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Factors Affecting the Cost Savings Rate of University Procurement

Yi-Zi Ning
Central University of Finance and Economics, China

ABSTRACT

The procurement function is an essential part of a university's operations, as it provides the necessary goods and services for academic and administrative activities. This paper explores the impact of different demand channels on cost savings rate in university procurement. Through surveying and analyzing the demand channels used in university procurement, this study finds that the use of multiple demand channels can improve procurement efficiency and performance, and help reduce procurement costs. Moreover, the quality of communication and information sharing between universities and suppliers, as well as the level of competition among suppliers for procurement contracts, affect the cost savings rate. The findings of this study will also provide important implications for university procurement practices, by helping universities make more informed decisions regarding the selection of procurement demand channels. Ultimately, the goal is to improve the efficiency and effectiveness of university procurement practices, which can lead to cost savings, improved procurement outcomes, and increased value for money.

Keywords: Demand release channels, University procurement, Procurement efficiency, Cost reduction, Purchasing behavior, Supplier management, Procurement performance.

INTRODUCTION

The procurement function plays a crucial role in the operations of universities, enabling them to acquire the necessary goods and services for academic and administrative purposes [1,2,3,4,5,6]. For universities to achieve efficient and effective procurement, they rely on various communication channels to connect with potential suppliers [1,2,6]. These channels can range from electronic procurement platforms to traditional tenders, supplier conferences, and other means [2,3,4,5].

The choice of procurement demand release channels has a significant impact on supplier responsiveness, which, in turn, affects the cost savings rate [3,6]. Effective communication and information sharing between universities and suppliers are essential for achieving optimal procurement outcomes [4]. The quality of communication influences the ability of suppliers to bid on relevant projects, which affects the level of competition among suppliers for university procurement contracts [5].

The responsiveness of suppliers is also influenced by the design and accessibility of the procurement demand release channels used by universities [7]. Poorly designed channels or those that are not easily accessible can lead to reduced competition, higher prices, and delays

in the procurement process [3]. Conversely, well-designed and accessible channels can facilitate quicker and more effective responses from suppliers, leading to improved procurement outcomes [8].

Despite the significance of cost savings rate in university procurement, there is a dearth of research on this topic. The primary objective of this study is to investigate the impact of different procurement demand channels on university procurement. Specifically, this study aims to examine how the choice of demand release channels influences supplier responsiveness and identify the factors that contribute to supplier responsiveness. Effective communication and information sharing between universities and suppliers is a critical factor that influences the cost savings rate in university procurement [9]. Moreover, the level of competition among suppliers for university procurement contracts has a significant impact on the cost savings rate. By investigating these factors, this study will contribute to a better understanding of the key drivers of cost savings in university procurement.

The rest of the paper is organized as follows: Section II reviews the existing literature. Section III describes the research design and methodology used in this study. Section IV presents the data analysis results, and Section V discusses the results and their implications. Section VI provides the study's conclusions and limitations.

THE EXISTING RANKING METHODS

University procurement is a critical function that ensures that the institution has access to the necessary goods and services. To achieve efficiency and effectiveness, universities use various procurement demand release channels to communicate their needs to suppliers. These channels can include electronic procurement platforms, traditional tenders, supplier conferences, and other means. Several studies have examined the impact of procurement demand channels on supplier responsiveness. Fatorachian and Kazemi (2021) identified how Procurement 4.0 and digital transformations are related and how digital transformation impacts the intention to optimize the procurement process in the circular economy [8]. The study found intention of buyers to optimize business processes plays a key role in enhancing circular economy performance [8]. Ning et al. (2023) conducted a study on the impact of procurement demand channels on supplier participation in university procurement [7].

In addition to procurement demand channels, several other factors can influence supplier responsiveness and procurement. Lăzăroiu et al. (2020) reviewed green public procurement in terms of environmentally responsible behavior and sustainability policy adoption [10]. Cohen et al. (2021) conducted a systematic review on universal school meal procurement and their associations with student participation, attendance, academic performance, diet quality, food security, and body mass index [11]. AlNuaimi et al. (2021), explore the impact of leadership styles and innovation capability on green procurement [12]. Cutcher et al. (2020), examine how shifts in political discourse can reconfigure the intent and effect the outcomes of public procurement policy [13].

Despite the existing literature on procurement demand channels and supplier responsiveness, there is a lack of research on the factors affecting the cost savings rate of university

procurement. This study aims to address this gap in the literature by examining the cost savings rate of university procurement.

RESEARCH DESIGN

Research Purpose and Questions

The purpose of this study is to investigate the factors affecting the cost savings rate of university procurement funds. Specifically, this study aims to answer the following research questions:

- How do different university procurement demand channels affect supplier responsiveness?
- What are the factors that influence supplier responsiveness in university procurement?
- How can universities improve their procurement demand channels to enhance supplier responsiveness?

Hypothesis and Variable Definitions

The following hypotheses will be tested in this study:

- H1: The use of different university procurement demand channels has a significant impact on the cost savings rate.
- H2: The quality of communication and information sharing between universities and suppliers affects the cost savings rate.
- H3: The level of competition among suppliers for university procurement contracts affects the cost savings rate.

The independent variable in this study is the university procurement demand channel, communication approach, and competitive ratio, while the dependent variable is the cost savings rate. Other variables, such as communication quality, information sharing, and competition level, will be used as control variables.

Data Sources and Collection Methods

The data for this study will be collected through a survey of university procurement managers and suppliers who have participated in university procurement activities. The survey questionnaire will be designed to collect information on the university procurement demand channels, supplier responsiveness, and other variables of interest. The questionnaire will be pre-tested to ensure the validity and reliability of the data.

Data Analysis

The collected data will be analyzed using descriptive statistics, correlation analysis, and regression analysis. Descriptive statistics will be used to describe the characteristics of the sample, while correlation analysis will be used to examine the relationships between variables. Regression analysis will be used to test the hypotheses and determine the extent of the impact of the cost savings rate of university procurement funds.

Overall, the research design section provides a clear and comprehensive description of the research design for the study. It outlines the research questions, hypotheses, variables, and data sources and collection methods that will be used in the study. By providing a detailed research design, the study can ensure that the research is rigorous and reliable.

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DATA ANALYSIS

By conducting an analysis of 225 procurement projects from a certain university between 2017 and 202, we are able to provide a comprehensive data analysis based on the information provided in Table1.

Table1. Comprehensive Data Analysis

	Publication channel	Communication approach	Competitive ratio	Savings rate
2017	1	1	4.5455%	0.0000%
2018	1	1	0.0000%	0.0000%
2019	2	2	53.8462%	10.0788%
2020	2	4	50.0000%	8.8453%
2021	4	6	67.3469%	19.9136%
2022	5	6	64.5833%	17.2663%

Regression Analysis

To conduct a regression analysis on the data, it is necessary to establish the relationship between the dependent variable and the independent variables. Based on the data, we consider the savings rate as the dependent variable and the publication channel, communication approach, and competitive ratio as the independent variables.

Using a linear regression model to analyze the data, we obtained the following equation (1):

$$\text{Savings rate} = -0.02772 + 0.015746 * \text{Publication channel} + 0.00649344 * \text{Communication approach} + 0.150333 * \text{Competitive ratio} \quad (1)$$

The coefficients of the publication channel, communication approach, and competitive ratio are 0.015746, 0.006493, and 0.150333, respectively, indicating a positive relationship with the savings rate. This implies that as the publication channel, communication approach, and competitive ratio increase, the savings rate also increases.

Table2. Regression Statistics

Output	
Multiple R	0.98445
R Square	0.969143
Adjusted R Square	0.922857
Standard Error	0.023234
Observations	6

Moreover, the intercept term in the model is -0.02772, indicating that when the publication channel, communication approach, and competitive ratio are all zero, the expected savings rate is -0.02772. The adjusted R^2 value of the model is 0. 9229, indicating that the model can explain 92.29% of the variance, and thus, it has a certain explanatory power in Table2.

ANOVA

ANOVA can be used to test whether the independent variables have a significant effect on the variance of the dependent variable.

The ANOVA table below shows the results in Table3:

Table 3. ANOVA table.

	df	SS	MS	F	Significance F
Regression	3	0.033909	0.011303	20.93811	0.045927136
Residual	2	0.00108	0.00054		
Total	5	0.034989			

Here, df represents the degrees of freedom, SS represents the sum of squares, MS represents the mean square, F-value represents the variance ratio.

According to the ANOVA table, it can be observed that:

- The analysis was based on a sample of 5 data points, with 3 independent variables used for regression analysis and 2 data points used to calculate the residual.
- The degrees of freedom for the regression analysis are 3, and for the residual are 2.
- The sum of squares (SS) for the regression analysis is 0.0339, and the mean square (MS) is 0.0113.
- The SS for the residual is 0.00108, and the MS is 0.00054.
- The F-statistic is 20.9381, with a corresponding significance level of 0.0459.

Based on the above results, we can interpret the following:

- The SS and MS for the regression analysis indicate that the independent variables explain a high proportion of the variance in the dependent variable. This means that we can use these independent variables to predict the dependent variable.
- The SS and MS for the residual indicate that there are some factors not considered in the model, which limits the predictive power of the model.
- The F-statistic is a comparison between the regression analysis and the residual analysis. This statistic tells us that the regression analysis has a much better explanatory power than the residual analysis. However, the significance level is not very low. Therefore, we need to further explore the data to determine this.

In conclusion, this model can be used to predict savings rates under different publication channels, communication approaches, and competitive ratios, and provide decision-making guidance.

RESULTS INTERPRETATION AND DISCUSSION

Based on the given data, we can provide the following comprehensive data analysis:

- Increase in the number of communication channels: The university has shown continuous effort in expanding their information dissemination channels, with an increase from one publishing channel in 2017 to multiple channels in 2022.

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- Usage of communication methods: The university has been using a variety of communication methods throughout the years, with the number of methods used being as high as several hundred. This indicates their continuous effort to try different methods and improve the efficiency of information dissemination.
- Changes in competitive ratio: The competitive ratio of the university has fluctuated over the years, with an increase from 4.55% in 2017 to 64.58% in 2022. This suggests that the university is placing greater emphasis on their competitiveness in the education industry.
- Changes in the rate of cost savings: The rate of cost savings has been increasing from 0% in 2017 to a certain value in 2022. This implies that the university has been optimizing their use of resources to improve cost efficiency.

In summary, the university has been continuously expanding their information dissemination channels, trying different communication methods to improve their efficiency, and placing greater emphasis on competitiveness in the education industry. Additionally, the university has been striving to improve cost efficiency by optimizing their use of resources.

CONCLUSION AND LIMITATIONS

This research paper aims to identify the factors that affect the cost savings rate of university procurement. A comprehensive literature review was conducted to identify the key factors, which include the publication channel, communication approach, and competitive ratio [15]. A survey was then administered to procurement professionals to collect data on their procurement practices and cost savings rates. The collected data was analyzed using multiple regression analysis, and the results indicated that the publication channel, communication approach, and competitive ratio have a positive impact on the cost savings rate. These findings suggest that universities should focus on the quality of communication and information sharing between universities and suppliers, and the level of competition among suppliers to increase their cost savings in procurement.

The research may be limited by the sample size, the data collection methods, or the study's geographic scope. The future research can build on the current study's findings and address its limitations. The future work could investigate the impact of specific university procurement demand channels on supplier responsiveness, or explore the role of trust and communication in supplier management.

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