The Impact of External Environment, Technology and Innovation Capacities, and Leadership Development on Organizational Performance in Food Industry. A Qualitative Study of Food Enterprises in Ho Chi Minh City, Vietnam

Mai Q. Nguyen
School of Business
International University
Vietnam.

Phuong V. Nguyen
School of Business
International University
Vietnam.

Abstract

This paper investigates the current issues for conducting technology transfer and innovation processes at food processing enterprises in Ho Chi Minh city, Vietnam. By conducting an extensive qualitative study comprised of 8 in-depth interviews with Executive managers and R&D managers, we identify seven main themes that emerged from the data concerning the specific contents for food processing enterprises. Correspondents described how the relative issues of externals, capacities, leadership in their organizations contribute to technology transfer and innovation effectiveness, and in turn lead to sustainable performance. In addition, respondents also noted challenges associated with implementing technology transfer projects. Based on prior studies and these challenges, we propose a conceptual model of innovation process and technology transfer in food processing enterprises as influenced three main factors - external environment, technology transfer and innovation capacities, and leadership. Changes in any of the three factors can potentially influence both technology transfer and innovation effectiveness and overall organizational performance.

Keywords: technology transfer, innovation, food industry, and performance.

1. Introduction

Changes in technological and highly competitive market conditions strongly influence the innovation needs of enterprises. Enterprises have to seek for new product and process development to meet new customer requirements through technology transfer or inside research and development (R&D). In general, inside R&D is high cost, more risk and time consume, thus technology transfer from outside enables firms to enhance technology absorption, knowledge generation, diffusion and application at less cost, lower risk and higher efficiency (Whangthomkum et al., 2003). In order to implement technology transfer successfully, firms require "absorptive capacity" which is the ability to recognize the value of external technology, knowledge, and information; to identify and acquire the new technology; and to apply or exploit the new technology (Cohen and Levinthal, 1990 and Whangthomkum et al., 2003). In terms of external factors, a rapidly changing technological environment forces firms toward co-operation in that they are not able to innovate successfully through using its own capacity alone. Therefore, the cooperation with external organizations is core to increase the motivation of firms to get involved in a large number of interactions to explore new technologies; to develop new product; reduce time to market; and to lower cost and risks.

Moreover, Knowledge transfer among organizations provides opportunities for mutual benefits and external co-operations that stimulate the creation of new knowledge and simultaneously contribute to organizations' ability to innovate (Tsai, 2001). Therefore, the more intensely the company interacts with externals, by participating in co-operation agreements, the more it will learn about new opportunities (Enkel et al., 2009 and Martinez, 2013). Two additional aspects of external factors are the government role and university-industry collaboration. First, government incentives have a significant role in promoting the incorporation with externals to increase innovation activities. For example, governments can offer R&D subsidies and tax credits to lower innovators' cost.

Another example, governments also can increase innovative activities by granting firms who qualify temporary monopolies on their innovation-related knowledge via intellectual property law (De Jong and Hippel, 2009). Second, university-industry collaborations also contribute to increase in business innovation and technology transfer processes. Todtling et al. (2009) find that firms introducing more advanced innovations are relying to a higher extent on R&D and patents, and that they are cooperating more often with universities and research organizations.

In terms of leadership role, the challenges of leadership development are to create an environment that supports innovative activities and technology transfer. Generally, most successful innovation or technology transfer projects depend on the leadership abilities. The key person is not afraid to be challenged, can change his/her mind in view of persuadable debates, is not afraid to delegate, involve other in the decision position, and maintain a leadership position. Moreover, the leadership of the team should reward passionate behavior by talking about the dream of creating the brighter future, while avoiding governing by pressure or fear. Pressure and fear destroy creativity, shatter loyalty, and discourage people who want to "do what is right". Leaders with these attitudes are able to promote innovative drive of the company and guarantee success (Martinez, 2013).
The prior studies have shed light on some important effects of externals, absorptive capacity, and leadership on the efficient organization of innovation and technology transfer processes in cross sectors and countries. However, there has been relatively little study on all interactions of these effects within food industry, especially in the food industry in Vietnam.

This paper investigates the current issues for conducting technology transfer and innovation processes at food enterprises in Ho Chi Minh city, Vietnam. By using qualitative research methodology, we identified seven main themes that emerged from the data concerning specific contents for food enterprises, those themes concern challenges of companies in technology transfer and innovation such as selection of original imported technology, types of technology transfer, R&D strategy, and impacts of Leadership and external environment on the effectiveness of technological innovation. Each of the themes was discussed across correspondents, supporting the validity of these findings. Based on prior studies and our findings, we propose a conceptual model of innovation process and technology transfer in food enterprises in Ho Chi Minh city, Vietnam as influenced by three main factors: (1) environment; (2) technology transfer and innovation capacities; and (3) leadership. Changes in any of the three factors can potentially impact both technology transfer and innovation effectiveness, and then overall organizational performance. Unlike many previous studies on the relationship between each of independent factors and overall organizational performance, we propose a more complex model to investigate influences of all interactions among factors as well as each factor on overall organizational performance.

In order to achieve sustainable performance, a food enterprise need to gain the ability to generate a strong linkage among university-industry-government, improve organizational capacities, and design better leadership programs. In order to achieve our objective, we structure the remainder of the sections as follows. The conceptual background is presented in Section 2, whereas the third section provides the study designs, results and discussion. The last part of the study is reserved for the conclusions, contributions and implications and pointing out the limitations.

2. Conceptual Background

2.1. The external environment

The external environment is playing an essential role in developing innovation and stimulating technology transfers. To generate a successful innovation project or implement a successful technology transfer project, firms have to seek a wide variety of expertise and knowledge provided by many complementary sources. Firms often have to collaborate with external organizations to expand their range of expertise and seek financial assistances for developing innovation. As Enkel et al., (2009) state that cooperation with external organizations is core to increase innovativeness and reduce time to market.

Additionally, governments also have a significant role in stimulating a firm to collaborate with externals to increase innovation activities. For example, governments can offer R&D subsidies and tax credits to lower innovators' cost. Another method, governments also can enhance the development of innovation by granting firms who qualify temporary monopolies on their innovation-related knowledge via intellectual property law (De Jong and Hippel, 2009).

Furthermore, the collaboration between universities and firms also contributes to increase in business innovation and technology transfer processes (Geuna and Muscio, 2009). Todtling et al. (2009) show that firms introducing more advanced innovations are relying to a higher extent on R&D and patents, and that they are cooperating more often with universities and research organizations. Moreover, they also find that the employment of researchers is considered as a key factor enhancing knowledge interactions of firms with universities.

From another perspective of the external environment, demand-side effect on innovation has explored in recent years. First, enterprises and policymakers concern the crucial role of demand for innovation activity. Muscio et al., (2010) summarize from previous studies that new technological paradigms arise from advances in science and developments in technological knowledge. Demand influences the alternatives among competing paradigms relating to a core force of alternatives that gives direction to the evolutionary process. Moreover, demand also drives inventive activities and in turn leads to increased innovation process because the number of inventions is lagged reflections of changes in the level demand.

Second, to survive in a globally competitive market, firms need to take advantage of the new technological opportunities for efficiently serving their target market and quickly responding to the needs of customers. This forces firms to become more engaged in innovative activities. In the end, the ability to deal with a sophisticated demand results not only in a direction towards more differentiated products but also in a competitive edge in the global market. Porter (1998) points out the role of demanding customers for driving forward new solutions and products. Under an increasing overall competiveness, enterprises are pursuing more innovative activities. Knowledge management is considered as a key element in improving organizational competiveness (Hedlund, 1994). From another study, Tidd et al. (1997) point out that the enterprises, which used innovation to differentiate their products were on average twice as profitable as other enterprises. Although considerable studies concentrated on across organizations and industries with respect to the relationship between the external environment and organizational performance, there is little study on the food industry alone.

2.2. The organizational innovation capacities

A firm has to face with the most challenge of the best use of available resources to ensure that the full range of assets including employees, technology, capital, information, intangible asset and market position can be accessed to carry out innovation activities and technology transfer. Therefore, the available resource is considered as one of a measurement dimension of organizational capacities. Furthermore, previous studies have identified other components that are completely interactive with one another to construct absorptive capacity. As Cohen et al, (1990) define “the absorptive capacity that is the ability of a firm to recognize the value of new external information, assimilate it and apply it to commercial ends new technology is critical to its innovative capacities.” The concept of absorptive capacity in technology transfer has been extensively explored in both theoretical and empirical studies. Kim (1998) states effective organizational learning depends on high absorptive capacity including two major elements, which are prior knowledge base and intensity of effort. Moreover, to pursue a strategy of independence in developing absorptive capacity, a firm has to establish a process of advancing from one phase to the next through the preparation for and acquisition, assimilation and improvement of imported technologies.

The technology transfer process is considered as a knowledge accumulation process. Davenport and Prusak (2000) suggest that the knowledge transfer consists of transmission and absorption, culminating in a behavioral change by the recipient. Whangthomkum et al, (2006) recognize the lack of absorptive capacity in the recipient as a friction. They focus on investigating relationships between dimensions of technology transfer performance and components of absorptive capacity, which involve ability to recognize, ability to acquire, ability to assimilate and ability to apply. Another empirical study explores a cross-industry data of a representative sample of 2,416 Small Medium Enterprises (SMEs) in the Netherlands, De Jong and von Hippel (2008) show that 21% of all SMEs develop and/or significantly modify existing equipment or software to satisfy their own process-related needs.

The previous studies also paid attention to investigate the objectives of innovation activities. For instance, Gault and von Hippel (2009) explored a sample of 1,219 Canadian manufacturing plants that had all developed new process equipment innovations for their own use, and/or had modified process equipment to better suit their needs. As a result, 25% of these firms knew that more innovations had been adopted by process equipment producers.

Although considerable variability exists across organizations and industries with respect to the relationship between absorptive capacity and organizational performance, there is little research on the food industry.

2.3. The leadership role

Academic research has explored the leadership role in development of innovation and technology. Shamir et al. (1993), when leaders serve as role models and articulate a compelling vision to energize followers to perform beyond expectations, the followers should be excited and energized to work hard toward achieving higher goals and objectives. In the innovation process, they are likely to focus on finding solutions at hand instead of asking for external assistances with an expensive cost. According the intrinsic motivation perspective, this increased excitement, energy, and concentration are likely to be associated with high levels of creativity. Specifically, by using a sample of 290 employees and their supervisors, Shin and Zhou (2003) show the positive relationship between transformational leadership and follower creativity. Additionally, in an extensive qualitative study, McAlearney (2006) propose a conceptual model of commitment to leadership development in healthcare organizations influenced by three components including organizational strategy, organizational structure and organizational culture.

The growing urgency for stronger corporate leadership is illustrated in a variety of global corporate surveys. Boston Consulting Group's (BCG) innovation survey in 2007 found that 57% of the respondents replied that their firms were above average or excellent at creating a culture that supports innovation. The implication is that an organization's innovation efforts will "…succeed or fail depending on the quality of its leadership." Risk-taking is a "critical" aspect of leadership because of its inherent role in the innovation process:

A strong committed leader will create an environment that supports innovation and drives it forward; a less determined leader will likely watch the company flounder. The caliber of leadership and the commitment to innovation seen at the helm of the most innovative companies demonstrate the truth of this axiom

Based on an important role of innovation in driving growth, performance and valuation, the McKinsey Quarterly conducted a survey of executives on leadership and innovation in September 2007. The result showed that more than 70 percent of respondents agree that innovation will be at least one of the top three drivers of growth for their companies in the next three years. Other respondents see innovation as the most important way for companies to accelerate the pace of change in today's global business environment. However, most respondents admit that they are generally disappointed in their ability to stimulate innovation. In general, many previous studies concentrated on the leadership role in organizational development, but organizational leadership in development of innovation process and technology transfer is far from established, especially in food enterprises.

The food industry in general is typically considered as a low-tech industry and low R&D investment levels and mature, pervasive technologies, where static capabilities dominate over dynamic capacities (Muscio et al., 2010). Other perspectives of food industry summarized from several prior studies in a book edited by Martinez (2013, page 41) include: 1) The food innovation processes are initially developed in smaller companies that may lack the know-how needed to commercialize them. 2) Patented food technology is highly concentrated in a few firms, most of which are multinational companies. 3) Innovation in food sector is usually incremental rather than radical, mostly comprising improvements or variations of existing products. 4) Therefore, the food industry brings to the marketplace the benefits of research conducted further upstream. In general, despite the importance of previous studies on innovation in food firms, there is still little research on the links among technology transfer and innovation capacities, environment and leadership associated with overall firm performance in food sectors.

3. Methods

3.1. Study design

We attempted to find many contact points to arrange an appointment with potential research participants. Each participant was sent a letter describing the purpose and scope of this research in details.

We initially contacted with 40 participants by emails or phone, but many of them did not reply. Of the 40 corresponds, eight correspondents agreed to have an interview. Informed consent was discussed in detail at the beginning of the interview. We conducted the interviews in April 2012 and August 2012.

Each participant also asked us to assure that we would not use any sensitive stories during the conversation to against them. Therefore, all respondents are assured that their voluntary participation will remain anonymous. We finally completed 8 in-depth interviews with one director from a food joint stock company, one R&D manager from the export goods processing joint stock company, one deputy general manager from state own joint stock food processing company; one general director and his assistant from a medical product import-export joint stock company, one deputy director and one project manager from an institute of technology and chemistry, one associate professor from a faculty of chemical engineering at a technology university. Research participants were in Ho Chi Minh city, Vietnam, with ages ranging from 35 to 60.

Each interview took between 60 and 90 minutes and was recorded with the permission of the participants being interviewed. After the interviews, the recordings were transcribed into computer files. Interviewees were asked about their own evaluation of technology transfers and innovation activities in Vietnam in general and their companies in particular. To facilitate the interview conversation, each participant received a list of behavioral issues to technology transfers and innovation activities in advance, which included themes such as general information of his/her company, demography, technology transfers and innovation activities, capacities, R&D environment and effectiveness and others.

Data collection, analysis, and writing*:* a main concern for rigor in qualitative study is evidentiary and adequacy. It means that we need a sufficient time in the field and extensiveness of the body of evidence through conducting and using data (Creswell, 2007). We used both unstructured and standard, semi-structured interview guides including open-ended questions to both frame the interviews and permit direct investigation of additional information in the expert interviews and case studies.

We rigorously read all of the interview transcripts and coded them in the style of a grounded theory approach to data analysis. This qualitative design enables us to meet the objectives of the research that permit investigation of the different problems occurring innovation and technology transfers in food industry. We choose the qualitative approach because it enables us to explore the natural research that experts' and companies' perspectives about innovation and technology transfers are multidimensional, making them difficult to investigate quantitatively (McAlearney, 2006). Furthermore, using qualitative approach enables us to explore both experiences and predictions of experts and organizational representatives, and provide much more information about the multi facets of innovation and technology transfer challenges in food industries. During initial or "open coding" process, we follow Strauss & Corbin (1998) to mine the data for all possible analytic ideas and theoretical avenues that have the potential to develop our conceptual model. Besides, we also use other methodology analyses such as word-by-word coding and line-by-line coding (Charmaz, 2006).

3.2. Results

After arranging five meetings with the research team and experts to discuss more details, we finally emerged the seven key themes concerning the specific challenges for food enterprises. Each of the themes was discussed across respondents, supporting the reliability of these findings. A summary of these challenges is presented in Table 1. We discuss each theme in more details:

Challenges of innovation and technology transfer implementation activities

Theme 1: Technology transfer capability - challenges associated with choice of original imported technology.
Almost respondents agreed that the dominant method of transferring technology in their companies is the outright purchase equipment. These purchases occur continuously: buyers make initial capital investment and then pay for maintenance services and upgrade of the purchased technology. They also recognized that equipment imported from developed countries is much more reliable than equipment imported from developing countries. Specifically, technology transfer as importing equipment from China was considered only for process that would not contribute much to the quality of product (such as packaging) due to the low cost advantage. Technology transfer occurs more exclusively when companies import equipment from Europe than Japan and Korea.

> Our equipment is always modernized. Most of them are imported from well-known manufacturer in Europe to ensure that our products are always delicious and able to meet all strictly requirements on food of other countries. Moreover, all of materials for producing are put under control of hygienic and safety standards.

> For example, layer cakes are produced on brand new synchronized production line from Italy, with excellent raw materials from Europe and under strict sanitary and food safety control procedures. Our products can now assure shelf life of this product up to 1 year instead of 1 week of normal cakes. With chocolate, we uses complete production line from Britain, raw materials and technology from Europe that it can produce products with the same quality as that of chocolates imported from Europe.

Although almost leaders are able to evaluate which technology is the most appropriate for their companies, the budget constraint also strongly influence on a final decision of capital investment. As one individual noted, "If a Japanese assembly line costs 10 times higher than a Chinese one, we will choose the Chinese one." Another respondent reported, "We have often to choose a Chinese technology because it is cheap."

Theme 2: Type of technology transfers - challenges associated with whether a company invests either a complete assembly line or individual equipment

A second theme that emerged involved the reported challenge of type of technology transfers. All informants were working at domestic firms. Therefore, there is no type of technology transfer from multinational corporations in our cases. The choice among techniques was based on the adaptability of these techniques and the sufficient budget. In reality, most domestic companies receive technology transfer directly from foreign countries. Furthermore, the level of technology transfer relies on a particular transaction. For instance, one informant noted, "There is no technology transfer as importing individual machinery from Taiwan and China." Meanwhile technology transfer occurs frequently as purchasing a whole assembly from Western countries, but firms have to deal with excess supply or exceeded their needs and expectations. As one respondent noticed, "When buying a whole assembly line from Western countries, the full capacity of factory usually exceeds the market demand. It is considered as a good sales performance when achieving at 60-70 percent capacity." Therefore, firms attempted to find some solutions to gain innovation transfer efficiently. For example, as another respondent reported, "we only buy some main parts of the whole assembly line because we can cooperate with local suppliers to produce auxiliary equipment with lower cost and meet our in-house needs."

Specifically, the current food processing industry is very behind. As one respondent noted that, "technology to process meat at our factory is 25 years behind other factories in other developed countries." This characterization of the industry was consistent and reflected the troubles and delays of food processing enterprises to invest in technology innovation.

Theme 3: R&D activities - challenges of research oriented directions between basic research and applied research.

Another theme emerged around the trade-off between basic research and applied research. All respondents confirmed that almost domestic firms have not invested in basic research. Because the food processing industry in general is more likely considered as a low-industry with a dominance of "incremental rather than radical and a relatively low innovation rate", companies are only concentrating on developing and improving the available technologies. In other words, most Vietnamese companies only have sufficient capital to do applied research. They study how to improve or modify current technologies to meet customer demand at lower cost. Even though, the government has introduced some types of financial assistance programs to promote basic research efforts in enterprises, almost respondents complained that the disbursement procedures make enterprises tired and frustrated. Therefore, they do not want to apply for a grant from the government. As one informant reported, "generally speaking, almost of food companies did not have enough funds for basic research." Another respondent reported, "we are able to adopt new technologies, but not able to do basic research because we have not enough capital and human resources to invest in a research laboratory." In addition, to produce auxiliary equipment at a manufacturer, it often requires having similar equipment in the market. It means that they could imitate or develop and modify existing process equipment to serve their in-house needs.

Theme 4: Resource Constraints - challenges associated with financial and human constraints.

A fourth theme emerged around the issue of limited resources. Most of respondents agree that firms have a clear understanding of the areas to be improved but do not have resources to solve the issues. As one respondent noted, "We are able to evaluate which technology can solve our own problems, but the available budget is always a huge barrier."

Although local staffs can learn by doing very fast as implementing a new technology after participating into training courses, firms concern about training costs. Moreover, the "brain drain" phenomenon occurs frequently in food enterprises. Specifically, technicians and researchers who are the owners of knowledge and skills and the carriers of core competence and the source of growth corporate value become a target of many headhunting companies. Hence, human resource departments have to spend large amounts of time, effort and money attempting to deal with how to keep their highly skilled staffs from leaving. Specifically, firms are also facing with a lack of management skills to run an innovation transfer efficiently from foreign firms. As one informant stated, "Most of Vietnamese enterprises have not adopted the knowledge management and known how to organize and coordinate a developed new process equipment innovation transfer."

Theme 5: Leadership - challenges of pursuing sustainable development.

A fifth theme that emerged involved the reported challenges of the objective sustainable development. Leaders have often been trapped in a tradeoff between a short-term profit and a long-term sustainable development. On the other hand, leaders often pay-off between lower cost and higher quality. As one respondent noted, "One small bottle of Japanese soybean sauce without preservatives costs a more than 10 US$. However, it will be costly if we invest the same technology but are not able sell at such a high price."

The leadership role in the food industry is not different from other industries. As McAlearney (2006) summarizes that great leadership must be transformational and leaders must be able to empower and motivate their labors, define and articulate a vision, build and foster trust and relationships, adhere to accepted values and standards, inspire their labors to accept change meet organizational objectives on multiple levels, and build a strong brand name for their business. However, in a sense of technology transfer and innovation, we consider whether leadership development has a strong impact on organizational innovation capability or not, especially in food enterprises. As one respondent stated, "In many situations, a leader wants to invest a specific innovation project because of his/her subjective desire, instead of based on real market demand."

Theme 6: Environment – it is very hard to access to financial supports from the government as well as to establish the linkages between companies and research institutes.

A sixth theme emerged around the issue of financial aids from the government and the capabilities of cooperative innovation projects between companies and research institutes. First, although the government introduced some financial aids to encourage enterprises to invest in R&D projects, indeed enterprises could not access such a financial assistance. As one respondent reported, "We have not been able to access financial assistance from the government for conducting processes of innovation because of the lack of a structured system as well as bureaucracy procedures." Second, the knowledge interactions of business sector and research institutes are really loose. As one respondent reported, "We have no business connections with local research institutes." In addition, the laboratories at research institutes were invested toward the same models. In other words, almost equipments at laboratories of research institutes are similar functions and small sizes. Therefore, the current laboratories are a huge barrier to interact with local firms to engage in the development of novel products with requiring advanced innovations. Finally, the propensity to engage in cooperation between food processing firms and research institutes seems to be infeasible. As one respondent noticed, "The engineering supporting industries and machinery and equipment industries in Vietnam are far less developed than other countries, even still lags far behind China." Therefore, enterprises frequently seek foreign partners to facilitate the knowledge transfers and innovation.

Theme 7: Performance - challenges associated market-based innovations and technology-based innovations.

A seventh theme emerged around the challenges. Almost informants agree that they only identify the demand for a new technology after they do a market research to anticipate customers' changing needs and expectation. In other words, as firms actively collect information about customers and competitors, therefore they would have extensive the database of customers and competitors.

Utilizing the database enables firms to stimulate incremental innovations and the adoption of new technologies to meet the customers' requirements better and earlier than rival firms. As one respondent noticed, "We always have new products in the laboratory and they are ready to launch in the market at a suitable time, because we have to compete with many foreign and domestic products."

Conceptual model of innovation and technology transfer

Considering these themes and data, we propose a conceptual model of innovation process and technology transfer in food enterprises in Ho Chi Minh city, Vietnam as influenced by three factors: (1) environment; (2) technology transfer and innovation capacities; and (3) leadership. Changes in any of the three factors can potentially influence both technology transfer and innovation effectiveness and overall organizational performance.

In the following sections, we discuss three aspects of the model in more details: (A) the external business environment promotes cooperation among university-industry-government; (B) the organizational capacities; and (C) the leadership development.

A. The External Environment

Proposition A: the stronger linkage among university-industry-government fosters the use of technology transfer and knowledge management, as well as facilitates innovation process, the more likely organization achieves sustainable growth.

Because of the nature of innovation process and technology transfer, they are not as simple as the purchase of capital good or the acquisition of the blueprint. Enterprises would normally be obliged to devote substantial resources to assimilate, adapt, and improve upon the original technology through seeking the cooperation with researchers at universities. As one respondent told us, "We often have to collaborate with researchers at universities to solve new issues of technologies and innovation." Additionally, the government also plays an essential role in supporting the cooperation between enterprises and universities through financial incentives such as grant programs, tax deduction, and others. However, all of respondents told us they have not accessed on the government financial aids.

B. Organizational Capacities

Proposition B: Organizational capacities including available resources, absorbability, assimilability and adaptability have a strong influence on the probability of being successful in innovation process and on the quality of technology transfers. Hence, it is more likely to achieve a sustainable performance.

In generally speaking, enterprises that accumulate more technological know-how are likely to have a comparative advantage in creating new ideas and developing new products. Enterprises with a high level of capacities have more technological opportunities for investing in innovation or R&D activities. Therefore, they are more likely to have a good business performance. As one respondent told us, "We have new product lines in our hands to be ready to launch in the market because our R&D department frequently implements technology transfer processes to develop new products."

C. The leadership development

Proposition C: The more investment in leadership development, the more likely the organization fosters technology transfer and innovation effectiveness, and in turn leads to sustainable performance.

Leaders must thoroughly understand and be committed to the objectives and terms of innovation strategy. The leadership of the team should reward passionate behavior by talking about real actions to encourage the team's efforts of creative thinking and create open, flat dialogue-based structures, instead of closed hierarchical and top-down structures. Leaders should avoid governing by pressure or fear. Pressure and fear would block innovative capacity. The role of a supporting open and participative culture was seen as essential to enable innovation through knowledge embodiment. Meanwhile knowledge embodiment was seen as vital to resulting innovation with the organization (McAdam, 2000). Therefore, three factors of leadership development including organizational strategy, organizational structure and organizational culture have a strong influence on organizational effectiveness. The important of organizational commitment to leadership development can help ensure that organizations are able to strive to develop better leaders and achieve maximum overall organizational performance (McAlearney, 2006).

3.3. Discussion

This exploratory investigation finds evidence that the food enterprises in Ho Chi minh city, Vietnam experienced major challenges in fostering technology transfers and innovation. First, we raise concerns about impacts of external environment on innovation and technology transfer as well as on company performance.

The private companies are frequently based on internal resources to do R&D without supporting from the government although the government has introduced some supporting programs such as tax incentives and grants. Besides, the disseminating and supporting innovation and technology transfer enable companies to develop new products to meet the needs of customers. In other words, to survive in a competitive edge in global market, companies have to pursue more innovative activities. Another aspect of external environment is that the challenges to external linkages between companies and research institutes are to do basic research, instead of modifying current technologies. In general, like many other industries, the external environment has significantly influenced on successful innovation process and technology transfer in food industry. The different aspects of external environment associated with innovation and technology transfer, as discussed in the literature and our results, are presented on the left hand side of Figure 1.

Second, the challenges of efficient use of available resources and capacities in innovative activities and technology transfer have become difficult issues to overcome because of the lack of financial resources as well as lack of domestic suppliers and absorptive capacity. Particularly, many technologies in the food enterprises in Vietnam are outdated. The technology transfer process almost depends on foreign countries. Although absorptive capacity has been extensively explored in both theoretical and empirical studies across companies and industries, we partially follow Whangthomkum et al., (2006) to measure the capacities by combining available resources and four components of absorptive ability including ability to recognize, ability to acquire, ability to assimilate and ability to apply. Figure 1 shows how technology transfer and innovation capacity influence on technology transfer and innovation effectiveness, and in turn, they have a strong impact on company performance.

Finally, the challenges of leadership development are to create an environment that supports innovative and technology transfer activities. Leaders often deal with many trade-offs such as a short-term strategy and a long-term strategy, lower cost and higher quality whenever they have to choose an appropriate technology. Although there were many previous studies on the leadership role in development of innovation and technology transfer in many industries, there is a little study on the food processing industry. We follow McAlearney (2006) to identify three components of leadership development, which involve organizational strategy, organizational structure and organizational culture. The different perspectives of leadership development, as mentioned in the literature and our results, are illustrated on the right hand side of Figure 1.

While most researchers focus on separating impacts of each type/factor of the above challenges on firm performance, theory lacks of a clear understanding of the interaction terms among external environment, internal capacities and leadership role. To close this gap, we attempt not only to investigate direct effects of external environment, capacities and leadership development on company performance, but also to observe the interaction terms of these effects. Specifically, we first explored the overall influences of these factors on the performance of food processing enterprises in Ho Chi Minh city, Vietnam.

4. Conclusion and limitations

This paper has constructed the research model from the conceptual framework integrating the factors of external environment, technology transfer and innovation capacity, and leadership development. Unlike many previous studies on independent factor influencing on firm performance, we propose a more complex model to investigate influences of interactions among factors as well as each factor on firm performance. From above results and discussions, in order to facilitate such challenges, companies could observe the following perspectives:
Ability to create a strong linkage among university-industry-government: first, a joint research with the government assistance provides opportunities to companies to acquire sufficient prior knowledge about current technologies that are using in developed countries. This enables companies to identify prospective technology suppliers and to increase their bargaining power in negotiating technology transfer agreements. After achieving the agreements, companies are able to assimilate and adapt new technologies quickly. Second, such a joint research increases innovative process to find solutions at hand rather than asking for external assistances with an expensive cost.

Ability to overcome the lack of capacities: first, companies have to figure out the financial resources to increase investment in innovation and new technologies. Companies should utilize the government financial aids. Second, investment in human resources enables companies to enhance the absorptive capacity rapidly.

Ability to commitment to leadership development: like in other industries, leaders in a food organization have to develop character and competence to guide the entire organization. Leaders at a high position are expected to demonstrate abilities in strategic planning and policymaking. Finally, leaders have a significant role in fostering technology transfer and innovation effectiveness, and achieving sustainable development.

To sum up, when a firm has gained the ability to generate a strong linkage among university-industry-government, improve organizational capacities, and design better leadership programs, it is more likely to achieve sustainable development goals.

Limitations of This Study

For this qualitative study, we have attempted to build and elaborate the conceptual framework from a limited sample, one must be careful when generating these findings to other sectors. Further research targets to conduct more samples to permit testing of our conceptual model, and formal comparison of technology transfer across industries.

5. Acknowledgements

We gratefully acknowledge the financial assistance provided by the Department of Science and Technology, Ho Chi Minh city, Vietnam. We greatly appreciate the help of all research participants. We are grateful to colleagues and the research team for discussion and arrangement of meetings. We are indebted to the research assistance provided by Ms. An K. Nguyen and Mr. Vu T.H Tran

References

Charmaz, K. (2006). *Constructing grounded theory.* CA: Thousand Oaks, CA: Sage.

Cohen, Wesley M., Levinthal, Daniel A. (1990). Absorptive Capacity: A New Perspective on Learning and Innovation. *Administrative Science Quarterly , 35* (1), 128-152.

Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five approaches. 2nd Edition.* Sage Publications, Inc.

Davenport, T.H. and Prusak, L. (2000). *Working Knowledge: How Organizations Manage What They Know.* Boston: Harvard Business School Press.

De Jong, J.P.J. and E. von Hippel. (2008). User Innovation in SMEs: Incidence and Transfer to Producers. *Working paper EIM: Zoetermeer, The Netherlands* .

De Jong, Jeroen P.J. and Eric von Hippel. (2009). Transfers of user process innovations to process equipment producers: A study of Dutch high-tech firms. *Research Policy* , 1181-1191.

Enkel, Ellen, Oliver Gassmann and Henry Chesbrough. (2009). Open R&D and open innovation: exploring the phenomenon. *R&D Managemen , 39* (4), 311-316.

G., H. (1994). A model of knowladge management and the N-form corporation. *Strategic Management Journal* (15), 73-90.

Gault, Fred and Eric von Hippel. (2009). The prevalence of user innovation and free innovation transfers: Implications for statistical indicators and innovation policy. *MIT Sloan School of Management Working Paper #4722-09 (January)* .

Geuna, A. and Muscio, A. (2009). The Governance of University Knowldge Transfer: A Critical Review of the Literature. *Minerva , 47*, 93-114.

Harbour, J. L. (2009). *The performance paradox - Understanding the real drivers that critically affect outcomes.* New York: Productivity Press, Taylor & Francis Group.

Kim, L. (1998). Crisis construction and organizational learning: Capability Building in Catching-up at Hyundai Motor. *Organization Science , 9* (4), 506-521.

Martinez, M. C. (2013). *Open innovation in the food and beverage industry.* PA: Woodhead Publishing Limited.

McAdam, R. (2000). Knowledgae Management as a Catalyst for Innovation within Organizations: A Qualitative Study. *Knowledge and Process Management , 7* (4), 233-241.

McAlearney, A. S. (2006). Leadership Development in Healthcare: A Qualitative Study. *Journal of Organizational Behavior* , 967-982.

Muscio, A., Nardone, D., Dottore, A.G. (2010). Understanding demand for innovation in food industry. *Measuring Business Excellence , 14* (4), 35-48.

Porter, M. (1998). On Competition. *Harvard Business School Press, Cambridge/Mass.*

Shamir, B., House, R. J., & Arthur, M. B. (1993). The motivational effects of charismatic leadership: A self-concept based theory. *Organizational Science* (4), 577-594.

Shin, Shung Jae and Jing Zhou. (2003). Transformational Leadership, Conservation, and Creativity: Evidence from Korea. *Academy of Management Journal , 46* (6), 703-714.

Strauss, A. & Corbin, J. (1994). *Grounded theory methodology. In N.K. Denzin & Y.S. Lincoln (Eds), Handbook of Qualitative research (pp. 273-285).* CA: Thousand Oaks, CA: Sage.

Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. CA: Sage: Thousand Oaks.

Tidd J, Bessant J, Pawitt K. (1997). *Managing Innovation: Integrating Technological, market and organisational change*. Wiley: London.

Todtling, F., Lehner, P., Kaumann, A. (2009). Do different types of innovation rely on specific kinds of knowledge interactions? *Technovation , 29* (1), 59-71.

Tsai, W. (2001). Knowledge transfer in intraorganizational networks: effects of network position and absorptive capacity on business unit innovation and performance. *Academy of Management Journal , 44* (5), 996-1004.

Whangthomkum, N., Igel, B., Speece, M. (2006). An empirical study of the relationship between absorptive capapcity and technology transfer effectiness. *International Journal Technology Transfer and Commercialisation , 5* (1/2), 31-55.

Table 1: Challenge themes in technology transfers and innovations

	Challenge	**Representative comments**
Theme 1:	Technology transfer capability: challenges associated with choice of original imported technology	"We analyze carefully types of technologies." "We prefer to buy technologies from developed countries." "If a Japanese assembly line costs 10 times higher than a Chinese one, we will choose the Chinese one."
Theme 2:	Type of technology transfers: challenges associated with whether a company invests either a complete assembly line or individual equipment.	"Technology transfer occurs as importing a whole assembly line from Japan and Korea. Specifically, technology transfer occurs almost exclusively as importing an assembly line from Europe."
Theme 3:	R&D activities: challenges of research oriented directions between basic research and applied research.	"We spend on applied research, mainly how to improve the current technology to meet customer demand at lower cost." "We only focus on how improve small issues during operating imported equipment." "In general, no food companies spend on basic research."
Theme 4:	Resource Constraints: challenges associated with financial and human constraints	"We are able to evaluate which technology can solve our own problems, but the available budget is always a huge barrier." "Our human resource can learn by doing very fast as implementing new technology."
Theme 5:	Leadership: challenges of pursuing sustainable development	"Leaders must be rich in experience in evaluation of durable technology." "Leaders are able to empower and motivate their labors and build a strong brand name for their business."
Theme 6:	Environment: it is very hard to access to financial supports from the government as well as to establish the linkages between companies and research institutes.	"We have no business connections with local research institutes." "We have not been able to access financial assistance from the government to implement innovative projects."
Theme 7:	Performance: challenges associated market-based innovations and technology-based innovations.	"Our products have to compete with many foreign and domestic products."

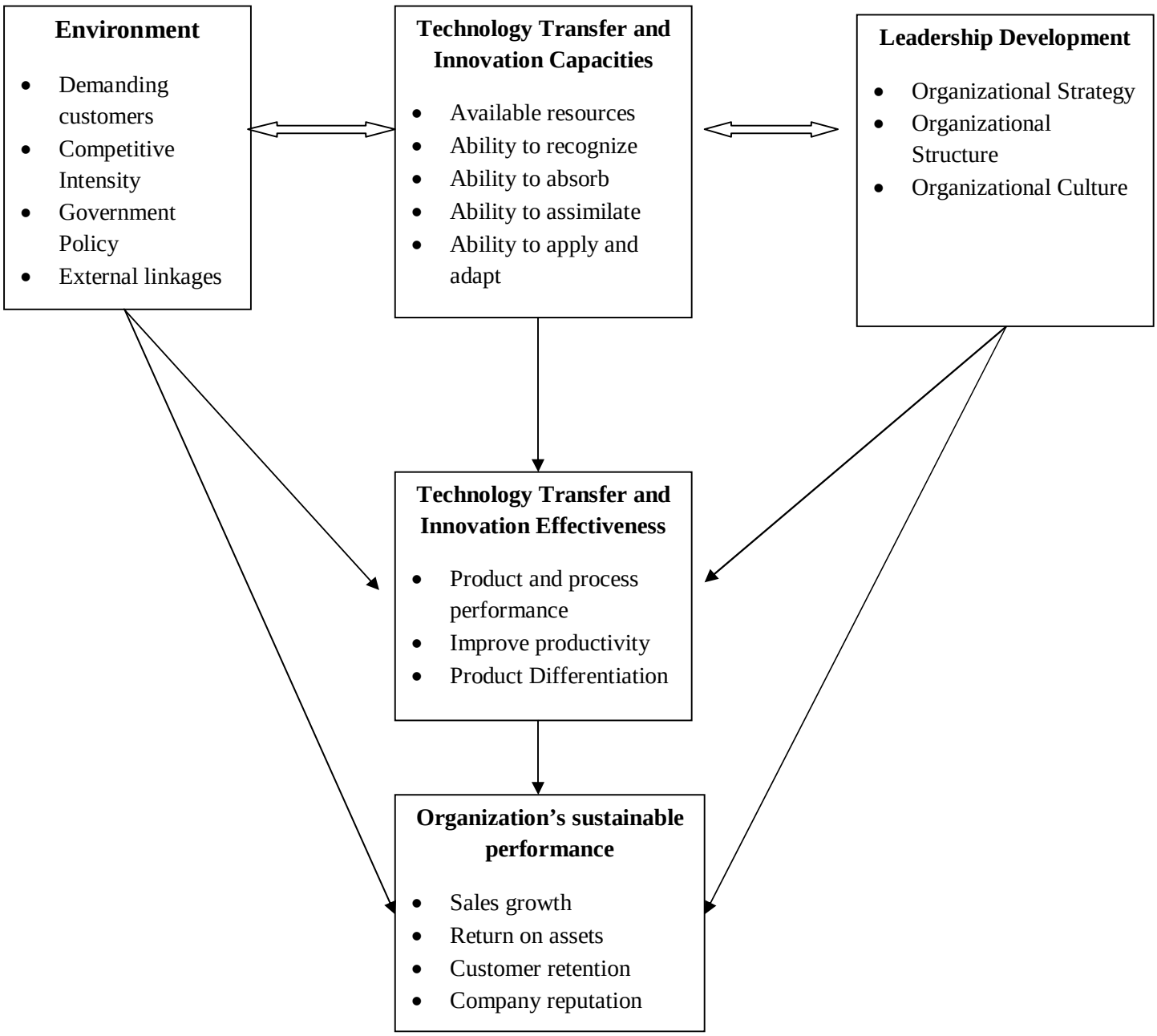

Figure 1: Conceptual model depicting impacts of environment, capacities and leadership on organizational performance