An Examination on the Mediating Effect of Collaboration on the Relationship between Consultant Competency and Consulting Utilization in Knowledge Service

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Abstract:Background/Objectives: This study is based on previous research that the higher the consultant's competency, the higher the Consulting utilization. There is insufficient research on the effect of collaboration between consultants on Consulting utilization, I would like to study ollaboration as a parameter.

Methods/Statistical analysis: The subjects of the study were consultants registered with the Korea Management Technology Consultant Association, which is currently conducting consulting, and consultants who graduated from the Graduate School of Consulting. Data collection was conducted using questionnaires. A total of 33 questions were measured, including 28 of the measurement variables consisting of a general characteristic 5 questions and a Likert 5-point scale. For empirical analysis, the SPSS Ver. 22 statistical package was used to perform Frequency analysis, Descriptive statistical analysis, Exploratory factor analysis, Reliability analysis, Correlation analysis, Regression and a Mediated effect analysis was performed.

Findings: The results of the empirical analysis of this study showed that, first, Common competency, Job competency and Management competency which are the competency of management consultants, had a positive effect on consulting utilization. Among management consultant competencies, Common competency was found to have the largest impact on Consulting utilization (β = .464, p< .001). Second, Common competency, Job competency, and Management competency, which are the competency of management consultants, have a positive effect on Collaboration. Among management consultant competencies, Common competency was found to have a high impact on the Collaboration (β = .586, p< .001). Third, it was found that Collaboration affects Consulting utilization (β = .401, p< .001). Fourth, Collaboration was partially mediated in the relationship between management consultant competency and Consulting utilization. In the relationship between management consultant competency and Consulting utilization, the Common competency was found to have a high impact, but the result of the analysis using Collaboration as a parameter showed that the Common competency

had a high impact.

Improvements/Applications: This study emphasizes the importance of Collaboration, which is teamwork among consultants by sector in SMEs (small and medium enterprise) consulting. However, according to the characteristics of SMEs, it is necessary to conduct research related to industrial classification and social network variables.

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1. Introduction

Rapid changes in global markets and technologies have led companies to choose strategic changes such as product service and outsourcing, and the service industry has grown through strategic changes in the enterprise[1]. In particular, knowledge intensive business services have been attracted attention as high value-added industries. The role of knowledge-intensive services is to serve as an intermediate in the overall production and distribution process of the industry, acting as a catalyst, facilitator of innovation and as a source of innovation[2]. Miles et al. (1995) divided the knowledge-intensive service industry into a traditional professional service (P-KIBS) and a new technology-based service (T-KIBS). It has expanded from knowledge-intensive services such as accounting, consulting, and legal services (P-KIBS) to technology-based computer-related services, software, and engineering (T-KIBS). T-KIBS emphasized the role of transferring and producing new knowledge about technology by applying new technology[3]. Consulting output of companies with high consulting performance is also important for companies that have commissioned consulting, but also companies and consultants who have conducted consulting. Management consulting is an area of the knowledge-intensive service industry to establish a network between consultants in each field and to secure a sustainable competitive advantage of the enterprise from a process system perspective. The purpose of this study is to empirically analyze

how the consultant collaboration affects consulting utilization to use consulting output in the long term rather than the short term.

2. Materials and Methods

2.1. Management Consulting

Consulting is subject to a five-step process of initiation, diagnosis, activity planning, implementation, and termination for the purpose of achieving organizational goals, solving management problems, discovering and utilizing new opportunities, increasing learning, and promoting change[4]. Larry Greiner and Robert Metzger (1983), through a special training process, help qualified people identify and analyze management problems in an independent and objective position by contracting with customers, recommending solutions to clients, Consulting is defined as an advice service that provides customers with assistance when they ask for help[5].

2.2. Consultant Competency

Job competencies are job-related competencies that are directly needed for consulting, including expertise, communication, analysis and alternative presentation, strategic thinking, document writing, and information gathering ability, etc. Common competencies are about the qualification and knowledge that a consultant should have. Achievement orientation, customer orientation, self-control, professional Ethics ethic, professional dignity and confidence, etcetera[6]. The consultant competency is based on the 'job

competency of technical skills' in terms of knowledge to understand the contents of consulting, and the 'common competency of interpersonal skills', the ability to facilitate mutual exchanges, and consulting. Each step was studied by dividing it into ' management competency of consulting skill ' that can be comprehensively performed[7].

2.3. Collaboration

The difficult issues that CEOs feel the same in practice are collaboration among team members and collaboration between teams. It defined collaboration as 'the process of looking at different aspects of the problem, organizing differences among participants, and finding solutions beyond one's own limited view of what is possible'[8]. Because the promotion of collaboration is linked to performance, collaboration is a concept that is clearly different from cooperation and has the meaning of interaction to pursue common goals or values. Source factors of collaboration include shared goals, clear responsibility and authority, balance of rewards and take the initiatives [9]. Kruse's (1999) collaboration is defined as "a collaborative environment in which everyone can share value as a team and make mutually positive decisions within the environment in which everyone is involved" and as a higher concept than cooperation or cooperation[9]. According to the framework proposed by Johansen (1988), depending on the nature of collaboration, people may collaborate in the same or different places in terms of space, and simultaneously or non-simultaneously in terms of time[10].

2.4. Consulting Utilization

McLachlan(1999) argued that the utilize of consulting results, along with client preparation and engagement, clear agreement between consultant and client, consultant abilities and integrity, and control over the client, served as a major success factor for consulting[11]. Kubr(2002) stated that the outcome of consulting was utilized in the implementation phase of the consulting process of initiation, diagnosis, action planning, execution, and termination[11]. 48.6% of respondents say that SMEs generally use consulting utilization rates, and 39.25% of

respondents say that they are using them very well. Finally, the level of education and learning for in-house employees to utilize consulting output was high at 55.61%[12]. In consideration of the fact that the quality level of consulting outcomes affects consulting utilization and repurchase intention, it is necessary to improve management consulting service level to strengthen SME competitiveness by systemizing through consulting platform[13]. Kerzner (1984) proposed project compliance, including time and budget observance, achievement of planned performance, and customer satisfaction and utilization. Satisfaction and the effectiveness and effectiveness of consulting results were presented, and the degree of consulting completion was studied with a concept similar to that of consulting[14].

2.5. Relationship between Consultant competency and Consulting utilization

Kim Ik-sung (2008) argued that the characteristics of consulting, consulting satisfaction, and consulting utilization had an impact on the management performance of companies that received consulting. In the process of consulting, the management performance that complied with the planned period, budget, and scope was defined as consulting completion, and the consultant competence and causality were analyzed[6]. In the study on the mediating effect of consulting utilization between common competency, job competency, management competency and consulting performance as consultant competency, there was a statistically significant influence relationship, and there was a mediating effect[15].

2.6. Relationship between Collaboration and Consulting utilization

Collaboration was statistically significant in the relationship between the information exchange system and team performance between the components, and verified that there was a mediating effect of collaboration[9]. Team collaboration is important for management consultants in the SMEs consulting to increase the utilization of consulting outcome, which is the performance of consulting projects.

2.7. The Research model and Hypothesis

2.7.1. Research model

The purpose of this study is to analyze the causal relationship between the consultant collaboration and the utilization of consulting products in the B2B knowledge service industry of SMEs based on the theoretical considerations of previous studies. Common competency, Job competency and Management competency were selected as independent variables for Management consultant competency[6-7]. Collaboration was chosen as a parameter based on the relationship between team collaboration and team performance[9]. Based on the study of consultant competency and Consulting utilization[1000000004], the consulting model was selected as the dependent variable and the research model of Figure 1 was established. Based on these previous studies, the hypothesis was established to empirically analyze the causal relationship between management consultants to improve the utilization of consulting performance in B2B knowledge service industry of SMEs. The research model for this study is shown in[Figure 1]..
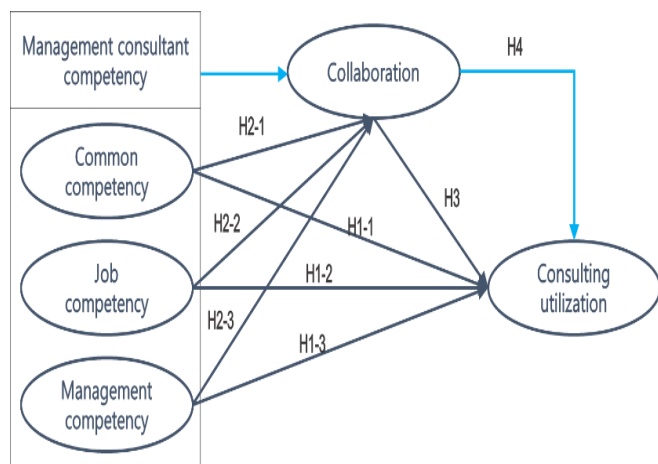

Figure 1. Research model

2.7.2. Research Hypothesis
Based on the research model in Figure 1 above, the following research hypotheses were established for the causal relationship among the consultant Collaboration on Consulting utilization.
H1-1. Common competency will have a positive effect on Consulting utilization.
H1-2. Job competency will have a positive effect on Consulting utilization.

H1-3. Management competency will have a positive effect on Consulting utilization.
H2-1. Common competency will have a positive effect on Collaboration.
H2-2. Job competency will have a positive effect on Collaboration.
H2-3. Management competency will have a positive effect on Collaboration.
H3. Collaboration will have a positive effect on Consulting utilization.
H4-1. Collaboration will mediate the effect of Common competency on Consulting utilization.
H4-2. Collaboration will mediate the effect of job competency on Consulting utilization.
H4-3. Collaboration will mediate the effect of Management competency on Consulting utilization.
2.7.3. Operational Definition of Variables
Based on the preceding study, this study divided consultant competences into Common competency, Job competency and Management competency, and comprised a total of 18 measurement items. Five items for collaboration and five items for Consulting utilization are adapted to the purpose of this study. The operational definition of each variable is summarized as shown in [Table 1].

Table 1. Operational Definition of Variables

Evaluation items	Measurement variable	Operational definition	Configure Questionnaire	Researcher
Consultant competency	Common competency	Acceptance of customer requests, Will to achieve the goal, Responsibility and reliability, Consistent attitude, Self-control power	6 questions	[6-7]
	Job competency	Consulting methodology and expert knowledge, Ability to analyze problems and suggest alternatives, Communication and presentation skills	6 questions	
	Management competency	Project driving ability, Teamwork Ability, Ability to present vision, Leadership skills	6 questions	
Collaboration	Collaboration	Shared Objectives, Responsibilities and roles, Compensation and balance, take the initiative	5 questions	[8-10]

Consulting utilization	Consulting utilization	Will to use performance, Will to reflect the work, Actual task utilization, Members' communication on the utilization of results	5 questions	[11-14]

3. Results and Discussion

3.1. Empirical Results

3.1.1. Demographic characteristics analysis

The total number of samples used in this study is 253. Frequency analysis was performed on the general characteristics of the sample distribution. As a result, 79.4% (201) were male and 20.6% (52) were female. The highest age group was 43.1% (109) in their 50s and 30% (76) in their 40s. The highest level of education is 50.6% (128) for graduate students or above and 47.4% (120) for university graduation.

3.1.2. Descriptive analysis

In this study, the results of analyzing the data collected by the management consultants who are actually consulting are as follows. Individual measurement veriables were found to follow a normal distribution with a Standard deviation of 3 or less, Absolute skewness of 3 or less and Kurtosis statistical value of 3 or less.

3.1.3. Exploratory factor analysis and Reliability analysis

An Exploratory factor analysis was conducted to test the validity of individual measurement variables. Principal component analysis was used and Varimax rotation method was used. The eigenvalue is greater than 1.0 as the selection criterion for the measurement variable. In this study, factor analysis was performed eight times. The KMO index value was .927, which is more than 0.7, which is a general level, and Bartlett's unit matrix test showed that the Chi Square (p) value was .000, which is smaller than the general level of 0.05. It was judged to be suitable for factor analysis [16]. The Management competency 3, Common competency 2, 6, Collaboration 1, and Job competency 4, 5, 6, which are measurement variables that impede Discrimination validity and Concentration validity, were removed and classified into five factors. Reliability analysis analyzed by utilizing Cronbach's alpha coefficient for Internal consistency reliabiliy to secure homogeneity among measured variables that had been refined

in Exploratory factor analysis. As a result of Reliability analysis, Cronbach's alpha coefficient of all measured variables was over 0.6, which is a general level, indicating that reliability was secured [16]. A summary of the Exploratory factor analysis and the Reliability analysis results are shown in the following [Table 2].

Table2. Exploratory factor analysisandReliability analysis

Measurement item	Exploratory factor analysis (Intensive validity & Discriminant validity)					Commonality	Reliability analysis
	Consulting utilization	Management competency	Common competency	Collaboration	Job competency		Cronbach's alpha
Consulting Utilization 2	**.755**	.108	.242	.275	.057	.719	
Consulting utilization 1	**.752**	.126	.201	.072	.171	.657	
Consulting utilization 4	**.745**	.204	.277	.283	.098	.763	**.892**
Consulting utilization 3	**.744**	.248	.136	.269	.123	.721	
Consulting utilization 5	**.698**	.189	.219	.313	.161	.695	
Management Competency 6	.083	**.880**	.004	.039	.160	.809	
Management Competency 5	.062	**.861**	-.024	-.056	.097	.758	
Management Competency 4	.180	**.828**	.087	.133	.063	.748	**.874**
Management Competency 2	.260	**.706**	.177	.266	.068	.674	
Management Competency 1	.226	**.584**	.289	.288	.097	.567	
Common Competency 5	.352	.071	**.747**	.747	.250	.090	
Common Competency 3	.169	.183	**.727**	.727	.258	.159	**.847**

Construct							
Common Competency 1	.137	.081	**.720**	.720	.358	.074	
Common Competency 4	.321	.003	**.717**	.717	.176	.158	
Collaboration 5	.317	.074	.286	**.719**	.107	.716	
Collaboration 4	.274	.107	.342	**.714**	.091	.721	.880
Collaboration 2	.363	.137	.263	**.685**	.169	.718	
Collaboration 3	.254	.259	.349	**.649**	.176	.705	
Job Competency 1	.046	.121	-.019	.271	**.808**	.744	
Job Competency 2	.233	.204	.306	-.137	**.686**	.680	.645
Job Competency 3	.261	.123	.268	.283	**.553**	.541	
Eigen-value	3.664	3.426	3.041	2.885	1.709		
% of Variance	17.448	16.314	14.481	13.738	8.139		
% of Accumulated	17.448	33.762	48.243	61.981	**70.120**		
Kaiser-Meyer-Olkin Sample Fit							.927
Bartlett's unit matrix test	Approximate Chi Square	3184.336	df	210	p-value		0.000

judged that it is possible to analyze the causal relationship among the constructs. A summary of the Correlation analysis results is shown in [Table 3].

Table 3. Summary of Correlation Analysis Results

Constructs	N	Mean	Standard Deviation	Common competency	Job competency	Management competency	Collaboration	Consulting utilization
Common competency	253	4.021	.643	1	.469**	.316**	.703**	.618**
Job competency	253	3.671	.647	.469**	1	.394**	.479**	.484**
Management competency	253	3.251	.687	.316**	.394**	1	.401**	.452**
Collaboration	253	3.979	.644	.703**	.479**	.401**	1	.686**
Consulting utilization	253	3.827	.650	.618**	.484**	.452**	.686**	1
**. The correlation is significant at the .01 level (both sides).								

3.1.4. Correlation analysis

In this study, Unidimensionality was secured through Exploratory factor analysis. And then Correlation analysis was performed to find the degree of directionality and density among the variables of the calculated construction through the averaging of the measured variables with Internal Consistency Reliability through Reliability analysis. The correlation between the variables showed that the Common competency was highly correlated with collaboration with 0.703 **, followed by Consulting utilization and Pearson correlation coefficient with 0.618 **. As a result of Correlation analysis, all variables were statistically significant (r≥ .05). Therefore, it is

3.1.5. Hypothesis test result

To test this study hypothesis was carried out a Multi-regression analysis using the SPSS ver.22 statistical package. [Table 4] showed that Durbin-Watson was close to 2.022 and there were no residuals. Besides, since the VIF (variable inflation factor) is less than 10 is determined that there is no Multi-collinearity between the independent variables is suitable for Multi-regression analysis. Looking at the causal relationship between Consultant competency and Consulting utilization, the Common competency t - value is 8.767(p< 0.001), t - value of Management competency is 4.706(p< 0.001), t - value of the Job competency appears to be 4.706(p< 0.001), H1-1, H1-2, H1-3 hypothesis was all accepted. The non-standardization

Hypothesis	Constructs	B	β	t	p-value	VIF	Results
H2-2	Job competency	.141	.141	2.786	.006	1.403	accept
H2-3	Management competency	.150	.159	3.377	.001	1.216	accept

R²=.544, Adjusted R²=.538, F=98.887(p = <.001), Durbin-Watson=2.113, Dependent variable : Collaboration

	(Constant)	1.076		5.762	.000		
H3	Collaboration	.691	.686	14.921	.000		accept

R²=.470, Adjusted R²=.468, F=222.650(p = <.001), Durbin-Watson=1.975, Dependent variable : Consulting utilization

coefficient (B) showed that the consultant's competency to influence the Consulting utilization of the positive(+) effect. The standardized coefficient (β) of the Common competency has the greatest effect to .461(p< .001), followed by the standardized coefficient (β) of the Management competency was found to have an effect of .238(p< .001). Finally, the standardized coefficient (β) of the Job competency was found to affect the .174(p< .01). Looking at the R2 value adjusted as a description of the effect of the Consultant's competency on the Consulting utilization can be said to have an explanatory power of 47%. According to Table 4, the standardized coefficient (β) of the common competency has the greatest effect to .586(p< .001), followed by the standardized coefficient (β) of the Management competency was found to have an effect of .159(p< .01). Hypothesis H2-1, H2-2, H2-3 was also adopted as the Consultant competency in the second stage appears to affect the positive(+) on Collaboration. Besides, hypothesis H3 was adopted as it showed that Collaboration had a positive(+) effect on Consulting utilization. The standardized coefficient (β) of Consulting utilization has an effect of .686(p< 0.001). The following [Table 4] is a summary of the results of Multi-regression analysis with Consultant competency and Consulting utilization.

3.1.6. Mediated effect analysis

To analyze the effect of collaboration between consultants on Consulting utilization, we utilized a Three-step approach of Baron &Kenny[17] to conduct Multi-regression analysis for mediated effect analysis. In the third step it appears that the Collaboration is all partially mediated in the effect relationship of the Consulting utilization, the hypothesis H4-1, H4-2, H4-3 was adopted altogether. Steps 1 and 3 in Table 5 show the change in the standardization coefficient (β) in the causal relationship of Consultant competency to Consulting utilization. Due to the mediating effects of Collaboration, the standardized coefficient (β) Job competency (.464, p< .001□ .226, p< .001), Management competency (.238, p< .001□ . 174 , p< .001), Job competency (.174, p< .001□ .117, p< .001) decreased. The following [Table 5] is a summary of the results of the analysis of the effect relationship between consultant Collaboration on Consulting utilization.

Table 4. Summary of Multi- regression Analysis Results.

Hypothesis	Constructs	B	β	t	p-value	VIF	Results
	(Constant)	.582		2.655	.008		
H1-1	Common competency	.466	.461	8.767	.000	1.316	accept
H1-2	Job competency	.175	.174	3.200	.002	1.403	accept
H1-3	Management competency	.225	.238	4.706	.000	1.216	accept

R²=.477, Adjusted R²=.470, F=75.601(p = <.001), Durbin-Watson=2.022, Dependent variable : Consulting utilization

	(Constant)	.615		3.032	.003		
H2-1	Common competency	.587	.586	11.936	.000	1.316	accept

Table 5. Summary of Effect Relationship Analysis Collaboration Among consultantsEffect on Consulting Utilization

Model	Step1		Step2		Step3		Results
	Dependent variable: Consulting Utilization		Dependent variable: **Collaboration**		Dependent variable: Consulting Utilization		Results
	B	β	B	β	B	β	mediating effect

(Constant)	.582		.615		.333		
Common competency	.466	.464***	.587	.586***	.228	.226***	partial mediating
Job competency	.175	.174**	.141	.141**	.118	.117*	partial mediating
Management competency	.225	.238***	.150	.159**	.165	.174***	partial mediating
Collaboration					.404	.401***	
R^2(Adjusted R^2)	0.477(0.470)		0.544(0.538)		0.550(0.543)		
F-value	75.601***		98.887***		75.765***		
Durbin-Watson	2.022		2.113		2.000		
p-value: *P< .05 **p< .01 ***p< .001							

As shown in [Figure 2] is the result of hypothesis test between Consultant competency and Consulting utilization.
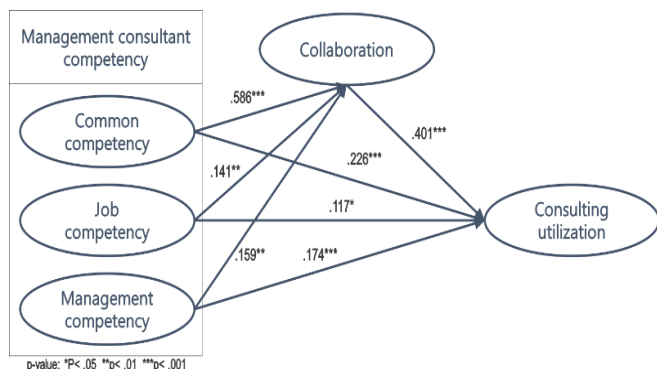

Figure 2. Analysis on the effect relationship of Collaboration among consultants on Consulting utilization

4. Conclusion

Currently, CEOs are struggling to solve the problems caused by the fierce competition in the complex environment for SMEs' continuous growth and survival. The existing general researches were for SMEs' that received consulting services. This study is for consultants who are currently consulting. To improve the performance of consulting projects, specialized consultants should collaborate to diagnose, understand and define the problems of SMEs. Following the priorities of these defined problems, it was empirically analyzed that the Collaboration between consultants in the B2B knowledge services industry to provide viable solutions affects the utilization of consulting performance. To improve the utilization of consulting, it was analyzed that the Common competency of the will, responsibility, credibility, consistent attitude, and self-control to achieve the goal among the consultant competencies had the most influence. This study emphasizes the importance of teamwork by professional consultants in each field to improve consulting project performance in SME consulting. However, in-depth research categorized by industry to suit the characteristics of SMEs is needed, and new variables need to be developed and studied according to new industry trends. It is necessary to conduct research related to industrial classification and social network variables.

5. Acknowledgment

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