

TRIZ Business Improvement and Innovation Framework for Malaysian Small and Medium Enterprise

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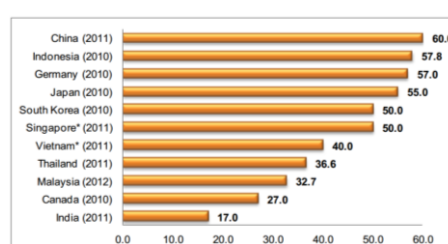
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Abstract. MPC and MyTRIZ have focused on the initiative to expose the Malaysia TRIZ Practitioners with the latest TRIZ development to acquire a wider perspective of TRIZ practices around the world, encourage Malaysia TRIZ Community to share ideas and collaborate with TRIZ experts from other countries, and apply the knowledge acquired to develop various new products, processes, services or systems for international and local customers. Hence, in order to ignite the effort, a framework was developed to mobilize the initiative of adopting TRIZ for the Malaysian industries, focusing primarily on Small Medium Enterprise (SME). This research explored the framework to expand the knowledge of TRIZ for the targeted industries. Most of the inputs were extracted from the experienced academicians and industrial experts who have used TRIZ as part of their core subject. The proposed framework is expected to meet the needs of business owners, which focuses on the outcome of any improvement or innovation initiative. The proposed outcome-based improvement framework is intended to suit the Malaysian environment and be able to perform effectively in terms of increasing innovation in the industries.

Introduction

SMEs are quoted as constituting 80% of global enterprises, whereas SMEs in Malaysia constitute 99.2% of total business establishments which contribute 30.9% of total manufacturing output and account for 31.8% of total employment in 2008. Malaysian manufacturing SMEs are classified into micro, small and medium-sized enterprise with less than 150 full time employees or less than RM25 million of annual sales turnover. Majority of them are micro enterprises with 79% of establishments, small enterprises constituted 18% of establishments, and medium enterprises represented 3% of establishments [1]. A streamlined methodology called the SME Competitiveness Rating for Enhancement (SCORE) was developed and has helped increase the relative role of SMEs in the economy, although by most measures, Malaysia still has a long way to go. For example, Malaysia's SME sector made up only 32.7 per cent of Gross Domestic Product (GDP) in 2012 compared to 50 per cent in Korea and Singapore (Fig. 1) [2].



Sources: SME Corp; various NSO from different countries

Fig. 1. SME's contribution to GDP [2].

To accelerate the growth of SMEs, the next focus is on integrating SMEs into the economic mainstream to become an important engine of growth in the National New Economic Model. SMEs are surrounded by challenges such as uncertainty in the external environment and pressures from globalization and market liberalization. Policy focus would be to enhance the capacity and capability of SMEs towards building long-term resilience and competitiveness. To achieve these goals efforts should be garnered through more targeted and innovation-based approach to SME business improvement [1].

In any type of business, starting from micro to global company level, there are common types of criteria that are important to the organization. Any business starts with a number of key components to develop a sufficient system of business. The components are resources, supply chain, product, cost, value, delivery, return, and customer [3]. By identifying a similar pattern in those components, any business may be able to plan and focus on the business goals accordingly. Furthermore, the integration of components in developing a business system may unravel the contradiction that is critical to be solved and open up new opportunities in business innovation. Fig.2 shows the proposed generic business system for TRIZ application.

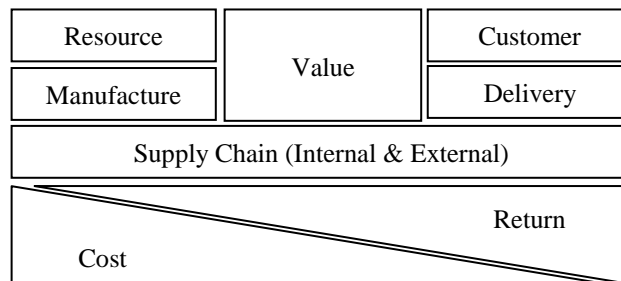


Fig. 2. Propose generic business system.

This proposed system is expected to be used on any level of business organization. This brings certain focus point on how the business system is able to improve at any platform of business. There are two main focuses that need to be highlighted from the generic system. The first focus is the core of contradiction between the business owner and the customer. The second focus item is the Ideal Final Result for each component in the generic system. The business owner will definitely fail to achieve success without the customer. Therefore, it is important for the business owner to fulfill the customers' expectations, and beyond that through innovation. At the same time, the business owner is risking his/her cost and resources with unsecured return from the customer [4]. This is a common contradiction that any level of business system would encounter. The platform to solve the identified contradiction is the value component in the system. Fig. 3 shows the challenges for a business that considers innovation to be part of their business improvement. The contradiction always lies in the risk of pursuing higher innovation.

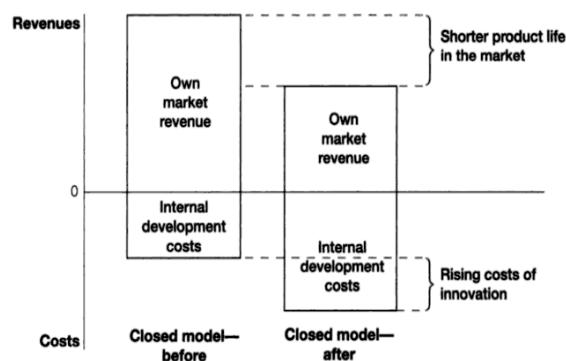


Fig. 3. Economic pressure on innovation [4].

Other components in the business system provide opportunities to grow and enhance through innovation. In the TRIZ method, the suitable tool or concept is the Ideal Final Result (IFR). This tool is selected because it provides a systematic approach for the business owner to customize his/her innovation towards a specific environment. Furthermore, it provides the capability to forecast the evolution of each component he/she prefers towards specific business performance.

An outcome based business improvement model

In every level of business model, the outcome has become the key focus for an organization to achieve. This may differ from the outcome based approach in the education area. The business areas have more specific goals, and limited time and space compared to the education environment. As mentioned previously, a business system consists of components that inherit various types of problems and opportunities for improvement.

In many cases, the problem solving or improvement initiative introduced creates deviation from the fixed outcome goals [5]. This has been identified as a distraction that derails the focus to meet the established outcome. The most common outcome for the business system is the return. Either it is an improvement or an innovation initiative; business owners always prefer the least cost solution that does not have risk or big investment [6]. These results the different levels of solutions achieved and may have low reliability or low impact on return.

Fig. 4 shows the proposed business improvement and innovation framework for SME and other levels of businesses. This outcome-based framework starts at the core of the established outcome, which consist of target and scope. Then, change activity is developed based on either business improvement or business innovation that depends on the outcome stated. Both improvement and innovation are formulated into specific strategy to improve the existing six common business components (cost, resources, supply chain, value, customer, and return). The strategy and the results from the improvement or innovation initiative are assessed to ensure that they meet the intended outcome and targets.

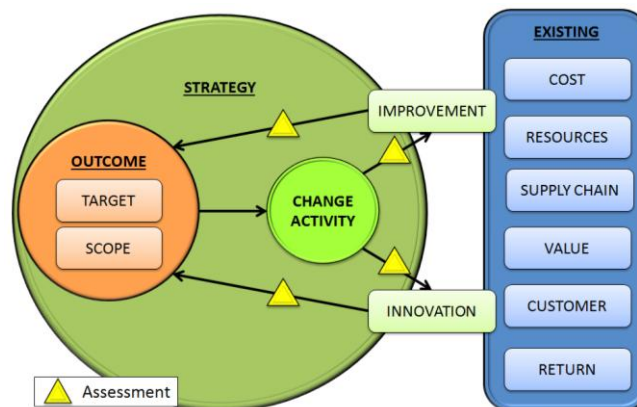


Fig. 4. Outcome-based framework for business improvement and innovation.

TRIZ business improvement and innovation

The TRIZ perspective provides solution that matches the business system proposed. Based on the two main initiatives, either improvement or innovation, the TRIZ methodology always starts from the contradiction in the business [7]. For example, understanding a value demanded by the customer and provided by the business owner is the key of success for a business. The value improvement in TRIZ perspective is related to the concept of IFR. The value component becomes the main drive to the total business system. This creates influence on other components to be aligned with the value improvement. However, the business owner has the option to pursue the level of solution that suits the needs of the business. TRIZ believes that 95% of inventive problems have already been solved in different fields, which can be adopted in business areas[9]. The findings are;

1. Problems and solutions are repeated across industries and sciences. The classification of the contradictions in each problem predicts the creative solutions to that problem.
2. Patterns of technical evolution are repeated across industries and sciences.
3. Creative innovations use scientific effects outside the field where they were developed.

Application of TRIZ in business improvement and innovation for SME

Currently, the SME consists of structured and unstructured organizations in their business operation. The common approach of introducing TRIZ focuses more on the individual itself as he/she contributes to develop a value to the organization, and not the other way around. This moves away from the dependency of the issue related to structure the organization. However, part of practicing TRIZ includes resources as one of the main pillars of inventive problem solving [8]. Fig. 5 shows the function model of a generic business function, including the SME.

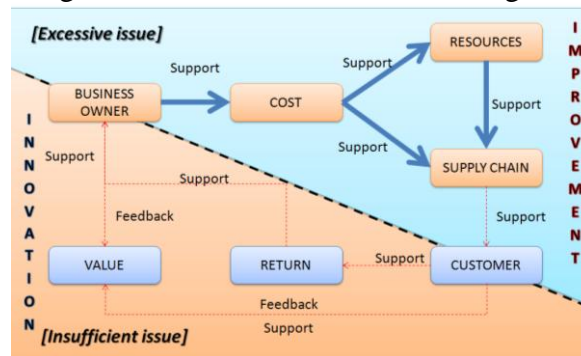


Fig. 5. Function analysis for Outcome based model.

Some SMEs have already adopted several techniques in problem solving and continuous improvement, such as Innovation Creative Circle (ICC), which consists of tools to support their effort based on the Plan-Do-Check-Action (PDCA) cycle. Those companies that have already used them for so many years may not consider other methods of problem solving, unless the value given is far greater than the existing method. Furthermore, some companies have opened their doors for a paradigm shift and learnt to use TRIZ to solve problems [9]. Those challenges need to be solved in order to expand TRIZ in the SME and to revolutionize the thinking process.

No	Focus	Model of problem	Tools	Concept level
1	Concept generation	Technical contradiction	Contradiction matrix	High
2		Physical contradiction	Inventive principles	High
3	Alternative generation	Substance field model	76 standard inventive solution	Medium
4	Simplification	Trimming	Trimming rules	High
5	System analysis	Function model	Function analysis	Low
6	Forecasting	Ideal Final Result	Contradictions	High
7	Forecasting	Trends of Evolution System Engineering	Trends of Increase Ideality	High

Fig. 6. TRIZ tools in business improvement and innovation.

The most important part for this approach is the way the proposal is executed. The process must be simple, cheap, fast, and effective [7]. This brings out significant discrimination of better value compared to the existing method. The SME would be able to see the differences and start to gain more interest in exploring the possibilities from TRIZ in their businesses [10]. Furthermore, it will be the best platform to highlight the weaknesses and limitations in using trade-off as part of their common method to solve problems in their operations.

Fig. 7 shows the example of contradictions that appear between generic business components that commonly occur in any level of businesses, including SME. For example, the

customer provides insufficient feedback in formulating the best value to them by the business owner. The parameter represents the customer as the object that generates harmful factor. This is due to insufficient feedback from them that will bring up a lot of issues, which may affect the information in producing the correct product to the customer. Another parameter represents the value as loss of substance. This is because providing the correct value at the highest level is the top priority for customer satisfaction, but the value is changed or lost along the process of creating the intended product, process or service.

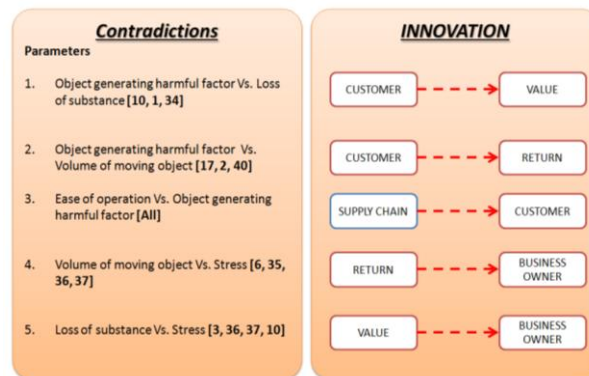


Fig.7. Example of developing concept solution using the contradiction matrix.

Conclusions

The rising costs of technology development would imply tough competition to achieve effective innovation by the SME. Furthermore, the increase of development costs and shorter product life cycles add up to the challenge for SME to justify investments in innovation. Therefore, TRIZ has identified this as a major contradiction for SME. Business improvement model using TRIZ is expected to improve their business system through two approaches; improvement and innovation. Both approaches have become outcome-based key change activities to ensure the effectiveness in the SME business targets and scopes.

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