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Технологизация управления подбором персонала на основе комплексного подхода как фактор укрепления человеческого капитала организаций строительной отрасли

Аннотация. Строительная отрасль является сложной диверсифицированной отраслью материального производства, выполняет функцию макроэкономического индикатора и ключевого катализатора развития экономики и социальной сферы. Дальнейшее эффективное функционирование строительных организаций в современных условиях всеобщей технологизации и цифровизации, а также повышения требований и стандартов к параметрам качества продукции требует поиска новых подходов к формированию, использованию и укреплению человеческого капитала строительных организаций. В статье обосновывается необходимость реализации комплексного подхода к подбору персонала в организациях строительной отрасли, от эффективной организации которого зависит качество человеческого капитала, объемы и направления инвестирования в развитие персонала, являющегося носителем человеческого капитала и основным фактором повышения уровня эффективности и конкурентоспособности строительных организаций. Раскрыта специфика комплексного подхода к подбору персонала и выделены основные функциональные элементы системы подбора персонала. Акцентируется внимание на необходимости формирования лояльности персонала на этапе подбора, с учетом которой сформулированы принципы, определяющие его организацию с целью укрепления человеческого капитала. Разработана технологическая схема реализации комплексного подхода к подбору персонала с позиции укрепления человеческого капитала организаций строительной отрасли.

Ключевые слова: подбор персонала, технологии рекрутмента, организационная лояльность, человеческий капитал, строительная отрасль

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The process of integrating technology into personnel recruitment management based on a comprehensive approach as a factor in strengthening the human capital of organizations in the construction industry

Abstract. The construction industry is a complex diversified branch of material production, serves as a macroeconomic indicator and a key catalyst for the development of the economy and social sphere. Further effective functioning of construction organizations in the current conditions of universal technologization and digitalization, as well as increasing requirements and standards for product quality parameters, requires the search for new approaches to the formation, use and strengthening of the human capital of construction organizations. The paper substantiates the need to implement a comprehensive approach to the selection of personnel in the organizations of the construction industry, on the effective organization of which the quality of human capital, the volume and direction of investment in the development of personnel depends, which is the carrier of human capital and the main factor in increasing the level of efficiency and

competitiveness of construction organizations. The specifics of an integrated approach to personnel selection are revealed and the main functional elements of the personnel selection system are highlighted. Attention is focused on the need to form staff loyalty at the recruitment stage, taking into account which the principles defining its organization in order to strengthen human capital are formulated. A technological scheme for implementing an integrated approach to personnel recruitment from the point of view of strengthening the human capital of organizations in the construction industry was developed.

Keywords: personnel selection, recruitment technologies, organizational loyalty, human capital, construction industry

Introduction

The construction industry is a multi-faceted material production sector whose performance often reflects the overall socioeconomic situation. It is a key driver of economic growth, stimulating demand in related industries and attracting investment. Construction activities have a significant impact on the development of social production and directly affect the quality of life of citizens. The construction industry facilitates the introduction of new technologies and increased productivity, creating a multiplier effect for small and medium-sized businesses [4]. Investments in construction projects contribute to the balanced development of regions, improved access to social services, and stronger socioeconomic stability.

The Russian recruitment market, as a component of the Russian economy, is influenced by key economic indicators. The development of the economy as a whole, and the construction market in particular, is primarily influenced by the following macroeconomic factors: GDP, industrial production, construction production, GDP inflation, population growth, investment income, and others.

Researchers and HR experts in the field of human capital formation and development note that over the past five years, the Russian economy has been adapting, but growth is slowing. This slowdown indicates increased caution among construction businesses regarding investments, including personnel costs [3]. In our view, this may lead to a more balanced and comprehensive approach to recruitment and increased demand for temporary staff and outsourcing to mitigate risks.

Systematic processes for personnel selection and assessment, lean motivational development, and the development of organizational loyalty are rightfully considered key management technologies aimed at developing high-quality human capital in the construction industry. «At the same time, it is the quality of personnel selection that determines the volume and direction of further investment in personnel development. This fact necessitates the search for effective approaches to organizing the selection process as the foundation for developing and regulating the strengthening of human capital in construction organizations» [11].

Materials and Methods

The methodological basis of the author's study was the systematization and analysis of theoretical and methodological approaches presented in the literature on the topic under study, coupled with the results obtained by the authors during an empirical study of the features and effectiveness of the current personnel selection system across a sample of construction organizations in the Belgorod Region selected as the study base (6 organizations, February-March 2026). A number of general scientific methods were used, including: a systems approach and analysis, comparison, comparison, as well as sociological and economic-statistical research methods.

Results and Discussions

Rosstat data show that from 2021 to 2024, the construction industry's share of the Russian Federation's gross domestic product was approximately 5%. Moreover, from 2021 to 2023, the annual growth rate of construction work consistently exceeded 7%. In 2024, the volume of completed construction work amounted to 16,780.1 billion rubles, and the growth rate of this indicator slowed significantly, reaching only 2.1% of the previous year's level. At the same time,

from 2020 to 2024, there was a trend towards an increase in the number of people employed in construction; in 2024, the number of people employed in the industry amounted to 6,816,000 people, which is equivalent to 9.3% of the total number of people employed in the country's economy (table 1). «The positive dynamics of industry production indicators in recent years is largely due to the implementation of major infrastructure and housing and utilities projects (including renovation programs in the housing and utilities sector), the development of the agro-industrial complex, and the availability of state support programs for housing construction» [8]. By the end of 2024, signs of a systemic crisis were observed in the development of the construction industry, caused by a combination of factors. Key factors include insufficient investment inflow and reduced budget funding, which are leading to a decrease in effective demand for capital investment and limiting the implementation of major infrastructure projects. Another important influencing factor is the accelerated technological transformation, which is driving increasing demands for upgrading the production base and implementing digital and resource-saving technologies [5, 8]. The consequences of this situation are manifested in a slowdown in the growth rate of completed construction work, a decrease in the profitability of construction organizations, and a decrease in the share of profitable organizations in the total number of organizations in the construction industry (table 1).

Table 1.

Dynamics of the number of employees employed in construction «Construction» and the main indicators reflecting the efficiency of construction organizations in the Russian Federation

Indicator	Years					
	2015	2020	2021	2022	2023	2024
Average annual number of people employed in construction, thousand people	6383,5	6 157,0	6496,3	6551,9	6814,0	6816,0
The share of those employed in construction in the total average annual number of those employed in the economy, %	8,8	8,9	9,2	9,2	9,3	9,3
Volume of work performed in the «Construction» activity category, billion rubles	7010,4	9 686,3	11047,9	13149,4	15092,3	16780,1
as a percentage of the previous year	96,1	102,1	107,0	107,5	107,9	102,1
Profitability level in construction, %	3,8	4,2	5,1	6,2	8,0	6,1
Share of profitable organizations in the total number of organizations, %	67,2	66,7	66,7	69,6	71,7	70,4

With the construction industry increasingly technologically advanced and digitalized, and increasingly stringent requirements for the quality and performance of construction projects, the industry is experiencing a shortage of highly qualified personnel (table 2) and low stability in the workforce of construction organizations (figure 1).

Table 2.

Employers' demand for construction workers, as reported to employment service agencies (at the end of the year)

Indicator	Years			
	2020	2021	2022	2023
Demand for construction workers – total, thousand people	191,3	187,3	119,1	137,8
of which by occupational group: skilled workers employed in construction and workers in related occupations	189,8	185,0	117,8	137,0
unskilled workers employed in the construction and repair of roads, dams, and similar civil structures	1,5	2,3	1,3	0,7
unskilled workers employed in building construction	0,03	0,1	0,02	0,01

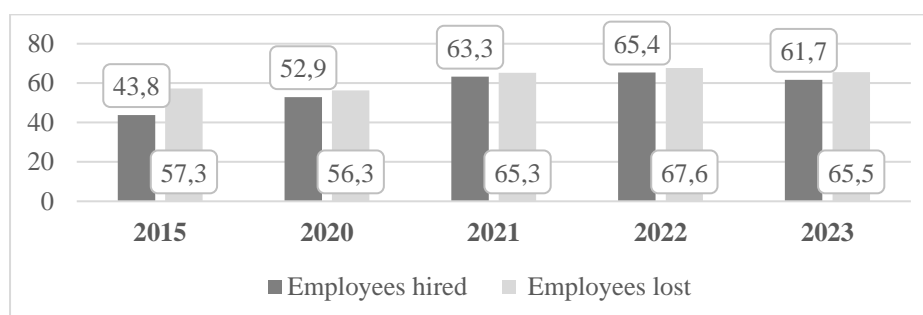


Figure 1. Movement of employees of construction organizations of the Russian Federation (without small businesses), as a percentage of the registered number of employees

This situation leads to a number of negative consequences, including a slowdown in the implementation of modern technological solutions and digital tools, a decline in the quality of design and engineering solutions and construction work, an increased likelihood of errors during the design and construction stages, and increased costs for training and onboarding new employees. The result is a decline in labor productivity, operational efficiency, and the competitiveness of construction organizations.

Structural factors (demographic decline and aging workforce, low wages and payment instability, a poorly developed system of vocational education and continuous training, seasonality and geographic dispersion of projects, informal employment and weak formalization of labor relations, outdated recruitment technologies, limited career paths, and weak HR practices in the areas of motivation and personnel development) are leading to a chronic labor shortage: virtually all segments of the construction industry are experiencing labor shortages. In 2023-2024, employers reported a shortage of personnel, ranging from common blue-collar jobs to highly skilled professionals. According to government estimates, this imbalance is long-term: labor demand exceeds supply and will continue to do so in the coming years [8, 9]. The labor shortage is most acute in the mass and blue-collar jobs of the construction industry. The shortage of unskilled workers is even greater – they are mobile and quickly leave for the employer who offers the highest wage.

Primarily, this situation is driven by both demographics and labor force outflow. The small generation born in the 2000s is entering working age, while numerous Soviet "baby boomers" are retiring. Raising the retirement age (to 65 for men and 60 for women by 2028) will only partially offset the labor force decline. There is no natural influx of workers, and there are no visible signs of one. Migration policy has also contributed.

The analysis of the perspective directions of development of the construction industry clearly demonstrates the growth of its knowledge intensity and the need for innovative transformations, which are the basis for further effective development of construction organizations in the face of fierce competition [2, 6].

A rational recruitment system should serve as a tool for monitoring the organization's HR practices: it allows not only for the formulation of job posting requirements but also for the assessment of applicants' professional and personal competencies. Such a system promptly identifies problem areas in the hiring process and initiates targeted corrective measures, improving the quality of recruitment. It ensures constant feedback between job posting analytics, new employee onboarding results, and the actual needs of the construction business, making recruitment more informed and predictable. The collection and analysis of key performance indicators (job fill time, recruitment quality, retention) provides the basis for management decisions and human resource planning. Integration with HR systems and regular recruiter training further enhance the system's ability to quickly respond to identified deficiencies, improve staffing levels, and strengthen human capital [7].

We will present the main results of the author's research on the regional recruitment market and the level of loyalty among organizations in the construction industry. The research type is an empirical and qualitative marketing study aimed at finding and analyzing data from open sources. The objectives of the research include assessing the macroeconomic factors affecting the regional recruitment market, determining the quantitative and qualitative characteristics of the market (volume, dynamics, and segmentation), analyzing the competitive environment and profiles of leading players, identifying key trends, including technological advancements, service diversification, and changes in consumer behavior, and assessing the level of employee loyalty during the recruitment, selection, evaluation, and adaptation stages.

The analysis of the conditions and factors that determine the effectiveness of personnel selection revealed that the actual values for all the evaluation criteria do not meet the established target indicators. «In retaining highly qualified employees who determine the quality of the organization's human capital, the recruitment process plays an important role, as it is from this stage of personnel management that the interaction between the employee and the employer begins and the employee's loyalty to the organization is formed» [10].

Assessment of the level of staff loyalty (a methodology was used based on the definition of the eNPS metric and involving the differentiation of staff into promoters, skeptics, and critics): below average level of loyalty in all the studied construction organizations, the total overall indicator is below average (eNPS = 48 – 13 = 35%), (figure 2). The absolute majority of employees (at the stages of primary and professional adaptation, with an experience of up to 1 year, identified themselves as a «critic».

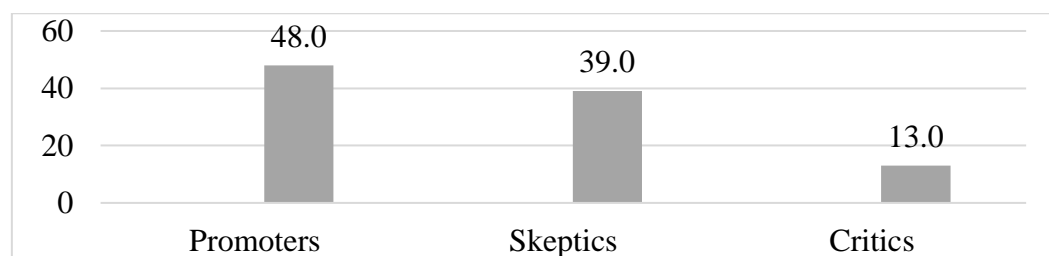


Figure 2. Categories of personnel of the studied construction organizations by the level of loyalty, % (compiled by the authors based on the results of the study)

We consider the application of a *comprehensive approach to personnel* selection as an integrated HR strategy (combining HR analytics, modern technologies for recruitment, pre-boarding, and on-boarding, and assessment centers) focused on strengthening human capital, consisting of interdependent stages and elements (primarily methodological, technological, organizational, and supporting components) that are linked to the overall goals of the organization, from analyzing needs to adapting, loyalty, and retaining new employees. Advantages of using it:

more accurate selection of candidates who meet the needs of the construction business; reduction of the time and cost of closing vacancies; improvement of the quality of hiring and retaining employees through coordinated processes; quick access to loyal employees who share the values of corporate culture (values-fit and soft-skills increases eNPS, reduces organizational conflicts and staff turnover).

The organizational foundation of staff loyalty is laid long before an employee begins their duties – the process begins already at the recruitment stage. It should be noted that there is no single separate law “on recruitment” in Russia, but this activity is strictly regulated by a whole range of legislative acts. The main body of norms is concentrated in labor law, but also affects civil, administrative and even criminal law. In our opinion, recruitment should be considered as a strategic tool for building commitment of future team members. During our research, we identified a number of key *principles* that determine the effectiveness and sustainability of human capital management and should form the basis of a comprehensive approach to recruitment:

1. Contextual monitoring: recruitment planning should be inextricably linked to a qualitative analysis of both the organization's internal resources and the dynamics of external market challenges.

2. Synergy between recruitment and HR brand: the talent acquisition process serves as a resource and regulator of corporate culture, directly influencing the organization's image and investment attractiveness as an employer.

3. Digital transformation of recruitment: the implementation of digital HR tools not only optimizes routine processes but also enhances the accuracy of candidate profiles through data analytics. The implementation of such tools makes it possible to identify candidates with low levels of loyalty at an early stage, thereby minimizing socio-ethical risks.

4. Multilevel acceleration of assessment: modern selection procedures must combine various diagnostic methods, allowing for a deep study of the candidate's motivation structure and predicting the depth of their future loyalty. This "diagnostic approach" allows for a shift from assessing solely professional competencies (Hard Skills) to a comprehensive analysis of the applicant's personal potential.

5. Loyalty as an anti-crisis factor: the level of a candidate's loyalty to the company should be a central criterion for evaluation, as it serves as an indicator of future staff stability and reduced turnover.

6. Predictive analysis of innovation potential: For key positions, it is crucial to assess the candidate's psychological readiness for change and their potential for resisting innovation, which can help prevent stagnation in the company's development. This aspect becomes particularly relevant in times of market turbulence, where the adaptability of the workforce directly impacts the viability of the construction organization's business model.

The authors have developed a technological scheme for implementing a comprehensive approach to personnel selection from the perspective of strengthening human capital, which is recommended for use by construction industry organizations (figure 3).

Conclusion

The strategic transformation of the recruitment market is evident: it is transforming from a service for filling vacancies into an industry for comprehensive management of human resources and business processes. Technologicalization is no longer an advantage, but rather a "price of entry" into the market, a prerequisite for increasing operational efficiency and speed for both mass-market and niche players.

There is a fundamental transformation in the approaches of potential customers to interacting with recruitment agencies. Over the past five years, there has been a qualitative shift from viewing recruitment as a one-time operational service to integrating it into human resources management strategies as a factor in strengthening the human capital of construction organizations.

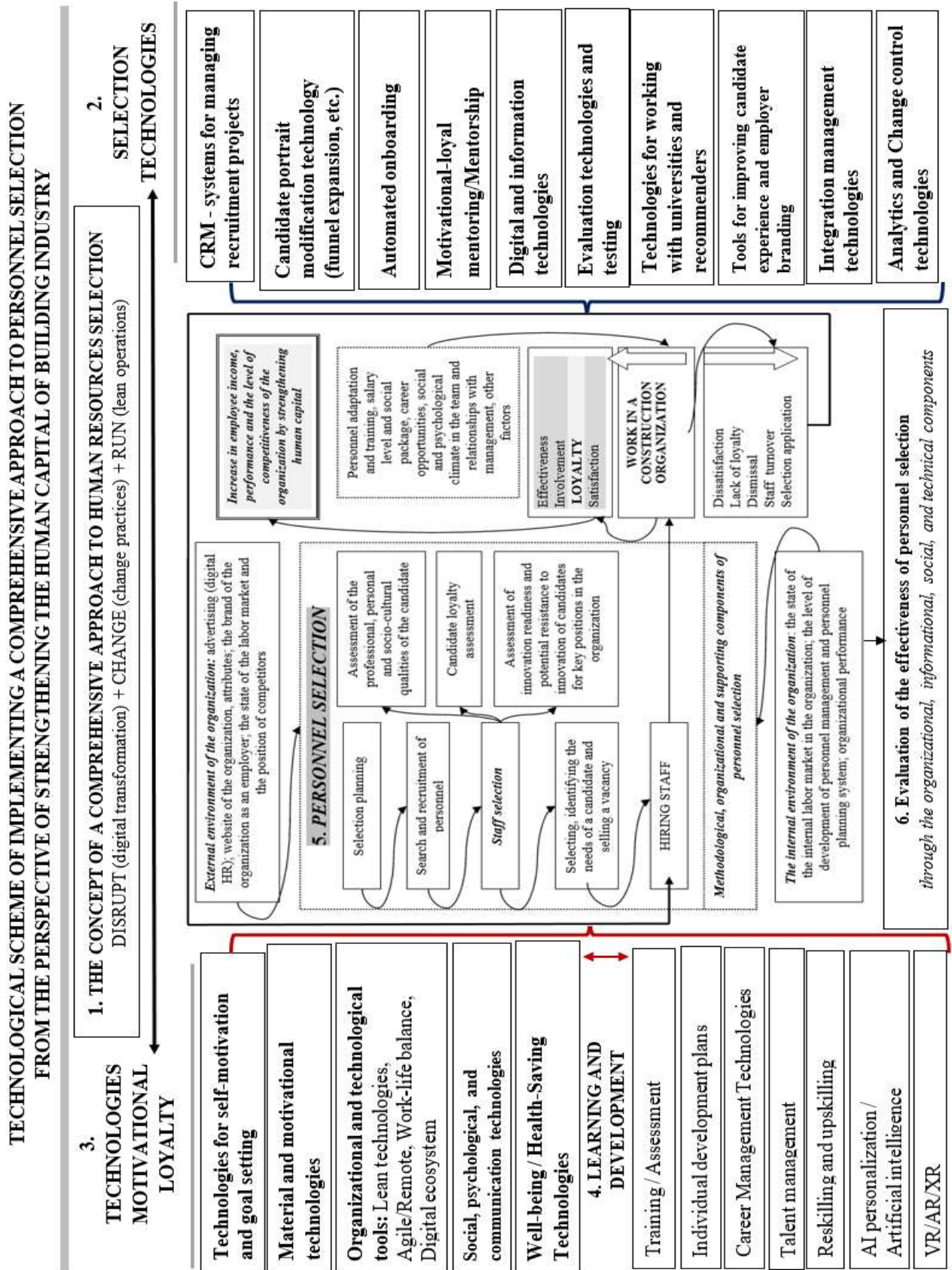
The strategic priorities of construction companies-customers vary depending on their size and business scale. The criteria for choosing a recruitment agency are directly related to the operational tasks and pain points of each segment. In general, customers are increasingly

considering recruitment services not as "necessary unjustified expenses" but as a strategic tool for optimizing operational costs, reducing business risks, increasing the company's flexibility and adaptability, and accelerating time to market in new markets.

The sales structure of the recruitment and staffing market is a combination of channels, technologies, and models through which the recruitment service is delivered from the provider (recruiter) to the customer (construction employer). Unlike the goods market, the service is "sold" here. The sales structure of the recruitment market is complex and fragmented. It is evolving from a pure consulting model (agency) towards hybrid, technological, and platform solutions, where the client can choose between a full service at a high price and a low-cost self-service model. The principle of building the scheme is based on ecosystem, technological, and lean approaches. It is a scheme of competing and complementary distribution channels that are connected through a common resource, which is the client's request (vacancy).

We recommend considering a comprehensive approach to personnel selection as an integrated system that functions within the organization's human resources management subsystem. This system is influenced by various internal and external factors that directly impact the effectiveness of the recruitment process. An important aspect of this approach is not only ensuring the high quality of candidate selection but also creating conditions for fostering sustainable employee loyalty to the organization. This method involves the integration of multiple components, including the analysis of the company's cultural and social context, the evaluation of candidates' professional and personal characteristics, and the utilization of modern assessment technologies and tools. Summarizing the empirical results obtained, which are consistent with the findings of a number of researchers [1, 6, 7, 8, 9], we can observe the following relationship: the development of an integrated recruitment system is positively associated with the growth of a construction organization's human capital. Moreover, increasing the technological and instrumental capabilities of human capital enhancement processes contributes to the more dynamic formation of an effective recruitment mechanism that provides the organization with qualified and loyal employees who are focused on achieving innovative development goals.

Figure 3. Technological scheme for the implementation of an integrated approach to recruitment from the perspective of strengthening human capital



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