Impact of Consultant Characteristics on the Performance of Government-sponsored SME Consulting Support Projects in Semiconductor and Flat Panel Display Industries

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This study aimed to examine the characteristics of consultant attitude, reputation, knowledge and skill, and to examine their impact on the performance of government-supported consulting projects. The subject of the study was a survey of companies with experience of receiving government support consulting among SMEs. The survey items consisted of 38 questions including 10 demographics. A five-point Likert scale was used for measurement. Among the distributed questionnaires, 213 valid questionnaires were surveyed. For the empirical analysis, descriptive statistical analysis, exploratory factor analysis, reliability analysis, correlation analysis and regression analysis were conducted using SPSS version 22. Although previous studies have shown that the characteristics and competences of consultants have a statistically significant impact on consulting performance, in part or in whole, there has been no research focusing on the consultant's reputation as a characteristic. Therefore, this study aimed to study the impact of the government-sponsored SME consulting project performance by classifying the characteristics of consultants into four categories: the attitude, reputation, knowledge, and skill of consultants. The subjects of this study were companies with experience of receiving government support for consulting among SMEs in the semiconductor and flat panel display industries in Korea. The results of the study showed that among the characteristics of consultants, knowledge of general management need for consulting, knowledge of organisational theory and organisational management, mathematical and statistical knowledge required for diagnosis and analysis, expertise and competitiveness in consulting, and know-how had the most influence on the performance of consulting projects. Therefore, participating SMEs were able to confirm that the

consultant's knowledge, skill and reputation are important to improving consultant performance. SMEs in the semiconductor and flat panel display industries in Korea were able to confirm that the consultant's knowledge, skill and reputation were important to improve consulting project performance.

Key words: *Consultant characteristics; consultant attitude, consultant reputation, consultant knowledge; consultant skill; consulting performance.*

Introduction

SMEs make a significant contribution to balanced regional development and economic growth within the national economy. However, SMEs are vulnerable due to global economic uncertainties such as global financial crises, economic recessions, trade wars, trade conflict and so on, and their survival is threatened. In order for these SMEs to be competitive, they should focus on increasing their internal capacities and enhancing their competitiveness, but it is difficult to promote these aspects due to a lack of information, lack of professional resources in the company, time constraints and a lack of funds. Recently, as government support policies for strengthening the competitiveness and capacity of domestic SMEs have been expanded, opportunities for SMEs to receive consulting services have increased. To maximise the performance of consulting projects that support SMEs, governments, consulting firms and consultants should seek ways to increase their competitiveness. It is necessary to improve the competitiveness of SMEs by identifying the characteristics of consultants that affect the performance of consulting projects and applying them to consulting projects through research to find the determinants of consultant capacity development (Shin & You, 2012). In the previous research, various consultant characteristics and competences were classified according to the research purpose, and various research was conducted on how they affected consulting performance. Although it has been established that the defined consultant characteristics and competences have a statistically significant impact on consulting performance, in part or in whole, no case has been specified in which a consultant's reputation is specified as a characteristic. Therefore, this study aimed to study the impact of consultants' attitude, reputation, knowledge and skill on the performance of government-sponsored consulting projects for SMEs in the semiconductor and flat panel display industries in Korea.

Materials and Methods
Concept of Consultant Characteristics

In the previous research, the characteristics of consultants were classified into various forms depending on the purpose and the subjects of the study. In a previous study, the characteristics of consultants were divided into consultant expertise, competence and integrity. In addition, the internal characteristics of the consultant consisted of ethics,

motivation, honesty, objectivity, confidence and loyalty (McLachlin, 1999). Other prior studies have looked at the characteristics of consultants from an ethical perspective, as opposed to a knowledge or ability approach. Ethical behaviour depends on the consultant's ethics, values and consulting context (Spreng & Mackoy, 1996). In this study, four categories were defined as consultant characteristics by adding the composition of consultant reputation to knowledge, skill and attitude, which are components of consultant competencies.

Consultant Competency

Previous studies classified consultant capabilities in various ways, depending on the purpose and subject of research. One study suggested qualifications, basic knowledge, expertise, empirical knowledge, ethics and integrity as conditions for consultants (Cho, 2005). In other studies, consultant capacity was divided into common competency, job competency and management competency. Common competencies include customer orientation, self-control, self-confidence, professional dignity and professional ethics. Job competencies consist of expertise, communication skills, strategic thinking skills, information gathering skills, analysis and alternative suggestion skills. Management competencies include teamwork skills, driving skills, flexibility, relationship-building skills, coaching and empowerment skills, and leadership (Lee et al., 2010). In a study that examined the impact of consultants' competences on abilities and attitudes, and examined the quality of consulting services, it was found that abilities had a higher impact on consulting service quality than attitudes (Jang et al., 2011). The competence of consultants is an important variable in performance creation. The general concept of consultant competence has been defined by a number of variables, including the professionalism of the consultant, the ethics and the specific behavioural characteristics and abilities that the consultant must possess in order to carry out the project. Competency is defined as the sum of knowledge, skill and attitude required to achieve an organisation's mission and strategy, and create a desirable corporate culture (Kim, 2001).

Consultant Reputation

Reputation is defined as the level of perception of how related companies, competitors and workers in the same industry are concerned about the companies involved and conducting their business honestly. Therefore, companies with a good reputation can increase the reliability of customers (Doney & Cannon, 1997). Reputation is also an attribute that is inferred from past behaviour, and it provides a strong link between expectations of future performance and evaluation of the object (Weigelt & Camerer, 1988).
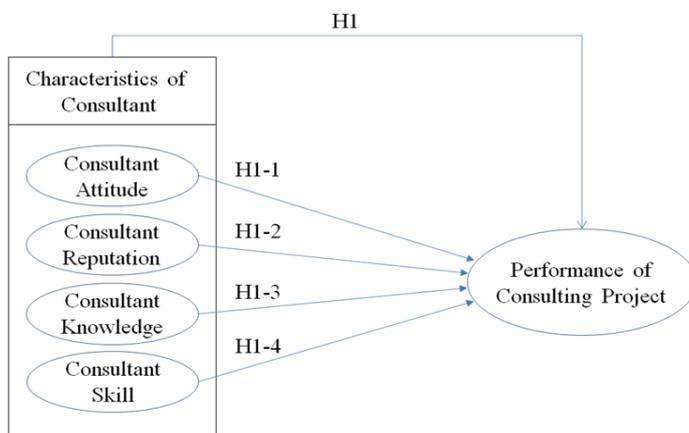
Concept of Consulting Project Performance

It is not an easy task to identify factors that affect consulting project performance. The performance of consulting varies according to many factors, including the capabilities of the input consultant, the internal characteristics of the receiving company, the characteristics of the consulting firm, the type of consulting and the external business environment (Bae, 2013). For SMEs, a previous study suggested that the consulting firm's expertise, work system and methodology, understanding and reliability, and the government's consulting awareness and support system. were the main factors in the performance of management consulting (Kwak, 2008).

Research Model and Hypothesis
Research Model

This study set up a research model (Figure 1) to examine how the characteristics of consultants affect the performance of consulting projects, based on the theoretical background and results of previous research. Based on the research model, the characteristics of the consultant consisted of four independent variables by adding the consultant's reputation to the consultant's attitude, knowledge and skill. In this study, the consultant's reputation was set as an independent variable, which is quite different from other research models of previous studies.

Figure 1. Research model

Research Hypotheses

H1   Consultant characteristics will have a positive impact on consulting project performance.
H1.1   The consultant's attitude will have a positive impact on consulting project performance.
H1.2   The consultant's reputation will have a positive impact on consulting project performance.
H1.3   The consultant's knowledge will have a positive impact on consulting project performance.

H1.4   The consultant's skill will have a positive impact on consulting project performance.
Operational Definition of Variables

The operational definitions of the variables are summarised in Table 1.

Table 1: Operational definition of variables

Evaluation items	Measurement variable	Operational definition	Researcher
Characteristics of consultants	Consultant attitude	Customer orientation to accommodate and meet customer needs, achievement orientation of efforts and commitment to achieve goals, professional dignity and image management, confidence in achieving goals, self-control to maintain a consistent attitude, and professional ethical compliance.	(Kim, 2001)
	Consultant reputation	Good image of consultant, external recognition, fair dealing, level of understanding of work, and degree of guarantee service after project completion.	(Doney & Cannon, 1997; Weigelt & Camerer, 1988)
	Consultant knowledge	Knowledge of general management necessary for carrying out consulting, knowledge of organisation theory and organisation management, mathematical and statistical knowledge for diagnosis and analysis process, expertise and competence necessary for consulting in specialised field, and know-how of experienced knowledge.	(Kim, 2001)
	Consultant skill	The ability to diagnose problems in the enterprise, the ability to analyse problems found, the ability to present alternatives to the results of analysis and diagnosis, the ability to gather information related to consulting, the ability to communicate smoothly, and the ability to predict the future to adapt to change.	(Kim, 2001)
Performance of consulting project	Performance of consulting project	Overall satisfaction with the results of consulting, compliance with the consulting process schedule, the degree of problem resolution suggested by the enterprise, compliance with consulting budgets, consulting value relative to the payment costs of the enterprise, and whether consulting results contribute to the corporate value.	(Kwak, 2008)

Results and Discussion
Demographic Characteristics Analysis

For this study, 213 valid questionnaires were used, and frequency analysis of general characteristics of sample distribution was conducted to identify demographic characteristics. The results of the frequency analysis are summarised in Table 2.

Table 2: Demographic characteristics

Classification	Contents	Frequency (Person)	%	Person
Gender	Male	173	81.2	213
	Female	40	18.8	
Age	Under 30	12	5.6	213
	30s	41	19.2	
	40s	97	45.5	
	50s	53	24.9	
	Over 60	10	4.7	
Education level	High school graduation	22	10.3	213
	College graduation	27	12.7	
	University graduation	87	40.8	
	Graduate or above	77	36.2	
Job position	Team members	60	28.2	213
	Team leader	66	31.0	
	Executives	54	25.4	
	CEO	33	15.5	
Establishment	Under 3 years	15	7.0	213
	3~5 years	54	25.4	
	5~10 years	58	27.2	
	10 and over	86	40.4	
Consulting Field	Management strategy	31	14.6	213
	Marketing	41	19.2	
	Finance and accounting	30	14.1	
	Human resource management	9	4.2	
	Production management	54	25.4	
	Performance management	14	6.6	
	IT or others	34	16.0	

Descriptive Analysis

This study analysed the collected data by surveying the representatives of SMEs in the semiconductor and flat panel display industries who had received government support for consultancy. As a result of the analysis, the absolute values of the standard deviation, skewness and kurtosis of the quantitative scale data were all less than 3, indicating that the measured variables were normally distributed.

Exploratory Factor Analysis and Reliability Analysis

An exploratory factor analysis was conducted to measure the validity of individual measurement variables. Descriptive statistics were performed by Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity. Principal component analysis was used for factor extraction and Varimax was used for factor rotation. In this study, the item selection criteria were set based on an eigenvalue above 1.0 and a factor load above 0.1. Factor analysis was conducted twice, and the KMO measure was 0.895, which was good – above the general standard of 0.7. Bartlett's test of sphericity showed that the factor analysis was appropriate because the p-value was 0.000, which was much smaller than the baseline of 0.05.

The questionnaire reputation no. 5 and consulting performance no. 1, measurement variables that hinder discriminant validity and concentration validity, were removed, and the dimensions were reduced and divided into five factors: consultant attitude, consultant skill, consulting performance, consultant knowledge and consultant reputation. As a result of the reliability analysis on the validity of the measured items through factor analysis, the Cronbach's alpha coefficient of all the measured variables exceeded the general standard of 0.6, indicating high reliability (Cronbach's alpha coefficient of 0.8 or more) without removing the measured items. Table 3 presents a summary of the exploratory factor analysis and the reliability analysis results.

Table 3: Exploratory factor analysis and reliability analysis

Measurement item	Exploratory factor analysis (Intensive validity & Discriminant validity)					Commonality	Reliability analysis
	Consultant Attitude	Consultant Skill	Consulting Performance	Consultant Knowledge	Consultant Reputation		Cronbach's alpha
Attitude 1	**.814**	.273	.196	.142	.148	.818	
Attitude 2	**.795**	.245	.186	-.014	.293	.813	
Attitude 3	**.706**	.261	.121	.240	.046	.640	**.909**
Attitude 4	**.703**	.219	.193	.163	.113	.619	
Attitude 5	**.699**	.352	.130	.299	.124	.734	
Attitude 6	**.679**	.313	.214	.150	.031	.628	
Skill 5	.363	**.778**	.142	.116	.063	.775	
Skill 1	.337	**.770**	.045	.202	-.075	.755	
Skill 3	.247	**.765**	.036	.130	.268	.736	**.900**
Skill 6	.173	**.753**	.287	.202	-.006	.720	
Skill 2	.304	**.669**	.303	.105	.080	.650	
Skill 4	.273	**.583**	.339	.129	.170	.575	
Performance 6	.183	.092	**.822**	.232	.072	.776	
Performance 2	.126	.163	**.814**	.238	.218	.808	
Performance 5	.200	.209	**.798**	.215	.200	.807	**.917**
Performance 4	.164	.158	**.737**	.203	.156	.661	
Performance 3	.254	.297	**.700**	.173	.166	.701	
Knowledge 4	.264	.231	.137	**.795**	.060	.778	
Knowledge 3	.192	.136	.261	**.783**	.153	.761	
Knowledge 1	.117	.070	.284	**.776**	.295	.788	**.911**
Knowledge 2	.082	.123	.274	**.751**	.223	.710	
Knowledge 5	.196	.272	.157	**.728**	.295	.754	
Reputation 3	.087	.017	.001	.267	**.838**	.781	
Reputation 2	.130	.126	.244	.158	**.772**	.712	**.858**
Reputation 4	.067	.105	.160	.269	**.765**	.699	
Reputation 1	.253	.048	.338	.074	**.725**	.711	
Eigenvalues	4.179	3.999	3.975	3.699	3.059		
% of Variance	16.072	15.382	15.290	14.228	11.765		
Cumulative %	16.072	31.453	46.744	60.972	**72.736**		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy							**.895**
Bartlett's Test of Sphericity	Approximate Chi Square	4481.493	Df	325		p-value	**0.000**

Pearson's Correlation Analysis

Through exploratory factor analysis, the contents of the variables were simplified by grouping the scale consisting of 28 items into five factors. Reliability analysis confirmed that those respondents who responded to the survey by factor completed the questionnaire with reliability. In this study, correlation analysis was performed to find the correlation and correlation direction between variables calculated by averaging the question terms among

the measured variables with simplification and reliability. According to the correlation analysis results, consultant attitude had the highest positive correlation with consultant skill (0.698 **), followed by consulting performance and 0.521 **. Consultant reputation had the highest positive correlation with consultant knowledge (0.528 **), followed by consulting performance (0.472 **). Consultant knowledge had the highest positive correlation with consultant performance (0.575 **). Consultant skill had positive correlation with consultant performance (0.531 **). Table 4 presents a summary of the correlation analysis results.

Table 4: Summary of Correlation Analysis Results

Constructs	N	Mean	Standard Deviation	Consultant Attitude	Consultant Reputation	Consultant Knowledge	Consultant Skill	Consulting Performance
Consultant Attitude	213	4.0728	.58885	1	.399**	.498**	.698**	.521**
Consultant Reputation	213	3.9918	.62258	**.399****	1	.528**	.320**	.472**
Consultant Knowledge	213	3.7765	.76381	**.498****	**.528****	1	.484**	.575**
Consultant Skill	213	4.0579	.58527	**.698****	**.320****	**.484****	1	.531**
Consulting Performance	213	3.7502	.72082	**.521****	**.472****	**.575****	**.531****	1

**. The correlation is significant at the .01 level (both sides).
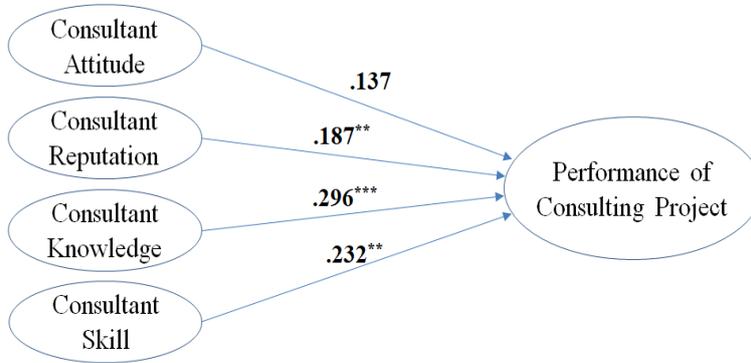
Hypothesis Test Result

To test the hypothesis of this study, the analysis was performed using SPSS version 22. Table 5 summarises the results of the hypothesis test with consulting performance for consultant attitude, consultant reputation, consultant knowledge and consultant skill.

Table 5: Multiple regression analysis

Constructs	B	β	t	p-value	VIF	Result
(Constant)	-.011		-0.035	.972		
Consultant Attitude	**.167**	**.137**	**1.818**	**.071**	**2.148**	**Reject**
Consultant Reputation	**.217**	**.187**	**3.043**	**.003**	**1.436**	**Accept**
Consultant Knowledge	**.280**	**.296**	**4.458**	**.000**	**1.681**	**Accept**
Consultant Skill	**.286**	**.232**	**3.159**	**.002**	**2.052**	**Accept**

R^2=.453, Adjusted R^2=.443, F=43.072(p = <.001), Durbin-Watson=1.950
Dependent Variable : Consulting Performance

The results of the hypothesis test between the characteristics of the consultant and the performance of the consulting project are shown in Figure 2.

p-value: *P<.05, **P<.01, ***P<.001

Figure 2: Test result of characteristics of consultant and performance of consulting project

First, we hypothesised that the characteristics of consultants would have a positive effect on the performance of consulting projects. As a result, the fit of regression analysis was statistically significant at a significance level of .05, with F value of 43.072 and significance probability of .000. The adjusted R^2 value is .443, which means that 44.3 per cent of the total variation is explained by the regression model. In addition, among the constructs of consultant characteristics, consultant knowledge has a statistically significant effect on the consulting project performance with a t value of 4.458, a significant probability of .000 and a standardisation coefficient of β of .296. Hypothesis H1.3 that consultant knowledge will have a positive effect on consulting project performance was therefore accepted. Consultant skills had a statistically significant effect on consulting project performance with a t value of 3.159 and a significant probability of .002, and the standardisation coefficient of β was .232. The H1.4 hypothesis that consultant skills will have a positive effect on consulting project performance was therefore accepted. Consultant reputation has a statistically significant effect on the consulting project performance with a t value of 3.043 and a significant probability of .003, and the standardisation coefficient of β is .187. The H1.2 hypothesis that consultant reputation will have a positive effect on consulting project performance was therefore accepted. The H1.1 hypothesis that consultant attitude had a positive impact on consulting project performance was rejected, with a t value of 1.818 and significant probability of .071 for consulting project performance.

Conclusion

SMEs are vulnerable in today's economic conditions, due to internal and external uncertainties, which in turn threaten the survival of firms. In order to enhance the competitiveness of SMEs, which contribute to balanced regional development and economic growth within a country's economy, the government has expanded its support policies to increase the opportunities for SMEs to receive consulting services. This study is aimed at companies with experience in receiving government support consulting services among SMEs whose main businesses are materials, components and equipment in the semiconductor and flat panel display industries.

The purpose of this study was to examine what characteristics of consultants affect consulting project performance when SMEs consider government-sponsored consulting services to improve their competitiveness. The results showed that, among the characteristics of consultants, knowledge of general management needed for consulting, knowledge of organisational theory and organisational management, mathematical and statistical knowledge required for diagnosis and analysis, expertise and competitiveness in consulting, and know-how had the most influence on the performance of consulting projects. Consultant attitude did not appear to affect consulting project performance.

Therefore, SMEs in the semiconductor and flat panel display industries were able to confirm the importance of the consultant's knowledge, skill and reputation in order to improve consulting project performance in support projects provided by the government. In future research, it will be necessary to prepare basic data to promote effective government-supported consulting by researching SMEs by industry or region, and developing new independent variables or parameters that can affect SME consulting project performance.

Acknowledgement

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