International Food Research Journal 22(4): 1417-1423 (2015)
Journal homepage: *http://www.ifrj.upm.edu.my*

Assessment of need for vertical coordination in supply chain of vegetable industry

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Article history

Received: 5 June 2014
Received in revised form: 9 December 2014
Accepted: 19 December 2014

Keywords

Vertical Coordination
Supply Chain
Vegetable
Delphi
VCVSC

Abstract

The Delphi technique applied to know and assess the attributes of vertical coordination for vegetable supply chain on the basis of fourteen variables observed with the extensive literature study and interview of experts. The study is based on the concept of the vertically coordinated supply chain to produce value for vegetables. The items of questionnaire converted to hypothesis and tested using the Independent Sample Kruskal- Wallis Test of Non Parametric Test. As the result shows all objectives fulfilled using the fourteen hypotheses for study with the need of implementing the vertical coordination in supply chain of vegetable industry can support ten attributes of vegetables to improve over the status of existing supply chain.

Introduction

Study conducted here is to obtain insight into the applicability of the concept of Supply Chain Management (SCM) in vegetable supply chains (SCs) with the vertically coordinated approach. Another view is to find an efficient and effective method to analyze the existing supply chain and redesign a beneficial supply chain to improve supply chain performances. Main theoretical considerations that support this research are presented and discussed including a brief discussion about the evolution in agribusiness research passing from a 'choice' to a 'contractual' analysis of the firm which is suggested when there are positive transaction costs. In this context the contributions of VCVSCs to deal with issues such as uncertainty and frictions in trade are introduced. The main postulate of VCVSCs is that institutionalization matters and therefore they can contribute to reduce transaction problems between parties (e.g., small farmers and the consumers). Within VCVSCs a special emphasis is put on the discussion about transaction costs and collective action. Transaction costs include the costs of searching information, establishing market relationships and monitoring them. Factors such as uncertainty and frequency of transactions determine the magnitude of transaction costs. Under this situation the concept of collective action becomes useful for developing and implementing institutional arrangements that help to reduce transaction costs.

Given the complex environment faced by small farmers in developing countries in the context of current changes in vegetable supply chain systems (VSCS). It is necessary to look for an analytical framework that helps us to understand these changes and search for mechanisms that allow small farmers to tackle challenges and take advantage of potential opportunities offered by VSCS. New Institutional Economics (NIE) is proposed here as a suitable approach.NIE is focused on analyzing market imperfections (Harris *et al.*, 1995) (e.g. limitations of small farmers to participate in vertically-coordinated markets). NIE has its origin in the works of Coase, North and Williamson that focuses on the role of institutions in economic transactions (Menard, 2000). According to mainstream economic theory economic agents (farmers in this case) will coordinate their actions if the benefits of doing so outweigh the costs. However in the real world this does not always happen regardless of the potential gains (Harris *et al*., 1998). One reason for such behavior is that while economic agents are inherently rational limitations in information and frictions in trade hamper them in this pursuit such that they are rationally bounded (Harris *et al*., 1998; Williamson, 2000). Reardon and Berdegue (2002) highlight the importance of the growth of supermarkets in developing countries considering it as a huge market opportunity that can be used as an engine for poverty alleviation and development. The question that arises is what are

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the factors that hamper small farmers to participate in supermarket supply chains and take advantage of these potential opportunities? The traditional spot market is considered to be inefficient under the new VSCS thus supermarket chains look for coordinated relationships with their suppliers. Nevertheless small farmers continue using the traditional market because it is where they are used to selling their products and therefore cannot switch to new marketing systems immediately just because of potential gains. A reasonable hypothesis is that farmers face positive transaction costs that limit their participation in coordinated markets such as the supermarket supply chains. Packaging appearance, branding and pricing of the vegetables are also very important for the consumer acceptance in the market (Harith, *et al*., 2014). Challenges come from the tendency of all cases for being 'product-centric' rather than 'customer-centric' company as such the implementation of CRM is low (Garnida *et al*., 2014). In agribusiness and agriculture government and firms should feel employees are an asset where they could be the determinant behind organizational success or failure in an industry (Nasyira *et al.*, 2014). Approach to Extended Producer Responsibility (EPR) in various Asian and European countries to increase public awareness and concern about the government's environmental impact of products and production processes, encourage sustainable design, as well as end-use products that focus on the improvement of environmental performance of products and manufacturing systems product (Herdiana *et al*., 2014). In competitive markets, agribusiness firms have embarked on improving their service quality for building and maintaining a profitable relationship with their customers (Tey *et al*., 2014). For this specific research three objectives set are to know the components of vertical coordination, to assess the need of vertical coordination in supply chain of vegetables and to determine the impact of vertical coordination on supply chain of vegetables industry.

Theoretical background

Since the 1980s literature on SCM stresses the need for collaboration among successive actors from primary producer to final consumers to better satisfy consumer demand at lower costs (Ellram, 1991; Towill, 1996; Bechtel and Jayaram, 1997). SCM deals with total business process excellence and represents a new way of managing the business within each link and the relationships with other members of the SC (Lambert *et al.* 1998). A driving force behind SCM is the recognition that sub-optimization occurs if each organization in a SC attempts to optimize its own results rather than to integrate its goals and activities with other organizations to optimize the results of the chain (Cooper *et al.*, 1997a). Stevens (1989) refers to the interdependency of activities in the SC says If one activity fails the chain is disrupted creating poor performance and destabilizing the workload in other areas thereby jeopardizing the effectiveness of the SC. This was first recognized by Forrester in 1961 when he modeled a factory – distributor – retailer system and showed that small disturbances in one part of the system can very quickly become magnified as the effect spreads through the SC. Vegetable SCs comprise organizations that are responsible for the production and distribution of vegetable produces (Zuurbier *et al*., 1996). In general SCs for fresh agricultural products (such as vegetables, flowers, fruits) may comprise growers, auctions, wholesalers, importers and exporters, retailers and specialty shops. Basically all of these SC stages leave the intrinsic characteristics of the product grown or produced in the countryside untouched. The main processes are the handling, storing, packing, transportation, and especially trading of these goods. For the food preservation technology is a way, that can get adopted for vegetables too (Abida *et al.*, 2014).

Bechtel and Jayaram (1997) provide an extensive review of the literature and research on SCM. Their findings show that the term SCM is often misused and that no agreement exists about its definition. SC definitions found in literature to illustrate this divergence in views. Particular attention should be paid to differences in the scope of SC analysis in these definitions. Hoogewegen (1997) distinguishes between five possible levels of analysis: (1) Single organization for example, a manufacturer. (2) Dyad referring to the relationship between two organizations, a seller and a buyer. (3) Entire SC incorporating the seller's supplier and/or the buyer's customer. (4) Industry level (for example manufacturers). (5) Total network of organizations that participate in a specific part of the economy. These different views are all represented in literatures. Whereas some authors refer to SCM in the context of an individual organization or dyad (Davis or Stevens) others refer to the SC level (Jones and Riley or Lee and Billington) or the network level of analysis (Beers *et al*., Christopher). In this study the SC level of analysis is chosen taking account of the other participants in the SC network too. The aim of the vertically coordinated supply chain is to produce value for the ultimate consumer whilst satisfying other stakeholders in the SC. As per the study of Singh *et al*. (2014) Vertical coordinated supply chain in vegetable industry can be beneficial to the consumer in the sense of price, and beneficial for

the farmers engaged in vegetable cultivation. Largely it can support all the intermediary participants of vegetable supply chain. This study can be a guiding map for the researchers working in the area of supply chain for agricultural produces and can get used as the valid source for assumption stated by Singh *et al*. (2014). Moreover the regulatory authorities of agricultural produce marketing can have the usage for decision making and optimize the vegetable supply chain. The statement that most of the states of India has unexplored opportunity in agribusiness management by vertical coordination by Singh (2013).

Research questions

The study is based on finding the solution for the following questions: What are the components of vertical coordination in Agricultural marketing? What is the importance of vertical coordination in supply chain of vegetables? Can vertical coordination in supply chain minimize the wastage due to perishibility of vegetables? Does vertical coordination in supply chain stimulate the higher yield that assures the security for the demand of vegetables? Can vertical coordination in supply chain assure demand security due to non seasonal availability of vegetables? Does vertical coordination in supply chain reduce the price fluctuation of vegetables? Can vertical coordination in supply chain assure variety, quality, quantity with grade and standard of vegetables? Does vertical coordination in supply chain reduce the risk due to system transparency in vegetable industry? Does vertical coordination in supply chain supports technology and can benefit vegetable growers the risk due to system transparency in vegetable industry?

Research objectives and hypothesis for study

The study is done on the basis of the following three objectives: To know the components of vertical coordination. To assess the need of vertical coordination in supply chain of vegetables. To determine the impact of vertical coordination on supply chain of vegetables industry. To fulfill the above defined objectives following hypotheses formulated to validate with the data collected using a structured instrument. Hypothesis 1: Vertical coordination in supply chain affects the vegetable in terms of perishibility. Hypothesis 2: Vertical coordination in supply chain affects the vegetables in terms of wastage reduction. Hypothesis 3: Vertical coordination in supply chain affects the vegetables in terms of yield increase. Hypothesis 4: Vertical coordination in supply chain affects the vegetables in terms of demand security. Hypothesis 5: Vertical coordination in supply chain affects the vegetables in terms of non seasonal availability. Hypothesis 6: Vertical coordination in supply chain affects the vegetables in terms of price fluctuation. Hypothesis 7: Vertical coordination in supply chain affects the vegetables in terms of variety. Hypothesis 8: Vertical coordination in supply chain affects the vegetables in terms of quality. Hypothesis 9: Vertical coordination in supply chain affects the vegetables in terms of quantity. Hypothesis 10: Vertical coordination in supply chain affects the vegetables in terms of risk. Hypothesis 11: Vertical coordination in supply chain affects the vegetables in terms of system transparency. Hypothesis 12: Vertical coordination in supply chain affects the vegetables in terms of grade and standard. Hypothesis 13: Vertical coordination in supply chain affects the vegetables in terms of support to technology. Hypothesis 14: Vertical coordination in supply chain affects the vegetables with vegetable growers benefit.

Methodology

The study is descriptive in nature and for this purpose both the sources of data has been used i.e. primary source of data and secondary source of data. Firstly the secondary data is collected from literature review to understand the existing theories in India and abroad. The data gathered from secondary sources is firstly filtered and then got used with references. Secondly the primary data is collected using a structured survey questionnaire with experts of vegetable industry. The main conclusion of the research is drawn on the basis of data collected from primary source. For experts, judgmental sampling of non probability sampling method is used and selection of experts is done with the consideration of geographical and resource limitations. The sample size for the experts is 80. The stages of data collection are divided into two main phases. The first phase aimed to collecting qualitative data (secondary information and interviews) to get the concept. The second phase is aimed at collecting quantitative data (survey). Both qualitative and quantitative data is collected. Qualitative data is getting used for making a general characterization of the vertical coordination in supply chain of vegetables. This information is providing essential input for designing a survey for collecting quantitative data. The qualitative information is has been very useful for interpreting quantitative results and complementing them while qualitative data is interpreted and descriptively presented. A self prepared structured survey questionnaire prepared including questions about socio-economic and importance of vertical coordination for vegetable

industry. The survey questionnaire got tested for validity, reliability (Cronbach's Alpha= .788), practicability. In the questionnaire different scales of measurement are getting used such as nominal and scales. For collecting data, a five-point Likert scale from I to 5 is getting used, where "1" accounted for the minimum agree value and "5" for the maximum agree value.

Result and Discussion

For the purpose of data analysis fourteen variables observed from extensive literature review and by the experience of interview with experts of vegetable industry. These variable formed as hypothesis and tested with respect to three different categories (Experience, Designation and Location) using the Independent Sample Kruskal-Wallis Test of Non Parametric Test, since the One Sample (Kolmogorov-Smirnov) Test for the normality test of fourteen variables are significantly different from the normal distribution. Out of the fourteen null hypothesis statements, ten got rejected though four got retained (Table-1). The analysis is done on the basis of output generated by SPSS 20 on the data collected through the questionnaire. First objective achieved with the process of selecting the highly significant attributes with minimum two of the categories (Experience, Designation and Location) favoring to reject or to retain the hypothesis. The analysis on the observed output showing that hypothesis related to wastage reduction (H2), yield increase (H3), demand security (H4), non seasonal availability assurance (H5), control price fluctuation (H6), variety (H7), quantity control (H9), risk reduction (H10), system transparency (H11), vegetable growers benefit (H14) got rejected and perishibility (H1), quality control (H8), grade and standard improvement (H12), Support technology (H13) got retained (Table-1). Thus the second objective fulfilled with the need of implementing the vertical coordination in supply chain of vegetable industry can support ten attributes of vegetable to improve over the status of existing supply chain (Table-1). Third and the last objective has got very strong support from the respondents during both the phases of data collection and with highly significant value for vegetable growers benefit (H14) and suggests that vertically coordinated vegetable supply chain can improve the social status of vegetable growers (Table-1).

Conclusion

Vegetable supply chain should get vertically

Table 1. Independent sample Kruskal-Wallis test summary

Sl. No.	Null Hypothesis Statement	Categories			Decision (Reject/ Retain)
		Experience (Sig.)	Designation (Sig.)	Location (Sig.)	
H1	The distribution of Perishibility reduction is the same across the categories.	.008	.155	.719	Retain the null hypothesis
H2	The distribution of Wastage reduction is the same across the categories.	.042	.042	.004	Reject the null hypothesis
H3	The distribution of Yield increase is the same across the categories.	.002	.222	.000	Reject the null hypothesis
H4	The distribution of Demand security is the same across the categories.	.047	.190	.004	Reject the null hypothesis
H5	The distribution of Nonseasonal Availability Assurance is the same across the categories.	.010	.039	.009	Reject the null hypothesis
H6	The distribution of Control price fluctuation is the same across the categories	.029	.180	.002	Reject the null hypothesis
H7	The distribution of Variety of vegetable is the same across the categories.	.009	.351	.006	Reject the null hypothesis
H8	The distribution of Quality control is the same across the categories.	.034	.107	.875	Retain the null hypothesis
H9	The distribution of Quantity control is the same across the categories.	.004	.810	.025	Reject the null hypothesis
H10	The distribution of Risk reduction is the same across the categories.	.009	.003	.557	Reject the null hypothesis
H11	The distribution of System transparency is the same across the categories.	.270	.004	.005	Reject the null hypothesis
H12	The distribution of Grade and Standard improvement is the same across the categories	.076	.000	.806	Retain the null hypothesis
H13	The distribution of Support technology is the same across the categories.	.070	.052	.002	Retain the null hypothesis
H14	The distribution of Vegetable growers benefit is the same across the categories.	.145	.000	.029	Reject the null hypothesis

*Based on the consolidation of Table-2, Table-3 and Table-4. The significance level is .05

Table 2. Hypothesis test summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Perishibility reduction is the same across the categories of Experience.	Independent Samples Kruskal-Wallis Test	.008	Reject the null hypothesis
2	The distribution of Wastage reduction is the same across the categories of Experience.	Independent Samples Kruskal-Wallis Test	.042	Reject the null hypothesis
3	The distribution of Yield increase is the same across the categories of Experience.	Independent Samples Kruskal-Wallis Test	.002	Reject the null hypothesis
4	The distribution of Demand security is the same across the categories of Experience.	Independent Samples Kruskal-Wallis Test	.047	Reject the null hypothesis
5	The distribution of Nonseasonal Availability Assurance is the same across the categories of Experience.	Independent Samples Kruskal-Wallis Test	.010	Reject the null hypothesis
6	The distribution of Control price fluctuation is the same across the categories of Experience.	Independent Samples Kruskal-Wallis Test	.029	Reject the null hypothesis
7	The distribution of Variety of vegetable is the same across the categories of Experience.	Independent Samples Kruskal-Wallis Test	.009	Reject the null hypothesis
8	The distribution of Quality control is the same across the categories of Experience.	Independent Samples Kruskal-Wallis Test	.034	Reject the null hypothesis
9	The distribution of Quantity control is the same across the categories of Experience.	Independent Samples Kruskal-Wallis Test	.004	Reject the null hypothesis
10	The distribution of Risk reduction is the same across the categories of Experience.	Independent Samples Kruskal-Wallis Test	.009	Reject the null hypothesis
11	The distribution of System transparency is the same across the categories of Experience.	Independent Samples Kruskal-Wallis Test	.270	Retain the null hypothesis
12	The distribution of Grade and Standard improvement is the same across the categories of Experience.	Independent Samples Kruskal-Wallis Test	.076	Retain the null hypothesis
13	The distribution of Support technology is the same across the categories of Experience.	Independent Samples Kruskal-Wallis Test	.070	Retain the null hypothesis
14	The distribution of Vegetable growers benefit is the same across the categories of Experience.	Independent Samples Kruskal-Wallis Test	.145	Retain the null hypothesis

Asymptotic significances are displayed.
The significance level is .05

Table 3. Hypothesis test summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Perishibility reduction is the same across the categories of designation.	Independent Samples Kruskal-Wallis Test	.155	Retain the null hypothesis
2	The distribution of Wastage reduction is the same across the categories of designation.	Independent Samples Kruskal-Wallis Test	.042	Reject the null hypothesis
3	The distribution of Yield increase is the same across the categories of designation.	Independent Samples Kruskal-Wallis Test	.022	Retain the null hypothesis
4	The distribution of Demand security is the same across the categories of designation.	Independent Samples Kruskal-Wallis Test	.190	Retain the null hypothesis
5	The distribution of Nonseasonal Availability Assurance is the same across the categories of designation.	Independent Samples Kruskal-Wallis Test	.039	Reject the null hypothesis
6	The distribution of Control price fluctuation is the same across the categories of designation.	Independent Samples Kruskal-Wallis Test	.180	Retain the null hypothesis
7	The distribution of Variety of vegetable is the same across the categories of designation.	Independent Samples Kruskal-Wallis Test	.351	Retain the null hypothesis
8	The distribution of Quality control is the same across the categories of designation.	Independent Samples Kruskal-Wallis Test	.107	Retain the null hypothesis
9	The distribution of Quantity control is the same across the categories of designation.	Independent Samples Kruskal-Wallis Test	.810	Retain the null hypothesis
10	The distribution of Risk reduction is the same across the categories of designation.	Independent Samples Kruskal-Wallis Test	.003	Reject the null hypothesis
11	The distribution of System transparency is the same across the categories of designation.	Independent Samples Kruskal-Wallis Test	.004	Reject the null hypothesis
12	The distribution of Grade and Standard improvement is the same across the categories of designation.	Independent Samples Kruskal-Wallis Test	.000	Reject the null hypothesis
13	The distribution of Support technology is the same across the categories of designation.	Independent Samples Kruskal-Wallis Test	.052	Retain the null hypothesis
14	The distribution of Vegetable growers benefit is the same across the categories of designation.	Independent Samples Kruskal-Wallis Test	.000	Reject the null hypothesis

Asymptotic significances are displayed.
The significance level is .05

Table 4. Hypothesis test summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Perishibility reduction is the same across the categories of address of the respondent.	Independent Samples Kruskal-Wallis Test	.719	Retain the null hypothesis
2	The distribution of Wastage reduction is the same across the categories of address of the respondent.	Independent Samples Kruskal-Wallis Test	.004	Reject the null hypothesis
3	The distribution of Yield increase is the same across the categories of address of the respondent.	Independent Samples Kruskal-Wallis Test	.000	Reject the null hypothesis
4	The distribution of Demand security is the same across the categories of address of the respondent.	Independent Samples Kruskal-Wallis Test	.004	Reject the null hypothesis
5	The distribution of Nonseasonal Availability Assurance is the same across the categories of address of the respondent.	Independent Samples Kruskal-Wallis Test	.009	Reject the null hypothesis
6	The distribution of Control price fluctuation is the same across the categories of address of the respondent.	Independent Samples Kruskal-Wallis Test	.002	Reject the null hypothesis
7	The distribution of Variety of vegetable is the same across the categories of address of the	Independent Samples Kruskal-Wallis	.006	Reject the null hypothesis
8	The distribution of Quality control is the same across the categories of address of the respondent.	Independent Samples Kruskal-Wallis Test	.875	Retain the null hypothesis
9	The distribution of Quantity control is the same across the categories of address of the respondent.	Independent Samples Kruskal-Wallis Test	.025	Reject the null hypothesis
10	The distribution of Risk reduction is the same across the categories.	Independent Samples Kruskal-Wallis Test	.557	Reject the null hypothesis
11	The distribution of System transparency is the same across the categories of address of the respondent.	Independent Samples Kruskal-Wallis Test	.005	Reject the null hypothesis
12	The distribution of Grade and Standard improvement is the same across the categories of address of the respondent	Independent Samples Kruskal-Wallis Test	.806	Retain the null hypothesis
13	The distribution of Support technology is the same across the categories of address of the respondent.	Independent Samples Kruskal-Wallis Test	.002	Reject the null hypothesis
14	The distribution of Vegetable growers benefit is the same across the categories of address of the respondent.	Independent Samples Kruskal-Wallis Test	.029	Reject the null hypothesis

Asymptotic significances are displayed.
The significance level is .05

coordinated to robust the variables studied here as wastage reduction, yield increase, demand security, non seasonal availability assurance, control price fluctuation, variety, quantity control, risk reduction, system transparency, vegetable growers benefit. This can support the vegetable supply chain to move one step further to improve the efficiency and can reduce the demand supply gap in the market. A vertically coordinated supply chain in vegetable industry is the need in the developing country like India is the opinion of experts working in this area. As the growing population is shifting towards the organic vegetables, this approach is needed to cope up with above said variables of vegetable supply chain. The scope of future research in supply chain management in agriculture is still having much opportunity to explore newer dimensions and loop holes to make the supply chain more robust. This study can get further expanded with other vegetables and corns. Moreover it can get checked for the acceptability of explored variables.

References

Abida, J., Rayees, B. and Masoodi, F. A. 2014. Pulsed light technology: a novel method for food preservation. International Food Research Journal 21(3): 839-848.

Bechtel, C. and Jayaram, J. 1997. Supply Chain Management: a strategic perspective. International Journal of Logistics Management 8(1): 15-33.

Beers, G., Beulens, A.J.M. and Van Dalen, J.C. 1998. Chain science as an emerging discipline in Proceedings of the 3rd International conference on chain management in agribusiness and the food industry (eds. Ziggers, G.W., J.H. Trienekens, P.J.P. Zuurbier). 1998, Wageningen Agricultural University, Netherland, p. 295-308.

Christopher, M.G. 1992. Logistics and Supply Chain Management; strategies for reducing costs and improving services, London: Pitman Publishing.

Christopher, M.G. 1998. Logistics and Supply Chain Management; strategies for reducing costs and improving services, London: Pitman Publishing.

Coase, R. H. 2000. The new institutional economics in C. Menard (Ed.), Institutions, contracts and organizations: Perspectives from new institutional economics, p 3- 6. Northampton, MA: Edward Elgar Publishing, Inc.

Cooper, M.C., Lambert, D.M. and Pagh, J.D. 1997a. Supply Chain Management: more than a new name for logistics. International Journal of Logistics Management 8(1): 1-13.

Ellram, L.M. 1991. Supply Chain Management: the industrial organisation perspective. International Journal of Physical Distribution and Logistics Management 21(1):13-22.

Forrester, J. 1961. Industrial Dynamics, MIT press.

Garnida, N., Tjakraatmadja, J. H., Nasution, R. A. and Purwanegara, M. S. 2014. Restructuring knowledge of

organic customer profile within KM-CRM framework. International Food Research Journal 21(3): 855-862.

Harith, Z. T., Ting, C. H. and Zakaria, N. N. A. 2014. Coffee packaging: Consumer perception on appearance, branding and pricing. International Food Research Journal 21(3): 849-853.

Harris, A., Fulton, M., Stefanson, B. and Lysyshyn, D. 1998. The role of external agents in the development of agriculture-based industries. Report of the Centre for the Study of Co-operatives, University of Saskatchewan, Canada.

Harris, J., Hunter, J. and Lewis, C. M. 1995. Introduction: Development and Significance of NIE. In J. Harris, J. Hunter and C.M. Lewis (Eds). The New Institutional Economics and Third World Development, p 1-13. London: Routledge.

Herdiana, D. S., Pratikto, Sudjito, S. and Fuad, A. 2014. Policy of extended producer responsibility (case study). International Food Research Journal 21(3): 873-881.

Hoogewegen, M.R. 1997. Modular Network Design: assessing the impact of EDI. International Journal of Physical Distribution and Logistics Management 21(1): 13-22.

Jones, T.C. and Riley, D.W. 1985. Using inventory for competitive advantage through Supply Chain Management. International Journal of Physical Distribution and Materials Management 15(5): 16-26.

Lambert, D.M., Cooper, M.C. and Pagh, J.D. 1998. Supply Chain Management: implementation issues and research opportunities. International Journal of Logistics Management 9(2): 1-19.

Lee, H.L. and Billington, C. 1995. The evolution of Supply-Chain-Management models and practice at Hewlett-Packard. Interfaces 25 (5): 42-63.

Menard, C. (Ed.) 2000. Institutions, contracts, and organizations: Perspectives from new institutional economics. Northampton, MA: Edward Elgar Publishing, Inc.

Nasyira, M. N., Othman, M. and Ghazali, H. 2014. Predictors of intention to stay for employees of casual dining restaurant in Klang Valley area. International Food Research Journal 21(3): 863-871.

North, D. C. 1995. The new institutional economics and third world development. In J. Harris, J. Hunter and C. M. Lewis (Eds.), The new institutional economics and third world development, p 17-26. New York: Routledge.

Reardon, T., and Berdegue, J. 2002. The rapid rise of supermarkets in Latin America: Challenges and opportunities for development. Development Policy Review 20(4): 371-3 88.

Singh, S. 2013, Vertical Coordination in Agribusiness Management in India, Making Contract Farming Work for Small Producers. In N. Ghosh and C.S.C. Sekhar (Eds). The Future of Indian Agriculture, Technology and Institutions, p. 101-118. New Delhi: Academic Foundation.

Singh, U. S., Mishra, U. S. and Mishra, B. B. 2014. Vertical coordination for optimization of the vegetable supply chain. International Food Research Journal 21(4): 1387-1394.

Stevens, G.C. 1989. Integrating the supply chain. International Journal of Physical Distribution and Materials Management 19 (8): 3-8.

Tey, Y. S., Brindal, M., Fatimah, M. A., Kusairi, M. N., Ahmad Hanis, I. A. H. and Suryani, D. 2014. The impact of service quality on business commitment in B2B segment of agribusiness: An exploratory study of HORECA sector in Malaysia, International Food Research Journal 21(3): 873-881.

Towill, D.R. 1996, Time Compression And Supply Chain Management - A Guided Tour. Supply Chain Management 1(1): 15-27.

Williamson, O. E. 2000. The new institutional economics: Taking Stock, Looking Ahead. Journal of Economics Literature 38: 595-613.

Zuurbier, P.J.P., Trienekens, J.H. and Ziggers, G.W. 1996. Verticale Samenwerking, Deventer: Kluwer Bedrijfswetenschappen (in Dutch).