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**OPEN INNOVATION ADOPTION : THE ROLE OF
TECHNOLOGY EXPLORATION, TECHNOLOGY
EXPLOITATION AND TRUST AMONG SMEs AND HELICES
IN TRIPLE HELIX MODEL**



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**DOCTOR OF PHILOSOPHY
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SEPTEMBER 2017**

**OPEN INNOVATION ADOPTION :THE ROLE OF
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EXPLOITATION AND TRUST AMONG SMEs AND HELICES IN
TRIPLE HELIX MODEL**

**By
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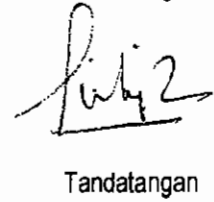
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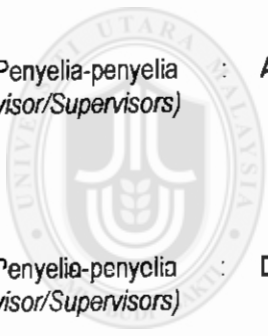


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ABSTRACT

Nowadays, it is almost impossible for businesses to craft competitive edges by pulling all in-house resources and capabilities alone. Innovation now demands a critical uplifting of a new dimension widely known as “open innovation”. Open innovation has been a main research focus and has mainly been targeted to large organizations where it have been proven to increase the organizations performance. As knowledge no longer resides within one particular industry alone, previous scholars have underlined the importance of embracing open innovation to SMEs to transform innovation processes. This study was constructed with the intention to look at the placement of open innovation among SMEs, specifically in the Malaysian triple-helix context. This study is developed to a threhold perspectives. Perspective I investigates the relationships of technology exploration, exploitation towards open innovation adoption and to investigate the mediating influence of trust on technology exploration and exploitation towards open innovation adoption. Perspective II investigates the success factors and challenges for the organizations to achieve the difficulty levels of the constructs in the light of open innovation; while Perspective III profiles the organizations based on the constructs involved. A total of 72 Malaysian SMEs involved in a triple helix project were involved in this study. The data collection was gathered through a likert-scale instrument. Two major analyses were used. The Structural Equation Modeling (SEM) and the Rasch Measurement were used to achieve the targeted perspectives. Result from Perspective I shows that technology exploration is significantly related to open innovation adoption and trust has also been proven to have a significant mediating relationship between technology exploration and open innovation adoption. Conversely, technology exploitation has proven insignificant relationship with open innovation adoption and has therefore resulted to trust having a non-significant mediating effect to the relationship of technology exploitation and open innovation adoption. Perspective II resulted to the division between success factors and challenges items while Perspective III indicated six distinct organizations profiles. Discussions of the study are based on latent characteristics shared by respective group. The findings of this study will assist SMEs; government; research bodies; industry players; and policy makers to understand what motivates SMEs to adopt open innovation in the light of their ability level in dealing with various difficulties in technology exploration, exploitation and trust towards triple helices.

Keywords: open innovation, triple helix, open innovation adoption, technology exploration, technology exploitation and trust.

ABSTRAK

Pada masa kini, adalah mustahil untuk perniagaan menghadapi persaingan dengan hanya menggunakan sumber-sumber dalaman dan keupayaan sahaja. Inovasi kini menuntut satu dimensi baru dikenali sebagai "inovasi terbuka". Inovasi terbuka telah menjadi satu bidang tumpuan utama dan telah dikaji di kebanyakan organisasi-organisasi besar dimana ia membuktikan peningkatan dalam prestasi syarikat. Oleh kerana ilmu tidak lagi terbatas di dalam ruang lingkup satu industri sahaja, para penyelidik telah menggariskan kepentingan mengguna pakai model inovasi terbuka di kalangan PKS bagi tujuan mengubah proses inovasi. Kajian ini dilakukan untuk melihat penerimaan ke atas inovasi terbuka dalam konteks PKS dan secara spesifiknya di dalam konteks 'triple helix' di Malaysia. Kajian ini dibahagikan kepada tiga perspektif yang berbeza. Perspektif I untuk mengkaji hubungan teknologi eksplorasi, teknologi eksploitasi terhadap penggunaan inovasi terbuka dan untuk mengkaji kesan perantara amanah ke atas teknologi eksplorasi, teknologi eksploitasi dan teknologi eksplorasi terhadap penggunaan inovasi terbuka. Perspektif II adalah untuk mengkaji faktor-faktor kejayaan dan cabaran-cabaran organisasi dalam mencapai halangan terhadap konstruk-konstruk yang terlibat, manakala Perspektif III adalah untuk membentuk profil organisasi-organisasi berdasarkan konstruk-konstruk tersebut. Sejumlah 72 PKS Malaysia telah terlibat di dalam projek 'triple helix' telah terlibat di dalam kajian ini. Data dikumpul menggunakan instrumen skala-likert. Dua analisis utama telah digunakan. Pertama, Structural Equation Modeling (SEM) dan Rasch telah diterjemahkan untuk mencapai perspektif-perspektif yang dibentuk. Keputusan Perpespektif I telah menunjukkan bahawa teknologi eksplorasi mempunyai hubungan signifikan dengan penggunaan inovasi terbuka dan amanah juga telah membuktikan hubungan perantara yang signifikan bagi hubungan teknologi eksplorasi dan penggunaan inovasi terbuka. Walaubagaimanapun, teknologi eksploitasi menunjukkan tiada hubungan yang signifikan diantara penggunaan inovasi terbuka dan oleh itu, amanah juga didapati tidak signifikan di dalam menjadi perantara diantara teknologi eksploitasi dan penggunaan inovasi terbuka. Perspektif II membawa kepada pembahagian diantara faktor-faktor kejayaan dan cabaran-cabaran berdasarkan item-item manakala Perspektif III menunjukkan terdapat enam profil organisasi yang berbeza. Perbincangan kajian ini adalah berdasarkan kepada ciri-ciri terpendam yang dikongsi setiap kumpulan. Penemuan kajian ini akan membantu PKS, kerajaan, badan-badan penyelidikan, pemain industri, dan pembuat polisi untuk memahami faktor-faktor yang dapat memotivasikan PKS untuk menggunakan inovasi terbuka berteraskan aras keupayaan mereka dalam menangani pelbagai kepayahan di dalam teknologi eksplorasi, teknologi eksploitasi dan amanah terhadap 'triple helices'.

Kata kunci: inovasi terbuka, *triple helix*, penggunaan inovasi terbuka, eksplorasi teknologi, eksploitasi teknologi dan amanah.

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“In the End, It Won’t Be How You Walked in The Sun - But How You Handled the Storm – That Will Determine Your Success”

~Yasmin Mogahed~

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Figure 6.1 Summary of Discussion of Findings

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LIST OF ABBREVIATIONS

AIM	Malaysian Innovation Agency
CTT	Classical Test Theory
GTP	Government Transformation Programmed
ICT	Information Communication Technology
IDT	Innovation Diffusion Theory
IP	Intellectual Property
IRT	ItemResponse Theory
MLSCF	Malaysian Life Sciences Capital Fund
MNSQ	MeanSquare
MOA	Memorandum of Agreement
MTDC	Malaysian Technology Development Corporation
MTT	Modern Test Theory
NEM	New Economic Model
NKEA	National Key Economic Areas
OIA	Open Innovation Adoption
PLS	Partial Least Square
R&D	Research and Development
SEM	Structural Equation Modeling
SET	Social Exchange Theory
SME	Small Medium Enterprises
OIA	Open Innovation Adoption

CHAPTER 1

INTRODUCTION

1.1 Background of Study

The increasing globalization of business activities, the revolution of research and development (R&D) and the fast-moving technological changes have intensified the competition among business players across and within countries stipulating for continuous technological knowledge enrichment. In today's business world, it is almost impossible for businesses to craft competitive edges by pulling all in-house resources and capabilities (Abulrub & Lee, 2012). The call for a more open collaborative network model is intensifying; demanding for a stronger technology and transparent platforms. As innovation becomes a major strategic ingredient to a country economic stability and balance social welfare (Ghili, Shams, & Tavana, 2011; Rahman & Ramos, 2013) companies' innovation activities demanded critical uplifting which requires a new dimension of strategy widely known as "open innovation".

The term which has been proposed as a new paradigm for the management of innovation (Gassmann, 2006; Huff, Möslein, & Reichwald, 2013) is defined as 'the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and to expand the markets for external use of innovation, respectively.' (West, Vanhaverbeke & Chesbrough, 2006). The concept emphasizes on the sharing of knowledge across organization and industry

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APPENDIX A: QUESTIONNAIRE

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QUESTIONNAIRE

Dear respondent,

I am a PhD student and currently pursuing a doctoral degree at Universiti Utara Malaysia (UUM) under the School of Business Management (SBM), College of Business (COB). I am conducting a doctoral research study on “**Adoption of Open Innovation Among SMEs: The mediating Role of Trust in Triple Helix Projects**”. The purpose of this study to explore the motives of SMEs to engage in open innovation and perceived management challenges in adopting open innovation in Malaysia

We have identified your organization as having the characteristics necessary to participate in this research study. We would very much appreciate your contribution and cooperation to complete the enclosed questionnaires within your valuable time. Your answers are very important and significant to ensure accuracy to the research study and we ensure all information obtained would be treated strictly confidential and use for academic purposes alone.

If you have any questions about the survey, I shall be contacted at 019-5710708. A summary report will be provided to the participants upon request.

Thank you for your assistance and cooperation. I hope this study will provide a significant contribution for the betterment of SMEs in Malaysia.

Yours sincerely,

Siti Noratisah Mohd Nafi
PhD Candidate

SECTION A : DEMOGRAPHY

Instruction: The questionnaire should be completed by the top manager(s) responsible for business operation or research and development. Please fill the required information below or (✓) in the appropriate box.

1. RESPONDENT'S DETAIL

1. Job Title: _____

2. Number of years in your present position:

Less than 5 years		5 – 10 years	
11 – 15 years		> 15 years	

3. Number of years working with the company:

Less than 5 years		5 – 10 years	
11 – 15 years		> 15 years	

2. COMPANY'S PROFILE

1. Years of business operation:

Less than 5 years		5 – 10 years	
11 – 15 years		> 15 years	

2. Number of employees:

Less than 50		50 - 100	
100 - 150		> 150	

3. Average **sales** per year for the last 3 years

Between RM100,000 - RM500,000	
Between RM501,000 - RM1 million	
Between RM1.1 million - RM 5 million	
Between RM5.1 million - RM10 million	
More than RM10 million	

4. Average **profit** per year for the last 3 years

Between RM100,000 - RM500,000	
Between RM501,000 - RM1 million	
Between RM1.1 million - RM 5 million	
Between RM5.1 million - RM10 million	
More than RM10 million	

3. INNOVATION DETAILS

1. Since 2012 to date, based on the definitions provided in the guideline, how do you classify your company's innovation?

(Please refer attachment should you require additional information)

	YES	NO
i. <u>PRODUCT INNOVATIONS</u> Since 2012 to date, did your company introduce any <i>new or significantly improved</i> goods or services?		
ii. <u>PROCESS INNOVATIONS</u> Since 2012 to date, did your company introduce any <i>new or significantly improved production process, distribution method, or support activity</i> for your goods or services?		
iii. <u>ORGANIZATIONAL INNOVATIONS</u> Since 2012 to date, did your company introduce any <i>new or significantly improved an organizational method</i> in the firm's business practices, workplace organization or external relation?		
iv. <u>MARKETING INNOVATIONS</u> Since 2012 to date, did your company introduce any <i>new or significantly improved marketing method</i> involving significant change in product design or packaging, product placement, product promotion or pricing?		
v. <u>RESEARCH AND DEVELOPMENT</u> Since 2012 to date, did your company carry out any <i>research and development (R&D)</i> activities or projects?		

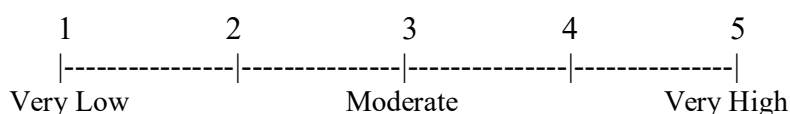
2. Overall, since 2012 to date, how do you rate the following innovation activities in your company based on the scale of 1 to 5 as follows:

1 = very poor; 2 = poor; 3 = average; 4 = good; 5 = excellent

i. Getting new products to the market quickly	1	2	3	4	5
ii. Making efficient use of R&D expenditure	1	2	3	4	5
iii. Coming up with breakthrough/radical technologies	1	2	3	4	5
iv. Bringing breakthrough technologies to the market	1	2	3	4	5

SECTION B : TECHNOLOGY EXPLOITATION

Using a scale of 1 – 5, please circle the appropriate number that best describe the level of **technological exploitation** activities of your organization.



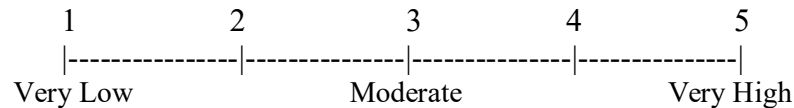
VENTURING							
Item No	Label	Items	Rating				
1	tl_v1	Extent to which your company has entered many new industries	1	2	3	4	5
2	tl_v2	Extent to which your company has expanded your international operations significantly	1	2	3	4	5
3	tl_v3	Extent to which your company has acquired many companies in very different industries	1	2	3	4	5
4	tl_v4	Extent to which your company has created various new lines of products and services	1	2	3	4	5
5	tl_v5	Extent to which your company has established or sponsored various new ventures	1	2	3	4	5
6	tl_v6	Extent to which your company has focused on improving the performance of your current business rather than entering new industries	1	2	3	4	5
7	tl_v7	Extent to which your company cooperate with external partners when launching your own new products/services on the market.	1	2	3	4	5
8	tl_v8	Extent to which your company use external sources of know-how/technology when developing new activities related to the present operation of the company	1	2	3	4	5
9	tl_v9	Extent to which your company are willing to cooperate with the partners from the outside when developing new activities related to the present operation of the company	1	2	3	4	5

OUTWARD INTELLECTUAL PROPERTY (IP) LICENSING							
Item No	Label	Items	Rating				
10	tl_oipl1	Extent to which your company is willing to sell part of your IP (e.g. patent, trademark).	1	2	3	4	5
11	tl_oipl2	Extent to which your company are prepared to introduce your products/services that have been developed through investing into a new joint venture	1	2	3	4	5
12	tl_oipl3	Extent to which your company believe that selling your IP could harm your company as it would give competitors access to our know-how/technologies.	1	2	3	4	5
13	tl_oipl4	Extent to which your company believe that selling your IP rights through licensing is important for the growth of the company.	1	2	3	4	5
14	tl_oipl5	Extent to which your company believe that the government's efforts for protection of selling IP rights benefited your company.	1	2	3	4	5

EMPLOYEE INVOLVEMENT							
Item No	Label	Items	Rating				
15	tl_ei1	Extent to which your employees are regularly rotated between different functions in your company.	1	2	3	4	5
16	tl_ei2	Extent to which there is regular discussion about possibilities for collaboration between units in your company.	1	2	3	4	5
17	tl_ei3	Extent to which your company coordinates information sharing between units through a knowledge network.	1	2	3	4	5
18	tl_ei4	Extent to which your company has cross-functional teams to exchange knowledge between departments	1	2	3	4	5
19	tl_ei5	Extent to which your company has standardized work processes for cooperation between units	1	2	3	4	5
20	tl_ei6	Extent to which your company has often involve multiple organizational units in strategic decision-making	1	2	3	4	5
21	tl_ei7	Extent to which your company uses temporary workgroups for collaboration between units on a regular basis	1	2	3	4	5
22	tl_ei8	To what extent does your company actively encourage communication among unrelated groups of employees in the company.	1	2	3	4	5
23	tl_ei9	Extent to which your employees are sent for internal or external training which is directly aimed at the development and/or introduction of innovation	1	2	3	4	5
24	tl_ei10	To what extent does your company award your employees if they bring external knowhow/technology that improves our products/services.	1	2	3	4	5
25	tl_ei11	When developing new ideas, to what extent does your company often consider the suggestions of employees who are not part of the research and development team.	1	2	3	4	5

SECTION B : TECHNOLOGY EXPLORATION

Using a scale of 1 – 5, please circle the appropriate number that best describe the level of **technological exploration** activities of your organization.



CUSTOMER INVOLVEMENT							
Item No	Label	Items	Rating				
26	tr_ci1	Extent to which your company obtain important product/market information from our customers rather than internal sources (internal search).	1	2	3	4	5
27	tr_ci2	Extent to which your customers are usually involved in the process of new product/service development.	1	2	3	4	5
28	tr_ci3	Extent to which your company engage with your customers in training sessions (as a trainee).	1	2	3	4	5
29	tr_ci4	Extent to which your company engage with your customers in training or instructing others (as trainer).	1	2	3	4	5
30	tr_ci5	Extent to which your company engage with your customers in evaluating your product/services.	1	2	3	4	5
31	tr_ci6	Extent to which your company usually developed new product/service in light of customer wishes and suggestions.	1	2	3	4	5
32	tr_ci7	Extent to which your company cooperate with your customers to acquire new knowhow/technology.	1	2	3	4	5
33	tr_ci8	Extent to which your company engage with your customers in the process of testing new products/services.	1	2	3	4	5

EXTERNAL PARTICIPATION							
Item No	Label	Items	Rating				
34	tr_ep1	Extent to which your company aggressively participate with external parties through technological alliances.	1	2	3	4	5
35	tr_ep2	Extent to which your organization is willing to invest in external collaboration should the desired technology are proven valuable.	1	2	3	4	5
36	tr_ep3	Extent to which your company believe that investing in a new joint venture could result in acquiring new know-how/technology to your company.	1	2	3	4	5
37	tr_ep4	Extent to which your company believe that the use of know-how/technology from the outside can significantly contribute to the innovation of your company.	1	2	3	4	5
38	tr_ep5	Extent to which your company believe that it is beneficial to determine systemic and formal ways of searching for external know-how/technology.	1	2	3	4	5
39	tr_ep6	Extent to which your company believe that the know-how/technology your company have bought can create new opportunities for the company.	1	2	3	4	5

EXTERNAL RESEARCH AND DEVELOPMENT (R&D)							
Item No	Label	Items	Rating				
40	tr_erd1	Extent to which your company acquire new know-how/technology through R&D services provided by knowledge institutions such as universities, faculties, institutes, laboratories, etc.	1	2	3	4	5
41	tr_erd2	Extent to which your company is willing to purchased creative work of others parties to increase the stock of knowledge and its use to devise new and improved goods, services and processes.	1	2	3	4	5
42	tr_erd3	Extent to which your company acquire new know-how/technology through informal ties with researchers from various laboratories.	1	2	3	4	5
43	tr_erd4	Extent to which your company acquire new know-how/technology through mentoring university interns.	1	2	3	4	5

INWARD INTELLECTUAL PROPERTY (IP) LICENSING							
Item No	Label	Items	Rating				
44	tr_iipl1	Extent to which your company usually buy the intellectual property of other companies to ensure successful development of your company's new products/services.	1	2	3	4	5
45	tr_iipl2	Extent to which your company is willing to buy the IP of other companies (e.g. patent, trademark) to support your company's internal development.	1	2	3	4	5
46	tr_iipl3	Extent to which your company believe that buying IP rights through licensing from other companies is important for the growth of the company.	1	2	3	4	5
47	tr_iipl4	Extent to which your company believe that the government's efforts for protection of buying IP rights benefited your company.	1	2	3	4	5

EXTERNAL NETWORKING							
Item No	Label	Items	Rating				
48	tr_en1	To what extent does your company actively engaged as a member of a cluster?	1	2	3	4	5
49	tr_en2	To what extent does your company successfully launched and/or implemented collaborative R&D projects within a consortium of partners?	1	2	3	4	5
50	tr_en3	To what extent does your company use Internet platforms and virtual networks for posting challenges to get ideas for product/ service development?	1	2	3	4	5
51	tr_en4	To what extent does your company has internal structures and processes for managing partnerships and networks?	1	2	3	4	5
52	tr_en5	To what extent does your company regularly exchanges business information with salesperson or marketers?	1	2	3	4	5
	tr_en6	To what extent does your company collaborate with:					
53	tr_en6.1	1. Your customers	1	2	3	4	5

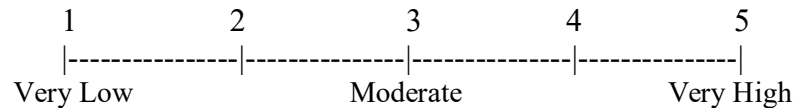
54	tr_en6.2	2. Your suppliers	1	2	3	4	5
55	tr_en6.3	3. Research community (universities, research centers, technology transfer agencies, etc.)	1	2	3	4	5
56	tr_en6.4	4. Your competitors	1	2	3	4	5
57	tr_en6.5	5. Other companies engaged in activities which are different than yours	1	2	3	4	5
58	tr_en6.6	6. Other companies engaged in high technology industries	1	2	3	4	5
59	tr_en6.7	7. Creative individuals	1	2	3	4	5
60	tr_en6.8	8. Government/public authorities	1	2	3	4	5



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SECTION C: OPEN INNOVATION ADOPTION

Using a scale of 1 – 5, please circle the appropriate number that best describe the level of **adoption of open innovation** activities of your organization.



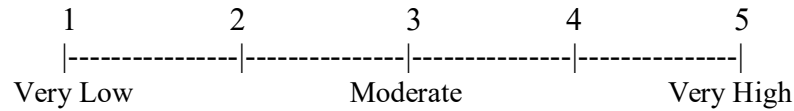
SATISFACTION								
Item No	Label	Items	Rating					
61	oia_s1	The extent to which your collaboration with external partners helps your company to reduce innovation risk.	1	2	3	4	5	
62	oia_s2	The extent to which your collaboration with external partners helps your company to reduce new product/process development cost	1	2	3	4	5	
63	oia_s3	The extent to which your collaboration with external partners helps your company to reduce time to market	1	2	3	4	5	
64	oia_s4	The extent to which your collaboration with external partners helps your company to introduce new or significantly improved process of producing your products and services	1	2	3	4	5	
65	oia_s5	The extent to which your collaboration with external partners helps your company to open new markets	1	2	3	4	5	

INNOVATION PROCESS								
Item No	Label	Items	Rating					
66	oia_ip1	To what extent does your company collaborated with external partners in the following innovation phase:	1	2	3	4	5	
67	oia_ip1.1	1. The knowledge and technology development process?	1	2	3	4	5	
68	oia_ip1.2	2. The experimentation process?	1	2	3	4	5	
69	oia_ip1.3	3. The idea development process?	1	2	3	4	5	
70	oia_ip1.4	4. The commercialization process?	1	2	3	4	5	

IP PROTECTION								
Item No	Label	Items	Rating					
70	oia_ipp1	To what extent does your company use the following IP protection mechanisms when collaborating with external partners in innovation projects?	1	2	3	4	5	
71	oia_ipp1.1	1. Patents	1	2	3	4	5	
72	oia_ipp1.2	2. Designs	1	2	3	4	5	
73	oia_ipp1.3	3. Trademarks	1	2	3	4	5	
74	oia_ipp1.4	4. Copyrights	1	2	3	4	5	
75	oia_ipp1.5	5. Non disclosure agreements and other contractual agreements	1	2	3	4	5	
76	oia_ipp1.6	6. Join development agreements	1	2	3	4	5	

SECTION D: TRUST

Using a scale of 1 – 5, please circle the appropriate number that best describe the level of **trust** of your organization towards your collaborative partners.



COMPETENCE TRUST							
Item No	Label	Items	Rating				
	t_cr1	RESEARCH COMMUNITY (UNIVERSITIES, RESEARCH CENTRES, TECHNOLOGY TRANSFER AGENCIES, ETC)					
77	t_cr1.1	Extent to which your company feels confident about the research body's skills.	1	2	3	4	5
78	t_cr1.2	Extent to which your company feels that the university has the ability to accomplish what it says it will do	1	2	3	4	5
79	t_cr1.3	Extent to which your company believes that the university is known to be successful at the things it tries to do.	1	2	3	4	5
80	t_cr1.4	Extent to which your company believes that the university has adequate knowledge in one or several area related to the working project.	1	2	3	4	5
81	t_cr1.5	Extent to which your company feels that the university has enough resources to help your company for market expansion	1	2	3	4	5
	t_cg1	GOVERNMENT					
82	t_cg1.1	Extent to which your company feels confident about the government and it's agencies capabilities.	1	2	3	4	5
83	t_cg1.2	Extent to which your company feels that the government and it's agencies have the ability to accomplish what it says it will do	1	2	3	4	5
84	t_cg1.3	Extent to which your company believes that the government and it's agencies are known to be successful at the things it tries to do.	1	2	3	4	5
85	t_cg1.4	Extent to which your company believes that the government and it's agencies have adequate knowledge in one or several area related to the working project.	1	2	3	4	5
86	t_cg1.5	Extent to which your company feels that the government and it's agencies have enough resources to help your company for market expansion	1	2	3	4	5
	t_ci1	INDUSTRIES					
87	t_ci1.1	Extent to which your company feels confident about the organization business capabilities.	1	2	3	4	5
88	t_ci1.2	Extent to which your company feels that the organization has the ability to accomplish what it says it will do	1	2	3	4	5
89	t_ci1.3	Extent to which your company believes that the organization are known to be successful at the things it tries to do.	1	2	3	4	5

90	t_ci1.4	Extent to which your company believes that the government and it's agencies have adequate knowledge in one or several area related to the working project.	1	2	3	4	5
91	t_ci1.5	Extent to which your company feels that the government and it's agencies have enough resources to help your company for market expansion	1	2	3	4	5



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CREDIBILITY TRUST							
Item No	Label	Items	Rating				
	t_crul	RESEARCH COMMUNITY (UNIVERSITIES, RESEARCH CENTRES, TECHNOLOGY TRANSFER AGENCIES, ETC)					
92	t_crul.1	Extent to which your company believes that the research body has been frank in dealing with you.	1	2	3	4	5
93	t_crul.2	Extent to which your company is confident that the research body is knowledgeable about the research they conduct.	1	2	3	4	5
94	t_crul.3	Extent to which your company is confident that the research body is honest about any problems occurs during the project duration.	1	2	3	4	5
95	t_crul.4	Extent to which your company can depend on the research body to be fair throughout the research project.	1	2	3	4	5
96	t_crul.5	Extent to which your company is confident that the research body is an honorable partner.	1	2	3	4	5
97	t_crul.6	Extent to which your company is confident that the research body honor their words.	1	2	3	4	5
98	t_crul.7	Extent to which your company is confident that the research body keep their promises.	1	2	3	4	5
99	t_crul.8	Extent to which your company is confident that the research body is telling the truth.	1	2	3	4	5
	t_crgl	GOVERNMENT					
100	t_crgl.1	Extent to which your company believes that the government and it's agencies have been frank in dealing with you.	1	2	3	4	5
101	t_crgl.2	Extent to which your company is confident that the government and it's agencies are knowledgeable about their functions.	1	2	3	4	5
102	t_crgl.3	Extent to which your company is confident that the government and it's agencies are honest about any problems that occurs during the project duration.	1	2	3	4	5
103	t_crgl.4	Extent to which your company can depend on the government and it's agencies to be fair throughout the research project.	1	2	3	4	5
104	t_crgl.5	Extent to which your company is confident that the government and it's agencies are honorable partners.	1	2	3	4	5
105	t_crgl.6	Extent to which your company is confident that the government and it's agencies honor their words.	1	2	3	4	5
106	t_crgl.7	Extent to which your company is confident that the government and it's agencies keep their promises.	1	2	3	4	5
107	t_crgl.8	Extent to which your company is confident that the government and it's agencies are telling the truth.	1	2	3	4	5
	t_cri1	INDUSTRIES					
108	t_cri1.1	Extent to which your company believes that the industrial big players have been frank in dealing with you.	1	2	3	4	5
109	t_cri1.2	Extent to which your company is confident that the industrial big players are knowledgeable about their products and market.	1	2	3	4	5
110	t_cri1.3	Extent to which your company is confident that the industrial big players are honest about any problems that occurs during the partnering project duration.	1	2	3	4	5
111	t_cri1.4	Extent to which your company can depend on the	1	2	3	4	5

		industrial big players are to be fair throughout the research project.					
112	t_cri1.5	Extent to which your company is confident that the industrial big players are honorable partners.	1	2	3	4	5
113	t_cri1.6	Extent to which your company is confident that the industrial big players honor their words.	1	2	3	4	5
114	t_cri1.7	Extent to which your company is confident that the industrial big players keep their promises.	1	2	3	4	5
115	t_cri1.8	Extent to which your company is confident that the industrial big players are telling the truth.	1	2	3	4	5

BENEVOLENCE TRUST							
Item No	Label	Items	Rating				
	t_bu1	RESEARCH COMMUNITY (UNIVERSITIES, RESEARCH CENTRES, TECHNOLOGY TRANSFER AGENCIES, ETC)					
116	t_bu1.1	Extent to which your company feels that the research body cares for you.	1	2	3	4	5
117	t_bu1.2	Extent to which your company feels that the research body has gone out on a limb (risking their reputation) in times of shortages.	1	2	3	4	5
118	t_bu1.3	Extent to which your company feels that the research body has been on your side.	1	2	3	4	5
119	t_bu1.4	Extent to which your company feels that the research body is like a friend.	1	2	3	4	5
120	t_bu1.5	Extent to which your company feels that the research body has your company's best interests in mind.	1	2	3	4	5
121	t_bu1.6	Extent to which your company feels that the research body is motivated to protect your company.	1	2	3	4	5
121	t_bu1.7	Extent to which your company feels that the research body work to protect your company.	1	2	3	4	5
122	t_bu1.8	Extent to which your company feels that the research body watches your company back.					
123	t_bu1.9	Extent to which your company feels that the research body looks out for your company.	1	2	3	4	5
	t_bg1	GOVERNMENT					
124	t_bg1.1	Extent to which your company feels that the government and it's agencies care for you.	1	2	3	4	5
125	t_bg1.2	Extent to which your company feels that the government and it's agencies have gone out on a limb (risking their reputation) in times of shortages.	1	2	3	4	5
126	t_bg1.3	Extent to which your company feels that the government and it's agencies have been on your side.	1	2	3	4	5
127	t_bg1.4	Extent to which your company feels that the government and it's agencies are like friends.	1	2	3	4	5
128	t_bg1.5	Extent to which your company feels that the government and it's agencies have your company's best interests in mind.	1	2	3	4	5
129	t_bg1.6	Extent to which your company feels that the government and it's agencies are motivated to protect your company.	1	2	3	4	5
130	t_bg1.7	Extent to which your company feels that the government and it's agencies work to protect your company.	1	2	3	4	5
131	t_bg1.8	Extent to which your company feels that the research body watches your company back.					

BENEVOLENCE TRUST								
Item No	Label	Items	Rating					
132	t_bg1.9	Extent to which your company feels that the government and it's agencies look out for your company.	1	2	3	4	5	
	t_bi1	INDUSTRIES						
133	t_bi1.1	Extent to which your company feels the industrial big players care for you.	1	2	3	4	5	
134	t_bi1.2	Extent to which your company feels that the industrial big players have gone out on a limb (risking their reputation) in times of shortages.	1	2	3	4	5	
135	t_bi1.3	Extent to which your company feels that the industrial big players have been on your side.	1	2	3	4	5	
136	t_bi1.4	Extent to which your company feels that the industrial big players are like friends.	1	2	3	4	5	
137	t_bi1.5	Extent to which your company feels that the industrial big players have your company's best interests in mind.	1	2	3	4	5	
138	t_bi1.6	Extent to which your company feels that the industrial big players are motivated to protect your company.	1	2	3	4	5	
139	t_bi1.7	Extent to which your company feels that the industrial big players work to protect your company.	1	2	3	4	5	
140	t_bi1.8	Extent to which your company feels that the industrial big players watch your company back.	1	2	3	4	5	
141	t_bi1.8	Extent to which your company feels that the industrial big players look out for your company.	1	2	3	4	5	

~Thank you very much for your assistance and cooperation in completing this survey ~

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