Influence of Portfolio Approach on Purchasing Consortia at the County Referral Hospitals in the Coast Region, Kenya

Everline Chebet, Dr. Samson Kitheka, Prof. Anwar Hood & Dr. Charles Kamau

Influence of Portfolio Approach on Purchasing Consortia at the County Referral Hospitals in the Coast Region, Kenya

[1*]Everline Chebet, [2]Dr. Samson Kitheka, [3]Prof. Anwar Hood & [4]Dr. Charles Kamau
[1*]PhD Student, Technical University of Mombasa, Kenya
P.O. Box 90420-80100, Mombasa, Kenya
*chebet8080@gmail.com
[2,3&4]Lecturers, Technical University of Mombasa, Kenya
P.O. Box 90420-80100, Mombasa, Kenya

Abstract

The objective of the study was to determine the influence of portfolio approach on purchasing consortium at the County Referral Hospitals in the Coast Region, Kenya. The study further investigated the moderating influence of management information system on the relationship between portfolio approach and purchasing consortia at the county referral hospitals in the coast region, Kenya. The contingency theory was used in the study. The study embraced the descriptive research design. The study population comprised of 212 officials drawn from the county referral hospitals in the coast region of Kenya. The stratified random sampling technique resulted into having 139 units of analysis. The study used primary quantitative data which was collected using questionnaires, whereas data analysis was through the statistical package for social sciences. The hypothesis testing led to the rejection of H_{01}, thus depicting that portfolio approach has a significant positive influence on purchasing consortia at the county referral hospitals in the coast region, Kenya. The hypothesis testing for the moderated relationship model led to the rejection of H_{02}, thus confirming that management information system has a significant moderating effect on the relationship between portfolio approach and purchasing consortia at the county referral hospitals in the coast region of Kenya. The study concludes that portfolio approach has a significant positive influence on the purchasing consortia in County Referral Hospital in the Coast Region, Kenya. The study recommends that county referral hospitals should embrace portfolio approach because it influences the purchasing consortia. The study also recommends that the county referral hospitals should invest in management information system because it has a significant positive moderating effect on the relationship between portfolio approach and purchasing consortia at the county referral hospitals in the coastal region of Kenya. Additionally, it is recommended that these hospitals prioritize continuous training and capacity building for staff on the effective use of portfolio approaches and management information system to maximize the benefits of these strategies.

Keywords: *Purchasing consortia, portfolio Approach, Contingency, Management Information System, County Referral Hospitals, Kenya*

1.0 Introduction

Purchasing Consortium (PC) is a strategy for enhancing competitiveness in supply chain operations in organizations with some common characteristics (Chan, Lettice, & Durowoju, 2019). Essig (2020) originally brought up the idea of a purchasing consortium based on collaboration in the purchase process in 1927. The term "purchasing consortium" refers to a broad conception of collaboration that encompasses cooperative purchasing and collective buying of office supplies (Carter, 2018). Purchasing consortiums may vary from collaborating on purchases via an online marketplace or forming a lead-buying agreement to just sharing information and insights (Nollet & Beaulieu, 2020). Purchasing consortia, which provide businesses and government agencies with a broader perspective of united effort in sourcing, have attracted more attention in recent years (Carter, 2018). Studys in purchasing consortium have developed both the concept and implementation criteria of purchasing consortium (Essig, 2020). This strategy allows members of a group to buy greater power from suppliers, resulting in more advantageous terms than they would have received if they had applied for the same service on their own (Morash & Clinton, 2019). Consolidation also saves money on administrative expenses because the negotiating process is handled by a single organization rather than by a number of entities (Kuei, Madu, & Lin, 2020). This current study endeavored to establish the influence of portfolio approach on purchasing consortium at the County Referral Hospitals in the Coast Region, Kenya.

1.1 Problem Statement

Purchasing consortia are becoming popular in the industrialized nations (Nollet & Beaulieu, 2020). This is as a result of the positive contributions of purchasing consortia to the performance of organizations (Essig, 2020). Although the concept of pooled sourcing is not new, it has not attracted the necessary adoption in the African context more-so in Kenya. This is because most of the studies such as the study by Chan, Lettice and Durowoju (2019) was done in New York and it used a mixed research design as well as the STATA package in data analysis, whereas the study by Kumar, Scheer and Steenkamp (2021) was conducted in India, and the studys used research questions instead of hypothesis and the multiple linear regression analysis model in their study. The problem of limited information and research studies on purchasing consortium in Kenya as well as the conceptual, contextual and the methodological gap emanating from the reviewed literature, prompted this current study. This present study therefore conducted a research study in an effort to unravel the influence of portfolio approach on purchasing consortium at the County Referral Hospitals in the Coast Region, Kenya.

1.2 Research Objectives
i. To determine the influence of portfolio approach on purchasing consortium at the county referral hospitals in the coast region, Kenya.
ii. To investigate the influence of management information system on the relationship between portfolio approach and the purchasing consortium at the county referral hospitals in the coast region, Kenya.

1.3 Research Hypotheses

H_{01}: Portfolio approach has no significant influence on the purchasing consortia at the county referral hospitals in the coast region, Kenya

H_{02}:   Management information system has no significant influence on the relationship between portfolio approach and the purchasing consortia at the county referral hospitals in the coast region, Kenya.

2.0 Literature Review

2.1 Theoretical Framework

The study was anchored on contingency theory. Contingency theory indicates that various companies handle purchasing operations in different ways depending on the level of uncertainty they face (Essig, 2020). It is therefore crucial to consider the supplier market's unpredictability in the context of collaborative procurement (Morash & Clinton, 2019). High performance is attributed to the assumption that a good match between the circumstances and the structure leads to it (Nollet & Beaulieu, 2020). The context and structure of an organization can influence performance, according to the contingency approach (Manne, 2018). Changes in specific circumstances, such as the expansion of the market, the size of the company, or the number of customers, would imply that the organization would modify its structure and resources so as to reach the new demands (of size and customers) and potentially alter its performance trajectory (Burns & Lee, 2017). The adoption of the contingency theory in this research study helped in the understanding of the portfolio approach and organization structure in purchasing consortium. Therefore, the contingency theory was crucial in underpinning the study variables used in this study.

2.2 Conceptual Framework

This is a pictorial representation of the variables under investigation (Cooper & Schindler, 2019). The dependent variable for this study was purchasing consortia while the independent variable for the study was portfolio approach. The relationship between the independent and the dependent variable was moderated by the management information system as shown in figure 1.
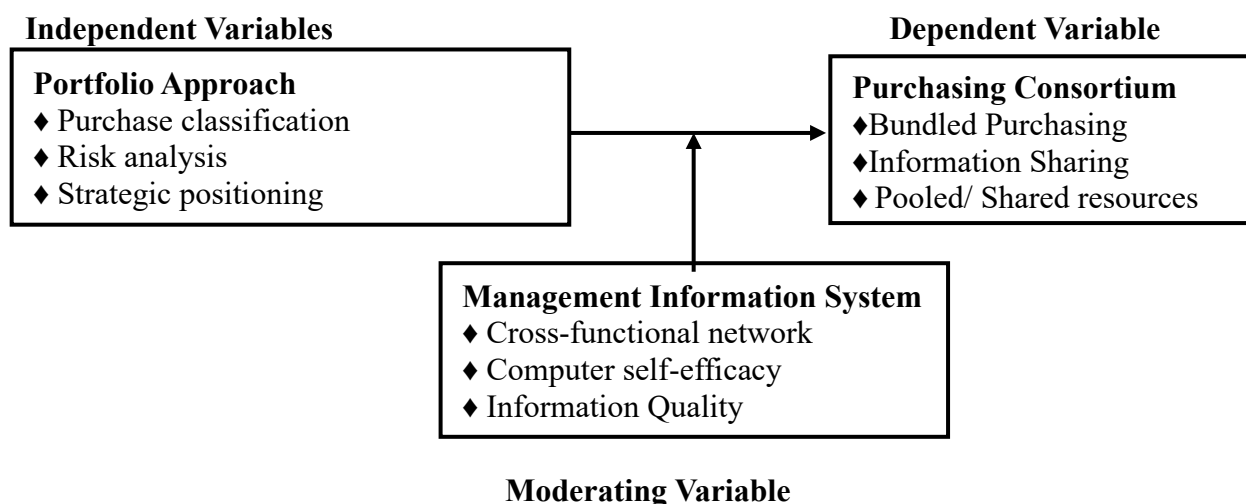
Independent Variables   **Dependent Variable**

Portfolio Approach
♦ Purchase classification
♦ Risk analysis
♦ Strategic positioning

Purchasing Consortium
♦Bundled Purchasing
♦Information Sharing
♦ Pooled/ Shared resources

Management Information System
♦ Cross-functional network
♦ Computer self-efficacy
♦ Information Quality

Moderating Variable

Figure 1: Conceptual Framework

2.3 Empirical Literature

In Germany, Schotanus and Telgen (2016) studied the effect of portfolio approach on purchasing consortium. Schotanus (2018) used the mixed research design as well as the multiple linear regression in data analysis. After data analysis, Schotanus (2018) concluded that portfolio approach significantly affects the purchasing consortium of commercial banks in Germany. In another research study, Manne (2018) found that portfolio approach has a significant effect on the purchasing consortium of health care facilities in the United Kingdom. Manne (2018) used research questions in his study as well as the statistical package for social sciences in data analysis. The reviewed research studies brought about several research gaps which this current study endeavored to address. For instance, the study by Schotanus (2018) was done in Germany, whereas the study by Manne (2018) was done in the United Kingdom. This current study was carried out at the county referral hospitals in the coast region, Kenya. The study by Schotanus (2018) used the mixed research design, and the study by Manne (2018) used research questions. This current study used the simple linear regression model as well as the research hypothesis in carrying out its study. Again, none of the reviewed studies conceptualized their variables in the same way as in this current study. Therefore, in an attempt to constrict the identified research gaps in methodological, contextual and the conceptual research gap, this study endeavored to undertake a study so as to unravel the influence of portfolio approach on the purchasing consortium at the county referral hospitals in the coast region, Kenya.

3.0 Research Methodology

This study employed a descriptive research design. The target population for this study constituted of the 212 officials drawn from the county referral hospitals in the coast region of Kenya. The Yamane Taro 1967 formular was used narrowing the target population to a sample size of 139 units of analysis. The stratified random sampling technique was used in selecting the 139 units of analysis out of the target population. The study used questionnaires in data collection. The collected data was cleaned, coded and analyzed through the Statistical Package for Social Sciences (SPSS). Data analysis was through descriptive statistics, correlation statistics as well as the regression statistics. Diagnostic tests were conducted on the data prior to running the simple linear regression model. The regression coefficients generated from the model were used in testing the research hypothesis at 0.05 level of significance and decision made on whether to reject or fail to reject the null hypothesis. The regression model guiding this study was formulated in the following manner.

$$Y = \beta_0 + \beta_1X_1 + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\text{Equation 3.1}$$

Where: Y: Purchasing Consortia; Purchasing consortia

The moderated regression model was espoused in determining the moderation effect of management information system on the relationship between portfolio approach and the purchasing consortium at the county referral hospitals in the coast region, Kenya. The moderated regression model comprised of two stages, the first stage involved estimating the main effect of the predictor variable (X) and the hypothesized moderator (Z) as shown in equation (3.2)

$$Y = \beta_0 + \beta_1X_1 + \beta_ZZ + \varepsilon\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\text{Equation 3.2}$$

Where: Z: the moderating variable

The second stage involved adding the interaction of the moderating variable so as to obtain equation (3.3).

$$Y = \beta_0 + \beta_1 X_1 + \beta_{1Z} X_1 * Z + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\text{Equation 3.3}$$

Where: X*Z: the interaction between the independent variable and the moderating variable

4.0 Research Findings and Discussion

The research findings and discussions were presented in sections.

4.1 Diagnostic Tests

Diagnostic tests were conducted on the data as a prerequisite for the successful running of the simple linear regression model employed in this study.

4.1.1 Test for Normality

Normal distribution of the data is confirmed when the normal (Probability to Probability) (P-P) plot tends to follow a liner pattern (Kothari & Garg, 2019). Figure 2 shows that the data points in the P-P plot follow a linear distribution pattern, thus confirming that the data set for this study was normally distributed.
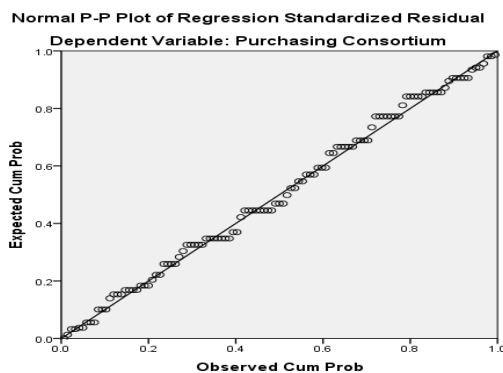

Figure 2: Normal P-P Plot

4.1.2 Test for Linearity

Studys confirm the presence of linear relationship between the independent and the dependent variables when the scatter plot portray an oval shape distribution (Holmes, 2019). The oval shape distribution pattern of the scatter plot in figure 3 confirmed the presence of linearity, thus paving way for the successful running of the linear regression model.
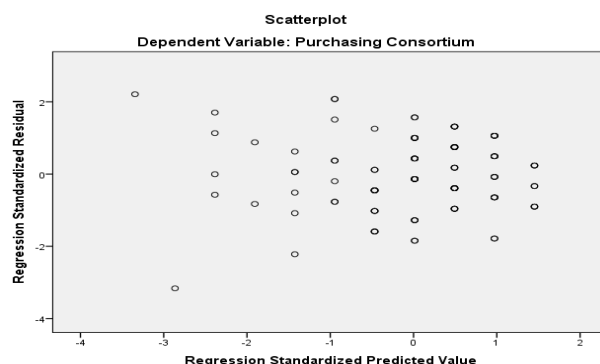
Figure 3: Scatter Plot

4.2 Descriptive Test Results

Table 1 was used in presenting the descriptive test results for this study

Table 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Purchasing Consortium	113	1.33	5.00	4.0767	.66078
Portfolio Approach	113	1.33	5.00	3.5665	.79416
Valid N (listwise)	113				

Table 1 showed that the overall mean for the portfolio approach variable was 3.5665. The mean score statistic of 3.5665 indicated the general agreement by the respondents that the county referral hospitals consider portfolio approach when constructing purchasing consortia. The standard deviation statistics value of .79416 which was less than the mean value indicated that the data for the portfolio approach variable was well dispersed around the central tendency. Again, the overall mean statistics of 4.0767 and the standard deviation of .66078 for the purchasing consortium showed that data was well dispersed around the mean.

4.3 Pearson's Correlation Analysis Results

The Pearson's correlation analysis statistics were generated and tabulated in table 2

Table 2: Pearson's Correlations Coefficients

		Purchasing Consortium	Portfolio approach	Interaction between portfolio approach and MIS
Purchasing Consortium	Pearson Correlation	1.000		
	Sig. (2-tailed)			
	N	113		
Portfolio approach	Pearson Correlation	.476**	1.000	
	Sig. (2-tailed)	.000		
	N	113	113	
Interaction between Portfolio approach and MIS	Pearson Correlation	-.328**	-.356**	1.000
	Sig. (2-tailed)	.000	.000	
	N	113	113	113

**. Correlation is significant at the 0.01 level (2-tailed).

The pearson's correaltion analysis outcomes presented in table 2 indicated a strong positive ralationship of .476 between portfolio approach and purchasing consortium, which was significant at 0.01 level (2-tailed). The corelation coeficient for the interacction between portfolio approach and Management Information System (MIS) and the purchasing consortia was an inverse relationship of -.328.

4.4 Regression Analysis Results

This section comprised of the table 3 for the model summary, table 4 for the ANOVA and table 5 for the regression coefficients of the direct relationship model. Table 6 was used in presenting the regression coefficients for the moderated relationship model.

Table 3: The Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.729a	.531	.490	.100

a. Predictors: (Constant), Interaction between portfolio approach and MIS, portfolio approach
b. Dependent Variable: Purchasing Consortium

The R-square results of 0.531 in table 3 indicated that over 53.1% of the variability of the dependent variable could be explained by the independent variable, thus indicating that the model was a good fit.

Table 4: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	54.067	9	7.109	10.500	.000b
	Residual	58.933	103	.572		
	Total	113	112			

a. Dependent Variable: Purchasing Consortium
b. Predictors: (Constant), Interaction between portfolio approach and MIS, portfolio approach

The significant F test results of 0.000 in table 4 indicated that the model was fit and statistically significant.

Table 5: Regression Coefficients for the Direct Relationship Model

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.441	.296		8.234	.000
	portfolio approach	.132	.080	.470	5.615	.000

a. Dependent Variable: Purchasing Consortium

Out of the findings in table 5, the simple linear regression model for the direct relationship model was fitted as shown in equation 4.1.

$Y = 2.441 + 0.132X_1$ …………………………..……………………..……. Equation 4.1

Where: Y: purchasing consortium; X_1: Portfolio approach

Table 6: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.857	.311		9.183	.000
	Portfolio approach	.132	.080	.470	5.615	.000
	Interaction between Portfolio approach and MIS	.138	.027	3	25.666	.000

a. Dependent Variable: Purchasing Consortium

Out of the findings in table 6, the regression model for the moderated relationship was fitted as shown in equation 4.2.

$Y = 2.857 + .132X_1 - .138_{1Z}X_1*Z$ …………………………………………...… Equation 4.2

Where,

Y: is the purchasing consortium

X_1:   is the Portfolio approach

$_{1Z}X_1*Z$:   is the interaction between Portfolio approach and MIS

4.5 Hypothesis Testing

The p-value statistics from the regression model in table 5 and 6 were employed in testing the hypothesis at 0.05 level of significance. The results for the hypotheses testing were presented in table 7.

Table 7: Hypothesis Testing for the Direct relationship Model

Hypothesis Statement	P-value	Decision Rule
H$_{01}$: Portfolio approach has no significant influence on the purchasing consortia at the county referral hospitals in the coast region, Kenya	.000	Reject **H$_{01}$**, Since P-value ≤0.05
H$_{02}$: MIS has no significant moderating influence on the relationship between Portfolio approach and the purchasing consortia at the county referral hospitals in the coast region, Kenya	.000	Reject **H$_{02}$**, Since P-value ≤0.05

4.6 Discussion of Key Findings

The main objective of the study was to determine the influence of portfolio approach on purchasing consortium at the County Referral Hospitals in the Coast Region, Kenya. The study further investigated the moderating influence of Management Information System (MIS) on the relationship between Portfolio approach and purchasing consortia. The Statistical Package for

Social Sciences (SPSS) was used in data analysis and the findings were presented in tables, chats and plots. The hypothesis testing in table 7 led to the rejection of H_{01}, since the p value of 0.000 was less than 0.05. The rejection H_{01}, indicated that Portfolio approach has a significant positive influence on the purchasing consortium of County Referral Hospitals in the Coast region of Kenya. These findings were consistent with the findings of Schotanus (2018) who concluded that portfolio approach significantly affects the purchasing consortium of commercial banks in Germany. The findings were also similar to the findings of Manne (2018) who found that portfolio approach has a significant effect on the purchasing consortium of health care facilities in the United Kingdom. The hypothesis testing for the moderated relationship between the interaction between Portfolio approach and MIS and purchasing consortia in table 7 led to the rejection of H_{02} since the P-value of 0.000 was <0.05. The rejection of H_{02} indicated that MIS has a significant positive moderating influence on the relationship between Portfolio approach and purchasing consortia in County Referral Hospital in the Coast Region, Kenya.

5.0 Conclusion

Based on the outcomes from this study, the study concludes that portfolio approach has a significant positive influence on the purchasing consortia in County Referral Hospital in the Coast Region, Kenya. This conclusion was drawn from the statistical analysis which revealed a strong correlation between portfolio approach and purchasing consortia. The rejection of H_{01} further substantiated the significant positive influence of portfolio approach on the purchasing consortia in County Referral Hospital in the Coast Region, Kenya. With reference to the moderating variable, the study concludes that MIS has a significant positive moderating influence on the relationship between portfolio approach and the purchasing consortia in County Referral Hospital in the Coast Region, Kenya.

6.0 Recommendations

The study therefore, recommends that the County Referral Hospitals in the Coast Region of Kenya should embrace portfolio approach because it positively influences the purchasing consortia. The study also recommends that the County Referral Hospitals in the Coast Region of Kenya should invest in MIS because it has a significant positive moderating influence on the relationship between the portfolio approach and the purchasing consortia. Additionally, it is recommended that these hospitals prioritize continuous training and capacity building for staff on the effective use of portfolio approaches and MIS to maximize the benefits of these strategies. Regular evaluation and monitoring of the portfolio approach and MIS should be conducted to ensure their effectiveness and relevance, with feedback mechanisms established to identify areas for improvement. Collaborating with other hospitals to share insights and adopting new advancements in technology and management practices can further enhance service delivery and operational excellence. Investing in state-of-the-art technology and infrastructure to support MIS will strengthen the relationship between the portfolio approach and purchasing consortia, ensuring sustainable improvements in procurement processes and overall hospital performance.

REFERENCES

Burns, L. R., & Lee, J. A. (2017). Hospital purchasing alliances: utilization, services, and performance. *Health Care Management Review, 33*(1), 3-15.

Carter, J. R. (2018). The future of purchasing and supply: a ten-year forecast. *Journal of Supply Chain Management, Vol 36*(1), Pages 14 - 26.

Chan, H., Lettice, F., & Durowoju, A. (2019). Decision-Making for Supply Chain Integration. *Supply Chain Integration publication, Vol 5*(2), Pages 101 - 113.

Cooper, D. R., & Schindler, P. S. (2019). *Business Research Methods* (13 ed.). New York, United States of America: McGraw-Hill Publication. doi:ISBN-13: 978-1260210019

Creswell, J. W., & Creswell, D. J. (2022). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (6 ed.). California, United States of America: SAGE Publications, Inc. doi:ISBN-13 : 978-1071817940

Essig, M. (2020). Essig M, (2020). Purchasing consortia as symbiotic relationships: developing the concept of "consortium sourcing"," European Journal of Purchasing & Supply Management, 6, 13-22. *European Journal of Purchasing & Supply Management, Vol 6*(1), Pages 13-22.

Field, A. (2017). *Discovering Statistics Using IBM SPSS Statistics: North American Edition* (5 ed.). New York, United States of America: SAGE Publication. doi:ISBN-13   : 978-1526436566

Handfield, R. B., & Bechtel, C. (2019). The Role of Trust and Relationship Structure in Improving Supply Chain Responsiveness. *Industrial Marketing Management Journal, 31*(4), Pages 367 - 382.

Holmes, W. F. (2019). *Multilevel modeling using R* (2 ed.). New York, United States of America: NY : CRC Press. doi:ISBN: 9781351062268; 1351062263; 9781351062251; 1351062255; 1351062247

Kothari, C. R., & Garg, G. (2019). *Research methodology: Methods and techniques* (4th Multi Color ed.). New Delhi, India: New Age International (P) Limited Publishers. doi:ISBN: 978-93-86649-22-5

Kuei, C., Madu, C. N., & Lin, C. (2020). The Relationship between Supply Chain Quality Management Practices and Organizational Performance. *International Journal of Quality & Reliability Management, Vol 18*(8), Pages 864 - 872.

Kumar, N., Scheer, L. K., & Steenkamp, J. B. (2021). The effects of perceived interdependence on dealer attitudes. *Journal of Marketing Research, Vol 32*(3), Pages 348 - 356.

Ljungquist, U. (2019). Core competency Beyond Identification: presentation of a model. *International Journal of Management Decision, Vol 45*(3), Pages 393 - 402.

Manne, J. R. (2018). Purchasing consortia: trends and activity in the UK. *The Bottom-Line Production Journal, Vol 12*(1), Pages 12 -18.

Morash, E. A., & Clinton, S. R. (2019). Supply Chain Integration: Customer Value through Collaborative Closeness versus Operational Excellence. *Journal of Marketing Theory and Practice, Vol 6*(4), Pages 104 - 120.

Nollet, J., & Beaulieu, M. (2020). The development of group purchasing: an empirical study in the healthcare sector. *Journal of Purchasing and Supply Management, Vol 9*(1), Pages 3 -10.

Schotanus, F., & Telgen, J. (2016). Effect of Portfolio Approach on Purchasing Consotium in the commercial banks in Gremany. *Journal of Purchasing and Supply Management, 13*(2), 53-68.

Spaulding, A., Zhao, M., & Haley, D. R. (2020). Value-based Purchasing and Hospital Acquired Conditions. *Journal of Health Policy, Vol 18*(12), Pages 413 - 421.