

The impact on Technological Innovation of Partners Collaborative Innovation in Micro-enterprise

Chun-Liang Chen, Yao-Chin Lin, Wei-Hung Chen, and Henry Pandia

Abstract—This study purposes are to examine how to measure properly impact of technological innovation of partner collaborative innovation in micro enterprise, and what its impact in micro enterprise. This study believes that technological innovation generates values that enhance organization to gain business advantages. The research gathers evidences by interviewing 10 micro enterprise organizations from different industries in various regions of Taiwan that participated in a partner collaborative innovation. This study uses two indicators of partner collaboration innovations, namely: (1) the number of entrepreneurs who cooperate with the establishment of technology-innovative micro-enterprises and enterprise development innovation, and (2) the impact of group / partnership cooperation on business growth. The study found that technological innovation of partners' collaboration innovation increase rapidly number of entrepreneurs who have developed innovative cooperation, and majority of cases showed as significant influence in business growth. Finally, the study presents practical implication and future research recommendations.

Index Terms—Technological innovation, partners collaborative innovation, micro-enterprise.

I. INTRODUCTION

In the era of digital economy, strong economic dependence in globalization World force organizations have to face progressively risky and sharp competition atmosphere. One way to survive in a harsh business environment is by implemented technological innovation in products, services and processes [1]. According to Baregheh *et al.* [2], micro enterprises involve in various kind of innovation through products, processes, people and marketing. Innovation is very crucial for organizations.

Information technology becomes a main tool for organizations for gaining a strategic competitive advantage [3]. Many previous study found that IT adoption has lack of significance impact on organizational performance was known as the “productivity paradox” [4] but others study concluded that the development of more advanced IT and the complementary investment of organizational capital (e.g., business process reengineering, change management) will growth organization's productivity [5].

In partner collaborative innovations environment, we believe that technological innovation delivers significant impact for members' growth. Micro enterprise in collaborative innovation should pursue any possibility

technological innovation's role to increase their market share as well as improve processes and services. This study will explorer the impact of technological innovation of partner collaborative innovation in micro enterprise.

The research questions to be explored in this study are: (1) what is the indicator to measure properly impact of technological innovation of partner collaborative innovation in micro enterprise? (2) What is the impact of technological innovation of partner collaborative innovation in micro enterprise?

II. LITERATURE REVIEW

A. Micro Enterprises

The definition of micro-enterprise is different in each country, and in fact there are no generally accepted definitions [6]. This is due to the different levels of economic progress of each country so that it is impossible to formulate universal definition [7]. In general, micro-enterprises are defined by the constraint of the number of employees and annual sales/turnover. In Taiwan, the organization for economic cooperation and development defines a micro-enterprise is organization that has employee less than 5 people [8].

Regardless of its size, SMEs had proved not only as one of main driver force in economic development in many countries [9], but also maintained sustained and long-term economics' growth as well as decrease unemployment rate [10]. Therefore, many governments and have specific policy and budget to support micro enterprises as part of nation's economic strategic.

Micro enterprises have to defeat some problem to grow business and expand market share include: limited access to funding, limited access to high technology tools, limited access to raw material, lack of technological skill, and limited access to utilities infrastructure such as electricity and goods [11]. Micro enterprises suggested developing efficient creativities specially to gain access to source funding and generate training programs [12]. In addition, another study persuades that SMEs that adopt technology to do innovation will achieve intention of having market competitive edge [13].

B. Technological Innovation

Technological innovation is applied new ideas and procedures in practices and/or business by industrialists [14], using technologies. Technological innovation innate from idea to implement a new way to reach new market and produce new products/service opportunity for a technology-based development; in pursue commercial success [15]. Technological innovations become an

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important tool for many organizations not only to grow market share, but also to increase their ability to survive in market's competition. Because of during uncertain circumstances, fight for business sustained is more critical than pursue business growth and profitability [16]. Technological innovation is become critical, role and crucial factor in many field [17], [18].

According to literature study, in order to survive, SMEs have to promote technological innovation in business. Theoretically, social networking, computerized record and online marketing are the main area that found to be significant [16] but still need empirical data to prove the connections. Study among Micro and Small Enterprise in Brazil conclude that implementation of innovations result satisfactory returns and changed management's perceptions and valued the permanence of the innovative process [19]. Moreover, technology innovation produces shorter delivery time, more flexible in operation, and lower cost of production [20]. Technological innovation should be implemented in main business processes to achieve determined benefits.

Since innovations are important for SMEs' business performance around the World, Bayarçelika and study to examine the factors that influence the innovations performance. The study found that technological capability in one of the most factors that impact the innovation performance in SMEs [21]. Technological capability refers to all organization's action, which support organization to examine, choose and use technology for gaining competitive advantage. Technological Innovations of organization constructed on internal technological capability [22].

Past research has pointed out that the ICT capabilities of micro-enterprises will affect their technological innovation. Members' ICT capabilities have been improved with the help of clusters, which has improved their performance. [23] Research indicates that ICT affects several modes of O2O business: 1. Brand model: Non-ICT is mainly relate to non-ICT design capabilities. 2. Cluster innovation model: almost all clusters are innovative, whether it is internal innovation of clusters or cross-group innovation. 3. E-commerce platform model: e-commerce platform and use of existing platforms to sell goods.

C. Partners Collaborative Innovation

Collaborative innovations refer to process joint alliance in order to design and develop new product, services or processes that involve information sharing, develop mutual planning, integrated activities, and solved common problem [24]. Collaborative innovation gives partners benefit such gather new quality of information and communication, facilitate top level management interaction, give chance to harmonize work of designer and engineering that contained representatives of suppliers, customers, service providers and others [24].

Regards to its limited resources, micro enterprises struggle to create innovation, affect that micro enterprises hardly compete with larger organizations. Collaboration innovation should be a solution, because it gives micro enterprises an opportunity to share knowledge, technology, information and others resources. Innovation developments basically consist of multidisciplinary activities that need disperse teams linking knowledge and practice in several areas.

Technological innovations strongly support the collaboration of established teams to innovate in a collaborative network [24]. In collaboration innovation, every partner accesses their resources, and contribute to the complementary resources and create innovation together [25].

In terms of partner collaborative innovation, this study cites [26] that through the transformation of leadership and cluster identification, it is possible to achieve collaborative innovation of micro-enterprise cluster, which is also consistent with the definition of collaborative innovation of this research partner.

III. METHODOLOGY

A. Instrument

1) Case interview analysis

Case studies are more suitable for studying "why" or "how to" and can be used as a basis for future research. Therefore, case studies are more suitable for the application of research problems that are still exploratory (exploring why or how to do it), and there are no previous studies, even taxonomic studies and hypotheses or propositions.

Interviewing is a form of oral narrative for researchers to have a comprehensive understanding of a specific subject or action. Crabtree and Miller divided interviews into "unstructured", "semi-structured" and "structured" interviews [27]. Unstructured interviews were often based on daily life chat or informed/expert interviews. Semi-structured interviews are conducted in an "interview outline", which can be individuals or groups. Interviews do not need to hide research purposes. Structured interviews use research techniques to further clarify cognitive or decision-making activities.

IV. SECONDARY DATA ANALYSIS

Secondary Qualitative Study is a research finding that uses data collected by others. Such as: corporate reports, briefs, policy statements, etc. The induction from secondary data is more helpful in understanding historical facts and trends. From a conceptual and substantive point of view, through the assistance of secondary data, a better understanding of the history and background can be obtained; from a methodological point of view, the use of secondary data analysis has several methodological aspects. The advantages: the opportunity to provide re-replication, the ease of taking time to study the design, the scope of the scalable self-variation allows researchers to gain new inspiration or increase the size of the sample; from an economic point of view it is costly to study the original materials. It is much cheaper to use existing materials than to collect new materials.

The biggest advantage of secondary data analysis is that researchers do not need to spend a lot of money and time to get large sample data. For new researchers who also hope to obtain research results in a short period of time, the use of existing databases is an efficient strategy for collecting data on their own; in addition to the advantages of time, the cost of using databases is much lower than that of self-collecting materials. Expenditure, therefore, is particularly suitable for

researchers with insufficient research funding; another advantage of secondary data analysis is that the database is often published by predecessors, and is suitable for reference as a person who has just been involved in research, especially the research methods include Selection of samples, selection of variables, methods of statistics, etc.

The main secondary sources of this research include internal government plans, websites, case albums, electronic newspapers and magazines, related books and so on. In the process of data collection, in order to complete the integrity of the data, this study has cross-checked the integrity of the data and excluded the errors of the data. At the same time, this study has made extensive efforts to improve the data through extensive collection of information.

A. Subjects

This research area is a micro-enterprise participating in the “Micro and Personal Care Support and Coaching Program” from 2014 to 2017. Based on the results of the counseling, 10 technology-innovative micro-enterprises were selected for case interviews to investigate these 10 technological innovations. The research investigates the status of the company before and after the participation in the "Micro and Personal Care Support and Counseling Program".

A case study is: "A study conducted by a social unit as a whole, and the unit of research may be a person, a family, a group, an institution, a community, a region or a country." It has the characteristics of inductive integration, experience understanding, uniqueness, thick description, inspiration and natural analogy. Its main research purpose is to present the real life situation of the case.

In [28], the case study also needs to collect further evidence through interviews, direct observations, observations and observations. Evidences were collected from September to October, 2006, from 10 technology innovation micro-enterprises participating in the “Micro and Personal Care Support and Coaching Program” for 2014-2017 years were arranged.

TABLE I: LIST OF INTERVIEWEES

NO	AREA	Major commodities
1	North	3C products, music box
2	East	Environmental protection products
3	North	Design products
4	North	Wear technology products
5	Middle	Agricultural information technology products
6	North	Digital paper camera
7	North	Handmade shampoo mold design and manufacture
8	South	E-commerce company: Web and app design
9	North	Female menstrual care products
10	South	Micro molecular water mask

Case interviews were be conducted to collect relevant information. Case interviews on this study were be interviewed. The list of companies shown in Table I.

The case interviews of this study was selected by purposive sampling, which refers to the sampling method based on the subjective experience of the investigators to select the units that are judged the most representative of the population as the sample, which is also called the judgment sampling. The logic and effectiveness of the intentional sampling is to select in-depth research on information-rich

cases. Therefore, after discussion with consultants and experts, the research team selected case interviews based on the experience of technologically innovative micro-enterprises.

Interview outline

1. What is the number of entrepreneurs who have participated in developing and innovation cooperation before and after coaching? Please give an example. (Which companies, their industries, cooperation models, etc.?) What are the key success factors? Why?

2. What is the impact of grouping/partnership before and after coaching on the growth of your company's performance?

B. Data Analysis

The data analysis method analyzes, interprets and objectively explains the problems by collecting relevant market information, survey reports, industrial dynamics and other literature materials according to specific research purposes or topics, so as to summarize and find out the meaning and influence behind them. The sources of literature are all-encompassing, and can be government department reports, business and industry research, document records databases, corporate organization materials, books in libraries, papers and periodicals, newspaper news, and so on. There are four steps in document analysis, namely Reading and Organizing, Description, Classifying and Interpretation.

This research can use data analysis method to find out the basis and context of the evolution of related materials from the history and background of relevant data. Through the process of comparing relevant data and research, it is beneficial to explore the characteristics and optimal operation mode of technologically innovative micro-enterprises. Etc., and put forward effective suggestions for corporate attributes, value creation activities and resource utilization, and with the problems and coaching models analyzed in the process of coaching the enterprise, it will effectively depict and analyze the trends and needs of technological innovation micro and personal careers.

V. FINDING

A. Partner Collaborative Innovation

This study gathers the data by interviewing respondents' enterprise companies, most of which are the responsible persons of the technology-innovative micro-enterprises, or the founders, or those who actually engage in the operation and management of the company such founder, co-founder, chief technology officer, CEO, principal, business manager and general manager from 10 technology innovation micro-enterprises participating in the “Micro and Personal Care Support and Coaching Program”.

Enterprise evaluation is determining the enterprise value of the act or process. Evaluation may involve all part of enterprise or specific business function or business interest. Enterprise evaluation can be expressed as a process to analyze business growth using of scientific methods. In the advance of the knowledge economy era, many preferences can be selected to evaluate enterprise performance such as number of transactions, financing, tax planning, litigation, financial reporting and internal management.

This research collects and references domestic and foreign literatures, and through the content and recommendations of expert consultation and expert research conferences, develops the growth assessment facets and indicators of technology-innovative micro-enterprises to provide selection and evaluation of future counseling program. This study uses

two indicators of partner collaboration innovations, namely: (1) the number of entrepreneurs who cooperate with the establishment of technology-innovative micro-enterprises and enterprise development innovation, and (2) the impact of group / partnership cooperation on business growth. The study result based on these indicators show in Table II.

TABLE II: ANALYSIS OF PARTNER COLLABORATIVE INNOVATION

No	Dimension	Before	After	Comparative
1	Number of entrepreneurs who cooperate with enterprise development and innovation	3	6	increase
	The impact of grouping/partnership on business growth	no effect	Well	Slightly affected
2	Number of entrepreneurs who cooperate with enterprise development and innovation	1	3	increase
	The impact of grouping/partnership on business growth	Low	Well	Slightly affected
3	Number of entrepreneurs who cooperate with enterprise development and innovation	0	3	increase
	The impact of grouping/partnership on business growth	no effect	High	Significant influence
4	Number of entrepreneurs who cooperate with enterprise development and innovation	0	5	increase
	The impact of grouping/partnership on business growth	no effect	High	Significant influence
5	Number of entrepreneurs who cooperate with enterprise development and innovation	0	6	increase
	The impact of grouping/partnership on business growth	no effect	High	Significant influence
6	Number of entrepreneurs who cooperate with enterprise development and innovation	2	6	increase
	The impact of grouping/partnership on business growth	Low	Highest	Significant influence
7	Number of entrepreneurs who cooperate with enterprise development and innovation	0	1	increase
	The impact of grouping/partnership on business growth	no effect	Well	Slightly affected
8	Number of entrepreneurs who cooperate with enterprise development and innovation	0	5	increase
	The impact of grouping/partnership on business growth	no effect	Well	Slightly affected
9	Number of entrepreneurs who cooperate with enterprise development and innovation	0	7	increase
	The impact of grouping/partnership on business growth	no effect	High	Significant influence
10	Number of entrepreneurs who cooperate with enterprise development and innovation	0	2	increase
	The impact of grouping/partnership on business growth	no effect	High	Significant influence

B. Comprehensive Analysis Results

The case study of this study aims to understand the current development trends and profiles of domestic technology-innovative micro-enterprises, as well as to explore the current situation and problems encountered by current and technologically innovative micro-enterprises before and after program, and to explore technologically innovative micro-enterprises through case interviews.

The number of entrepreneurs showed an increasing trend compared with the overall case before and after the program, and the influence of group / partnership on the growth of the company showed a significant influence on the majority of cases before and after the counseling, and the second part showed a slightly influential trend.

Development partners and innovations have a positive impact on technology, innovation, and micro-enterprise in terms of performance, products, marketing, and access. In addition to cooperating with the strategists or members of the group, they also generate more resources and business opportunities through partner collaborative. In addition, the number of entrepreneurs who have developed innovative cooperation through clusters has increased from a total of 5 to 44, thus promoting the development and provision of new products or services. The key factor affecting the collaborative innovation model of science and technology innovation micro-enterprises is nothing more than the cooperation between the enterprise and the industry, mainly the mutually beneficial cooperation between enterprises and enterprises, mutually beneficial and complementary cooperation, and no conflict of interests.

VI. DISCUSSION AND CONCLUSIONS

A. Conclusions

This study examined impact of technological innovation of

partners' collaborative innovation on micro enterprises using two chosen indicators: number of entrepreneurs who participate with enterprise development and innovation, and impact on business growth.

Technological innovation of partner's collaborative innovation develops positive impact of micro enterprises' business growth and number of entrepreneurs participated. In all of 10 cases, number of entrepreneurs who cooperate with enterprise development and innovation increased rapidly. In addition, majority of the cases partnership generate significant influence on business growth.

B. Theoretical and Practical Implications

Previous study admitted technological innovation should give positive impact on business performance [29]-[31]. However, this study shows that only 6 of 10 organization gain significant influence on their business growth, others only got a slightly affected. According to study that conduct by Bayarçelika et. al., there are seven factor that determine innovation for SMEs, and four of the most influence factors are management skill, technological capability, financial factor and firm size [21]. Since "Micro and Personal Care Support and Coaching Program" only investigated technological innovation area, we cannot conclude the reason of slightly affected of technological innovation for some organization. However, micro enterprises are suggested to gain maximum affected, technological innovation should be supported by improving other factors.

Developing a new technology in term technological innovation is very costly especially to a micro enterprise that has limited resources. In collaborative innovation, every partner will be forced to contribute their complementary resources and competencies then combine them to speed up the adopting new technology [21]. However, impact of the technology innovation in an organization is determined by technological capability itself. Therefore, organizations

suggest raising in-house technological capability by creating continuous process of employment training [22].

As companies with growth potential, micro enterprise should be continuous proactively recognized a chance to innovate and extend market capacity. This idea will be caused some problem due to lack of organizations resources. In some level, collaboration innovation can be a solution for resource problem, but for pursuing a greater chance in innovation will need a supporting from outside partners. Faherty and Stephens suggest an expert team to support members for higher level of innovation. The experts could then come together to study the opportunities that arise; indeed, with the agreement of the micro enterprises, the experts could use their knowledge and networks to identify innovative ways in which the opportunities could be developed [32].

C. Recommendations for Future Research

This study develop by interview survey only for subject that involve the “Micro and Personal Care Support and Coaching Program” through scientific and technological innovation-oriented micro enterprises do investigation and analysis interview, due to the restrictions under conditions of sampling, not rendering technology to create a new type of comprehensive micro enterprises aspects of analysis and discussion. In the future study, we can explore the research questions through quantitative questionnaires, and deepen the analysis of the existing evaluation of the coaching companies and collaborative innovation of partners, resulting in more complete research results.

REFERENCES

- [1] G. Sirilli and R. Evangelista, “Technological innovation in services and manufacturing: results from Italian surveys,” *Res. Policy*, vol. 27, no. 1, pp. 881–899, 1998.
- [2] A. Baregheh, J. Rowley, S. Sambrook, and D. Davies, “Innovation in food sector SMEs,” *Journal of Small Business and Enterprise Development*, Vol. 19, no. 2, pp. 300–321, 2012.
- [3] T. W. Ferratt, R. Agarwal, C. V. Brown, and J. E. Moore, “IT human resource management configurations and IT turnover: Theoretical synthesis and empirical analysis,” *Information System Research*, vol. 16, no. 3, pp. 237–255, 2005.
- [4] H. J. Seo, Y.S. Lee, J. J. Hur, and J. K. Kim, “The impact of information and communication technology on skilled labor and organization types,” *Information System Frontier*, vol. 14, no. 2, pp. 445–455, 2012.
- [5] R. F. Zammuto, T. L. Grith, A. Majchrzak, D. J. Dougherty, and S. Faraj, “Information technology and the changing fabric of organization,” *Organization Science*, vol. 18, no. 5, pp. 749–762, 2007.
- [6] L. W. Hooi, “Implementing e-HRM: The readiness of SME manufacturing company in Malaysia,” *Asia Pacific Business Review*, vol. 12, no. 4, 465–485, 2006.
- [7] L. Schee rs, “SMEs’ marketing skills challenges in South Africa,” *African Journal of Business Management*, vol. 5, no. 13, pp. 5048–5056, 2011.
- [8] Small and medium enterprise administration under the ministry of economic affairs, White Paper of Small and Medium Enterprise, 2018.
- [9] M. Liu, M. Li, and T. Zhang, “Empirical research on China’s SMEs technology innovation,” *Engineering Strategy. Systems Engineering Procedia*, vol. 5, pp. 372–378, 2012.
- [10] Indonesia’s Central Bureau of Statistics, *Table of Development of MSMEs in the Period 1997-2013*, April 20, 2018.
- [11] H. D. Seibel. (1996). *Coping with Scarcity: Microenterprise Strategies in Nigeria*. [Online]. Available <https://www.hf.uni-koeln.de/data/eso/File/seibel/EIFo70.pdf>
- [12] W. N. W. Mustapa, A. A. Mamun, and M. D. Ibrahim, “Development initiatives, micro-enterprise performance and sustainability,” *International Journal of Financial Studies*, vol. 6, no. 74, August 2018.
- [13] J. Tidd and J. Bessant, *Managing Innovation: Integrating Technological, Market and Organizational Change*, 4th ed. West Sussex: John Wiley and Sons. Ltd, 2010.
- [14] W. Naude and A. Szirmai, “Technological innovation, entrepreneurship, and development,” Working Paper No. 2013/17, pp. 1–13, 2013.
- [15] R. Garcia and R. Calantone, “A critical look at technological innovation typology and innovativeness terminology: A literature review,” *Journal of Product Innovation Management*, vol. 19, no. 2, pp. 110–132, March 2002.
- [16] N. A. Rahmana, Z. Yaacobb, and R. M. Radzic, “An overview of technological innovation on SME survival: A conceptual paper,” *Procedia - Social and Behavioral Sciences*, vol. 224, pp. 508–515, 2016.
- [17] The Organization for Economic Co-operation and Development, *Guidelines for Collecting and Interpreting Technological Innovation Data; Oslo Manual*, OECD: Paris, France, 2005.
- [18] J. Zheng, G. Wu, and H. Xie, “Impacts of leadership on project-based organizational innovation performance: The mediator of knowledge sharing and moderator of social capital,” *Sustainability*, vol. 9, 2017.
- [19] T. B. Claudino, S. M. Santos, A. C. A. Cabral, and M. N. M. Pessoa, “Fostering and limiting factors of innovation in Micro and Small Enterprise,” *RAI Revista de Administração e Inovação*, vol. 14, pp. 130–139, 2017.
- [20] H. Boer and W. E. During, “Innovation, what innovation? A comparison between product, process, and organizational innovation,” *International Journal Technology Management*, vol. 22, pp. 83–107, 2001.
- [21] E. B. Bayarçelika, “A research on determining innovation factors for SMEs,” *Procedia - Social and Behavioral Sciences*, vol. 150, 202–211, 2014.
- [22] B. M. H. Subrahmanya, “Nature and strategy of product innovations in SMEs: A case study-based comparative perspective of Japan and India,” *Innovation: Management, policy & practice*, vol. 11, pp. 104–113, 2009.
- [23] C. L. Chen, Y. C. Lin, W. H. Chen, and X. S. Heng, “Determinants of cluster leadership and identification on cluster innovation model,” *Leadership & Organization Development Journal*, vol. 39, no. 4, pp. 538–553, 2018.
- [24] V. Serrano and T. Fischer, “Collaborative innovation in ubiquitous systems,” *Journal of Intelligent Manufacturing*, vol. 18, pp. 599–615, 2007.
- [25] J. P. Davis and K. M. Eisenhardt, “Rotating leadership and collaborative innovation: Recombination processes in symbiotic relationships,” *Administrative Science Quarterly*, vol. 56, no. 2, pp. 159–201, 2011.
- [26] Y. C. Lin, W. H. Chen, and X. S. Heng, “The impact of technological capabilities on online-to-offline commerce: A case of micro-enterprises’ cluster performance,” *International Journal of e-Education, e-Business, e-Management and e-Learning*, vol. 8, issue 1, pp. 1–9, 2018.
- [27] B. F. Crabtree and W. L. Miller, *A Template Approach to Text Analysis: Developing and Using Codebooks*, Newbury Park, CA: Sage Publications, pp. 93–109, 1992.
- [28] R. K. Yin, *Case Study Research Design and Methods*, CA: Sage Publications, 1994.
- [29] D. G. Kim and S. O. Choi, “Impact of construction IT technology convergence innovation on business performance,” *Sustainability*, vol. 10, p. 3972, October 2018.
- [30] Y. Meigang, H. Di, Z. Xianrong, and X. Xiaobo, “Impact of payment technology innovations on the traditional financial industry: A focus on China,” *Technological Forecasting & Social Change*, February 2018.
- [31] M. Lecerf and N. Omrani, “SME internationalization: The impact of information technology and innovation,” *Journal of the Knowledge Economy*, January 3, 2019.
- [32] U. Faherty and S. Stephens, “Innovation in micro enterprises: reality or fiction?” *Journal of Small Business and Enterprise Development*, vol. 23, no. 2, pp. 349–362, 2016.



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