Journal of Applied Sciences

ISSN 1812-5654

science alert

ANSInet
an open access publisher
http://ansinet.com

Journal of Applied Sciences 13 (10): 1851-1857, 2013
ISSN 1812-5654 / DOI: 10.3923/jas.2013.1851.1857

Revenue Distribution Model in Express Industry with the Integration of the End Distribution

Cheng Meiying and Xu Jie
School of Economics and Management, Beijing Jiaotong University, 100044, Haidian, Beijing, China

Abstract: With the rapid development of the express industry, the coordination and specification of the end distribution business have been paid more attention of. Revenue distribution is one of the key questions to the stability of the integration model. This paper studies a two-stage service supply chain consists of a express company and a end distribution integrator. It sets up three different revenue distribution models and analyses the optimal profits and service levels of each model meaning to find a relatively better model to coordinate this service supply chain so that both of the partners would be willing to do this business and gain satisfactory profits.

Key words: Revenue distribution, express industry, end distribution, integration

INTRODUCTION

With the online shipping becoming more and more popular under e-commerce and becoming a part of our daily life, the express industry in our country has been developing rapidly and the demand of this business increased briskly. The rapid development also brings many problems to the express industry especially in the end of the express delivery business. The processes of the courier reception are messy along with the problems of it be different to enter the schools and the communities, the demand of convenience and timeliness from the customers could not be satisfied. Meanwhile because the express distribution terminals are too scattered, it is difficult for the express companies to manage and supervise. The constant occurrence of losing or damaging the couriers and the problems of the dispatchers' attitude further influence the satisfaction of the customers to the express companies. So it is badly in need to integrate and specialize the end distribution of express. In recent years, there emerge some enterprises like city 100 and other integrators which specialize in express end distribution so that to improve the service efficiency and offer more security convenient and flexibility end distribution services to the customers.

As independent business entities express companies and integrators both pursue profits maximization. Revenue distribution becomes the key question to make the end integration model gain sound development. Only by finding an effective revenue distribution coordination mechanism and make both the express company and the integrator in a partnership obtain their satisfied profit, the cooperation mode can progress continuously and healthily. Meanwhile the mechanism could make the companies improve the service level to the customers and the operation efficiency of the express industry.

LITERATURE REVIEW

Most of the studies on revenue distribution models focused on the traditional supply chains. Cachon and Lariviere (2005) analyzed the strengths and limitations of the supply chain coordinated with revenue-sharing contracts. They found that revenue sharing contract could not always be attractive if the retailer's effort influence the demand. Giannoccaro and Pontrandolfo (2004) analyzed a model of a revenue-sharing contract aiming at coordinating a three-stage supply chain. They showed that the implementation of the contract model needs a certain degree of cooperation among the supply chain members during the contract design phase. Many scholars thought that revenue share contract could not always be attractive. Pan *et al.* (2010) found that because of the different channel power structures revenue sharing contract is not always the optimal choice to coordinate the supply chains. Chen and Cheng (2012) point out that revenue sharing contract could be more efficient than wholesale price contract only under certain conditions. Krishnan and Winter (2011) also considered that revenue-sharing could not achieve coordination if there are competitions downstream.

Corresponding Author: Cheng Meiying, School of Economics and Management, Beijing Jiaotong University, 100044, Haidian, Beijing, China

Many scholars also studied the revenue distribution models of service supply chain including logistics service supply chain. Yu and Liu (2011) claimed that in order to optimize its benefit service supply chain calls for the service provider to implement incentive mechanism on service supplier; service supply chain based on revenue sharing contract can also realize coordination and has good flexibility of the profit distribution. Lin *et al.* (2009) studied the coordination mechanism between mobile network operator and content/ser-vice provider based on the value-added mobile service found the certain conditions that its model can achieve the coordination among and the profit maximization of the members of the main mobile commerce value chain. Hu and Xu (2012) analyzed the lattice store coordination based on revenue sharing contract. The result showed that the shop's rent should be correspond to the owner's cost of brand building and promotion, so that the revenue sharing mechanism coordination can achieve and improve the lattice store's operation. Through the case analysis of network outsourcing on the Li Ning Company Chen *et al.* (2011) researched the problem of revenue sharing between a manufacturer and a agent middleman under B2B/B2C and gave the optimal profit distribution. The result showed that the increase of point rewards from third-party e-commerce platform will improve total channel revenue.

THE REVENUE DISTRIBUTION PROBLEM OF THE EXPRESS COMPANY AND THE INTEGRATOR

Problem description: This study studies a two-stage service supply chain of express business consists of an express company and an integrator of the end distribution. The express company provides the delivery service for the express senders and charge by each case. At the end of the processes the express do not distribute the couriers to the terminal customers directly but to the integrator. The integrator is in charge of distributing the couriers to the final recipients uniformly. The express company should pay the integrator for its service. Under the condition of decentralized decision, we give following revenue distribution models: (1) Fixed payment model, that means the express company pay the same fixed fee to the integrator; (2) Income-sharing model, that means the express company pay a certain rata of their charge for each case to the integrator; (3) Revenue and service level compensation model that means the express company pays its revenue to the integrator pro rata meanwhile bears a certain rata of the integrator's cost which is related to the service level for compensation.

Fundamental assumption: Demands of express service are related to the charge price and the service level of the integrator. There are many indexes to measure the service levels. The demand is inversely proportional to the price of the service but the higher the service level of the integrator is the higher the demand is. In this paper we just consider security and timeliness of the end express distribution. The demand is set as $D-ap+bk^{\alpha}/^{\beta}$:

- The cost of the integrator is related to its service level, the higher the service level is the higher the cost is, set the cost as $\frac{1}{2}s(k+1)^2$. S is a positive constant
- The service levels of the security and timeliness are measurable using some evaluation indexes
- When they make decisions separately, because the integrator is a new business and the express company own most of the market and the customers, in this two-stage service supply chain the express company acts as a leader and the integrator is a follower
- The integrator has opportunity cost, that is, the highest profit of the integrator if it does other business. The profit of the integrator in this model could not be less than its opportunity cost

Symbol description: p-the price of each case of the express; c-the cost of each case of the price for the express company; k-the integrator's service level of timeliness, k*-the optimal parameter of k under centralized decision model, k_i*-the optimal parameter of k of the ithrevenue distribution model under decentralized decision making model I = 1, 2, 3; l-the integrator's service level of security, l*-the optimal parameter of l under centralized decision model, l_i*--the optimal parameter of l of the ithrevenue distribution model under decentralized decision making model i = 1, 2, 3; D-the demand without consideration of price and service level; a-the sensitive coefficient of the demand to the price ; b-the sensitive coefficient of the demand to the service level; α-the elastic coefficient of the timeliness to the demand, $0<\alpha<1$; β-the elastic coefficient of the security to the demand, $0<\beta<1$; s-the cost coefficient of the integrator's cost; μ-the opportunity cost of the integrator; N-the fixed fee the express company pays to the integrator under the fixed payment model; θ-the rate of the price of each case the express company pays to the integrator under income-sharing model, θ* is the optimal value of θ; λ-the rata of the revenue the express company pays to the integrator under revenue and cost sharing model, λ* is the optimal value of λ, $\lambda<1$; ϕ--the rata of the cost of the integrator the express company bears under the revenue and cost sharing model, ϕ* is the optimal value of ϕ, $\phi/1$; π-the total profit of the express service supply chain

under centralized decision model, π_i-the total profit of the system under decentralized decision model, π_{ie}^* and π_{is}-the profit of express company and integrator of the ith revenue distribution model under decentralized model, π^*, π_i^*, π_{ie}^*, π_{is}^* are the optimal values of them, i = 1, 2, 3.

THE BUILDING SOLVING AND ANALYSIS OF THE MODEL

Centralized decision: Under centralized decision making condition, the express company and integrator are regarded as a whole; the question is to solve the optimal profit of the whole system:

$$\max \pi(k,l) = (p-c)(D-ap+bk^{\alpha}l^{\beta}) - \tfrac{1}{2}s(k+l)^2 \qquad (1)$$

Let:

$$\frac{\partial \pi(k,l)}{\partial k} = 0$$

and:

$$\frac{\partial \pi(k,l)}{\partial l} = 0$$

getting that:

$$k^* = \left[\frac{(p-c)b\alpha^2\beta^{\beta}}{s(\alpha+\beta)\alpha^{\beta}}\right]^{\frac{1}{2-\alpha-\beta}}$$

and:

$$l^* = \left[\frac{(p-c)b\beta^2\alpha^{\alpha}}{s(\alpha+\beta)\beta^{\alpha}}\right]^{\frac{1}{2-\alpha-\beta}}$$

so:

$$\frac{k^*}{l^*} = \frac{\alpha}{\beta}$$

That means when the system gains the optimal profit under centralized decision model, the service level relate to the input of the integrator is in the same proportion with their elastic coefficient to the demand. The result explains that the integrator should pay more attention to more the influencing factors which the customers care more about and is more helpful to the express demand and invest more in order to improve the service level and make the system gain more profit. In order to simplify the calculation and make it easy to compare with the profit under decentralized decision model, let $\alpha = \beta = \frac{1}{2}$, then:

$$k^* = l^* = \frac{(p-c)b}{4s}$$

meanwhile the optimal profit of the system is:

$$\pi^* = (p-c)[D-ap+\frac{b^2(p-c)}{8s}] \qquad (2)$$

K* and l* are the upper limit of the service level of the integrator's distribution timeliness and security and π^* is the upper limit of the profit of the system consist of a express company and a integrator of end distribution.

Decentralized decisions: When the members make decisions separately, as independent operating entities they both pursue profit maximization. This process is a two-stage dynamic game model of complete information and the express company as a leader is in dominant position of the partnership. So in the first stage the express company decides the revenue distribution model and the corresponding payment parameter to the integrator so that to gain the maximum profit; in the second stage the integrator determines the service levels to gain its own maximum profit.

- Fixed payment model: Under fixed payment model, the objective function of the express company is:

$$\max \pi_{1e}(N) = (p-c)(D-ap+bk^{\alpha}l^{\beta}) - N \qquad (3)$$

The objective function of the integrator is:

$$\max \pi_{1s}(k,l) = N - \tfrac{1}{2}s(k+l)^2 \qquad (4)$$

$$s.t.\ \pi_{1s}(k,l) \geq \mu \qquad (5)$$

According to the backward induction of dynamic game solving, firstly according to (4) let the first derivative of k and l be zero. We can get that $k_1^* = 0$ and $l_1^* = 0$, put them into (4), get $\pi_{1s}^* = N$; than according to (3) and $k_1^* = 0$, $l_1^* = 0$ derivative of N:

$$\frac{\partial \pi_{1e}(N)}{\partial N} = -1 < 0$$

That means $\pi_{1e}(N)$ is monotone decreasing with N. Along with considering the constraint of (5) we can get N = μ. So the maximum profit of the express company, the integrator and the whole system are:

$$\pi_{1e}^{*} = (p-c)(D-ap) - \mu \quad (6)$$

$$\pi_{1s}^{*} = \mu \quad (7)$$

$$\pi_{1}^{*} = (p-c)(D-ap) \quad (8)$$

The result shows that under the fixed payment model the integrator could not increase its own profit through improve their service levels. On the contrary, the high the service levels are, which means the higher input cost, the lower its profit is. So the integrator prefers to be effortless and it hard to maintain a higher service level as it is under the centralized decision model and the express company do not mean to offer a higher payment so that the integrator could only obtain the profit equal to its opportunity cost. The demand of the express business is lower than that under centralized decision model. Comparing (8) and (2) we could also find that the profit of the whole system is also lower under this model. So the fixed payment model could not coordinate the service supply chain well.

- Income-sharing model: The objective function of the express company under this model is:

$$\max \pi_{2e}(\theta) = (p-c-\theta p)(D-ap+bk^{\alpha}l^{\beta}) \quad (9)$$

The objective function of the integrator under this model is:

$$\max \pi_{2s}(k,l) = \theta p(D-ap+bk^{\alpha}l^{\beta}) - \tfrac{1}{2}s(k+l)^2 \quad (10)$$

$$s.t.\ \pi_{2s}^{*}(k,l) \geq \mu \quad (11)$$

According to the backward induction of dynamic game solving, firstly, according to (10), let the first derivatives of k, l be equal to zero. We could get that:

$$k_2^{*} = \left[\frac{\theta p b \alpha^2 \beta^{\beta}}{s(\alpha+\beta)\alpha^{\beta}}\right]^{\frac{1}{2-\alpha-\beta}}$$

$$l_2^{*} = \left[\frac{\theta p b \beta^2 \alpha^{\alpha}}{s(\alpha+\beta)\beta^{\alpha}}\right]^{\frac{1}{2-\alpha-\beta}}$$

and at the same time:

$$\frac{k_2^{*}}{l_2^{*}} = \frac{\alpha}{\beta}$$

That means under the income-sharing model, when the integrator gains the maximum profit the service levels of end distribution timeliness and security are also in the same proportion to their demand elasticity coefficient. The integrator should also invest more on the influencing factors which pull more demands.

We could get:

$$\frac{k_2^{*}}{k_1^{*}} = \frac{l_2^{*}}{l_1^{*}} = \left[\frac{\theta p}{(p-c)}\right]^{\frac{1}{2-\alpha-\beta}}$$

meanwhile because the profit of the express should be higher than zero so:

$$\frac{\theta p}{(p-c)} < 1$$

so:

$$\frac{k_2^{*}}{k_1^{*}} = \frac{l_2^{*}}{l_1^{*}} < 1$$

The result shows that under the income-sharing model, though the optimal service levels of the integrator are not equal to zero, higher than these under the fixed payment model, they are still lower that these under the centralized model.

Then we solve the optimal profit of the express company and the integrator. In order to simplify the calculation, let $\alpha = \beta = \frac{1}{2}$, so:

$$k_2^{*} = l_2^{*} = \frac{\theta p b}{4s}$$

According to 9 and 11, we get that:

$$\frac{(p-c)^2 b^2}{8s} - \frac{2s(D-ap)^2}{b^2} > \mu$$

Then according to (9) take the first derivative of θ, we could get that:

$$\theta^{*} = \frac{p-c}{p} - \frac{4s(D-ap)}{pb^2}$$

The maximum profit of the express company, the integrator and the whole system are:

$$\pi_{2e}^{*} = (p-c)(D-ap) \quad (12)$$

$$\pi_{2s}^{*}=\frac{b^2(p-c)^2}{8s}-\frac{2s(D-ap)^2}{b^2} \quad (13)$$

$$\pi_{2}^{*}=(p-c)[D-ap+\frac{b^2(p-c)}{8s}]-\frac{2s(D-ap)^2}{b^2} \quad (14)$$

When:

$$\frac{(p-c)^2 b^2}{8s}-\frac{2s(D-ap)^2}{b^2}\le\mu$$

according to (11), we could get that, the profit of the integrator is $\pi_{2s}^{*}(k,l)=\mu$ and:

$$\theta^{*}=\frac{4s[\sqrt{(D\text{-}ap)^2+\frac{b^2}{2s}\mu}\text{-}(D\text{-}ap)]}{b^2 p}$$

The optimal profit of the express company and the whole service supply chain system are:

$$\pi_{2e}^{*}=\sqrt{(D-ap)^2+\frac{b^2\mu}{2s}}-(D-ap) \quad (15)$$

$$\pi_{2}^{*}=\sqrt{(D-ap)^2+\frac{b^2\mu}{2s}}-(D-ap)+\mu \quad (16)$$

According to 13, 14, 15, 16, the optimal profits of the express company, the integrator and the whole system under this condition all lower than these when:

$$\frac{(p-c)^2 b^2}{8s}-\frac{2s(D-ap)^2}{b^2}>\mu$$

so do the service levels and the demand volume.

We could see that under the income-sharing model the profit of the whole system lower than that under the centralized decision model and higher than that under fixed payment model. The profit of the express company is also higher than that under fixed payment model, meanwhile the integrator has chance to gain the profit which exceed its opportunity cost.

- Revenue sharing and service level compensation model: Under the revenue sharing and service level compensation model, the objective function of the express company's profit is:

$$\max\pi_{3e}(\lambda,\phi)=(1-\lambda)(p-c)(D-ap+bk^{\alpha}l^{\beta})-\tfrac{\phi}{2}s(k+1)^2 \quad (17)$$

The objective function of the integrator's profit is:

$$\max\pi_{3s}(k,l)=\lambda(p-c)(D-ap+bk^{\alpha}l^{\beta})-\tfrac{1-\phi}{2}s(k+1)^2 \quad (18)$$

$$\text{s.t.}\ \pi_{3s}(k,l)\ge\mu \quad (19)$$

According to the backward induction of dynamic game solving, according to 18, taking the first derivative of k, l, we could get that:

$$k_3^{*}=\left[\frac{\lambda b(p-c)\alpha^2\beta^{\beta}}{(1-\phi)s(\alpha+\beta)\alpha^{\beta}}\right]^{\frac{1}{2-\alpha-\beta}}$$

and:

$$l_3^{*}=\left[\frac{\lambda b(p-c)\beta^2\alpha^{\alpha}}{(1-\phi)s(\alpha+\beta)\beta^{\alpha}}\right]^{\frac{1}{2-\alpha-\beta}}$$

so:

$$\frac{k_3^{*}}{l_3^{*}}=\frac{\alpha}{\beta}$$

That means under the revenue sharing and service level compensation model, when the integrator gains its maximum profit, the best investment combination which is related to the service levels should be still in the same proportion of their demand elastic coefficient. Comparing the best service levels under this model with those in the centralized decision model:

$$\frac{k_3^{*}}{k^{*}}=\frac{l_3^{*}}{l^{*}}=\left(\frac{\lambda}{1-\phi}\right)^{\frac{1}{2-\alpha-\beta}}$$

If we let λ = 1-ϕ, we could find that $k_3^{*}=k^{*}$, $l_3^{*}=l^{*}$. That means under this condition, the service levels of the timeliness and security of end distribution could reach the best level of this system under centralized decision model, that is:

$$k_3^{*}=\left[\frac{(p-c)b\alpha^2\beta^{\beta}}{s(\alpha+\beta)\alpha^{\beta}}\right]^{\frac{1}{2-\alpha-\beta}}$$

$$l_3^{*}=\left[\frac{(p-c)b\beta^2\alpha^{\alpha}}{s(\alpha+\beta)\beta^{\alpha}}\right]^{\frac{1}{2-\alpha-\beta}}$$

We find that when λ = 1-ϕ, this kind of revenue sharing model is helpful to make the service levels be equal to the

best system levels. This practice is equal to allocating the whole profit of this system in a proportion of 1-λ:λ to the express company and the integrator.

Under the condition that the service levels is system optimum, to simplify calculation, let:

$$\alpha=\beta=\frac{1}{2}$$

so:

$$k_3^*=l_3^*=\frac{b(p-c)}{4s}$$

and:

$$\pi_{3s}^*=\lambda(p-c)[D-ap+\frac{b^2(p-c)}{8s}]$$

Equation 17 could be indicated as:

$$\max\pi_{3e}(\lambda)=(1-\lambda)(p-c)[D-ap+\frac{b^2(p-c)}{8s}] \quad (20)$$

No matter the value of λ, the maximum profit of the whole system would be:

$$\pi_3^*=(p-c)[D-ap+\frac{b^2(p-c)}{8s}]$$

that means under the revenue sharing and service level compensation model, when 1-λ = ϕ, not only the service level of timeliness and security (k_3^*, l_3^*) could reach the system optimal levels but also the whole profit could be equal to that under centralized decision model at the same time. The value of λ would not influence the system profit but only the profit allocation proportion between the two members. The reasonable value of λ may coordinate the system.

According to 20, taking the derivative of λ, we get that:

$$\frac{d\pi_{3e}(\lambda)}{d\lambda}=-(p-c)[D-ap+\frac{b^2(p-c)}{8s}]<0$$

that shows $\pi_{3e}(\lambda)$ is monotonic decreasing with λ. So to the express company the smaller λ is, the high its profit is, the express company is not willing to allocate more revenue to the integrator. Considering the limit of (19), we could derive that:

$$\lambda^*=\frac{\mu}{(p-c)[D-ap+\frac{b^2(p-c)}{8s}]}$$

so the maximum profit of the express company and the integrator are:

$$\pi_{3e}^*=(p-c)[D-ap+\frac{b^2(p-c)}{8s}]-\mu \quad (21)$$

$$\pi_{3s}^*=\mu \quad (22)$$

From 21 and 22, under the revenue sharing and service level compensation model the whole system gain a optimal profit equal to that under the centralized decision model. Because of the leader position the express company could also obtain its best profit guaranteeing the integrator could gain its opportunity cost. And the integrator could only gain the profit equal to its opportunity cost.

Comparing, analyzing and choosing of the revenue distribution models: Through the analysis of 4.2 we could find out that:

- $\pi_1^*<\pi_2^*<\pi_3^*=\pi^*$ That means the optimal profit under fixed payment model is lower than that under income-sharing model and both of them are lower than that under the revenue sharing and service level compensation model which is equal to the maximum profit when the two members make decision centralized; The cost of the integrator is related to its service level, the higher the service level is the higher the cost is, set the cost as $\frac{1}{2}s(k+1)^2$. s is a positive constant
- $0=k_1^*<k_2^*<k_3^*=k^*,1$ is in the same case, that means the service levels under fixed payment model are equal to zero and the levels under income-sharing model are lower than that under centralized decision model. Only under the revenue sharing and service level compensation model the service level could reach to the maximum level when they make the decision together systematically; When they make decisions separately, because the integrator is a new business and the express company own most of the market and the customers, in this two-stage service supply chain the express company acts as a leader and the integrator is a follower
- $\pi_{1e}^*<\pi_{2e}^*<\pi_{3e}^*=\pi^*-\mu$ that explains the optimal profit of the express company under the fixed payment model, the second lower is that under income-sharing model. Under the revenue sharing and service level compensation model considering the integrator's

lowest profit is its opportunity cost, the express company could gain its maximum profit practically in a certain condition

- $\pi_{2e}^* \geq \pi_{1e}^* = \pi_{3e}^* = \mu$ that is only under the income-sharing model, the integrator has the chance to obtain a profit higher than its opportunity cost

The comparisons above shows that because the express company plays a dominant part in the service supply chain of express and hold the power to make decision of the revenue distribution, though the integrator makes its best effort, it is difficult to gain a profit higher than its opportunity cost. It is beneficial for the express company to choose the revenue sharing and service level compensation model but for the integrator the best choice is income sharing model. So there appears a conflict and contradictory between. If the express company take use of its leader position to force the integrator to accept the lowest profit in the long term, it is easy for the integrator to lose the original enthusiasm to be engaged in this business. If the express company wants to maintain a long-term cooperative relationship with the integrator and the stability of this two-stage express service supply chain, the company must give the integrator a certain amount of excess profit so as to make the integrator be willing to work harder to improve the service level meanwhile the company could gain a higher demand. Considering model (3), it could reach the optimal service level and system profit, if the integrator is willing to accept this distribution model it may gain system coordination in some ways. Compare model (2) and model (3), let the express company's and the integrator's profit under revenue sharing and service level compensation model both higher than those under income-sharing model that is: $\pi_{3e} > \pi_{2e}^*$, $\pi_{3s} > \pi_{2s}^*$. Solving this problem, we could get that:

$$\frac{\frac{b^2(p-c)^2}{8s} - \frac{2s(D-ap)^2}{b^2}}{(p-c)(D-ap)+\frac{b^2(p-c)^2}{8s}} < \lambda < \frac{\frac{b^2(p-c)^2}{8s}}{(p-c)(D-ap)+\frac{b^2(p-c)^2}{8s}} \quad (23)$$

Under the condition of (23), the express company shares a part of the profit to the integrator, the integrator becomes willing to choose the revenue sharing and service level compensation model which lead to a more harmonious relationship and a more efficient express service.

CONCLUSION

In the situation of marketing economy there is contradiction between the upstream and downstream and it is hard to both of them gain the 3Ttheoretically3T maximum profit. As the leader of this service supply chain the express company always possesses the market and the customers, it has the power to determine the distribution model and the proportion of it. It is hard for the integrator to gain a satisfactory profit. According to the analysis of this paper the way to gain a coordination service supply chain need the leader to make a certain sacrifice. But the leader could still gain a relative higher profit.

REFERENCES

Cachon, G.P. and M.A. Lariviere, 2005. Supply chain coordination with revenue-sharing contracts: Strengths and limitations. Manage. Sci., 51: 30-44.

Chen, J.M. and H.L. Cheng, 2012. Effect of the price-dependent revenue-sharing mechanism in a decentralized supply chain. Central Eur. J. Operat. Res., 20: 299-317.

Chen, Y.Y., J.X. Wang and L. Wang, 2011. Research on revenue sharing of supply chain under B2B2C. J. Qingdao Univ., 24: 77-82.

Giannoccaro, I. and P. Pontrandolfo, 2004. Supply chain coordination by revenue sharing contracts. Int. J. Prod. Econ., 89: 131-139.

Hu, B.Y. and C. Xu, 2012. Optimization analysis of lattice store coordination based on revenue sharing contract. J. Ind. Eng. Eng. Manage., 26: 83-88.

Krishnan, H. and R.A. Winter, 2011. On the role of revenue-sharing contracts in supply chains. Operat. Res. Lett., 39: 28-31.

Lin, J.B., Y.B. Lu and L. Zhang, 2009. The profit distribution mechanism for mobile service supply chain. Chinese J. Manage., 6: 906-909.

Pan, K., K.K. Lai, S.C.H. Leung and D. Xiao, 2010. Revenue-sharing versus wholesale price mechanisms under different channel power structures. Eur. J. Operat. Res., 203: 532-538.

Yu, H.H. and N. Liu, 2011. Coordination of revenue sharing contract in service supply chains with incentive mechanism. Mathe. Pract. Theory, 41: 69-79.