International Journal of Accounting & Business Management
Vol. 4 (No.2), November, 2016
ISSN: 2289-4519
DOI: 10.24924/ijabm/2016.11/v4.iss2/43.52

www.ftms.edu.my/journals/index.php/journals/ijabm

Research Paper

Frugal Innovation: A Strategy for Emerging Market Penetration and Beyond

Anthony Kuo*
Associate Dean, College of Management
Associate Professor, Department of Finance
and International Business
Fu Jen Catholic University
profakuo@gmail.com

Steven Ng
MBA Graduate
MBA Program in International Management
(imMBA)
Fu Jen Catholic University
076667@mail.fju.edu.tw

Abstract

The huge potential of emerging economies has attracted numerous multinationals as well as small and medium businesses to develop and introduce products to penetrate these markets. However, constraints such as incomplete infrastructure and low purchasing power often invalidate products developed elsewhere. Frugal innovation, initiated from products developed in emerging markets to overcome resource constraints and address the needs of the "bottom of the pyramid", has attracted broad attentions. The no-frill, cost-cutting, and resource-saving nature of frugal innovation has enabled many firms to create successful, affordable products. This paper uses case studies to delve into details of how various businesses harness frugal innovation to develop simple, affordable products to penetrate emerging markets. The cases were chosen through purposeful sampling to select information-rich cases. The data required for the study were collected mainly from publicly available archival sources, including company websites and documents. The data obtained from different sources were triangulated, revealing a high level of consistency. Four major findings were drawn from the results: First, successful frugal innovations to penetrate emerging markets call for the maintenance of product quality and robustness while cutting costs. Second, firms need to cater to different price sensitivities in different emerging markets while penetrating these markets through frugal innovation. Third, firms need to avoid the association of poor product image to the low price. Forth, successful frugal innovation may also enhance firms' capability of developing outstanding products under constraints, leading to possible "adversity advantages".

Key Terms: *Frugal innovation, reverse innovation, constraint-based innovation, simplicity, emerging market*

1. Introduction

The huge potential of emerging economies has attracted numerous firms to develop and introduce products to penetrate these markets. However, various constraints, such as incomplete infrastructure and low purchasing power, often invalidate products developed elsewhere, making them impractical or even unusable in the resource-constrained environment of emerging markets. For example, refrigerators developed in matured economies are unworkable in the villages of emerging countries where electricity supply is scarce or unstable. Under such circumstances, firms often need to re-design their products to fulfil the unique needs in emerging markets, especially when they target at budget-constrained consumers at the bottom of income pyramid. Frugal innovation, the innovation approach originating from emerging markets that emphasizes "doing more with less" and focuses on serving the ignored needs of the bottom-of-pyramid (BOP) market has come to rescue. The no-frill, cost-cutting, and resource-saving nature of frugal innovation has enabled many firms to create successful, affordable products. This paper uses case studies to delve into details of how various businesses harness frugal innovation to develop simple, affordable products to penetrate emerging markets, and the implications of frugal innovation for firms to build their capabilities to compete under constraints.

2. Literature Review

Innovation has been considered an important catalyst to both economic and business growth. Innovation scholars usually trace the origin of innovation theory to Joseph Schumpeter (Schumpeter, 1934). In the eyes of Schumpeter, the driving force of economic growth was innovation (the "creative destruction"), rather than competition (the "invisible hand"). Schumpeter found that entrepreneurs initiated the creative destruction process by using conceptual breakthroughs to carry out new combinations, destroying the status quo to create something better and thus drove economic growth (Birkinshaw, 2000). Schumpeter's perspective was categorized by following scholars as "entrepreneurial innovation theories" (Sundbo, 1998), due to its emphasis on the activity of one individual—the entrepreneur. As "the fourth Kondratiev wave" began (an event that Sundbo dated to the late 1930s), a paradigm shift occurred in economic and sociological studies on innovation. This shift turned the focus from individual persons to technologies to study their roles on driving economic development. This "technology-economics paradigm", also known as "Schumpeter II" (Freeman, 1982), regarded technological development as the main innovation factor. Numerous researchers have since dedicated themselves to the study of technological innovation (see Mowery & Rosenberg, 1991 for a review).

Extending from the perspectives above, business strategy scholars further investigate innovation activities within organizations, finding that innovation enables business firms to create economic value for their customers, and thus facilitates these firms to compete more effectively on the market (Grant, 1996; Lengnick-Hall, 1992). Researchers in various disciplines such as organization, marketing, engineering, and new product development have conducted numerous studies on the origin, forms, types, and processes of innovation. The resulting literature has provided fruitful insights of how businesses harness innovation to stay competitive.

As emerging markets are reshaping the global economic landscape, firms endeavor to enter these bourgeoning markets for their great potential. However, in the emerging markets, firms need to tackle distinctive challenges arising from resource-constrained environments, including limited purchasing power, incomplete infrastructure, and lack of cutting-edge technologies, just to name a few. Therefore, products targeting at consumers in the emerging markets often need to be largely re-designed to cater to unique local constraint. Specifically, as emerging markets have been going through the process of rapid growth and industrialization, the "bottom of the pyramid " (BOP) (Prahalad & Hart, 2002) market appeared to be attractive, driving business firms to develop new business models and provide goods and services to the economically disadvantaged people. They have started to take the needs of budget-constrained consumers as a starting point and working backwards (Economist, 2010). Through focusing on the essential needs, simplifying the product or service design, minimizing the use of resources in development, production and delivery, business firms effectively reduce the cost, as well as the price, of a product, making it affordable for the majority of people in the emerging markets.

Such “frugal innovations” (Economist, 2010; Zeschky, Widenmayer, & Gassmann, 2011) or “jugaad innovations” (Radjou, Prabhu, & Ahuja, 2012) have become prevalent in the emerging markets (Bellman, 2009), and gradually diffused to other parts in the world (Agarwal & Brem, 2012; Bellman, 2009; Economist, 2010). Frugal products and services have sprawled across the emerging countries. Studies or reports have defined frugal innovation differently, but most of them agree on the following characteristics:

1. Focusing on the fundamental needs or the essence of needs.
2. Eliminating non-essential functions of products.
3. Trimming down the processes (e.g. service processes or manufacturing processes).
4. No-frill.
5. Simple design.
6. Easy to use but robust enough. (Frugal products need to adapt to harsh environments in the emerging or developing world.)
7. Sparing in the use of resources.
8. Doing more with less.
9. Cost-cutting.

Due to the current lack of a general definition of frugal innovation, this study provides a working definition of frugal innovation as the following:

> *New products or services which focus on fundamental needs, spare in the use of resources, or eliminate non-essential functions to simplify the design.*

In the current study, we explore how firms harness frugal innovation to penetrate emerging markets and examine the implications of such a strategy for other firms. Traditional quantitative methodologies are not suitable for such a new phenomenon, so we use qualitative approaches for this study.

3. Research Design and Methodology

We adopt the qualitative method to conduct the current study for the following reasons. First, when investigating organizational processes such as innovation processes, quantitative measurements are either inappropriate or less preferred (Strauss & Corbin, 2007; Van Maanen, 1979), as are survey-based methodologies (Yin, 1983). Second, exploratory fieldwork is essential in emerging areas of research that lack an extant body of both theories and data (Glaser & Strauss, 1967; Noda & Bower, 1996). Finally, the use of exploratory case research enables ideas to be developed for further study (Noda & Bower, 1996). Therefore, in this study, we use case study for the purpose of elaborating upon a set of concepts necessary for process theory development.

The cases in this study were chosen through purposeful sampling (Patton, 2001). We follow the principle suggested by Patton (2001) to select “information-rich cases—cases in which one can learn a great deal about matters of importance and therefore worthy of in-depth study” (Patton, 2001, p.242). To be eligible for selection, each case has to be involved in frugal innovation and penetration of emerging markets. The data required for the study were collected mainly from publicly available archival sources, including company websites and documents (such as annual reports, corporate press releases, public conferences, and magazine or newspaper reports). The data obtained from different sources were triangulated, revealing a high level of consistency (Denzin & Lincoln, 2005). The analysis of data revealed differences and similarities in firms’ market penetration strategy and frugal innovation processes.

4. Results and Discussion

4.1. Case 1: Renault-Nissan's Logan

In 1898, Louis Renault's brothers, Marcel and Fernand Renault, established Renault in Boulogne, France. In 1999, Renault purchased 36.8% of Nissan's share, leading to the formation of Renault-Nissan Alliance. In the same year, Renault acquired Dacia, a Romanian state-owned automobile company founded in 1966, with 51% share (Betts, 2011). A new company, Renault-Nissan B.V. was later established in 2002, with Renault and Nissan both holding equal ownerships on the Amsterdam-based company. Renault further privatized Dacia to form Dacia Renault Group, and kept increasing the ownership of Dacia's share until 99.3% in 2004 (Renault, 2004a), the year when Logan, the car that explored the company's path into emerging markets, was launched.

The no-frills Logan was first released with three trim levels, 1.4 liter petrol engine and 1.6 liter petrol engine in Romania in 2004, and a 1.5 liter diesel engine in the next year (Bota & Luca, 2006). As one of the cheapest 3-box cars in the world, it was intended to be sold at a price of €5,000 (around USD $6,000) only, with an annual production of at least 700,000 in five factories in Romania, Russia, Columbia, Morocco, and Iran. The former Renault's chairman and CEO, Louis Schweitzer had given a three-word brief to his engineers – modern, reliable, and affordable, as a guidance for the 1.13 billion project which was code-named X90 (Bota & Luca, 2006). This project was planned to adopt digital simulation technology to manipulate the production process to design and manufacture vehicle and manufacturing tools, leading to a total cost saving of €20m approximately, and Logan was the outcome targeted on emerging markets of the world (Bota & Luca, 2006).

Prior to the decision to produce Logan, ample market researches were conducted, and the needs for simple and low-cost yet reliable vehicles that met people's fundamental requirement for mobility were hence discovered. The design-to-cost base was adopted; cost savings, together with reliability, were achieved by using the same elements for several vehicles from the same manufacturer. Logan was officially launched in September 2004 in Romania, and had been a tremendous success. By December 2004 Logan's orders had already reached 27,000 units in Romania alone, far beyond a predicted 11,000. The car was then introduced to the Czech Republic, Hungary, Turkey and Slovakia, then, in early 2005, to Poland, Estonia, Lithuania, Latvia, Slovenia, Bulgaria and Moldavia (Renault, 2004b). Renault originally had no plans to sell the Logan in Western Europe, but in June 2005, began selling a more expensive version of the car, starting at around €7,500. It was an unexpected success with people wanting an inexpensive, no-frills car they could repair themselves (Bota & Luca, 2006).

The worldwide success of Logan was redounded to its low cost, without compromising on its robustness, reliability, and functionality. In fact, the Logan provided air bag, boot capacity of 510 liters, and three separate headrests on the rear seat. These were seldom provided by the other cars from the same segment. Also, Logan had successfully meet the international standards like standard of the European Union, in terms of gas and noise emissions, recycling of materials, and safety (Bota & Luca, 2006). Based on the experience accumulated with Logan and the same platform, Renault-Nissan further developed Sandero, a sub-compact car which is smaller and cheaper than Logan, and Duster, a compact sport utility vehicle (SUV) based on the Logan platform, aiming to penetrate more segments in the emerging markets (Renault, 2004b).

In 2007, Logan was launched by the joint venture between Renault and Mahindra & Mahindra in India (Mahindra, 2007). This marked the commencement of Renault's India journey. By forming the joint venture, synergy was expected to be realized, where Renault would contribute its technology and Mahindra & Mahindra would be responsible in marketing and distribution. In local Indian market, Logan was marketed as Mahindra Renault Logan. The entry of Logan into India led to its first right hand drive variant. Besides, the extreme local climate had indicated the necessity to enhance the air-conditioning and heating system of the car. Mahindra Renault Logan was positioned as the first car at the entry level of midsized cars for the first-time buyers, as well as the customers who wanted to upgrade from small car to entry level premium segment in India. It basically targeted at Indian families, and this explained the availability of roomy interiors, especially the generous headroom and legroom (Mahindra, 2007).

Despite the huge global success, the development of Logan in India ended up miserably, with only less than 500 cars being sold each month, while the actual projected sales volume was 2,500 cars a month and 30,000 cars a year. The poor performance in the sales figure was mainly caused by the price point (Baggonkar, 2009). The price of Logan is much higher than expected, and the local Indians' sensitivity towards price was relatively high. One of the critical factors that results in the high price was lack of localization. In point of fact, 50% of Logan's parts and engine itself were sourced from France, boosting its price much higher than the local segment competitors like Tata Indigo CS and Maruti Swift Dzire (Baggonkar, 2009). Meanwhile, the rising Euro also increased the cost of Logan. Besides, Logan was charged a higher dual structure excise duty, as much as 20%, just because its 4.24-meter body was slightly longer than the 4-meter specification for small car, which faced a much lower 8% levy.

On the other hand, there was a lack of commitment and trust in the joint venture between Renault and Mahindra & Mahindra. Throughout the cooperation between both the companies, Renault refused to disclose its technology in order to retain its dominant position in the joint venture. The poor brand image was further devastated when Logan was widely adopted as tourist taxi in many cities (Baggonkar, 2009). In the end, the joint venture broke up after Renault decided to sell all its rights of Logan to Mahindra & Mahindra and withdrew itself from the mess. Since then, Mahindra Renault Logan was sold as Mahindra Verito with a lower price due to the cost savings from less excise after reducing the length of car. Sales then surged (Khan, 2012).

4.2. Case 2: Tata Motor's Nano

Tata Motors is an Indian multinational automotive manufacturing company headquartered in Mumbai, Maharashtra, India, and a subsidiary of the Tata Group, the biggest business conglomerate in India. The idea of Tata Nano was inaugurated by the former chairman of Tata Motors, Ratan Tata, from what he observed during a rainy day – a family on a motorbike, with a baby in the mother's arms and a child standing in front of the father. Ratan Tata realized the need of an affordable people's car in India. The target customers of Nano were the existing two-wheeler users and also small families of three to four, mainly between lower middle class and upper lower class. After having successfully launched the low cost Tata Ace truck in 2005, Tata Motors began to develop Nano, aiming to introduce the world's cheapest car at Rs.1 lakh (USD$1,500) (Businesstoday, 2014).

Tata Nano was commercially launched in 2009 at a price of INR 1 lakh (equivalent to INR 1,00,000 or approximately $2,000 to $2,500) (Farris *et al*. 2009; Nelson, 2009). The development of Tata Nano within such a budget made the whole process totally different from the conventional method, which was by adding a profit margin to the production cost. Instead, Tata Nano worked reversely. Price was fixed at the beginning and the manufacturing partners had to work back to control the production cost. 100 subcontractors signed long-term volume contracts with Tata. In fact, Tata outsourced 90% of Nano's components, while roughly 75% were single-sourced (Farris *et al*. 2009).

Prior to the launch of Tata Nano, it did receive huge expectations to cause a stir in the existing automobile market. Nevertheless, it turned out to be a total failure. Although it was announced that 206,703 (2.06 lakh) bookings had been received, the sales figure of Nano only achieved 1.75 lakh in the first three years, falling far behind the claimed booking numbers, and much lower than the annual production capacity of 2.5 lakh Nanos (Kalla, 2015).

Part of the failure of Nana can be attributed to quality issues. Some customers reflected the shortcoming of noisy engines. There were also people complaining about the insufficient power of Nano to be driven in the mountains. One of the most serious issues that spoiled Nano's image radically was the series of incidents where the car engines of Nano caught fire, just a year after the commercial launch (McLain, 2013). Despite the aforementioned quality issues, the root of the big failure of Tata Nano can be attributed to its unwise marketing and positioning strategies. Since the release of Nano, it had been depicted as "the cheapest car" by the public, though it was supposed to be conceived as affordable transportation for whole family to replace the two-wheelers, from Ratan Tata's viewpoint. Psychographic factors played a critical role in affecting consumer buying behavior, let alone cars were viewed as a symbol of prestige and social status. In the case of Tata Nano where its image had been distorted as "car for poor people", no one wanted to be conceived as low income group, regardless of the fact. When someone spent money buying a car, no matter how much the price, he or she desired to be viewed as a prestigious buyer, and this psychographic factor was neglected in the marketing and positioning of Tata Nano (kalla, 2015). Today, Tata Motors is working hard on reimaging, relaunching, and reviving Tata Nano – the people's car.

4.3. Findings and Discussion

The analysis of case data and an iterative process of data comparison led us to four major findings. First, successful frugal innovations to penetrate emerging markets call for the maintenance of product quality and robustness while cutting costs. When developing its frugal product, Logan, Renault-Nissan, successfully maintained the product quality and robustness to sustain in emerging markets such as Romania, Hungary, Poland, etc., the first emerging markets where the product was launched. Good quality and affordability attracted numerous customers to buy the product, making the product successful in emerging markets. The good quality was further validated in developed economies in Western Europe, leading to a worldwide success of the frugal product.

Second, firms need to cater to different price sensitivities in different emerging countries while penetrating emerging markets through frugal innovation. When Renault-Nissan's introduce Logan to penetrate the Indian market, the product encountered obstacles, due mainly to its high cost and consequent high price. Renault-Nissan failed to cater to the higher price sensitivity of consumers in India. Even the product has been successful in quite a few emerging markets, inability to address the price concern of Indian customers eventually led to the failure. Firms need to fully understand that a frugal product in certain emerging markets does not necessarily guarantee its frugality in another emerging country.

Third, firms need to avoid certain pitfalls, such as the association of poor product image to low price. In the case of Tata Motor's Nana, aside from the quality issues in the early stage, the most detrimental factor of the frugal product's failure is the association of poor product image to low price. Consumers would rather stay with two-wheelers than buy a poor people's car. Once the negative image has been associated with the frugal product, it is very hard to be remedied.

Forth, successful frugal innovation may also enhance firms' capability of developing outstanding products under constraints. Renault-Nissan's success experience of Logan to develop frugal products for customers in the resource-constrained environments led the company to develop Sandero, a sub-compact car, and Duster, a compact sport utility vehicle (SUV) based on the same platform, to extend its product line in emerging markets. We posit that, as time goes by, Renault-Nissan will further enhance their capability of developing and marketing frugal products under adversity (i.e. the resource-constrained environment) and will eventually stand out from its competitors, especially when economic downturn hits again, leading to possible "adversity advantages". We would like to call for more studies in this direction to explore the possible adversity advantages.

5. Conclusion

As emerging countries are gaining more ground on global economy, frugal innovation has attracted increasing attentions. An incremental number of firms have penetrated emerging markets through frugal products and services. The core characteristics of frugal innovation, such as focusing on the fundamental needs, sparing in the use of resources, and eliminating non-essential functions to simplify design and make products or services affordable for consumers at the bottom of the pyramid, have enabled many firms to re-think and re-design their products or services to address unsatisfied essential needs in the emerging markets.

The philosophy of frugal innovation has not only been found in emerging economies, where resources are relatively scarce, but also flourished in developed countries. In those countries, the issue of sustainability has started to attract significant attentions. Economic growth at the price of natural environment has no longer been acceptable, and a growing number of people have started to voluntarily reduce their consumptions and possessions toward a higher degree of frugality. Affordable, good-enough products become increasingly popular, even trendy. The rise of apparel brands, such as Zara, H&M, and Uniqlo tells the story. If people keep emphasizing sustainability issues, the lifestyle of simple living will likely become more prevalent, making frugal innovation more widely praised. On the other hand, economic upheavals and financial crises inevitably will take place again. Firms must be prepared for the next economic downturn. Developing frugal products and services may be a feasible way to enhance a firm's competence to survive the next financial tsunami and equip the firm with "adversity advantages".

All in all, we believe that frugal innovation is a promising way to penetrate emerging markets and overcome challenges in resource-constraint environments. Nonetheless, research on the phenomenon of frugal innovation and its impacts is still in its infancy. The exploratory nature of the present study undoubtedly limits the insights uncovered. Even so, the author humbly expects it to invoke more studies in this field.

Reference

Agarwal, N., & Brem, A. (2012). Frugal and reverse innovation-Literature overview and case study insights from a German MNC in India and China. Paper presented at the Engineering, Technology and Innovation (ICE), 2012 18th International ICE Conference.

Baggonkar, S. (2009, November 10). What went wrong with Logan. Business Standard. Retrieved 15 April, 2016 from http://www.business-standard.com/article/companies/what-went-wrong-with-logan-109111000042_1.html

Bota, M., & Luca, I. T. (2006). Dacia Logan – A successfull car idea. Studia Universitatis Babeş-Bolyai, Negotia, LI, 87-95 [Studies of Babeş-Bolyai University, Business, 51, 87-95]. Retrieved 20 May, 2016 from ftp://ftp.repec.org/opt/ReDIF/RePEc/bbn/journl/2006_1_8_Bota.pdf

Bellman, E. (2009, Oct 20, 2009). Indian Firms Shift Focus to the Poor, The Wall Street Journal.

Betts, P. (2011, January 27). Better to be bold and merge Renault and Nissan. FT.com. Retrieved 14 September, 2016.

Birkinshaw, J. (2002). Entrepreneurship in the Global Firm, London: Sage Publications
Businesstoday (2014, March 30). The new Nano promise. Retrieved 20 August, 2016 from http://www.businesstoday.in/magazine/cover-story/tata-nano-makeover-features-price-ratan-tata/story/204009.html

Denzin, N. K., & Lincoln, Y. S. (2005). The Sage handbook of qualitative research (3rd ed.): Sage Publications, Incorporated.

Economist. (2010, April 15). First break all the rules: The charms of frugal innovation. The Economist.
Farris, P., Lemley, A., & Venkatesan, R. (2009). The Tata Nano: The people's car. Darden Case No. UVA-M-0768. Retrieved May, 2016 from https://www.researchgate.net/publication/228143324_The_Tata_Nano_The_People's_Car
Freeman, C. (1982). The Economics of Industrial Innovation (second ed.). Cambridge: MIT Press.

Glaser, B. G., & Strauss, A. L. (1967). The discovery of grounded theory: Strategies for qualitative research: Aldine de Gruyter.

Grant, R. M. (1996). Toward a knowledge-based theory of the firm. Strategic management journal, 17, 109-122.

Kalla, N. (2015). Tata Nano: A positioning disaster. IOSR Journal of Business and Management (IOSR-JBM), e-ISSN: 2278-487X, p-ISSN: 2319-7668, 47-53. Retrieved from http://iosrjournals.org/iosr-jbm/papers/ies-mcrc-icscm/Part%205/47.pdf

Khan, F. A. (2012). How Renault Logan Became Mahindra Verito. The Truth About Cars. Retrieved 12 April 2016, from http://www.thetruthaboutcars.com/2012/07/how-renault-logan-became-mahindra-verito/

Lengnick-Hall, C. A. (1992). Innovation and Competitive Advantage: What we know and what we need to learn. Journal of Management, 18(2), 399-429.

McLain, S. (2013). Why the World's Cheapest Car Flopped. WSJ. Retrieved 5 April 2016, from http://www.wsj.com/articles/SB10001424052702304520704579125312679104596
Mahindra (2007). Mahindra Renault Launches Logan. Retrieved 25 July 2016 from http://www.mahindra.com/news-room/press-release/1294042409

Mowery, D. C., & Rosenberg, N. (1991). Technology and the pursuit of economic growth: Cambridge University Press.

Nelson, D. (2009). Tata Nano, world's cheapest car, launched in India. Telegraph.co.uk. Retrieved 5 April 2016, from http://www.telegraph.co.uk/news/worldnews/asia/india/5039397/Tata-Nano-worlds-cheapest-car-launched-in-India.html

Noda, T., & Bower, J. L. (1996). Strategy making as iterated processes of resource allocation. Strategic management journal, 17(S1), 159-192.

Patton, M. Q. (2001). Qualitative research & evaluation methods (3rd ed.): Sage Publications, Incorporated.

Prahalad, C. K., & Hart, S. L. (2002). The Fortune at the Bottom of the Pyramid. Strategy and Business, 54-54.

Radjou, N., Prabhu, J., & Ahuja, S. (2012). Jugaad Innovation: Think frugal, be flexible, generate breakthrough growth: Jossey-Bass.

Renault (2004a). Renault 2004 Annual Report. Retrieved 18 April 2016 from https://group.renault.com/wp-content/uploads/2014/07/renault_-_2004_annual_report.pdf

Renault (2004b). The Dacia saga #3: 2004-2012, a success story. Retrieved 20 June 2016 from https://group.renault.com/en/news/blog-renault/the-dacia-saga-3-2004-2012-a-success-story

Schumpeter, J. A. (1934). The Theory of Economic Development. Cambridge: Harvard University Press.

Strauss, A., & Corbin, J. (2007). Basics of qualitative research: Techniques and procedures for developing grounded theory. Newbury: Sage Publications, Incorporated.

Sundbo, J. (1998). The theory of innovation: enterpreneurs, technology and strategy: Edward Elgar Pub.

Van Maanen, J. (1979). Reclaiming qualitative methods for organizational research: A preface. Administrative Science Quarterly, 24(4), 520-526.

Yin, R. K. (2003). Case study research: Design and methods (3rd ed.). Thousand Oaks: CA: Sage.

Zeschky, M., Widenmayer, B., & Gassmann, O. (2011). Frugal Innovation in Emerging Markets. Research-Technology Management, 54(4), 38-45.

* The corresponding author
No. 510 Zhongzheng Rd , Xinzhuang Dist., New Taipei City, 24205 Taiwan