the immaturity of the modern commercial horse racing operating mechanism in the 1990s, horse racing is called urgently by the state. Stop, even being labeled by the society as "horse racing is betting on horses", the cognitive bias of "talking about horse discoloration" has further widened the distance between horse racing and the people. In recent years, with the concentrated implementation of various favorable policies and the spiritual demands of the people for fitness and leisure, the fashionable sport of horse racing has returned to the public eye. The Ministry of Culture, the Ministry of Tourism, and the General Administration of Sports have also begun to explore, protect and develop ethnic horse culture and modern horse cultural resources. In the future, horse cultural industries such as horse-themed competition performances, leisure and entertainment, tourism and vacation, media education will shine, and will also add core internal driving forces to the development of the "Internet + horse racing industry" [5].

3.5 Talent Motivation: the First Resource for the Development of "Internet + Horse Racing Industry"

With the release of modern horse function value, which mainly demands competitions, entertainment, education and training in China, equestrian clubs are gradually ushering in a blowout

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expansion and explosion. According to the "2018 China Equestrian Market Development Report", among the 273 clubs that participated in the survey, basic equestrian teaching accounted for 76% of the business share, and the rest were horse fostering, horse trading, outdoor riding, camera cooperation, etc. (see TABLE II). The diversification of the main business content will inevitably bring about the urgency of talent demand. Professional talents such as horse racing coaches, trainers, referees, stable managers, horse breeders, breeders, mailers, and horse veterinarians will become the core competitiveness of the equestrian club. Although there are currently more than ten colleges and universities across the country offering sports education or professional courses such as equestrianism and horse racing, and the level of education also involves junior colleges, undergraduates, and postgraduates, the number of talents cultivated by these colleges is far from satisfying the society's rapid expansion of the horse racing market. demand. 70.97% of the clubs said that the severe shortage of high-quality coaches, horsemen and stable management staff has become the biggest constraint to their own development in addition to horses. Therefore, under the background of the "Internet +" era, horse racing professionals who have perfect horse racing knowledge and skills and innovative service spirit, and can deeply integrate Internet technology and thinking with traditional horse industry will become the promotion of my country's horse racing industry structure toward advanced the first resource [6].

TABLE II. Main Business Statistics of Equestrian Club

Main business of equestrian club	Quantity (home)	percentage
Basic teaching	208	76%
Horse breeding	33	12%
Horse trading	68	25%
Horse Boarding	78	29%
Outdoor riding	59	22%
Host an event	52	19%
Camera cooperation	55	20%
Summer camp	48	18%
Space lease	20	7%

IV. ANALYSIS OF THE FUTURE DEVELOPMENT DIRECTION OF "INTERNET + HORSE RACING INDUSTRY"

4.1 Promote the Application of O2O Business Model in the Horse Racing Industry

The Online to Offline (O2O) model is to use Internet information technology to build a "virtual front desk" for supply and demand transactions between merchants and customers, that is, online product introduction, discount information, consumption guide, online payment and other functions are provided, while offline focus on customer experience service. The O2O model can give full play to the advantages of the Internet in cross-regional, borderless, massive information, and resource integration, and at the same time realize the effective mining of offline customer needs. It is a vivid representative of the "Internet +" emerging business model [7].

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Different from other traditional industries, sports, as a sunrise industry in the tertiary industry, is mainly characterized by participatory and ornamental consumption. The application of the O2O business model can make online reservations for venues, coaches, or purchase service products such as sports training courses, and conduct offline consumption and experience, which coincides with the current development demands of the horse racing industry. The horse racing industry chain is centered on competition performances, covering various sectors from upstream animal husbandry to downstream service industry, gaming industry, etc. Therefore, it can rely on Internet information technology and use O2O business model to extend offline horse racing business activities to service terminals. Create a vertical ecological chain of blood relationship, realize the resource integration between the upstream, middle and downstream industries, and achieve mutual benefit and win-win results. The horse racing industry O2O mainly has the following modes: (1) Online horse racing or performance ticket sales and seat selection, that is, customers purchase tickets online in advance and then watch the game performance offline; (2) Reserve coaches and horses. Customers purchase coaching services and guidance online through self-selection and customization models, and select their favorite horses to carry out horse racing skills training or leisure and entertainment activities; (3) Marketing of derivative service products. Merchants can push horse racing-related derivative products on the "virtual platform", such as horse racing tours, wedding photography, sales of horse gear and horses, etc.; (4) online rental and consumption of horse racing venues. Internet technology can complete the real-time online operation and management of the racecourse, help customers intuitively understand the stadium services and usage, and improve transaction efficiency. In the future, functions such as online booking, shopping mall services, social entertainment, and sightseeing can all be realized through the "O2O" model. The "customer + data + service + terminal" operating model will gradually promote the innovation of the traditional horse racing industry [8].

4.2 Strengthen the Integration of Internet Smart Technology and Horse Racing Industry

With the gradual maturity of computer technology, precision sensing technology, GPS positioning technology, as well as artificial intelligence and virtual reality, intelligent terminal products and services featuring a new generation of information technology have begun to reconstruct the sports industry and its future ecological trends. From professional training of athletes to ordinary individual sports health management, from digital competition technical and tactical monitoring to personalized spectator viewing experience, emerging technologies represented by sports bracelets, wearable smart devices, and smart stadiums are constantly opening up all aspects of the sports field. "Black box", horse racing should be no exception. Taking Shandong Zibo Weili Enterprise as an example, the company uses 3D animation technology to analyze the force direction and gravity of the horseshoe, thereby designing the thickness of the horseshoe. Through professional forming, forging and profiling technology and sophisticated manufacturing equipment, the horseshoes it produces can at least improve at 10% of the horse racing speed, it currently accounts for 80% of the European high-end horse racing equipment market. Saddles, reins, rider hats, riding boots and other equipment are also being gradually upgraded to meet the market's demand for high-end products [9].

The development and iteration of emerging technologies are the key to promoting the in-depth development of the industry. VRC can provide users with encryption and authentication functions for transmission between desktop and desktop, desktop and border through video recorder video technology. The Emirates Melbourne Cup Race Festival has adopted the VRC and Twitter milestone partnership to

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more than 212,000 global viewers Provide live event broadcast service. In addition, horse racing can use wearable smart devices to monitor the physical fitness data of horses and jockeys in real time, and seek the best competitive state by constantly adjusting the breeding and training methods. Although the current horse racing smart software and hardware are still in the early stages of development, and the market needs to be further explored, as domestic horse racing industry related companies increase their investment and deployment in smart technology research and development, they have various functions such as data statistics, equipment management, and mobile social networking. Smart devices for horse racing will appear frequently. In the future, promoting the integration of the horse racing industry and emerging smart technologies will be the way for the survival and development of the horse racing industry, especially the horse racing supplies manufacturing industry [10].

4.3 Building an "Internet + Horse Racing Industry" Platform Ecosystem

The construction of the "Internet + Horse Racing Industry" platform ecosystem aims to integrate the resources of the government, enterprises, and social organizations, taking horse racing performances and fitness and leisure as the main core advantages, and deriving more such as horse racing sightseeing on the basis of expanding the platform Middle and downstream industries such as tourism and harness production will eventually use the Internet as a link to establish a multi-platform ecosystem of resource coupling and mutual benefit (see Figure 3) [11].

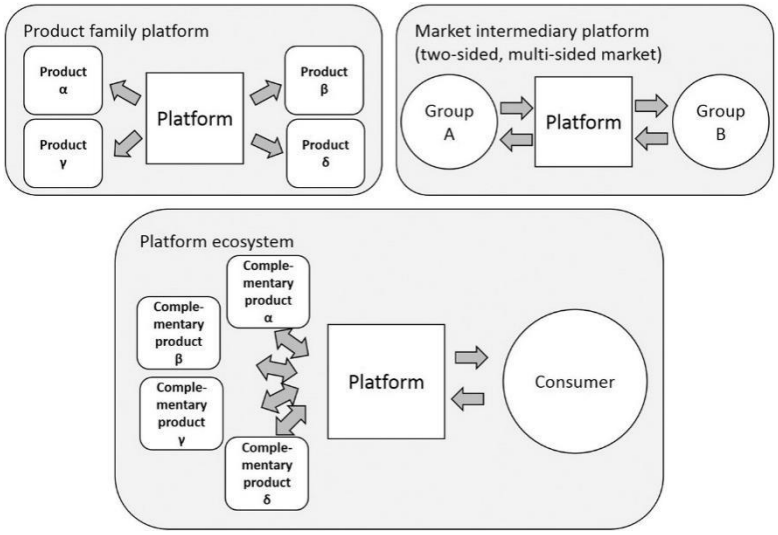

Fig 3: "Internet + Horse Racing Industry" platform ecosystem

The concept of the ecosystem is to respond to the national policy call to develop horse racing with Hainan as a pilot base. The core is consumer demand-oriented, respecting user experience, and supporting Internet technology to accurately grasp customer consumption habits and preferences, and continuously enrich the horse racing industry. At the same time, speed up the training of horse racing talents and feedback the horse racing industry. At this stage, horse racing has become a powerful guarantee for promoting the development of urban tourism, culture and entertainment markets. For example, the French city of Nice integrates horse racing with local characteristics, and through the development of diversified leisure tourism projects, it has turned the five-month low winter tourist season into a tourist season. In addition, you can also take advantage of the geographical advantages around large horse farms to build horse culture theme parks or equestrian towns integrating horse

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industry science knowledge, equestrian sports and leisure, and create a strong horse culture atmosphere for the construction of the platform ecosystem [12].

V. CONCLUSION

While developing a business model similar to other sports, the horse racing industry has its own particularities. Horse racing mainly examines the running speed of horses and the ability of riders to control horses. It is a highly unified sports event for both horse and man. However, due to differences in geographical location and national culture and history, horses, as the soul of horse racing, are currently cultivated and reproduced mainly in the northwestern region of my country, while horse racing performances and fitness and leisure industries are mainly in the economically developed eastern regions, which can easily cause things Contradictions such as misalignment of horse supply and demand and poor information communication channels. If Internet information technology can be used to build a horse racing industry platform ecosystem, it can display product information such as horse breeds, horse feed and selling prices in the western region, maximize trade convenience, and drive my country's northwestern region on the basis of achieving a balance between supply and demand. The development of animal husbandry also provides support for the One Belt One Road strategy.

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REFERENCES

[1] Jeanjean, T., Stolowy, Hervé, Erkens, M., & Yohn, T. L., (2015). International evidence on the impact of adopting english as an external reporting language. Journal of International Business Studies, 46(2), 180-205.

[2] Li, J., Xia, B., Geng, X., Ming, H., Shakkottai, S., & Subramanian, V., et al., (2015). Energy coupon: a mean field game perspective on demand response in smart grids. Performance Evaluation Review, 43(1), 455-456.

[3] Gray, H. M., Guðberg K Jónsson, Laplante, D. A., & Shaffer, H. J., (2015). Expanding the study of internet gambling behavior: trends within the icelandic lottery and sportsbetting platform. Journal of Gambling Studies, 31(2), 483-499.

[4] Carolina, B., Gouvea, T. L., Carvalho, P. M., Sampaio Rita de Cássia de Lima, Saraiva, B. N., & LacerdaNeto José Correia de, et al., (2015). Distance exercised during submaximal training on race winnings for thoroughbred racehorses. Ciência Rural, 45(7), 1268-1273.

ISSN: 0011-9342
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[5] Schrder, G., Boldt, R., Günther Kundt, Hamann, F., & Schober, H. C., (2018). Comparison of high- and medium-intensive weight loss programmes for obesity grade 2 and 3 – a randomized clinical trial. Diabetologie und Stoffwechsel, 13(06), 576-588.

[6] Bell, M. J., Donaldson, E. M., Mann, S., Gillette, R. L., Levine, C. B., & Wakshlag, J. J., (2015). The effects of exercise on serum chemistry, non-esterified fatty acid, insulin and glucagon dynamics during a 400-meter sprint in racing greyhounds. Open Journal of Veterinary Medicine, 5(6), 142-151.

[7] Allareddy, V., Venugopalan, S. R., Nalliah, R. P., Caplin, J. L., & Allareddy, V. (2019). Orthodontics in the era of big data analytics. Orthodontics and Craniofacial Research, 22(S1), 8-13.

[8] Purswani, J. M., Dicker, A. P., Champ, C. E., Cantor, M., & Ohri, N. (2019). Big data from small devices: the future of smartphones in oncology. Seminars in radiation oncology, 29(4), 338-347.

[9] Demirden, G., Ik, Z., & Arayici, Y. (2020). Lean management framework for healthcare facilities integrating bim, beps and big data analytics. Sustainability, 12(17), 7061.

[10] Rodriguez, F., Scheinker, D., & Harrington, R. A. (2018). Promise and perils of big data and artificial intelligence in clinical medicine and biomedical research. Circulation Research, 123(12), 1282-1284.

[11] Majeed, A., Lv, J., & Peng, T. (2019). A framework for big data driven process analysis and optimization for additive manufacturing. Rapid Prototyping Journal, 25(2), 308-321.

[12] Cravero, A., Saldana, O., Espinosa, R., & Antileo, C. (2018). Big data architecture for water resources management: a systematic mapping study. IEEE Latin America Transactions, 16(3), 902-908.