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Article

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Original Article

Alliance models among value chain participants in foreign markets: A focus on Korean LSPs

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ABSTRACT

This paper develops conceptual value chain alliance models through literature review and case studies. And it analyzes economic, industrial and logistics environments of Vietnam, Indonesia, Thailand, Myanmar and Ghana. Then the structure, flow and partnership of VC and SC and willingness to participate in the alliance of manufacturers, distributors and logistics firms in those countries are analyzed, through literature review, questionnaire analysis, site visits, interviews and case studies. Based on such analyses, the business models and strategies for global alliance among VC participants including manufacturers, distributors, LLPs and logistics SMEs are developed.

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Introduction

Research background

Due to liberalization of international trade and investment, coupled with the rapid adoption of information technologies, there have been fundamental changes in how multinational enterprises (MNEs) and small-and-medium enterprises (SMEs) operate and compete in the global economy. Global production sites located in low cost countries have been closely linked with multinational manufacturers and buyers from major markets in developed countries (Gereffi, 2018; Kano, Tsang, & Yeung, 2020). And recently MNEs of developing countries including Asia have also emerged as major strategic partners and manufacturing service providers (Yeung, 2016).

Global value chains (GVCs) have played an important role in global business strategies, profoundly affecting international trade and investment framework, and now represent a new path for development. Therefore trade, competitiveness and international business strategies should be reshaped accordingly to seize these opportunities and avoid the risks associated with global competition (Cattaneo, Gereffi, Miroudot, & Taglioni, 2013).

Over the last two decades, world trade and production have become increasingly organized around global value chains (GVC)

and GVCs have shown a positive impact on global economy and productivity of participants (Ignatenko, Raei, & Mircheva, 2019).

In Korea, like most other countries in the world, there has been an increasing outflow of business and cargo to overseas and such a trend will continue to accelerate due to the increasing uncertainty and risk factors in domestic markets. Therefore the importance of value chain management (VCM) and global supply chain management (GSCM) supported by logistics service providers (LSPs) has continuously increased. The globalization of manufacturers and distributors in sourcing, production and marketing is not achievable without efficient logistics and SCM supports of LSPs in the majority of cases.

As global LSPs have been rapidly enhancing dominating power in the global market, the windows of opportunity for most of less-established LSPs have been closing. Thus many LSPs in an imminent need of global market development and expansion need to seriously contemplate to team up with manufacturers, distributors and other LSPs. And LSP partners often include lead logistics service provider (LLP), small and medium (S-M) logistics specialists and local LSPs.

Manufacturers and distributors also need to enhance the global competitiveness through joint overseas expansion among VC participants, which often include suppliers, finished goods (FG) manufacturers, distributors and LSPs.

Although an increasing number of Korean manufacturers and distributors have made inroad into the global market, collaboration between these firms and the third-party logistics service

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providers(3 PLs) in VCM and SCM are still not in full swing (Lee, Choi, Chae, & Choi, 2018).

Research objective

Research objectives of this paper include development of the conceptual VC alliance models through the literature reviews and case studies; identification of collaborative business models for foreign markets including Vietnam, Indonesia, Thailand, Myanmar and Ghana which have significant potential for Korean enterprises, through in-depth environmental analysis; and identification of the current status and needs of VC and SC alliance through site visits, interviews, case studies, and questionnaire analysis; and development of the business models and strategies for global alliance among VC participants based on a comprehensive analysis on the result of the above researches.

Research methodologies

This paper employs various research methodologies including a literature review for an analysis on different types of alliance models and the global SC alliance case analysis; a case study for development of the conceptual VC alliance model and alternative alliance models in 5 countries; a questionnaire survey for analysis on SC structure and willingness of shippers & LSPs to participate in the alliance; a cluster analysis for identification of target partners and customers of alliance models; and the comprehensive analysis on the result of the above researches for development of alliance strategies (Table 1).

Literature review, case study and conceptual model

Literature review on vertical alliance

Griffioen (2011) deduced motives for an alliance, which include achievement of the new competitive edge, and presented factors to consider such as the complementary relations among alliance partners, in strategic direction and competitive fields. This paper classified an alliance as 3 different types including customer-based, product-based, and cost-based types and deduced objectives of each alliance type. And the specific measures for alliance, which include joint distribution agreement for sharing services and labor of partners in the different regions and joint investment for improved economy of scale and risk reduction, were suggested. Such suggestions are reflected in the VC alliance conceptual model of my paper.

As primary objectives of an alliance, Todeva and Konke (2005) deduced new market development; acquisition of the new technology; the improved scale economy; more efficient adaptation to the environmental changes; diversification into the new business; joint investment; product and service quality improvement; risk reduction; and competitiveness enhancement. Specific measures suggested for an alliance, including the joint investment for systems and networks, joint R&D, and long-term strategic alliance, are reflected in the VC alliance strategies of my paper.

Yoshino and Rangan (1996) classified an alliance as pre-competitive, competitive, pro-competitive, and non-competitive on the basis of the characteristics of competition. According to the above classification, VC alliance models of my paper is expected to focus on non-competitive alliance with high level of organizational interaction effect and low level of conflict potential, and also competitive alliance with low level of both categories.

Das and Kumar (2010) classified alliance types on the basis of the commitment and forbearance level in the strategic collaboration. If I apply VC alliance model of my paper to the above classification, the ideal VC alliance model may need to grow from communal

alliance with high level of commitment and forbearance, through constrained alliance with high level of commitment but low level of forbearance, to the alliance which is close to the collaboration among different divisions in the same enterprise.

Bagchi and Virum (1996) defined alliance, which is centered around logistics, as a long-term partnership between shippers and LSPs in transportation, warehousing, and inventory control; deduced critical success factors(CSFs) including collaboration between partners in design and development of logistics solution; and suggested alliance management schemes for the processes including alliance agreement, operation, performance measurement and coordination.

Lee (2013) analyzed the structural problems of the collaboration in joint global market expansion between the manufacturing and retailing corporations and 3 PLs; studied problems and successes in collaboration among such SC participants; and developed the collaboration model and practical guidelines for joint global operations, which are reflected in the VC alliance models and strategies of my paper.

Literature review on horizontal alliance

Schmoltzi and Wallenburg (2011) developed a framework of horizontal alliance among LSPs, which includes motives, structure, and performance. And the structure was developed on the basis of the characteristics of alliance contracts, the number of participants, value-added areas, scope of services and geographical scope.

Carbone and Stone (2005) expected cost saving, risk reduction, broader scope of services and better adaptation to the environmental changes of the local markets, as benefits of horizontal alliance among LSPs. And this paper deduced motives for an alliance, including integrated network development, new market development and increased competition, through case studies on the alliances among European LSPs. Similar alliance models can be applied to Korean LSPs which are in increasing need of expanding into emerging South East Asian markets and other global markets.

As motives for an alliance, Verstrepen et al. (2006) deduced internal factors, including better utilization of the current infrastructure; capacity increase; market expansion; service capability improvement and diversification; and external factors such as customer, economy and industry. And this paper classified alliance models on the basis of objectives and the level of strategic collaboration, competition and asset sharing.

Dauda and Yusuf (2009) studied alliance cases among LSPs and suggested CSFs including building mutual trust in cost saving and profit increase through asset sharing among participants; efficient adaptation to the market changes; impartial performance evaluation systems; and active benchmarking efforts among participants for sustainable growth of the alliance. And this study expected that more alliances would adopt co-branding strategies as the number of participants grows.

Lee et al. (2018) developed global logistics alliance models and strategies between large LLPs and SMEs, which are reflected in the VC alliance models and strategies of my paper.

SC can be defined as a set of organizations linked directly by one or more of the upstream and downstream flows of products, services and information, from a source to a customer. While VC includes all primary and secondary support activities that can lead to competitive advantage, SC includes materials and supply management, physical distribution and channel management. Therefore SC is a subset of VC at an organizational level. However, the original VC concept focused primarily on internal participants (Monczka, Handfield, Giunipero, & Patterson, 2016). Thus this study employs the concept of VC as an extended VC or extended enterprise which expand the original VC model to include suppliers and customers.

Table 1
Research framework and methodologies.

Items	Main contents	Methodologies
VC/SC alliance concept	Analysis on vertical alliance & horizontal alliance Conceptual model of the VC alliance	Literature review
Alliance cases	Global SC alliance case study Global VC & SC alliance case study of Korean enterprises	Literature review Case study Literature review Site visit & interview
Current state of alliance	VC/SC structure, flow & partnership Willingness of shippers & LSPs to participate in the alliance	Questionnaire survey analysis Site visit, interview
VC alliance model development	Development of global VC alliance model centered around logistics in Vietnam, Indonesia, Thailand, Myanmar, East Asia and Ghana Identification of target partners & customers of alliance models	Analysis on economy, industry, market & infra of 5 nations SWOT analysis Site visit, interview, case study Cluster analysis Identification of target firms with high willingness & suitable products
VC alliance model analysis	Objectives and primary strategies of VC alliance models	Analysis of models by region, industry & partners
Alliance strategy development	Critical success factors, risk Strategy options	Comprehensive analysis on the result of the above researches

Global alliance case studies

Global supply chain alliance cases

This paper studies cases of global alliance centered around logistics and deduces implications for development of VC alliance models (Table 2).

Global VC & SC alliance cases of Korean enterprises

Global alliance cases, centered around Korean enterprises, are studied through site visits and interviews. And the steel VC alliance in China, the footwear VC alliance in Asia and the garment VC alliance in Myanmar cases are studied based on Lee (2013) (Table 3).

Implications for overseas expansion strategies through VC alliance

It may not be economical for an individual enterprise, especially SME, to establish its own network to manage VC and SC in countries like Myanmar, Vietnam, Indonesia, Thailand and Ghana which have a vast land but no sufficient infrastructure. Therefore companies entering into such markets need to increase economies of scale and scope; secure the stable utilization rate of facilities; and improve service and cost competitiveness over global and local enterprises, through joint establishment of integrated network.

A conceptual model of the value chain alliance

A conceptual model of the VC alliance centered around logistics, which includes objectives and primary strategies by model, is developed through a literature review and case study. Some VC alliance models, which often involve a variety of participants in different industries, may not be confined to a specific type. However this paper classifies the model into 3 types including the market base sharing model, the competence enhancement model and the cost competitiveness improvement model, on the basis of the level of focus (Table 4).

A questionnaire survey analysis on Korean firms in Vietnam, Indonesia and Thailand

A questionnaire survey through telephone was conducted in 2018. The survey was targeted 160 Korean manufacturers, distributors and LSPs in Vietnam, Indonesia and Thailand. The survey includes 60 firms in Vietnam which has significantly more Korean companies than 2 other countries which include 50 surveyed firms

each. The samples are drawn from 2018 directories of Korea Chamber of Commerce and Industries and KOTRA on the basis of the proportion of each industry.

The analysis surveys structure, flow and partnership relations of VC and SC; analyzes the willingness of shippers & LSPs to participate in an alliance; and conducts a cluster analysis on the basis of the willingness for an alliance.

The willingness of shippers to participate in an alliance

Shippers including manufacturers and distributors are divided into 4 groups on the basis of the willingness to participate in the alliance with LSPs in various phases of VCM and SCM, through a cluster analysis.

Shippers in Group 1, which have the highest willingness, are comprised of: petrochemical (32%), textile/garment (32%) and electronics (17%) which have increasing demand for GSCM due to the growing investment of manufacturing facilities in the local market, in terms of industry; Thailand (44%) which has been adopting 3 PL and SCM faster than other 2 countries, Vietnam (28%) and Indonesia (28%), in terms of country; and textile and garment (32%), chemical (32%) and electronic parts (26%), in terms of product group. The most preferred alliance partners of Group 1 shippers are marine transport and Freight Forwarder (FF) for international transportation, followed by global LSPs for GSCM supports, MHE, public sector like port authority and local LSPs.

Shippers in Group 2, which have the relatively high willingness, are comprised of: textile/garment (30%), electronics (21%), metal (12%), and automotive (12%), in terms of industry; Vietnam (42%), Indonesia (42%) and Thailand (16%); and textile and garment (33%), machine parts (33%) and raw material (12%), in terms of product group. The most preferred alliance partners of Group 2 shippers are marine transport and FF, followed by global LSPs, public sector and local LSPs.

The ratio of shippers with a willingness to participate in an alliance is higher in Thailand (48%) than Vietnam (39%) and Indonesia (39%). And manufacturers, which are in need of more extensive SCM supports than distributors, show a higher willingness in all 3 countries (Fig. 1).

In terms of country, shippers in Vietnam, where are the largest number of Korean manufacturing facilities among 3 countries and in turn the highest volume of shipment to and from Korea, prefer FF, trucking, 3 PLs, and ocean carriers in the order of willingness.

Table 2
Global supply chain alliance cases.

Cases	Analysis
ACEX (Associated Cargo Experts)	<p>Alliance among Freight Forwarders (FF) of Russia and CIS to expand into global market including Europe and China and enhance integrated logistics service capability including inter-modal transportation</p> <p>Primary strategies include development of platform sharing expertise, technologies and experience among partners; development of common standards for jointly provided services; and establishment of integrated logistics network for consolidation.</p> <p>This case provides implications for LSPs trying to enhance capability to cope with a large-scale global business and multimodal transportation-related business which are often difficult to be handled by an individual LSP.</p> <p>Implications for alliance model: Such platform is benchmarked to deduce critical success factors (CSFs), including flexible organization structure and management systems to facilitate collaboration and trust-based coordination among partners, for e-commerce (EC) and retail fulfillment alliance model in Indonesia.</p>
T.A.C (Turkish & Arabian Alliance)	<p>This alliance improves capability to provide integrated services which are customized to regions including Central and West Asia, North Africa and Eurasia through integrated network of different types of LSPs.</p> <p>Objectives include improvement in expertise through collaboration; visibility through information sharing; service quality; and efficacy.</p> <p>Alliance measures include membership systems, internal marketing, online service support and co-branding.</p>
TLA (Thai Logistics Alliance)	<p>TLA enhances economies of scale and scope through connecting 30 LSPs with different fields of specialty in Thailand.</p> <p>Improvements in service quality, cost efficiency & brand power are expected based on synergistic effects from the alliance.</p> <p>Implications for alliance model: Thilawa Port - SEZ - Yangon VC alliance model focuses on connecting LSPs, with different customer groups & specialties, to enhance economies of scale & scope. Such economies are critical for new port-related business model with high level of uncertainty.</p>
MonarchFX	<p>The alliance among specialists in the areas of customized EC system design, OMS/WMS, IoT, sensor and automated material handling solution:</p> <p>provides integrated services to S-M EC firms to be able to compete with global EC platforms like Amazon; enhances economy of scale through consolidating inventory control, fulfillment center operation and delivery for different EC firms; and minimizes inventory through visibility improvement and anticipatory shipping.</p> <p>Implications for alliance model: Like this case, Logistics – material handling equipment(MHE) - IT - EC - manufacturing alliance model in Vietnam can provide integrated & customized services through connecting various specialists. Such specialists include MHE, solution & IT developers; MHE pooling firms; & MRO specialists.</p>
Other cases	<p>The alliance between Gefco, French forwarder and Kuehne & Nagel, Swiss 3 PL(Third-Party Logistics) provides integrated services of container consolidation and truck transportation in Europe.</p> <p>The alliance among Nexia(French LSP), Exel and Dachser provides bulk transportation and end-to-end cold chain services throughout the Europe.</p> <p>The alliance between Exel and EFES(Turkey LSP) provides SCM services which are customized for automotive and electronics industries in Eastern Europe.</p> <p>The alliance between Schenker & Sinotrans(Chinese LSP) provides consolidation services in global market including Far East market through combined network connecting over 2000 cities in 130 countries.</p> <p>Nippon Express and NEC(Japanese electronics manufacturer) formed an alliance to enhance SCM operation throughout the world.</p> <p>Implications for alliance model: Like the above cases, most alliance models in this paper involve global LSPs & local LSPs and provide services which are customized to target industries.</p>

Source: [Carbone and Stone \(2005\)](#), websites of each firm, related industries and journals.

Table 3
Global VC & SC alliance cases of Korean enterprises.

Cases	Analysis
Grain VC alliance in US & global market	<p>aT Center(VC coordinator) - STX(ocean shipping) - Hanjin(3 PL) - Samsung(global marketing)</p> <p>Objectives: stable supply from global grain market; role allocation among specialists in different industries</p> <p>CSFs: business risk reduction through participation of public sector; securing initial critical mass volume</p>
Steel VC alliance in China	<p>POSCO(steel manufacturer) - Hanjin(3 PL) - STX(shipbuilding) - Chinese auto manufacturers</p> <p>CFSs: integration effect through establishment of joint venture among VC participants; high level of understanding on requirements of other VC participants on the back of long-term strategic partnership; diversification of local customer base</p> <p>Implications for alliance model: Like this case, Grain VC hub alliance model in Vietnam involves the whole VC, which includes various related buyer industries for stable business. Such industries include grain trading, feed, livestock farming, etc.</p>
Footwear VC alliance in China & Asia	<p>SK Networks(manufacturer) - GBP(4 PL) - XuYi(local 3 PL) - local retailers</p> <p>CSF: capability to provide customized 4 PL service; use of experience and expertise of localized pan-Korean 3 PLs of Korean descent; reduced risk and need for investment through utilizing facilities of local 3 PLs</p>
Franchise VC in China	<p>Korean & local supplier - BBQ(franchise) - Pioneer(local cold chain logistics) - Smart Logistics(3 PL)</p> <p>CSF: customized and localized services of pan-Korean 3 PLs; reduced need for investment through utilizing cold chain facilities of local 3 PLs</p>
Garment VC in Myanmar	<p>Korean & Japanese garment manufacturers - Smart Logistics(3 PL) - Naniwa Logistics(Japanese garment logistics specialist) - local LSPs</p> <p>CFS: benchmarking best practices in garment logistics specialist like Naniwa; securing business of Japanese garment firms through partnership with Naniwa; use of expertise of Smart Logistics in Myanmar market</p> <p>Implications for alliance model: Like this case, E Asia VC hub alliance model involves suppliers in E Asia, 3 PLs for industry-specific supply management capability, logistics specialists & local LSPs.</p>

Those in Indonesia, where are the high level of dependency on ocean transport and difficulties in distribution to cover a vast region with 17,500 islands, prefer FF, trucking, ocean carriers, 3 PLs, MHE

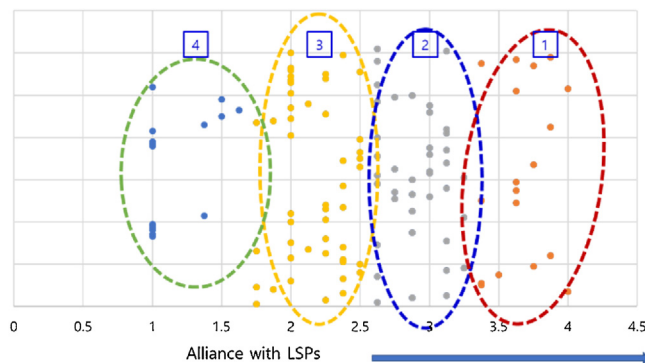
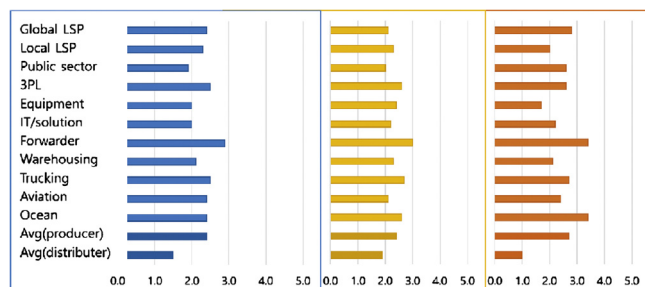
firms and local LSPs. And those in Thailand, where are LCB regional hub port and the largest number of global LSPs among 3 countries, prefer ocean carriers, FFs, global LSPs and 3 PLs ([Fig. 2](#)).

Table 4

A conceptual model of the value chain alliance.

Model type	Objectives	Strategies
Market base sharing model	Sharing resource at the different markets	Sharing service, labor, systems and network of VC partners at the different regions and markets
	VCM/GSCM capability improvement	Sharing markets and specialties of VC partners Integration of logistics specialists under LLP VC/SC visibility improvement
	Customer sharing among VC partners	Co-branding, sharing brand power of LLPs Joint marketing, franchising Sharing of customers in different industries & markets
	Market development & expansion	Joint overseas expansion among VC participants
Competence enhancement model	Creation of business/GSCM model for new markets	Developing differentiated & customized business models & process through inter-industry alliance & PI
	Localized VCM/SCM services through local partnership	Strategic alliance with local distributors & LSPs
	Interlocking VC partners including logistics-production-distribution-IT-MHE-MRO-R&D	L-T strategic alliance among related industries Providing product life cycle(PLC) services including upgrading & Maintenance, Repair, Operation(MRO) services for MHE
Cost competitive-ness improvement model	Scale economy increase & risk sharing	Consolidation through utilizing integrated Logistics Center(L/C) & transportation systems of VC leader and/or LLP Joint investment in VC & SC systems Joint operation in sourcing, logistics & marketing
	Operation cost saving	Sharing labor, equipment & system
	Efficiency improvement & investment saving	Sharing expertise, experience & advance tech

Note: The model is developed based on Lee et al. (2018); Griffioen (2011) and aforementioned case studies.

**Fig. 1.** The willingness of shippers to participate in an alliance (5 point scale).**Fig. 2.** Alliance partner preferred by shippers (Vietnam (left), Indonesia (center), Thailand (right)) (5 point scale).

The willingness of LSPs to participate in an alliance

LSPs are divided into 4 groups on the basis of the willingness for an alliance with shippers and logistics specialists in various phases of VCM and SCM, through a cluster analysis.

LSPs in Group 1 which have the highest willingness are comprised of: 3 PLs (50%) which provide extensive SCM support, marine transport (50%) which need cooperation with other LSP for end-to-end SC support, in terms of industry; Indonesia (100%) which needs to cover extensive land with many islands, in terms of country; and consumer goods and garment, in terms of product group. The most preferred alliance partners of Group 1 LSPs are air transport, trucking, 3 PLs, followed by local LSPs, global LSPs and public sector like port authority.

LSPs in Group 2 are comprised of: 3 PLs (64%) and FF (27%) which often need the cooperation with other LSPs and shippers for end-to-end supply chain support, in terms of industry; Vietnam (46%) and Thailand (36%); and garment and machine parts. The most preferred alliance partners of Group 2 LSPs are 3 PLs, trucking, marine transport, followed by global LSPs and local LSPs.

On the whole, the most preferred alliance partners are: 3 PLs which frequently collaborate with logistics specialists in various areas to provide integrated SCM supports; trucking firms for local delivery; and air and marine transport for international transportation (Fig. 3).

In terms of country, LSPs in Vietnam prefer trucking, marine transport, 3 PLs, global LSPs and public sector. Those in Indonesia with a massive market have a high level of willingness in general

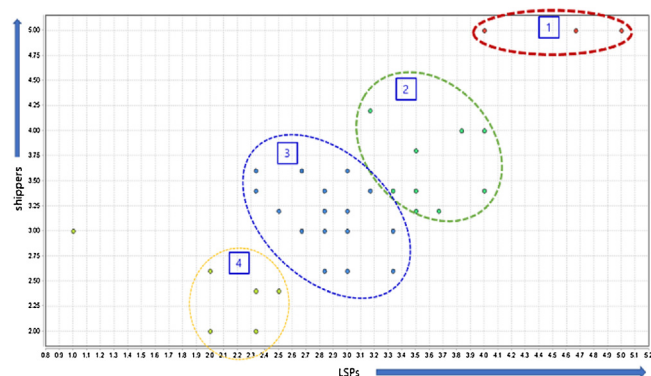


Fig. 3. The willingness of LSPs to establish alliance with other LSPs & shippers (5 point scale).

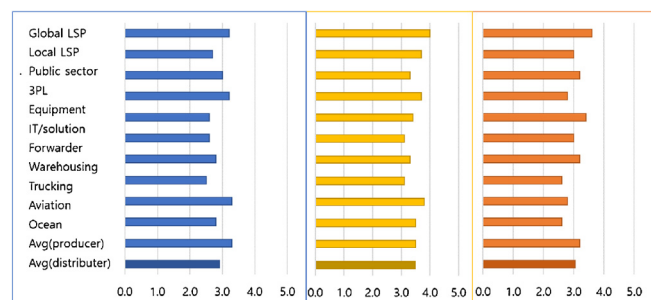


Fig. 4. Alliance partner preferred by LSPs (Vietnam (left), Indonesia (center), Thailand (right)) (5 point scale).

and prefer global LSPs, trucking, local LSPs, 3 PLs, and air/marine transport. And those in Thailand prefer global LSPs, MHE developers, FFs, public sector and marine transport (Fig. 4).

Global VC alliance model centered around logistics

Although an increasing number of Korean manufacturers and distributors are expanding their global market, collaboration between those firms and 3 PLs are still limited, in their efforts in joint offshore expansion strategy development and other global operations (Lee, 2013).

In emerging markets like Vietnam, Indonesia, Thailand, Myanmar and Ghana which have the massive geographical scope while lack sufficient infrastructure, it is not economical for individual VC participant to establish its own supply chain network. And a large initial investment including network development frequently causes various risks due to uncertainties during the early stage of operation.

Therefore alliances among VC participants need to be pursued to establish an integrated VC network and a strategic partnership relationship. Such alliances can support VC participants to reduce risks and investment requirements; secure the economy of scale and scope; maintain a stable utilization rate of facilities; and as a result, improve price and service competitiveness over local and global LSPs.

In this chapter, various VC alliance models for Vietnam, Indonesia, Thailand, Myanmar, Asia and Ghana are developed based on environment analysis, case study, site visit, questionnaire analysis and SWOT analysis.

Table 5

Identified target partners and customers of MHE & EC alliance model (5 point scale).

Group	Name	3 PL	Local LSP
Group 1	B electronics	4	4
	R garment	3	4
	I industry	3	4
	W garment	4	4
	K garment	4	4
	P industry	3	5
	K garment	4	4
	D sports	5	2
	N electronics	4	1
	WI garment	4	3
Group 2	W apparel	4	3
	A auto	4	3
	W electronics	4	3
	C garment	4	1
	N distribution	4	1
	P garment	4	1

VC alliance models for the Vietnamese market

E Asia VC hub alliance model: supply from E Asia - supplier management - manufacturing in Vietnam - IT - local LSP

This model is suggested to include alliances among [suppliers in Korea, China, Vietnam & E Asia] - [Korean 3 PL for integrated supply management] - [manufacturers of garment, footwear, bag, etc. in Vietnam & E Asia] - [global & Korean 3 PLs for E Asia supply hub operation] - [logistics specialist(local logistics center(L/C) operator - logistics IT - pickup & consolidation - local transport)] - [export LSPs including FF].

This VC alliance model can provide customized GSCM services to VC including: sourcing from Vietnam and E Asian countries; production in Vietnam; SCM support in Vietnam; and export to Korea and the global market. CSFs include: E Asia GSCM hub and network connecting supply hubs of Busan–Shanghai–Shenzhen–Ho Chi Minh–Jakarta and other major ports in production areas; information system integrating the whole SCM processes including production schedule; and reliable local LSP partners in Vietnam and other E Asian countries.

Logistics - MHE - IT - EC - manufacturing alliance model in Vietnam & SE Asia

This model is suggested to include alliances among [suppliers in NE Asia] - [retail/EC firms] - [EC logistics coordinator(retail logistics specialist)] - [Korean 3 PLs for regional fulfilment hub operation] - [local fulfilment center(F/C) operators] - [Korean MHE, solution & IT developers] - [Korean MHE pooling, lease, rental & MRO specialists] - [local last mile service providers].

This model develops and installs MHE, information system and total solutions which are customized to the specific needs of S-M retailers, EC platforms and manufacturers in Vietnam and SE Asia. 3 PLs provide continuous operation and MRO services for logistics facilities utilizing such MHE systems.

CSFs include: the development of customized total system integrating IoT - big data analysis - production/logistics automation; provision of PLC support such as upgrading and MRO services; availability of procurement options including purchasing, rental and lease, depending on the client's financial capability and characteristics of MHE systems; and continuous optimization of the whole VC through strategic alliances among participants (Table 5).

A cluster analysis is employed to identify potential VC partners and target customers for LSPs in Vietnam and SE Asian countries. Manufacturers and distributors with a high level of intention for alliances with 3 PLs and local LSPs, which are two of the most important players for this alliance model, are identified through a cluster analysis. And among firms in 2 high intention groups, food

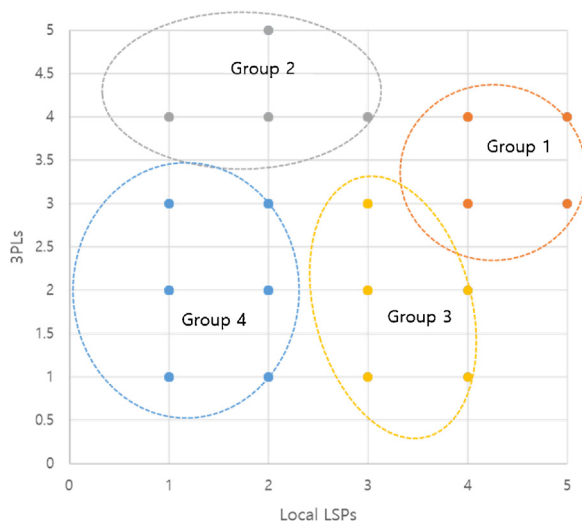


Fig. 5. Identification of target partners of MHE & EC alliance model (5 point scale).

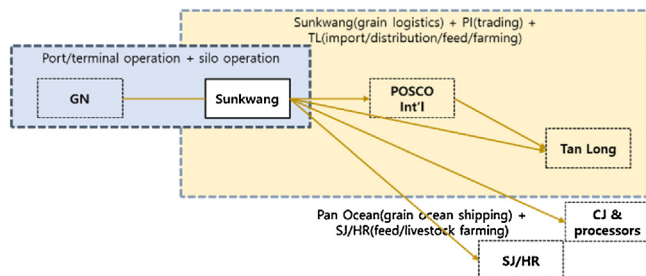


Fig. 6. Grain VC hub alliance model.

& beverage, garment, other sewing products, electronics, general merchandise, wholesale and retail companies, which account for majority of EC, are identified (Fig. 5).

Grain VC hub alliance model

This model is suggested to include alliances among [global & Korean grain traders & distributors] - [grain logistics & ocean shipping firms] - [Korean silo & bulk terminal operator, grain import & distribution LSPs] - [local & Korean feed distributors] - [local & Korean animal & aqua feed manufacturers] - [local & Korean livestock farmers].

POSCO International has been growing into global grain trader through expanding market from Vietnam and Korea to the whole Asia and collaborating with Tan Long which is the largest local grain company in trading, feed manufacturing and grain processing. Harim Group has been establishing GVC through acquiring Pan Ocean, which is bulk ocean shipping company, and expanding production facilities to 14 feed plants and 9 livestock farms (Fig. 6).

VC alliance models for the Indonesian market

EC and retail fulfilment alliance model

This alliance model is suggested to include alliances between and among [EC firms(IndoLotte(joint venture of Korean & local retail groups: Lotte & Salim), Korean EC platform)] - [retail logistics specialist(Lotte Global Logis)] - [fulfilment hub operator(Korean 3 PLs such as CJ Logistics and Pantos)] - [Korean home shopping(GS SHOP) & Korean electronics home-delivery service provider(Pantos with 11 hubs)] - [local transportation firms] - [Korean solution providers(Mesh Korea, Codebrick)] - [customized MHE developer(LTM & Korean manufacturers)] - [palette/container/MHE

Table 6

Identified target partners and customers of C-B logistics alliance model (5 point scale).

Group	Name	Trucking	Local LSP	Current/planned SC
Group 1	K Chemical	4	4	V, SE Asia
	D Heavy Industry	4	5	V, ID, SE Asia
	B Elect	4	4	V, C
	U Design	4	4	V, I, C
	R World	4	4	V, I, SE Asia
Group 2	SJ feed	4	2	V, C, M, ID
	D Chemical	4	3	V, C, I
	WI	4	3	V, SE Asia
	W Apparel	4	3	V, C, SE Asia
	IS	4	3	V, I, C
	W Electronics	4	3	T, C, V, ID

Note: V = Vietnam, I = Indonesia, T = Thailand, M = Myanmar, C = China, ID = India.

pooling firm(LogisALL)] - [local CVS chain(use of Indomaret stores as pickup facilities)] - [local delivery firms(J&T, Tiki)] - [local last mile service provider(Gojek)] (Table 6).

CSFs for this alliance model, which involves a wide variety of the interested parties, include: the flexible organization structure and management to facilitate various different types of collaboration; trust-based coordination among partners from different industries; selection of partners with mutual reliability; and proper incentives decided based on mutual consensus, for the participants which secure business and clients for the VC.

Joint logistics network model for the Indonesian VC alliance

This alliance model is suggested to include alliances among [Tanjung Priok Port terminal & CY(Korean port authority, Inter-gis)] - [Cikarang dry port hub] - [Bekasi Industrial Zone logistics hub of LLPs including Pantos & CJ Logistics]] - [local L/C utilizing unused facilities of Bulog which is the state logistics agency] - [L/C of shippers including LGE, Lotte Retail, CJ, Parkland footwear, etc.] - [palette pooling depot of LogisALL].

Such networks need to expand from Jakarta and Cikarang to Bandung, Banten, Semarang, Surabaya, Sumatra, Kalimantan and Sulawesi, as Korean enterprises expand their facilities and market.

Strengths and opportunities of such an alliance include: sharing the global logistics network of LLP and other partners; capability to provide a full range of services and solutions from a team of specialists in various logistics areas; abatement of risk regarding a huge investment required to establish the integrated logistics network covering the massive and uncertain Indonesian market; and strengthening of competitive advantages in price and service through maximizing the economy of scale and scope effects and stabilizing the utilization rates of shared facilities.

VC alliance models for the Thailand market

Thailand also has a vast market region but development of infrastructure and industry has been mostly concentrated around East Economic Corridor(EEC) which connects Bangkok and Rayong. Such an imbalanced development consequently expose difficulties in providing nationwide SCM services. Therefore Korean LSPs in the local market need to improve their capabilities to provide services to the whole country and neighbouring markets, which include Myanmar, Laos and Cambodia, as well as South Eastern region where most Korean enterprises are located. And thus they need to establish and share the integrated logistics network together while reducing the investment requirements and risks.

EEC - LCB Port VC alliance model

This alliance model is suggested to include alliances among [LCB Port terminal(Korean Port Authority)] - [Samsung Electronics(SEC) plant in Chonburi] - [SDS as a GSCM coordinator of SEC] - [local

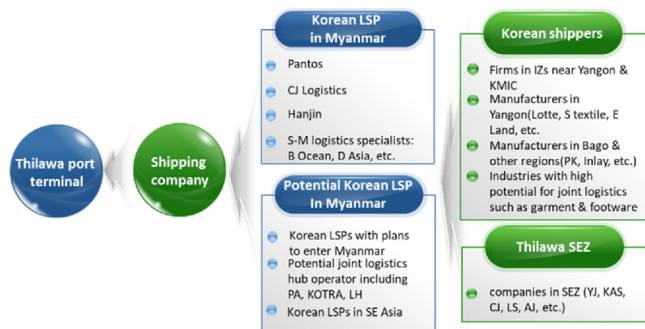


Fig. 7. Thilawa Port - SEZ - Yangon VC alliance model.

custom clearance firm such as Acutech which is in partnership with SDS] - [Chonburi L/C of CJ Logistics] - [LGE plant in Rayong] - [Pantos L/Cs in LCB, Bangna and KhonKaen] - [LatKrabang ICD L/C of K&N, local LSPs, etc.] - [C-B (Cross Border) trucking firms from Cambodia, Vietnam & China].

Such an alliance can be further enhanced through incremental approaches including: acquisition of a terminal in LCB Port by Korean public sector like a port authority; construction of Container Freight Station (CFS) and logistics hub facilities in the hinterland of LCB Port; attraction of Korean manufacturers, distributors and LSPs to such facilities; and implementation of the cooperative strategies among alliance partners to take advantage of EEC development plan of the Government of Thailand.

VC alliance model connecting E Asia and Europe

This alliance model is suggested to include alliances among [sourcing from suppliers in Korea, China and Vietnam through LCB Port] - [Korean shipping company] - [FG manufacturers in Thailand such as SEC, LGE & Hyundai Motors] - [rail/land transportation from LCB Port to Ranong Port & Dawei Port in Myanmar] - [transportation from Ranong to Kra canal which is planned to develop] - [exporting to India, Middle East & Europe].

This VC alliance model connects sourcing hub in SE Asia, manufacturing hub in Thailand and export market in Middle East and Europe.

VC alliance models for the Myanmar market

Thilawa Port - SEZ - Yangon VC alliance model

This alliance model is suggested to include alliances among [Thilawa Port terminal developer such as LGI (LG International) & operator] - [shipping company such as SM Line & NS shipping] - [Thilawa Special Economy Zone (SEZ) logistics hub operators including Korean LSPs] - [S-M logistics specialists] - [tenants in SEZ including YJ, KAS, LS and local firms] - [Firms in Industrial Zones (IZs) near Yangon & KMIC (Korea–Myanmar Industrial Complex)].

Korean public sector like a port authority and private sector like LGI have plans to invest in Thilawa Port terminal development. CSFs for such an investment includes the availability of feasible SCM business models which utilize Thilawa Port as a hub and generate a stable volume of cargo from VC alliance participants.

It may not be easy for port authority and LGI to expect feasibility of such an investment simply based on forecasting and feasibility study without development of specific SCM and business models which can generate stable businesses and cargo (Fig. 7).

Myanmar–Thailand–Cambodia–Vietnam–China C-B logistics alliance model

This alliance model is suggested to include alliances among [SEC, LGE, D Pharm., P Bags, etc. with plants & markets in SE Asia] - [C-



Fig. 8. Myanmar–Thailand–Cambodia–Vietnam–China C-B logistics alliance model.

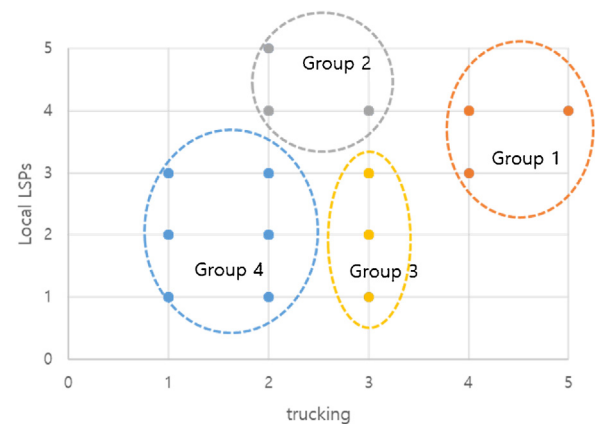


Fig. 9. Identification of target partners of C-B logistics alliance model (5 point scale).

B transport service providers such as CJ, HTNS & Yusen] - [local customs clearance & trucking firms such as Roadsun, ITL, etc.].

For shipment between Ho Chi Minh and Yangon, sea & trucking using ports in Thailand and C-B trucking throughout the whole corridor can be utilized. This alliance is expected to further expand to connect South Economic Corridor (EC) connecting Ho Chi Minh–LCB–Bangkok; East West EC connecting Da Nang–Yangon; North South EC connecting Kunming/Nanning–Bangkok–Singapore; and India–Myanmar–Bangkok corridor.

Potential alliance participants may include firms with SC connecting KMIC/Yangon IZs - Thilawa Port/SEZ - Mawlamyine IZ - Thailand, and in the medium and long term, firms with SC connecting Central and Eastern China - Kunming - Ruilin IZ in China - Muse IZ in Myanmar - Bago IZ - Thilawa Port/SEZ - Thailand (Fig. 8).

Shippers with the high level of intention for alliances with trucking and local LSPs which are two of the most important players for this alliance model are identified through a cluster analysis. And among 2 high intention groups, firms whose current and planned SC include China, SE Asia and India, which can be connected through C-B corridor, are identified as target partners and customers (Fig. 9).

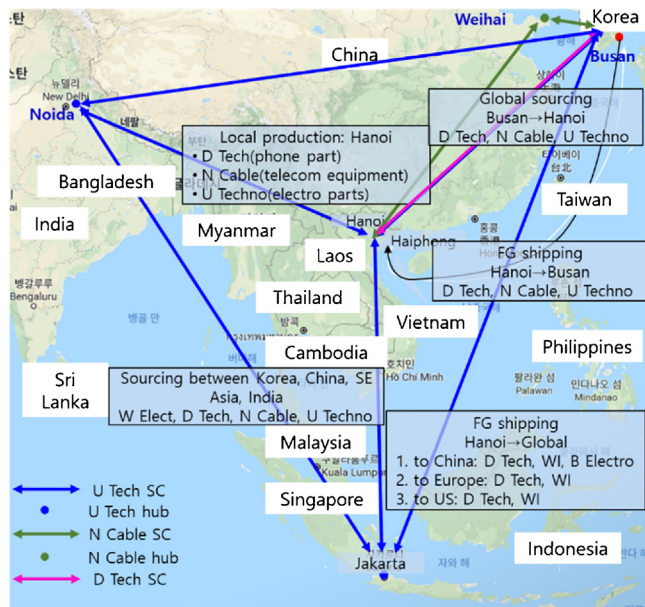


Fig. 10. E Asia electronics VC alliance model.

E Asia electronics VC alliance model

This alliance model is suggested to include alliance among [suppliers in Korea, China, India & Indonesia] - [FG manufacturers in Vietnam & India including SEC & LGE] - [local manufacturing support LSPs providing services including: sourcing hub operation, Vendor-Managed Inventory(VMI), Bonded Warehouse Transaction(BWT), & logistics services between VC participants in Vietnam] - [FG logistics including VAL & vender flex service] - [international air/ocean transportation firms for Korean & global market]. The figure below shows global supply chain flow among electronics VC in E Asia (Fig. 10).

VC alliance models for the Ghanaian market

Cocoa global VC alliance model among local shipper - Korean LSP - local LSP

BILT(Boankra Integrated Logistics Terminal) provides the GSCM hub function to Ghana Cocoa Board(COCOBOD) and producers in Ghana for greater control over global supply market.

This VC alliance model is suggested to include [Licensed Buying Companies(LBC) of COCOBOD] - [district warehouses & local truckers collecting cocoa bean from farmers] - [Korean terminal operator storing cocoa at BILT] - [processors like Cargill & Niche at/near BILT] - [Korean & local LSPs for storage & distribution of processed cocoa at BILT] - [Korean & global LSPs for shipment to Tema Port & export] - [Korean & global chocolate manufacturers including Lotte Confectionary] (Fig. 11).

VC alliance models among local shipper - public sector - Korean LSP - local LSP

Such alliance models provide customized logistics services and SC supports for private sector such as Badu Agrochemicals, Bonwire Kente Weavers Association, etc. and distribution hub function for the state supply including grain, petroleum, military supply, etc.

This alliance models is suggested to include alliances among [local suppliers] - [LSP for joint L/C of the public sector] - [Korean LSPs for 3 PL/SCM services] - [local transportation firms] - [Korean/global LSPs for international logistics] (Fig. 12).

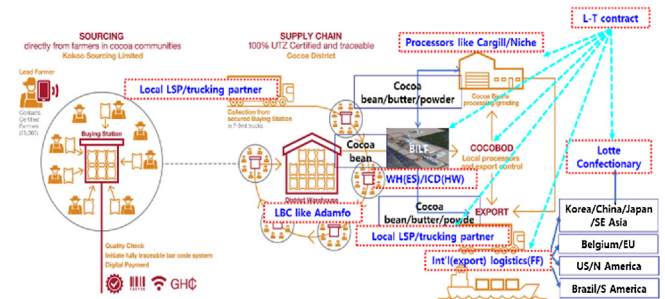


Fig. 11. Cocoa global VC alliance model.

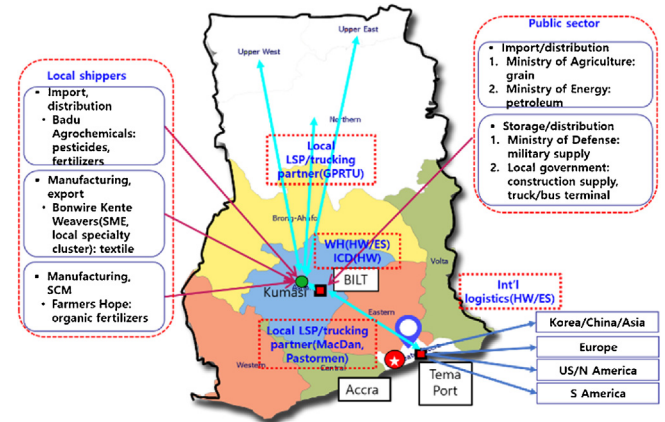


Fig. 12. VC alliance models among local shipper - public sector - Korean LSP - local LSP.

Global VC alliance model analysis

Global VC alliance model by region, industry and business model

Among 12 VC alliance models of this study, 4 models cover large areas of E Asia, 3 models cover Vietnam, and 4 other countries are covered by 2 models each. In terms of industry and business model, bulk product-related VC alliance model and integrated logistics network-related alliance model each have 3 related VC models, while retail & EC alliance model and pan-industry alliance model each have 2 related VC models. And Korean and/or global LSPs are suggested to participate in all 12 models, followed by local LSPs (11), manufacturers (10), public sector firms including port authorities and dry ports (8), distribution & EC firms (7), and MHE, IT and engineering firms (3) (Table 7).

VC alliance models are analysed by region, industry and business model, and suggested alliance partners in the figure below (Fig. 13).

Objectives and primary strategies of VC alliance models

Since all of 12 VC alliance models involve a wide range of different industries, business models and participants, each model pursues many of different objectives. Thus it is difficult to classify them into specific types of models but model types are roughly classified based on principal objectives and strategies of each model.

Market base sharing model includes: the logistics - MHE/IT - EC - production model; EC/retail fulfilment model; Thilawa Port - SEZ - Yangon VC model; and local shipper - public sector - Korean/local LSP model. Competence enhancement model includes: the logistics - MHE/IT - EC - production model; grain VC hub model; EEC - LCB Port VC model; Thilawa Port - SEZ - Yangon VC model; and local shipper - public sector - Korean/local LSP model. And cost competitiveness improvement model includes: the logistics - MHE/IT -

Table 7
VC alliance models by region.

Region	Alliance model	Processes & participants
Vietnam	① E Asia VC hub	[sourcing from E Asia] - [integrated supply management(Korean 3 PL)] - [manufacturing(garment, bag, etc.) in Vietnam] - [E Asia supply hub(global & Korean 3 PLs)] - [IT - pickup & consolidation - local transport(logistics specialist)] - [export logistics(FF)]
	② Logistics - MHE/IT - EC - production	[sourcing from NE Asia] - [retail/EC] - [EC logistics coordination] - [regional fulfilment hub(Korean 3 PL)] - [local F/C & transport(local S-M LSPs)] - [MHE/IT development(Korean developer)] - [lease/MRO of system/MHE(pooling specialist)] - [last mile delivery]
	③ Grain VC hub	[global grain trading/distribution(grain majors, Korean trader)] - [grain logistics/shipping(Pan Ocean)] - [bulk terminal, grain import/distribution logistics(Korean silo operator)] - [feed distribution(local/Korean distributor)] - [feed production(local/Korean manufacturer)] - [local/Korean livestock farm]
Indonesia	④ EC/retail fulfilment	[EC(IndoLotte, Korean EC platform)] - [retail SCM(Korean retail LSP)] - [fulfilment hub operation(Korean 3 PLs)] - [home shopping/electronics home-delivery service for Korean firms(Pantos with 11 local hubs)] - [local transportation] - [customized solution/MHE development(Korean developer)] - [palette/MHE pooling(Korean pooling firms)] - [customer pickup at local CVS chain] - [last mile delivery]
	⑤ Joint logistics network	[Tanjung Priok Port terminal operation(Korean port authority, Intergis)] - [Cikarang dry port hub] - [Bekasi IZ logistics hub(LLP)] - [local L/C(Bulog)] - [Korean shippers L/C(LGE, Lotte)] - [palette pooling depot]
Thailand	⑥ EEC - LCB Port VC	[LCB Port terminal(Korean Port Authority)] - [SEC plant in Chonburi] - [GSCM coordination of SEC] - [local custom clearance] - [Chonburi L/C(Korean 3 PL)] - [LGE plant in Rayong] - [Pantos L/Cs in LCB, Bangna & KhonKaen] - [LatKrabang ICD] - [C-B trucking from Vietnam and China]
	⑦ VC connecting E Asia & Europe	[sourcing from E Asia through LCB Port(Korean shipping company, C-B trucking)] - [manufacturing in Thailand(SEC, LGE, automotive)] - [RR/land transportation from LCB Port to Ranong & Dawei Port(in Myanmar)] - [Kra canal(planned to develop)] - [export to India, Middle East & Europe]
Myanmar	⑧ Thilawa Port - SEZ - Yangon VC	[Thilawa Port terminal development(LGI)/operation] - [ocean shipping(Korean shipping firms)] - [Thilawa SEZ L/C(Korean LSPs)] - [local logistics support for tenants in SEZ (S-M logistics specialists)] - [production in IZs near Yangon & KMIC]
	○ Myanmar-SE Asia-China C-B logistics	[production/distribution of SEC/LGE/D Pharm., with plants & markets in SE Asia] - [C-B transport(Korean/Japanese C-B trucking service providers)] - [local customs clearance & trucking(local LSPs)]
E Asia	⑩ E Asia electronics VC	[global sourcing from E Asia] - [manufacturing in Vietnam/India(SEC, LGE & suppliers)] - [local manufacturing support(sourcing hub, VMI, BWT, logistics services between VC participants in Vietnam)] - [FG logistics(VAL)] - [international air/ocean transportation to Korea & global market]
Ghana	⑪ Cocoa global VC	[collecting cocoa bean from farmers, LBC & district WHs(local LSPs & truckers)] - [storing cocoa at BILT(Korean terminal operator)] - [processing at/near BILT] - [storage/distribution of processed cocoa] - [shipment to Tema Port & export(Korean & global LSPs)] - [chocolate production(Korean/global manufacturers)]
	⑫ Local shipper - public sector - Korean/local LSP	[joint logistics for local sourcing & production] - [joint L/C of public sector] - [3 PL/SCM services(Korean LSPs)] - [local transportation] - [international logistics(Korean/global LSPs)]

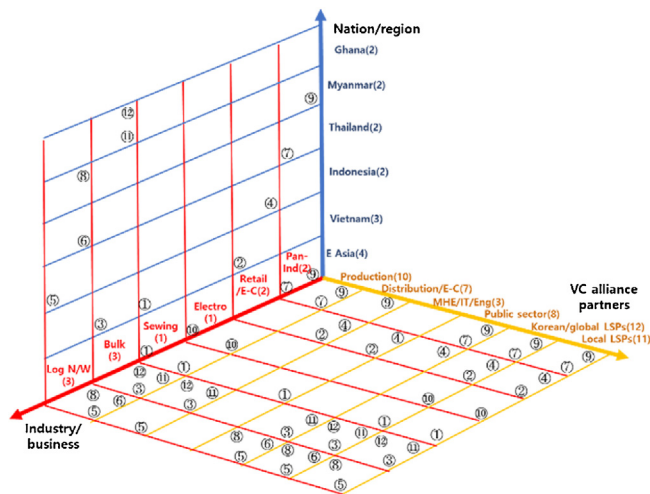


Fig. 13. VC alliance models by region, industry and partner.

EC - production model; EC/retail fulfilment model; Thilawa Port - SEZ - Yangon VC model; Cocoa global VC model; and local shipper - public sector - Korean/local LSP model. The logistics - MHE/IT - EC - production model; Thilawa Port - SEZ - Yangon VC model; and local shipper - public sector - Korean/local LSP model are included in all 3 model types.

All of 12 VC alliance models are analyzed to pursue scale economy increase and risk sharing as objectives. And primary strategies

to accomplish such objectives include: consolidation of inventory and shipment through utilizing integrated L/Cs and transportation systems of VC leader and/or LLPs; joint investment in VC and SC systems; and joint operation in sourcing, logistics, marketing and export.

11 VC alliance models pursue: the objective of sharing resource including service, labor, systems and network of VC partners at the different regions and markets; the objective of VCM and GSCM improvement through sharing markets and specialties of VC partners, integrating S-M logistics specialists under the coordination of LLP, VC and SC visibility improvement through information sharing, and use of LLPs as VC and SC coordinators; and the objective of market development and expansion through joint overseas expansion strategies among VC participants.

10 VC alliance models pursue: the objective of creating customized business models for new markets through developing differentiated and customized GSCM process by using inter-industry alliance, 4 PL and Process Innovation(PI); and the objective of localized VCM and SCM services through the strategic alliance with local distributors and LSPs.

Operation cost saving through sharing labor, equipment and system is pursued by 9 alliance models. And 7 alliance models aim at efficiency through utilizing integrated L/Cs and transportation systems of VC leader and/or LLPs; joint investment in VC and SC systems; and joint operation in sourcing, logistics, marketing and export.

11 VC alliance models pursue: the objective of sharing resource including service, labor, systems and network of VC partners at the different regions and markets; the objective of VCM and GSCM

Table 8

Objectives and primary strategies of VC alliance models.

Model type	Objectives/strategies	① E Asia VC hub	② Log – MHE/IT – EC – prod	③ Grain VC hub	④ EC/retail fulfilment	⑤ Joint logistics N/W	⑥ EEC – LCB Port VC	⑦ E Asia– Europe VC	⑧ Thilawa Port – SEZ – Yangon VC	○ M-SE Asia–C C-B log	⑩ E Asia electronics VC	⑪ Cocoa global VC	⑫ Local shipper – public – LSP	Total
Market base sharing model	Sharing resource at different markets: joint logistics N/W, joint logistics/distribution	0	0	0	0	0	0		0	0	0	0	0	11
	VCM/GSCM improvement thru sharing markets, specialties & info	0	0	0	0		0	0	0	0	0	0	0	11
	Customer sharing: co-branding, joint marketing		0		0				0				0	4
	Market development/expansion: joint overseas expansion	0	0	0	0	0	0	0	0	0	0		0	11
Competence enhancement model	Creation of customized business/GSCM model for new markets	0	0	0			0	0	0	0	0	0	0	10
	Localized VCM/SCM services thru local partnership		0	0	0	0	0	0	0	0		0	0	10
	Interlocking logistics-production-distribution-IT-MHE-MRO-R&D		0	0	0		0		0				0	6
	Scale economy & risk sharing: consolidation, joint investment	0	0	0	0	0	0	0	0	0	0	0	0	12
Cost competitive-ness improvement model	Cost saving thru sharing labor, equipment & system	0	0		0	0	0		0		0	0	0	9
	Efficiency improvement & investment saving thru sharing expertise & tech		0	0	0				0	0		0	0	7
Total		6	10	8	9	5	8	5	10	7	6	7	10	

Note: M = Myanmar, C = China, log = logistics, prod = production, N/W = network.

improvement through sharing markets and specialties of VC partners, integrating S-M logistics specialists under the coordination of LLP, VC and SC visibility improvement through information sharing, and use of LLPs as VC and SC coordinators; and the objective of market development and expansion through joint overseas expansion strategies among VC participants.

10 VC alliance models pursue: the objective of creating customized business models for new markets through developing differentiated and customized GSCM process by using inter-industry alliance, 4 PL and Process Innovation(PI); and the objective of localized VCM and SCM services through the strategic alliance with local distributors and LSPs.

Operation cost saving through sharing labor, equipment and system is pursued by 9 alliance models. And 7 alliance models aim at efficiency improvement and investment saving through sharing expertise, experience, efficient systems and advance technologies (Table 8).

Conclusions and implications for GVC alliance strategies

Based on the comprehensive analysis on the researches employed in this paper, implications for GVC alliance strategies are proposed. Such strategic implications are prepared for the alliance itself and participant groups including LLPs and S-M LSPs.

Strategic implications for the alliance

The GVC alliance needs to develop a basic framework for collaboration. Such a framework is suggested to include: a platform to efficiently share expertise, experience and technologies among VC participants; joint standard and process for collaboration among VC participants in different countries, regions and industries; integrated VC and SC network for consolidation of value-added activities and freight of VC participants, through inter-modal logistics systems; and governance system for joint efforts of VC partners in SCM, marketing, co-branding and overall coordination.

The alliance needs to develop cooperation systems to facilitate joint overseas expansion among VC participants through sharing SC networks, markets and specialties of VC partners. Such a cooperation can reduce requirements for investment and expense; mitigate the expected risk; and meet requirements for service scope and geographical coverage more efficiently.

The alliance needs effective measures to foster a long-term strategic alliance relationship among VC participants. Such measures include: an internal marketing system to improve satisfaction and trust on collaboration among partners; and fair evaluation and reward systems to encourage more active participation of partners and attract new participants.

All participants of VC should not pursue the maximization of each participant's profit but aim for increasing the size of the pie for the whole VC and in turn optimizing profit of each participant.

Strategic implications for LSPs

One of the most important CSFs for the VC alliance is global SC support capabilities of LSPs. Thus the alliance needs measures to improve GSCM capabilities of LLPs and international logistics service capabilities of logistics specialists which often lack sufficient experience in international business. And LSPs need to improve end-to-end SCM capabilities in overseas markets through integrating logistics networks and consolidating logistics facilities and processes of alliance partners.

To improve GSCM capabilities of LSPs, the role of LLPs is critical. LLPs need to lead the alliance with S-M logistics specialists through: providing investment and other financial supports; litigating risk

of S-M LSPs; sharing their advanced logistics facilities and systems with S-M LSPs; leading joint marketing to secure global customers and business; ensuring the fair allocation of secured business; and coordinating the whole collaboration processes.

Another CSF for the VC alliance is visibility throughout the whole VC and SC, which can improve transparency in cooperation among VC participants. Thus LLPs need to improve VCM and GSCM capabilities through integrating information systems and networks of VC partners.

LLPs and/or FG manufacturers, which often play a role as VC coordinator, need to lead the collaborative efforts to improve global competitiveness of the VC through providing financial and technical supports in training of local experts and practitioners, localization of the processes, and upgrading systems and facilities.

S-M LSPs, which are often constrained by a lack of network and resource, need to actively participate in the VC alliance for global market expansion. However many manufacturers and distributors don't have sufficient confidence on S-M LSPs in their capability to support international logistics and localized SCM in the foreign markets. Thus, to be able to participate in alliances, S-M LSPs need to secure an appropriate level of expertise and experience in a specific market, region, industry, and logistics process.

Since VC alliances aim to create the synergistic effects through integrating the complementary strengths and expertise of each participant, S-M LSPs should secure a distinctive expertise in a specialized area of logistics.

Conflict of interest

The author declares that there is no conflict of interest.

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