

Global Business Strategy for Commercialization of Wastewater Treatment Machine Technology: Lessons from the Trident Water System and Procon Water

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Abstract

Wastewater treatment machine innovation can be supposed to be an innovation that offers water treatment choices and empowers new, imaginative plans of action. The organizations contemplated were the Trident Water System and Procon Water. This review intends to find the illustrations learned by wastewater treatment that is planned in a worldwide business methodology to get better than expected and examination of wastewater treatment organizations to see the commercialization of their innovation. The examination approach utilizes vital administration with a blend I/O (Industry/Association) model and an asset based model. The information utilized in examining this relative review are optional information and essential information. The aftereffect of the exploration is that the two organizations are organizations that are normal.

Keywords

Commercialization Technology, Comparative Study, Global Business Strategy, Wastewater Treatment Machines

1. Introduction

Water is a key component identified with human endurance (Paul, 2017). In numerous nations, guidelines overseeing water the board have been set up to keep up with tidiness and water quality. The requirement for clean water keeps on expanding by the increment in populace, and the quantity of enterprises (CRRamakrishnaiah, et al. 2009) Based on reality, emerging nations with huge populace development have a more pressing issue, contrasted with created nations, to satisfy clean water they need. One of the wellsprings of clean water is a waterway which assumes an imperative part in drinking water and water system (M.T. Sikder, et al., 2013).

In this period, inventive new plans of action are fundamental to have the option to accept the additional opportunities presented by new advancements. Wastewater treatment machine innovation can be supposed to be another innovation that offers additional opportunities and empowers new imaginative plans of action. Right now, wastewater treatment machines are believed to assist organizations with doing things that are reasonable in light of the fact that they will assist with limiting the presence of wastewater created.

The capacity to popularize developments can assist organizations with infiltrating existing business sectors or make new ones, which adds to manageable industry authority and life span (Wallsten, 2000; Salamenkaita and Salo, 2002). Due to the solid need to popularize (that is, organizations regularly depend on items grew a couple of years prior for the majority of their present income items), organizations frequently discover their objectives three to five years in front of new, subtle targets. items (Grove, 1996; Burgelman et al., 2006). The commercialization of this innovation is significant in the improvement of wastewater treatment machine innovation to accomplish worldwide business.

This review will examine the worldwide business technique of commercialization of wastewater treatment machine innovation by taking a gander at the organizations that have delivered these machines so these organizations can keep on filling later on. The companies studied in this study were PT EcoSystem International (Trident Water System) and Procon Djaya Agung (Procon Water). By and by associations regularly have the decision of going around the world, they assess an extent of examinations prior to beginning such expansion. By carrying out the worldwide system, the organization can think about the presentation evaluation of the organization among worldwide organizations (Istiqomah, 2020).

PT Ecosystems International (PT ESI) is a company engaged in providing industrial waste treatment solutions that specialize in electro-coagulation (EC), a unique chemical-free wastewater treatment profile. The company is located in Singapore and Jakarta. PT. This company produces a product in the form of a wastewater treatment machine called ECR. Electro Contaminant Removal (ECR) is Trident Water Systems' wastewater treatment arrangement.

Procon Djaya Agung is located in Bekasi, this company is compiling a water or waste treatment package to make it easier to make a selection of water treatment plans to be used.

The paper plans to find the illustrations learned by wastewater treatment machine organizations in planning worldwide business methodologies to acquire better than expected returns by looking at two organizations, namely trident water system, and procon water. This paper looks at the advantages and challenges of the company from an internal and external perspective.

2. Literature Review

The accompanying writing audit portrays the hypotheses about the idea of worldwide business system, key administration from past research.

2.1 Concept of global business strategy

Globalization has in a general sense changed the manner in which business is imagined and directed. The effect of globalization on business tasks is boundless and far and wide. Thusly, it requires a survey of existing business draws near and verifiable basic guidelines (eg standard working techniques) utilized in the business. For instance, the globalization of business implies that business arranging at all levels currently requires information that is both neighborhood and worldwide. Understanding nearby administrative necessities is just about as significant as considering worldwide prerequisites for monetary movement when setting key corporate targets. Likewise, neighborhood social practices and customs should be perceived when setting set up business tasks and strategies. Inability to change the methodology of maintaining a business can bring about a huge effect on execution. In addition, at the same time influential events, openings, impediments, and fundamental choices similar with indispensable choices should be seen as when business becomes all throughout the planet (Rhinesmith, 1993; Akhter, 2003; Mayer, 2002). Above all, to accept an overall framework as an element of an association's organization strategy, analyze the differences between the inward and outside business conditions (Motohashi. K., 2015).

2.2 Strategic Management Concept

The Strategic Management Process is a progression of responsibilities, choices, and activities that an organization needs to accomplish key seriousness and acquire better than expected returns (Hitt et al., 2007).

2.2.1 Industrial Organizational Model (I/O) (External Environment)

As shown by Hitt et al. (2007), from the 1960s to the 1980s, the outer climate was seen as a critical determinant of the framework a firm chooses to succeed. The cutting edge affiliation (I/O) model of surprisingly good returns explains the prevalent effect of the external environment on an association's principal works out. The model exhibits that the business wherein firms choose to fight greaterly impacts execution than the choices bosses make inside their affiliations. The I/O model shows that shockingly great returns are acquired when firms do procedures coordinated by attributes of the overall climate, industry, and contenders. Firms that make or secure the inside limits fundamental to do the systems needed by the outside climate will without a doubt succeed, while firms that don't will without a doubt fall flat. The I/O model considers an association's strategy a ton of liabilities, activities, and choices that are laid out taking into account the attributes of the business where the firm chooses to fight.

2.2.2 Resource development model

Assets are inputs into a company's creation measures, like capital gear, individual worker abilities, licenses, finance, and capable chiefs. As a general rule, asset organizations are arranged into three classifications: physical, human, and authoritative capital (Hitt et al., 2007).

Individual resources alone may not convey a high ground. Honestly, resources will undoubtedly be a wellspring of advantage when they are fused into capacities. Capacity is the breaking point with respect to a lot of resources for perform effectively regulated in journey for surprisingly good returns. Focus capacities are resources and limits that fill in as a wellspring of high ground for the association over its opponents (Hitt et al., 2007).

Assets, capacities, and center capabilities give the premise to upper hand. Assets are wellsprings of organization capacities. Assets are consolidated to make authoritative abilities. Thus, abilities are the wellspring of the organization's center capabilities, which structure the premise of upper hand. Assets are organization resources, including individuals, brand/brand esteem. Abilities are an assortment, and a bunch of assets will make up an organization's capacities. Mirrors the capacity to utilize assets in a coordinated way to accomplish specific objectives. The connection among substantial and theoretical assets. Improvement through the most common way of trading data and information on human resources. Wellsprings of capacities are the remarkable abilities and information on organization workers and representatives' utilitarian aptitude. Capacities are frequently evolved in a specific helpful part or part of an association. Assets and capacities are wellsprings of an organization's upper hand that recognize the organization's cutthroat even out and mirror its character (Hitt et al., 2007).

3. Methods

The technique in this review utilizes a near investigation of two organizations in commercializing Trident Water Framework and Procon Water as a contextual analysis. Figure 1 shows a research method that uses the comparative concept of the I/O Model and the Resource-Based Model of Above Average Returns in strategic management as a framework for analyzing global business strategy formulation.



Figure 1. Comparative Study Framework

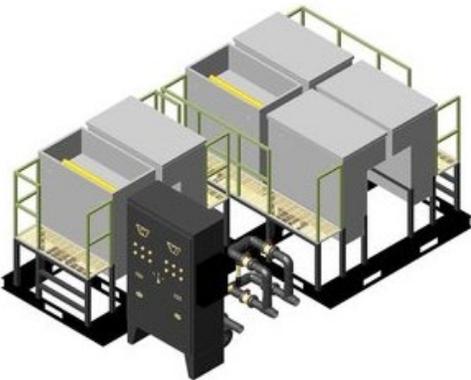
The information utilized in this review are auxiliary information and essential information. Auxiliary information was acquired from the web in regards to the harpoon water framework and procon water and past research diaries. While the primary data was obtained from the results of interviews and questions and answers to one of the trident water system employees.

4. Data Collection

The information utilized in this review are auxiliary information and essential information. Auxiliary information was acquired from the web in regards to the harpoon water framework and procon water and past research diaries. While the primary data was obtained from the results of interviews and questions and answers to one of the trident water system employees.

Table 1 shows the comparison of PT Ecosystem International (Trident Water System) and Procon Djaya Agung (Procon Water).

Tabel 1. Product Comparison

Trident Water	Procon Water
	
<p>Suggested Stream rate: 60 m3/Hr Greatest Stream rate: 180 m3/Hr All out Delivery Weight: 3.5 ton Functional Weight: 10 ton Workspace Faint (mm): 7000 X 7000 Force Prerequisite: 380-440V, 50 Hz Control Board Rating: 500 Amp</p>	<p>Available capacity : 5 – 2500 M3/day Modern solutions for industrial waste & hazardous waste. Effectiveness > 90%</p>

Source : <http://www.tridentwater.com.sg/> and <https://www.proconwater.co.id/beranda>

5. Results and Discussion

5.1 The Industrial Organization (I/O) Model (External Environment)

The outside climate should be examined to decide worldwide conditions in planning vital administration on the grounds that most organizations face mind boggling and testing circumstances (Hitt et al., 2007)..

- General Environment

The overall climate comprises of a segment fragment, a monetary portion, a political/legitimate section, and an innovation fragment. Factors in the general environment can have a broad impact on all firms in an economy. The general environment does not only affect companies but can also affect various elements that

are included in the special environment (Bagas, 2019). Table 2 explains the comparison of general environment between the two companies.

Table 2. General Environment

	Trident Water	Procon Water
Demographic segment	The trident water production center is in Singapore, but there are also subsidiaries in Indonesia.	Procon water comes from Bekasi, Indonesia.
Political / legal segment	Sewerage And Drainage (Sanitary Appliances And Water Charges) Regulations. Cap/SL No:Cap.294, Regulations 1-7 (https://www.iucnael.org)	RI Government Regulation No. 82 concerning water quality management and water pollution control. (http://www.bphn.go.id)

- Industrial environment
 The danger of new participants for squander handling organizations is the development of comparative organizations that offer results of a similar quality. Notwithstanding, lower costs represent a danger to these two organizations, as numerous purchasers look at costs and quality between organizations, making it conceivable to compromise new participants.
- Competitor environment
 Environmental competitors from Trident water and Procon water organizations are other wastewater treatment organizations that additionally produce similar items and focus on a similar market fragments. One more significant thing in a serious climate is the place where water treatment advancements from different organizations can coordinate or surpass the developments made by the two organizations.

5.2 Resources and Capabilities

Table 3. Comparison resource

Aspect	Trident Water	Procon Water
Resource	Have their products that have been recognized - On the authority site there is an item examination (kind of item) to discover the particulars of the item to be utilized - Has divisions in Singapore and Indonesia - Have trademarked patent paten - Has ongoing work in Indonesia, Singapore, Bangladesh, and other countries in the Asia Pacific. - Site : Tridentwater.com.sg	- Have a wastewater treatment system and clean water air - On the official website there is a system that will be used along with the advantages of the system. - Site : procowater.co.id
Capabilities	The product utilizes electricity and iron resources so that it is more environmentally friendly	Procon water not only treats waste water but also treats clean water.

The comparison of Trident water systems and Procon Water companies based on the company's resources and capabilities can be seen in Table 3. Then, the capability is a collection, and a set of resources will form the company's capabilities.

There are some system to popularize the advancements that have been created by scholarly researchers in colleges, for example protecting, authorizing, fire up creation, and college industry organizations (Saputra,2018).

5.3 Competitive advantage

The competitive advantage of Trident Water is “We offer solutions for competitors in the Asian region with performance on par with competitors from the US and Europe” (Theron Madhavan, President Director). So this company is always developing products and always looking for a market that matches the product. In addition, another competitive advantage is that this company has its machine or product that has been recognized, the company also offers consultation for which product or system to use.

The competitive advantage of Procon Water is that it provides partnership packages for the Wastewater Treatment Plant (IPAL), the workforce (operators) will carry out routine inspections to the laboratory. Another advantage is that Procon Water does not only treat wastewater but also treats clean water. In addition, this company also offers a variety of systems that will be used.

5.4 Attractive Industries

The waste water treatment machine industry is very interesting because this technology will continue to develop from year to year. Waste water that was previously thrown into the river and can cause water pollution. Currently, processing is being carried out so that the water is clear and safe for disposal into the river, this can reduce water pollution. The business should likewise comprehend this innovation first and adjust it to the requirements of business purchasers.

5.5 Strategy formulation and implementation

In outer climate, resources & capabilities, upper hand, and appealing industry, it can be concluded that the formulated procedures that made the two companies successful are:

- 1) Always innovate to be better at creating technology.
- 2) Build interaction with clients by building great information access for clients
- 3) Produce items that customers need.
- 4) Provide solutions or input on the best product to be used.

5.6 Above-average Returns

The accomplishment of profits above the trident water system average is deals that have entered in various countries, ongoing work in Indonesia, Singapore, Bangladesh, and other countries in the Asia Pacific (tridentwater.com.sg).

The achievement of returns above the average for Procon water is that they have carried out wastewater treatment works at several factories, hospitals, and companies in Indonesia (proconwater.co.id).

5.7 Lesson Learned

Learning in the aftereffects of this review can be seen from the technique definition completed by the two organizations as a correlation. The two organizations, in particular Spear Water Framework and Procon Water, utilize a system to be acknowledged on the lookout and accomplish better than expected returns. Trident Water System carries out a strategy by focusing on providing innovative wastewater treatment solutions and methods so that they are easily found in various countries. While the advantages of Procon Water have innovation by using several systems used.

The clarification in this paper can be a business technique suggestion for comparable organizations, the system examination in this review can be a proposal for organizations to carry out to accomplish better than expected returns. In addition, it can also find out the source of each company and the capabilities they have so that they get above-average income. Marketed items that are prepared will be acquainted with the ventures and people in general through an organization of organizations, presentations and other limited time exercises (Yuniaristanto,2014).

6. Conclusions

Studies on worldwide business technique utilizing an essential administration system have been done. The writer composes the procedures utilized by Pike Water Framework and Procon Water organizations in fostering their business worldwide. The Trident Water System company achieves above-average results by prioritizing the various types of products available and product specifications, the products produced are also traded market patent products so that consumers are more confident in using these products. Detailed product information can be accessed on the company's website. Procon Water prioritizes products produced with various systems used and not only for wastewater treatment but also clean water treatment, product information and product specifications can be seen on the company website.

The two organizations have additionally executed vital business and effectively promoted developments. This review looks at the business procedures utilized by wastewater treatment organizations so the consequences of this near study can be a suggestion for comparable organizations to execute their worldwide business techniques to accomplish better than expected returns. Ideas for additional exploration are to utilize an ever increasing number of itemized essential information, aside from essential information, search for additional auxiliary information from the web, diaries, and books. So analysts in dissecting worldwide business techniques can be more. Then, at that point, additionally the organization picked for this situation should be considered with respect to the appropriateness of its items.

References

- Aqidawati, E.F., Sutopo, W., Pujiyanto, E. Lesson learned in developing and implementing global business strategy to commercialize battery swap technology: A comparative study. *Proceedings of the International Conference on Industrial Engineering and Operations Management, 2020 (August)*, 2020.
Bagas. Available: <https://brainly.co.id/tugas/24635478#:~:text=Lingkungan%20umum%20yaitu%20beberapa%20faktor.semua%20perusahaan%20dalam%20suatu%20perekonomian>, Accessed on April 20, 2021.
- BPHN. Available: <http://www.bphn.go.id>, Accessed on April 05, 2021.
- Buckley, P. J., & Ghauri, P. N. Globalization, economic geography, and the strategy of multinational enterprises. *Journal of International Business Studies*, Vol.35, No. 2, pp. 81–98, 2004.
- Burgelman, R.A., Christensen, C.M., and Wheelright, S.C. *Strategic Management Of Technology And Innovation*. New York: McGraw Hill Irwin, 2006.
- C.R. Ramakrishnaiah. Assessment of Water Quality Index for the Groundwater in Tumkur Taluk, Karnataka State, India, Vol.6, No.2, pp. 523–530, 2009.
- D. Paul. Research on heavy metal pollution of river Ganga: a review, *Ann. Agrar. Sci*, Vol.15, No.2, pp. 278–286, 2017.
- Grove, A.S. *Only the Paranoid Survives: Exploit the Crisis Point That Challenge Every Company and Career*. New York: Doubleday Dell Publishing Group, Inc, 1996.
- Hitt, Michael, A. Ireland R. D. and Hokkisson, R.E. *Strategic Management*. Presentation by Charlie Cook The University of West Alabama., 2007.
- Istiqomah, S., Sutopo, W., Astuti, R.W. Lesson learned of business strategy for commercializing an e-motor cycle technology: A comparative study. *Proceedings of the International Conference on Industrial Engineering and Operations Management, 2020, (August)*, 2020.
- M.T. Sikder. River water pollution in developed and developing countries: judge and assessment of physicochemical characteristics and selected dissolved metal concentration. *Clean Soil Air Water*, Vol.41, No.1, pp. 60–68, 2013.
- Nida An Khofiyah I and Wahyudi Sutopo. Global Business Strategy for Commercializing a Technology of Drone: A Lesson Learned from DJI Drones and Parrot Drones. *Proceedings of the 5th NA International Conference on Industrial Engineering and Operations Management Detroit*, Michigan, USA, August 10 - 14, 2020
- Procon Water. Available: <https://www.proconwater.co.id/>, Accessed on April 07, 2021.
- Republika. Available: <https://nasional.republika.co.id/berita/nasional/umum/porsc1383/82-persen-sungai-di-indonesia-tercemar-dan-kritis> Accessed on May 14, 2021.
- Salamenkaita, J.P. and Salo, P. Rationales for government interventions in the commercialization of new technologies. *Technology Analysis & Strategic Management*, Vol.14, pp. 183–200, 2020.
- Saputra, I.W., Sutopo, W., Zakaria, R. A business strategy formulation for commercializing university-created technology: A university spin-offs, *AIP Conference Proceedings*, 1931, 030020, 2018.

Solar Impluse. Available <https://solarimpulse.com/efficient-solutions/electro-contaminant-removal-ecr-system>. Accessed on March 15, 2021.

Trident Water System. Available: www.trinderwater.com.sg. Accessed on March 10, 2021

Wallsten, S.J. The effects of government-industry R&D programs on private R&D: the case of the small business innovation research program. *The Rand Journal of Economics*, Vo.31, pp. 82–100, 2020.

Yuniaristanto,, Wicaksana, D.E.P., Sutopo, W., Nizam, M. Proposed business process technology commercialization: A case study of electric car technology incubation. *Proceedings of 2014 International Conference on Electrical Engineering and Computer Science, ICEECS 2014*, 2014, pp. 254–259, 7045257, 2014.

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