

A Study of Educations Supplies, Research Supplies and Community Service Supplies Effect Quality of Education in University and Society Value

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Abstract

The mismatch between supply and demand among university graduates, schools and enterprises in China is prominent. This study suggests that we should think from the perspective of the supply chain and explore the overall process of education supplies, research supplies and community service supplies providing society value through the quality of education in university, and use the structural equation model to build the overall framework of the education supply chain, and use AMOS and SPSS to verify whether the structural equation is established.

The results show that education supplies, research supplies and community service supplies have a positive impact on the quality of education in university. The quality of education in university has a positive impact on society value. Education supplies, research supplies and community service supplies have a positive impact on society's values. The quality of education in university has a mediating effect on education supplies, research supplies and community service supplies and society's values. The article finally proposes prospects for deeper research on the education supply chain in the future.

Keywords: Education Supplies; Research Supplies; Community Service Supplies; Quality of Education in University; Society Value

Introduction

Affected by the COVID-19 epidemic, starting in 2019, many domestic professional graduates in China have been unable to find satisfactory jobs, and are slow to find employment.

In recent years, feedback from graduates of our college and employers has found that among companies' rankings of graduates' lack of abilities, the number one ranking is practical and application abilities. At the same time, this is also the self-assessment of graduates. The lack of ability tops the list. Other problems are still emerging. Companies are struggling to recruit suitable graduates, and graduates are struggling to find satisfactory jobs. There is a contradiction between supply and demand between the two. Therefore, how to better meet the needs of industries, enterprises and institutions through training college students has practical significance and long-term value.

From the perspective of the recruiting unit, it is believed that the school cannot cultivate the comprehensive talents needed by the unit, and there are problems such as difficulty in recruiting, retaining, and training. The model that emphasizes use but neglects training leads to students who have just stepped out of the society to be at a loss, among students

From the perspective of others, there is eagerness for quick success, egoism, idealism such as being close to home, high wages, easy work without overtime, and no need to be seconded everywhere, lack of understanding of the job market, self-centeredness, and lack of comprehensiveness required for the development of a market economy quality.

From the school's perspective, the school has a single curriculum, limited information, and no bridge to connect with enterprises.

From the school's point of view, the school's curriculum is single, information is blocked, and there is no bridge to connect with enterprises.

To analyze the mismatch between supply and demand among college students, we should think from the perspective of the supply chain and explore how suppliers and manufacturers can develop products that meet customer employment needs from the three dimensions of suppliers, manufacturers and customers. This has far-reaching significance for college students. Therefore, analyzing the employment difficulties of students, exploring how to cultivate comprehensive talents that meet the employment needs of enterprises and institutions, and accelerating the construction of China's talent team have increasingly become a focus of social attention and research.

Research objectives

1. To develop a structural equation model of the Education Supplies, Research Supplies, Community Service Supplies, Quality of Education in University and Society Value.
2. To study Education Supplies, Research Supplies and Community Service Supplies effect Quality of Education in University and Quality of Education in University effect Society Value.
3. To study Education Supplies, Research Supplies, Community Service Supplies effect Society Value and Quality of Education in University has a mediating effect on Education Supplies, Research Supplies, Community Service Supplies and Society Value.

Literature review

The definitions and concepts involved in this article include Education Supplies, Research Supplies, Community Service Supplies, Quality of Education in University and Society value.

Handfield (1998) believes that the supply chain includes all activities related to the flow of items and the accompanying information flow from the raw material stage until the final product is delivered to the final customer. Supply chain management refers to the overall planning and management of all links in the supply chain to achieve the overall optimization of the supply chain.

1. Education Supplies

Habib & Jungthirapanich (2010) proposed the concept of education providers as: students (high schools/colleges), teachers (other universities), self-financed students, sources of funds – family (parents, siblings), relatives, etc. Government and private organizations (scholarships), suppliers of assets or equipment (furniture, computers, network equipment, etc.), educational materials (stationery, teaching materials, etc.).

Harris, Suarez, Jaramillo, Hall & Murray (2023) proposed that based on Wahlberg's educational productivity theory and Maslow's hierarchy of needs theory, to help understand How access to academic supplies affects academic achievement and graduation and retention rates.

2. Research Supplies

Bornmann (2013) proposed that society can gain from successful research only when the research results are transformed into marketable and consumable products (e.g., drugs, diagnostic tools, machines and equipment) or services. beneficial. This article examines social impacts such as: third–

stream activities, social benefits, social quality, usefulness, public values, knowledge transfer and social relevance. The focus is on assessing the social, cultural, environmental and economic returns (impact and effectiveness) of the results (research outcomes) or products (research outcomes) of publicly funded research.

Lau (2007) In the "research" supply chain, there are direct and indirect services depending on the research process. Direct services are research processes such as idea generation, instrument development, data collection, data analysis, and dissemination. Indirect services include campus facilitation and maintenance, IT infrastructure, libraries, open spaces, bookstores, security, restaurants, and more. In the supply chain, "research" is a product developed internally and externally by a group of academic and non-academic operators. The people who create the research idea and sponsor the research are the vendors. Both society and research sponsors who can gain knowledge from research are consumers.

3. Community Service Supplies

Sampson (1999) proposed that, at the most general level, community social organization can be viewed as the ability of a community structure to realize the shared values of its residents and maintain effective social control. Social control should not be equated with repression or forced conformity, but rather refers to the ability of a social unit to regulate itself according to desired principles to achieve collective goals, rather than coercive goals. One of the most central among the shared goals is the desire of community residents to live in a safe and orderly environment, free from predatory crime. Aspects of a community's social organization can be analyzed not only in isolation from racial segregation, concentrated poverty, instability, and other external sources of change, but also from the benefits that society may generate. The goal of the community is to find unity in diversity.

Youniss & Yates (1997) a sense that can make a difference in society –and social responsibility, or concern for society's well-being.

4. Quality of Education in University

The most commonly used tool is total quality management (TQM), which is defined as follows: a management approach that is primarily quality-centered and focused on all It is based on member participation and aims to achieve long-term success through customer satisfaction and benefits for all members of the organization and society (Cruickshank, 2003). The rationale for adopting TQM is that TOM has the potential to cover the quality perspectives of both external and internal stakeholders in an

integrated manner, thereby enabling a comprehensive approach to quality management that ensures quality and promotes change and innovation.

Habib (2010) described Holistic View of Educational Supply Chain, Single-level, multi-tier, bi-directional supply chain management for the universities, Multi-tier Suppliers in the Universities, Multi-tier Customers in the Universities, Integrated Educational Supply Chain Management for the Universities, Three Decision Phases in the Universities, Strategic Level in the Universities, Planning Level in the Universities, Operating Level in the Universities, Performance Indicators in terms of Effectiveness and Efficiency, Good supply chain performance can be obtained by establishing a comprehensive education supply chain management model for colleges and universities.

5. Society Value

Yuan (2004) pointed out that regarding the research on social value, the past practice in academic circles is usually to divide human value into two aspects: human self-personal value and social value, pointing out that human value is essentially human social value.

Habib (2010) proposed that our goal is to provide Society value by producing high-quality graduates and research results. One of the main goals of education supply chains is to improve the well-being of the end customer or society. The performance of supply chain management relies on seamless coordination of all supply chain stakeholders to ensure the desired results are achieved.

Research Methodology

The sample survey used in this study is a simple random sampling in probability sampling. we also used the analytical method of structural equation modeling to explore the impact of different suppliers in university and society.

1. Research Hypotheses

Based on the review of related concepts, theories and the relationship between variables, the theoretical model of this study is constructed, and the following 10 research hypotheses are proposed (Figure 1).

H1: Education Supplies have a positive impact on Quality of Education in University.

H2: Research Supplies have a positive impact on Quality of Education in University.

H3: Community Service Supplies have a positive impact on Quality of Education in University.

H4: Quality of Education in University has a positive impact on Society Value.

H5: Education Supplies have a positive impact on Society Value.

H6: Research Supplies have a positive impact on Society Value.

H7: Community Service Supplies have a positive impact on Society Value.

H8: Quality of Education in University has a mediating effect on Education Supplies and Society Value.

H9: Quality of Education in University has a mediating effect on Research Supplies and Society Value.

H10: Quality of Education in University has a mediating effect on Community Service Supplies and Society Value.

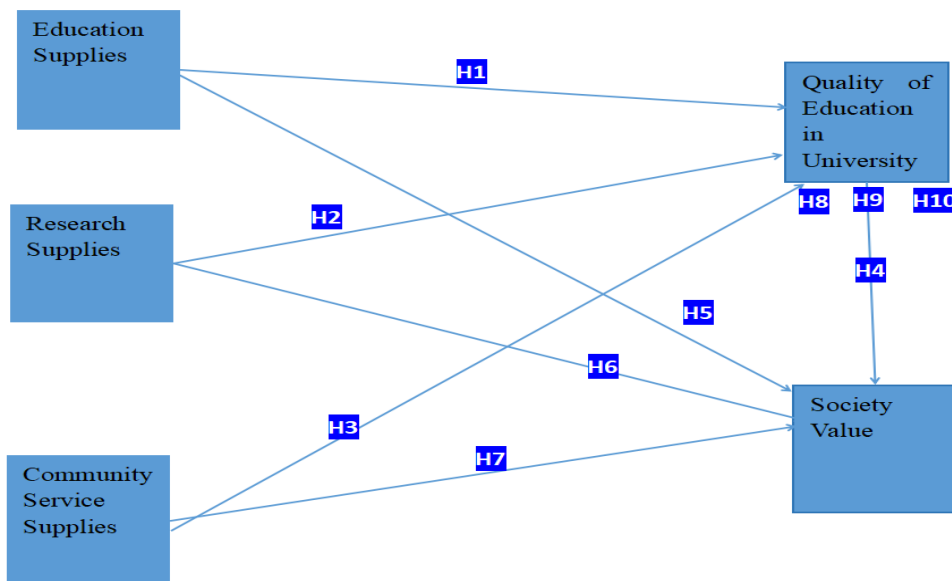


Figure 1 Conceptual framework (Source: Constructed by the researcher)

2. Sample Selection

According to the list of universities published by the Ministry of Education, there are 72 universities in Guangdong. Currently, the number of college students in Guangdong is 2.8109 million. The number of graduates from Guangdong University reaches 840,000. According to the teacher-student ratio required by the Ministry of Education to reach 1:200, the number of university teachers is approximately 15,050. According to data from China Consumer Network, the number of small and

medium-sized enterprises in Guangdong has reached more than 6.8 million household. The number of employees is about 9.5 million. (Data comes from the Internet)

3. Data Collection

In the questionnaire survey, the sample survey used in this study is a simple random sampling in probability sampling and the analytical method of structural equation modeling.

In total, in this research model, there are 5 latent variables and 40 parameters. Therefore, according to Kline's (2012) recommendation, the minimum sample size for this study is 200 and the maximum sample size is 800, there is between 200–800. This research use 10 times sample size, so 413 sample sizes were collected.

Research Results

Since the reliability and validity of the pre-survey were good, a formal survey was carried out. The formal survey lasted for 8 months from January to August 2024, and 413 valid questionnaires were recovered. The details are as follows:

1. Validity analysis

Table 1 KMO and Bartlett test

| KMO sampling suitability quantity | | 0.951 |
|-----------------------------------|------------------------|----------|
| Bartlett's test of sphericity | Approximate chi-square | 9576.035 |
| | Degrees of freedom | 780 |
| | Significance | 0 |

Table 1 shows that the KMO is 0.951 and the significance is less than 0.05.

2. Confirmatory factor analysis

Table 2 Model fit index

| Com mon indic ators | χ^2 | df | Chi-square degree of freedom ratio χ^2/df | AGFI | RMSEA | NFI | IFI | TLI | CFI |
|------------------------------|-------------|-----|---|-----------------------|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | | | | | | | | | |
| Judg ment criteri a | - | - | <3 excellent <5 qualified | >0.9 excell ent | <0.05 excellen t | >0.9 excellen t | >0.9 excellen t | >0.9 excellen t | >0.9 excellen t |
| | | | | >0.8 qualifi ed | <0.08 qualifie d | >0.8 qualifie d | >0.8 qualifie d | >0.8 qualifie d | >0.8 qualifie d |
| Value | 928.5 71 | 730 | 1.272 | 0.889 | 0.026 | 0.906 | 0.978 | 0.977 | 0.978 |

Table 2 shows that Most of the model fitting indicators meet the standards. The chi-square is 928.571, the degrees of freedom are 730, and the ratio of chi-square and degrees of freedom is 1.272. Generally speaking, when the chi-square degree of freedom ratio is less than 2, the model fitting effect can be considered good. The AGFI is 0.889. RMSEA is an index to evaluate the misfit of the model. If it is close to 0, it means a good fit. The RMSEA of this model is 0.026. NFI is 0.906, that is, the better the model fitting effect, the IFI of this model is 0.978. The TLI index is the closer to 0, the worse the fit, and the closer to 1, the better the fit. The TLI of this model is 0.977. CFI is the comparative fit index, whose value lies between 0 and 1. The CFI value is 0.978. The larger the CFI, the smaller the difference between the hypothesized model and the independent model. The model can be considered acceptable when the CFI is greater than or equal to 0.95.

3. Path coefficient

Table 3 Convergent validity

| | CR | AVE |
|------------------------------------|-------|-------|
| Education Supplies | 0.898 | 0.526 |
| Research Supplies | 0.908 | 0.553 |
| Community Service Supplies | 0.904 | 0.541 |
| Quality of Education in University | 0.915 | 0.574 |
| Society Value | 0.914 | 0.57 |

Table 3 shows that Combination reliability (CR) is one of the criteria for judging the intrinsic quality of the model. As can be seen from the table, CR is greater than 0.7, indicating that each latent variable has All test items can consistently explain the latent variable. All AVE values are greater than 0.5, and all CR values are greater than 0.7. It shows that the questionnaire structure model has good convergent validity.

Table 4 Discriminant validity

| | Education Supplies | Research Supplies | Community Service Supplies | Quality of Education in University | Society Value |
|--|-----------------------|----------------------|----------------------------------|--|------------------|
| Education Supplies | 0.725 | | | | |
| Research Supplies | 0.507*** | 0.744 | | | |
| Community Service Supplies | 0.493*** | 0.482*** | 0.736 | | |
| Quality of Education in University | 0.464*** | 0.511*** | 0.559*** | 0.757 | |
| Society Value | 0.454*** | 0.463*** | 0.473*** | 0.558*** | 0.755 |

Table 4 shows that one method of discriminant validity testing is to compare the correlation coefficient with the square root value of the average variance extracted (AVE). If the square root of

factor AVE is greater than the correlation coefficient between factors, it indicates good discriminant validity.

Table 5 Model fitting index

| Com mon indic ators | χ^2 | df | Chi- square degrees of freedom ratio χ^2/df | AGFI | RMSEA | NFI | IFI | TLI | CFI |
|------------------------------|-------------|-----|--|--|--|--|--|--|--|
| Judg ment criteri a | - | - | <3 excellent <5 qualified | >0.9 excellen t >0.8 qualifie d | <0.05 excellen t <0.08 qualifie d | >0.9 excellen t >0.8 qualifie d | >0.9 excellen t >0.8 qualifie d | >0.9 excellen t >0.8 qualifie d | >0.9 excellen t >0.8 qualifie d |
| Value | 928.5 71 | 730 | 1.272 | 0.889 | 0.026 | 0.906 | 0.978 | 0.977 | 0.978 |

Table 5 shows that Chi-square represents the difference between the expected covariance matrix and the covariance matrix of the data. The smaller the chi-square, the better the fit between the model and the data. The chi-square value is 928.571, the degrees of freedom are 730, and the ratio of the chi-square value to the degrees of freedom is equal to 1.272. The CFI indicator is recommended to be greater than 0.9, it is 0.978. RMSEA is an indicator related to model residuals. The smaller the better, and the general requirement is less than 0.06. This model is 0.026. The final model is ideally acceptable. Most of the model fitting indicators meet the standards, and the model fits well.

Table 6 Path coefficient

| Path coefficient | | | Estimate | S.E. | C.R. | P | STD. Estimate |
|------------------------------------|------|------------------------------------|----------|-------|-------|-------|---------------|
| Quality of Education in University | <--- | Education Supplies | 0.165 | 0.06 | 2.748 | 0.006 | 0.156 |
| Quality of Education in University | <--- | Research Supplies | 0.256 | 0.056 | 4.537 | *** | 0.26 |
| Quality of Education in University | <--- | Community Service Supplies | 0.352 | 0.058 | 6.056 | *** | 0.357 |
| Society Value | <--- | Quality of Education in University | 0.284 | 0.054 | 5.254 | *** | 0.332 |
| Society Value | <--- | Education Supplies | 0.143 | 0.052 | 2.725 | 0.006 | 0.158 |
| Society Value | <--- | Community Service Supplies | 0.118 | 0.051 | 2.319 | 0.02 | 0.14 |
| Society Value | <--- | Research Supplies | 0.123 | 0.049 | 2.491 | 0.013 | 0.146 |

Table 6 shows that the standardized path coefficient of Education supplies, Research Supplies, Community Service Supplies on Quality of Education in University is 0.156,0.26,0.357, and P is less than 0.05, indicating that Education supplies, Research Supplies, Community Service Supplies have a significant positive impact on Quality of Education in University. The standardized path coefficient of Quality of Education in University on social value is 0.332, and P is less than 0.05, indicating that Quality of Education in University has a significant positive impact on Society Value.

The standardized path coefficient of Education Supplies, Community Service Supplies, Research Supplies, on Society Value is 0.158,0.14,0.146, and P is less than 0.05, indicating that Education

supplies, Research Supplies, Community Service Supplies have a significant positive impact on Society Value.

Table 7 Intermediary inspection

| Effect type | Path | Estimate | Lower | Upper | P |
|-----------------|---|----------|-------|-------|-------|
| Direct effect | Education Supplies-->Society Value | 0.143 | 0.039 | 0.261 | 0.008 |
| Indirect effect | Education Supplies-->Quality of Education in University-->Society Value | 0.047 | 0.008 | 0.103 | 0.015 |
| Total benefit | Education Supplies-->Society Value | 0.19 | 0.072 | 0.315 | 0.002 |

Table 8 Intermediary inspection

| Effect type | Path | Estimate | Lower | Upper | P |
|-----------------|---|----------|-------|-------|-------|
| Direct effect | Research Supplies -->Society Value | 0.123 | 0.026 | 0.232 | 0.014 |
| Indirect effect | Research Supplies -->Quality of Education in University-->Society Value | 0.073 | 0.035 | 0.131 | 0 |
| Total benefit | Research Supplies -->Society Value | 0.196 | 0.091 | 0.318 | 0.001 |

Table 9 Intermediary inspection

| Effect type | Path | Estimate | Lower | Upper | P |
|-----------------|---|----------|-------|-------|-------|
| Direct effect | Community Service Supplies-->Society Value | 0.118 | 0.015 | 0.234 | 0.028 |
| Indirect effect | Community Service Supplies-->Quality of Education in University-->Society Value | 0.1 | 0.054 | 0.166 | 0 |
| Total benefit | Community Service Supplies-->Society Value | 0.218 | 0.103 | 0.336 | 0.001 |

Table 7, 8 and 9 shows that Education Supplies-->The direct effect of Society Value is established, the indirect effect is established, and the total effect is established, indicating that it is a partial intermediary. Research Supplies-->The direct effect of Society Value is established, the indirect effect is established, and the total effect is established, indicating that it is a partial intermediary.

Community Service Supplies-->The direct effect of Society Value is established, the indirect effect is established, and the total effect is established, indicating that it is a partial intermediary.

Discussion

1. Research objectives and Research results

This study established a structural equation model consisting of Education Supplies, Research Supplies, Community Service Supplies, Quality of Education in University and Society Value, and verified 10 hypotheses through AMOS and SPSS, all of which were effectively supported. Therefore, the structural equation model is established. This confirms the entire process of building a supply chain with Supply input–management–consumer as the clue, and explores the interactive relationship between Education Supplies and Research Supplies, Community Service Supplies and Quality of Education in University, as well as the impact on Society Value.

Use literature analysis to express the definitions and meanings of Education Supplies, Research Supplies, and Community Service Supplies.

This study found that Education Supplies, Research Supplies, and Community Service Supplies can all have a positive impact on the Quality of education in university.

This study found that the Quality of Education in University can have a positive impact on Society Value.

This study found that Education Supplies, Research Supplies, and Community Service Supplies can have a positive impact on Society Value.

Quality of Education in University is considered to have a mediating effect on Education Supplies, Society Value, Research Supplies, Society Value and Community Service Supplies, Society Value. It further proves that the Quality of Education in University is a good intermediary or bridge. University education provides high-quality resources and services, and the environment allows students and teachers to produce excellent research results, academic papers and outstanding graduates.

2. Consistent/inconsistent

Habib & Jungthirapanich (2010) regard education supply chain and research supply chain as the main components of university education supply chain management. Accuracy and validity were assessed through multiple linear regression (MLR) analysis and structural equation modeling (SEM)

techniques. The ultimate goal of the research model is to produce high-quality graduates and high-impact research results to provide Society value. The model structure educates supply chain and research supply chain personnel as the research objects, mainly university managers, faculty, employers and graduates. Educational supply chain management includes inputs provided to universities and outputs provided to universities. The article provides inputs through model A and outputs through model B. It is concluded that the factors that make significant contributions to universities are students and Research supplies. is the most important factor in the university. The main output of the university, including graduates and research results, will be provided to education customers and research customers respectively. The contribution of education customers and research customers to society is equal. If the university can produce high-quality products through successful education supply chain management, graduates and high-quality research results, then a happy society will be possible.

The difference between this study and this study is that: firstly, the research subjects of the author's study are mainly: university graduates, university teachers and personnel responsible for human resource management in enterprises; secondly, the paper of Habib & Jungthirapanich (2010) uses multiple linear regression (MLR) analysis and structural equation modeling (SEM) techniques, this study only used structural equation modeling to verify the hypothesis, Habib & Jungthirapanich, (2010) used education providers and research providers through universities, universities produce graduates and research results to benefit society. This study adds Community service supplies as a variable. In addition to graduates and research results, university outputs also include Society values and social service contributions provided by Community service supplies.

Lau (2007) proposed that the strategic goals set by universities should be to cultivate outstanding graduates and produce research results. The education supply chain has developed two independent supply chains, namely the "student" supply chain and the "research" supply chain. In the "student" supply chain, students are raw materials and finished products. After students are trained through university education, they are processed into high-quality goods. School teachers and staff work together to train students, which is the step of processing raw materials in the supply chain. At the same time, a "research" supply chain has developed, where research knowledge and learning concepts are the raw materials, research results are the commodities, research activities are the processing of raw materials, and school teachers and staff work together to produce research results.

The difference between this study and this study is that: first, the study of Lau (2007) mainly focuses on the goals set by university education. Therefore, the result-oriented development of "student" supply chain and "research" supply chain uses the concept of supply chain to integrate students as raw materials and finished products, they are finally processed into high-quality products. Research knowledge and learning concepts are the raw materials, and the research results are the finished products. Research results are produced through the joint efforts of school teachers and staff. This study adds a social service provider as a variable. In addition to graduates and research results, university outputs also include Society values and social service contributions provided by Community service supplies. Students are not only regarded as raw materials and instead, students, students' families, teachers' teaching, etc. are aggregated into Education Supplies. Research knowledge and learning concepts, teachers and students' joint research are aggregated into Research supplies, rather than a single element, which is more complex. and more diverse.

Conclusion

The 10 hypotheses discussed in this paper are established. The hypotheses, questionnaires, and models fit well.

H1: Education Supplies have a positive impact on Quality of Education in University. The standardized path coefficient of Education Supplies on Quality of Education in University is 0.156, and P is less than 0.05, indicating that Education Supplies have a significant positive impact on Quality of Education in University.

H2: Research Supplies have a positive impact on Quality of Education in University. The standardized path coefficient of Research Supplies on Quality of Education in University is 0.26, and P is less than 0.05, indicating that research supplies have a significant positive impact on Quality of Education in University.

H3: Community Service Supplies have a positive impact on Quality of Education in University. The standardized path coefficient of Community Service Supplies on Quality of Education in University is 0.357, and P is less than 0.05, indicating that Community Service Supplies have a significant positive impact on Quality of Education in University.

H4: Quality of Education in University has a positive impact on Society Value. The standardized path coefficient of Quality of Education in University on Society Value is 0.332, and P is less than 0.05, indicating that Quality of Education in University has a significant positive impact on Society Value.

H5: Education Supplies have a positive impact on Society Value. The standardized path coefficient of Education supplies on Society Value is 0.158, and P is less than 0.05, indicating that Education supplies have a significant positive impact on Society Value.

H6: Research Supplies have a positive impact on Society Value. The standardized path coefficient of Research Supplies on Society Value is 0.146, and P is less than 0.05, indicating that Research Supplies have a significant positive impact on Society Value.

H7: Community Service Supplies have a positive impact on Society Value. The standardized path coefficient of Community Service Supplies on Society Value is 0.14, and P is less than 0.05, indicating that Community Service Supplies have a significant positive impact on Society Value.

H8: Quality of Education in University has a mediating effect on Education Supplies and Society Value. Education Supplies-->The direct effect of Society Value is established, the indirect effect is established, and the total effect is established, indicating that it is a partial intermediary.

H9: Quality of Education in University has a mediating effect on Research Supplies and Society Value. Research Supplies-->The direct effect of Society Value is established, the indirect effect is established, and the total effect is established, indicating that it is a partial intermediary.

H10: Quality of Education in University has a mediating effect on Community Service Supplies and Society Value. Community Service Supplies-->The direct effect of Society Value is established, the indirect effect is established, and the total effect is established, indicating that it is a partial intermediary.

Suggestions

Firstly, the researchers saw that rapid digitalization of industry is a trend in supply chain management. Secondly, supply chains have continued to develop in a fiercely competitive economy. Several functional supply chain applications based on artificial intelligence (AI) have emerged, but few studies address the application of AI in supply chain processes. Machine learning, natural language processing and robotics are all potential drivers of supply chain transformation. Recognizing the paucity of research on the potential benefits of AI implementation in supply chains, it behooves us to further

explore. Finally, in addition to the Education Supplies, Research supplies and social service suppliers verified in this article to produce Society value through the quality of university education, it can also be verified based on other different suppliers, or the Society value can be changed to other such as Student satisfaction, service satisfaction and other related variables are used to verify hypotheses.

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