

## Service Innovation from Sales-Oriented to Customer-Oriented – A Case Study of Air-conditioning Company in Taiwan

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**Abstract**—The industrial reforming strategy of service innovation management with the intense global competition has been recognized as a critical factor of driven to success. This paper conducts an approach of the inventive problem theory, TRIZ, to emerge and integrate the optimal transformation strategy from the service innovation concept which been distinguished to the four dimensions of concept model. Through executing the appropriate industrial reforming strategy comes from the proposed concept model, the result will catch hold of the client's satisfaction and demands.

**Keywords** — *innovation management; Service innovation; TRIZ*

### I. INTRODUCTION

The strategic proposition and value of service function in the enterprises has been recognized much more important and prominent than the tangible products in all intensive and elaborate business competing modules. Admittedly, on the one hand, the weight of industrial structure is highly converted from the good manufacturing to the service offering, which is played as the core character in all economy, whereas it is determined by the value-adding activities or the amount of employee. On the other hand, the pursuance of service value and the proposal of the service content, which both are driven by the advancement of knowledge economic and technology, are far more important than the substantial function of tangible production.

As far as the business operational and competitive proposition is concerned, the new conception and execution of business operation are aimed to get rid of the solidified conservation and the weak competitive advantage in the supply-side. The discussion of the advantage competition of intangible service production or itself in the service science and service innovation has been adopted in the manufacturing industry as the recently diffusion research object in all area.

The massive market changes have masked long-term and irreversible margin erosion in most production intensive business throughout the air-conditioning industry. More and more enterprise have brought the cost management, scale advantage, reflecting a fundamental redefinition by manufacturing institutions of what is core, adding value and differentiated into the focus of shifted the sales-risk to a conception of where customer service quality, efficiency, and reach of operations and technology.

In this article, the industrial background is firstly introduced. Then the construct of service innovation are mentioned in the second place. In search for a solution of service innovation, the theory of Inventive Problem Solving (TRIZ) is proposed on this paper for the transformation strategy. The purpose of this paper is to demonstrate that the application of TRIZ can propound a preliminary result analyzed in the service innovation phase at the final place.

### II. LITERATURE REVIEW

Service innovation itself has difficultly concretized to give a clear identification, especially when there is the role of supplier involved [1]. To put it more concretely, the deploying service innovation strategy is primarily driven by satisfied the requirement of client, and the manufacturer would adopt to carry out the value-adding activities rather than only production [2]. So [3] mentioned that most of minor changes and the existing service products can be accumulated as a component of service innovations. And the conceptual model of service innovation has been developed by four dimensions, the service concept, the client interface, the service delivery system/organization, and the technological options.

Any service innovation involves some combination of the above dimensions, but to group or filter them for shaping an enterprise transformation strategy will require the scientific efficient method or approaches involved. According to [4], the enterprise transformation is a fundamental change of ameliorating organization's configuration and relationship in distinction from the routine change in business process improvement which is the whole point of Total Quality Management (TQM)[5].

TQM is a management philosophy focused on enterprise comprehensive, macro-leadership, culture, structure, process, and to constantly improve the quality of management and operational processes for enhancing the enterprise employees' and customers' satisfaction. It is revolutionary, substantial re-design, and aims to dramatically improve the quality, cost, design speed and the customer service performance indicators. The implementation of TQM often has been seen a kind of continuous transformation in routine business process. It is a slow pace to impulse the change with a long-term of continuous morphing and information delivering [6] By contrast with the TQM, even in practice, the feature of

enterprise transformation is more like substantial, abrupt altering, speedy, and with significant results.

More specifically, enterprise transformation is driven by perceived the new value propositions which might express in different modality. As the indicated by [4], mentioned the scope of transformation which can categorize from the fundamental changes of strategy to the whole enterprise, such as the transformation of markets, offerings, and the perceptions of business operating, which is including the moving from being a traditional manufacturer to a package supplier with completing service. It addresses value from the perspective of customers, thereby the existing organization process has to be redesigned and restructured to achieve the demand, which is following the above-mentioned construct of the service delivery system.

The redesigning and restructuring of organization process is the difficult phase of enterprise transformation which not only needs to correct the definition of each functional department, but also to locate the substantial value of it. For example, facing with the rapid changes of electronic consumer products industry, the new value proposition of business operating is moving from pursuing the high technology involved to employing the lower manpower cost. It seems to a foregone conclusion for the enterprise to impulse the organizational process change and to convert the business tenet, while the strategy and goal of the enterprise has changed from the sales-oriented to customer-oriented.

### III. PROPOSED METHODOLOGY

The proposed approach is intended to dissociate the transformation issues and following the three systematic stages, such as proposition definition, seeking factors, and aggregative solution. First of all, the objective of proposition definition would be translated as the enterprise information into the four service innovation dimensions. In the second place, use the specific tool which is the 40 Inventive Principles to emerge the solutions at the second stage. Then we eliminate and integrate the surplus solution as an executive transformation strategy in the final space.

As mentioned above, a much more accurate methodology, named the theory of inventive problem solving, or called TRIZ developed by [7]. Originally, TRIZ is developed as a methodology which supports a process of generating the innovative idea or inventive activity to a categorized solution. The process is following a systematic way, a six-step process [8], such as situation analysis, problem mapping, root conflict selection, using TRIZ patterns, building Feasible solution, and selecting the best innovation strategy.

The TRIZ is used to tackle the problem of technology and engineering [9]. [10] has mentioned that the initially definition of Contradiction Matrix is particular designed for inventive industrial products, as the 40 inventive principles as well. By observing the Contradiction Matrix<sup>1</sup> and noticed

the 40 inventive principles<sup>2</sup> in the third stage, we can emerge the related factor from the conception model of service innovation. First of all, the proposition definition is described by the 39 features of Contradiction Matrix by Altshuller and given each feature a managerial explanation.

### IV. AN EMPIRICAL STUDY

American Standard Heating & Air Conditioning, which gained the air-conditioning products through the acquisition of the Trane Company in 1984, developed and marketed as an international indoor and outdoor Air Conditioner manufacturer. Nowadays, the Trane not only is the largest centrifugal central air-conditioning company of the world, but also is a pioneer enterprise with leading the development of new technologies. However, the future breakthrough thinking of the air-conditioning industry is not longer determined by what the majority enterprises or manufactories are willing to sell, but by what the customers' requirement is and how to keep the high quality and stable service linking with the venders and clients.

The Trane Company had set up a branch at Taipei in 1987 and established the department of Engineering and Technical Services in 1998 for the purpose of expanding the sales business. In order to efficiently enhance the enterprise's capacity of adapting the aggressive environment and competitors, the Trane in Taiwan had divided the production and sales activities into two subsidiaries in 2001, branded as the Trane Tech Company and the Trane Air-conditioning Company, respectively.

The former company focused on the research and development of products, and the latter company was responsible for the sales, maintenance and repair services, organization restructuring, and business process integration. Next, the Trane set up the Gadget Centre in 2003, which sold the multi-brand air-conditioning system parts, offered their clients the convenient and consultative service.

At the mean time, Taiwan was experienced a dramatic change in rapidly adjusting the structure of traditional manufacturing. The output value of services industry rocketed from 47.3% of GDP in 1986 to the 67.8% in 2004, and eventually reached to the 74.3% at the first quarter of 2006. Therefore, in order to improve the quality of the consumption and office environment, the demands of installing air-condition system was also increasing and taking count. However, Trane was a sales-oriented company that not only tried to introduce the success promoting experience of American Standard, but also emphasized the illustration of production feature, quality, and function.

This tendency forced the Trane Company to execute the enterprise transformation strategy in the aspect of service innovation. The enterprise transformation has been widely concerned and pursued as the key strategy to maintain or gain an ascendancy over the competitive market.

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<sup>1</sup> For the detail of the each feature identification with a managerial explanation in Contradiction Matrix, please reference to the website of TRIZ journal.

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<sup>2</sup> As the same as above.

## V. GENERATE THE POSSIBLE SOLUTION

I. For example, the arising issue is to attach a great importance to the repair and maintenance department of the Trane. On the one hand, this sector shoulders the responsibility of collecting information. On the other hand, it can be used as reference for continuous improvement enterprise products. From the perspective of the clients, the most essential purpose is to achieve the higher its customer value by offering the repair and maintenance service for sustaining to grasp the use of the product life, and providing timely replacement of parts, in order to maintain the operation at a high level of energy efficiency. Therefore, the primary task of managers is how to allocate the limited resources to the maintenance department.

II. This issue could be discussed by following four dimensions for the reason of proposition definition.

### III. Dimension 1: The service concept

IV. This addressed concept of offering the repair and maintenance service for Trane is really new, this particular service idea may already exist in the other markets, rather than applied in the air-conditioning market. And it will involve a new logic or scientific transformation.

### V. Dimension 2: The client interface

VI. This client interface will be systemic redesigned the process of service innovation between the clients and project team, both might be the source of service innovation.

### VII. Dimension 3: The service delivery system

VIII. It refers to the internal organizational arrangements, which indicates what the role of employee and how they perform their duties and deliver the service. In this issue, it usually involves the new organizational construction, or the new personal capabilities and skills requirement.

### IX. Dimension 4: Technological options

X. This issue mentioned that the final propose of the new service is maintaining the operation at a high level of energy efficiency. It clearly is introducing a new or improved technology to reach the cap.

Table 1 The Contradiction Matrix (Part.)

Principle	Force (Intensity)	Stress or pressure	Use of energy by stationary object	Quantity of substance
Shape	35, 10, 37, 40	34, 15, 10, 14		36, 22
Stability of the object's composition	10, 35, 21, 16	2, 35, 40	27, 4, 29, 18	15, 32, 35
Adaptability or Versatility	15, 17, 20	35, 16		3, 35, 15
Productivity	28, 15, 10, 36	10, 37, 14	1	35, 38

XI. As shown in Table 1, we set the default describe of problem is "service innovation", which is eliminated and selected optimally according with the four dimensions and transit to the Contradiction Matrix. The features at the vertical column represent the improving factor, but worsening feature is at the horizon line. Each feature is form the 40 inventive principles, and has been given an optimal unique managerial implication or interpretation.

XII. By observing the Table 1, the feature 35 appears 7 times, so we take the Principle 35 to emerge the explanation

of the recommended strategies. Principle 35 is Parameter Changes, it has four small interpretations[11], such as the change an object's state, change the concentration, change the degree of flexibility, and change the atmosphere to an optimal setting. For this case, the managerial solution which is getting customers excited about the product or service by giving them sense of advantage over their competitors will be an appropriate innovative idea.

XIII. To extend this idea, the enterprise should encourage or organize a project team which is focused on meeting the clients' requirement and tried to put alternative system into the project (change an object's state). Furthermore, to emphases the scope of the project and clarify the uncertainty. The key variable is providing the customized air-conditioning service (change the degree of service flexibility) and deep integration of services model (change the concentration) by Trane to avoiding the price competition.

The integrated product and service is designed as a pack project which is scheduling for the specific requirement of clients and planned by energy/technology service solutions group. The composition of this project is recruited from the other horizontal functional departments, including the product group, service group, repair and maintenance group, to seek and offer the clients a more appropriate and integrity program. Furthermore, the project will benefit from the strong capacity of air condition products and service, to sharply arise the efficiency of high-integrate energy saving program. This pack project called turnkey service that the whole inverter system, light, and high efficiency equipments are designed and provided by the energy/technology solution group as an ultimate goal.

## VI. CONCLUSION

According to the above section, the Trane finally launched a new integrated air-condition services: Energy / technical services solution, called Turnkey service, which has been seen as a service innovation. And the original of integrated idea comes from the recommend solution which combines the different principles of TRIZ. The Turnkey service shifts focus from the original mentality of the product-manufacturing into the service-oriented mentality of customer's needs and satisfaction. And its service innovation mainly comes from its core strengths, such as the professional process value management, the capacity of personnel training and development.

Second, Trane has emphasis on the openness and compatibility of its product to expand the service targets and added value. Due to focused on the commitment of customer service, the result is directly reflected on the air-condition market share, and achieves to 80% or more. It becomes a stable and high percentage of revenue.

Furthermore, in talent training and development section, Trane continues to impose the training on basis of staff's professional skills and the quantitative cost analysis. The one hand, it keeps its own sector of professional knowledge, on the other hand the quantifying the benefits of professional can obtain the customer recognition, so easy to communicate with each other, and to provide more customized service.

At last, the integrated solution is to combine the above both core advantages, and to satisfy the comprehensive requirement from customers. And through the superiority in energy saving, the turnkey project can lower the clients' operation cost. Basis this declaration, to develop with the clients together, the innovation service of Trane is pulled the thresholds invisibly to stay ahead to the competitors, in order to create the blue ocean.

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