

# Supplier Relationship Management and Performance of Fast Moving Consumer Goods Manufacturing Firms in Nairobi City County, Kenya

Masters of Science in Procurement and Logistics

MSC Samuel Obwocha Bw'obegi and Dr. Anthony Osoro

Jomo Kenyatta University of Agriculture and Technology (JKUAT) in Nairobi, Kenya.

DOI: 10.29322/IJSRP.13.02.2023.p13434

<http://dx.doi.org/10.29322/IJSRP.13.02.2023.p13434>

Paper Received Date: 10<sup>th</sup> January 2023

Paper Acceptance Date: 10<sup>th</sup> February 2023

Paper Publication Date: 25<sup>th</sup> February 2023

**Abstract:** This research project established the relationship between supplier relationship management and performance of Fast Moving Consumer Goods (FMCG) manufacturing firms in Nairobi City County, Kenya. How manufacturing sector also generates revenues for the government. This was from 95 manufacturing companies in Nairobi City County. Therefore, this was the total population. The firms to be targeted included the different manufacturing sectors of the economy textiles, foods, chemicals, wood and paper, building materials, water and drinks, breweries, metals and toiletries.

**Keywords:** Supplier information sharing, Supplier collaboration, Supplier ICT Integration, Supplier value creation and Performance of FMCG

## 1.1. Introduction:

Supply chain being an integral part of the business highly contributes to the success of an organization especially where modern technologies for instance in business integration are used. In practice, SRM entails creating closer, more collaborative relationships with key suppliers in order to uncover and realize new value or optimize value and reduce risk. According to Ongeru and Osoro (2021) defined SRM as a process involved in managing preferred suppliers and finding new ones whilst reducing costs, making procurement predictable and repeatable, pooling buyer experience and extracting the benefits of supplier partnerships. While for certain transactions self-centered or discrete relationships, typically characterized as arm's length, may be appropriate, for others, more collaborative relationships may be appropriate. Supplier relationship management is the process that defines how a company interacts with its suppliers. As the name suggests, this is a mirror image of customer relationship management (CRM). Just as a company needs to develop relationships with its customers, it also needs to foster relationships with its suppliers. The desired outcome is a win-win relationship where both parties benefit." Integration of internal processes of the organization with the suppliers and customers forms the essence of the whole idea behind SCM. With the widespread use of internet, web-based systems enable organizations to form strong customer and supplier integration for inventory management, demand forecasting, customer and supplier relationship management (Shenoy & Rosas, 2017).

### 1.1.2. Network Governance Theory

The terms "network organization", "networks forms of organization" "interfirm networks", "organization networks" "flexible specialization" have been used frequently and somewhat metaphorically to refer to interfirm coordination that is characterized by organic or informal social systems, in contrast to bureaucratic structures within firms and formal contractual relationships between them (Webb, 2014). Network governance constitutes a "distinct form of coordinating economic activity" which contrasts and competes with markets and hierarchies (Chiappor & Salanie, 2003). Network governance involves a select, persistent and structured set of autonomous firms (as well as non-profit agencies) engaged in creating products or services based on implicit and open-ended contracts to adapt to environmental contingencies and to coordinate and safeguard exchanges (Northouse, 2007). An interfirm network consists of a close knit of network members who promote collective norms, which works as governance affecting network members' behavior (Lin, 2001). The network, therefore, operates as a governance mechanism through two mechanisms. First, the interfirm network provides members' reputation within the network, which affects the social standing of the network member (Webb,

2014). Since network members are connected to one another, they can spread reputations among network members and can easily check the reputations of new members who want to start business with them. Thus, when network members select exchange partners, they can rely on the reputation of a potential partner, which is provided by referrals from network members (Morgan, Robert & Shelby, 1994). Reputation is therefore not a consequence of interfirm exchange, rather it is an antecedent of the exchange and a key factor for choosing a partner to work with. In the 1990s, a new method of network-based governance emerged that expanded the range of management and supplier coordination mechanisms. This method has been accompanied by a critique of the previous two methods, namely market and hierarchy method, and is known for its wide chain of communication, informal organizational forms, and supplier chain trust-based relationships (Northouse, 2007).

### **1.1.3 Resource Dependence Theory**

Resource Dependence Theory (RDT) promoted by Webb (2014), is the study of how the external resources of organizations affects the performance of the organization. The procurement of external resources is an important tenet of both the strategic and tactical management of any company. Nevertheless, a theory of the consequences of this importance was not formalized until the 1970s, with the publication of *The External Control of Organizations*: According to Northouse (2007), Resource dependence theory has implications in the procurement effectiveness of the buying firms especially in tapping into the relationship with suppliers as their important and dependable partners. Thus this theory props up the notion of supplier development. RDT proposes that actors lacking in essential resources will seek to establish relationships with such as be dependent upon others in order to obtain needed resources. Just like buyer will depend on suppliers for external resources and sellers on buyers for precious markets (MSG Experts, 2015). Based on the RDT, the vertical integration of an organization in its supply chain depends on the perceived certainty of resource acquisition. Including the main variables of the RDT, the make or-buy decision is influenced by the power of an organization over its suppliers, the dependency of the organization on its suppliers, and the criticality of the resources sources from these suppliers (Webb, 2014). The first step in the make-or-buy decision process includes the assessment of the criticality of the resource for the organization. The second step includes the concentration of the resource in the organizational environment (Chiappor & Salanie, 2003). A resource can be seen as concentrated, if there are only few suppliers available, leading to dependency of the organization to few suppliers (Feidler & House, 1994). The general assumption of the RDT, organizations will try to reduce its dependency to external providers of resources and improve its power over other organizations in their organizational environment. Another critical factor under resource dependence theory is environmental uncertainty the fact that the incidents and circumstances of the future cannot be forecasted. The technological uncertainty of a product expresses the inadequacy in forecasting the technical aspects of the product changes, the technical requirements of clients and the changes in the future. It can be seen that strategic collaborations and mergers are more frequent in industries where the rates of dependence and uncertainty are higher (Sanders & Premus, 2005).

## **2.1 Supplier Information Sharing**

Managing information and communication between manufacturing firms and suppliers is becoming crucial to businesses. Therefore, employing shared information systems can assist firms in reducing costs, especially if this information is exchanged on a real-time basis (Li, Kang & Haney, 2017). Effective information sharing mechanisms require the integration of buyers and suppliers that will facilitate the execution of complex purchasing strategies, such as just-in-time concepts. This integration can be conducted using IT applications that enable both parties to synchronize their data by connecting with their business systems and establishing a more collaborative decision-making process. Accordingly Lii and Kuo (2016), the performance of manufacturing firms can be enhanced by key suppliers with more accurate demand forecasting, improved coordination in production planning decisions, and effective management of inventory levels within the organization. The relationship with the key supplier should ensure an accurate and timely flow of information related to the planning, coordinating, and controlling of all data that can help manufacturing firms in establishing efficient processes. This information sharing mechanism and supplier information alignment will enable the firms to make more successful decisions and achieve a competitive advantage over their rivals. The objective of information sharing is to enable manufacturers to provide the best value to their customers at a low cost by having effective and efficient information flows between the two parties (Li et al., 2017). Moreover, all redundant activities and waste will be eliminated by the frequent and timely exchange of information with suppliers. This alignment between manufacturing firms and their suppliers leads to more efficient, faster, and accurate processes that enhance the performance of both suppliers and their customers. Consequently, information sharing and integration among key suppliers and manufacturers will lead to improvements in logistics decisions, improvements in development activities, enhanced production efficiencies, and ultimately establish competitive advantage in the whole manufacturing supply chain (Musau, 2018).

### **2.1.2 Supplier Collaboration**

In practice, supplier collaboration expands the scope of interaction with key suppliers beyond traditional buy-sell transactions to encompass other joint activities which are predicated on a shift in perspective and a change in how relationships are managed, which may or may not entail significant investment. Such activities include, Joint research and development, more disciplined, systematic, and often expanded, information sharing and finally joint demand forecasting and process re-engineering. The strategic focused outcomes model (SFOM) categorizes collaboration into three (Ongeri & Osoro, 2021) These are Market collaboration which includes activities such as shared merchandising, co-branding, joint selling and distribution channel management. Operational collaboration

which includes shared operational planning information, developing and sharing of forecasts, link order management system and joint capacity management system. Strategic collaboration which includes aligning customer requirements, sharing basic technologies, shared production engineering, developing joint market entry strategies and develop joint capital expenditures (Mwangi, 2019). Supplier collaboration is the act of two or more chain members working together to create a competitive advantage through sharing information making joint decisions and sharing benefits which result from greater profitability of satisfying customer needs than acting alone (Musau, 2018). Supplier relationships play both a rationalization role, in which they support the company's efficiency and support minor sacrifices for its customers, and a developmental role, in which they support the company's development of innovation and capabilities and, thus, help the increase of the benefits perceived by the company's customers. As a result of the strategic importance of supplier relationships, the procurement function has become more and more crucial in the organization. This function performs more and more strategic activities by developing and controlling critical capabilities supporting and enhancing the company's competitive differential (Ongeri & Osoro, 2021).

### **2.1.3 Supplier ICT Integration**

According to Wagner (2018) the study was to assess the integrative role of supplier relationship on procurement performance in manufacturing sector in Kenya. The study used the case of East African Breweries Ltd and focused on employees working in different departments at the Company. It adopted a descriptive research design which was appropriate because it involved collecting data in order to answer pertinent questions concerning the current status of subjects under study. The target population was 450 employees working in different departments who were directly involved in managing manufacturing activities in the Organization. Analysis of variance (ANOVA), correlation and regression analysis was done. The results of the study indicated that there is a positive relationship between the predictor variables and procurement performance (Boit & Osoro, 2021). The results also indicated that supplier ICT integration contributes more to procurement performance. According to Talley (2019) study aimed to comparatively examine the supplier relationship management (SRM) dimensions and organizational performance links of private and public hospitals in Ghana. Partial least square-multi-group analysis (PLS-MGA) was performed to test the significance of the difference in the parameters between the two samples: private and public hospitals in Ghana (Mwangi, 2019). The dimensions of ICT integration have a significant, positive impact on private hospitals' performance in Ghana. Similarly, ICT integration enhances supplier communication and trust were found to be positively and significantly correlated to public hospitals' performance. In contrast, cooperation, atmosphere and adaptation dimensions showed no significant, positive effect on public hospitals' performance. PLS-MGA disclosed that these observed differences in the findings between the private and public hospitals in Ghana are statistically significant (Mutai & Osoro, 2021).

### **2.1.4 Supplier Value Creation**

According to Yang, Zhao, Yeung and Liu (2016), they observed developed and tested a new model for value creation and capture in buyer-supplier relationships. In addition to including both value creation and capture in the same model, value creation is unraveled by the identification of its sources, both intrinsic and relational. Intrinsic value is the set of benefits derived from resources belonging to one party that can be captured by another party if there is a relationship between them, even if this relationship is non-collaborative. Relational value encompasses the mutual benefits that are generated as the collaboration between buyer and supplier increases. The model was tested using a survey of 127 dyads (buyer and supplier). The results indicated that both sides benefit from the total value created by the relationship, but the degree of value capture varies. The value perceived by the supplier is greater than that perceived by the buyer, which consequently encourages the former to boost its efforts even further to ensure that the relationship continues (Boit & Osoro, 2021). According to Whipple, Wiedmer and Boyer (2015) the impact of value-added activities provided by key suppliers on the performance of manufacturing firms was measured in this study. Based on a literature review, four added-value activities: supplier customized services, logistics collaboration, information sharing, and innovation and development were focused on. The final sample included 126 respondents, representing a 63% response rate. All value-added activities were found to have a statistically significant effect on the manufacturing firms in Jordan and the dimension of logistics collaboration had the greatest effect on performance (Shenoy & Rosas, 2017). This research model can be applied to future studies of multiple sectors in Jordan or the same sector in multiple countries to examine the effect of value-added activities on different firm's performance levels (Mwangi, 2019).

### **2.1.5 Performance of Fast Moving Consumer Goods (FMCG)**

According to Nyile et al. (2022) investigated the impact of brand equity on the operational performance of businesses in the Indian FMCG industry. The results indicate that there is correlation between brand equity and operational performance of business. The practical implications of the findings are that brand equity has to be effectively managed for improved operational performance of business. The study found that supplier relationship management systems positively and significantly influences supply chain performance of FMCG in Kenya. According to Mwangi (2019) identified the supply chain performance attributes that are relevant to the Fast Moving Consumer Goods (FMCG) industry. The FMCG supply chains are analysed from the perspective of processes, components and typology. The typical issues faced by the FMCG supply chains are also explored. Three supply chain operational models are compared and identify SCOR as the one best suited for the FMCG industry. According to Ominde, Osoro and Monari (2022) examined the impact of distinctive determinants namely flexibility, planning, quality and information technology (IT) of the

supply chain management on the overall performance. Hence, considered FMCG sector in Pakistan through employing quantitative methods. Through non-probability sampling techniques such as convenience, purposive and referral technique 148 responses were collected via on-line survey questionnaire for quantitative analysis. The statistical analysis confirmed that there exist positive moderate to strong correlation between SCM determinants and attributes of overall performance (Okumu & Bett, 2019). Moreover, the regression analysis confirmed that all the determinants have positive significant impact on the considered attributes of overall performance. Detailed analysis and Chi-Square test confirmed flexibility is the most essential determinant that highly affects accuracy. The qualitative findings also confirmed the similar findings.

### 3.1 Research Design

This study used descriptive research design where both qualitative and quantitative approaches was applied to analyze the problem. The aim of a descriptive research was to determine and report the way things are and it guides in determining the current status of the population under research (Silverman, 2019). Therefore, descriptive survey appeared to be the best approach which was fulfilled the objective of this research design. A research design was a roadmap of how one goes about answering the research questions. He states that a good research design had a clearly defined purpose and had consistency between the research questions and the proposed research method.

#### 3.1.2 Supplier Information Sharing

Respondents were asked to give their responses in regard to supplier information sharing in a five point Likert scale where SA=Strongly Agree, A=Agree, N= Neutral, D=Disagree, and SD= Strongly Disagree. Results obtained were presented in Table 1.1 below: Respondents were asked to give their level of agreement on the variable supplier information sharing. From table 1.1, the respondents unanimously agreement that supplier information sharing ensured performance of FMCG manufacturing firms and periodic review in Nairobi County viable (M=3.741, SD=1.0606); Through real time basis assessment the county has been able to make rational decisions on priority and non-priority projects (M=3.831, SD=.9201); willingness to share information assessment has contribution to the quality and innovation of the planning team (M=3.901, SD=.9006); assessment of quick, frequent and accurate information transfer in supplier information sharing it is important to put in place and maintain procurement record/ register (M=4.059, SD=.8250); The management of Nairobi County implements performance of FMCG manufacturing firms to prevent fraud in supplier evaluation (M=3.839, SD=1.3019); and supplier information sharing enhances performance of FMCG manufacturing firms at Nairobi County (M=3.584, SD=.8016). These findings concur with the findings of Nyile *et al.* (2022) who observed that clear description of supplier information sharing, can enhance effective performance of FMCG Manufacturing firms.

**Table 1.1: Supplier Information Sharing**

Statement	Mean	Std. Dev.
My county ensures conformance of supplier information		
Sharing through Real time basis	3.3741	1.0606
Through Willingness to share information my county has		
been able to make decisions on FMCG Manf. Firms.	3.831	.9201
Responsiveness of supplier has contribution to performance		
of FMCG manufacturing firms in Nairobi County	3.901	.9006
By Quick, frequent & accurate information transfer		
it is important to put in place supplier information sharing	4.059	.8250
The management of my county implements supplier		
Information sharing	3.839	1.3019
Supplier information sharing enhances performance		
of FMCG Manf. firms at Nairobi County	3.584	.8016

#### 3.1.3 Supplier ICT Integration

Respondents were asked to give their responses in regard to supplier ICT integration on performance of FMCG manufacturing firms in Nairobi city County in Kenya i.e. 5 point Likert scale where SA=Strongly Agree, A=Agree, N= Neutral, D=Disagree, and SD=

Strongly Disagree. The results obtained were as presented in Table 1.2 below: The findings presented in table 1.2 show that respondents agree that: Network has effect on performance of FMCG manufacturing firms in Nairobi City County, Kenya (M=3.803, SD=.7901); Information Technology training on performance of FMCG manufacturing firms in Nairobi city County, Kenya (M=3.409, SD=.8233); Number of computing devices on performance of FMCG manufacturing firms in Nairobi city County, Kenya (M=4.601, SD=.7935); ICT integration is significant when you want to performance of FMCG manufacturing firms of Nairobi County (M=4.601, SD=.6908); Contract Appraisal enhances our performance of FMCG manufacturing firms in Nairobi city County (M=3.594, SD=.7023); and through evaluation, the organization is able to identify problems and find solutions in a timely manner to ensure high quality of the goods and services delivered (M=4-.009, SD=.7047). The findings concurs with the finding of Boit and Osoro (2021), who argued that it is critical to ICT integration frequently and at regular intervals after award to ensure that the supplier is providing the goods and services on schedule and within the procurement plan , and that quality standards are being met, especially for the highest-risk and most complex contracts. Evaluating post-award performance entails several activities to ensure that the delivery of services meets the terms of the contract. These include identifying performance criteria, such as key performance FMCG manufacturing firms indicators , at the time of contract formulation, and providing adequate monitoring resources and a capable workforce for overseeing contractor evaluation, by so doing performance of FMCG manufacturing firms of Nairobi was improve communication among FMCG manufacturing firms.

**Table 1.2: Supplier ICT Integration**

Statement	Mean	Std. Dev.
Our county conduct Network awareness on performance of FMCG manufacturing firms of Nairobi City County, Kenya	3.803,	.7901
Our county review IT training on performance to performance of FMCG manufacturing firms of Nairobi City County, Kenya	3.409	.8233
Through county review of Number of computing devices on performance of FMCG manuf. firms of Nairobi City County, Kenya	4.601	.7935
ICT integration on performance of FMCG manuf. firms of Nairobi City County, Kenya	4.601	.6908
Supplier Appraisal enhances our performance of FMCG Manuf. firms of Nairobi City County, Kenya	3.594	.7023
Through of supply chain best practices on performance of FMCG manuf. firms of Nairobi City County, Kenya	4.106	.7047

**3.1.4 Regression Analysis**

To establish the degree of the effect of supply chain for a regression analysis was conducted, with the assumption that: variables are normally distributed to avoid distortion of associations and significance tests, which was achieved as outliers were not identified; a linear relationship between the independent variables and dependent variable for accuracy of estimation, which was achieved as the standardized coefficients were used in interpretation. The multiple regression model was as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Performance of FMCG manufacturing firms of Nairobi=  $\beta_0 + \beta_1$  (supplier information sharing) +  $\beta_2$  (supplier collaboration) +  $\beta_3$  (ICT integration) +  $\beta_4$  (supplier value creation) + error term. Regression analysis produced the coefficient of determination and analysis of variance (ANOVA). Analysis of variance was done to show whether there is a significant mean difference between dependent and independent variables. The ANOVA was conducted at 95% confidence level.



### 3.1.5 Model Goodness of Fit

Regression analysis was used to establish the strengths of relationship between the performance of FMCG manufacturing firms of Nairobi (dependent variable) and the predicting variables; supplier information sharing, supplier collaboration, ICT integration and supplier value creation (Independent variables). The results showed a correlation value (R) of 0.764 which depicts that there is a good linear dependence between the independent and dependent variables. This finding is in line with the findings of Onger and Osoro (2021). They observed that this also to depict the significance of the regression analysis done at 95% confidence level. This implies that the regression model is significant and can thus be used to evaluate the association between the dependent and independent variables. This finding is in line with the findings of Amoako-Gyampah, Boakye, Adaku and Famiyeh (2019), they observed that analysis of variance statistics examines the differences between group means and their associated procedures.

**Table 1.3 Model Goodness of Fit**

R	R <sup>2</sup>	Adjusted R	Std. Error of the Estimate
0.764	0.793	0.731	0.065

a. Predictors: (Constants); supplier information sharing, supplier collaboration, ICT integration and supplier value creation

b. Dependent Variable: performance of FMCG manufacturing firms of Nairobi

With an R-squared of 0.793, the model shows that supplier information sharing, supplier collaboration, ICT integration and supplier value creation can contribute up to 79.3% on performance of FMCG manufacturing firms of Nairobi County, while 20.7% this variation is explained by other indicators which are not inclusive in this study or model. A measure of goodness of fit synopses the discrepancy between observed values and the values anticipated under the model in question. This finding is in line with the findings of Mwakubo and Ikiara (2007).

### Conclusion

Therefore, from the foregoing, this study concludes that supplier information sharing have broadly impacted on performance of FMCG manufacturing firms of Nairobi City County, Kenya. The findings conclude that any county should drive to embrace the best performance of FMCG manufacturing firms after improving supplier evaluation in Kenya. When public-private partnerships is embraced through supplier collaboration, ICT integration, and supplier value creation then the implementation of performance of FMCG manufacturing firms of Nairobi City County, Kenya.

### REFERENCES

- Amoako-Gyampah, K., Boakye, K. G., Adaku, E. and Famiyeh, S., (2019). Supplier relationship management and firm performance in developing economies: A moderated mediation analysis of flexibility capability and ownership structure. *International Journal of Production Economics*, 208, 160-170.
- Boit, J,S & Osoro, A. (2021), Factors Affecting Women in Strategic Management on Performance of County Government in Trans Nzoia, Kenya. *The International Journal of Business & Management* ISSN 2321–8916 October 2021 Vol 9Issue 1
- Chiappori, P. & Salanie. B. (2003). Testing Contract Theory: A Survey of Some Recent Work”. In *Advances in Economics and Econometrics*. Cambridge University Press.
- Feidler, F., & House, R. (Eds.). (1994). *Leadership theory and research: A report of progress*.
- Li, S., Kang, M., & Haney, M. (2017). The effect of supplier development on outsourcing performance: The mediating roles of opportunism and flexibility. *Production Planning & Control*, 28(6-8), 599- 609. doi:10.1080/09537287.2017.1309711.
- Lii, P., & Kuo, F. (2016). Innovation-oriented supply chain integration for combined competitiveness and firm performance. *International Journal of Production Economics*, 174, 142-142.
- Morgan, Robert M. and Shelby D. Hunt. 1994. “The Commitment-Trust Theory of Relationship Marketing.” *Journal of Marketing* 58 (July): 20-38.
- Musau, E. (2018). Supply chain determinants of organizational performance among textile manufacturing firms in Kenya: the moderating effect of background characteristics: Unpublished PhD thesis, Jomo Kenyatta University of Agriculture and Technology
- Mutai, V. K and Osoro, A.(2021) Strategic Engineering Management on Performance of all Commercial Banks in Nyeri County, Kenya. *International Journal of Scientific and Research Publications*, Volume 11, Issue 10, October 2021 530 ISSN 2250-3153.

- MSG Experts, (2015) Trait Theory of Leadership, Management Study Guide.
- Mwangi, N. (2019). Influence of supply chain optimization on the performance of manufacturing firms in Kenya.
- Northouse, P. G. (2007). Leadership: theory and practice. 4th ed. Thousand Oaks, CA: Sage Publications.
- Nyile, E. K, Ismail, N, S, & Osoro, A.(2021) . Influence of Supply Chain Leagility on Performance of Humanitarian Aid Organizations in Kenya. Journal of Business and Economic Development. Vol. 6, No. 1, 2021, pp. 37-57.
- Okumu, E. A., & Bett, S. (2019). Inventory management practices and organization performance of steel industries in Nairobi County, Kenya. International Journal of Current Aspects, 3(III), 71-82.
- Ominde,S.O, Osoro,A. & Monari, D,G (2022).Contractual Supply Chain Governance, Relational Supply Chain Governance and Performance Of Agro Processing Firms In Kenya. International Journal of Scientific and Research Publications, Volume 12, Issue 4, April 2022 363 ISSN 2250-3153.
- Ongeri, N.V. and Osoro, A. (2021) Effect of Warehouse Consolidation on Performance of Registered Distribution Firms in Nairobi City County, Kenya. The international journal of business & management Publications, Volume 9, Issue 10, October 2021 ISSN 2321–8916.
- Sanders, N. R., &Premus, R. (2005). Modeling the relationship between firm IT capability, collaboration, and performance. Journal of Business Logistics, 26(1), 1-23.
- Shenoy, D., & Rosas, R. (2017). Introduction to inventory management. Problems & Solutions in Inventory Management, 3-11.
- Silverman, D. (2019). Interpreting qualitative data. Sage Publications Limited.
- Talley, W. K. (2019). Note: Determinants of cargo Port choices by cargo Port service providers. Transportation Research Part E: Logistics and Transportation Review, 132, 48-50.
- The role of institutions in intermodal transport and logistics. (2016). Institutional Challenges to Intermodal Transport and Logistics, 63-73.
- Wagner, S., Grosse-Ruyken, P., & Erhun, F. (2018). Determinants of sourcing flexibility and its impact on performance. International Journal of Production Economics, 205, 329-341.
- Wang, W. (2015). Pooling Game Theory and Public Pension Plan. ISBN 978-1507658246.
- Webb, J. N. (2014). Game theory: decisions, interaction and evolution, Undergraduate mathematics, Springer, ISBN 978-1- 84628-423-6 Consistent treatment of game types usually claimed by different applied fields, e.g. Markov decision processes.
- Whipple, J., Wiedmer, R., & Boyer, K. (2015). A dyadic investigation of collaborative competence, social capital, and performance in buyer-supplier relationships. Journal of Supply Chain Management, 51(2), 3-21.
- Yang, Q., Zhao, X., Yeung, H., & Liu, Y. (2016). Improving logistics outsourcing performance through transactional and relational mechanisms under transaction uncertainties: Evidence from china. International Journal of Production Economics, 175, 12-12