

The Impact & Innovation of $E=K.MC^2$ in Singapore Botanic Garden (SBG): The Business Strategy to Gain Competitive Advantage

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Abstract

The environment is one factor that must be maintained and developed its existence because a healthy environment provides enormous benefits to human life. Singapore Botanic Garden is one of the most beautiful gardens in the world and presents an incredible atmosphere. In this journal, we will develop and provide innovative ideas to the SBG as an idea in developing SBG to a wider direction, not only in SBG but can spread all over the world. Environmental problems that are commonly occurring today, can be overcome by such innovations and by using several methods such as The 7S's of Galliers & Sutherland and Competing with the giants of the Harvard business review, we will know to what extent SBG has grown and then $E = K.MC^2$ which is an innovative formula which later developed into SBG University (The Idea & Innovation For the future) which is an innovative idea in expanding what has been done by SBG, innovation is needed, not only to retain existing ones, but to be able to give positive contribution which in giving the true meaning of the vision and mission of the company and / or organization that has been established. Innovation should not stop at one point, but it should be able to spread to other points that can make human life much better.

Keywords: Singapore Botanic Garden (SBG), IS/IT Planning, $E=KMC^2$, Innovation, CRM

1. Introduction

The environment is the most important factor in human life, with the environment being maintained and developed, and then human life will have good health. The work of preserving, nurturing and developing the environment is the job of all of us, and we must all be convinced, even though at this moment we see a lot of environmental damage, we will be able to do so in order to change it. The proverb says, "If you are serious about getting something done, you will find a way (Yǒuzhìzhě, shì jìng chéng). The exploitation of the environment is so great that it causes damage to the quality of human life. We must realize that the environment is a union with humans, we take it, and we should return it back to the environment. By reason, it takes development, strategy setting, and change in the way we treat the environment.

Singapore Botanical Garden located at 1 Cluny Road, Singapore 259569, is a place where we can appreciate nature and make ourselves all amazed at the wonders that come from nature and the important thing is that we realize that the importance of nature in all our lives. Botanic Gardens Conservation International explains some of the important criteria in fulfilling the requirements of botanic garden: (1) a reasonable degree of permanence, (2) an underlying scientific basis for the collections, (3) proper documentation of the collections, including wild origin, (4) monitoring of the plants in the collections, (5) adequate labeling of the plants, (6) open to the public, (7) communication of information to other gardens, institutions and the public, (8) exchange of seed or other materials with other botanic gardens, arboreta or research institutions, (9) undertaking of scientific or technical research on plants in the collections; (10) maintenance of research programs in plant taxonomy in associated herbaria. From these criteria, we understand that the environment, that is nature, is a factor that cannot be separated from human life. Therefore, we must also understand the notion of the botanic garden itself, according to the International

Agenda for Botanic Gardens in Conservation, botanic garden is defined as: “Botanic gardens are institutions holding scientific documents, collections of living plants for the purposes of scientific research, conservation, display, and education. “Furthermore, Jocelyn Dodd & Ceri Jones defines botanic garden:” Botanic gardens, like many organizations in the cultural sector, are concerned with being more socially relevant, working with their communities and addressing contemporary concerns like climate change(Dodd & Jones, 2010). The whole of what has been done by SBG, basically been very well, but changes need to be done to continue to develop what has been built, therefore SBG needs to innovate from the CRM side. In a research written in the American medical association, 1998, Herbal medicine for the treatment of cardiovascular disease, there is an explanation of the use of herbs as a means of treatment and this should continue to be developed so that herbal medicines can be used more often because they have very side effects minimum(Nick H. Mashour, MD; George I. Lin, MD; William H. Frishman, 2015). In the journal Nephrotoxicity and Chinese Herbal Medicine, the use of herbs is very useful, if treated very well and can provide health benefits(Yang et al., 2018). From a more detailed analysis, obtained from the journal The Determinants of Traditional Medicine Use in Northern Tanzania: A Mixed-Methods Study, there is a framework that can be developed into innovation for the Singapore botanic garden:

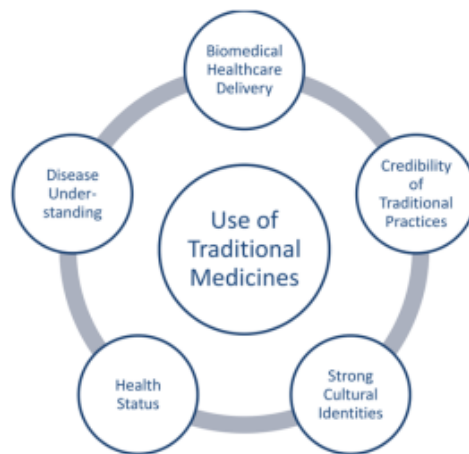


Figure 1. The Use of traditional medicines (Stanifer et al., 2015)



This journal is a literary journal, which is the development from the journal- Educational and enjoyment benefits of visitor education centers at botanical gardens(He & Chen, 2012), from this journal we know that the established botanic garden is an excellent educational tool for the community. This is one side, on the other hand, we need to look further, whether the function is only for the preservation of plants and others or can make other innovations to be used on some things?. Therefore, we use the method: The 7S's Of Galliers & Sutherland (G & S) and next is to use the method proposed by Niraj Dawar and Tony Frost, “Harvard Competing with the Giants: Survival

Strategies for Local Companies in Emerging Markets” Business Review 77(Czinkota & Ronkainen, 2007). As a final result of this journal is to know the level of $E = K.MC^2$ from the Singapore Botanic Garden and what innovations can be done. The main problem of the Singapore Botanic Garden is that there is still a lack of development from alternative treatment/medicine and education development that has not been thoroughly spread, thus contributing more to the world. Moreover, this journal is the result of an analysis of the Singapore Botanic Garden website, which then, we used the 7S McKinsey method to analyze, and next did a survey to find out if the Singapore Botanic Garden needed further innovation, as a final result, we gave the idea, which may be applied at the future Singapore Botanic Garden.

2. Method

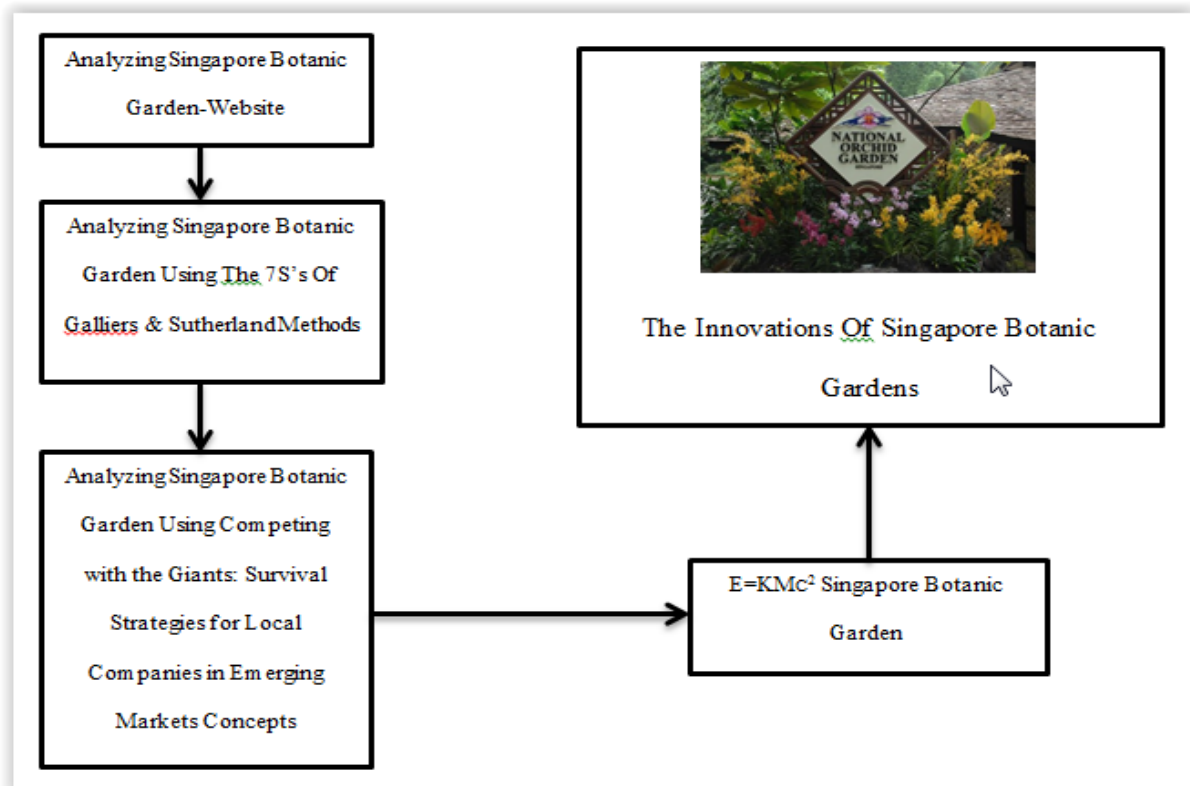


Figure 2. A process of Analyze & Innovations Singapore Botanic Garden

According to figure 2, the first process is to analyze the website of Singapore Botanic Garden, to find out what SBG has done, what is being done and what things are contained in it. The second process is to use The 7S's of G & S method to analyze every element contained in SBG and the extent to which SBG has developed itself and here will the SBG be generated at what level for each element. The third process is SBG analysis using 4 important concepts, where this concept will be able to know what innovations have been done by SBG. The last process is the implementation of $E = KMC^2$ on SBG and what innovations should be done by SBG in the face of global competition. The 7S's of G & S methods can be seen in the following table:

Table 1. The Stages of G&S(Peppard, Galliers, & Thorogood, 2014)

Stages	Descriptions
One	Ad Hococracy
Two	Starting the foundations
Three	Centralized dictatorship
Four	Democratic dialectic and cooperation
Five	Entrepreneurial opportunity
Six	Integrated harmonious relationships

Table 2. The 7 Elements of G & S (Peppard et al., 2014)

7 Elements	Descriptions
Strategy	Plan or course of action leading to the allocation of a firm's scarce resources, over time, to reach identified goals
Structure	Characterization of the organization's chart (i.e, functional, decentralized, etc)
Systems	Procedural reports and routine processes such as meeting formats
Staff	Demographic descriptions of important personnel categories within the firm (i.e, engineers, entrepreneurs, MBS's, etc), the staff is not meant in the line-staff terms
Style	Characterization of how key managers behave in achieving the organization's goals, also the cultural style of the organizations
Skills	Distinctive capabilities of key personnel or firm as a whole
Superordinate goals	The significant meanings or guiding concepts that an organization imbues in its members. Superordinate goals can be also described as the shared values or culture of the organizations

Data collection methods are conducted by conducting surveys and interviews to 100 participants within the university, ie students, and lecturers, and then developed into 200 participants, including 3 universities as the basis for collecting survey data. Here are the questions asked when collecting data:

Table 3. Survey & Interview

Questions	Points
Do you think the Singapore Botanic Garden needs to develop innovations in order to contribute more to the world?	10 20 30 40 50 60 70 80 90 100
Does the Singapore botanic garden need to set up an alternative medicine development center that comes from nature?	10 20 30 40 50 60 70 80 90 100
Does the Singapore botanic garden need to develop an educational connection, so that it can set up R & D in every university?	10 20 30 40 50 60 70 80 90 100

There are 200 Participants. Points 10-40: Singapore botanic garden does not need to develop innovation and contribute anything. 50-point does not answer/hesitate; 60-80: some innovations need to be done in order to continue to grow; 90-100: innovation needs to be done in order to produce something new and can be beneficial to the health and development of alternative treatment. From 200 participants - 120 people have ever been to Singapore botanic garden; 20 people only see the Singapore botanic garden website; 15 people never go to Singapore botanic garden; 15 people say do not know; 30 people say they have gone twice to Singapore botanic garden. From these surveys and interviews, it can be concluded that many people want the Singapore botanic garden to innovate in some ways.

3. Results & Discussions



Referring to the Singapore Botanic Garden website, and the analysis performed using The 7S's of G & S method, the following results are obtained:

Table 3. The Levels of SBG- The 7S's of G&S methods(Gamayanto, 2017)

6 Stages 7 Elements	Stages 1	Stages 2	Stages 3	Stages 4	Stages 5	Stages 6
Strategy	-	-	-	-	SBG	-
Structure	-	-	-	-	-	SBG
Systems	-	-	-	-	-	SBG
Staff	-	-	-	-	SBG	-
Style	-	-	-	-	-	SBG
Skills	-	-	-	-	SBG	-
Superordinate goals	-	-	-	-	-	SBG

The explanation is as follows: on the **strategy-structure-systems** and **superordinate goals**-the Singapore Botanic Garden has a vision and mission that is very supportive of the future, therefore SBG became one of the best botanic gardens in the world. SBG's vision is A tropical botanical garden of international renown and A national icon, key tourist destination, and flagship park; mission - Connecting people and plants through publications, horticultural and botanical displays, educational outreach, and events, provision of a key civic and recreational space, and playing a regional center for botanical and horticultural research and training. Therefore, SBG reaches level 6 on superordinate goals. One strategy that is owned by SBG is The Singapore Herbarium. The Herbarium collections mainly include materials from the Malesian region (Peninsular Thailand, Malaysia, Singapore, Brunei, Indonesia, the Philippines and New Guinea) and adjacent areas (East Asia, mainland SE Asia, the Southwest Pacific), with the most extensive collections from Singapore and Peninsular Malaysia dating from the 1880s. Out of these, about 8000 are type specimens. There are still many strategies that are owned by SBG, but all that, still not enough and still need to be developed. Therefore, SBG strategy is at level 5. In terms of structure and systems, SBG has a very good system in presenting things in enjoying the atmosphere in SBG and bringing a complete education of nature to the community, so that people can be more appreciative nature, more than it should be. Therefore, the structure and system sections are at level 6. In the **staff-skills-style** section, SBG has an attractive style to bring comfort to visitors, and moreover, education is provided very well in SBG and excellent maintenance, by, Therefore, the style is at level 6. Staff and skills positions have highly skilled research staff, but this needs to be developed, not only in SBG but in subsequent wider innovations, additional staff and skills are needed to achieve that matter. therefore, staff and skills positions are at level 5

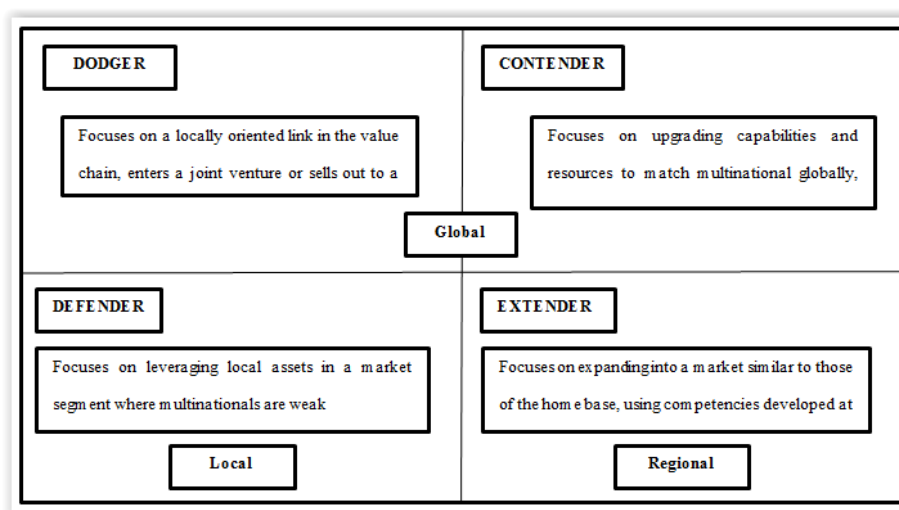


Figure 3. Competing with the giants, Harvard business review(Czinkota & Ronkainen, 2007)

According to figure 3, market globalization has the meaning of making choice strategies - whether to become a defender, dodger, extender or contender in the face of global competition. Being a defender means focusing on enlarging local competitive assets on a market segment where multinational companies are not so strong. The key to success for defenders is to concentrate on the advantages found in the domestic market. Often, it is necessary to customize products and services with specific customer needs and is not uncommonly unique. Defenders need to resist the temptation to try to reach all customers or imitate multinationals. A defender will perform better by focusing on consumers who value local touch and ignore consumers who are fonder of global brands. Being a contender means focusing on developing markets to neighboring countries by relying on the competencies built in the country. Having the right assets that can be transferred can use their success in the country as a platform for expansion to all places. Extender companies can enlarge assets more effectively by searching for similar markets, markets similar to markets in countries of origin in terms of consumer preferences, geographic proximity, distribution channels, or government regulation. If a company with only strong domestic competitive assets faces strong pressure toward globalization, then the company must be a dodger. The company will not be able to simply rely on its local assets; the company has to rethink its business model. If assets are only valuable in the country, then the best way is to joint venture with and/or sell the entire company to multinational companies. Being a dodger is probably the most difficult choice to implement the four strategies above, but by focusing on a carefully selected niche, a dodger company can use its local assets to build effective positions. The last strategy is to be a contender. Contender means doing all the effort to develop its competence in the global market, and therefore competing head-to-head with other global companies. Here, the company must still consider its sales strategy on a global level. If the competitive assets can be moved, the company may be able to transform itself into a multifarious company. A contender company focuses on enhancing the capabilities and resources to compete with multinational companies globally, often to survive in its market niche. From the analysis done, with 4 types of strategies, SBG, which initially became a defender, jumped away into dodgers and extenders, it is very interesting that a garden can expand its market and make the whole world interested to see it; one important thing that needs to be developed by SBG is to be a contender. This will be explained further.

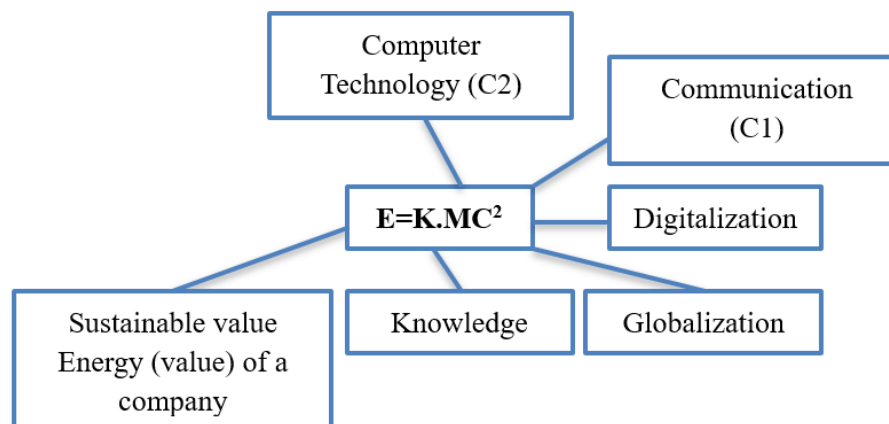


Figure 4. Strategic Challenge in the new economy (Hermawan, 2005)

K is the company's ability to improve and utilize knowledge. M is what is called marketing, which is the company's ability to enable interaction with the market, interact with customers in the commercial market, with employees in the competency market and with shareholders in the capital market. C^2 is a computer technology and communications to build competitive advantage. The simple formula brings a very fundamental challenge for companies that want to achieve sustainable value in the new economy. As described above, the equation contains three core components K, M, C^2 . The first component, C^2 , explains that if you want to succeed in a new economy, it will inevitably have to digitize the corporate network, and the final component, K, demands to segregate the business. This is the requirement for the success of a business. The above formula can be developed by SBG to Singapore Botanic Garden University, with the following framework: (the following is an innovative idea that may be applied in Singapore botanic garden in developing the organization)

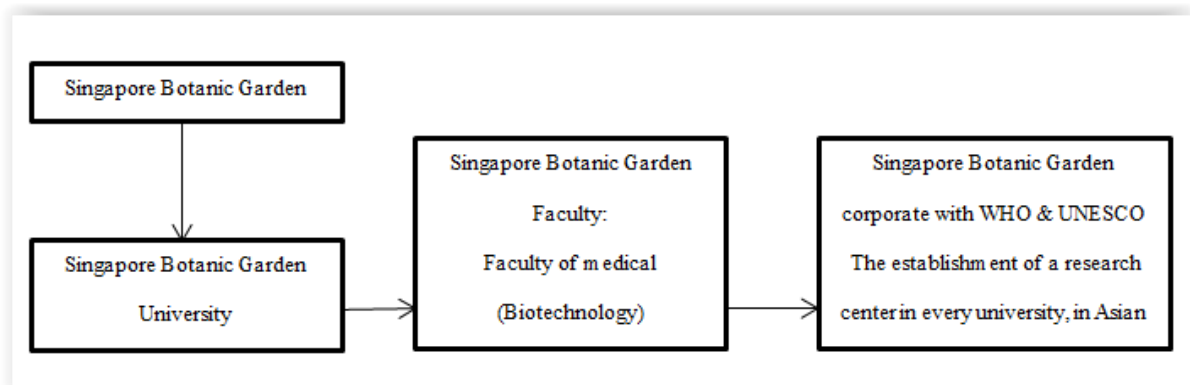


Figure 5. Innovations inside Singapore Botanic Garden- Singapore Botanic Garden University

According to figure 5, this is an innovation process that can be done by SBG. In view of the present situation, the increasingly damaged environment and the occurrence of environmental pollution, SBG can establish the Singapore Botanic Garden University, where SBG can be an example for the whole world, that SBG University can be one of the leaders in improving the environment and producing human resources. not just focusing on profit, but balance like a yin-yang. The first thing is to establish the faculty of medicine, where here SBG can produce doctors who use plants as alternative medicine, the environment can be utilized as well as possible and give health contribution to society. Doctors are not just focused on chemicals that contain chemicals, but doctors produced by SBG University are doctors focusing on alternative medicine, keep in mind that plants are the most powerful drug because they have few side effects, unlike other drugs which have existed. Again, we need to look at the balance; in addition to focusing on existing medicines, then the drugs produced from plants and/or the environment are powerful ways of providing health to the people. The next process is to set up a management faculty, why is it so important ?, we know many companies that have CEOs and great leaders in them, but sometimes do not have the feeling that sometimes the environment also needs to be considered. This faculty of management will be able to produce leaders who have a yin-like balance that is leaders who not only have a very high knowledge in the field of management but also have a very big concern for the environment. This awareness must be built first in the university because it is impossible if we demand that leaders understand the matter concerning the environment, but upon completion of university education, never get any explanation about the impact resulting from utilizing the environment incorrectly. Therefore, SBG University can be one of the best universities, providing a different education than any other university, which is, by providing environmentally-based management knowledge. And the last is the faculty of information systems and technology(Gamayanto, n.d.), this faculty will be able to create sophisticated alternative technologies and systems that companies should have in order to reduce the impact of damage to the environment

For example, creating alternative fuels for motor vehicles, we know that so far many companies have focused only on electric power, SBG universities can develop this and then be able to sell it to other countries as an alternative in creating a healthy environment with materials fuel alternative that is more friendly to the environment, the fuel that is created from the environment around us. Of the 3 things that have been described, there may be questions, whether using the environment as an alternative development, does not that also damage the environment?, The answer is that we do not stop up to K and MC^2 , there is still an E formula that has not been discussed here. Of all the developments undertaken, it takes the development of research and development more focused. For example, SBG universities can set up R & D at every university in ASIA, in cooperation with them; the R & D must have an impact on those universities, and can be seen examples of highly innovative offices, established by Amazon.com. The R & D was founded not only focusing on the development of alternative medicine and technology but looking at the situation of every university that works together, if possible, then established a place in the cultivation of plants, established a park in each university, this will be able to make each university appreciate the environment, and the students will be able to slowly change their paradigm to the environment. From those who have no concern for the environment become concerned with the environment. We can change the culture, by doing a change of action slowly, starting from the mindset that has been taught, to be a green mindset. From here will be creating awareness of the high environment and the creation of leaders who pay attention to quality and quantity. Quality and quantity must be balanced, we cannot stand on one side only, focusing on quality but sacrificing quantity and/or focusing on quantity but sacrificing quality. The balance between quality and quantity can be explained as

follows: When we use the environment as an alternative, we must also produce special places by setting up parks on every land that can still be utilized as a healthy environment. From this production will not stop, and also the creation of a new culture, where the culture will be able to change from top to the level that. The state of concern to the environment, it will be passed down to every state, from the state will be relegated to the big cities and then the small towns, which are then relegated to the villages, and then spread throughout the family. Change must start from the leader, if the leader is able to give a concrete example then the change will be possible to change

As Vernon H. Heywood says - One of the consequences of global change, especially demographic and climatic, will be a demand for novel plant growth. As a consequence, botanic gardens will face an opportunity to regain their respective positions in the assessment of new germplasm, both of ornamentals as well as other economically important plants. Plant introduction has remained largely unchanged over the past 400 years and is as often as possible. In particular: (1) the base of plant introduction needs to be broadened; (2) closer cooperation with agricultural genebanks should be established; (3) agreement should be between the botanic gardens and the agricultural sector on their respective responsibilities (4) the quality and sampling of the accessions should be more strictly controlled; (5) proper evaluation of the introductions before they are disseminated; (6) information on the accessions of plants and their fate needs to be maintained and disseminated; and (7) full cognizance should be taken of policies to protect against invasive species and care should be taken to evaluate the risks that new introductions might represent. Finally, consideration should be given to the introduction of a code of conduct for plant introductions by botanic gardens in association with other agencies (Heywood, 2011). He says Thus, it is reasonable to conclude that the VEC non-visitors are gaining knowledge on environment protection " than the VEC non-visitors. An alternative explanation for the fact that, as in most BGs, visiting the VEC was optional for visitors. Thus, the VEC visitors may be willing to gain new knowledge and information compared to VEC non-visitors. Determining which explanation is plausible in this study requires further investigation. Nonetheless, the study results strongly suggested that the VECs in BGs do play a significant role in education. Older people tended to be more strongly influenced by the VEC visitation of young people, probably because much of the information was more accessible to adults, with a limited number of displays that fit the interests of teenagers (He & Chen, 2012). Kate a. Hardwick says a relatively easy first step for botanic gardens to take to engage in restoration is to make information and expertise can provide more available for use by restoration practitioners. In effect, scientists from botanic gardens can recast their own experience and knowledge base in horticulture, curation, species-based research, and educational displays for new purposes beyond the garden. Dissemination through outreach initiatives, joint projects, and short courses puts this expertise to work (Hardwick et al., 2011). From here, when SBG University can be established, it will be able to expand its influence on health in a larger environment.

Innovation needs to be developed with respect to the environment, innovation means developing what already exists, working together in developing and caring for the environment. The environment is a source of human life that can continue to be developed and in the search for alternatives that do not stop at one point, dissatisfied only on what already exists, but have ambitions in developing towards a more directed balance. Innovation is a balance between quality and quantity, innovation is a change done to provide health benefits to the community, not just focusing on personal and/or corporate profits, and innovation is a healthier change of culture, changes in mindset and changes in systems and technologies used to the daily activities of man.

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4. Conclusions

- Singapore Botanic Garden is one of the most beautiful parks in the world established by Singapore, as a means of providing environmental education, in which case the Singapore Botanic Garden has provided the best example of environmental concerns
- The 7S's of Galliers & Sutherland is one of the earliest methods of analysis at the Singapore Botanic Garden to find out how far the Singapore Botanic Garden has evolved and innovated
- The competing with giants method of the Harvard business review yielded in-depth analysis that the Singapore Botanic Garden has reached 3 strategic positions namely dodger-defender and extender, which later developed into extenders. Formula $E = K.MC^2$ is a very simple formula but can be used to develop the next innovation idea

- Singapore Botanic Garden University can be established as one of the universities based on further environmental development and can benefit from the leadership, treatment, and development of alternative technologies.
- Singapore botanic garden can develop by developing research and development and cooperating together, especially in the development of alternative medicine, the environment can be used as an innovation in the discovery of alternative medicines that can be useful in the treatment of cancer and other diseases.

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