

The Effects of Supply Chain Management on Project Manager's Capability and Sustainable Benefit Sharing in Global Leading Companies

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글로벌 리딩 기업의 공급사슬관리가 프로젝트 관리자의 역량과 지속가능 성과공유에 미치는 영향

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Abstract This study was conducted to evaluate the effects of SCM on PM's capabilities and sustainable benefit sharing in leading global companies. To achieve this, statistical analyses were carried out through an empirical questionnaire survey of 426 PMs in SCM companies. The results showed that SCM commitment, vision and goal sharing have positive effects on PM's capabilities in leading global companies, boosting PM capability. Moreover, sustainable benefit sharing was improved along with SCM trust building, vision and goal sharing in global leading companies, supporting the usefulness of these variables. In contrast, SCM information sharing and trust building did not lead to significant acceleration of PM's capabilities, rejecting these variables. These findings indicate that SCM information sharing or trust building does not really help simple members to accelerate PM's capabilities.

요약 본 연구는 글로벌 리딩 기업의 공급사슬관리(SCM)가 프로젝트 관리자(PM)의 역량과 지속가능 성과공유에 미치는 영향력을 밝히는데 목적을 갖는다. 연구방법은 설문지에 의한 실증조사방법으로 조사 후 통계분석 방법을 통해 수행하였다. 연구대상은 SCM 기업의 PM 426명을 대상으로 하였다. 연구결과는 글로벌 리딩 기업에서의 SCM의 몰입과 비전 및 목표공유가 높을수록 PM의 역량에 긍정적인 영향을 미쳐 PM역량이 촉진되는 것으로 나타났다. 또한, 신뢰구축과 비전 및 목표공유가 높을수록 지속가능성과 성과공유가 높아지는 것으로 나타났으며, 이들 변수의 유용성을 지지해 주었다. 반면 정보공유와 신뢰구축은 PM의 역량을 높이는데 유의하지 않은 것으로 나타내 기각되었다. 이는 SCM에서 단순구성원의 정보공유나 신뢰구축만으로는 PM의 역량을 높이는데 큰 도움이 되지 않음을 의미한다. 즉, 글로벌 리딩 기업에서의 SCM은 몰입과 비전 및 목표공유가 높을수록 PM의 역량에 긍정적인 영향을 미쳐 PM역량이 촉진되고 또한, 신뢰구축과 비전 및 목표공유가 높을수록 지속가능성과 성과공유가 높아지는 것으로 나타나 이들 변수의 유용성을 지지해 주었다. 반면 정보공유와 신뢰구축은 PM의 역량을 높이는데 유의하지 않은 것으로 나타나 기각돼 이는, SCM에서 단순구성원의 정보공유나 신뢰구축만으로는 PM의 역량을 높이는데 큰 도움이 되지 않음을 의미한다.

Keywords : PM Capability, Project Manager, Project Management, Supply Chain Management, Sustainable Benefit Sharing

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I. Introduction

The Fourth Industrial Revolution refers to the technology and concept of the value chain and a new era of technology convergence without the boundaries of digital, physical and biological areas[1]. The Fourth Industrial Revolution, which has begun a full-fledged discussion while “Mastering the Fourth Industrial Revolution” was selected as the 2016 theme of the Davos Forum, an annual meeting of the World Economic Forum(WEF), can be explained by the innovation process of automation and connectivity, and maximized by AI and Big Data, which combine these two characteristics[2]. The Fourth Industrial Revolution is recognized as a present progressive type despite controversy over the advent of it, and it can be seen as a full-scale appearance rather than the introduction of a new concept[2]. Though high technology leading this revolution depends on each agency's evaluation, it includes most of the government's new growth engines in the 2000s except artificial intelligence and data processing as there's an overlap between ten areas such as artificial intelligence, robot, IoT, self-driving car, 3D printing, nano, bio, material science, energy and data processing[1]. As the positive and negative evaluations of the Fourth Industrial Revolution are mixed across the agencies and especially, there is growing concern about individual, social and national winner takes all, the market led by individuals or countries with low-medium technologies is expected to exacerbate inequality[2]. With each company's response to the 4th industrial revolution is accelerating, manufacturing innovation oriented towards full-fledged smart factories in Korea is recently affecting the entire industrial environment including the service industry. In the meantime, it has been expected that high technology leading the market will determine the success or failure of future companies. Korea, which has shown strengths in ICT, is one of the countries with a great ripple effect of the 4th industrial revolution[3]. At the same time, in order to response to changes in corporate strategies, the

innovative management and operation of SCM are essential for global companies of leading the 4th industrial revolution[4]. In other words, global leading companies should take the lead in the development of integrated new business by reducing time of technology development based on innovative organizational capability. For this, they should make joint efforts to pioneer new markets based on the competence of professional manpower in accordance with the global competitive environment. In addition, they need to form consortium and integrated alliance to cope with the market with partnership through communication, collaboration and mediation.

SCM means a management technique for cost reduction and productivity improvement of companies participating in SCM by efficiently managing all the processes from product and service to final consumer including raw material supply, production and distribution[5].

In order for a company to have a sustained competitive advantage in the global environment, it is essential to have experts and technologies for the international environment[6]. For the smooth operation of SCM, which is a base of dual competitive edge, there must be a strong project organization and a manpower with expertise within the company, and a capital and organizational system to support it[7]. However, for global leading companies, SCM performance depends on SCM personnel's capability of each company, and even in the same company, there is a difference between SCM performance and forecast according to manager capability and cooperative relationship as leading companies[8].

In this regard, Hayes & Pisano[9] pointed out that this is due to the mechanical implementation of the change program without professional competence of a systematic production strategy.

Like this, as the introduction and operation of SCM don't only become larger and larger, but also the development and environment of SCM become complicated, the existing various methods proposed for

successful management often fail to achieve the desired results[10]. Based on the recognition of these problems, the method of introducing PM(Project Management), a professional organization or a manpower system, has been proposed as a new approach for efficient implementation and successful competence of SCM[11, 12].

The competence of PM can improve the performance by efficiently controlling and managing the requirements required by SCM with time, cost, quality, and target setting by management objectives[13].

This means that SCM can maximize the performance when the coordination of managerial roles is well based on the broad knowledge, skills and personality of project managers. However, research related to the role of project manager, which has been carried out so far, has shown a limit to be mainstream in the study that emphasizes only performance from a systematic perspective[14-17].

In general, the introduction of SCM has helped establish optimal plans for improving overall efficiency and performance with the goal of maximizing profitability. However, there have been conflicts of interest between organizations without enough resolution, because the explanations of a functional relationship between organizations besides a quantity relationship between optimized plan and purchase plan-production plan-sales plan aren't only insufficient in the planning process, but the measures and procedures for resolving a conflict of interest in major functions of the company are indefinite and unclear in the planning agreement process[17]. The optimized integrated operation has been pointed out as a major factor to reduce the feasibility of plan through cooperation between organizations, because it is just emphasizing the efficiency of the whole company rather than reflecting the goal of organizational unit between organizations through enough adjustment[5]. For this reason, SCM research has recently focused on the relationship between efficiency and fairness. The concept of fairness in SCM has been introduced to

conduct SCM-related research. In the planning process of the company, the entire optimization plan and the organizational plan between organizations for fair operation should be harmoniously reflected in a final plan based on the understanding of each organization to lead the cooperation between organizations in the implementation, getting the results in early stages. As global leading companies share mutual industrial environments with adjacent service sectors such as manufacturing distribution, logistics and business, the analysis and prediction of adjacent sectors should be considered as important factors for business strategies. This study is intended to the effects of supply chain management(SCM) on cross-company collaboration, relationship satisfaction and sustainable benefit sharing in that the sustained performance can depend on project management and competence in SCM of global leading companies. The significance of this study is to suggest industrial and interdisciplinary implications through an empirical survey of SCM operating companies.

2. Theoretical Background

2.1 Relationship between SCM and PM Capability

SCM(Supply Chain Management) means “integrated management of the process of various in-house or inter-corporate business activities beyond the wall between sectors and between departments, that is to say the efficient management of the supply flow of procurement, production and distribution from order to customer delivery”[18]. Since 2000, Korean companies have aggressively introduced SCM to maintain their competitive capabilities while undergoing external integration for the maximization of the entire supply chain including suppliers and customers outside enterprise[3]. This trend has made many companies introduce and operate SCM, but there are not many successful cases of them announced to the outside

world, compared to the number of them that have introduced it[19]. This is because the operation of SCM, which integrates and manages the in-house or inter-corporate process, is not as successful as it is.

In other words, global leading companies should have a clear understanding and implementation of key success factors for technological information sharing, vision and goal sharing, trust building, and commitment in introducing and operating SCM, and develop it systematically and organizationally through the strategy establishment by promotion types in order for them to carry out it, maximizing sustainability and business performance[15].

However, environmental factors such as interest pursuit, limited rationality, risk aversion and information disparity are likely to cause opportunistic behaviors and conflicts with relational companies as the goal of two independent companies is fundamentally different if the relationship between companies is cooperative by partnership[19]. Therefore, As companies participating in supply chain have a strong tendency to behave from the their perspective rather than cooperation for the entire SCM, their behavior is a stumbling block to the achievement of SCM's goal, making it difficult for them to succeed in SCM[20]. The competence required at this time is expert's management capacity, called a project manager(PM).

The project manager is responsible for a series of coordinated and controlled activities to push for project tasks in the organization, and the organizational structure for project management is driven in a variety of forms and sizes[21]. Especially, the project manager(PM), who is responsible for both rapid decision making and role, is very important in that SCM performance depends on his capability as a leader[15].

In other words, the project manager's capability is essential for the successful achievement of project's goal, and the management capability required by individual, organization and team is different.

Especially, because he has to accomplish his jobs through collaboration with project members, he needs technical, integrated and interpersonal expertise to pore over the project progress and ensure appropriate mutual cooperation, as well as coordination, control and role as a mediator who selectively copes with the capability required by individual, organization and team. And he have to reflect information sharing, trust building, commitment, and vision and goal sharing to use for SCM factors as independent variables.

2.2 Relationship between PM's Capability and Sustainable Benefit Sharing in SCM

In recent years, companies have selected managers as PM's with professional management capabilities by efficient means of management for high efficiency in SCM. The reason for the need of PM's capability in SCM is that the need by organization[15] is different, and project management and operation in the existing SCM companies often fail by assigning managers who give priority to only high position and performance, rather than appointing managers with management capabilities required by individual, organization and team[22].

In other words, SCM requires rapid decision making to bring about management performance within a period of time due to the input of many people, budgets, resources and schedules, but the existing operation is less likely to sustain, and often fail in benefit sharing because there was often a conflict of opinions due to the difference in the results of each process[23].

Companies try to select appropriate managers for project capability and improve organizational effectiveness because of cost waste and performance decline due to opposing conflict, delivery delay and schedule extension by overlooking the management and capability in accordance with unique attributes by organization in carrying out most projects. These efforts are caused by low performance.

Like this, project manager's capability in SCM is an important factor to improve SCM performance, and is regarded as a SCM-based technology. This supports the usefulness in that organization and management were in common shown as success factors of SCM in previous studies[8, 23]. This is why manager's capability should delegate authority between functions and lead the coordination and cooperation of each organization(function) in the company based on the lead, and can adjust the direction and scope of cooperation between companies to share the sustainability and performance of business according to the capabilities that control the entire SCM. In addition, the organic cooperation and coordination between organizations can raise success factors of SCM through the weighted cross-functional role. In this regard, Douglas et al.[24] implies that companies need to form a closer relationship with supply companies by the value chain as it is difficult to secure corporate competitiveness just by individual companies' capabilities, with corporate competitiveness changing from competition between individual companies to competition between supply chains. In this situation, they will be able to maximize their performance by creating a synergy effect by coordination and integration between related companies through SCM. Consequently, based on the theoretical criteria, this study attempts to test the causal relationship through the research model and hypothesis setting in the next chapter.

3. Research Method

3.1 Research Model and Hypothesis Setting

3.1.1 Research Model

This study is empirically intended to look into the effects of SCM on PM's capability and sustainable benefit sharing in global leading companies. To achieve this, information sharing, trust building, commitment, vision and goal sharing, PM's capability

and sustainable benefit sharing were reflected as SCM antecedents.

In other words, a research model was designed as shown in Figure 1 on the basis of previous studies[10, 25], "SCM antecedents have a significant effect on organization capability." and another previous studies, "The test of relationship between PM's capability, SCM, and sustainable benefit sharing in supply chain companies."

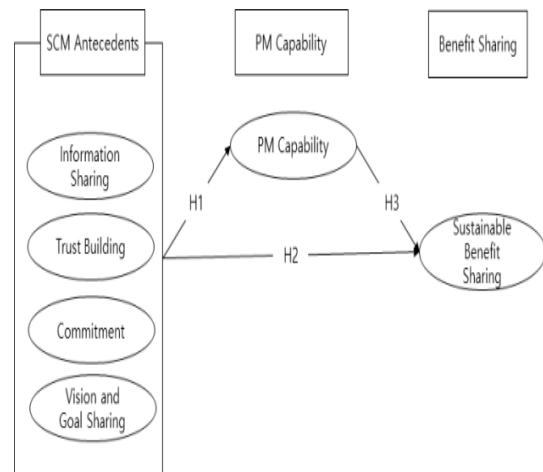


Fig. 1. Research Model

3.1.2 Research Hypothesis

3.1.2.1 Relationship between SCM Antecedents and PM Capability

In the study on the effects of SCM antecedents, information sharing, trust building, commitment, and vision and goal sharing on PM's capability in supply chain companies, they are gradually established as the stage of cooperation through the stage of past transaction experience and implementation such as information sharing, trust building, commitment and goal sharing[18]. Lambert et al.[26] emphasized that the performance depends on manager's capabilities in SCM-participating companies among partners.

Hurt & Thmos[11] insisted through an empirical analysis that the driving force into manager's capabilities and values creates organizational identity.

Park Heung-soo et al.[27] said that long-term

commitment, open communication and information sharing, and agreed goal sharing have a significant positive effect on strategic collaboration between companies and relationship satisfaction.

Like this, information sharing, trust building, commitment, and vision and goal sharing as SCM antecedents have a significant effect on PM's capability between SCM companies. Consequently, PM's capability in SCM will play an important role in efficient performance of SCM.

H1 : SCM antecedents will have a significant positive effect on PM's capability.

H1-1 : SCM information sharing will have a significant positive effect on PM's capability.

H1-2 : SCM trust building will have a significant positive effect on PM's capability.

H1-3 : SCM commitment will have a significant positive effect on PM's capability.

H1-4 : SCM vision and goal sharing will have a significant positive effect on PM's capability.

3.1.2.2 Relationship between SCM Antecedents and Sustainable Benefit Sharing

PM's capability between SCM-participating companies is an important variable affecting performance, and this capability is the partners' response to significant sustainable benefit sharing. PM's capability is a behavioral variable that sustains SCM relationship, and maintains community spirit by arousing the soundness of SCM. Lambert & Cooper[24] said that PM's capability emphasized on the PM's role causes more dominant position than competitors. Morgan et al.[28] pointed out that PM's cooperative capability is very important for successful sustainability and benefit sharing in relation marketing for distributors, and such PM's capability is a main variable affecting benefit sharing in the business relationship between companies[29]. In this context, it has been shown that the performance increases along with PM's capability

in SCM, as proved by similar studies. Consequently, the following hypotheses are set up in light of the preceding facts.

H2 : SCM antecedents will have a significant positive effect on sustainable benefit sharing.

H2-1 : SCM information sharing will have a significant positive effect on sustainable benefit sharing.

H2-2 : SCM trust building will have a significant positive effect on sustainable benefit sharing.

H2-3 : SCM commitment will have a significant positive effect on sustainable benefit sharing.

H2-4 : SCM vision and goal sharing will have a significant positive effect on sustainable benefit sharing.

3.1.2.3 Relationship between PM Capability and Sustainable Benefit Sharing

PM's capability for SCM in companies can raise the competitiveness of the entire SCM by self-efforts and improvement activities for sustained innovation through benefit sharing, and the business performance through aggressive collaboration at the win-win cooperation level. McLaren et al.[30] argued that the performance is also different depending on the PM's role through SCM.

Lee Sang-man et al.[31] set up the following research hypothesis based on previous studies, indicating that PM's capability in SCM has a significant effect on corporate benefit sharing.

H3 : PM's Capability in SCM will have a significant positive effect on sustainable benefit sharing.

3.2 Research Method and Design

3.2.1 Sample Selection

This study is a study on antecedents between SCM companies, PM's capability and sustainable benefit sharing. To achieve the purpose of this study, the questionnaires were distributed via mail and e-mail to

SCM managers or PM's in medium-sized companies, 500 global leading companies in Korea with 300 to 1,000 employees, i.e. 50 companies in 10 industries. A survey was carried out for 60 days through September 4 to November 12, 2017. A total of 500 copies were distributed. After collection, 406 copies were used for data analysis, except for questionnaires regarded as a large number of missing values with respect to respondents and the lack of faithfulness and consistency.

3.2.2 Variable Setting and Definition

The concept of model in this study is mainly composed of SCM antecedents, PM's capability and sustainable benefit sharing in global leading companies. Four independent variables such as information sharing, trust building, commitment, and vision and goal sharing were introduced as SCM antecedents, and PM's capability and sustainable benefit sharing were included as dependent variables.

3.2.2.1 SCM Antecedents

Based on the common contents as SCM antecedents in previous studies[10,25], a total of 20 items, each of 5 items in 4 variables such as information sharing, trust building, commitment, and vision and goal sharing were measured on the Likert 5-point scale.

3.2.2.2 PM Capability

PM's capability was defined as trust improvement, tangible and intangible profit improvement, satisfaction improvement of open communication and shared information quality between SCM-participating companies. Based on Gwon Gi-dae·Kim Shin-ae[32]'s and Lee In-hee[26]'s findings, 5 items including the level of partnership trust and the maintenance of mutual seamless communication were measured on the Likert 5-point scale.

3.2.2.3 Sustainable Benefit Sharing

Sustainable benefit sharing was defined as

satisfaction with competitive advantages including cost reduction, increase in investment income, reliability and response to market demands by cooperation between supply chain-participating companies. Based on Oh Jung-hwa(2008)'s and Kim Sang-oh·Yoon Sun-hee(2007)'s findings, 5 items such as sales growth, operating profit increase, operating cost reduction, quality improvement and asset growth by mutual transactions were measured on the Likert 5-point scale.

3.2.3 Questionnaire Composition

In this study, the survey method was used for the collection and measurement of data. The questionnaire consisted of 36 items such as 6 questions on SCM antecedents, 6 questions on PM's capability, 5 questions on sustainable benefit sharing and 6 questions on demographics measurement as shown in Table 1.

Table 1. Questionnaire Composition

Classification	Measurement Variable	Question Number	Scale
SCM Antecedents	Information Sharing, Trust Building, Commitment, Vision and Goal Sharing	20	Likert-5 Point
PM Capability	Community Spirit, Relationship Effectiveness, Problem-Solving Collaboration	5	
Benefit Sharing	Sales, Operating Profits, Operation Cost, Quality, Assets	5	
Demographic Characteristics	Gender, Age, Academic Background, Job, Working Years, Position	6	Nominal Scale
Total		36	

4. Empirical Analysis

4.1 Demographic Characteristics

The demographic characteristics of 406 respondents surveyed are shown in Table 2 below.

Table 2. Demographic Frequency Analysis

Classification	Content	N(%)	Total N(%)
Gender	Male	401(98.9)	406 (100)
	Female	5(1.2)	
Age	20s	78(19.3)	404 (100)
	30s	134(33.2)	
	40s	142(35.1)	
	50s	50(12.4)	
Working Field	Electricity / Electronics	144(35.5)	406 (100)
	Clothing / Textile	12(3.0)	
	Construction	122(30.0)	
	Car	103(25.4)	
	Food & Beverage	23(5.7)	
	Chemistry	0(0.0)	
	Steel	1(0.2)	
Other	1(0.2)		
Job	Strategy / Planning	97(24.3)	400 (100)
	Development / Production	151(37.8)	
	Production Management	126(31.5)	
	Other	26(6.5)	
Position	Regular Employee	69(17.1)	403 (100)
	Section Head / Deputy Section Head	144(35.7)	
	Department Head / Deputy Department Head	133(33.0)	
	More Than Executive	49(12.2)	
	PM	8(2.0)	
Work Period	Less Than 3 Years	47(11.6)	404 (100)
	4 ~ 5 Years	67(16.6)	
	6 ~ 10 Years	120(29.7)	
	11 ~ 20 Years	127(31.4)	
	More Than 21 Years	43(10.6)	

4.2 Confirmatory Factor Analysis

4.2.1 Validity and Reliability of Sample

Confirmatory factor analysis was conducted to confirm the validity and reliability of collected data.

The results of factor analysis are shown in Table 3 below. The items of factor loading less than 0.5 per observation variable were used for the post-elimination analysis. The AVE(Average Variance Extracted) was used to confirm the convergence validity based on the AVE more than 0.5 and construct reliability more than 0.7. Correlation coefficients were compared with AVE to verify the discriminant validity. The Cronbach 's α coefficients were more than 0.7, verifying the validity and reliability of data.

Table 3. Intensive Validity and Reliability Analysis Result

Factor		Factor Loading	AVE	CR	Cronbach's α	p
Information Sharing	Information Sharing1	.748	.716	.909	.876	***
	Information Sharing2	.729				***
	Information Sharing3	.820				***
	Information Sharing4	.899				***
Trust Building	Trust Building1	.675	.610	.823	.769	***
	Trust Building2	.774				***
	Trust Building3	.741				***
Commitment	Commitment1	.814	.611	.823	.783	***
	Commitment2	.784				***
	Commitment3	.654				***
Vision and Goal Sharing	Vision Sharing1	.852	.744	.897	.855	***
	Vision Sharing2	.849				***
	Vision Sharing3	.752				***
PM Capability	PM1	.667	.585	.849	.804	***
	PM2	.771				***
	PM3	.703				***
	PM4	.722				***
Benefit Sharing	Benefit Sharing1	.722	.720	.884	.836	***
	Benefit Sharing2	.903				***
	Benefit Sharing3	.771				***

*** p < .001

4.2.2 Correlation Coefficients and Discriminant Validity

The results of correlation analysis are shown in Table 4 below. The diagonal matrix of correlation coefficients between factors created the AVE values.

Correlation coefficients between factors were .199 to .761, which they had a positive correlation. The average variance extracted(AVE) estimate should be not only more than the square of correlation between two factors for the basis of discrimination validity, but the value of construct reliability should be more than .7[33]. The verification of the discriminant validity showed that the square value of the maximum value(.761) of correlation coefficients was .579, which is smaller than all mean AVE values, satisfying the discriminant validity and concept reliability.

Table 4. Correlation Analysis

Factor	Information Sharing	Trust Building	Commitment	Vision and Goal Sharing	PM Capability	Benefit Sharing
Information Sharing	.716 1)	.215 2)	.253 2)	.200 2)	.123 2)	.062 2)
Trust Building	.464 (.023)	.610 1)	.420 2)	.490 2)	.193 2)	.116 2)
Commitment	.503 (.030)	.648 (.030)	.611 1)	.579 2)	.237 2)	.181 2)
Vision and Goal Sharing	.447 (.028)	.700 (.031)	.761 (.038)	.744 1)	.211 2)	.116 2)
PM Capability	.350 (.022)	.439 (.021)	.487 (.027)	.459 (.026)	.585 1)	.172 2)
Benefit Sharing	.248 (.021)	.340 (.021)	.426 (.027)	.340 (.026)	.415 (.028)	.720 1)

*** p < .001.

1) AVE, 2) r², (s.e Value)

4.2.3 Fitness of Confirmatory Factor Analysis Model

The statistic for the fitness test of model contain absolute goodness-of-fit index, incremental goodness-of-fit index and simple goodness-of-fit index. The RMR, GFI, RMSEA and Normed chi-square was used for statistical analysis as shown in Table 5.

The chi-square test statistic is a representative absolute goodness-of-fit index, which is determined by the difference between the input covariance matrix and the estimated covariance matrix and the sample size.

If the sample number increases to more than 200, the null hypothesis that the model is appropriate is likely to be rejected because it tends to show a significant probability level, that is, p value < α. By contrast, if it decreases to less than 100, the null hypothesis is likely to be rejected because it tends to show a insignificant probability level, that is, p value ≥ α[34].

If the sample size is large enough and the theoretical backing of the test model is significant, the chi-square test will be used as a reference index to estimate the inconsistency with the covariance matrix estimated by the model and not recommended as a test statistic[35].

The GFI is an index indicating the degree that is

described by the estimated covariance matrix, which has the value between 0 and 1. GFI more than 0.9 is considered as high fitness.

The RMSEA has a chi-square statistic value and the fitness is generally known to be good if it is less than 0.1.

Table 5. Fit Index of Confirmatory Factor Analysis

χ ²	p	RMR	GFI	TLI	CFI	RMSEA (90% CI)
510.861	<.001	.045	.886	.894	.913	.075 (.068-.083)

The χ² value is statistically significant(p < .001). The GFI index is also .886, but it can be interpreted with reference to other indicators because it is sensitive to the sample size and the complexity of model. Consequently, the evaluation of the model fitness with RMR, TLI, CFI and RMSEA showed that CFI = .913, RMSEA = .075 and RMR = .045, which are measured to meet criteria.

4.3 Structural Equation

4.3.1 Structural Equation Model and Fitness

The fit index of structural equation model are shown in Table 6 below.

The Chi square has a significant probability of 400.758 and p < .001. Given the number of research samples, RMR = .040, GFI = .913, TLI = .924, CFI = .939, and RMSEA = .064, indicating the appropriate index for the analysis of the model complexity and sample size.

Table 6. Fit Index of Structural Equation Model

χ ²	p	RMR	GFI	TLI	CFI	RMSEA (90% CI)
400.758	<.001	.040	.913	.924	.939	.064 (.056-.072)

4.3.2 Path Analysis Result of Structural Equation

Table 7. Path Analysis Result

Hypothesis Path	Estimate	S.E.	t	p
PM Capability ← Information Sharing	.028	.059	.553	.581
PM Capability ← Trust Building	.027	.072	.428	.668
PM Capability ← Commitment	.272	.089	3.012	.003
PM Capability ← Vision and Goal Sharing	.278	.087	3.105	.002
Benefit Sharing ← Information Sharing	.022	.060	.359	.720
Benefit Sharing ← Trust Building	.133	.074	1.707	.088
Benefit Sharing ← Commitment	.310	.093	2.77	.006
Benefit Sharing ← Vision and Goal Sharing	-.085	.088	-.786	.432
Benefit Sharing ← PM Capability	.172	.053	2.748	.006

The path analysis results of structural equation model are shown in Table 7 above. For the effect of sub-factors of independent variable SCM, information sharing, trust building, commitment, vision and goal sharing on PM capability, information sharing and trust building are $\beta=.028$ $p=.581$ and $\beta=.027$ $p=.668$, respectively, which information sharing and trust building have no significant effect on PM capability at the .05 significance level. By contrast, commitment and vision and goal sharing are $\beta=.272$ $p=.003$, and $\beta=.278$ $p=.002$, respectively, which commitment and vision and goal sharing have a significant positive effect on PM capability.

For the effect of 4 sub-factors of independent variable SCM on benefit sharing, information sharing, trust building, commitment and vision and goal sharing are $\beta=.022$ $p=.720$, $\beta=.133$ $p=.088$, $\beta=.310$ $p=.006$ and $\beta= -.085$ $p=.432$, respectively, which only commitment has a significant positive effect on benefit sharing.

PM capability is $\beta=.172$ $p=.006$, which it has a significant effect on benefit sharing.

4.4 Hypothesis Testing Result

The above-mentioned findings are summarized as

shown in Table 8.

First, SCM information sharing had no significant effect on PM's capability, rejecting hypothesis 1.

Second, SCM trust building had no significant effect on PM's capability, rejecting hypothesis 2.

Third, SCM commitment had a significant effect on PM's capability, adopting hypothesis 3.

Fourth, SCM vision and goal sharing had a significant effect on PM's capability, adopting hypothesis 4.

Fifth, SCM information sharing had no significant effect on sustainable benefit sharing, rejecting hypothesis 5.

Sixth, SCM trust building had no significant effect on sustainable benefit sharing, rejecting hypothesis 6.

Seventh, SCM commitment had no significant effect on sustainable benefit sharing, rejecting hypothesis 7.

Table 8. Hypothesis Testing Result

Hypothesis	Hypothesis Content	p	Adoption Status
H1-1	SCM information sharing will have a significant positive effect on PM's capability.	.581	Rejection
H1-2	SCM trust building will have a significant positive effect on PM's capability.	.668	Rejection
H1-3	SCM commitment will have a significant positive effect on PM's capability.	.003	Adoption
H1-4	SCM vision and goal sharing will have a significant positive effect on PM's capability.	.002	Adoption
H2-1	SCM information sharing will have a significant positive effect on sustainable benefit sharing.	.720	Rejection
H2-2	SCM trust building will have a significant positive effect on sustainable benefit sharing.	.088	Rejection
H2-3	SCM commitment will have a significant positive effect on sustainable benefit sharing.	.006	Adoption
H2-4	SCM vision and goal sharing will have a significant positive effect on sustainable benefit sharing.	.432	Rejection
H3	PM's capability in SCM will have a significant positive effect on sustainable benefit sharing.	.006	Adoption

*** p <.001

Eighth, SCM vision and goal sharing had no significant effect on sustainable benefit sharing, rejecting hypothesis 8.

Ninth, PM's capability in SCM had a significant effect on sustainable benefit sharing, adopting hypothesis 9.

5. Conclusion

As for the results mentioned above, SCM commitment and vision and goal sharing had a positive effect on PM's capability in global leading companies, boosting PM's capability. Sustainable benefit sharing rose along with SCM trust building and vision and goal sharing, supporting the usefulness of these variables. By contrast, SCM information sharing and trust building had no significant on PM's capability, rejecting hypothesis 1 and 2. Consequently, SCM information sharing or trust building don't just help simple members to accelerate PM's capability. In other words, PM's mediation and arbitration in professional role are important for a commitment to SCM by their vision and goal sharing.

In other words, in the process that SCM antecedents - information sharing, trust building, commitment, vision and goal sharing - and PM's capability are gradually established into the stage of cooperation through the stage of experience, maintenance and performance of SCM companies depends on PM's capabilities including arbitration and control of SCM-participating companies between partners, supporting previous studies. Consequently, the role of PM capability is important. It is very important that project managers do a series of SCM activities mediated and controlled to drive project tasks in light of previous studies that the strong driving force based on manager's capability and value creates the identity of organization.

Especially, the project Manager(PM), who is responsible for the rapid decision-making and roles,

supports this in that the performance of supply chain management depends on his capacity as a leader.

And Information sharing and mutual trust building of dismissed SCM don't lead to sustainability and sharing only with information and mutual trust mutually shared by PM's capabilities and benefit sharing in a global competitive environment. In other words, it is impossible to share sustainable benefit only with simple cooperation in the global competitive environment.

The results have practical and theoretical implications in terms of proving the facts that the goal-oriented PM's capability and role are affected by the continuous transaction willingness of SCM-participating companies through their commitment and vision sharing, and fair and effective benefit sharing affects the performance of the entire SCM. Consequently, all SCM-participating companies can't only boost the benefit sharing because of profit creation caused by collaborative performance management, but also reduce costs and improve customer service quality through such efficient SCM.

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