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Analysis and Potential Application of the Maturity of Growth Management in the Developing Construction Industry of a Province of China: A Case Study

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Abstract: Construction industry is one of the major drivers of the economic sustainability of China's provinces. An investigation of the status of the construction industry in China is needed to find out its maturity and health. The results of this investigation may help China define the impact factors required in order to promote the growth level of its construction industry. This research assesses the growth level of the construction industry in Shaanxi Province, China. This study utilizes both the original average score method and the newer entropy method to analyze the growth level of the construction industry based on its growth management model and growth drivers. An empirical survey of this research includes 123 construction companies in Shaanxi Province. The results show that the entropy method is better than the average score method to use when analyzing the maturity status of a local industry for future development. The maturity level of Shaanxi's construction industry lies on the second tier in a four-tier ranking system. The advanced professional skills of project management are critically needed for future growth. Brand building is the most important factor needed to drive up Shaanxi's construction industry. Standardization, knowledge management through lessons learned, and cost management for budget control by using information systems are required for Shaanxi's construction project management. The Excellent Project Management Model of China is often used in Chinese project knowledge management. After maturity analysis, China's local industries would be able to develop a sustainable strategy for optimizing their outcomes by removing the hurdles preventing future growth.

Keywords: China's construction industry; maturity; economic sustainability; Excellent Project Management Model

1. Introduction

China's construction sector is now crucial to the country's economic development, while competition has become significant and aggressive. Although China's construction market is fairly new, it is already the largest in the world in terms of development potential and profitability. China's government applies its central, provincial and local management model to regulate its construction industry. The Ministry of Construction is the main supervisor in the sector through the effective application of three major laws: construction law, contract law and tendering and bidding law. These regulations allow companies to operate as commercial entities, mainly through competitive bidding [1].

In general terms, China's construction sector is comprised of companies primarily engaged in the construction of buildings and other structures, additions, alterations, renovations, installations, maintenance, and repairs. China's construction industry includes three distinct categories of enterprises: state-owned companies, urban and rural collectives, and rural construction teams, and despite the declining significance of foreign direct investment in the sector, the latest official data also consider foreign-funded companies as representative elements in the sector's growth.

As one of the most protected industries, which include automobiles, civil aviation, telecommunications, construction, steel, insurance, and energy in China, the construction industry undergoes sophisticated restructuring despite the general need to follow new patterns of industrial growth management. China's construction sector very much depends on its national macroeconomic policy, which in recent times has led to an upsurge of domestic demand and investment in infrastructure, more precisely in construction materials, equipment, and design services. Local governments, which tend to be the major investors in infrastructure, are the largest end users of construction materials and equipment.

However, China's construction sector is still labor-intensive, whereas it needs to gradually move into being technology-intensive in order to increase its international competitiveness [2]. Despite the growth of construction companies in China, there are only a few large and profitable enterprises that can influence and lead the industry or otherwise compete in the international market. From the perspective of competitiveness, the development of the construction industry is extremely unbalanced among the provinces in that a few are very developed, yet most are underdeveloped. Thus there is a development gap between the provinces as two provinces are the most developed in the construction industry and ten provinces are still developing; Shaanxi Province belongs to the latter category. Thus the growth management of China's construction industry needs to emphasis each province's context in order to understand its status in the transition period and to achieve a comprehensive upgrade.

This research proposes a new theoretical framework to analyze the maturity status of a local industry for future development and compares the results of the original growth management model with the new entropy method. The research results may be a good foundation in understanding the transition process of construction industry management in China when developing its management strategy. They are particularly useful to similar industries which may need improvement in developing their own approaches to managing economic sustainability.

The literature review in Section 2 surveys the drivers of the construction industry and growth management model as it applies to China. Section 3 provides the methodology of this research. Section 4 applies the methodology to analyze the growth stage of the construction industry and the corresponding top influencing factors. Section 5 presents the conclusions and highlights the implications for construction industry maturity analysis in a transitional economy.

2. Literature Review

Due to the widespread construction and overheating process derived from excessive investment, effective growth management in the civil engineering sector has been particularly imperative in the past decade. As construction industry managers often cannot clearly understand their own industry's status, it creates an iterating process throughout its industrial growth, and of course, internal barriers may be dominant caused by government policy initiative. According to previous research [2–11], several causes may be put forward to explain the barriers of construction industry growth management in the transition process.

First, the traditional argument is that a fair environment for innovation, specific brand-building strategy, capital-intensive project management, and project management information system are still in their infancy. These are the main factors restricting the transformation and upgrading of the construction industry. This argument explains the reason for much of the slow improvement and low implementation efficiency of industrial growth at the time of transition and shortly after that period. However, since the modernization of the construction market and the adoption of benchmarked project management, the explanatory power of this traditional argument decreases, although it does not vanish. Second, the barrier of construction industry growth management may be caused by the lack of skilled workers at the provincial level. A typical example of this is the low level of low carbon building technology investment [12–14] and its corresponding lack of talent support [15].

Additionally, considering the crucial importance of the construction industry in China's path to economic transition, the 2014 guidelines for promoting the development and reform of the construction industry issued by the Ministry of Housing and Urban-Rural Development of the People's Republic of China (MOHURD, P. R. China) state that provinces, autonomous regions, and municipalities may use the actual situation to propose the self-augmenting reform policies and measures in order to support the transformation of construction enterprise. This should then achieve the success results of sustainable growth. According to the thirteenth five-year plan transition pilot program in construction, Shaanxi Province has also been listed to carry out the pilot reform and development of its construction industry, complying with the 2014 guidelines of MOHURD, P. R. China.

Stubbs and Cocklin (2008) discuss organizational development needs in view of the balance between economic and environmental impacts by using the sustainability business model [16]. Wang (2016) has developed a procedure for the analysis of sustainable development, which includes accountability, predictability, balanceability, and policy (APBP), as shown in Figure 1 [17]. In this research, focus has been placed on the maturity of the construction industry based on the accountability analysis of the maturity of this industry. The rising need to quantitatively assess the levels and target the impact factors as a way of improving the construction industry's sustainable development has become one of the dominant best practice requirements in the construction industry over recent years in both a national and international context [18,19].

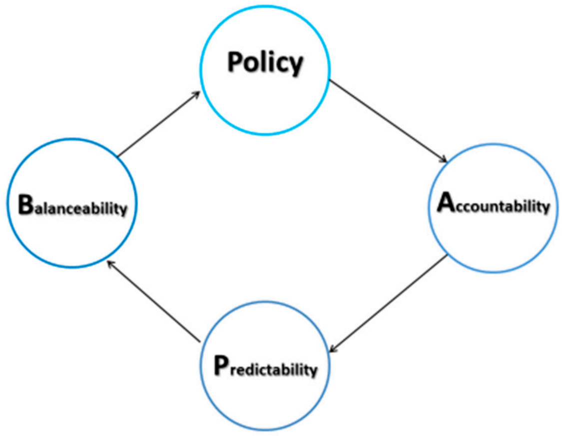

Figure 1. Cycle of accountability, predictability, balanceability, and policy (APBP) (Wang, 2016) [20].

Attention should be given to the fact that there is a clear gap between the different levels in the process of organizational maturity, and as a result, a methodology is needed to predict the level of the local industry [21,22]. The method of using the targeted impact factors may be far too generic to be utilized by practitioners seeking to implement the specific growth management of the construction industry in order to ensure its sustainable development [23,24]. Usually, companies in the transition phase cannot see their way to upgrade to the next level [19,25–33]. The growth management model (GMM) has been adopted to form an integrated organizational diagnosis framework to analyze the growth management of the petroleum industry in China [34].

Determination of the level of growth in China's construction industry has a political connotation [3]. In recent years, policy makers have repeatedly designed strategic programs to trigger growth at the central, provincial, and local levels. This research provides a theoretical framework and case study to explore the growth of China's construction industry at the provincial level.

2.1. Growth Driversof the Construction Industry

The growth drivers of the construction industries, such as the influences of technological innovation and strategies to transparently build up a company's drivers in order to overcome the difficulties in the transformation period, have caught the attention of researchers [35–37]. Growth drivers also may include renovating construction patterns, integrating external information, implementing project knowledge management, and developing the brand [19,38–41]. The competitive advantages of the updated industry are based on the efficient use of internal resources, such as capital, workforce, technological innovation, and knowledge integration of brand building. For example, technological innovation may lead the transformation and improve the capability of enterprises [42,43]. The acquisition and implementation of talent helps enterprise transformation [44]. Undoubtedly, a well-designed brand is needed to provide values to consumers in the construction service market. The brand of a construction enterprise also requires high-quality projects, outstanding corporate culture, thoughtful customer service, and advanced management systems.

On the micro level, construction companies may have similar drivers in the growth process. For example, Han and Ofori (2001) [3] have studied the relationship between the development of the construction industry and local economic growth. Iammarino et al. (2012) [45] have researched the relationship between companies' technological capabilities and their locations. Dick and Payne (2005) [46] and Herliana (2015) [47] have studied local development and the growth of clusters of small and medium enterprises. They all state that at the local level, growth could be accelerated by certain factors. They also note that with a clear process, construction industry growth management is increasingly recognized as a central competitive advantage in embracing sustainability. However, Dick et al., argue that there is compelling evidence that as the construction industry wrestles with the challenge of building a sustainable organization, it should clearly know at what growth level it is and then focus on the core issues in order to proceed with the appropriate steps. Nevertheless, for local construction companies, there is a lack of systematic framework for growth drivers that can be used effectively in practice to analyze the growth level of the construction industry. Thus, it is urgent to thoroughly understand the sustainable processes to implement change. This is because of the following: (a) Growth management of the local construction industry is needed to justify the enterprises' growth drivers and to realize that their levels are influenced by their specific impact factors; (b) Impact factors are targeted in the corresponding phase of construction industry management; and (c) Successful countermeasures are needed to iterate industrial growth management through local construction company feedback. As described above, the growth path of the local construction industry has been established for industrial policymakers in order that they achieve self-augmentation of their industry management. This provides a quantitative way to service a repeatable and scalable industry growth management model of sustainable construction industry.

Laihonen et al. (2015) developed case-specific cornerstones of growth-oriented knowledge management. The results of their research show that there are two knowledge issues that arise when dealing with growth management. The first issue concerns whether or not an organization has the needed knowledge resources to enable growth, and the second issue is the need for management to have relevant and real-time information in order to make informed decisions [48]. AlQahtany et al., used Delphi techniques to propose a framework of sustainable development that focused on environmental, social, economic and urban planning issues [49]. However, these models are neither focused on the construction industry nor can be used to analyze its maturity. McIntyre [20] explains a process for finding out the appropriate level of the growth management model (GMM) through a consortium of industry advisory boards, committees, and councils; the American Council for Construction Education has chosen this model as a standard. This model pays much attention to internal sustainable management in order to pursue an organization's growth and has been widely facilitated in organizational process management, such as sustainable growth management of organizational diagnosis [34]. Thus, our research uses growth drivers in China's construction industry plus GMM to form a theoretical framework. Our study also implements the data of previous research to further analyze the growth path position of construction industry management, which forms a complementary profile of the internal driver levels to explain Shaanxi's construction industry management.

2.2. Growth Management Model (GMM)

Growth managementis one core part of the sustainable growth of an industry, which is increasingly recognized as a central determinant for economic sustainability. In order to analyze the growth management of an industry, Charles McIntyre (2015) [20] suggests using an industry advisory board (IAB) to propose an IAB GMM model for analyzing the organizational growth stage. Like Charles McIntyre's statement, the GMM framework roots itself in basic management theory which is applicable to any business or organization. Focusing on the internal and evolutionary growth which occurs within industry, the GMM model is generic in nature and refers to any industry. Charles McIntyre was aware of this and provided a structured and sequential approach to improving managerial proficiency with the ultimate goal of enhancing outcomes by means of models that are similar to IAB GMM. As a managerial instrument, the GMM model is designed to enhance the proficiency of an organization which is attempting to improve organizational outcomes.

As an organization's managerial proficiency improves, organizational outcomes increase before reaching new stability zones/levels. Transition periods may result in interpersonal conflicts because of new expectations and higher anticipated efficiencies. During the transition periods, IAB members are typically asked to step out of their personal comfort zones and meet new challenges. In this process, GMM provides a fundamental theory to understand the significance of effective managerial proficiency. In an organization's GMM framework, the vertical axis represents managerial proficiency, and the horizontal axis relates to an organization's outcomes. The relationship between managerial proficiency and organizational outcomes is expressed by a series of plateau levels, such as IAB Level I, which are linked by transition periods. During the period of transition, the organization needs to change until it approaches the next managerial proficiency level. These four management plateaus represent the IAB GMM model outcomes which can be achieved at each level of managerial proficiency. These plateaus are stability levels where the IAB outcomes match the organization's managerial proficiency exactly, as shown in Figure 2. Consistent with the generic thinking of the IAB GMM, this research modifies the corresponding four levels of construction industry growth management to form a new integrated diagnostic model for local construction industry transition. As the integrated model indicates in Figure 2, the vertical axis represents managerial proficiency, and the horizontal axis shows instrument scores.

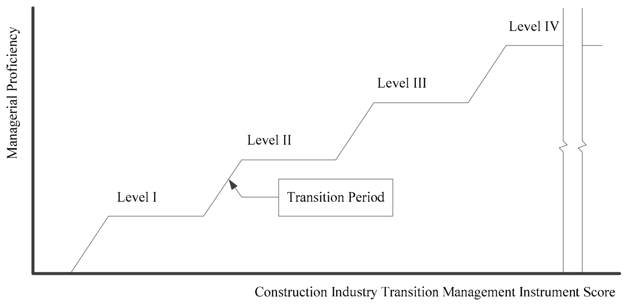

Figure 2. Incorporating growth management model (GMM) into local construction industry transition.

In order to respond to the growth level question of the construction industry, McIntyre has adopted the concepts of the framework of GMM [20] to match the construction industry's transition to a stage of sustainable economic development. The research of Zhang et al. (2016) has integrated IAB GMM into an extended Weisbord's Six-Box Model to form a sustainable growth diagnosis framework, which has been used to investigate one of China Petro sub-companies as an empirical case study [34]. According to existing research of growth drivers, four levels of construction industry growth management have been redeveloped by renovating construction patterns, integrating external information, implementing project knowledge management, and building the brand, which are all primary components of managerial proficiency of construction industry transition needed for sustainable development. In addition, construction industry transition outcomes are defined as the number and quality of best practices conducted by local construction industry within these four proficiency levels.

2.3. *Analysis of the Maturity of Growth Management*

This research has developed a theoretical framework of the general underlying mechanisms of maturity analysis as shown in Figure 3. Within this framework it can be seen that transition process description and quantitative assessment have the same implications for the development of a local construction industry. The goals of the research approach are to create an understanding of the theoretical framework of construction industry growth management in the transition period and to structure the findings obtained in this case study.

A

B

C

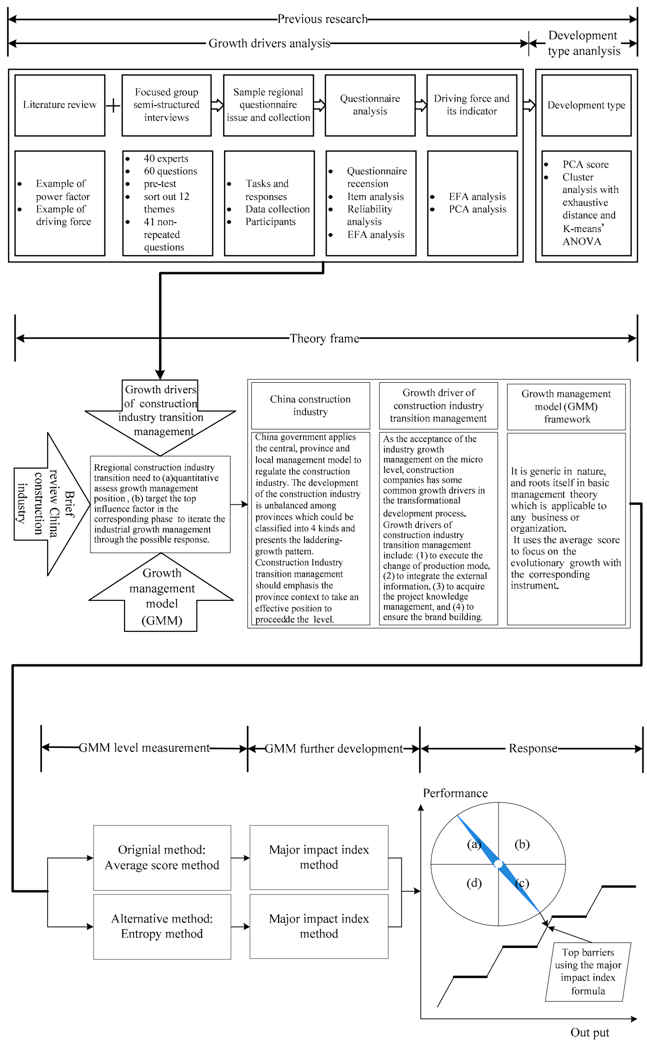

Figure 3. Research design. Note 1: (**A**) represents the previous studies and growth driver analyses that were adopted in this research; (**B**) represents the theoretical framework integration process; and (**C**) represents the test process of theoretical framework. Note 2: There are four growth drivers in the response wheel. Driver (a) represents implementation level of transformational development; Driver (b) represents external information integration; Driver (c) represents project knowledge management; and Driver (d) represents corporate brand building support.

3. Methodology

In order to justify the validity of the original GMM framework by using an average score method, according to the American Council of Construction Education (ACCE), we chose the entropy method as the proposed alternative to comparatively analyze the growth management position in order to target the transition step in the sustainable development of the construction industry transition process. The entropy method [50–52] is an objective approach reflecting the disorder degree of information in not only information theory but also in the expansion of social and economic areas [50,51,53–55] where the weights of individual indicators are determined by calculating the entropy and entropy weight. The greater the entropy is, the smaller the corresponding entropy weight. If the entropy weight is zero, it provides no useful information to the decision-maker, and this indicator may be removed. The amount of useful information that the target provides to the decision-maker is objective. Thus, using the entropy method to determine index weights could reflect an objective and realistic information-derived GMM system of construction industry transition.

3.1. Average Score Method

According to Charles McIntyre (2015), the main steps in obtaining the average score to evaluate the GMM Level of the local construction industry are shown as follows [20]:

(1) Calculating the average score of total samples

Suppose there are m units and n indicators to be evaluated to establish the sum in Equation (1).

$$ZF_i = \sum_{t=1}^{n} f_{st} \tag{1}$$

where $s = 1, 2, 3, ..., m$; $t = 1, 2, 3, ..., n$; ZF_s = the score sum of sth sample; f_{s_t} = the tth index score of sth sample. Then the average score of m units is calculated in Equation (2).

$$f = \sum_{s=1}^{m} ZF_s / m \tag{2}$$

(2) Grading the GMM level of the local construction industry

When the average score is calculated, we apply it to grade the WSBGMM level.

According to the IABGMM model [20], suppose that there is $K = 5$ (where $A = 5$ represents strong disagreement to $E = 5$ representing strong agreement) scaling of each indicator in each unit, then there are 5 ($K = 5$) levels to be graded for the sample. The scope of each level is shown in Table 1.

Table 1. The scope of each level in the growth framework of construction industry growth management using the average score method.

Level	I	II	III	IV
Scope	$n \times [1,2)$	$n \times [2,3)$	$n \times [3,4)$	$n \times [4,5]$

Note: n represents the number of indicators in m units. Source: Compiled by the authors according to the IABGMM level calculation proposed by Charles McIntyre (2015) [20].

In the case of the average score method, it is assumed that the index weight probability of each sample at each level is equally allocated to generate the total sample level in the WSBGMM model. Actually, the index weight is objectively constrained by the sample score, which is the reason why we have used another method, namely the entropy method, to calculate the WSBGMM level to arrive at more accurate assessment results.

3.2. Entropy Method

The main four steps of entropy method [50,56] are shown as follows:

Step 1: The formation of the evaluation matrix

Suppose there are also m units and n indicators to be evaluated in order to establish the original data matrix in Equation (3).

$$R = (r_n)_{m \times n} \quad (s = 1, 2 \ldots, m; t = 1, 2 \ldots, n) \tag{3}$$

where r_{st} represents the actual value of the tth index of sth unit.

Step 2: The standardization of the evaluation matrix

The following equation is used to normalize the matrix B,

$$B = (b_n)_{m \times n}(s = 1, 2 \ldots, m; t = 1, 2 \ldots, n) \text{ with } b_{st} = \frac{r_{st} - r_{min}}{r_{max} - r_{min}} \tag{4}$$

where r_{max} and r_{min} represent the maximum and minimum values respectively for the evaluation unit.

If indicator is the positive tropism (+)

$$b_{st} = \frac{r_{st} - r_{min}}{r_{max} - r_{min}} \tag{4-1}$$

If indicator is the negative tropism (–)

$$b_{st} = \frac{r_{max} - r_{st}}{r_{max} - r_{min}} \tag{4-2}$$

Step 3: The calculation of the entropy

The entropy of the system can be defined by using the following calculations:

$$H_t = -\left(\sum_{s=1}^{m} f_{st} ln f_{st}\right) / \ln m \quad (s = 1, 2 \ldots, m; t = 1, 2, \ldots n) \tag{5}$$

where, $f_{st} = b_{st} / \sum_{s=1}^{m} b_{st}$ if $f_{st} = 0$, redefine the f_{st} as:

$$f_{st} = (1 + b_{st}) / \sum_{s=1}^{m} (1 + b_{st}) \tag{6}$$

Step 4: The calculation of the entropy weight

$$\text{w} = (\omega_t)_{1 \times n}, \omega_t = (1 - H_t) / \left(n - \sum_{t=1}^{n} H_t\right) \text{ with } \sum_{t=1}^{n} \omega_t = 1 \tag{7}$$

Step 5: Use to Entropy weight to calculate the score of WSBGMM level

$$sf = \sum_{i=1}^{n} \omega_i f_i \tag{8}$$

where, ω_i = the entropy weight of the ith index, and f_i the score of the ith index.

Step 6: Grade the level

According to the average score method above, the entropy method to grade the GMM level of the construction industry growth management is shown in Table 2.

Table 2. Scope and level of the growth framework of the construction industry using the entropy method.

Level	I	II	III	IV
Scope	[1,2)	[2,3)	[3,4)	[4,5]

Source: Compiled by the authors according to the grading rubric of the IABGMM level proposed by Charles McIntyre (2015) [20].

3.3. Targeted with Impact Factor

As stated previously, looking at the top impact barriers and finding targeted solutions in the current organizational level is a good way to promote a sustainable path for an organization. This research uses the major impact index formula [52,57–59] to generate and compare the impact extent of the indices, which are shown Equation (9).

$$A_i = \omega_i d_i / \sum_{i=1}^{n} \omega_i d_i \times 100\% \tag{9}$$

A_i represents the indices' impact extent, ω_i represents the index entropy weight, d_i represents the index standardization value, and n represents the index number in the evaluation system of WSBGMM.

As to the use of the average score method to calculate the top impact barriers, the index is allocated to the average weight. Thus the top impact barrier formula with the average score method is shown in Equation (10).

$$A_i = \frac{d_i}{\sum_{i=1}^{n} d_i} \times 100\% \tag{10}$$

4. Implementation

4.1. Data Collection

This research uses data collection from prior research that focused on obtaining the understanding of growth drivers that may help to promote the transformation of the local construction industry at the company level. In addition, China's economy is driven primarily by the policy and management of local governments, resulting in the transitional status of the local construction industry. Thus, using a survey design, we collected data from 123 local construction companies located in China's Shaanxi Province to explain the growth level of its construction industry growth management. The Shaanxi Construction Association has been responsible for the forum of construction industry growth management annually supported by the provincial government in Shaanxi. With the help of the Shaanxi Construction Association, we randomly selected 1200 companies from the Shaanxi 2014 Yellow Pages Commercial/Industrial Telephone Directory [59–62]. We made telephone calls to the top administrator of each company to explain the purpose of the study and to solicit agreement for survey participation. Of the 1200 companies, 300 agreed to participate. We then hand delivered a total of 300 questionnaires to the top administrator in each company. A telephone follow-up was conducted within two weeks to make sure that it was the top administrator (i.e., general or deputy-general manager) who provided the information. In many cases, the research company sent representatives to meet the top administrators of the companies to explain how the data would be used, to answer any questions, and to collect the finished questionnaires. This was an important step toward obtaining high-quality data in China [63,64]. Overall, a total of 145 questionnaires were issued, of which 123 were completed correctly. With an 84.83% response rate, the data collection met the requirement of sample size (i.e., at least 100) in order to analyze the common problems in economic and social areas [65,66].

Following the prior research design shown in Figure 3 in Section 2.3, we developed a questionnaire with (a) item analysis (*T*-test ($p< 0.05$) [65,66]); (b) reliability analysis (Cronbach's $\alpha > 0.80$); (c) item total correlation analysis, the threshold value of which was conducted between 0.3 and 0.5 [66]; (d) exploratory factor analysis (EFA) (KMO > 0.9 and Eigenvalue > 1); and (e) principle component analysis (PCA) with SPSS 22 software (Appendixs A–J). In addition, in order to determine whether nonresponse bias was present in the study, we compared early respondents with late respondents on the key constructs. Chi square tests showed that no significant differences existed between the early and the late respondents with regard to company characteristics. In addition, t-test results indicated that there were no significant differences between the earlier and later respondents on the measures of construction industry growth management. Thus, nonresponse bias was not a problem in this study.

Our final questionnaire of Shaanxi's construction industry growth management contained 16 questions (Appendix B). In the formal questionnaire, most items were evaluated on a five-point ratio scale (1 = very important to 5 = not very important), except for several specific options. The statistical measurements of instrument development are described in Table 3 below.

In Shaanxi Province, we administered the questionnaire in Chinese. To ensure that the meaning of all questionnaire items in the Chinese version were the same as those in the original English version, we translated all the questions into Chinese and then back-translated them into English following the procedure that Chung-Leung (2005) [67] andLi (2006) [68] suggest.

Table 3. Overview of items and principle components in the final questionnaire of Shaanxi's construction industry.

Original Question No.	Item	Principle Component	Formal Questionnaire(Appendix A)	
			Final Question No.	Name of Principle Component
V11	How significant is the attention given to propagating the advanced practice gained through successful projects in your company?	F1-1	No. 1	Implementation level of transformational development
V14	How often are transformational project delivery methods, such as EPC, BT, or BOT, used in your company?	F1-2	No. 2	
V16	What is the extent of standardization in your company?	F1-3	No. 3	
V17	What is the extent of improvement of living conditions of your company's construction laborers?	F1-4	No. 4	
V18	At what level is your company's implementation of project information management?	F1-5	No. 5	
V19	How often are joint venture and equity used in your company's project management system?	F1-6	No. 6	
V29	How important is brand building to your company in improving its development?	F1-7	No. 7	
V 15	How important are your company's corporate earnings from EPC, BT, or BOT?	F2-1	No. 1	External information integration
V 36	In your company's project management services, how well is the information-related budget managed?	F2-2	No. 2	
V37	What is the extent of your company's clarity of information channels and platforms used to share economic and market trends (e.g., in memos, company newsletters, and/or on the company's website)?	F2-3	No. 3	

Table 3. *Cont.*

Original Question No.	Item	Principle Component	Formal Questionnaire(Appendix A)	
			Final Question No.	Name of Principle Component
V22	How important is the implementation of quality and safety standards to your company's corporate managers?	F3-1	No. 1	Project knowledge management
V 23	How well is project standardization managed in your company?	F3-2	No. 2	
V24	What is your opinion of the implementation of project knowledge training in your company?	F3-3	No. 3	
V25	How familiar are you with the Excellence Project Management Model published by the Ministry of Housing and Urban-Rural Development of the People's Republic of China (MOURD, P. R. China)?	F3-4	No. 4	
V26	What is your opinion of your company's implementation of the Excellence Project Management Model published by MOURD?	F4-1	No. 1	Corporate brand building support
V27	Does your company have a brand building department?	F4-2	No. 2	

Source: Adoption of research of Zhang et al. [21].

4.2. Average Score Method Analysis

4.2.1. Growth Level Using the Average Score Method

On the basis of Table 3 in Section 4.1, using the average score method with Equations (1) and (2) in Section 3.1, it is easy to generate the average score of the construction industry growth management of Shaanxi Province, which is 40.927. At the same time, using Table 2 in Section 3.1, we can arrive at each growth level, as shown in Table 4. Thus, it is easy to find that Shaanxi's construction industry maturity level is Level II. Analogous to the framework of GMM [20], the maturity level and whole process of Shaanxi's construction industry growth are clearly shown in Figure 4, which also indicates that its status is still at an early level. Thus it should look for ways to improve its growth.

Table 4. Growth level and scope using the average score method.

Level	**I**	**II**	**III**	**IV**
Score	[16,32)	[32,48)	[48,64)	[64,80]

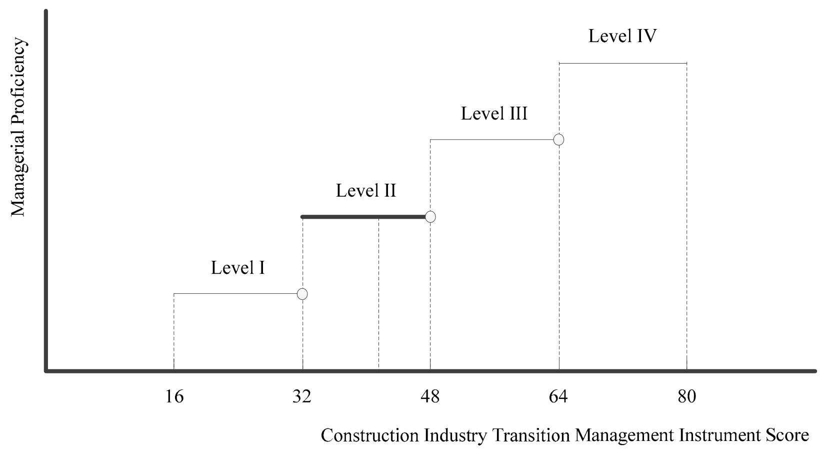

Figure 4. Level of Shaanxi's construction industry growth management using average score method with GMM framework.

4.2.2. Impact Factors Using the Average Score Method

Our research uses three lower frequency percentages as threshold values to analyze the impact factor, with Equation (10) generating the degree of difficulty of each index, as shown in Table 5. According to past research [52,54,58,69,70], the smaller the frequency percent of each index is, the stronger the hindering influence. In Table 5, we can see that F1-7 in Table 3 is the smallest frequency percent, which indicates that Shaanxi's construction industry's brand building support is unable to meet the requirements for transition at the present time. The values of F3-2 (59) and F3-4 (60) in Table 5 are smaller than all the other values, which shows that Shaanxi's construction industry is not standardized and needs to learn effective project management. The industry should also become familiar with the Excellence Project Management Model compiled by MOURD, China.

Table 5. Impact factors using the average score method.

Index	F1-1	F1-2	F2-1	F1-3	F1-4	F1-5	F-16	F3-1	F3-2	F3-3	F3-4	F4-1	F4-2	F1-7	F2-2	F2-3
Frequency	62	84	99	94	79	78	66	90	59	88	60	93	82	48	62	81
Frequency %	50.4	68.3	80.5	76.4	64.2	63.4	53.7	73.2	48	71.5	48.8	75.6	66.7	39	50.4	65.9

4.3. Entropy Method Analysis

4.3.1. Impact Factors Using the Entropy Method

We used Equations (3) and (4) in Section 3.2 to standardize the data of the final questionnaire. We then applied Equations (5)–(7) in Section 3.2 to generate the entropy weight of the 16 indices in Table 3, which are shown in Table 6.

Table 6. Index entropy weight of Shaanxi construction industry.

Index	F1-1	F1-2	F1-3	F1-4	F1-5	F1-6	F1-7	F2-1	F2-2	F2-3	F3-1	F3-2	F3-3	F3-4	F4-1	F4-2
Entropy weight	0.061	0.055	0.065	0.062	0.056	0.044	0.043	0.078	0.050	0.052	0.043	0.111	0.114	0.039	0.062	0.065

4.3.2. Impact Factors Using the Entropy Method

By calculating the Shaanxi construction industry's growth level using the entropy method of Equation (8), we generate a score of 2.55, which is at Level II. Compared with Table 2 in Section 3.2, we can then see that the level of management proficiency of the Shaanxi construction industry lies at the second level, as shown in Figure 5, which is also consistent with the results of Charles McIntyre (2015) [20].

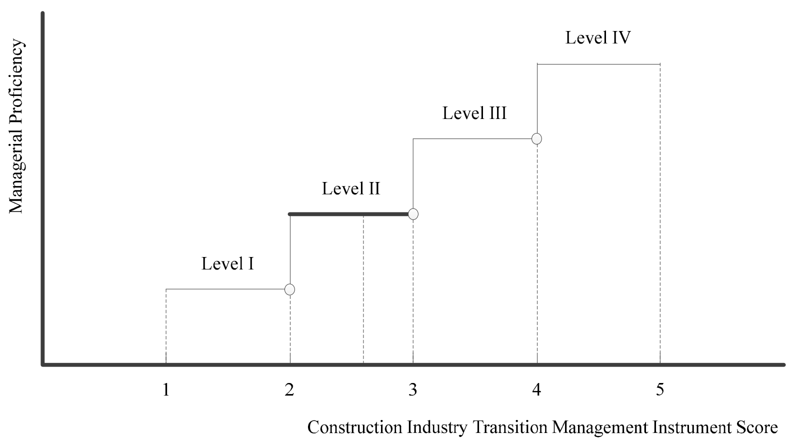

Figure 5. Level of Shaanxi's construction industry using the entropy method with GMM framework.

4.3.3. Impact Factors Using the Entropy Method

Equation (9) of the barrier degree method in Section 3.3 allows us to generate the frequency percentages of the impact factors using the entropy method. The results are shown in Table 7.

Table 7. Impact factors using the entropy method.

Index	F1-1	F1-2	F2-1	F1-3	F1-4	F-15	F1-6	F3-1	F3-2	F3-3	F3-4	F4-1	F4-2	F1-7	F2-2	F2-3
Frequency	58	69	99	93	61	35	19	96	35	67	24	95	95	8	60	81
Frequency %	47.2	56.1	80.5	75.6	49.6	28.5	15.4	78	28.5	54.5	19.5	77.2	77.2	6.5	48.8	65.9

With regard to Table 7, we can see that the three lowest frequency percentages of the indices of Table 3 are F1-7 (6.5%), F1-6 (15.4%), and F3-4 (19.5%). Thus, in order to manage the growth drivers of Shaanxi's construction industry, the local government may need to pay more attention to improving the maturity level of this industry. This may be done by project management systems implementation, brand building, and project knowledge management, as well as enhancing the understanding of the Excellence Project Management Model compiled by MOURD, China.

4.4. Discussion

The above research shows that brand building is the most important factor needed to drive up Shaanxi's construction industry. Standardization, knowledge management through lessons learned, and cost management for budget control by using information systems are required for construction project management. Understanding of the Excellent Project Management Model of China is a trend for Chinese project knowledge management.

Technological innovation, information systems, urban and rural infrastructure, and knowledge management and training in the construction industry are the most important potential areas to enhance in order to drive up growth [19,25,27,42,71,72]. The results of our research show that the Shaanxi construction industry is on the second level of managerial proficiency and also that the critical impact factors of future growth are the driving forces of transformation and project knowledge management in this industry. Our research also prioritizes the factors of organizational growth.

This research summarizes the top seven impact factors as shown in Table 8. Other researchers [23,24,73,74] recommend that the local government stimulate the transformation of construction enterprises and encourage these businesses to focus on implementing innovative business models such as service-driven engineering, procurement, construction, and partnering. In Table 8, the results from the entropy method are more consistent with still other research [34,50,52,55,75]. Questions such as "How significant is the attention given to propagating the lessons learned from successful projects in your company?" (F1-1 in Table 3), "At what level is the implementation of project information management in your company?" (F1-5 in Table 3), and "How well is project standardization managed in your company?" (F3-2 in Table 3) should be the significant impact factors for Shaanxi construction industry growth management.

Table 8. Top seven impact factors by using the entropy method and the average score method.

Rank	Average Score Method		Entropy Method	
	Impact Factor	Frequency %	Impact Factor	Frequency %
1	F1-7	39	F1-7	6.5
2	F3-2	48	F1-6	15.4
3	F3-4	48.8	F3-4	19.5
4	F1-1	50.4	F1-5	28.5
5	F2-2	50.4	F3-2	28.5
6	F1-6	53.7	F1-1	47.2
7	F1-5	63.4	F2-2	48.8

Additionally, using the growth driver aspect as shown in Table 9, the different methods give us almost consistent results for the impact factors. Researchers [23,24,73,74,76,77] further suggest the importance of talent training and technological innovation. Our research focuses on the maturity analysis of the construction industry and its impact factors needed for the companies. For example, in order to update the managerial proficiency level of the construction industry, the local government should encourage the industry to pay attention to brand building in order to enhance brand recognition in the market. This result is consistent with the central tenets of "Rethinking Construction: the Egan Report", which mentions the importance of learning strategies and methods in construction industry management and enhancing the application of brand strategy performance tools and techniques [78].

Table 9. Impact factors of the growth driver aspect using the entropy method and the average score method.

Growth Driver	Method	Impact Factor
Implementation level of transformational development	Average score method Entropy method	F1-7 F1-7
External information integration	Average score method Entropy method	F2-2 F2-2
Project knowledge management	Average score method Entropy method	F3-2 F3-4
Corporate brand building support	Average score method Entropy method	F4-2 F4-1, F4-2

5. Conclusions

This research reviews the characteristics of Shaanxi Province's construction industry, defines its growth drivers, and develops a growth management model (GMM). The research investigates the maturity levels of the construction industry in Shaanxi, which is on its national government's pilot list. This study also researches Shaanxi's significant impact factors on its industry level and explains the four growth drivers and 16 corresponding indicators of growth management in this province. The empirical research shows that the growth management of Shaanxi's construction industry lies on the second of four maturity levels. This indicates that the construction industry of Shaanxi is at an early stage of growth management and is facing some critical problems, such as a low level of transformation and a lack of project knowledge management. The Shaanxi construction industry may need to enhance the brand building in its enterprises' developmental strategies, to increase budgets on training as well as research and development, and to implement project standardization management.

This research proposes a theoretical framework for analyzing the maturity status of a developing industry. The results of this research can help policymakers, leaders, and managers understand the maturity status of their industries and develop their own strategies for economic sustainability. The research has adopted the barrier degree method to analyze the impact factors in the corresponding transition steps. Empirical research shows that the entropy method can more clearly target potential barriers than the average score method when assessing the accountability of an ecosystem in its developing construction industry. These research results can provide a good foundation for improving the transition process of construction industry management. The application of the results of this research to the development of maturity growth management may be particularly useful in similar industries of other developing countries which may need improvement in their own approaches to managing economic sustainability.

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Abbreviations

GMM	Growth management model
MOURD, P. R. China	Ministry of Housing and Urban-Rural Development of the People's Republic of China
IAB	Industry Advisory Board

Appendix A. Original Questionnaire

Questionnaire Survey for Power Factors and Transformational Mechanism in Construction Companies in Shaanxi Province, China

Survey Explanation: The purpose of the survey to determine the types, characteristics, and development issues of construction companies during transformation. The data collected will only be used for research and policy-making support. Your ID information will be kept confidential.

Part One: Background (Choose 1 answer for each question.)

1. Your employer is a(an):

(1). University; (2). Supervision Company; (3). Owner; (4). Design Company;
(5). Construction company; (6). Bidding Service Company; (7). Government;
(8). Consultancy Company; (9). Inspection Service; (10). Other: _____________

2. Your final education is:

(1). Vocational;
(2). Associate Degree;
(3). Bachelor Degree;
(4). Master's Degree;
(5). Ph.D. Degree

3. Your work experience is:

(1). $\leq$5 years;
(2). 6–10 years;
(3). 11–15 years;
(4). 16–20 years;
(5). $\geq$21 years

4. If you work for a construction company, your company size is:

(1). Large-scale, state-owned;
(2). Large-scale, private;
(3). Small-and-medium, state-owned;
(4). Small-and-medium private

5. Your job responsibility is at which of the following category? A; B; C; D and others.

(1). Entry level;
(2). Intermediate;
(3). Administrative;
(4). Other________

Part Two: Power factors and indicators for transformational development of construction enterprises

6. What is/are your company's main scope(s) of business (Limit to 4 selections)?

(1). Real estate; (2). Residential construction; (3). R & D; (4). Design
(5). Supervision; (6). Engineering consulting; (7). Capital management and investment
(8). Municipal construction; (9). Roads & bridges construction
(10). Industrial plants and parks; (11). Interior finishes
(12). Overseas business development; (13). Prefabricated building
(14). Material supplier; (15). CM service; (16). Steel structure

7. Does your company have other business (Limit to 4 selections)?

(1). Real estate; (2). Residential construction; (3). R & D; (4). Design
(5). Supervision; (6). Engineering consulting; (7). Capital management and investment
(8). Municipal construction; (9). Roads & bridges construction
(10). Industrial plants and parks; (11). Interior finishes
(12). Overseas business development; (13). Prefabricated building (NPC)
(14). Material supplier; (15). CM service; (16). Steel structure

8. In your opinion, would the business of your company transform into the following areas? (Limit to 4 selections)

(1). Real estate; (2). Residential construction; (3). R & D; (4). Design
(5). Supervision; (6). Engineering consulting; (7). Capital management and investment
(8). Municipal construction; (9). Roads & bridges construction
(10). Industrial plants and parks; (11). Interior finishes
(12). Overseas business development; (13). Prefabricated building (NPC)
(14). Material supplier; (15). CM service; (16). Steel structure

9. Does your company pay attention in summarizing the advanced methods used in excellent projects?

A. Very significant, having designated manager
B. Some significant, having a part-time manager
C. Significant, having a designated person
D. Somewhat insignificant
E. Very insignificant

10. How well do you know about the incentive extent of project marketing by a special team?

A. Very well;
B. Relatively well;
C. Well;
D. Not very well;
E. Do not know

11. How significant is the attention given in propagating the advanced practice gained through successful projects in your company?

A. Very significant, having designated manager
B. Some significant, having a part-time manager
C. Significant, having a designated person
D. Somewhat insignificant
E. Very insignificant

12. To what level is the influence of the "10 New Technologies in the Construction Industry" to your company's R & D?

A. Very significant;
B. Some significant;
C. Significant;
D. Somewhat insignificant
E. Very insignificant

13. How strict does your company enforce the environmental friendly activities of site management (such as noise control, centralized collection of construction waste, and dust control)?

A. Very strict implementation, having designated person to inspect every day
B. Strict implementation, having frequent and regular inspection
C. General implementation, having frequent and random inspection

D. Somewhat not strict, having random inspection
E. Not strict

14. How often are transformational project delivery methods, such as EPC, BT or BOT, used?

A. Very often;
B. Somewhat often;
C. Neutral;
D. Somewhat not often;
E. Never

15. How important are the corporate earnings from EPC, BT or BOT?

A. Very important
B. Important
C. Somewhat important
D. Not very important
E. Not important

16. What is the extent of standardization in enterprise management?

A. Excellent
B. Good
C. Average
D. Poor
E. Very Poor

17. What is the extent of improvement for living conditions for construction laborers?

A. Excellent
B. Good
C. Average
D. Poor
E. Very Poor

18. At what level is the implementation of project information management?

A. Excellent
B. Good
C. Average
D. Poor
E. Very Poor

19. How prevalent are joint venture and equity used in the project management system?

A. Very high
B. High
C. Moderate
D. Low
E. Very Low

20. In your opinion, what is the level of improvement in the training and use of migrant workers in the construction industry, in the aspects of using contract, standardization, and normalization?

A. Very significant;
B. Some significant;
C. Significant;
D. Somewhat insignificant;
E. Very insignificant

21. What is the implementation extent of skill training for employees in your company?

A. Very significant;
B. Some significant;
C. Significant;

D. Somewhat insignificant;
E. Very insignificant

22. How important is the implementation of quality and safety standards to the corporate's managers?

A. Very important
B. Important
C. Somewhat important
D. Not very important
E. Not important

23. How well is project standardization managed in your company?

A. Excellent
B. Good
C. Average
D. Poor
E. Very Poor

24. What is your opinion of the implementation of project knowledge training in your company?

A. Excellent
B. Good
C. Average
D. Poor
E. Very Poor

25. How familiar are you with the Excellence Project Management Model guided by Ministry of Housing and Urban-Rural Development of the People's Republic of China (MOURD, P. R. China)?

A. Very familiar
B. Familiar
C. Acceptable familiar
D. Not very familiar
E. Hardly ever heard

26. What is your opinion of the implementation of the Excellence Project Management Model Guided by MOURD in your company?

A. Very well
B. Well
C. Adequately
D. Poorly
E. Very poorly

27. Does your company have a brand-building department?

A. Yes. There is a designated unit.
B. Yes. There is a shared (part time) unit.
C. No. We don't have it.

28. Does your company have a brand-building manager?

A. Yes. There is a designated high-rank manager.
B. Yes. There is a designated production manager.
C. No. We don't have a designated high-rank manager.
D. No. We don't have a designated production manager.

29. How important is brand-building in the future to improve the enterprise's development?

A. Very important
B. Important
C. Somewhat important
D. Not very important
E. Not important

30. How important was brand-building in the history of the enterprise's development?

A. Very important
B. Important
C. Somewhat important
D. Not very important
E. Not important

31. In recent years, the highest investment of the brand-building is:

A. R & D investment;
B. Production equipment;
C. Advertising;
D. Sales channels;
E. Other.

32. The most competitive factor of brand building is:

A. The ability to innovate;
B. Product quality;
C. Service level;
D. Brand Culture;
E. marketing;
F. Other

33. The most important way to corporate branding is:

A. Television advertising;
B. Newspaper Advertising;
C. Outdoor advertising;
D. Public relations activities;
E. online advertising;
F. Industry Award;
G. Exhibition.

34. Does your company have the intent of mergers or setup new regional offices in other provinces (except local province)?

A. Very clear intention;
B. Relative clear intention;
C. General clear intention;
D. Not very clear intention;
E. No intention;
F. Do not know

35. Does your company have the plan of entering emerging industrial areas (such as non-building market)?

A. Very clear intention;
B. Relative clear intention;
C. In the process of making such a plan;
D. No intention;
E. May consider this in the future

36. In your company's project management services, how well is the information-related budget managed?

A. Excellent
B. Good
C. Average
D. Poor
E. Very Poor

37. What is the extent of the clarity of information channels and platforms to share the economic and market trends (e.g., in memos, company newsletters, or on the company's website)?

A. Excellent
B. Good

C. Average
D. Poor
E. Very Poor

38. How significant is the self-improvement training of corporate manager on corporate business?

(1). very significant;
(2). some significant;
(3). significant;
(4). somewhat insignificant
(5). very insignificant

39. The funding solutions of your company's project management services mainly rely on (limit to 3 multiple choices):

A. its own efforts to expand construction output value and profit;
B. improves corporate ownership structure;
C. Project equity financing;
D. Venture capital funding;
E. Bank loan;
F. Issue bonds to raise funds within the enterprise;
G. Private capital lending;
H. Companies listed.

40. How much effort does Shaanxi Province put on the protection of the local construction market?

A. very significant;
B. some significant;
C. significant;
D. somewhat insignificant;
E. very insignificant

41. How strict is the implementation extent of corporate audit and quality control for procurement contracts?

A. Very strict implementation, having designated department and manager
B. Strict implementation, having part-time department and manager
C. General implementation, having designated person
D. Somewhat not strict, having part-time person
E. Not strict

Appendix B. Formal Questionnaire of Transformational Development for Construction Enterprises

The purpose of the survey you are being asked to complete is to determine the types, characteristics, and development issues of construction companies in the transformation period. This objective of this survey focused on the specific transformation analysis on the enterprise power factors, driving force and types of construction enterprises. You can give up the response at your will.

- First part: Background (choose one item)

    1. Your employer: A high university, B supervision company, C owner, D design company, E construction company, F bidding company, G government, H consultancy company.
    2. Your education accepted: A Technical school, B college, C graduate, D others.
    3. Your work experience: A less than 5 years, B 6–10 years, C 11–15 years, D 16–20 years, E more than 21 years.
    4. Your company size: A large-scale state-owned construction enterprise, B large-scale private construction companies, C small-and-medium state-owned construction companies, D small-and-medium private construction enterprises.
    5. Your job title: A entry-level, B intermediate, C advanced, D others.

- Second part: Driving force and its indicator for transformational development of construction enterprise

Questions about Implementation level of transformational development (F1):

1. How significant is the attention given in propagating the advanced practice gained through successful projects in your company?

a. Very significant, having designated manager
b. Some significant, having a part-time manager
c. Significant, having a designated person
d. Somewhat insignificant
e. Very insignificant

2. How often are transformational project delivery methods, such as EPC, BT or BOT, used?

a. Very often
b. Somewhat often
c. Neutral
d. Somewhat not often
e. Never

3. What is the extent of standardization in enterprise management?

a. Excellent
b. Good
c. Average
d. Poor
e. Very Poor

4. What is the extent of improvement for living conditions for construction laborers?

a. Excellent
b. Good
c. Average
d. Poor
e. Very Poor

5. At what level is the implementation of project information management?

a. Excellent
b. Good
c. Average
d. Poor
e. Very Poor

6. How prevalent are joint venture and equity used in the project management system?

a. Very high
b. High
c. Moderate
d. Low
e. Very Low

7. How important is brand-building in the future to improve the enterprise's development?

a. Very important
b. Important
c. Somewhat important
d. Not very important
e. Not important

Questions about External Information Integration (F2):

1. How important are the corporate earnings from EPC, BT or BOT?

a. Very important
b. Important
c. Somewhat important
d. Not very important
e. Not important

2. In your company's project management services, how well is the information-related budget managed?

a. Excellent
b. Good

c. Average
d. Poor
e. Very Poor

3. What is the extent of the clarity of information channels and platforms to share the economic and market trends (e.g., in memos, company newsletters, or on the company's website)?

a. Excellent
b. Good
c. Average
d. Poor
e. Very Poor

Questions about Project Knowledge Management (F3):

1. How important is the implementation of quality and safety standards to the corporate's managers?

a. Very important
b. Important
c. Somewhat important
d. Not very important
e. Not important

2. How well is project standardization managed in your company?

a. Excellent
b. Good
c. Average
d. Poor
e. Very Poor

3. What is your opinion of the implementation of project knowledge training in your company?

a. Excellent
b. Good
c. Average
d. Poor
e. Very Poor

4. How familiar are you with the Excellence Project Management Model guided by Ministry of Housing and Urban-Rural Development of the People's Republic of China (MOURD, P. R. China)?

a. Very familiar
b. Familiar
c. Acceptable familiar
d. Not very familiar
e. Hardly ever heard

Questions about corporate brand building (F4):

1. What is your opinion of the implementation of the Excellence Project Management Model Guided by MOURD in your company?

a. Very well
b. Well
c. Adequately
d. Poorly
e. Very poorly

2. Does your company have a brand-building department?

a. Yes. There is a designated unit.
b. Yes. There is a shared (part time) unit.
c. No. We don't have it

Appendix C.

Table C1. The Descriptive Statistics of Original Questionnaire.

Question Code	N	Range	Minimum	Maximum	Mean		Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
V6	123	18	1	19	4.24	0.339	3.755	14.100	1.919	0.218	3.773	0.433
V7	123	18	1	19	5.66	0.379	4.202	17.653	1.173	0.218	0.793	0.433
V8	123	17	1	18	4.50	0.358	3.968	15.744	1.753	0.218	2.529	0.433
V9	123	4	1	5	2.03	0.099	1.093	1.196	1.197	0.218	1.048	0.433
V10	123	4	1	5	2.20	0.106	1.173	1.376	0.834	0.218	−0.022	0.433
V11	123	4	1	5	2.37	0.090	0.995	0.990	0.508	0.218	-0.402	0.433
V12	123	4	1	5	2.19	0.079	0.881	0.776	0.500	0.218	0.015	0.433
V13	123	4	1	5	2.48	0.079	0.872	0.760	0.101	0.218	−0.285	0.433
V14	123	4	1	5	2.76	0.091	1.011	1.022	0.266	0.218	−0.806	0.433
V15	123	4	1	5	3.08	0.104	1.149	1.321	−0.030	0.218	−1.115	0.433
V16	122	4	1	5	2.98	0.100	1.102	1.214	−0.139	0.219	−1.024	0.435
V17	123	4	1	5	2.60	0.089	0.990	0.979	0.254	0.218	−0.299	0.433
V18	123	4	1	5	2.60	0.080	0.885	0.783	0.444	0.218	0.070	0.433
V19	123	4	1	5	2.46	0.076	0.842	0.710	0.284	0.218	−0.101	0.433
V20	123	4	1	5	2.50	0.080	0.891	0.793	0.331	0.218	−0.048	0.433
V21	123	4	1	5	2.06	0.080	0.890	0.792	0.597	0.218	0.051	0.433
V22	123	3	1	4	2.40	0.082	0.912	0.832	0.043	0.218	−0.798	0.433
V23	123	4	1	5	2.36	0.081	0.897	0.805	0.403	0.218	0.091	0.433
V24	123	4	1	5	2.76	0.087	0.970	0.940	0.016	0.218	−0.520	0.433
V25	123	4	1	5	2.41	0.077	0.849	0.720	0.722	0.218	0.892	0.433
V26	123	2	1	3	2.15	0.069	0.765	0.585	−0.255	0.218	−1.243	0.433
V27	123	3	1	4	2.50	0.102	1.126	1.268	0.115	0.218	−1.373	0.433
V28	123	4	1	5	2.01	0.069	0.763	0.582	0.887	0.218	1.742	0.433
V29	123	4	1	5	2.17	0.070	0.776	0.602	0.871	0.218	1.365	0.433
V30	123	4	1	5	2.64	0.118	1.307	1.707	0.669	0.218	−0.610	0.433
V31	123	5	1	6	2.37	0.091	1.011	1.023	0.979	0.218	1.146	0.433
V32	123	6	1	7	4.02	0.174	1.929	3.721	−0.002	0.218	−1.353	0.433
V33	123	5	1	6	2.84	0.125	1.381	1.908	0.658	0.218	−0.326	0.433
V34	123	4	1	5	2.72	0.106	1.177	1.386	0.328	0.218	−0.810	0.433
V35	123	7	1	8	2.25	0.158	1.749	3.059	1.465	0.218	1.450	0.433
V36	123	4	1	5	2.52	0.094	1.043	1.088	0.805	0.218	0.167	0.433
V37	123	4	1	5	2.82	0.099	1.102	1.214	−0.012	0.218	−1.099	0.433
V38	123	4	1	5	2.62	0.087	0.963	0.927	1.172	0.218	1.068	0.433
V39	123	4	1	5	2.23	0.092	1.023	1.046	1.257	0.218	1.512	0.433
V40	123	4	1	5	2.12	0.089	0.988	0.977	1.305	0.218	1.803	0.433
V41	122	3	1	4	2.07	0.073	0.810	0.657	0.447	0.219	−0.207	0.435
Valid N (list wise)	121											

Appendix D.

Table D1. Independent Samples Test of Original Questionnaire.

Question Code		Levene's Test for Equality of Variances		*t*-Test for Equality of Means						
		F	Sig.	t	df	Sig. (2-Tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
V6	**Equal variances assumed (EV)**	7.218	0.009	2.757	65	0.008	2.619	0.950	0.722	4.517
	Equal variances not assumed (NEV)			2.733	46.996	0.009	2.619	0.959	0.691	4.548
V7	**EV**	18.196	0.000	4.460	65	0.000	4.420	0.991	2.441	6.399
	NEV			4.424	48.969	0.000	4.420	0.999	2.412	6.428
V8	**EV**	13.430	0.000	2.838	65	0.006	2.644	0.932	0.783	4.506
	NEV			2.807	41.794	0.008	2.644	0.942	0.743	4.546
V9	**EV**	19.328	0.000	4.739	65	0.000	1.290	0.272	0.746	1.833
	NEV			4.692	44.608	0.000	1.290	0.275	0.736	1.843
V10	**EV**	19.420	0.000	5.330	65	0.000	1.474	0.277	0.922	2.027
	NEV			5.283	47.422	0.000	1.474	0.279	0.913	2.035
V11	**EV**	12.673	0.001	8.448	65	0.000	1.626	0.192	1.241	2.010
	NEV			8.381	49.783	0.000	1.626	0.194	1.236	2.015
V12	**EV**	0.050	0.824	4.758	65	0.000	0.961	0.202	0.557	1.364
	NEV			4.753	64.396	0.000	0.961	0.202	0.557	1.365
V13	**EV**	0.573	0.452	4.908	65	0.000	0.939	0.191	0.557	1.322
	NEV			4.900	63.705	0.000	0.939	0.192	0.556	1.322
V14	**EV**	4.505	0.038	9.777	65	0.000	1.726	0.177	1.374	2.079
	NEV			9.740	60.290	0.000	1.726	0.177	1.372	2.081
V15	**EV**	0.020	0.888	8.471	65	0.000	1.761	0.208	1.346	2.176
	NEV			8.459	63.918	0.000	1.761	0.208	1.345	2.177
V16	**EV**	0.497	0.483	9.658	64	0.000	1.758	0.182	1.394	2.121
	NEV			9.658	61.872	0.000	1.758	0.182	1.394	2.121
V17	**EV**	2.462	0.122	6.538	65	0.000	1.449	0.222	1.006	1.892
	NEV			6.507	58.454	0.000	1.449	0.223	1.003	1.895
V18	**EV**	6.791	0.011	5.483	65	0.000	1.121	0.204	0.713	1.530
	NEV			5.450	55.025	0.000	1.121	0.206	0.709	1.533

Table D1. *Cont.*

Question Code		Levene's Test for Equality of Variances		*t*-Test for Equality of Means						
		F	Sig.	t	df	Sig. (2-Tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
V19	**EV**	2.370	0.129	7.045	65	0.000	1.210	0.172	0.867	1.553
	NEV			7.016	59.511	0.000	1.210	0.173	0.865	1.555
V20	**EV**	1.704	0.196	5.480	65	0.000	1.032	0.188	0.656	1.408
	NEV			5.456	58.825	0.000	1.032	0.189	0.654	1.411
V21	**EV**	1.394	0.242	4.833	65	0.000	0.956	0.198	0.561	1.352
	NEV			4.815	60.423	0.000	0.956	0.199	0.559	1.354
V22	**EV**	0.016	0.901	6.999	65	0.000	1.328	0.190	0.949	1.707
	NEV			6.994	64.598	0.000	1.328	0.190	0.949	1.707
V23	**EV**	0.790	0.377	6.871	65	0.000	1.325	0.193	0.940	1.711
	NEV			6.831	55.332	0.000	1.325	0.194	0.937	1.714
V24	**EV**	4.017	0.049	7.542	65	0.000	1.367	0.181	1.005	1.729
	NEV			7.512	60.044	0.000	1.367	0.182	1.003	1.731
V25	**EV**	5.662	0.020	7.167	65	0.000	1.179	0.165	0.851	1.508
	NEV			7.107	48.669	0.000	1.179	0.166	0.846	1.513
V26	**EV**	5.886	0.018	7.079	65	0.000	1.051	0.148	0.754	1.347
	NEV			7.108	61.345	0.000	1.051	0.148	0.755	1.346
V27	**EV**	0.292	0.591	8.394	65	0.000	1.749	0.208	1.333	2.165
	NEV			8.378	63.500	0.000	1.749	0.209	1.332	2.166
V28	**EV**	1.829	0.181	3.912	65	0.000	0.719	0.184	0.352	1.086
	NEV			3.899	61.182	0.000	0.719	0.184	0.350	1.088
V29	**EV**	19.622	0.000	5.420	65	0.000	0.964	0.178	0.609	1.320
	NEV			5.371	46.460	0.000	0.964	0.180	0.603	1.326
V30	**EV**	24.740	0.000	5.610	65	0.000	1.541	0.275	0.992	2.090
	NEV			5.570	52.126	0.000	1.541	0.277	0.986	2.096
V31	**EV**	3.442	0.068	3.211	65	0.002	0.788	0.245	0.298	1.278
	NEV			3.198	59.278	0.002	0.788	0.246	0.295	1.281
V32	**EV**	3.860	0.054	2.796	65	0.007	1.341	0.480	0.383	2.299
	NEV			2.805	63.088	0.007	1.341	0.478	0.386	2.297
V33	**EV**	6.244	0.015	4.935	65	0.000	1.457	0.295	0.867	2.047
	NEV			4.920	61.779	0.000	1.457	0.296	0.865	2.049

Table D1. *Cont.*

Question Code		Levene's Test for Equality of Variances		*t*-Test for Equality of Means						
		F	Sig.	t	df	Sig. (2-Tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
V34	**EV**	2.352	0.130	4.456	65	0.000	1.307	0.293	0.721	1.892
	NEV			4.450	64.148	0.000	1.307	0.294	0.720	1.893
V35	**EV**	22.178	0.000	2.564	65	0.013	1.052	0.410	0.233	1.871
	NEV			2.540	45.654	0.015	1.052	0.414	0.218	1.885
V36	**EV**	3.585	0.063	5.163	65	0.000	1.269	0.246	0.778	1.760
	NEV			5.149	62.313	0.000	1.269	0.246	0.777	1.762
V37	**EV**	0.557	0.458	7.948	65	0.000	1.695	0.213	1.269	2.121
	NEV			7.932	63.350	0.000	1.695	0.214	1.268	2.122
V38	**EV**	9.978	0.002	4.409	65	0.000	1.004	0.228	0.549	1.459
	NEV			4.370	47.726	0.000	1.004	0.230	0.542	1.467
V39	**EV**	6.279	0.015	3.221	65	0.002	0.816	0.253	0.310	1.323
	NEV			3.207	59.522	0.002	0.816	0.255	0.307	1.326
V40	**EV**	21.104	0.000	3.890	65	0.000	0.963	0.247	0.468	1.457
	NEV			3.852	44.878	0.000	0.963	0.250	0.459	1.466
V41	**EV**	8.813	0.004	4.383	64	0.000	0.848	0.194	0.462	1.235
	NEV			4.383	54.120	0.000	0.848	0.194	0.460	1.237

Appendix E.

Table E1. Item-Total Statistics of Original Questionnaire.

Question Code	Scale Mean If Item Deleted	Scale Variance If Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha If Item Deleted
V6	92.71	409.674	0.127	0.353	0.851
V7	91.34	389.993	0.215	0.304	0.851
V8	92.49	414.052	0.083	0.358	0.857
V9	94.93	421.712	0.453	0.772	0.824
V10	94.76	417.984	0.499	0.794	0.823
V11	94.59	417.361	0.618	0.675	0.821
V12	94.79	430.953	0.316	0.459	0.828
V13	94.48	428.652	0.391	0.606	0.826
V14	94.21	416.232	0.636	0.664	0.821
V15	93.89	416.547	0.539	0.621	0.822
V16	94.00	417.733	0.540	0.584	0.822
V17	94.36	421.017	0.527	0.656	0.823
V18	94.37	421.302	0.581	0.668	0.823
V19	94.50	421.735	0.606	0.642	0.823
V20	94.47	424.601	0.490	0.565	0.825
V21	94.92	427.626	0.403	0.527	0.826
V22	94.57	422.897	0.523	0.584	0.824
V23	94.61	421.190	0.579	0.616	0.823
V24	94.22	420.975	0.534	0.649	0.823
V25	94.56	423.798	0.533	0.652	0.824
V26	94.82	425.983	0.536	0.658	0.825
V27	94.47	416.035	0.565	0.707	0.822
V28	94.97	430.166	0.396	0.590	0.827
V29	94.80	425.160	0.549	0.635	0.824
V30	94.34	415.393	0.488	0.419	0.822
V31	94.61	430.673	0.279	0.436	0.828
V32	93.01	422.192	0.221	0.454	0.830
V33	94.16	420.267	0.382	0.452	0.825
V34	94.28	419.520	0.469	0.508	0.823
V35	94.73	425.067	0.209	0.426	0.830
V36	94.45	418.967	0.545	0.541	0.823
V37	94.15	414.278	0.622	0.666	0.820
V38	94.36	426.364	0.400	0.550	0.826
V39	94.74	427.475	0.348	0.541	0.827
V40	94.85	424.544	0.435	0.560	0.825
V41	94.91	428.800	0.413	0.522	0.826

Appendix F.

Table F1. Component Matrix [a].

Question Code	Component			
	1	2	3	4
V11	0.726	−0.246	−0.145	−0.200
V14	0.742	0.011	0.210	−0.217
V15	0.658	0.106	−0.280	−0.241
V16	0.672	0.020	−0.053	−0.294
V17	0.703	−0.401	0.083	−0.064
V18	0.694	−0.313	0.201	−0.210
V19	0.741	−0.075	0.209	−0.130
V22	0.569	0.003	0.270	0.542
V23	0.660	−0.310	0.182	0.264
V24	0.626	0.058	−0.259	0.388
V25	0.669	−0.269	−0.099	0.377
V26	0.571	0.633	0.203	0.046
V27	0.666	0.551	0.134	0.100
V29	0.598	0.178	0.332	−0.210
V36	0.621	0.187	−0.471	−0.028
V37	0.701	0.053	−0.486	0.029

Extraction Method: Principal Component Analysis. [a] 4 components extracted.

Appendix G.

Table G1. Structure Matrix.

Question Code	Component			
	1	2	3	4
V11	0.744	0.635	0.416	0.221
V14	0.765	0.460	0.384	0.525
V15	0.573	0.707	0.247	0.397
V16	0.672	0.571	0.260	0.410
V17	0.770	0.455	0.547	0.163
V18	0.807	0.391	0.431	0.257
V19	0.760	0.447	0.462	0.462
V22	0.388	0.259	0.782	0.434
V23	0.624	0.359	0.725	0.234
V24	0.365	0.640	0.662	0.351
V25	0.528	0.539	0.775	0.186
V26	0.360	0.392	0.294	0.874
V27	0.436	0.497	0.410	0.853
V29	0.614	0.291	0.258	0.595
V36	0.413	0.796	0.330	0.377
V37	0.499	0.850	0.454	0.324

Extraction Method: Principal Component Analysis. Rotation Method: Promax with Kaiser Normalization.

Appendix H.

Table H1. Total Variance Explained of Original Questionnaire.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings [a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	7.090	44.312	44.312	7.090	44.312	44.312	5.810
2	1.283	8.019	52.331	1.283	8.019	52.331	4.740
3	1.047	6.546	58.877	1.047	6.546	58.877	3.960
4	1.010	6.315	65.193	1.010	6.315	65.193	3.451
5	0.804	5.022	70.215				
6	0.675	4.219	74.434				
7	0.669	4.181	78.615				
8	0.576	3.598	82.213				
9	0.486	3.037	85.251				
10	0.453	2.834	88.084				
11	0.394	2.463	90.548				
12	0.375	2.344	92.892				
13	0.340	2.128	95.020				
14	0.295	1.843	96.863				
15	0.259	1.617	98.481				
16	0.243	1.519	100.000				

Extraction Method: Principal Component Analysis. [a] When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Appendix I.

Table I1. PCA and K type.

Response Code	F1	F2	F3	F4	Fs	K Type
CE1	5.476154713	0.707855252	0.290322581	−0.872636816	3.807647481	1
CE2	6.054074352	−0.597528685	0.042033236	−0.237810945	4.041413047	1
CE3	7.159218926	0.488967343	0.472140762	0.688557214	4.928379896	1
CE4	6.031918888	−0.744042365	−0.208211144	0.105472637	4.008253035	1
CE5	7.028163725	−0.608120035	0.013685239	−0.07761194	4.702260658	1
CE6	6.345850544	1.40776699	−0.27370479	1.844776119	4.483293611	1
CE7	8.638002253	2.886142983	0.377321603	0.68358209	6.228003058	2
CE8	6.28689448	0.120035305	−1.137829912	0.189054726	4.286637977	1
CE9	7.443484792	0.037952339	0.692082111	−0.227860697	5.063045069	1
CE10	7.539241457	−0.834951456	−0.283479961	0.213930348	5.021358701	1
CE11	8.861058956	−0.863195057	0.502443793	−1.925373134	5.910572733	1
CE12	7.476154713	−0.610767873	0.26686217	0.296517413	5.006946055	1
CE13	5.233195644	−0.187113857	−0.448680352	0.171144279	3.53352444	1
CE14	7.950431844	1.65842895	−1.384164223	−0.618905473	5.613420171	1
CE15	9.503567405	0.47749338	−1.338220919	0.034825871	6.518074492	2
CE16	7.973713857	0.328331862	0.060606061	0.302487562	5.460286416	1
CE17	8.761547127	−0.612533098	1.196480938	0.047761194	5.880277553	1
CE18	8.007885843	−1.450132392	0.03030303	0.698507463	5.264735729	1
CE19	9.909125047	1.820829656	−3.45259042	−0.129353234	6.962130093	2
CE20	9.310927525	0.279788173	−0.659824047	−0.800995025	6.366465473	2
CE21	4.221930154	0.215357458	−0.2228739	0.537313433	2.895402959	1
CE22	8.689072475	1.173874669	0.608993157	0.648756219	6.052934911	2
CE23	7.418700713	0.467784643	1.716520039	1.233830846	5.113529459	1
CE24	7.684190762	1.075904678	−1.409579668	−0.099502488	5.356240357	1
CE25	7.514081863	0.485436893	−0.173998045	−0.085572139	5.167178015	1
CE26	7.780322944	−1.098852604	−0.650048876	0.543283582	5.150899176	1
CE27	8.708599324	0.3451015	0.330400782	1.59800995	5.96509149	2
CE28	7.759294029	−0.230361871	−0.137829912	0.256716418	5.245469689	1
CE29	6.80022531	−0.214474846	0.374389052	−1.20199005	4.592907015	1
CE30	5.497183627	0.204766108	0.247311828	−0.253731343	3.761258696	1
CE31	8.465264739	0.343336275	−1.458455523	0.602985075	5.79054134	2
CE32	8.998497935	0.244483672	−0.049853372	−0.44278607	6.146546103	2
CE33	8.194892978	0.314210062	0.377321603	0.693532338	5.610431041	1
CE34	7.446113406	0.068843778	0.545454545	1.903482587	5.076226592	1
CE35	8.285016898	−1.499558694	−0.360703812	−0.899502488	5.448948443	1
CE36	9.57679309	−0.631950574	0.269794721	−0.946268657	6.430031829	2
CE37	9.197897109	0.243601059	−0.77028348	1.021890547	6.276831641	2
CE38	8.178370259	1.40070609	−0.083088954	1.309452736	5.730514032	1
CE39	11.06984604	0.701676964	0.48973607	−1.649751244	7.605428306	3
CE40	8.776192264	1.93027361	−1.530791789	0.093532338	6.20178867	2
CE41	7.220803605	−0.248896734	−0.599217986	0.541293532	4.875339574	1
CE42	7.533233196	−1.576345984	0.612903226	0.115422886	4.926899109	1
CE43	9.034923019	1.312444837	−2.059628543	−0.980099502	6.315368663	2
CE44	9.42208036	1.466019417	0.007820137	0.894527363	6.584641084	2
CE45	8.59218926	−1.102383054	−1.597262952	0.168159204	5.702831825	2
CE46	8.380398047	0.721977052	−0.699902248	0.344278607	5.783493558	1
CE47	9.280886219	−0.507502207	−1.036168133	−0.858706468	6.251483778	2
CE48	10.89372888	−1.06619594	0.945259042	−1.0039801	7.26733208	2
CE49	9.875328577	−1.301853486	−1.639296188	0.013930348	6.552009374	2
CE50	9.479158843	0.859664607	−0.880742913	−0.105472637	6.549386302	2
CE51	10.26286143	1.043248014	0.070381232	−1.873631841	7.103231338	2
CE52	8.340968832	−1.363636364	1.326490714	−0.888557214	5.494156251	1
CE53	8.929778445	1.158870256	−0.470185728	1.27761194	6.208374757	2
CE54	8.684190762	1.40423654	0.219941349	1.186069652	6.077104736	2
CE55	8.911002629	−0.022947926	0.730205279	1.270646766	6.059925907	2
CE56	8.208787082	0.379523389	−0.19257087	0.688557214	5.625406408	1
CE57	7.936162223	0.596646072	−0.05083089	0.887562189	5.467368823	1
CE58	8.078107398	−0.377758164	−0.594330401	−0.629850746	5.446637212	1
CE59	7.973713857	0.328331862	0.060606061	0.302487562	5.460286416	1
CE60	9.646263612	0.837599294	−0.254154448	−0.132338308	6.65987744	2

Table I1. *Cont.*

Response Code	F1	F2	F3	F4	Fs	K Type
CE61	9.526849418	−0.72109444	−0.003910068	−0.379104478	6.386748488	2
CE62	9.692452122	1.594880847	1.693059629	−0.356218905	6.780393292	2
CE63	10.49267743	−0.667255075	0.056695992	0.820895522	7.050136794	2
CE64	11.27224934	−1.837599294	−1.26001955	2.841791045	7.413001233	3
CE65	10.84003004	−0.556928508	−1.019550342	−0.227860697	7.300986866	3
CE66	9.981224183	−1.025595763	−0.615835777	−0.110447761	6.658550731	2
CE67	11.10101389	−1.641659312	−2.720430108	−0.417910448	7.350674145	2
CE68	10.70634623	1.586054722	−2.013685239	−0.200995025	7.474856675	3
CE69	10.51445738	0.154457193	0.033235582	1.190049751	7.165987515	2
CE70	10.54299662	0.331862312	0.346041056	0.282587065	7.207580853	2
CE71	10.26511453	−2.035304501	−0.404692082	0.139303483	6.726503234	2
CE72	11.43334585	1.537511033	−3.869012708	0.487562189	7.948481446	3
CE73	13.2275629	1.991173875	−2.568914956	−0.95721393	9.251425904	3
CE74	11.40668419	2.134157105	−1.722385142	0.134328358	8.014271216	3
CE75	11.5610214	0.094439541	−0.622678397	−0.179104478	7.870416172	3
CE76	11.34622606	0.73874669	−0.387096774	0.794029851	7.80102451	3
CE77	11.46601577	1.590467785	−0.049853372	−0.365174129	7.98929662	3
CE78	10.96995869	0.329214475	−0.409579668	−0.735323383	7.498755079	2
CE79	13.32219302	−0.361871139	−0.641251222	−0.235820896	9.011608609	3
CE80	11.05595193	−0.589585172	−1.748778104	−1.312437811	7.456831762	2
CE81	9.690199024	1.375110327	−1.421309873	0.369154229	6.752322534	2
CE82	9.656402554	−1.340688438	−0.868035191	0.983084577	6.393152666	2
CE83	12.98047315	1.276257723	−0.730205279	0.391044776	8.978097084	3
CE84	11.30829891	1.812886143	−1.825024438	−1.215920398	7.923434327	3
CE85	11.84040556	−0.481906443	−0.531769306	−0.174129353	7.989289951	3
CE86	11.56590312	−0.464254192	−1.375366569	−0.689552239	7.810315122	2
CE87	11.52985355	−0.433362754	−0.661779081	1.382089552	7.777782143	3
CE88	10.69132557	1.274492498	0.376344086	0.380099502	7.424655349	2
CE89	13.31843785	0.915269197	0.485826002	−2.230845771	9.158333934	3
CE90	11.31693579	0.467784643	−1.99315738	−1.050746269	7.763031371	3
CE91	13.78107398	−0.483671668	−1.538611926	0.618905473	9.30152087	3
CE92	10.94892978	2.095322154	0.124144673	−0.171144279	7.699689629	2
CE93	13.4183252	1.300970874	−0.296187683	0.995024876	9.278689616	3
CE94	10.95043184	−0.233009709	−0.348973607	2.369154229	7.409152423	2
CE95	13.31505821	0.527802295	0.730205279	−1.137313433	9.109977315	3
CE96	9.407059707	2.763459841	1.999022483	0.328358209	6.738172803	2
CE97	11.02215546	−0.203883495	0.793743891	−0.890547264	7.462248022	2
CE98	10.05444987	1.833186231	−2.351906158	−2.387064677	7.095242547	2
CE99	10.34960571	2.154457193	−1.423264907	2.267661692	7.279241089	3
CE100	13.27638002	0.329214475	−0.438905181	−0.050746269	9.064671252	3
CE101	11.72099136	0.448367167	−0.913000978	0.820895522	8.017223161	3
CE102	11.36687946	−0.53309797	−2.259042033	−2.2	7.692104921	3
CE103	14.27938415	0.422771403	−0.204301075	0.47960199	9.757164862	4
CE104	11.47465265	1.203883495	−0.921798631	0.012935323	7.947416298	3
CE105	13.5148329	−0.131509267	1.027370479	0.726368159	9.174665725	3
CE106	12.48291401	−1.138570168	−1.730205279	1.470646766	8.328474568	3
CE107	15.39466767	−1.395410415	−2.091886608	−0.011940299	10.29232816	4
CE108	15.15133308	−1.554280671	−0.530791789	−0.478606965	10.10884186	4
CE109	13.52797597	0.347749338	0.848484848	0.650746269	9.241327383	4
CE110	13.96432595	0.770520741	−0.282502444	0.782089552	9.585019142	4
CE111	13.643635	1.92321271	−1.322580645	1.030845771	9.501599161	4
CE112	13.29553136	1.520741395	0.239491691	−2.065671642	9.220993246	3
CE113	11.94780323	1.396293027	0.219941349	0.112437811	8.292923275	3
CE114	13.2459632	0.79082083	−1.282502444	0.167164179	9.099283083	3
CE115	15.01577169	0.051191527	−1.948191593	1.123383085	10.19870258	4
CE116	15.80247841	−0.277140335	0.710654936	−0.624875622	10.70411605	4
CE117	13.41870071	1.45631068	−0.514173998	1.542288557	9.294891364	4
CE118	14.28426587	0.231244484	−1.30400782	0.065671642	9.736998792	4
CE119	15.53548629	0.048543689	−0.542521994	0.288557214	10.56453311	4
CE120	15.51520841	0.54015887	−0.677419355	−0.627860697	10.61492601	4
CE121	12.76943297	−0.315092674	−1.725317693	−0.544278607	8.646652282	3
CE122	16.00638378	−0.294792586	0.2971652	−0.088557214	10.84319274	4
CE123	15.74239579	0.05913504	0.216031281	−0.024875622	10.7074336	4

Appendix J.

Table J1. PCA Descriptive Statistics.

	N	Range	Minimum	Maximum	Sum	Mean		Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	**Statistic**	**Statistic**	**Statistic**	**Statistic**	**Statistic**	**Std. Error**	**Statistic**	**Statistic**	**Statistic**	**Std. Error**	**Statistic**	**Std. Error**
F1	123	11.78445362	4.221930153	16.00638377769	1258.18475403	10.2291443417	0.23458289429	2.601650152969	6.769	0.278	0.218	−0.460	0.433
F2	123	4.921447484	−2.03530450	2.886142983230	34.4889673433	0.280398108482	0.09426215467	1.045417867551	1.093	0.080	0.218	−0.479	0.433
F3	123	5.868035190	−3.86901277	1.999022482893	−57.145650048	−0.46459878088	0.09230751755	1.023739893283	1.048	0-.508	0.218	0.643	0.433
F4	123	5.228855721	−2.38706467	2.84179104478	10.374129353	0.08434251506	0.08543292560	0.947496980313	0.898	−0.090	0.218	0.594	0.433
Fs	123	7.947789782	2.895402959	10.84319274164	859.453442627	6.98742636282	0.16039946696	1.778916143930	3.165	0.236	0.218	−0.532	0.433
Valid N (listwise)	123												

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