WHOLE-PROCESS ENGINEERING CONSULTING SERVICES - RESEARCH ON EVALUATION OF COMPETENCE - NANTONG JIANCHEN ENGINEERING CONSULTING CO., LTD

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WHOLE-PROCESS ENGINEERING CONSULTING SERVICES - RESEARCH ON EVALUATION OF COMPETENCE - NANTONG JIANCHEN ENGINEERING CONSULTING CO., LTD

Thematic Certificate

To

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This Independent Study has been Approved as a Partial Fulfillment of the Requirement of International Master of Business Administration in International
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Degree: Master of Business Administration

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ABSTRACT

With the rapid growth of China's fixed assets investment and the gradual improvement of project construction level, the relatively independent, single and decentralized special consulting model can no longer meet the needs of investors or construction units for quality, efficiency and low price, and the demand for comprehensive, cross stage and integrated consulting services is increasing. The development of the whole process of engineering consulting is the only way for the development of China's engineering consulting industry and the rigid demand for the development of the construction industry, both at the market demand and policy level. The purpose of this study is to test whether the basic conditions, organizational management ability, team cooperation, information application and marketing of respondents' core competencies have a positive impact on the improvement of the whole Process engineering consulting services.

Taking Nantong Jiancheng Engineering Consulting Co., Ltd. as an example, based on the theory of enterprise core competence and the theory of whole-process engineering consulting service, the core competence of the whole-process engineering consulting service is evaluated and explored through the method of quantitative research. A questionnaire survey was used to conduct research activities on relevant personnel in the field of whole-process engineering consulting service in Nantong City, Jiangsu Province, China. 580 questionnaires were distributed and 560 valid questionnaires were collected in this research activity. Subsequently, the reliability test, descriptive statistical analysis, correlation analysis and regression analysis were conducted on the sample data through SPSS statistical analysis software.

From the research results, it can be seen that among the five paths of core competence of whole-process engineering consulting service, the basic conditions, organization and management, teamwork, informationization application and marketing competence in core competence have significant positive influence on whole-process engineering consulting service. In this study, it is also found that informationization application and organization management have the most prominent

influence on whole-process engineering consulting service, and marketing ability has the least influence on whole-process engineering consulting service. Finally, combining the research results with the actual situation of whole-process engineering consulting enterprises at the present stage, corresponding countermeasures for developing whole-process engineering consulting services are proposed.

Keywords: whole process engineering consulting, service capability, construction companies

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Declaration

I, SHUANGBO,NI, hereby certify that the work embodied in this independent study entitled "Whole-Process Engineering Consulting Services Research On Evaluation Of Core Competence - Nantong Jian Chen Engineering Consulting Co., Ltd" is result of original research and has not been submitted for a higher degree to any other university or institution.

NI Shuangbo

(SHUANGBO, NI)
Jun 24, 2023

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Chapter 1 Introduction

1.1 Background of the Study

China's engineering consulting service industry has formed a mature and perfect service mode from scratch, and engineering consulting service involves a series of consulting services such as costing, project management, bidding agency, survey and design, supervision, investment consulting, etc., which have made outstanding contributions in urban and rural construction, industrial production and transportation and energy infrastructure construction. Under the status quo of multiple project management modes in parallel, engineering consulting services are often artificially cut by stages and specialties, and various engineering consulting services are handled by different consulting organizations, each of which is only responsible for the business it undertakes, with less consideration for the extension of services and lack of overall control of the construction project from beginning to end, which cuts the overall inner connection of the construction project and lowers the investment of the construction project to a large extent. Efficiency. As China's fixed asset investment continues to grow rapidly and the level of project construction gradually increases, the relatively independent, single and fragmented special consulting mode can hardly meet the demand of investors or construction units for high quality, high efficiency and low price, while the demand for consulting service changes to cross-stage, comprehensive and integrated direction without delay (Fu, 2018).

In the current situation where multiple project management models are in parallel, engineering consulting services are often subdivided by different phases and specialties. Various engineering consulting services are handled by different consulting organizations, which are responsible for their own operations with little consideration for the scalability of services and lack of overall control over the construction project from the beginning to the end, thus dividing the internal linkages of the entire construction project. According to Fu (2018), to a large extent, the investment efficiency of construction projects is reduced. With the continuous rapid growth of fixed asset investment and gradual improvement of project construction level in China, the relatively independent, single and fragmented special consulting mode can no longer meet the demand of investors or construction units for high quality, high efficiency and low price, so the consulting service gradually faces the overall integration of cross-stage, integration and synthesis (Pi, 2017). In order to accelerate the development of whole-process engineering consulting services, meet the domestic demand for integrated and integrated consulting services, and align with international technical standards for engineering consulting, the relevant Chinese departments have issued a series of supporting documents, among which the State Council officially issued the Opinions on Promoting the Sustainable and Healthy Development of the Construction Industry in February 2017. In this opinion, the concept of whole-process engineering consulting was mentioned for the first time. At the same time, enterprises such as bidding agency,

engineering cost, survey, supervision, investment consulting and design were introduced into the whole-process engineering consulting business together, and on this basis, mergers and acquisitions, reorganization and joint operation of each enterprise were actively recommended in an attempt to create a whole-process engineering consulting enterprise comparable to the international level (Zhou, 2022).

In May of the same year, the Ministry of Urban and Rural Development officially issued the Notice on the Pilot Work of Full-Process Engineering Consulting. According to the notice, forty enterprises in Beijing, Guangdong, Hunan, Fujian, Zhejiang, Jiangsu, Sichuan and other provinces and municipalities will start the pilot work of whole-process engineering consulting service for a period of 2 years, and it is also clearly proposed that the pilot areas should actively develop and implement innovative management mechanisms, deeply understand the meaning of whole-process engineering service and actively implement classification and integration. In order to achieve the key breakthrough of classification (Zhou, 2022).

In summary, no matter from the market demand or policy level, the development of whole-process engineering consulting is a necessary path for the development of China's engineering consulting industry and a rigid demand for the development of the construction industry. According to Zhang (2017), in this context, assessing and studying the core competitiveness of engineering consulting enterprises in the whole process of engineering consulting can help consulting enterprises to self-examine in the whole process and seek the best path for the development of engineering consulting services.

1.2 Problems of the Study

By combining the advantages and disadvantages of China's whole process consulting service, the transformation of each engineering consulting enterprise to whole process engineering consulting service, the enterprise's whole process consulting ability is obviously insufficient, the office equipment is not sound, the enterprise's internal organization and management and the collaboration ability of each part of the whole process engineering consulting service are poor, the enterprise's information construction degree is obviously insufficient, the enterprise is unable to provide accurate information in real time and cannot do accurate positioning in marketing. It is important for the transformation and development of the enterprise to solve the problems such as the underground capability of the enterprise in the process of whole-process engineering consulting service, which cannot provide accurate information in real time and cannot achieve accurate positioning in marketing. Therefore, based on this starting point, this paper evaluates the core competence of the whole-process engineering consulting service of Nantong Jianchen Engineering Consulting Co. Specific research questions are as follows:

1. Does the improvement of basic conditions in the core competence of Nantong Jianchen's whole-process consulting service have a significant positive effect on the capability of whole-process consulting service?

2. Does the improvement of organization management in the core competence of Nantong Jianchen's whole-process consulting service have a significant positive effect on the ability of whole-process consulting service?

3. Does the improvement of teamwork in the core competence of Nantong Jianchen's whole-process consulting service have a significant positive effect on the ability of whole-process consulting service?

4. Does the improvement of information application in the core competence of Nantong Jianchen's whole-process consulting service have a significant positive effect on the ability of whole-process consulting service?

5. Does the improvement of marketing in the core competence of Nantong Jianchen's whole-process consulting service have a significant positive effect on the ability of whole-process consulting service?

1.3 Objectives of the Study

1. To examine the influence of the basic condition indicators in the core competencies of the respondents on the service capability of the whole process consulting.

2. To examine the influence of organizational management capability indicators in the core competencies of the respondents on the service capability of whole process consulting.

3. To examine the impact of teamwork indicators in the core competencies of the respondents on the service capability of full process consulting.

4. To examine the influence of information application indicators in the core competencies of the respondents on the service capability of whole-process consulting.

5. To examine the influence of marketing indicators in the core competencies of the respondents on the service capability of full process consulting.

1.4 Significant of the Study

The promotion of the whole process engineering consulting service mode is of positive significance to industry authorities, project owners, construction units and engineering consulting enterprises. As a major participant in the whole process of engineering consulting service, it is worth exploring further how to break through the bottleneck of this mode of development. Specifically, the research significance of this paper includes the following two aspects.

1.4.1 Theoretical significance

At present, the research on whole process engineering consulting service in China mainly focuses on the concept and significance research at the industry level.

Meanwhile, some main problems and solutions are found from the perspective of industry development. Xie (2019) points out that the research on the evaluation and improvement of consulting service capability of engineering consulting enterprises is not enough. Taking Nantong Jianchen Engineering Consulting Company as an example, this paper conducts a systematic study on the development of the whole process of engineering consulting services, which enriches the relevant research in this field to a certain extent.

1.4.2 Practical significance

First, it is beneficial to improve the level of consultants. according to Zhang (2019), the whole process of engineering consulting service is to provide integrated and one-stop consulting service, which very much tests the leadership, professional ability and communication ability of consulting talents. Through the study of human resources of Jianchen Engineering Consulting Company, the relevant personnel management countermeasures are improved, and the overall service level of the company's consultants is improved to a greater extent.

Second, it is conducive to optimizing the efficiency of enterprise management. The integrated management of the whole process of engineering consulting services effectively avoids business division and management fragmentation, and effectively improves the management efficiency of the company by strengthening internal coordination and optimizing the organization and management mode.

Thirdly, it is conducive to enhancing the market competitiveness of enterprises. At this stage, only a few enterprises in China can be in the forefront of the whole process of engineering consulting service. The countermeasures for the development of whole-process engineering consulting service are studied to make the enterprise walk in the forefront of engineering consulting industry and enhance the market competitiveness of Jianchen.

1.5 Limitation of the Study

This study firstly refers to and analyzes the research results of international scholars in the field of whole process engineering consulting services, but due to the limitation of knowledge level, ability and economic factors, there are still some limitations in the sample selection, questionnaire preparation and research methods. These include the following three main points:

(1) Limitations of sample size and quality:

The respondents of this study mainly come from 580 people who are internal staff of Nantong Jianchen Engineering Consulting Co., Ltd. of Jiangsu Province, China, people in the same industry and users who receive whole process engineering consulting services, and the questionnaires are mostly distributed on the network in the form of questionnaire stars, and 560 valid questionnaires are officially collected. In terms of objectivity and rigor of the study, the number of samples is small.

At the same time, the research subjects were mainly selected from the sales personnel in the building materials industry, which were more influenced by gender, age and working years, and the universality of their results needed to be deepened. In terms of filling out the questionnaire and personal understanding, different research subjects may have different understanding of the content of the questionnaire due to different subjective emotions and actual feelings, and the generalizability of the research results is yet to be tested. Based on this, in order to make the research results more convincing, future research should include other forms such as interviews to improve the accuracy of the data and expand the scope of data collection and sample size, if the research conditions allow.

(2) Geographical and time constraints

Due to the limitation of the research conditions and resources, the sample data collected in this study were only selected from the whole process engineering consulting service enterprises in Jiangsu Province, China, and the sampling was done in a wide range according to the sampling rules and distribution area, so there are certain limitations in the scope and breadth of sampling, and the generality and applicability of the test results need to be further tested. Secondly, in the data collection process, only the cross-sectional data of a certain point in time are available, and the dynamic data of the research object in a certain period of time are not observed, so that the dynamic relationship between the variables to be studied cannot be examined.

(3) Limitations of Research Perspective

In terms of research perspective and theoretical application, the concept of whole-process engineering consulting service has been proposed for a relatively short period of time, and at this stage, both enterprises themselves and international scholars are in the exploration stage, and there are not many references available, so the research perspective on this issue is narrow.

As a result, the use of questionnaires for this study has not yet been unified among international scholars, and in the process of preparing this questionnaire, there are not many more mature and widely applicable scales for reference, which will affect the research results of this paper to a certain extent.

Chapter 2 Literatures Review

2.1 Introduction

This chapter reviews and summarizes the literature related to the core competence of whole process engineering consulting service, and reviews various influencing factors such as theories, concept definitions, important significance, problems in the development process and countermeasures through analyzing the core competence of whole process engineering consulting service, and takes this as the theoretical basis of this paper to further construct the theoretical framework of the research related to the core competence of whole process engineering consulting service, so as to lay a solid theoretical foundation for the subsequent research.

2.2 Literature Reviews

2.2.1 Core competence of whole-process engineering consulting services

Frederic (2017) points out that there is no specific concept corresponding to whole-process engineering consulting in the international arena, but in terms of international engineering contracts, engineering consulting is called "engineering consulting". With the release of the document "Opinions on Promoting the Sustainable and Healthy Development of Construction Industry" by the State Council of China in 2017, the concept of whole-process engineering consulting service was officially defined for the first time, and then a large number of Chinese scholars conducted in-depth research and analysis on the definition of the concept of whole-process engineering consulting service. Among them, Fu (2018) believes that the essence of whole-process engineering consulting can be understood as engineering consulting at a broad level, and also as a consulting service throughout the whole process of engineering projects, which is mainly manifested in management, economic technology, coordination and organization, etc. Pi (2017) defines the concept of whole-process engineering consulting as an integrated management service called the whole process of the project. zhang (2017) defines whole-process engineering consulting service based on time span as a category that can be called whole-process engineering service engineering consulting concept as long as it meets the point that the project is involved in the whole process from the beginning until the end. xu (2018) defines whole-process engineering consulting as a mode that effectively connects all aspects of the engineering consulting process. Zhang (2020) subdivides the whole process engineering consulting service into the links running through the pre-project planning, pre-construction preparation work, construction process, completion and acceptance, and subsequent operation and warranty

Since the concept of whole-process engineering consulting was put forward, many traditional engineering consulting service enterprises and supervision enterprises have started to transform into whole-process engineering consulting enterprises, so as to meet the needs of the external market and the development of the enterprises themselves.

Experts and scholars in this field have been constantly exploring and studying the problems of full-process engineering consulting enterprises in the transformation process, and have been exploring through the combination of research theory and practice. In this paper, the main capabilities that enterprises should have in the whole process of engineering consulting are summarized in five aspects: basic conditions, organization and management, teamwork and application of information technology and marketing, respectively

1. Basic conditions

In terms of basic conditions and capabilities, whole-process engineering consulting is different from the traditional single, independent engineering consulting mode. Pan (2019) points out that the services cover design, bidding, cost, supervision, project management and other types of professional business consulting, which requires enterprises to have certain basic conditions when carrying out the whole process of engineering consulting services. Enterprises carrying out whole-process engineering consulting services should have corresponding qualification certificates. Qualification is an important proof of the company's business ability and the most basic condition for carrying out whole-process engineering consulting. At the same time, rich professional technology and management consulting experience is the core foundation for the enterprise to upgrade engineering consulting mode in the whole process. Engineering consulting enterprises should have office equipment and facilities system for carrying out whole-process engineering consulting service, which is the basic guarantee for enterprises to carry out whole-process engineering consulting service work. xiu (2019) believes that good corporate brand reputation is the key for enterprises to open the whole-process engineering consulting market and enhance the competitiveness of the industry. liu (2020) found that the core influences of whole-process engineering consulting service The main factors of capability are enterprise qualification, the number of registered engineers, enterprise reputation, service portfolio type and other core basic capabilities.

2. Organizational management

In terms of organizational management capability, whole-process engineering consulting needs to break the barriers of traditional engineering consulting professions working independently, effectively organize and manage professional resources, form a whole-process engineering consultant mode of comprehensive management, improve the control ability of project quality, schedule and investment, and maximize the value of engineering construction projects (Xie, 2019).Zheng (2019) believes that to improve the whole-process engineering consulting's organizational management capability, it is possible to adjust and optimize the organizational structure, establish a reasonable whole-process engineering consultant management system, and standardize the service process. At present, some enterprises have participated in the preparation of all technical standards of provincial construction authorities. Reasonable management system and standardized service process help achieve efficient organizational management goals. The tightness of the organizational structure can be achieved by strengthening the

guidance of corporate culture. Enterprise members follow common values, unified way of thinking and harmonious way of doing things, which can greatly promote the improvement of the whole process of engineering consulting services. qiao (2021) The whole process engineering consulting enterprises should improve the organizational change ability of consulting team, organizational structure, etc., as a way to constantly adapt to the internal and external changes of the enterprise, which helps to achieve efficient enterprise goals. fan (2022) Aiming at the organizational management capability of whole-process engineering consulting service, it is proposed to improve the organizational innovation management capability, improve the organizational structure, carry out regular engineering consulting training sessions and perfect learning and training system, etc.

3.Teamwork

In terms of teamwork ability, team building is the core. Only by promoting the collaboration and cooperation of engineering consulting team in the whole process of each profession can we effectively control the key aspects of the whole process of the construction project and ensure the smooth implementation of the construction project. peng (2020) believes that improving team cooperation ability can not only ensure the whole process team to play its core ability and achieve effective decision-making and execution, but also help the development of the whole process engineering consulting service of the consulting enterprise. In the project implementation stage, in order to realize the effective collaborative work of each profession in the team, enterprises need to strengthen the training of team building, improve the awareness of cooperation of each field profession in the team, strengthen the degree of tacit cooperation of each industry profession in the team, and actively carry out lectures and training of whole-process engineering consulting to improve construction efficiency and save costs. cao (2020) believes that the team of each profession in the whole process should be improved Collaboration ability and cooperation consciousness, which can not only make the timely transmission and communication sharing of industry information, but also help the consulting team to agree on the mode of thinking and behavior, and further help the formation of cohesion and centripetal force among project teams. luo (2023) suggested that enhancing the control ability of enterprise should leaders on the process and the execution ability of consulting members can help the consulting enterprise to form a unified goal and reduce cost loss, schedule lag, and other phenomena.

4. Application of information technology

In terms of information technology application capability, promoting information technology construction is an important prerequisite for leading the upgrading of the whole construction industry (Zhang, 2019).Fu (2018) believes that the application of information technology must pay great attention to strengthening the power of whole-process engineering consulting. Only the whole-process engineering consulting work based on information platform can realize the collaboration and circulation of data. Only through the collaboration and circulation of data can the traditional phased operation mode be broken and the whole process of engineering consulting be

realized.Pan (2019) believes that fully developing and utilizing information technology and information resources and attaching importance to the construction of information platform are important measures for enterprises to enhance the core competitiveness of whole-process engineering consulting services. Zhang (2021) points out in the study of information collaboration management of whole-process engineering project consulting service enterprises that information collaboration as well as digital application is the core competitiveness to solve the low degree of informationization and the depth of integration and digital integration of whole-process engineering consulting service enterprises, and good information construction of enterprises is the driving force to promote the development of enterprises.

5.Marketing

Wang and Cai (2012) pointed out in the book 'Marketing' that service marketing refers to the goal of enterprises to better achieve customer demand for services under the premise of fully and comprehensively understanding consumer needs. Shi and Zhang (2008) pointed out in their study that marketing mainly includes: brand strategy, people management strategy, differentiation strategy, innovation strategy, diversification strategy, customer communication strategy, etc. Lv (2022) found through the study of marketing strategy of whole process engineering consulting service enterprises that engineering service enterprises have product, personnel, channel, promotion and so on in marketing problems. Zhou (2022) proposed that marketing in the core competence of whole-process engineering consulting service includes four parts, namely, enterprise credibility, market share, market development ability and customer loyalty. Among them, enterprise credibility refers to the common performance of enterprise's service ability, integrity ability and economic status; market share refers to the ratio of sales or sales volume of a certain type or a certain product of the enterprise; market development ability refers to the expansion ability of the enterprise to its own scale; customer loyalty refers to the reflection of the degree of trust of the enterprise to win customers.

2.2.2 Development significance of whole process consulting service

Based on the above studies by scholars from various international parties, it can be seen that whole-process engineering consulting services are of great significance to the development of China's construction industry, and many scholars have elaborated on this issue.Kong and Yang (2017) believe that whole-process consulting services integrate professional consulting capabilities to give full play to the overall advantages and make consulting services better reflect the comprehensive value. Sun (2018) pointed out that whole-process engineering consulting services can help owners better control their projects, and the implementation of general engineering contracting needs the support of whole-process engineering consulting services. Bai (2018) and other scholars believe that accurate and controllable integrated management of the whole process of engineering consulting services from the beginning of project establishment is conducive to reducing construction costs, avoiding project risks and maximizing project benefits. It plays an important role in improving the management efficiency of

project planning, survey and design, bidding and tendering, cost control and construction management, completion acceptance and post-evaluation. Siavash (2019) proposed that the whole process of engineering consulting is based on planning, with investment control as the main line and value-added management as the goal. It can better solve the shortcomings of the traditional model such as separation of design, construction and supervision, cost increase, lack of overall control of the whole industry chain, and poor information flow. It ensures that owners get quality products and services.

Nie (2020) summarized the importance of the whole process of engineering consulting services from several aspects, including improving investment efficiency, breaking barriers, ensuring project compliance, helping government supervision, strengthening risk control and prevention, reducing project risks, improving project quality, and enhancing industry value. Yan (2018), a Chinese scholar, calls for the transformation of the whole process of engineering consulting business to adapt not only to the needs of construction industry reform but also to the needs of market development, accelerate the integration of consulting industry with international standards, and develop the international market of consulting industry.

2.2.3 Problems and causes in the development of whole process consulting in China

The application time of whole process consulting service in China is relatively short, and there are certain problems in practice. Many scholars have conducted in-depth research on the existing problems and focused the problems on the following four aspects.

1. low marketization and weak integration ability Ye (2014) pointed out that Chinese engineering consulting enterprises have problems such as single business type and weak integration service, etc. Chen (2019) pointed out that China's engineering consulting industry has problems such as low marketization, little competition, strong regionalism and poor independent innovation ability of enterprises.

2. insufficient industry norms and lack of fee basis, Zhao and Gao (2019) believe that the whole process of engineering consulting faces a series of problems and challenges during its initial application, such as low market demand, unclear service mode, insufficient policies and norms, unclear remuneration rules, contract mode to be tested, etc., and insufficient experience accumulation. yu (2018) points out that, at present, various provinces and municipalities have introduced corresponding pilot work programs for whole-process consulting services. Although relevant fee standards and modes are included, there is a lack of operational fee standards. scholars such as Chen (2018), put forward the problems of misalignment between the understanding of the whole process of engineering consulting and the understanding of service organizations, difficulty in defining the boundary conditions of consulting service contracts, lack of basis for charging the whole process of engineering consulting service, inconsistency in the caliber of quotation of consulting enterprises, etc., and the mismatch between the

service content required by the owner and the service charge The quality of consulting service is affected.

3. Lack of composite talents and teamwork

Wang and Wang (2019) argue that the general practice of whole-process engineering consulting is consistent with the world practice of "one-stop" engineering consulting, and the key role of general consultants in whole-process engineering consulting should be highlighted. Especially, there is a lack of professional technical managers who are familiar with both design and construction process to lead the whole process of engineering consulting projects. Therefore, the synergistic effect of each stage is difficult to play, and the quality of consulting service is reduced. It is difficult to form competitiveness.

4. the degree of digitalization and informatization is not enough in terms of information technology application.

Zhang (2019) points out that promoting informatization is an important prerequisite for leading the upgrading of the entire construction industry.Song (2017) points out that the construction and application of engineering consulting informatization is a long-term and arduous task for enterprises, which needs to combine with the actual situation of enterprises and coordinate the planning of software and hardware equipment such as database, information system and information network. It is also necessary to improve the information awareness, quality and skills of relevant personnel to ensure the organic integration of enterprise resources. Find a suitable path for the enterprise's own information construction, and promote the stable, rapid and sustainable development of the enterprise.

2.2.4 Development measures of whole process engineering consulting service

With the continuous development and depth of the whole process consulting services, various drawbacks and shortcomings have been exposed, and international scholars have tried to put forward corresponding solutions and countermeasures through many aspects such as standardization, information technology, quality control, international convergence and organizational model. Details are as follows.

(1) Improvement of industry norms and standards

Zhou (2019) proposes feasible program strategy strategies based on industry norms and standards such as optimizing organizational structure, building standard system, applying information technology, categorizing and cultivating enterprises, and adjusting qualification requirements downward according to the problems arising in the development of whole-process engineering consulting. Lu (2017) and other scholars give two suggestions by analyzing the policies and guiding suggestions promulgated by the state and combining the applicability of the policies at the present stage, on the one hand, the all-round grasp of engineering consulting laws; on the other hand, the timely adjustment and optimization of management system in the process of whole-process engineering consulting services, so as to ensure that the management system adapts to

the changing needs of the market. Sha (2019) and other scholars propose that the combination of "integrated fee + special fee" should be adopted based on the existing charging method of whole-process engineering consulting. At the same time, according to the charging rate and the corresponding base, the corresponding calculation model is proposed and explored in depth.

(2) Information construction

Chinese scholar Ye (2014) points out that at this stage, new development strategies should be focused on the whole process engineering consulting enterprises, and the enterprises should be developed in the direction of knowledge-based and intellectually intensive, etc. Based on BIM technology, Chen (2018) and other scholars propose that the whole process engineering consulting should be combined with BIM technology as the starting point, both from the initial design of planning and the later maintenance and operation, and Song (2019), based on the combination of BIM technology and whole-process engineering consulting as the starting point, proposed that each engineering enterprise should proceed to build a modern management platform, so as to ensure the accuracy and consistency of information transmission and further bring its advantages such as integrated integration and collaborative management into full play (Lu, 2017).

(3) Adjustment and optimization of organizational model

Based on the problems of fragmented business scope, limited comprehensive business capability and insufficient integration among engineering consulting enterprises at the present stage, Tian (2019) proposed the engineering consulting modes that are not used, which are the whole process mode of single integration, the whole process mode of cooperative body and the whole process mode of joint body, respectively.

Based on Tian's (2019) study, Sun (2020) further proposed the consulting service mode of unit integration, consulting service mode of engineering project implementation and combined engineering consulting enterprises' joint effort to carry out engineering consulting services for engineering consulting enterprises. Meanwhile, the management mode based on integration can, to a certain extent, bring a good balance to the management time of engineering projects as well as the practicability of business management process, which helps the coordination of engineering projects (Zhou, 2022).

(4) Process transformation and quality control

Fenton (2000) and other scholars believe that the standard of consulting service quality is the issue that should be focused on by each engineering consulting enterprise.

Han (2019) and other scholars believe that quality control and organizational model overhaul must be preceded by reconstruction in the process, and attention should be paid to the rationalization and maximization of enterprise value in the process of reconstruction. It should adhere to the concept of adhering to the full service life cycle

in the whole process engineering consulting, value-added services and promoting integration, and then improve the quality of the whole process engineering consulting services.

(5) With the convergence of international

Ren (2021), a Chinese scholar, proposed that a steady path of rectification should be preferred for the transformation and upgrading of the engineering consulting industry to the service mode of whole process engineering consulting at the early stage. With regard to the advanced experience of international whole-process engineering consulting reform, the analysis should be carried out from an objective perspective and combined with the current development situation of China, and a new whole-process engineering consulting service model with Chinese characteristics should be formulated in line with Chinese national conditions. An (2021) points out that the whole process engineering consulting enterprises should start from the market demand and basic national conditions, to comprehensively understand and analyze the concept and definition of whole process engineering consulting. They should also combine theory, system and practice to determine the final reform idea.

2.3 Theory of Reviews

Regarding the research on the core competence of whole process engineering consulting service, as the concept has been officially defined by the Chinese State Council official in recent years, but there is no specific concept corresponding to the concept of whole process engineering consulting in the international arena so far, and then a large number of scholars found that the concept is similar to the concept of engineering consulting in terms of international engineering contract. Li (2022) found in an empirical study on the capability of whole-process engineering consulting services that the improvement of core competence of enterprises in five dimensions (basic conditions, organization and management, teamwork, information technology application and marketing) had a significant positive impact on whole-process engineering consulting services. The lowest score of informatization application further indicates that Chinese full-process engineering consulting enterprises should pay attention to the development of information technology, attach importance to the construction of information platform, and realize data collaboration and information synchronization at this stage. all have a significant positive influence on the whole process engineering consulting service.

2.4 Research Relevant

2.4.1 Theory of core competence of enterprises

According to Wu (2007), the basic characteristics of core competencies can be divided into four areas: value, uniqueness, extensibility and integration.

1. Value. Value is the first core competence. The core competence not only provides customers with satisfactory value, but also the company will get super high profit. This has two meanings: on the one hand, the enterprise's products and services can provide unique value and benefits to customers, including the subjective utility of significantly increasing customer satisfaction and creating more value for customers, i.e., making key contributions to customers' core interests; on the other hand, the enterprise's resources and capabilities must have economic value, i.e., the core competencies should also contribute to the improvement of the enterprise's efficiency, so that the enterprise can create value and On the other hand, the enterprise's resources and capabilities must have economic value, that is, the core competencies should also contribute to the improvement of the enterprise's efficiency, so that the enterprise has an advantage over its competitors in creating value and reducing costs, thus bringing significant competitive advantages to the enterprise.

2. Uniqueness. An individual or collection of resources, capabilities and systems that are unique to the enterprise but not available to other enterprises. It is because of its uniqueness that the enterprise's expertise cannot be easily imitated by competitors, and the enterprise can have long-term super profits and competitive advantages. As an individual product of the enterprise, the core competence of the enterprise is necessarily difficult to be imitated and copied by competitors, and internal accumulation is the main source of assets that are difficult to be imitated or replaced. At the same time, these resources cannot be purchased from the market, otherwise, these resources cannot form the core competitiveness of the enterprise.

3. Extensibility. The ability of an enterprise to extend a series of new products and services from its core competence. It can improve the overall competitiveness of the enterprise, and the core competence can support the enterprise to develop into a variety of products or services, not only limited to a certain product or service. Core competencies can enable a company to grow into more dynamic areas. Through the derivation of a series of new products and services, a company's core competency has a continuous and vigorous life, consolidating its competitive advantage in the relevant product market. Core competencies are the command of the company's various capabilities, with dominant and driving forces.

4. Integration. Prahalad and Hamel's classic definition emphasizes that a firm's core competencies have the function of coordinating and organically combining different production skills and various technical schools of thought. Core competencies are not a single element, resource or technology possessed by an organization, but rather an organizational system capability formed by the integration of various competencies.

2.4.2 Theory of whole process engineering consulting service

Full-process engineering consulting refers to engineering consulting in a broad sense, which is an engineering consulting service for the management, organization, coordination, economy and technology of construction project decision-making and the

whole life cycle of project implementation and operation, etc. Sun (2021) points out that when the consulting service can meet the "start to finish" time span of consulting, it is called full-process engineering consulting. Wang (2019) proposes that the whole process engineering consulting can be understood as a general contracting management mode of PMC, which is considered to be through all aspects of consulting. Hou (2019) points out that the whole process of engineering consulting service should cover all stages and the whole process of engineering project management consulting service, such as preliminary planning consultation, pre-construction preparation, construction process, completion and acceptance, operation and warranty, etc.

2.5 Conceptual Framework

This study attempts to study the enhancement of enterprise core competitiveness and whole-process engineering consulting with the support of enterprise core competitiveness theory and whole-process engineering consulting theory. From the five aspects of basic conditions, organization and management, teamwork, marketing and information application, it finally realizes the improvement of the capability of whole-process consulting service. The research framework of this paper is as follows.

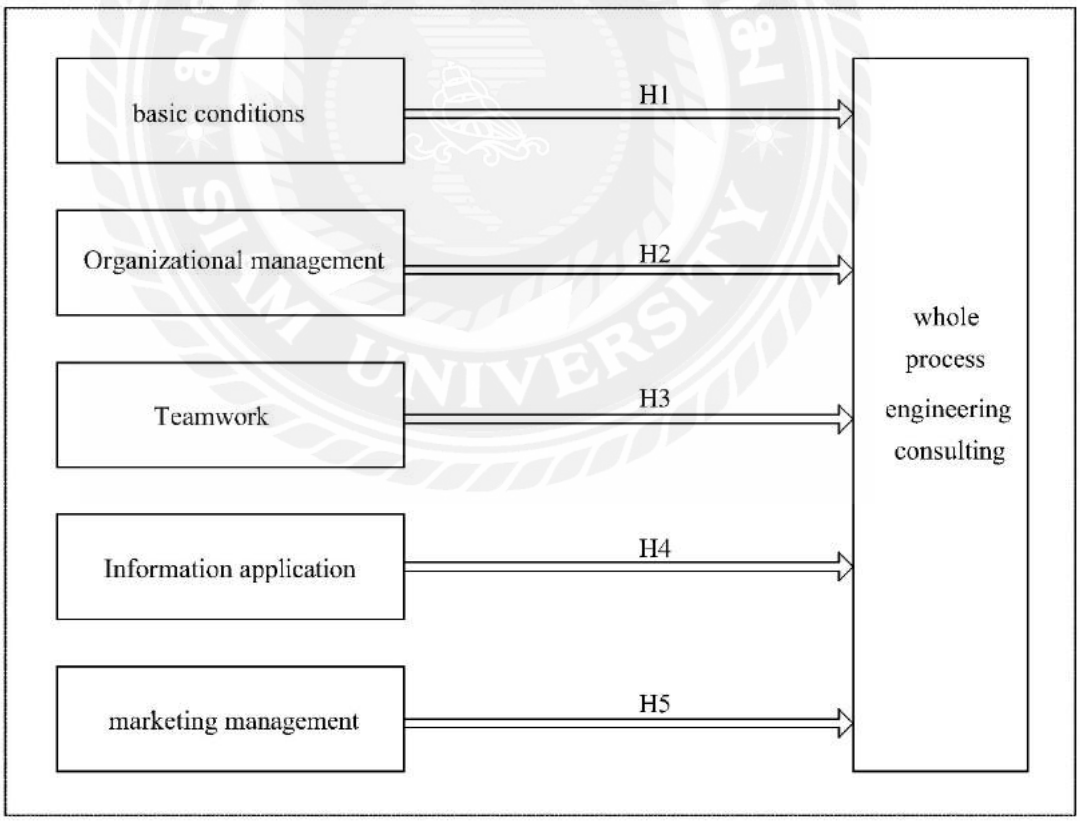

Figure 2.5 Research architecture diagram

2.6 Explanation and definition of relevant academic terms

2.6.1 Total process engineering consulting service

The concept of whole-process engineering consulting has attracted great attention from international scholars since it was officially defined by Chinese officials in 2017. Although scholars from various international parties have not formed a unified standard for the definition of the concept of full-process engineering consulting, in terms of the transformation of engineering consulting enterprises to full-process engineering consulting services and the time span of engineering projects, the definition can be understood as the scope of the concept of full-process engineering service engineering consulting as long as it meets the point of full participation of the project from the beginning to the end (Zhang, 2017). 2017) The current research scope of whole process engineering consulting service mainly focuses on the exploration stage of whole process engineering consulting development such as policy, market, service content, service scope, transformation of consulting enterprise, and service system (Luo, 2022).

2.6.2 Corporate core competencies

Since 'whole-process engineering consulting' has been officially defined, a large number of supervision-type enterprises and traditional engineering consulting-type enterprises have started the transformation to whole-process engineering consulting as a way to meet the development needs of the market and enterprises. Enterprise core competence refers to the core competitive advantage possessed in the process of enterprise development (Zhou, 2022).

Therefore, in the process of moving to full-process engineering consulting service, scholars and experts from international parties, based on enterprise core competence as the starting point, propose that the core competence of full-process engineering consulting service is reflected in five aspects, which are the basic conditions of the enterprise, organizational management ability, teamwork ability, enterprise information application ability and marketing ability Xiu (2019).

2.6.3 Nantong Jianchen Engineering Consulting Co.

Nantong Jianchen Engineering Consulting Co., Ltd. is located in Nantong City, Jiangsu Province, China. The company was established in 2004, mainly engaged in: engineering technology consulting services, engineering cost consulting, engineering bidding agency services, government procurement agency services, bid preparation and audit, etc.

Chapter 3 Research Methodology

3.1 Introduction

This study adopts quantitative research method. Based on the core theories of enterprise core competitiveness and whole-process engineering consulting theory, the theoretical framework of core competence of whole-process engineering consulting service is constructed, and a questionnaire survey is used to sample the subjects of this study by referring to the research results of international scholars and combining with the initial experience of Chinese engineering consulting enterprises in transition to whole-process engineering consulting service at the present stage. In the process of questionnaire design and preparation, the international scales with good reliability and validity through empirical research are used as the reference basis, and the design and preparation are combined with the characteristics of Chinese enterprises of full-process engineering consulting service in Nantong, Jiangsu Province, China, to test the reliability and validity of each research variable.

3.2 Research Design

In this paper, based on the reference to the relevant literature and theories of international scholars on the core competency of whole process engineering consulting service, combined with the actual situation of Nantong Jianchen Engineering Consulting Co., Ltd, according to the basic principles of questionnaire design and the core competency of whole process engineering consulting service of Nantong Jianchen Engineering Consulting Co. The scale is validated by empirical analysis. All the questions in this questionnaire are closed-ended single-choice questions. Therefore, this paper divides the questionnaire of core engineering consulting services of Nantong Jianchen Engineering Consulting Co., Ltd. into three parts according to Zhou (2022):

The first part is the basic information of the respondents. It mainly includes gender, education background, age, working years and position, etc. The scale consists of 5 questions.

The second part is mainly a scale of five measurement dimensions of core competence of whole process engineering consulting service, which is composed of five dimensions of basic conditions, organization and management ability, teamwork, information application and marketing. The scale is composed of 21 questions, which is the basis for data statistics and empirical analysis in the later stage.

The third part is the whole process engineering consulting service scale, which consists of 5 questions. In order to quantify the survey results and facilitate the subsequent data processing, this questionnaire adopts Likert five-point scale, which is "strongly disagree, disagree, uncertain, agree, strongly agree" in order.

3.3 Hypothesis

H1: The improvement of basic conditions in the core competence of Nantong Jianchen's whole-process consulting service has a significant positive effect on the ability of whole-process consulting service.

H2: The improvement of organization management in the core competence of whole-process consulting service of Nantong Jianchen has a significant positive effect on the competence of whole-process consulting service.

H3: The improvement of teamwork in the core competence of Nantong Jianchen's whole-process consulting service has a significant positive effect on the ability of whole-process consulting service.

H4: The improvement of information application in the core competence of Nantong Jianchen whole-process consulting service has a significant positive effect on the ability of whole-process consulting service.

H5: The improvement of marketing in the core competence of Nantong Jianchen's whole-process consulting service has a significant positive effect on the ability of whole-process consulting service.

3.4 Population and Sampling

The overall questionnaire is selected from the internal staff of Nantong Jianchen Engineering Consulting Co., Ltd, the staff of the same industry and the 19,500 people who receive the whole process engineering consulting service, and 580 people are selected to participate in this research activity according to the random sampling. Among them, the total target refers to the whole of the research object or the total from which the researcher wishes to obtain information, and it consists of all individuals of the same nature in the research object. Sampling is one of the most widely used modes of questionnaire survey, is a non-comprehensive survey, refers to a part of the total number of units from the research object as a sample, according to the sample to carry out analysis of the survey, to obtain information about the overall target amount. Random sampling refers to a sample survey in which each part of the population has a chance to be selected in accordance with the principle of equal chance distribution, also known as "equal probability". In this study, the principle of random sampling is used to ensure that each subject in the population has a known, non-zero probability of being selected as a subject, and that the sample is as representative and universal as possible. Thus, this study used the sampling table proposed by Yamane in 1967 for sampling with 95% confidence interval i.e. P=0.5 (Feng, 2021).

3.5 Sample Size

Nantong Jianchen Engineering Consulting Co., Ltd. internal personnel, personnel in the same industry and personnel receiving the whole process of engineering consulting services were randomly selected. 580 questionnaires were issued, and 560 valid questionnaires were returned after eliminating invalid data such as wrongly filled out and omitted.

3.6 Data Collection

In the process of collecting data for this questionnaire, after establishing a clear theme at the beginning of the questionnaire, all the survey contents were focused on the theme. For the distribution and collection of data, the questionnaire was filled out, distributed and collected mainly through the software "Questionnaire Star" (Li, 2022). After the questionnaire was edited, 10 professionals from the industry were found to conduct a pre-survey and were asked if there were any options that they did not understand or were ambiguous, and the data from the pre-survey were tested for validity using SPSS statistical analysis software.

In order to make the respondents understand the purpose and content of the survey, to obtain their cooperation and support, to reduce the subjective judgment of the respondents, and to minimize the impact of errors, we first briefly explained the specific items and purpose of the questionnaire to the respondents, and informed them that the questionnaire was filled out anonymously, in the process of filling out the premise of fairness, impartiality, objectivity, and factuality, and that the The survey data is only for data research and analysis, not for other purposes, so please feel free to fill out the questionnaire. After two weeks of waiting patiently, the research activity was officially finished, and all the questionnaires collected were analyzed and screened for validity at the first time. 580 questionnaires were distributed and 567 were collected, and 560 valid questionnaires were obtained after eliminating invalid ones.

3.7 Data Analysis

In this paper, when analyzing the data of this sample through SPSS analysis software, descriptive statistical analysis is an important part of the study, for descriptive statistics refers to a series of processes of organizing, analyzing, describing and interpreting the sample data collected during the study. It is also a way to describe the basic situation and distribution characteristics of the sample data using graphical and mathematical methods. Usually, descriptive statistics involves three aspects: concentration trend, dispersion trend and data distribution characteristics. It is mainly expressed in the statistical analysis of data by methods such as frequency, mean, standard deviation and variance, kurtosis and skewness (Xue, 2021).

(1) The frequency refers to the value of the variable that occurs most often in the value of the variable. The proportion of which indicates the percentage of each frequency in the overall sample, and the percentages contain two types of effective and cumulative percentages. The mean or average reflects the level of concentrated trends in a set of data, i.e., the common attributes and general characteristics of the set of data in the overall sample. The variance or standard deviation reflects the degree of dispersion in a group of data; there are two main types of data distribution states: skewness and kurtosis, with skewness referring to a set of statistics used to describe the symmetry of the values taken by the variables. When the skewness is 0, the distribution is symmetric and the total deviation is equal; when the skewness is greater than 0, it is positive skewness, and when the skewness is less than 0, it is negative skewness. The kurtosis, on the other hand, describes the distribution pattern of the variable reflecting the steepness of the variable. When the kurtosis is then 0, it represents that the sample data is as steep as the standard normal distribution. When the kurtosis is greater than 0, it means that the data distribution is steeper than the standard normal distribution; when the kurtosis is less than 0, it means that the data distribution is flatter than the standard normal distribution (Xue, 2021).

(2) One-way ANOVA, also known as "analysis of variance" or "F-test", is used to test the significance of the difference between the means of two or more samples. Due to the influence of various factors, the data obtained from the study shows fluctuations. The causes of fluctuations can be divided into two categories: uncontrollable random factors, and controllable factors imposed in the study that form an impact on the results. ANOVA starts from the variance of the observed variables and examines which of the many control variables are the ones that have a significant effect on the observed variables. By analyzing the magnitude of the contribution of the variance from different sources in the study to the total variance, the magnitude of the influence of the controllable factors on the study results is determined.

(3) Correlation analysis is a statistical method to study whether there is some kind of dependence between phenomena and to explore the direction of correlation and the degree of correlation for phenomena with dependence, and is a statistical method to study the correlation between random variables.

(4) Regression analysis is a statistical analysis method to determine the quantitative relationship between two or more variables. Among them, according to the number of independent variables, regression analysis can be divided into two types: univariate regression and multiple regression; according to the type of relationship between the independent and dependent variables can be divided into linear regression and nonlinear regression. In regression analysis, only one independent variable and one dependent variable are included, and the relationship between them can be approximated by a straight line, which is called one-dimensional linear regression analysis. If two or more independent variables are included in the regression analysis

and the relationship between the dependent and independent variables is linear, it is called multiple linear regression (Cong, 2017).

3.8 Reliability and validity analysis of the scale

3.8.1 Reliability analysis of the scale

First of all, this paper needs to determine whether the survey questions in the questionnaire can reflect the purpose of the survey and the intention of the survey, and whether each question in the questionnaire measures the same content and information; at the same time, for the reliability of the data obtained from the questionnaire, it is necessary to do reliability analysis before the analysis of the questionnaire. Reliability itself has nothing to do with the correctness of the measurement results, it is used to detect the stability of the questionnaire itself. Reliability, also known as reliability, is a way to describe the level of reliability of the test results of the sample data. It is a way of describing the level of reliability of the test results of the sample data, i.e., whether the test results truly reflect the stable and consistent characteristics of the respondents. In this paper, reliability is tested using the internal consistency method commonly used by scholars. The magnitude of Cronbach's alpha coefficient is commonly used in reliability analysis to measure the reliability of a survey questionnaire. When the Cronbach's coefficient is greater than 0.6, it means that the questionnaire has acceptable reliability; if it is between 0.7-0.8, it means good reliability; if it is higher than 0.8, it means high reliability; if the Cronbach's alpha coefficient is below 0.6 it should be considered to rewrite the questionnaire (Sun, 2018). The data from the questionnaire were analyzed for reliability using SPSS and the results are shown in Table 3.1.

Table 3.1 Reliability test of each dimensional questionnaire

variable	N	Number of items	Cronbach’s alpha
Basic conditions	560	3	0.836
Organizational Management	560	5	0.862
Teamwork	560	4	0.836
Informatization Application	560	5	0.867
Marketing	560	4	0.847
Whole Process engineering consultation	560	5	0.863

According to the reliability test results of each dimensional scale in 3.1, the Cronbach's Alpha coefficient values are 0.836, 0.862, 0.836, 0.867, 0.847, and 0.863, respectively.

Table 3.2 Overall reliability of the questionnaire

Variables	N	Number of items	Cronbach's alpha
Overall questionnaire	560	25	0.905

According to the results of the overall reliability test of the questionnaire in Table 3.2, the Cronbach's Alpha coefficient value is 0.905, so it can be inferred that the questionnaire used has good reliability and can be tested in the next step.

3.8.2 Validity analysis of the scale

The correctness of the questionnaire can be measured by "validity" analysis. Validity, i.e. validity, refers to the correctness and usefulness of the measurement results, and consists of two main components: content validity and structural validity. The scale used in this study has good reliability based on the empirical analysis of the scale used by Chinese scholar Zhou (2022). Therefore, it can be guaranteed that the measurement scale used in this time is with good content validity, but in order to further improve the validity of the measurement scale. In this paper, factor analysis will be conducted by using KM0 and Bartlett's spherical test index. Normally, a KM0 value of 0.6 or higher indicates acceptable validity, and the greater the value is close to 1, the more suitable it is for factor analysis, while Bartlett's spherical test is also suitable for factor analysis if it is significant. The validity of the questionnaire data was analyzed by SPSS, and the test results are shown in Table 3.3.

Table 3.3 KMO and Bartlett's test for the core competence scale of whole process engineering consulting services

Variables	KMO value	Bartlett sphericity test		
		chi-square	（df）	Sig.
Basic conditions	0.725	655.065	3	0.000
Organizational Management	0.872	1169.784	10	0.000
Teamwork	0.809	846.470	6	0.000
Information Application	0.875	1212.614	10	0.000
Marketing	0.823	899.703	6	0.000
Whole Process engineering consultation	0.870	1171.906	10	0.000

As shown in the KMO and Bartlett test results of the core competency scale of whole process engineering consulting services in Table 3.3 above, the KMO values of each part of the questionnaire are 0.725, 0.872, 0.809, 0.875, 0.823 and 0.870, which are above 0.7 and above 0.8 in some parts of the test results. At a significant level of 5% confidence interval (i.e., $\alpha=0.05$), $P<0.05$, which can indicate that the data validity test of this questionnaire is good.

Chapter 4 Finding

4.1 Introduction

Chapter 4 of this paper focuses on the descriptive statistical analysis, independent sample t-test, one-way ANOVA, correlation analysis, and regression analysis of the 560 valid data collected in this research activity by using SPSS statistical analysis software. Among them, descriptive statistics were mainly used to understand the basic situation of this sample data in terms of frequency, percentage, effective percentage, and cumulative percentage. Next, two methods, independent sample t-test and one-way ANOVA, were used to test whether there was any variability in the perceived level of respondents' personal traits on each of the study variables. Finally, the research hypotheses of this paper were tested by correlation analysis and regression analysis among the variables of this sample.

4.2 Description of statistical variables

4.1 Descriptive statistics of variables

Variables	N	Mean value	Standard deviation
Basic conditions	560	12.0929	2.80020
Organizational Management	560	18.7089	4.39416
Teamwork	560	15.4679	3.49224
Information Application	560	19.9821	4.15957
Marketing	560	14.7161	3.62555
Whole Process engineering consultation	560	18.0857	4.71398

The results of the descriptive statistical analysis of each variable in Table 4-1 show that the mean value of basic conditions is 12.0929 and the standard deviation is 2.80020, which is the lowest mean value among the studied variables. The mean value of informational application is 19.9821 and the standard deviation is 4.15957, which is the highest mean value among the variables studied. Thus, it can be preliminarily indicated that informationization application has an important role in the improvement of core competence of whole-process engineering consulting services.

Table 4.2 Analysis of variables on gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	352	62.9	62.9	62.9
	Female	208	37.1	37.1	100.0
	Total	560	100.0	100.0	

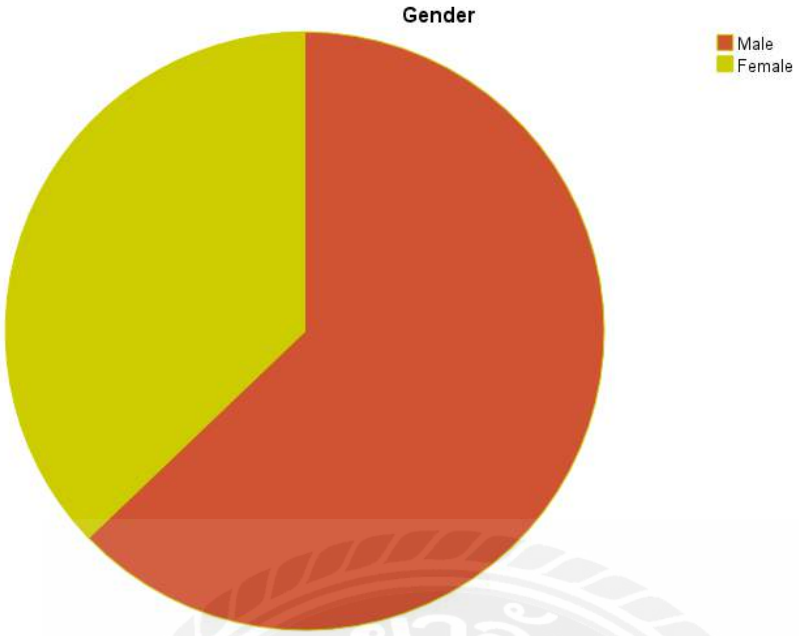

Figure 4.1 Analysis of variables by gender

According to the results of variable analysis on gender in Table 4.2 and Figure 4.1, it can be seen that the number of males in this sample data is predominant, with a frequency of 352 and a percentage of 62.9% of the total number; the effective percentage is 62.9. The frequency of females is 208 and a percentage of 37.1 of the total number; the effective percentage is 37.1. Thus, it can be seen that males among the respondents are engaged in the whole process engineering consulting services is higher, and because the engineering and construction industry has higher occupational requirements in terms of personal physical ability, energy and experience, and because men's physical ability, endurance and intensity of adapting to work are generally higher than those of women in this industry, the higher overall percentage of men in this research activity is consistent with the respective characteristics of the practitioners in this industry (Pi, 2017).

Table 4.3 Analysis of variables regarding educational background

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High school or below	2	0.4	0.4	0.4
	College degree	86	15.4	15.4	15.7
	Bachelor degree	240	42.9	42.9	58.6
	Master's degree or above	232	41.4	41.4	100.0
	Total	560	100.0	100.0	

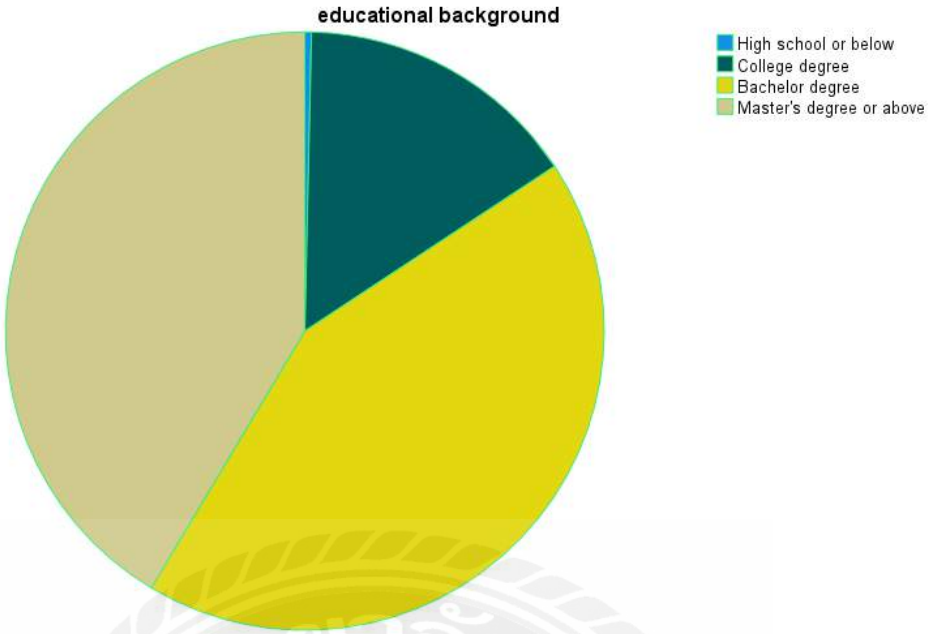

Figure 4.2 Analysis of variables by educational background

According to the results of the analysis of educational background variables in Table 4.3 and Figure 4.2 above, it can be seen that the majority of respondents had a bachelor's degree, with a frequency of 240, accounting for 42.9% of the total number of respondents; followed by a master's degree and above with a frequency of 232, accounting for 41.4% of the total number of respondents; the lowest number of respondents had a high school degree or less and a college degree, with a frequency of 2 and 86, accounting for 0 and 15.4% of the total number of respondents, respectively. The frequency of those with high school or below and college education is 2 and 86 respectively, accounting for 0.4% and 15.4% of the total number of people respectively. From this, it can be seen that the education background of respondents engaged in whole process engineering consulting service or closely related to this industry is generally high. This situation may be due to the fact that the construction engineering consulting industry generally requires high professional skills and technical level of its practitioners, which makes those with low education background unable to integrate well into this industry.

Table 4.4 Analysis of variables regarding age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Under 20 years old	4	.7	.7	.7
	21-30 years old	181	32.3	32.3	33.0
	31-40 years old	199	35.5	35.5	68.6
	41-50 years old	139	24.8	24.8	93.4
	Over 51 years old	37	6.6	6.6	100.0
	Total	560	100.0	100.0	

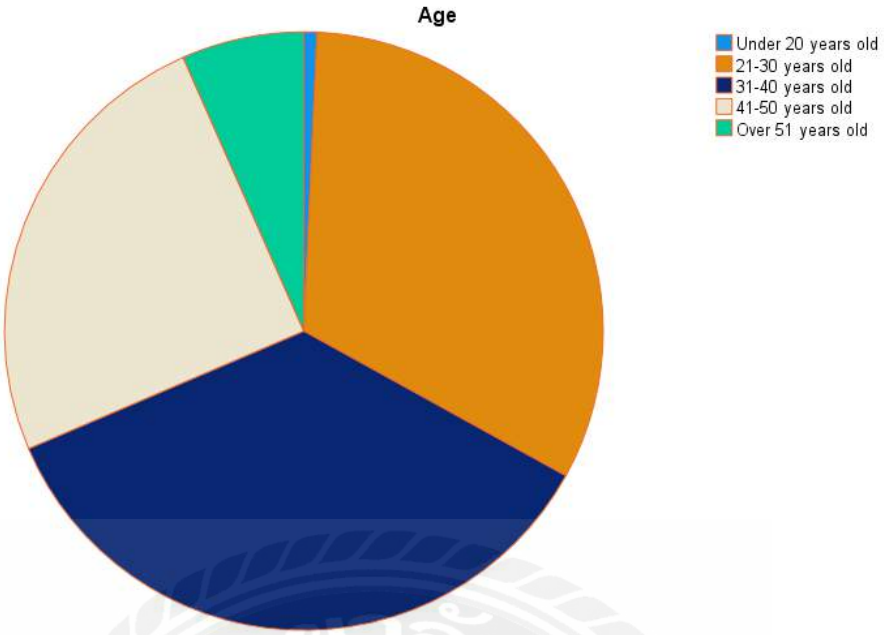

Figure 4.3 Analysis of variables by age

According to the results of the analysis of age variables in Table 4.4 and Figure 4.3 above, it can be seen that in the categorical variables of age, most of the respondents' ages are concentrated in 31-40 years old, with a frequency of 199, accounting for 35.5% of the total number of respondents; followed by respondents aged 21-30 years old and 41-50 years old, with a frequency of 181 and 139 respectively, accounting for 32.3% and 24.8% of the total number of respondents; respondents under 20 years old and over 50 years old have the least number of respondents, with a frequency of 4 and 37 respectively, accounting for 0.7% and 6.6% of the total number of respondents. The number of respondents under 20 years old and over 50 years old is the lowest, with the frequencies of 4 and 37 respectively, accounting for 0.7% and 6.6% of the total number of respondents; thus, it can be seen that the age of the personnel in the construction and engineering consulting industry is mainly concentrated between 21-45 years old, which may be due to the fact that the industry mainly relies on professional skills and experience to provide consulting services, so that those who have good working experience and have been engaged in the work for a longer period of time have a better understanding of the industry. This situation is probably due to the fact that the industry mainly relies on professional skills and experience to provide consulting services, and therefore most of the personnel have good working experience and have been engaged in the work for a long time, which is in line with the basic age distribution of the personnel in the industry and the characteristics of the respondents of this research activity.

Table 4.5 Analysis of variables regarding years of work experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 3 years	4	0.7	0.7	0.7
	3-5 years	156	27.9	27.9	28.6
	6-10 years	164	29.3	29.3	57.9
	over 10 years	236	42.1	42.1	100.0
	Total	560	100.0	100.0	

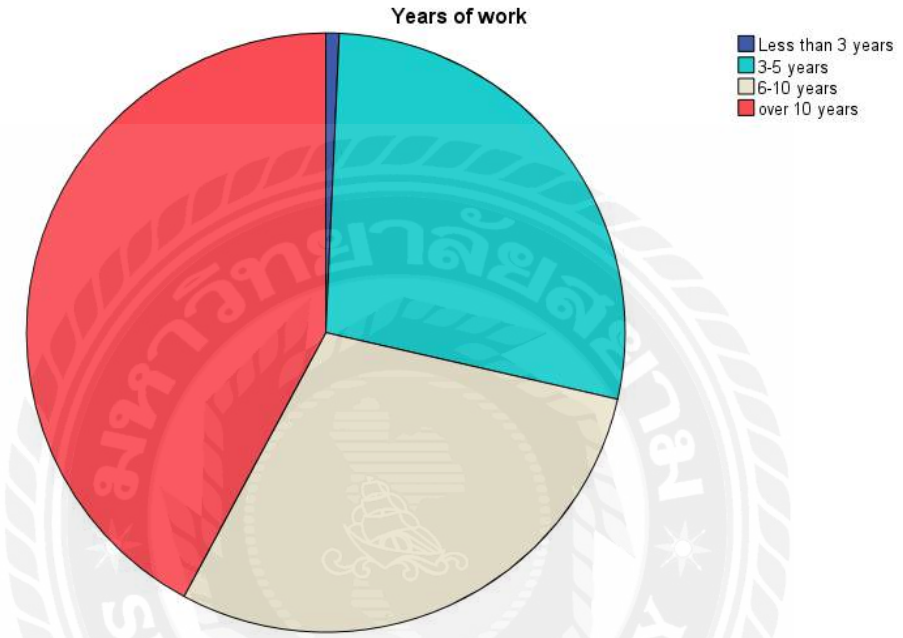

Figure 4.4 Analysis of variables by years of work experience

According to the results of the above Table 4.5 and Figure 4.4 on the variable of working years, the largest number of respondents with more than 10 years of working years, with a frequency of 236, accounting for 42.1% of the total number of respondents, followed by respondents with 6-10 years of working years and 3-5 years of working years, with a frequency of 164 and 156, accounting for 29.3% and 27.9% of the total number of respondents, respectively; The number of respondents with less than 3 years of work experience was the lowest, with a frequency of 4, accounting for 0.7% of the total number of respondents. Based on the working years of the respondents, it is clear that most of the respondents have generally worked in the industry for a longer period of time.

Table 4.6 Analysis of variables on job positions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Assist engineers	405	72.3	72.3	72.3
	Senior Professional Title	101	18.0	18.0	90.4
	Intermediate title	44	7.9	7.9	98.2
	Senior professional title	10	1.8	1.8	100.0
	Total	560	100.0	100.0	

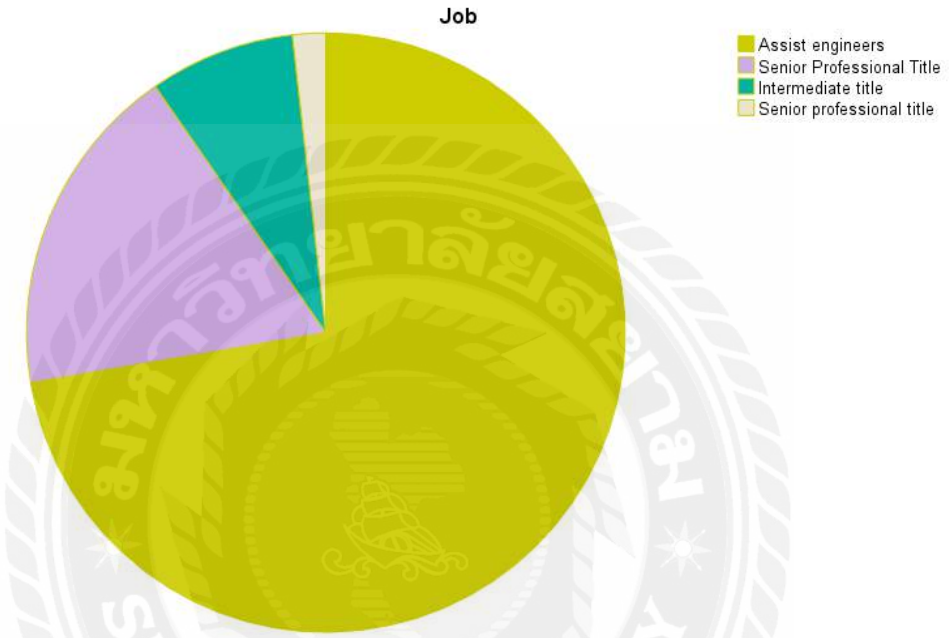

Figure 4.5 Analysis of variables by position

According to the analysis results of Table 4.6 and Figure 4.5 on job position variables, it can be seen that the largest number of respondents were assistant engineers, with a frequency of 405, accounting for 72.3% of the total number of respondents; followed by the number of respondents with senior title of 101, accounting for 18.0% of the total number of respondents; the frequency of respondents with intermediate title and senior title were 44 and 10, accounting for 7.9% and 1.8% of the total number of respondents, respectively. The frequency of respondents with intermediate and senior titles was 44 and 10, accounting for 7.9% and 1.8% of the total number of respondents, respectively.

4.3 Results of the Study

4.3.1 One-way ANOVA

This subsection will further explore whether respondent demographic variables such as gender, educational background, age, education, years of experience, and position are significantly different across the study variables in this paper to provide a reference basis for subsequent data analysis. Considering the simplicity in the process

of data analysis, for the test of variance of respondent demographic variables on each variable, this paper will uniformly use the one-way ANOVA method to test (Cong, 2017). The one-way ANOVA test on gender is shown in - Table 4.7.

Table 4.7 One-way ANOVA on gender

Variables	gender	mean value	One-way ANOVA	
			F-value	P-value
Basic conditions	Male	12.0625	0.111	0.739
	Female	12.1442		
Organizational Management	Male	18.8494	0.969	0.325
	Female	18.4712		
Teamwork	Male	15.6108	1.589	0.208
	Female	15.2260		
Informative Applications	Male	20.1278	1.163	0.281
	Female	19.7356		
Marketing	Male	14.7557	0.113	0.737
	Female	14.6490		
Whole Process engineering consultation	Male	18.3295	2.543	0.111
	Female	17.6731		

Note: *Sig.(P)<0.05, **Sig.(P)<0.01

According to the results of one-way ANOVA on gender in Table 4.7, it can be seen that the F-values of basic conditions, organizational management, teamwork, information application, marketing and whole process engineering consulting services are 0.111, 0.969, 1.589, 1.163, 0.113 and 2.543, respectively; their P-values are 0.739, 0.325, 0.208, 0.281, 0.737 and 0.111, the p-values of this variable are greater than the significance level of 0.05, thus it can be indicated that there is no significant difference in the perceived level of each variable of this study among respondents of different genders.

Table 4.8 One-way ANOVA on educational background

Variables	educational background	mean value	One-way ANOVA	
			F-value	P-value
Basic conditions	High school and below	13.5000	43.241	0.000**
	junior college	10.6860		
	undergraduate course	13.4750		
	Master's degree or above	11.1724		
Organizational Management	High school and below	23.0000	5.028	0.002**
	junior college	17.5116		
	undergraduate course	19.3750		
	Master's degree or above	18.4267		
Teamwork	High school and below	16.0000	3.353	0.019*
	junior college	15.0000		
	undergraduate course	16.0000		
	Master's degree or above	15.0862		
Informative Applications	High school and below	21.5000	4.412	0.004*
	junior college	19.0465		
	undergraduate course	20.6667		
	Master's degree or above	19.6078		
Marketing	High school and below	12.5000	2.871	0.036*
	junior college	14.3605		
	undergraduate course	15.2167		
	Master's degree or above	14.3491		
Whole Process engineering consultation	High school and below	18.0000	4.937	0.002*
	junior college	17.0349		
	undergraduate course	18.9333		
	Master's degree or above	17.5991		

Note: *Sig.(P)<0.05, **Sig.(P)<0.01

According to the results of the one-way ANOVA on educational background in Table 4.8, it can be seen that in the one-way ANOVA on each group of variables, the F-values of the sample data were 43.241, 5.028, 3.353, 4.412, 2.871, and 4.937; their P-values were 0.000, 0.002, 0.019, 0.004, 0.036, and 0.002, respectively, and P-values were all less than 0.05 significance level. Thus, it can be shown that there is a significant variability in the perceived level of each study variable among the respondents with different educational backgrounds.

Table 4.9 One-way ANOVA on age

Variables	Age	Mean value	One-way ANOVA	
			F-value	P-value
Basic conditions	Under 20 years old	9.7500	4.164	0.002*
	21-30 years old	11.9392		
	31-40 years old	12.6683		
	41-50 years old	11.6043		
	Over 51 years old	11.8378		
Organizational Management	Under 20 years old	13.7500	2.866	0.023*
	21-30 years old	18.8840		
	31-40 years old	19.0603		
	41-50 years old	17.9640		
	Over 51 years old	19.2973		
Teamwork	Under 20 years old	13.0000	0.927	0.448
	21-30 years old	15.5083		
	31-40 years old	15.6834		
	41-50 years old	15.2950		
	Over 51 years old	15.0270		
Informatization Application	Under 20 years old	18.5000	0.985	0.415
	21-30 years old	19.9669		
	31-40 years old	20.1709		
	41-50 years old	20.0863		
	Over 51 years old	18.8108		
Marketing	Under 20 years old	18.0000	2.294	0.058
	21-30 years old	15.0939		
	31-40 years old	14.7638		
	41-50 years old	14.2662		
	Over 51 years old	13.9459		
Whole Process engineering consultation	Under 20 years old	15.5000	2.466	0.044*
	21-30 years old	18.1713		
	31-40 years old	18.6080		
	41-50 years old	17.7842		
	Over 51 years old	16.2703		

Note: *Sig.(P)<0.05, **Sig.(P)<0.01

According to the one-way ANOVA on age in Table 4.9, the F-values of the sample data were 4.164, 2.866, 0.927, 0.985, 2.294, and 2.466, and the P-values were 0.002, 0.023, 0.448, 0.415, 0.058, and 0.044, respectively, for each group of variables, where the different age The p-values of respondents on basic condition variables, organizational management variables, and whole process engineering consulting services variables were less than 0.05 significance level. This can indicate that there is a significant difference in the perceived level of respondents of different ages on the three research variables of conditions, organizational management, and whole process

engineering consulting services, and there is no present difference in the perceived level of teamwork, information technology application, and marketing.

Table 4.10 One-way ANOVA on years of work experience

Variables	Years of work	Mean value	One-way ANOVA	
			F-value	P-value
Basic conditions	Less than 3 years	9.7500	1.551	0.200
	3-5 years	12.2308		
	6-10 years	12.2622		
	over 10 years	11.9237		
Organizational Management	Less than 3 years	13.7500	1.911	0.127
	3-5 years	18.8526		
	6-10 years	18.8780		
	over 10 years	18.5805		
Teamwork	Less than 3 years	13.0000	2.089	0.101
	3-5 years	15.4359		
	6-10 years	15.9329		
	over 10 years	15.2076		
Informatization Application	Less than 3 years	18.5000	1.007	0.389
	3-5 years	20.1090		
	6-10 years	20.3293		
	over 10 years	19.6822		
Marketing	Less than 3 years	18.0000	4.222	0.006**
	3-5 years	15.2244		
	6-10 years	14.9451		
	over 10 years	14.1653		
Whole Process engineering consultation	Less than 3 years	15.5000	1.251	0.290
	3-5 years	18.4359		
	6-10 years	18.3171		
	over 10 years	17.7373		

Note: *Sig.(P)<0.05, **Sig.(P)<0.01

According to the one-way ANOVA on years of work in Table 4.10, it can be seen that in the one-way ANOVA on each group of variables, the F-values of the sample data were 1.551, 1.911, 2.089, 1.007, 4.222, and 1.251, with P-values of 0.200, 0.127, 0.101, 0.389, 0.006, and 0.290, respectively; where the no The p-values for marketing variables for respondents with no years of work experience are less than 0.01 level of significance. This can indicate that there is a significant difference in the perceived level of marketing variables among respondents with different working years, and there is no present difference in the perceived level of basic conditions, organizational management, teamwork, information technology application, and whole process engineering consulting services variables.

Table 4.11 One-way ANOVA on jobs

Variables	Jobs	Mean value	One-way ANOVA	
			F-value	P-value
Basic conditions	Assist engineers	11.8938	2.566	0.054
	Senior Professional Title	12.5842		
	Intermediate title	12.7500		
	Senior professional title	12.3000		
Organizational Management	Assist engineers	18.7259	0.316	0.814
	Senior Professional Title	18.9010		
	Intermediate title	18.1364		
	Senior professional title	18.6000		
Teamwork	Assist engineers	15.4864	0.016	0.997
	Senior Professional Title	15.4356		
	Intermediate title	15.3864		
	Senior professional title	15.4000		
Informatization Application	Assist engineers	19.9160	0.194	0.900
	Senior Professional Title	20.1188		
	Intermediate title	20.3409		
	Senior professional title	19.7000		
Marketing	Assist engineers	14.7358	0.966	0.409
	Senior Professional Title	14.8317		
	Intermediate title	14.0000		
	Senior professional title	15.9000		
Whole Process engineering consultation	Assist engineers	18.1037	0.233	0.873
	Senior Professional Title	18.2475		
	Intermediate title	17.5455		
	Senior professional title	18.1000		

Note: *Sig.(P)<0.05, **Sig.(P)<0.01

According to the results of the one-way ANOVA on posts in Table 4.11, it can be seen that in the one-way ANOVA on each group of variables, the F-values of the sample data were 2.566, 0.316, 0.016, 0.194, 0.966, and 0.233; their P-values were 0.054, 0.814, 0.997, 0.900, 0.409, and 0.873, respectively, and the P values were all greater than the 0.05 significance level. Thus, it can be stated that there is no significant difference in the perceived level of each study variable among the respondents with different job positions.

4.3.2 Correlation analysis

Correlation analysis is the process of describing the relationship between variables by using an appropriate statistical indicator in order to confirm the degree of linear correlation between the variables or the dimensions of the variables in the data analysis. Generally, the Pearson correlation coefficient is in the range of 1 or -l, which can be interpreted as the larger the coefficient between variables, the closer they are to each

other (Xue, 2021). Therefore, Pearson correlation analysis is also used in this study to analyze the core competence of whole-process engineering consulting services, and the specific results are shown in Table 4.12.

Table 4.12 Correlation analysis between variables

	1	2	3	4	5	6
Pearson						
Basic conditions	1					
Organizational Management	0.314**	1				
Teamwork	0.338**	0.281**	1			
Information Application	0.314**	0.284**	0.228**	1		
Marketing	0.254**	0.300**	0.220**	0.331**	1	
Whole Process engineering consultation	0.452**	0.477**	0.466**	0.478**	0.429**	1

**. Significant correlation at the 0.01 level (two-tailed).

According to the results of correlation analysis between each research variable in the core competencies of whole process engineering consulting service in Table 4.12, it can be seen that the correlation coefficient between whole process engineering consulting service and the basic condition variable in core competencies is 0.452**, the correlation coefficient with the organization management variable in core competencies is 0.477**, the correlation coefficient with the teamwork variable in core competencies is 0.466**, the correlation coefficient with the information technology application variable in core competencies is 0.478**, and the correlation coefficient with the marketing variable in core competencies is 0.429**. The correlation coefficient of information technology application variable in core competency is 0.478**, and the correlation coefficient of marketing variable in core competency is 0.429**. In conclusion, each research variable in the core competence of whole process engineering consulting service has a significant positive correlation effect.

4.3.3 Regression analysis

Regression analysis can describe exactly the specific relationship that exists between the variables and know exactly the magnitude of the quantitative relationship of the interdependence of each research variable variable (Xue, 2021). At the same time in the statistical analysis of the data is the next step of testing based on correlation analysis. Through the results of the previous research and analysis of correlation between each research variable, it is clear that there is a strong positive correlation between the core competencies of whole process engineering consulting services, but this does not indicate the existence of a causal relationship between each variable.

Therefore, in this summary study, regression analysis will be used to further analyze the data of each research variable, so as to understand more intuitively how each research variable affects each other, so as to explore the causal relationship between each index of core competence of whole-process engineering consulting service. Demographic variables such as gender, educational background, age, and years of experience were added as control variables in the regression analysis of each research variable. The results of the regression analysis on the basic conditions in the core competencies and the whole-process engineering consulting services are shown in Table 4.13.

Table 4.13 Regression analysis of basic conditions and whole process engineering consulting services

	Beta	t	P-value	VIF	R^2	Adjustment R^2	F	P
Constant		6.726	0.000		0.217	0.208	25.480	0.000
Gender	-0.062	-1.620	0.106	1.025				
Educational background	0.036	0.927	0.354	1.056				
Age	-0.069	-1.102	0.271	2.729				
Years of work	0.033	0.526	0.599	2.803				
Job	-0.058	-1.439	0.151	1.145				
Basic conditions	0.462	12.101	0.000	1.027				
Dependent variable: Whole Process engineering consultation								
D-W value: 1.905								

Note: *Sig.(P)<0.05, **Sig.(P)0.01

According to the results of regression analysis of basic conditions and whole process engineering consulting serves in Table 4.13, it can be seen that the basic conditions in core competencies are used as independent variables; gender, educational background, age, years of work and position of respondents are used as control variables; and whole process engineering consulting serves are used as dependent variables to carry out linear regression analysis. The R^2 value of the model is 0.217, which indicates that the basic conditions in core competencies can explain 21.7% of the variation in the whole process engineering consulting services. the value of F-test is 25.480, and the P-value is 0.000 which is less than 0.01 significance level, which indicates that the model passes the F-test and is statistically significant. the values of VIF are less than 10 and the D-W value is around 2. It can be concluded that the model is well constructed and there is no serious problem of multicollinearity.

The regression coefficient of basic conditions in core competencies is 0.462, t-value is 12.101, and p-value is 0.000 **, which indicates that basic conditions in core

competencies have a significant positive influence on whole process engineering consulting services, and the research hypothesis H1 is verified.

Table 4.14 Regression analysis of organizational management and whole process engineering consulting services

	Beta	t	P-value	VIF	R^2	Adjustment R^2	F	P
Constant		7.572	0.000		0.233	0.225	28.012	0.000
Gender	-0.047	-1.245	0.214	1.026				
Educational background	-0.022	-0.573	0.567	1.043				
Age	-0.050	-0.814	0.416	2.731				
Years of work	-0.011	-0.176	0.860	2.801				
Job	0.015	0.381	0.703	1.125				
Organizational Management	0.474	12.708	0.000	1.003				
Dependent variable: Whole Process engineering consultation								
D-W value: 1.882								

Note: *Sig.(P)<0.05, **Sig.(P)0.01

According to the results of regression analysis of organizational management and whole process engineering consulting services in Table 4.14, it can be seen that organizational management in core competencies is used as the independent variable; gender, educational background, age, years of work and position of respondents are used as control variables; and whole process engineering consulting services are used as the dependent variable to carry out linear regression analysis. The R^2 value of the model is 0.233, which indicates that the organizational management in core competency can explain 23.3% of the variation in the whole process engineering consulting service. the value of F-test is 28.012, and the p-value is 0.000 which is less than 0.01 significance level, which indicates that the model passes the F-test and is statistically significant. the values of VIF are less than 10 and the D-W value is around 2. It can be concluded that the model is well constructed and there is no serious problem of multicollinearity.

The regression coefficient of organizational management in core competency is 0.474, t-value is 12.708, and p-value is 0.000 **, indicating that organizational management in core competency has a significant positive influence on whole process engineering consulting services, and the research hypothesis H2 is verified.

Table 4.15 Regression analysis of teamwork and whole process engineering consulting services

	Beta	t	P-value	VIF	R^2	Adjustment R^2	F	P
Constant		6.715	0.000		0.222	0.213	26.265	0.000
Gender	-0.039	-1.026	0.305	1.028				
Educational background	0.003	0.071	0.944	1.045				
Age	-0.065	-1.045	0.297	2.730				
Years of work	0.010	0.167	0.868	2.800				
Job	0.002	0.045	0.964	1.125				
Teamwork	0.462	12.293	0.000	1.005				
Dependent variable: Whole Process engineering consultation								
D-W value：1.885								

Note: *Sig.(P)<0.05, **Sig.(P)0.01

According to the results of regression analysis of teamwork and whole process engineering consulting services in Table 4.15, it can be seen that teamwork in core competencies is used as the independent variable; gender, educational background, age, years of work and position of respondents are used as control variables; and whole process engineering consulting services are used as the dependent variable to carry out linear regression analysis. The R^2 value of the model is 0.222, which indicates that teamwork in core competency can explain 22.2% of the variation in whole-process engineering consulting services. the value of F-test is 26.265, and the P-value is 0.000 which is less than 0.01 significance level, which indicates that the model passes the F-test and is statistically significant. the values of VIF are less than 10 and the D-W value is around 2. It can be concluded that the model is well constructed and there is no serious problem of multicollinearity.

The regression coefficient of teamwork in core competencies is 0.462, the t-value is 12.293, and the p-value is 0.000 ** , indicating that teamwork in core competencies has a significant positive effect on the whole process engineering consulting services, and the research hypothesis H3 is verified.

Table 4.16 Regression analysis of information application and whole process engineering consulting service

	Beta	t	P-value	VIF	R^2	Adjustment R^2	F	P
Constant		5.990	0.000		0.234	0.226	28.232	0.000
Gender	-0.040	-1.072	0.284	1.027				
Educational background	-0.008	-0.208	0.835	1.043				
Age	-0.080	-1.309	0.191	2.730				
Years of work	0.036	0.579	0.563	2.804				
Job	-0.014	-0.361	0.718	1.127				
Informatization application	0.476	12.760	0.000	1.006				
Dependent variable: Whole Process engineering consultation								
D-W value：1.920								

Note: *Sig.(P)<0.05, **Sig.(P)0.01

According to the results of regression analysis of information technology application and whole process engineering consulting services in Table 4.16, it can be seen that the information technology application in core competency is taken as the independent variable; gender, educational background, age, working years and position of respondents are taken as control variables; and whole process engineering consulting services are taken as the dependent variable to carry out linear regression analysis. The R^2 value of the model is 0.234, which indicates that the application of information technology in core competency can explain 23.4% of the variation in the whole process engineering consulting services. the value of F-test is 28.232, and the p-value is 0.000 which is less than 0.01 significance level, which indicates that the model passes the F-test and is statistically significant. the values of VIF are less than 10 and the D-W value is around 2. It can be concluded that the model is well constructed and there is no serious problem of multicollinearity.

The regression coefficient of information technology application in core competency is 0.476, the t-value is 12.760, and the p-value is 0.000 **, which indicates

that information technology application in core competency has a significant positive impact on the whole process engineering consulting service, and the research hypothesis H4 is verified.

Table 4.17 Regression analysis of marketing and whole process engineering consulting services

	Beta	t	P-value	VIF	R^2	Adjustment R^2	F	P
Constant		7.264	0.000		0.189	0.181	21.531	0.000
Gender	-0.058	-1.507	0.133	1.025				
Educational background	-0.001	-0.022	0.982	1.044				
Age	-0.067	-1.053	0.293	2.730				
Years of work	0.064	0.993	0.321	2.819				
Job	-0.008	-.187	0.852	1.126				
Marketing	0.429	11.089	0.000	1.021				
Dependent variable: Whole Process engineering consultation								
D-W value：1.893								

Note: *Sig.(P)<0.05, **Sig.(P)0.01

According to the results of regression analysis of marketing and whole-process engineering consulting services in Table 4.17, it can be seen that marketing in core competencies is taken as the independent variable; gender, education background, age, years of work and position of respondents are taken as control variables; and whole-process engineering consulting services are taken as the dependent variable to carry out linear regression analysis. The R^2 value of the model is 0.189, which indicates that marketing in core competencies can explain 23.4% of the variation in the whole process engineering consulting services. the value of F-test is 21.531, and the p-value is 0.000 which is less than 0.01 significance level, which indicates that the model passes the F-test and is statistically significant. the values of VIF are less than 10 and the D-W value is around 2. It can be concluded that the model is well constructed and there is no serious problem of multicollinearity.

The regression coefficient of marketing in core competency is 0.429, t-value is 11.089, and p-value is 0.000 **, which indicates that marketing in core competency has a significant positive influence on the whole process engineering consulting service, and the research hypothesis H5 is verified.

According to the above analysis and test results of this sample data, it is found that among the five paths of core competencies of whole-process engineering consulting services, basic conditions, organizational management, teamwork, information technology application and marketing competencies in core competencies have significant positive influence on whole-process engineering consulting services. In this study, it is also found that informationization application and organization management have the most prominent influence on whole-process engineering consulting service, and marketing ability has the least influence on whole-process engineering consulting service.

Chapter 5 Conclusion and Recommendation

5.1 Conclusion

In this study, 560 valid questionnaires collected in this research activity were analyzed by descriptive statistics, one-way ANOVA, correlation analysis and regression analysis, etc., and the theoretical model of this paper was constructed through the five paths of basic conditions, organization and management, teamwork, information application and marketing in the core competencies, with which the research hypothesis of this paper is proposed. The results of the empirical analysis show that.

Research hypothesis 1 by regression analysis of Nantong Jianchen whole process engineering consulting service and infrastructure conditions, the regression coefficient is 0.462, the t-value is 12.101, and the p-value is 0.000 **. It is concluded that the improvement of the foundation conditions of Nantong Jianchen's whole process engineering consulting service can effectively improve the service capability of the enterprise's whole process consulting, and the research hypothesis is established.

Research hypothesis 2 The regression analysis of Nantong Jianshen's whole process engineering consulting service and organization management is carried out, and the regression coefficient is 0.474, the t-value is 12.708, and the p-value is 0.000 **. It is concluded that the improvement of organizational management capability of Nantong Jianchen whole-process engineering consulting service can effectively improve the service capability of whole-process consulting, and the research hypothesis is established.

Research hypothesis 3 The regression analysis of Nantong Jianchen's whole process engineering consulting service and teamwork is carried out, and the regression coefficient is 0.462, the t-value is 12.293, and the p-value is 0.000 **. It is concluded that the improvement of teamwork of Nantong Jianchen whole process engineering consulting service can effectively improve the service capability of whole process consulting of the enterprise, and the research hypothesis is valid.

Research hypothesis 4 The regression analysis of Nantong Jianchen's whole-process engineering consulting service and information application is carried out, and the regression coefficient is 0.476, the t-value is 12.760, and the p-value is 0.000 **. It is concluded that the improvement of informationization application of Nantong Jianchen whole process engineering consulting service can effectively improve the service capability of whole process consulting of the enterprise, and the research hypothesis is established.

Research hypothesis 5 The regression analysis of Nantong Jianchen's whole process engineering consulting service and marketing is carried out, and the regression coefficient is 0.429, the t-value is 11.089, and the p-value is 0.000 **. It is concluded

that the improvement of marketing capability of Nantong Jianchen whole process engineering consulting service can effectively improve the service capability of whole process consulting, and the research hypothesis is valid.

In summary, the basic conditions, organizational management, teamwork, information technology management and marketing among the core competencies of the enterprise have a significant positive influence on the whole-process engineering consulting services. The study also found that information technology application and organizational management have the most prominent influence on whole-process engineering consulting services, and marketing capability has the least influence on whole-process engineering consulting services. In order to ensure the scientificity and accuracy of the results of this study, this study adds demographic variables as control variables in the regression model among variables. From the results of the empirical analysis, it can be seen that there is no significant difference in the perceived level of each variable of this study among respondents of different genders and job positions; there is significant difference in the perceived level of each research variable among respondents with different educational backgrounds; There is no significant difference in the perceived level of the three research variables of conditions, organizational management, and whole process engineering consulting services by age of the respondents, and there is no present difference in the perceived level of teamwork, information technology application, and marketing; there is significant difference in the perceived level of the marketing variables by years of experience of the respondents, and there is significant difference in the perceived level of the basic conditions, organizational management, teamwork, information technology application, and whole process engineering consulting services variables. There is no significant difference in the perceived level of the variables of basic conditions, organizational management, teamwork, information technology application and whole process engineering consulting services. The findings of the research hypotheses are validated as shown in Table 5.1.

Table 5.1 Research findings

Research Hypothesis	Research Results
H1: The improvement of basic conditions in the core competence of Nantong Jianchen's whole-process consulting service has a significant positive effect on the ability of whole-process consulting service.	Established
H2: The improvement of organization management in the core competence of whole-process consulting service of Nantong Jianchen has a significant positive effect on the competence of whole-process consulting service.	Established
H3: The improvement of teamwork in the core competence of Nantong Jianchen's whole-process consulting service has a significant positive effect on the ability of whole-process consulting service.	Established
H4: The improvement of information application in the core competence of Nantong Jianchen whole-process consulting service has a significant positive effect on the ability of whole-process consulting service.	Established
H5: The improvement of marketing in the core competence of Nantong Jianchen's whole-process consulting service has a significant positive effect on the ability of whole-process consulting service.	Established

5.2 Discussion

According to the research results in Chapter 4 of this paper, Nantong Jianchen Engineering Consulting Co., Ltd. has the most prominent role in the study of core competence of whole-process engineering consulting services in terms of information technology application and organization management on whole-process engineering consulting services, so in order to improve the quality of consulting services of the enterprise, it is necessary to focus on the information technology construction and the improvement of internal organization management capacity of the enterprise.

On the one hand, the application of information technology can solve the problems of numerous business processes and inefficient information transmission for the whole-process engineering consulting service, and eliminate the cost increase caused by the information asymmetry of all parties involved in the construction, so as to realize the all-round integration of the project; on the other hand, the well-known Chinese head enterprises attach great importance to the application of information technology, such as big data, cloud computing, blockchain technology, information technology The application of the above-mentioned emerging technologies provides important support for the head enterprises to stay ahead. Therefore, Nantong Jianchen Engineering

Consulting Co., Ltd. should follow the trend of the times and invest more human, material and financial resources in the application of information technology to improve its own efficiency in the whole process of consulting services, reduce the cost increase brought by information asymmetry, and actively respond to the competition brought by the head enterprises entering the Chongqing market in the future.

On the one hand, good organizational management ability of engineering consulting enterprises can not only improve teamwork ability and promote active cooperation of team members; on the other hand, whole process engineering consulting serves enterprises involve the integration of multiple professional fields, and the improvement of organizational management ability can promote the close contact and resource integration of each professional field. Teamwork is a prerequisite for the stable development of the enterprise, and good teamwork not only enhances the construction of the team but also enhances the cohesion of the enterprise to a certain extent. Thus, organizational management ability plays an important role in the integration of whole-process engineering consulting services and business.

Marketing ability has the weakest influence on the whole process engineering consulting service, which is mainly related to the nature of engineering consulting enterprises, but in order to maintain the stable development of enterprises, enterprises should take the initiative to improve marketing ability, adapt to the changes in the market, and accurately judge the trend of market demand.

5.3 Recommendation

According to the research results, the five paths of basic conditions, organizational management, teamwork, information application and marketing in the core competence of Nantong Jianchen Engineering Consulting Co., Ltd. are combined with the theory of enterprise core competence and enterprise practice, and the following improvement strategies are proposed to help the whole process engineering consulting service enterprises improve their core competence and help them grow healthily. Thus, it contributes to the healthy and sustainable development of the whole process consulting field.

Optimize the internal structure of the enterprise Improve the form of organization management: Optimize the organizational structure of the whole engineering consulting team and improve the service capability of the team. In dynamically adjusting the organizational structure of the whole engineering consulting service enterprise, the following principles should be followed: First is the principle of strategy orientation. The enterprise development strategy is the long-term and global development goal and plan of the enterprise. According to the setting of strategic goals, the enterprise continuously adjusts and optimizes the organizational structure to achieve the goals. Second, the market-oriented environment principle, enterprises need to analyze the

industry market environment, judge whether the enterprise organization can adapt to the market environment, and adjust and optimize the organizational structure according to the judgment. At the same time, the enterprise can make a comprehensive analysis of the current situation of the enterprise and analyze the current business environment, and determine the organizational structure of the enterprise in combination with the business environment. The third is the principle of flat structure orientation, flat management organization structure can improve the office efficiency of the enterprise, reduce the administrative level, clarify the division of responsibilities, and reasonably arrange the workload of the post. Fourth is the principle of effectiveness evaluation, enterprises are in the process of dynamic development, the organization should be constantly adjusted with the dynamic changes. Enterprises need to evaluate their organizational structure regularly and effectively according to the actual situation to judge whether it meets the needs of enterprise development.

Market-oriented Strengthen marketing: At this stage, Nantong Jianchen Engineering Consulting Co., Ltd. does market-oriented in the development of the whole process of engineering consulting, and constantly improves its marketing ability. Insist on taking market demand as the core, such as consumer demand, service quality demand and supply demand, and make reasonable design and planning according to the actual situation of the company, and develop corresponding marketing strategy to meet customers' demand for the whole process of engineering consulting. In terms of action, we can strengthen publicity with the help of new media or network platform and organize professional operation team.

Sound information platform to reach the leading level in the industry: Improving the construction of the function of the information platform of the whole process engineering consulting is an important link to solve the problem of the development of informationization of the whole process engineering consulting of Nantong Jianchen Engineering Consulting Co. First, it comprehensively understands the needs of the engineering consulting team in the whole process of informationization application, strengthens the accumulation of the whole process of engineering consulting informationization application, and identifies the problems and shortcomings in the process of informationization application according to the accumulated experience, so as to further lay the foundation for improving the construction of information platform functions. Second, according to the user feedback in the process of use, the development of information service functions. At the same time, we should also increase the investment in the training of talents in the whole process of engineering consulting informatization, systematically invest in the training of talents and information technology research and development, effectively improve the construction of the whole service function of engineering consulting informatization and regularly launch training on the application of informatization for employees within the enterprise.

Improve the communication of each profession and strengthen teamwork: In order to solve the problems of lagging information transmission and project construction

caused by the independent operation of each profession, improving the communication and collaboration ability of the whole process of engineering consulting team is an important means to break the barriers and improve efficiency. Aiming at strengthening teamwork and promoting cohesion and centripetal force of each professional project personnel, enterprises should firstly strengthen the awareness of team communication and cooperation, with a strong sense of cooperation, which can effectively improve the efficiency of the whole process of engineering consulting to a certain extent and further promote the whole process of engineering consulting project to be completed better and faster. Secondly, opportunities should be created to promote communication between different professions. Enterprises should actively organize relevant training and regularly organize work experience exchange and sharing sessions for different professionals in design, bidding, costing, supervision and project management, etc., so as to promote the exchange between different professions and improve the technical skills of different professions.

5.4 Further Study

First, although the actual situation of research and relevant research results have been fully combined, there may still be some key indicators missing in the process of constructing the evaluation index system of whole-process engineering consulting service capability in this paper, and it is hoped that future research can think more fully when constructing the evaluation system and continuously improve the evaluation system.

Secondly, at this stage, the whole process engineering consulting service is in a period of rapid development, and in the process of continuous practice in the future, the whole process engineering consulting service will definitely present new service characteristics, so it is still necessary to keep up with the trend of the times and make further research at that time.

Thirdly, this paper only studies the core competence of the whole process engineering consulting service enterprises, and there is no unified conclusion on the concept of whole process consulting service among international scholars so far. In the future, the focus of scholars' research can be shifted to the exploration of the concept, definition, dimension and measurement index of whole process engineering consulting service.

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Appendix

Dear Sir/Madam:.

Hello, first of all, thank you for taking time out of your busy schedule to participate in this questionnaire survey. This academic study is "Evaluation Study on Core Competence of Nantong Jianchen's whole process engineering consulting serves", which aims to evaluate the core competence of Nantong Jianchen's f whole process engineering consulting consulting services by understanding your feelings about whole process engineering consulting consultants. Your support and cooperation will play an important role in this study. This questionnaire will be anonymous. Please cooperate and fill it out carefully. Thank you for your support and cooperation! Please tick the checkboxes. The data from this survey will be used for research purposes only and will not be disclosed to any third party.

Part 1: Basic Information of Respondents

1. Your gender is:
○A Male
○B Female

2. Your educational background is:
○A High school and below
○B College
○C Bachelor's degree
○D Master's degree or above

3. Your age is
○A 20years old and below
○B 21-30 years old
○C 31-40 years old
○D 41-50 years old
○E 51 years old or older

4. Years of work
○A Less than 3 years
○B 3-5 years
○C 6-10 years
○D 10 years or more

5. Your job is:
○A Professor
○B Associate professor
○C Senior Engineer
○D Assistant Engineer
○F other

Part II: Enterprise core competence indicators

Table A-1 Core Performance Scale

	1	2	3	4	5
Basic conditions					
A1 Basic conditions indicators of the whole process professional consulting ability is the most important core ability of the whole process engineering consulting service					
A2 The office equipment matching degree in the basic condition index is the most important core ability of the whole process engineering consulting service					
A3 The enterprise qualification level in the basic condition index is the most important core ability of the whole process engineering consulting service					
Organizational Management					
The degree of organizational network in B1 organizational management index is the most important core competence of whole-process engineering consulting service					
B2 The degree of corporate culture identity in the organizational management index is the most important core competence of whole-process engineering consulting services					
B3 Reasonable division of labor and responsibility in the organizational management index is the most important core ability of the whole process engineering consulting service					
B4 Reasonable engineering consulting management system in the organizational management index is the most important core ability of the whole process engineering consulting service					
B5 The specification of the whole process of engineering consulting business in the organizational management index is the most important core ability of the whole process engineering consulting service					
Teamwork					
C1 Teamwork index of all professional communication skills in the whole process is the most important core competence of whole process engineering consulting service					
C2 The awareness of professional cooperation in the whole process in the teamwork index is the most important core competence of the whole process engineering consulting service					
C3 The execution ability of members in the teamwork index is the most important core ability of the whole process engineering consulting service					

C4 The ability to control the leadership process in the teamwork index is the most important core ability of the whole process engineering consulting service					
Informatization Application					
Information awareness of team members in D1 information application index is the most important core ability of whole process engineering consulting service					
The timely delivery of results at all stages of the process in D2 information application index is the most important core ability of the whole process engineering consulting service					
D3 Information application indicators of the process results of all stages of the submission integrity is the most important core ability of the whole process engineering consulting services					
D4 The degree of functional perfection of information platform in the information application index is the most important core ability of the whole process engineering consulting service					
D5 The ease of operation of the information platform in the information application index is the most important core ability of the whole process engineering consulting service					
Marketing					
Corporate reputation in the E1 marketing index is the most important core competence of the whole process engineering consulting service					
E2 market share in marketing index is the most important core ability of whole-process engineering consulting service					
E3 Market development ability in marketing index is the most important core ability of the whole process engineering consulting service					
E4 Customer loyalty in the marketing index is the most important core ability of the whole process engineering consulting service					

Part III: Capability indicators of whole-process engineering consulting services

Table A-2 the Whole Process Engineering Consulting Service Scale

	1	2	3	4	5
F1 The most important thing in the company's whole process engineering consulting service is the foundation condition.					
F2 The most important thing in the company's whole process engineering consulting service is the organization management.					
F3 The most important thing in the whole process engineering consulting service of the company is teamwork.					
F4The most important thing in the whole process engineering consulting service of company is the application of information technology.					
F5The most important thing in the whole process engineering consulting service of company is marketing.					