Cost recovery strategies for public sector Botanic Gardens

Wong, Wei Har

2005

Wong, W. H. (2005). Cost recovery strategies for public sector Botanic Gardens. Doctoral thesis, Nanyang Technological University, Singapore.

<https://hdl.handle.net/10356/7795>

<https://doi.org/10.32657/10356/7795>

Nanyang Technological University

Downloaded on 26 Apr 2023 19:25:48 SGT

COST RECOVERY STRATEGIES FOR PUBLIC SECTOR BOTANIC GARDENS

WONG WEI HAR

NANYANG BUSINESS SCHOOL
NANYANG TECHNOLOGICAL UNIVERSITY

2005

Cost Recovery Strategies For Public Sector Botanic Gardens

Wong Wei Har

Nanyang Business School

A thesis submitted to the Nanyang Technological University
in fulfilment of the requirement for the degree of
Doctor of Philosophy

2005

ACKNOWLEDGEMENTS

Doing this degree of Doctor of Philosophy on a part-time basis while holding a full-time job is a challenging journey. This journey is made with the support and encouragement of the following:

Dr Russell Arthur Smith, Director, Nanyang Executive Programme, Nanyang Business School, for the supervision of this dissertation.

Dr Chin See Chung, Director, Singapore Botanic Gardens for access to information and materials and for the thought-provoking comments to the author's views.

Dr Julia Kornegay, Director, Fairchild Tropical Garden for permitting the SERVQUAL survey to be conducted in the Garden and for access to information and materials.

Directors and staff of botanic gardens from around the world who participated in this study.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	2
LIST OF TABLES	6
LIST OF FIGURES	9
LIST OF APPENDICES	10
ABSTRACT	11
CHAPTER ONE	13
INTRODUCTION	
1.1 Background	13
1.2 Research issues	14
1.3 Objectives of the study	15
1.4 Usefulness of the study	16
1.5 Organization of this thesis	17
CHAPTER TWO	18
LITERATURE REVIEW AND PROPOSED MODEL	
2.1 Entrepreneurship in public sector organizations	18
2.2 Cost recovery in public sector organizations and botanic gardens	26
2.2.1 Need for cost recovery and examples	31
2.2.2 Pros and cons of cost recovery	35
2.3 Existing models, theories and literature	39
2.4 Proposed Model of present study	45
2.4.1 Factor 1: Revenue Generation is included in the botanic garden's mission on botanical and horticultural research, education, conservation and recreation	46
2.4.2 Factor 2: Strategic Partnership is sought to fund the botanic garden's operating budget	49

2.4.3	Factor 3: Customer Satisfaction is included in the botanic garden's traditional scientific and social priorities	57
2.4.4	Factor 4: Financial Incentive is present for the botanic garden to enhance its fiscal sustainability	67
2.4.5	Proposed Model	69
2.5	Summary	70
CHAPTER THREE		71
RESEARCH METHODOLOGY		
3.1	Overview of research methodology	71
3.2	Data collection	72
3.3	Selection of botanic gardens	74
3.4	Computation of cost recovery ratios	75
3.4.1	Cost recovery ratio analysis	75
3.5	Selection of study sites	75
3.6	Scheduling of overseas field trip	77
3.7	Review of critical factors of proposed model	77
3.7.1	Review of factor 1	77
3.7.2	Review of factor 2	80
3.7.3	Review of factor 3	81
3.7.4	Review of factor 4	82
3.8	Summary	83
CHAPTER FOUR		84
RESULTS AND ANALYSIS		
4.1	Results of cost recovery ratio computation	84
4.2	Analysis of cost recovery ratios computed	84
4.3	Qualitative and quantitative analyses	87
4.3.1	Critical factor 1: Revenue Generation is included in the botanic garden's mission on botanical and horticultural research, education, conservation and recreation	89
4.3.1.1	Results of indicator checks for the two case gardens	89
4.3.1.2	Statistical results for botanic gardens in general	91
4.3.2	Critical factor 2: Strategic Partnership is sought to fund the botanic garden's operating budget	100
4.3.2.1	Results of indicator checks for the two case gardens	100
4.3.2.2	Statistical results for botanic gardens in general	103

4.3.3	Critical factor 3: Customer Satisfaction is included in the botanic garden's traditional scientific and social priorities	106
4.3.3.1	Results of indicator checks for the two case gardens	106
4.3.4	Critical factor 4: Financial Incentive is present for the botanic garden to enhance its fiscal sustainability	113
4.3.4.1	Results of indicator checks for the two case gardens	113
4.4	Summary	115
CHAPTER FIVE		117
DISCUSSION AND CONCLUSION		
5.1	Discussion of research findings	117
5.2	Practical applications of findings for botanic gardens	129
5.3	Limitations of the study	136
5.4	Future directions for research	137
5.5	Conclusion	139
APPENDIX		145
BIBLIOGRAPHY		245

LIST OF TABLES

		Page
1	Definition of public and private sector entities	27
2	Fifteen critical factors for successful implementation of revenue generation activities	40
3	Ten factors around which entrepreneurial public organizations are built	41
4	Twelve factors for commercialization of public sector technology	42
5	Re-organization of the critical factors of Thurston and Richardson's Model (1996) into four categories	43
6	Re-organization of the critical factors of Osborne and Gaebler's Model (1992) into four categories	44
7	Re-organization of the critical factors of Radosevich and Kassicieh's Model (1994) into four categories	45
8	Distillation of the critical factors from Thurston and Richardson's Model (1996), Osborne and Gaebler's Model (1992) and Radosevich and Kassicieh's Model (1994) into four categories	46
9	Proposed model of four critical factors that promote cost recovery performance in a botanic garden	70
10	Indicators for critical factor 1	78

11	Indicators for critical factor 2	81
12	Indicators for critical factor 3	82
13	Indicators for critical factor 4	83
14	Cost recovery ratios of botanic gardens for Financial Year 1997; arranged numerically in ascending order	85
15	Cost recovery ratios of botanic gardens for Financial Year 1998; arranged numerically in ascending order	86
16	Checking of indicators against critical factor 1 to see if they match predicted “effect” pattern	90
17	Presence/absence of revenue generation in mission statement (FY 1997)	92
18	Presence/absence of revenue generation in mission statement (FY 1998)	93
19	Findings on the awareness of botanic garden administrators of the need for revenue generation to fund botanic gardens	96
20	Findings on the awareness (detailed) of Botanic Garden administrators of the need for revenue generation to fund botanic gardens	97

21	Checking of indicators against critical factor 2 to see if they match predicted “effect” pattern	101
22	Percentage reliance on strategic partnerships to fund operating expenditure (FY 1997)	104
23	Percentage reliance on strategic partnerships to fund operating expenditure (FY 1998)	105
24	Checking of indicators against critical factor 3 to see if they match predicted “effect” pattern	107
25	Service expectation and performance scores for Singapore Botanic Gardens	109
26	Service expectation and performance scores for Fairchild Tropical Garden	110
27	Checking of indicators against critical factor 4 to see if they match predicted “effect” pattern	114

LIST OF FIGURES

	Page
1 Collaboration Continuum	55
2 A framework for linking quality to performance	61
3 Volvo's model of the factors that affect financial performance	63
4 Two levels of expectations	65
5 Singapore Botanic Gardens' 3-core concept	121

LIST OF APPENDICES

	Page
I American Association of Botanic Gardens and Arboreta (AABGA) Corporate Sponsorship Programs: Survey and Case Studies of AABGA Institutional Members	145
II Computation of cost recovery ratios	148
III Mission statements of 19 botanic gardens	150
IV Three-item rating questionnaire	157
V SERVQUAL survey questionnaire	164
VI Culture statement of Singapore Botanic Gardens	167
VII Results of SERVQUAL survey for Singapore Botanic Gardens	168
VIII Results of SERVQUAL survey for Fairchild Tropical Garden	202
IX Santa Barbara Botanic Garden Board Profile	238
X Santa Barbara Botanic Garden Board Giving Expectations	240

ABSTRACT

Botanic gardens are increasingly finding themselves having to change radically their traditional ways of doing business. Declining budget appropriations are forcing botanic garden administrators to turn to direct commercial activities to mitigate the impact of cuts in state funding. While they need to grow their business expertise, they also need to change the mindset of staff and stakeholders that managing botanic garden as a business will compromise the traditional scientific roles of botanical and horticultural research, education and conservation.

Botanic gardens as a business have received very little attention from researchers and academics. This study makes a primary contribution to the understanding of what drives botanic garden operations and how this type of organization grapples with the need to raise its own revenue without compromising its traditional scientific and social roles.

This study is a comparative case study of two botanic gardens, Singapore Botanic Gardens and Fairchild Tropical Garden in Miami, Florida, United States of America, complemented by quantitative tests conducted on other botanic gardens. Based on prevailing literature and existing models, this study identifies four critical “cost recovery” strategies or factors. It develops

the proposition that the presence of certain critical factors promotes cost recovery performance in botanic gardens.

The first critical factor is that revenue generation is included in the botanic garden's mission on botanical and horticultural research, education, conservation and recreation. The second critical factor is that strategic partnership is sought to fund the botanic garden's operating budget. The third critical factor is that customer satisfaction is included in the botanic garden's traditional scientific and social priorities. The fourth critical factor is that financial incentive is present for the botanic garden to enhance its fiscal sustainability.

The research findings recommend the first and third critical factors as possible factors that will promote better cost recovery performance when present. The study also confirms the second and fourth critical factors as factors that produce better cost recovery performance when present. Finally this study contributes to a better understanding of the mindset of those managing botanic institutions; the concerns these institutions face as they take the major step to operationalize these strategic factors that promote cost recovery performance to face the challenge of attaining greater financial independence while fulfilling their traditional agenda of botany, horticulture, research, conservation, education and recreation.

CHAPTER ONE

INTRODUCTION

1.1 Background

In recent years there have been increasing calls for a reassessment of public services. Isacc-Henry, Painter & Barnes (1993) traced the start of managerial reformist agendas to a growing concern about government performance as early as the 1960s. The 1970s were characterised by momentous external shocks which destabilised the world economy. The resource difficulties experienced led to retrenchment and challenges of cutback management in a financially constraining climate. That decade was also associated with major institutional re-organization throughout the public sector. Wilson (1998) observed that it has become fashionable to believe that the public sector was inherently inefficient and needed to be revolutionized so that it approximated more closely to the private sector model. Critics like Osborne and Gaebler (1992), viewed the public service structure and practices as impediments to economic efficiency and a hindrance to the development of a customer awareness culture. They pointed out that the traditional bureaucratic public sector based largely on virtues such as stability, predictability, continuity, adherence to rules and regulations, and a system of recruitment, selection and training which ensured these virtues were inculcated and perpetuated

resulted in a government that is slow, inefficient and impersonal. There is a need for alternative frameworks to guide the management of public sector organizations¹; a need to reinvent and streamline government and to introduce to the public sector market-related mechanisms such as competition, market segmentation, user fees, and a customer focus (Osborne and Gaebler, 1992).

1.2 Research issues

Against the backdrop of the above discussion, this study organizes its research issues in two parts:

- Part I aims to identify a set of strategies that encourage entrepreneurship² and hence, cost recovery in public sector organizations. This involves reviewing prevailing literature and existing models as the basis for devising a proposed model of critical factors that promote cost recovering performance in public sector organizations.
- Part II selects botanic gardens listed in the International Directory of Botanic Gardens V (Heywood, Heywood & Jackson, 1990) and that meet the definition of a public sector organization as defined by Jones (1985). This list is updated against the database of the Botanic Gardens Conservation

¹ Public sector organizations are defined in Chapter Two.

² Entrepreneurship is defined in Chapter Two.

International (2000). A cost recovering botanic garden means the organization is entrepreneurial in its approach and it is proactive in generating new sources of revenue. In this study a “better” cost recovering botanic garden is defined as having a cost recovery ratio³ of one or more ($CRR \geq 1$). A partially cost recovering botanic garden has a cost recovery ratio of less than one ($CRR < 1$). These two categories of cost recovery performers will form the framework for testing the study proposition that certain critical factors promote cost recovery performance in botanic gardens.

1.3 Objectives of the study

This study aims to achieve the following objectives:

1. To gain an understanding of cost recovering public organizations by reviewing prevailing literature and existing models on the subject.
2. To identify critical factors that encourage entrepreneurship in public sector organizations that lead to better cost recovery performance.
3. To apply the identified critical factors to selected public sector organizations represented by botanic gardens to test their validity.

³ Cost recovery ratio is defined in Chapter Two.

The research proposition and methods are presented and discussed fully in Chapter Three (Research Methodology).

1.4 Usefulness of the study

The findings of this study will be useful for managers in public sector organizations. It seeks to contribute to the understanding of how entrepreneurial public sector organizations conduct their business, the obstacles faced in pushing ahead with revenue generation activities and the common mistakes made in embarking upon an entrepreneurial journey. The findings will provide a roadmap for those public sector organizations considering the adoption of a more entrepreneurial approach within their organizations.

This study fulfils a practical need for botanic gardens which are facing increasing pressure for them to enhance their self-sustainability, highlighting the reasons why botanic gardens need to be entrepreneurial and innovative to turn in a cost recovering performance. This study will learn from the experiences of existing cost recovering gardens, answering questions of what these innovative, cost recovering gardens have in common; what incentives they provide to create such different behaviour; what they have done which, if other botanic gardens do the same, would make entrepreneurship the norm and bureaucracy the exception. The proposed model of cost recovery

strategies is another measure botanic garden managers could adopt if they are to create workable cost recovering organizations.

1.5 Organization of this thesis

This thesis is organized into five chapters. In Chapter Two, a review of definitional literature, existing literature, theories and models on cost recovery in public sector organizations in general and botanic gardens in particular is presented. The need for cost recovery is examined and a proposed model of strategic factors that will promote cost recovery performance in botanic gardens is developed.

Chapter Three presents the study methodology employed, detailed information about the sample, identification of key indicators to measure the validity of the proposed strategic factors and data collection procedures. The qualitative and quantitative results of the study are reported and analyzed in Chapter Four. Chapter Five discusses the major findings, practical implications of the findings for botanic gardens, limitations of this research, directions for future research and closes with conclusions of the study.

CHAPTER TWO

LITERATURE REVIEW AND PROPOSED MODEL

2.1. Entrepreneurship in public sector organizations

This study aims to identify a set of strategies that promote cost recovering performance in public sector organizations, specifically public sector botanic gardens. It is therefore necessary to define key terms such as *entrepreneurship*, *public sector organizations* and *cost recovery*.

Entrepreneurship historically referred to the efforts of an individual who takes on the challenge of translating a vision into a successful business enterprise. Drucker (1993) described an entrepreneur as using resources in new ways to maximise productivity and effectiveness.

Entrepreneurship is an on-going process that can occur in organizations of all sizes and types. The entrepreneurial process has both attitudinal and behavioural components. Attitudinally, it refers to the willingness of an organization to embrace new opportunities and take responsibility for effecting creative change. Behaviourally, the process includes the set of activities required to (a) identify and evaluate an opportunity; (b) define a

business concept; (c) identify the needed resources; (d) acquire the necessary resources; and (e) implement, operate and harvest the venture.

The basic components are applicable to both private and public sectors. This is confirmed by Morris and Kuratko (2002) who applied the entrepreneurial process to a public university and found that some of the tools and concepts from the private sector that are useful when trying to understand or facilitate developments in each stage of the process are equally applicable to a public sector organization.

The term “entrepreneurship” has been used in the public administration literature in a number of diverse ways. Lewis (1980) noted that public entrepreneurs differ from ordinary managers in their ability to alter the existing allocation of scarce public resources in fundamental ways.

An alternative research stream defined public entrepreneurship as a likely by-product of the application of strategic management and leadership principles to public enterprises. In the process, the public sector organizations are thought to be more likely to identify new opportunities and generate new process and service innovations, thereby affecting organizational transformation (Mokwa and Permut, 1981).

In the “reinventing government” literature of Osborne and Gaebler (1992, 18), an “entrepreneurial” government searches for more efficient and effective ways of managing:

It is willing to abandon old programs and methods. It is innovative and imaginative and creative to take risks. It turns city functions into money-makers rather than budget-busters. It eschews traditional alternatives that offer only life-support systems. It works with the private sector. It employs solid business sense. It privatises. It creates enterprises and revenue generating operations. It is market oriented. It focuses on performance measurement. It rewards merit.

An “entrepreneurial” government by the definition of Osborne and Gaebler (1992) would be expected to turn in a cost recovering performance.

On the surface public sector entrepreneurship would seem to have much in common with entrepreneurship in a large corporation in the private sector (Morris and Kuratko, 2002). However there are key differences. Public sector organizations are traditionally seen as not having a profit motive; instead they are guided by social and political objectives. Public sector organizations also have less exposure to the market and less incentives for cost reductions, operating economies and efficient resource allocation; resources tend to be allocated based on equity or fairness considerations and

political pressures. This means there is less or no incentive to promote cost recovery performance for public sector organizations. These organizations also receive funds indirectly from involuntary taxpayers rather than directly from a satisfied and voluntary customer. They also have difficulties in identifying the organization's "customers" because there are typically a number of different publics being served by a given agency, department or unit. They are, however, subject to public scrutiny, such that major decisions have to be made with transparency; decisions must involve consensus among and consultation with a variety of interest groups and constituencies.

These differences raise fundamental questions as to whether entrepreneurship that promotes cost recovery performance can be applied in public enterprises or even whether it should be applied at all. Morris and Kuratko (2002) argued that creating value for customers, putting resources together in unique ways and being opportunity driven are not inherently in conflict with the purpose of public sector organizations. They pointed out that there is a growing need for entrepreneurial approaches in public administration. The contemporary environment confronting public sector managers is far more complex, threatening, and dynamic than in years past.

It is recognized that the public sector entrepreneur confronts unique obstacles. Ramamurti (1986) discussed multiplicity and ambiguity of goals, limited managerial autonomy and high political interference, high visibility,

skewed reward systems, a short-term orientation (reinforced by budget and election cycles) and restrictive personnel policies. To these obstacles are added the lack of competitive incentives for improved performance, difficulties in segmenting or discriminating among users, and a lack of accountability among managers for innovations and changes.

Drucker (1993), however, recognized that for public-service institutions to be cost recovering, they need to be as entrepreneurial and innovative as much as any business because the rapid changes in today's society, technology, and economy, are simultaneously an even greater threat and opportunity to them. Prokopenko and Pavlin (1991) hypothesized that public enterprises throughout the world must develop entrepreneurial behaviour in order to survive as enterprises. Spilling (1994) suggested that the traditional notion of an entrepreneur as an independent, innovative individual acting in response to an isolated entrepreneurial event be expanded to include the role of "community entrepreneur". Trauer and McIntyre (1998) identified Government as "community entrepreneur" and recognized that community entrepreneurial activity can take place at all levels of government (national, state and local).

Governments around the world have been re-assessing the role of their public sector organizations as observed by Wilson (1998) who pointed out that the management of public services has undergone significant change. Private

sector values and techniques have been imported as change has been imposed. Bureaucratic and monopolistic provision of services, and the alleged concomitant indifference to the consumer, have been replaced by a sharper focus on customer care and efficiency, delivered largely by means of restructuring, market forces and an emphasis on performance measurement.

For example, the New Zealand government started deregulation of its economy and liberalization of the nature of its government administration in the early 1980s when the country was suffering from slow economic growth, high fiscal deficits and a large national debt. In 1986 the State-Owned Enterprise Act transferred trading functions from government departments and agencies to new commercial organizations which continued to report to government ministers. As State-owned enterprises were often in a monopoly situation, it was relatively easy to establish them as limited liability companies with a mandate to make a profit, a move that collectively earned the government more than NZ\$263 million (S\$230.65 million⁴) in 1992 (Thurston and Richardson, 1996).

The United Kingdom, under the market-driven political philosophy of the Thatcher government, undertook a comprehensive reassessment of the role of the public service. Under a major restructuring activity, executive agencies headed by chief executives accountable to ministers were created. These

⁴ NZ\$1 = S\$0.8770, FXHistory, OANDA Corporation dated 2 January 1992.

agencies operate within the terms of founding framework agreements that provide considerable financial and managerial autonomy (Thurston and Richardson, 1996).

The Canadian federal government has been experimenting with cost-recovery service delivery units within government departments. These units are allowed greater management flexibility and more freedom from administrative policies than the public service in general. In addition to these cost-recovery service delivery agencies, many government departments in Canada are pursuing revenue-generation strategies. Some of these departments are charging user fees at levels which are not intended to deter Canadian taxpayers from using a service, but are aimed at recovering certain costs from users. For example, Parks Canada charges a small user fee to offset the costs of campsite clean up. Other departments are actively involved in cost recovery from value-added products and services that are not normally available to all Canadians. Another example is Statistics Canada which earns revenues of approximately C\$80 million (S\$83.35 million⁵) from selling its data, analyses and services. The scope of revenue generation appears to be growing quickly (Thurston and Richardson, 1996).

The Singapore government is also reassessing the role of public sector

⁵ C\$1 = S\$1.0419, ExchangeRate.com Inc. dated 2 January 1996.

organizations. Koh (1999) reported that the Finance Ministry is giving ministries more freedom with their budgets to encourage them to operate more like private firms. This is part of the Managing for Excellence drive by the government to improve the management of resources in the civil service. In 1994 the Singapore government introduced budgeting for results where ministries and departments that were run as autonomous agencies were encouraged to stop concentrating on how much they were given, as was traditionally done. Instead they were tasked with achieving set targets, and given more freedom to use their budgets in the way they think best. The government also stopped allocating budgets for specific programmes, and allowed these agencies to accumulate savings made through efficient spending.

Koh (1999) reported Finance Minister Richard Hu's call to change the government budgeting paradigm from one of striving to incur the least cost to achieve a given result to one of achieving the greatest results from a given resource. The government will task ministries to start using financial tools to look beyond their cash budgets and monitor the true costs of their activities more closely. There is now greater emphasis on performance, results and accountability in exchange for greater autonomy and flexibility. The spirit of entrepreneurship is therefore starting to emerge in the Singapore civil service as public sector organizations rise to face the challenge of operating in a

more businesslike mode and becoming competitive with private sector organizations.

In Africa, the Zimbabwe National Chamber of Commerce in 2002 called for the budget not to be expenditure-driven, but to be in line with the revenue generation capabilities of the government (Ndlela, 2000). This and the other illustrations noted above suggest that the trend may be a universal one.

The call to re-assess the role of public service has resulted in the emergence of entrepreneurial public sector organizations. The entrepreneurial spirit in the public sector usually starts off as an option through which public sector organizations can mitigate the impact of declining budget appropriations by generating revenues from the sale of value-added products and services. It faces the challenges of operating in a more businesslike mode, moving away from traditional reliance on governmental funding, generating enough revenue to cover its operations and perhaps even make a profit.

2.2 Cost recovery in public sector organizations and botanic gardens

Han (1991) defined public sector to encompass all government departments and agencies as well as enterprises in which the government has effective control through majority share holding or otherwise. A more comprehensive definition of public sector organization is provided by Jones (1975). Jones used four concepts in his definition. He used the concepts of ownership and

control to determine which entities are to be considered “public” versus “private” and the concepts of autonomy and marketedness to distinguish “institutions” from “enterprises”.

Jones’ definition (Table 1) categorises organizations into government institutions, autonomous government institutions, quasi-government institutions, private institutions and government enterprises, autonomous government enterprises, quasi-government enterprises and private enterprises.

	Goods with Dominant Public Element (Institution)	Goods with Dominant Private Element (Enterprises)
Government	Government Ownership <u>and</u> Control and non-Autonomous <u>and</u> non-Marketed	Government ownership <u>and</u> Control <u>and</u> non-Autonomous <u>and</u> Marketed
Autonomous Government	Government Ownership <u>and</u> Control <u>and</u> Autonomous <u>and</u> non-Marketed	Government ownership <u>and</u> Control <u>and</u> Autonomous <u>and</u> Marketed
Quasi-Government	Government Ownership <u>or</u> Control <u>and</u> Autonomous <u>and</u> non-Marketed	Government ownership <u>or</u> Control <u>and</u> Autonomous <u>and</u> Marketed
Private	No Government ownership <u>and</u> no Control <u>and</u> Autonomous <u>and</u> non-Marketed	No Government ownership <u>and</u> no Control <u>and</u> Autonomous <u>and</u> Marketed

Table 1: Definition of public and private sector entities
Source: Jones (1975)

There are 1,846 botanic gardens in 148 countries worldwide (Botanic Gardens Conservation International, 2000). This study selects botanic

gardens listed in the *International Directory of Botanic Gardens V* (Heywood, Heywood & Jackson, 1990) updated against the database of the Botanic Gardens Conservation International (2000) and that meet the definition of public sector organization as defined by Han (1991) and Jones (1975).

Jones' definition in Table 1 is useful in providing a set of criteria to define public gardens from private gardens. It uses the concepts of ownership and control to determine "public" garden from a "private" garden. The gardens in this study are public sector gardens. The private gardens are sifted out in this study when there is an absence, to any extent, of government ownership and control. The Botanic Gardens Conservation International (2000) defined a botanic garden as an institution holding documented collections of living plants for the purposes of scientific research, conservation, display and education.

McCracken (1997) traced the modern botanic garden to the eighteenth century intellectual movement. He recorded that in 1880 the director of the Royal Botanic Gardens at Kew, Surrey, United Kingdom, described a botanic garden as "a garden in which a vast assemblage of plants from every accessible part of the earth's surface is systematically cultivated." By that time botanic gardens had existed in Europe for over three-and-a-quarter centuries. They had established themselves as an acceptable part of the urban environment. They were more than parks, for while they might provide aesthetic delight and casual recreation, satisfy idle curiosity and even excite

wonderment, their purpose was universally recognized as different. They were to accumulate botanical and horticultural knowledge and to disseminate that knowledge. By the 1890s, botanic gardens were also an accepted part of British colonial life.

Each botanic garden has a different specific purpose, organizational structure and location and therefore the emphasis of its work may vary. The different emphasis placed on each function is what gives each Botanic Garden its distinctive character and its special role.

Tan (1999, 3) wrote that:

“... the intrinsic value of botanic gardens is constant, but their perceived value fluctuates when buffeted by the winds of the economic climate. During such times, garden administrators must go back to the basic formula for the administration and development of botanical institutions and adjust relative weights of the components of the formula.”

He reasoned that this is necessary to keep the botanic garden relevant in catering to current needs, aspirations and demands of the target clients of the gardens concerned. The four components of the basic formula are 1) recreation, 2) research, 3) conservation and 4) education. By adjusting the

weightage of these components in response to the demands of the times, a botanic institution can remain important to a nation and its communities through its vital contributions to national development, health, education and economic growth.

This research looks at cost recovering public sector organizations, using the example of botanic gardens. Jimenez (1987) used a mathematical approach to define cost recovery. He first defined price as what a user pays, per unit of service, to the provider of the service. Jimenez defined cost recovery per unit cost of service provided by the government as that part of the unit cost that is covered by price. Unit cost (p) is the sum (per unit) of the recurrent cost (rc), the annualised capital cost (cc), and any other cost incurred by the provider of the service (t) such as educational scholarships, superannuation, health allowances, etc. For a fully cost recovering organization, the unit cost is presented as: $p = rc + cc + t$. For a partially cost recovering organization, the unit cost is presented as: $s + p = rc + cc + t$ where s is the unit subsidy by the government.

For this study, a “better” cost recovering public sector organization is defined as one with a cost recovering ratio of one or more ($CRR \geq 1$) and a partially cost recovering public sector organization as one with a cost recovering ratio of less than one ($CRR < 1$).

2.2.1 Need for cost recovery and examples

Nature areas are not costless to provide: for example, California's park system operated on an annual budget of US\$180 million (S\$289.62 million⁶) in 1996 while the Oregon's park system operated with a budget of US\$24 million (S\$38.62 million⁶) in 1994 (Leal and Fretwell, 1997a).

Some nature areas however have been fairly successful in recovering cost. For example, the Kruger National Park in South Africa has made great advances in conservation and tourism management techniques to make it one of the top ten national parks in the world, generating over 70% of its operating costs from tourism (Middleton and Hawkins, 1998).

The idea of business in nature areas is not new in America. Dating back to 1916, the first director of the National Park Service, Stephen Mather expected America's national parks to be self-supporting, even potentially profitable (Leal and Fretwell, 1997a). Mather knew that the survival of the national parks depended on the use and support of the public. He set out to make sure that visitors of all incomes felt welcomed in the parks and he created an amenities system to make sure the "creature comforts" of all park visitors were catered for. To provide the necessary hotels, stores and services, he

⁶ US\$1 = S\$1.6090, FXHistory, OANDA Corporation dated 2 January 1994.

supported controlled monopolies of concessionaires within the park that could provide conveniences at both a fair price and, significantly, a profit.

In the United States today there are some 12 million acres of state parks attracting over 750 million visitors annually. An abundance of recreation opportunities are available at these heritage, scenic and recreation parks and most of these parks practice to some extent the concept of private enterprise in the park (Leal and Fretwell, 1997b).

The Nebraska state parks provide fee-based services and activities that include horse trail rides, jeep rides and hayrides while South Caroline parks provide nearly three thousand campsites to over 10 million paying visitors a year.

Major state parks such as the Arkansas state parks offer more than just camping facilities and provide cabins and lodge rooms, conference and meeting rooms, recreation halls, restaurants and swimming pools. In the case of the Nebraska state parks, their own restaurants and lodging facilities contributed 34% of the total revenues of the Nebraska state park system (Leal and Fretwell, 1997b).

State parks in Idaho also run several in-park enterprise operations which generate revenues from visitors in the form of marinas equipped with small

stores and boating fuel and a recreational area that rents trailers (Leal and Fretwell, 1997b).

The idea of business in nature areas is also germinating in Australia. The “Rainforest Habitat” in Northern Queensland consists of 3 acres of carefully planned rainforest within a specially designed enclosure. It provides a tropical environment where in the course of an hour or so, visitors can view over 35 species of birds and 30 species of butterflies flying in natural surroundings. Over 300 metres of elevated timber walkways climb through the trees, permitting visitors close contact with nature. Ninety five thousand people annually pay to be closer to nature and view first hand the natural attributes of the area. This type of development also facilitates extra food and beverage sales to the visitors and provides an alternative, natural setting for functions (Kerr, 1991).

Moving on to botanic gardens, this study also find that botanic gardens are increasingly adopting a business focus as they strive for cost recovery. Botanic Garden administrators are pursuing revenue generation activities largely to reduce their dependence on shrinking government grants. In the early 1990s when the United Kingdom went into recession, the Royal Botanic Gardens at Kew, Surrey, needed to look for ways to reduce its dependence on grants. The visitors were identified as an asset that had not been fully exploited. With this in mind the admission charge was increased in 1990 and

a new Visitor Centre put in place. In 1992 the first marketing manager for this Garden was appointed. His objectives were to develop and sustain revenue growth in the long term. In order to increase the income from visitors, the new Visitor Centre that was built included a gift shop and catering facilities such as restaurant, cafeteria, bakery and kiosks.

In the Fairchild Tropical Garden's 1997 Annual Report, Dr Brinsley Burbidge, Director of the Garden stressed the pressing need facing botanic gardens for more funds. He opined that in moving ahead, the increasing importance and urgency of the work Fairchild Tropical Garden does would create pressure for more funding. He felt that the Garden must continue to emphasize the importance of its work while enhancing the quality of service it provides to all its audiences - visitors to the Garden, land managers in search of advice, gardeners and growers looking for plants and information on how to grow them, and teachers seeking new ways to inspire children to be more interested in science, the natural world and conservation. He was confident that, if the Garden offers good service and programs of quality, it would continue to get support as it pursues its goals (Fairchild Tropical Garden, 1997, III).

The New York Botanical Garden shifted its emphasis to areas such as endowment growth, earned income, membership and fundraising efforts to enable the Garden to continue balancing its budget while fulfilling its mission.

In 1997 The New York Botanical Garden reported that only 22.8% of its funds was from the government (New York Botanical Garden, 1997).

The Royal Botanic Gardens Sydney (1997) reported the formation of a marketing subcommittee to advise the Gardens' Trust and Management about retailing in the garden (books, food and conference facilities). A revenue committee was constituted in 1996 with the terms of reference to evaluate the existing sources of revenue of the organization to see if the net returns could be increased, and to investigate options for revenue streams. One of the challenges the Royal Botanic Gardens Sydney has identified that the garden has to meet beyond 2000 is financial security and becoming less dependent on the public purse (Royal Botanic Gardens Sydney, 1997).

2.2.2 Pros and cons of cost recovery

Laarman and Gregersen (1996) advocated that applying the concept of business in nature areas to raise revenue is appropriate and that for the amount of revenue to be collected, a politically defensible position is cost recovery. The Treasury Board of Canada formalized a policy of cost recovery in the mid 1980s which directed government departments to identify the full costs of providing goods, services, property, and limited rights and privileges to external users; identify the market value of property, determine appropriate user charges; and impose them (McMahon, 1997).

Leal and Fretwell (1997a) defined self-sufficiency as “relying on park visitors, not Congress, for operating support.” They identified several reasons why park systems should move toward self-sufficiency. First, self-sufficiency would give park managers an incentive to provide more services and maintain parks in good condition. Park managers who depend on visitors for funds want them to have a memorable experience that brings them back as unhappy customers will be less likely to return. Second, self-sufficiency would also encourage more realistic pricing to cover the costs of services whereas a tax-financed park offers limited service that fails to collect fees, and encourages park overuse by subsidizing goods and services. Third, self-sufficiency would also give park management an incentive to balance costs and benefits. Since costs must be covered out of revenues, managers would add services that cover costs and eliminate those that do not cover costs. In contrast, when park operations are mostly funded by taxes, management can ignore such economic realities.

Leal and Fretwell (1997b) believed that requiring nature areas to be self-sustaining is an important tool to encourage responsible management and financial stability. This is in line with what the early park pioneers had in mind at the turn of the century when the American National Park Service was formed. Laarman and Gregersen (1996) defended the revenue goal of public suppliers whose budgets are constrained. If revenues from fees can be made

to increase, this may enable public agencies to gain increasing independence from outside influences and hence greater internal policy autonomy.

McMahon (1997) also defended cost recovery as introducing a market type discipline to the demand for and supply of goods and services provided by the government.

However, this issue of cost recovery or revenue generation for public sector organizations is not without contradictions. Visitors normally do not expect public nature areas to be managed as businesses (Laarman and Gregersen, 1996). Access to public parks and gardens is considered the right of every member of the community who contributes with their taxes and money-making behaviour is not the usual administrative culture for public authorities in charge of parks and gardens.

Critics argued that historically, public parks and gardens have been a critical part of our heritage, locally, regionally, nationally, and even globally and that parks have social and economic responsibilities beside cost recovery. In many parts of public sector recreation provision, there is a tradition of free accessibility and usage of facilities (Gratton and Taylor, 1991). Woodburn, Fraser and Balmer (1992) cited a social benefit in that parks and gardens, their facilities and programs provide leisure opportunities and improve the quality of the local environment which are the foundations of community pride. Ohio Parks and Recreation Association (1998) agreed that the programs,

services, events, and opportunities offered by local, state, and national park and recreation agencies positively impact lives and society as a whole. It is therefore a valid concern that if people have to pay to use public parks and gardens, their facilities or programs, they may find these areas no longer accessible to them.

Nevertheless the shift in managerial theory in recent years suggests that public sector organizations need to be “reinvented” (Osborne and Gaebler, 1992) or “re-engineered” (Hammer and Champy, 1993) to better serve the needs of customers. They also find themselves having to change radically their traditional ways of doing business in the face of declining budget appropriations. They are increasingly forced to engage in efforts to reinvent and restructure in order to mitigate the impact of cuts in council/state funding. In the case of botanic gardens, they need to balance their budgets while fulfilling their scientific role. They also face the challenge of having to do this without compromising their scientific image and responsibilities. Hence the concept of revenue generation for cost recovery for public sector organizations is politically defensible as pointed out by Laarman and Gregersen (1996).

2.3 Existing models, theories and literature

This study looks at entrepreneurial public sector organizations which take an active approach to administering responsibilities that include generating new sources of revenue. In undertaking entrepreneurial revenue generating activities, the public sector organization recovers its cost of operations.

Thurston and Richardson (1996) reviewed the experiences of public sector organizations in implementing revenue generation initiatives in a variety of sectors and countries (Canada, New Zealand, Australia and United Kingdom).

Their study developed a number of observations on patterns of success and failure and studied the common mistakes made by organizations attempting to implement a revenue-generating strategy. Thurston and Richardson's Model (1996) identified the critical factors for successful implementation of revenue generation activities which are summarized in Table 2:

Critical factors for successful implementation of revenue generation activities	
1.	Align revenue generation and the principles that will govern the activity with the organization's mandate and strategy
2.	Treat revenue generation as a major strategic change for the organization
3.	Establish a business office as the hub of the revenue-generation network
4.	Communicate the importance of revenue generation, demonstrate the benefits and build understanding
5.	Build alliances and networks with the private sector to become their ally, not a competitor
6.	Create a basic, non-bureaucratic set of policies and guidelines for the activity
7.	Formulate a strategic marketing approach
8.	Contract external expertise to lead the marketing activity
9.	Develop core products and services with a carefully selected set of potential customers
10.	Introduce a total customer focus and educate all employees about what this means
11.	Encourage entrepreneurial activities at all levels of the organization
12.	Start with employees who are enthusiastic supporters of revenue generation
13.	Conduct a unit costing exercise to establish a uniform, realistic pricing policy
14.	Ensure activities are well-resourced and if necessary, limit the initial scope
15.	Introduce appropriate recognition to encourage and reward revenue generation

Table 2: Fifteen critical factors for successful implementation of revenue generation activities
Source: Thurston and Richardson (1996)

Another key research study on entrepreneurial public sector organizations is that by Osborne and Gaebler (1992). This study advocated that government organizations must be freed from the stranglehold of regulations, bureaucratic procedures, line-item budgets and risk-adverse organizational cultures if they are to be more entrepreneurial and customer focused. They argued that bureaucracy is the ultimate obstacle to improving government responsiveness

and performance. They recommended that management systems in government should be less rule driven and more mission focused. Public officials should be given more discretion and authority to develop entrepreneurial programs and strategies for government agencies to earn money rather than simply spend money. Essentially, they said that governments can and should adapt business management principles to the public sector context to more effectively meet the needs of citizens, taxpayers and future generations. In short, Osborne and Gaebler (1992) were calling for public serving organizations to be “reinvented.”

Osborne and Gaebler’s Model (1992) identified and described ten factors around which entrepreneurial public organizations are built (Table 3):

Factors around which entrepreneurial public organizations are built	
1.	Entrepreneurial public organizations should steer more than they row
2.	Empower communities rather than simply deliver services
3.	Encourage competition rather than monopoly
4.	Driven by their mission, not their rules
5.	Fund outcomes rather than inputs
6.	Meet the needs of the customer, not the bureaucracy
7.	Concentrate on earning, not just spending
8.	Invest in prevention rather than cure
9.	Decentralize authority
10.	Solve problems by leveraging the marketplace, rather than simply creating public programs

Table 3: Ten factors around which entrepreneurial public organizations are built
Source: Osborne and Gaebler (1992)

The third model employed in this study is provided by Radosevich and Kassicieh (1994). Their model identified twelve factors for the

commercialization of public sector technology (Table 4). Radosevich and Kassicieh (1994) called for the creation of commercial value and for private sector involvement in the commercialization of public sector technology. They also emphasized the need for improvement in interaction with customers and the need to provide incentives for small entrepreneurial firms.

Factors for commercialization of public sector technology	
1	Private involvement in public research programming
2	Control of technology recipient nationality
3	Support for small entrepreneurial firms
4	Creation of commercial value in public-sector technology
5	Provision for technology maturation
6	Creation of consistent technology transfer policies across agencies
7	Avoidance of conflict of interest in technology commercialization
8	Tolerance of failure in public-sector commercialization
9	Improvement of interaction mechanisms
10	Fairness of opportunities
11	Preservation of national security
12	Facilitation of organizational learning to improve technology commercialization

Table 4: Twelve factors for commercialization of public sector technology
Source: Radosevich and Kassicieh (1994)

The critical factors of the three existing models are analyzed. A review of the fifteen critical factors from Thurston and Richardson's Model (1996) for successful implementation of revenue generation activities revealed that the factors can be grouped under four broad categories, viz. Revenue, Strategic Partnerships, Customers and Incentives. This leads logically, in the present study, to re-organize the fifteen critical factors from Thurston and Richardson's Model (1996) into four categories, viz. Revenue, Strategic Partnerships, Customers and Incentives (Table 5).

Re-organization into four Categories	Critical factors of Thurston and Richardson's Model
Revenue	Align revenue generation and the principles that will govern the activity with the organization's mandate and strategy
	Treat revenue generation as a major strategic change for the organization
	Establish a business office as the hub of the revenue-generation network
	Communicate the importance of revenue generation, demonstrate the benefits and build understanding
	Encourage entrepreneurial activities at all levels of the organization
	Start with employees who are enthusiastic supporters of revenue generation
	Conduct a unit costing exercise to establish a uniform, realistic pricing policy
Strategic Partnerships	Build alliances and networks with the private sector to become their ally, not a competitor
	Ensure activities are well-resourced and if necessary, limit the initial scope
Customers	Formulate a strategic marketing approach
	Contract external expertise to lead the marketing activity
	Develop core products and services with a carefully selected set of potential customers
	Introduce a total customer focus and educate all employees about what this means
Incentives	Create a basic, non-bureaucratic set of policies and guidelines for the activity
	Introduce appropriate recognition to encourage and reward revenue generation

Table 5: Re-organization of the critical factors of Thurston and Richardson's Model (1996) into four categories

Similarly the critical factors of Osborne and Gaebler's Model (1992) can also logically be re-organized into the four categories (Table 6).

Re-organization into four Categories	Critical factors of Osborne and Gaebler's Model
Revenue	Entrepreneurial public organizations should steer more than they row
	Encourage competition rather than monopoly
	Driven by their mission, not their rules
	Invest in prevention rather than cure
	Fund outcomes rather than inputs
Strategic Partnerships	Empower communities rather than simply deliver services
Customers	Meet the needs of the customer, not the bureaucracy
	Solve problems by leveraging the marketplace, rather than simply creating public programs
Incentives	Concentrate on earning, not just spending
	Decentralize authority

Table 6: Re-organization of the critical factors of Osborne and Gaebler's (1992) Model into four categories

As in the case of Thurston and Richardson (1996) and Osborne and Gaebler (1992), the critical factors of Radosevich and Kassicieh (1994) can also be grouped into four broad categories except for their critical factors 2, 5 and 11 which pertain to issues unique to the technology sector and do not fit into any of the four categories (Table 7).

Re-organization into four Categories	Critical Factors of Radosevich and Kassicieh's Model
Revenue	Creation of commercial value in public-sector technology
	Avoidance of conflict of interest in technology commercialization
	Tolerance of failure in public-sector commercialization
	Facilitation of organizational learning to improve technology commercialization
Strategic Partnerships	Private involvement in public research programming
	Creation of consistent technology transfer policies across agencies laboratories
Customers	Improvement of interaction mechanisms
Incentives	Support for small entrepreneurial firms

Table 7: Re-organization of the critical factors of Radosevich and Kassicieh's Model (1994) into four categories

Thurston and Richardson (1996), Osborne and Gaebler (1992) and Radosevich and Kassicieh (1994) looked at public sector organizations using different approaches to determine the critical factors that promote an entrepreneurial mindset within the organizations to create revenue generating activities that contribute to cost recovery performance (Tables 2, 3, 4).

2.4 Proposed Model of present study

The distillation process above has shown that a common thread of four broad categories, viz. Revenue, Strategic Partnerships, Customers and Incentives runs through the models of Thurston and Richardson (1996), Osborne and

Gaebler (1992) and Radosevich and Kassicieh (1994) as presented in Tables 5, 6 and 7. The results of the distilling process are tabulated in Table 8:

Categories	Existing Models		
	Thurston and Richardson's Model (1996)	Osborne and Gaebler's Model (1992)	Radosevich and Kassicieh's Model (1994)
Revenue	√√√√ √√√	√√√√ √	√√√√
Strategic Partnerships	√√	√	√√
Customers	√√√√	√√	√
Incentives	√√	√√	√

Table 8: Distillation of the critical factors from Thurston and Richardson's Model (1996) Osborne and Gaebler's Model (1992) and Radosevich and Kassicieh's Model (1994) into four categories
(Each √ represents a critical factor of the existing models)

To provide a framework for analysis, the present study expresses these four categories into critical factors that promote cost recovery.

The following sub-sections look at literature relating to each of the four critical factors to support its inclusion in a proposed model which is central to this study.

2.4.1 Factor 1: Revenue Generation is included in the botanic garden's mission on botanical and horticultural research, education, conservation and recreation

Several of the factors in Tables 5, 6 and 7 above, when present, will lead to the organization achieving revenue generation, eg. the revenue generating initiatives such as setting up a revenue-generating business office or the creation of commercial products. The key point is how to achieve a clear and shared sense of purpose and direction to the extent that employees align revenue generation objectives and activities with the values and motivations of the organization.

Public sector organizations face the challenge of how to align revenue diversification objectives, principles and activities with the values and motivations that govern the respective organization. Thurston and Richardson (1996) found some organizations fail to align the strategy of their revenue generation activities to the extent that they end up with an activity that competes with, rather than complements, existing activities.

Factor 1 calls for revenue generation to be included in the botanic garden's mission statement. This is in line with the finding of Heath and Wall (1992) that a well-worked-out mission statement can provide everyone in an organization, and also those affected and influenced by the organization's activities, with a shared sense of purpose, direction, significance, and achievement and will motivate them. A mission statement is a written, codified set of principles by which the organization is to be run (Falsey, 1989). The mission statement can do a number of different things. It may point the

direction in which the organization intends to go, or it may define the market which the organization hopes to service. A mission statement gives an indication of what the management of an organization feels is important and guides the way the management runs the business. While a mission statement contains many elements that must be prioritized, including revenue generation in the mission puts it on the list of priorities. By including revenue generation as one of the key areas that is important to the organization, strategic goals in this direction can be developed accordingly. This is supported by the studies of Joyce (1999) who attributed strategic goals to mission statements and Duncan, Ginter and Swayne (1995) who prescribed that one approach to developing strategic goals from the mission statement is based on identifying key performance areas.

Germain and Cooper (1990) examined the role of a customer service mission statement in manufacturers, industrial service firms and consumer service firms. Their research examined empirically a few of the many potential effects that a customer service mission statement can have on the manner in which a customer service department operates. Germain and Cooper (1990) found that managers of firms that have a customer service mission statement are more active in seeking out opinions and perceptions of customers. Their research questions concerned the effect of a written customer service mission statement versus a verbal understanding within the firm (or no understanding whatsoever) on customer service performance measurements. Germain and

Cooper (1990) further investigated the relationship between a customer service mission statement and quantitative performance measurement. Using one-tailed t-tests of the difference between the proportions to confirm the relationship between the existence of a customer service mission statement and the propensity to conduct customer surveys, they found that firms with a customer service mission statement are significantly more likely to keep quantitative measures of customer service performance than firms not having a customer service mission statement. This demonstrated that the presence of a customer service mission statement has an effect on the manner in which staff operate. The study of Germain and Cooper (1990) lends support to the call to include revenue generation in the botanic garden's mission statement.

2.4.2 Factor 2: Strategic Partnership is sought to fund the botanic garden's operating budget

Thurston and Richardson (1996) strongly advocated the development of cooperative arrangements with the private sector to create win-win situations. Hesselbein, in his capacity as the Chairman of the Board of Governors of The Peter Drucker Foundation for Nonprofit Management, wrote in the foreword for Austin's book on "The Collaboration Challenge" that businesses and nonprofits in today's interconnected world would neither thrive nor survive with visions confined within the walls of their own organizations. They need

to look beyond the walls and find partners who can help to achieve greater results and build the vital communities to meet the challenges ahead (Austin, 2000, x).

He predicted that collaborations between non-profit organizations and corporations will grow in frequency and strategic importance. Collaborative relationships will increasingly migrate from the traditionally philanthropic, characterized by benevolent donor and grateful recipient, toward deeper, strategic alliances. Wilkins and Quatman (1997) supported the concept of public-private ventures and identified them as the future of Parks and Recreation; as public funds become more scarce, there is a need to partner with the business communities and neighbourhood groups to provide programs that fit the interests of the community. Koteen (1997) agreed that public-private collaboration appeals to an increasing number of persons and institutions who are confronted with a shrunken base of resources and who are seeking ways to decrease costs and increase effective outcomes.

Arkansas state park managers have begun partnership programs with corporate sponsors to create interpretative tours (Leal and Fretwell, 1997b). The Missouri Botanical Garden (1995) launched a three year Partnership Campaign to seek a minimum of 30.9 million (S\$49.72 million⁶) from the private sector and individuals to fund the development of a new Research Center. The Royal Botanic Gardens, Sydney (1997) re-established a

Development Office to develop programs of corporate and individual giving, sponsorship and bequests. This move acknowledged the increased importance of financial support from the private sector. The garden identified the Development Manager's first task as creating a new fundraising strategy for the garden, and establishing an annual giving program encompassing corporate support, private gifts and bequests.

The American Association of Botanic Gardens and Arboreta (AABGA) conducted a corporate sponsorship survey in 2001 among its members. The survey questionnaire is attached as Appendix I. The objective of the survey was to determine how many of AABGA's Institutional Member gardens were participating in corporate sponsorship solicitation as a new or added source of revenue. 324 survey questionnaires were mailed out and 91 member botanic gardens responded. 20 of the respondent-gardens cited funding operations as their primary goal for seeking sponsorship revenues while 27 gardens attributed the reason to creating larger events and defraying costs. 45% of the respondents indicated they were currently selling corporate sponsorships and 10% indicated they were developing a program to sell corporate sponsorship. 16 of the 91 respondent-gardens (27%) generated US\$75,000 (S\$120,675⁶) or less in annual revenues from corporate sponsorships in their

⁶ US\$1 = S\$1.6090, FXHistory, OANDA Corporation dated 2 January 1994

fiscal year; 16 (14%) generated US\$100,000 (S\$160,900⁶) to US\$500,000 (S\$804,500⁶) and one garden identified sponsorship revenue at US\$1 million (S\$1,609,000⁶) or more.

The discussion above confirms that there is a growing opportunity for botanic gardens and businesses to work together and create new possibilities that further respective missions. Botanic gardens know they must become more businesslike. Businesses know they must become more socially responsible.

The AABGA corporate sponsorship survey is a good indication that botanic gardens are moving beyond the institutional barriers to co-operation and are meeting the collaborative challenge head-on. Botanic garden managers realize that they cannot limit their vision to the results that can be achieved within their own organizations. They are counting on the results made possible by collaboration with other organizations across all sectors of the economy if they are to have sufficient resources to do their works in scientific research, conservation, display and education.

Botanic gardens are increasingly becoming aware that well-managed collaborations can help to build brand identity and goodwill, reinforce employee commitment and uncover new business opportunities and sources of revenue.

⁶ US\$1 = S\$1.6090, FXHistory, OANDA Corporation dated 2 January 1994

The New York Botanical Garden with a strong program of strategic partnerships receives more than \$1 million (S\$1.6820 million⁶) in revenue from their corporate sponsorships annually (based on the survey findings of the American Association of Botanic Gardens in 2001). The Garden uses its sponsorship revenue to create larger events and defray event expenses, and fund operations and marketing activities.

Austin (2000), who conducted surveys, interviews and company studies on cross-sector collaborations, found that corporate giving to non-profit organizations is a part of most major companies' strategies. For example, Citicorp, a global financial services corporation, has made community service an integral part of its worldwide corporate strategy and one key area in which it measures company performance. Citicorp's strategy is to be an "embedded" corporation, an integral part of the institutional fabric, in each of the communities in which it operates. This means achieving a level of involvement that extends well beyond offering services in the financial marketplace to include assessing the impact of business decisions on the community and mitigating any negative consequences, and engaging in activities-volunteer and philanthropic-that help build the community (Austin, 2000). Citicorp's rationale for such strategic engagement is that it wants a positive and trusted image with customers, potential customers, regulators, legislators, and community groups, all of which supports its global image as a

trusted brand name and more importantly, the engagement could also offer profitable business opportunities (Austin, 2000,12).

Citicorp is not alone in having that sentiment. Corporations are aware that businesses can also benefit from the external linkages they develop through or as a consequence of community service. Although managers report that community service activities are undertaken primarily to make a social contribution, these activities can enhance a company's reputation; build goodwill; expand networks, relationships, and markets; increase access to key consumer groups; and provide an arena for testing innovations.

However this win-win situation can be jeopardized when it is handled insensitively. A case in point is the adverse public reaction provoked when a well-known non-profit organization in Singapore, the National Kidney Foundation (NKF), announced plan to tie up with British insurer, Aviva, in a fund-raising deal where NKF could receive a total of S\$5 million over five years in referral fees. The proposal resulted in a backlash for NKF and Aviva when the public perceived NKF getting cash from an insurer for introducing clients to the company via its database of donors (Tan, 2004). The negative publicity was compounded when the Consumers Association of Singapore (Case) stepped in and wrote a letter to the press to express its disappointment with NKF and Aviva for allowing donor database to be used by a commercial concern for commercial purpose (Seah, 2004).

Austin (2000) devised a framework, the Collaboration Continuum, to enable managers to envision different collaboration options, think strategically about cross-sector alliances and recognize that strategic alliances are multifaceted relationships that evolve over time so that they will be able to make more informed choices about their partnership strategies. The Collaboration Continuum is detailed in Figure 1.

Collaboration Continuum			
Relationship Stage	Philanthropic	Transactional	Integrative
Level of engagement	Low		High
Importance of mission	Peripheral		Strategic
Magnitude of resources	Small		Big
Scope of activities	Narrow		Broad
Interaction level	Infrequent		Intensive
Managerial complexity	Simple		Complex
Strategic value	Modest		Major

Figure 1: Collaboration Continuum
Source: Austin (2000)

The framework above summarizes the collaborative relationship in each of the three stages: philanthropic, transactional, and integrative. In the philanthropic stage the nature of the relationship between the corporation and the recipient organization is largely that of a charitable donor and recipient. The engagement is generally limited to an annual solicitation from a recipient

organization that elicits a donation from a corporation. Minimum interaction and communication are the mode of operation. In the transactional stage, organizations carry out their resource exchanges through specific activities, such as cause-related marketing, event sponsorships, licensing, and paid service arrangements. Engagement of partners is more active and the value flow more significantly two-way. For corporations, in particular, the relationship begins to connect more directly with business operations. Austin (2000) estimated that cause-related marketing and event sponsorships represent the fastest growing marketing expenditure category of corporations, pumping around a half-billion dollars (S\$706,950,000⁶) into non-profit partners.

An integrative stage relationship sees the partners' missions, people and activities experiencing more collective action and organizational integration. In the integrative stage, the magnitude and form of resource exchange increases. The collaborative relationships can be located at any point on the continuum since the three stages are not single discrete locations. Progression along the continuum is not automatic, but rather it is the result of the partners' conscious acts and efforts. As the relationship moves from stage to stage, the level of engagement of the two partners moves from low to high. The importance of the relationship to each collaborator's mission shifts from peripheral to strategic. The magnitude and nature of the resources allocated to the relationship expand significantly. The scope of activities

⁶ US\$1 = S\$1.6090, FXHistory, OANDA Corporation dated 2 January 1994

encompassed by the partnership broadens. The partners' interactions intensify, and the managerial complexity of the alliance increases. The strategic value of the collaboration escalates from modest to major.

2.4.3 Factor 3: Customer Satisfaction is included in botanic garden's traditional scientific and social priorities

McChesney (1997) advocated that in view of the increasing competition in the recreation field, organizations should examine the extent to which they actively engage in proactive marketing efforts. He suggested that the best example of a cost-effective and proactive marketing strategy is the adoption of the marketing concept. This concept suggests that the key to business success is to integrate all company activities and personnel toward satisfying consumers, while providing satisfactory profits to the firm. Myers (1999) likened customer satisfaction to a scorecard that represents the "voice of the customer" directly on an on-going basis. As a scorecard, it provides measurements that can inform all parts of the organization about customer perception and evaluations.

What McChesney (1997) and Myers (1999) are saying is that marketing integrates the consumer's requirements with the activities of the other organizational functions such as finance, human resources and production. This allows the principles of consumer sovereignty to be practiced. The

principle of consumer sovereignty calls for the meeting of the consumer's requirements as the primary function of an organization. The marketing processes that are put in place are for the purpose of helping frontline employees better focus on the customer, particularly those customers the organization can serve best and who also provide the greatest revenue potential to the organization. This thinking is supported by Kessler (1997) who recommended that the organization should, first and foremost, focus on the customer but always factor revenue generation into the equation.

Marketing is commonly and aggressively used by agencies such as the National Cancer Institute, the United States Agency for International Development and the World Bank in their programmes. Marketing is finding its way more and more into education, the arts, social services, libraries, and public services. The whole concept of "reinventing government" is about ways to make it more responsive to customer needs and wants. Kotler, Ferrell and Lamb (1983) said that the choice facing those who manage non-profit organizations is not whether to market or not to market, for no organization can avoid marketing. The choice, they argued, is whether to do it well or poorly.

In the United States, Mentzer, Bienstock, & Kahn (1995) conducted a survey of 124 business firms and found that at least 82% had a budget allocation for customer satisfaction program. The Toyota Motor Sales, for example,

conducted an impact study of customer satisfaction on the bottom-line of the organization. Using selected financial comparisons between a group of dealers with very high customer satisfaction ratings and another group with ratings near the bottom, the impact study showed that the top satisfaction dealers had an average of 46% higher profit. Myers (1999) supported this finding with his observation that evidence to date suggests that high customer satisfaction can indeed have positive effects on the bottom-line.

Peterson (1989) concurred that firms should find out what benefits consumers want and then provide these benefits through goods and services. A business strategy must include an understanding of market needs, an appropriate product concept, and adequate functional skills to efficiently make and/or deliver products to the designated market. Applying this theory to public sector organizations, Lovelock and Weinberg (1984) found that managers of some of the better run and more responsive non-business institutions already recognized that it made sense to understand the needs and concerns of one's users or clients and sought to develop programs targeted at specific groups within the population, tailoring systems, prices and communication efforts to the characteristics of these groups rather than trying to be all things to all people.

The Royal Botanic Gardens, Sydney (1996) is a public sector institution that recognizes the critical role that marketing plays. In its 1995-1996 Annual

Report the garden reported that one of the highlights of that year was the preparation of an organization-wide marketing plan with a fresh client and commercial focus. A major organizational review also took place at this garden. Prior to 1998, the marketing function was parked under Organizational Support. The aim of Organizational Support is to develop, support and promote the role of the Royal Botanic Gardens through efficient human resources, financial and information technology management, and effective marketing programs. A prime objective of marketing is to increase community understanding and support for the garden as a center of horticultural and botanical excellence. Increasingly the garden realized that marketing can maximize revenue-generating opportunities for the organization without compromising the organization's mission. As a result, in 1998, the functions of marketing, public relations and development were amalgamated under one unit with direct line of accountability to the Director of the garden. Staff, volunteers and Friends were briefed on the proposed commercial activities the garden intended to embark on.

In its 1998-2001 corporate plan, the Royal Botanic Gardens, Sydney identified six key challenges and stated that the key emphasis in meeting these challenges is to build an even more outwardly focused, responsive and relevant organization, committed to inspiring the community to understand and appreciate plants and their conservation. Of the six key challenges, three are relevant to this study:

- a) Developing and marketing a distinctive compelling identity that is driven by a customer-focused organization.
- b) Becoming a more effective and efficient organization through collaboration with other agencies, industry and tertiary institutions.
- c) Ensuring that staff, volunteers and Friends are informed, motivated, skilled and customer-focused.

Johnson and Gustafsson (2000) developed a framework for linking quality to performance. Their assumptions are that improved quality leads to increased satisfaction, which in turn makes customers more loyal, and that the organization gets more profit from loyal customers than from those who do not care where they get the product or service. Johnson and Gustafsson's (2000) framework is presented in Figure 2.

Figure 2: A framework for linking quality to performance
Source: Johnson and Gustafsson (2000)

The internal quality encompasses the service the organization offers, the physical surroundings, and the satisfaction of employees and the resulting service quality they provide. Customer satisfaction encompasses what customers see in the purchase and consumption experience and customer loyalty is a customer's intention or predisposition to buy. Quality, satisfaction and loyalty ultimately affect financial performance.

The Volvo Car Company provides a good example of the linkage developed by Johnson and Gustafsson (2000). In 1991, Volvo was performing poorly in the global automotive market. It ranked as low as twenty-sixth out of thirty-four brands in the J D Power Initial Quality Study in the United States and sales and profitability were affected. Volvo then adopted a model similar to the framework developed by Johnson and Gustafsson (2000). Volvo's model is presented in Figure 3. Internally Volvo emphasized changing quality to improve productivity (satisfied employees) and reduce costs. This in turn would create improved quality to the public, customer satisfaction and loyalty. The development of this comprehensive view was fundamental to the policy changes at Volvo and in 1996 the company outperformed twenty-three competitors in the J D Power Initial Quality Study to reach third placing. In 1998 Volvo Car Company had re-established its quality and emerged as the most profitable automotive producer in Europe.

Figure 3: Volvo's model of the factors that affect financial performance
Source: Johnson and Gustafsson (2000)

Like Volvo, the Sears department store adopted a similar framework. The Sears model draws directly on a service-profit chain that links internal quality to service quality and the satisfaction generated by service quality to loyalty and financial performance.

The common logic in Johnson and Gustafsson's framework and the Volvo and Sears models illustrated the linkage between quality and customer satisfaction and the impact on the profitability of the organization. A botanic garden can be categorized to be in the service sector as its products include the provision of recreational services, scientific services, botanical and horticultural services, and educational services. The logic of the argument, discussed above for service organizations, linking quality and customer

satisfaction and the impact on profitability, should therefore be relevant to botanic gardens.

Service quality is the foundation of service marketing because the core product being marketed is a performance. The performance is the product; the performance is what customers buy. A strong service concept gives companies the opportunity to compete for customers; a strong performance of the service concept builds competitiveness by earning customers' confidence and reinforcing branding, advertising, selling, and pricing. Services are intangible, ephemeral, and experiential. Berry and Parasuraman (1991) opined that customers must experience the intangible service to really know it. Myers (1999) cautioned that marketers should recognize that a customer's evaluation of a service is often based on numerous impressions that include performance of supplementary services as well as the core service. It is important to understand how customers actually experience all the different service elements. An organization that places emphasis on proactive marketing will view customer satisfaction as an integral part of the organization activities.

Parasuraman, Zeithaml & Berry (1984) noted that the key to providing superior service is understanding and responding to customer expectations. These expectations can be regarded as comparison standards against which the organization performance is judged or compared (Parasuraman, Berry &

Zeithaml 1991). Customers assess service quality by comparing what they want or expect with what they perceive they are getting. Parasuraman, Berry & Zeithaml (1991) defined “expectations” in two different ways – what customers believe “will occur” in a service encounter (predictions) and what customers “want to occur” (desires). They found from their study of sixteen customer focus group interviews in six service sectors to investigate the nature and sources of customers’ service expectations, that customers’ service expectations exist at a “desired” level and an “adequate” level. The desired service level reflects the service the customer hopes to receive and the adequate service level reflects what the customer finds acceptable. A zone of tolerance separates the desired and adequate service levels (Figure 4). This zone of tolerance is a range of service performance that a customer considers satisfactory. A performance level below the tolerance zone will encourage customer frustration and decrease customer loyalty while a performance above the tolerance zone will pleasantly surprise customers and strengthen their loyalty.

Figure 4: Two levels of expectations
Source: Parasuraman, Berry & Zeithaml (1991)

Parasuraman, Berry & Zeithaml (1990) developed a measuring instrument to measure the perceived quality of a service experience. Zeithaml (1986) defined “perceived quality” as the consumer’s judgement about a product’s overall excellence or superiority. This survey instrument called SERVQUAL measures the quality of service rendered by an institution along five dimensions: tangibles, reliability, responsiveness, assurance, and empathy. The five dimensions are defined as follows: tangibles related to the appearance of physical facilities, equipment, personnel, and communication materials; reliability is the ability to perform service dependably and accurately; responsiveness is the willingness to help customers and provide prompt service; assurance is the knowledge and courtesy of employees and their ability to convey trust and confidence; and empathy is the caring, individualized attention the institution provides its customers.

SERVQUAL measures what the customer expects from the institution in relation to these dimensions against what the customer perceives the institution performs along these dimensions. A SERVQUAL survey is used in this present study to measure the visitor’s impression of selected botanic gardens’ service performance.

Only through understanding and responding to customer expectations, as recommended by Parasuraman, Zeithaml & Berry (1985), can a botanic garden provide superior service to its visitors so as to ensure repeat visits and

customer loyalty; behaviour that impacts the financial performance of the Garden. More recently McChesney (1997) observed that the best example of a cost-effective and proactive marketing strategy is the adoption of the marketing concept of integrating all company activities and personnel towards satisfying consumers, while providing satisfactory profits to the firm.

2.4.4 Factor 4: Financial Incentive is present for the botanic garden to enhance its fiscal sustainability

Thurston and Richardson (1996) believed that making the organization return the funds generated will result in a disincentive to generate revenue. This supported Osborne and Gaebler's (1992) belief that if managers cannot keep any of their earnings, they are not likely to pursue them. If we want public managers to think like entrepreneurs, we have to give them incentives to do so. Creese and Kutzin (1995) also identified that one of the critical factors that will ensure the success of cost-recovery in the health sector in Europe, Asia and Africa is to allow some or all of the revenues collected to be retained for use within the collecting health facility. This is confirmed by the finding of the United States General Accounting Office (GAO, 1996) which reported that the US Forest Service encountered problems in collecting fees and recovering costs. One of the contributing factors identified by the report is the lack of incentive for the Forest Service to dedicate additional resources to address this problem since additional fees collected would generally be

returned to the US Treasury and not benefit the forest service. Based on the works of Lindberg and Huber (1993) on economic issues in ecotourism management and Laarman and Gregersen (1996) on pricing policy in nature-based tourism, Walpole, Goodwin & Ward (2001) believed that revenues that are earmarked for and returned to Komodo National Parks in Indonesia may act as an incentive to managers to promote and efficiently manage tourism. They called for a change in government financial structures to allow Komodo National Park to retain some of the revenues generated from tourism. The motivational effect of revenue retention on the organization is supported by the findings of Potts, Goodwin & Wadpole (1996) who found that a lack of revenue retention in Hwange National Park, Zimbabwe, combined with government under funding, has resulted in a decline in staff morale and park infrastructure.

The psychology of financial incentive argued that aligning financial rewards with results has a strong motivational effect. This motivational impact on employees has been well researched and documented. A survey in the United States of 514 incentive schemes for employees applied in the late 1940s discovered increases in output of 39%, labour costs lowered by 11.5%, while earnings increased by 17.5% (Argyle, 1989). A 1958 study of six British companies found that the use of financial incentives increased output by 60%, while earnings increased by 20% (Davison, 1958). In 1985 an American survey of 330 programmes to improve work performance found that financial

incentives had by far the greatest influence on productivity (Gazzo, Jette and Katzell, 1985). The impact of financial incentives on motivation and performance is indeed significant and this finding logically holds for employees of an organization as well as the organization itself.

The same psychology of financial incentive is relevant to organizations as confirmed by the finding of Masssarsky and Beinhacker (2002). They surveyed 519 enterprises in the non-profit sector and found that financial return was the motivation for more than half of the non-profits surveyed launching profit-making ventures. 66% of the organizations currently operating ventures cited generating income and surplus for their programs as the top reason for operating the enterprise; 52% cited moving toward self sufficiency as a top reason while 51% mentioned wanting to diversify their revenue stream.

2.4.5 Proposed Model

The review of the literature relating to each of the four critical factors supports their inclusion in the proposed model to be applied in this study (Table 9).

Category	Proposed critical factors that promote cost recovery performance in a botanic garden
Revenue	Revenue Generation is included in the botanic garden's mission on botanical and horticultural research, education, conservation and recreation
Strategic Partnerships	Strategic Partnership is sought to fund the botanic garden's operating budget
Customers	Customer Satisfaction is included in the botanic garden's traditional scientific and social priorities
Incentives	Financial Incentive is present for the botanic garden to enhance its fiscal sustainability

Table 9: Proposed model of four critical factors that promote cost recovery performance in a botanic garden

2.5 Summary

A review of existing literature shows that the issue of cost recovery is not new for nature areas, parks and botanic gardens and three existing models have been reviewed. These models looked at public sector organizations using different approaches to determine the critical factors that promote an entrepreneurial mindset within the organizations to create revenue generating activities that contribute to cost recovery performance. A common thread running through the existing three models is evident when most of their critical factors can be re-organized into four categories, viz. Revenue, Strategic Partnerships, Customers and Incentives. Each category is then expressed as a critical factor that promotes cost recovery performance. The existing literature related to each of the critical factors were reviewed to support their inclusion in the proposed model to be applied in this study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Overview of research methodology

This study focuses on a comparative case study of two botanic gardens, Singapore Botanic Gardens and Fairchild Tropical Garden in Miami, Florida, United States of America. Findings will be further strengthened by quantitative tests conducted on other botanic gardens, allowing more general conclusions to be derived.

This research uses a comparative case study strategy to examine the “why” and “how” questions : *Why do some botanic gardens perform better than others in terms of cost recovery? How do these better cost recovery performing botanic gardens achieve their position?* These questions are explanatory type questions and according to Yin (1994) and Gomm, Hammersley & Foster (2000), a case study strategy is relevant. Yin (1994) and Burns (2000) also advocated the case study as a preferred research tool in examining contemporary events and when the relevant behaviours cannot be manipulated as in the present study where the cost recovery performance of the botanic gardens cannot be manipulated by the researcher.

While the “why” and “how” questions capture what the researcher is really interested in answering, they do not point to what the researcher should study. This calls for a study proposition which directs attention to what should be examined within the scope of the study. The proposition in this study is that *certain critical factors promote cost recovery performance in botanic gardens*.

In this case study the researcher is studying the effects of identified critical factors in promoting cost recovery performance. The proposition is that the presence of these critical factors will produce a certain pattern of cost recovery performance. The predicted pattern is that the existence of such critical factors will promote better cost recovery performance. If the results are as predicted, then the study proposition, that *certain critical factors promote cost recovery performance in botanic gardens*, holds.

3.2 Data collection

The data collection for this study relies on the five sources of evidence of documentation, archival records, interviews, direct observation and participant observation. This is in line with one of the recommendations of Yin (1994) and Burns (2000) to use multiple, not just single, sources of evidence to

Miensure a quality case study. The five sources of evidence provide multiple measures of the same phenomenon to address any construct validity concern. Yin, Bateman & Moore (1983) rated the case study use of multiple source of evidence in data analysis more highly than those research strategies that use only single sources of information.

Documentation and archival records used in this study included Annual Reports and Financial Statements to obtain the cost recovery ratios; newspaper clippings and other articles appearing in the mass media; internal documents the site organizations made available to the researcher; organizational records including organizational charts and budget records; and maps and brochures. The study also required a field trip to the overseas case site, the Fairchild Tropical Garden in Miami, Florida, United States of America, to carry out direct and participant observation. Evidence was obtained from regular visits to the Garden, attendance at events and functions organized by the Garden and requested meetings with the staff of the Garden during the period of the field visit. The researcher is based in Singapore and direct and participant observation carried out at Fairchild Tropical Garden was also done at Singapore Botanic Garden.

A customer satisfaction perception survey (SERVQUAL survey as described in Chapter Two) was conducted at the two case sites to measure the visitor's impression of the botanic gardens' service performance relative to his or her

service expectations. These covered areas such as events, performances, gardening courses, visitor amenities, guided tours, Garden infrastructure, landscapes, plants and staff.

The survey was administered at the key entrance/s to the botanic garden. Survey forms were handed out to every fifth visitor that walked through the gate and who was at least 18 years old or above. Two hundred survey forms were handed out at each site and the completed form was returned by the interviewee to the interviewer.

3.3 Selection of botanic gardens

The selection of botanic gardens has been discussed in Chapter Two. In addition, the selection of botanic gardens for this study was also narrowed to those located in countries where English is the language of communication. This prevents the need for translation if data are collected in a non-English speaking country.

A total of 230 letters was sent out in 1999 to botanic gardens to request their 1997 and 1998 Annual Reports and Financial Statements. Of the 230 botanic gardens, 148 did not respond; 15 responded that their Financial Statements were unavailable; 30 responded that their organizations did not publish

Annual Reports; seven provided complete information for certain years only and 30 provided the complete information as asked for.

3.4 Computation of cost recovery ratios

From the list of 30 who provided the complete information, their Annual Reports and Financial Statements were reviewed. The cost recovery ratios were computed for individual gardens for Financial Years 1997 and 1998 (Appendix II).

3.4.1 Cost recovery ratio analysis

The computed cost recovery ratios of the 30 botanic gardens for Financial Years 1997 and 1998 were sorted in an ascending order respectively. Using a cost recovery ratio of one as a benchmark, the 30 gardens were separated into “better” cost recovering botanic gardens and partially cost recovering botanic gardens.

3.5 Selection of study sites

From the list of 30 botanic gardens, two gardens were selected for this comparative case study. The selection of the two botanic gardens were based on the cost recovery ratios. One garden was selected from the “better”

cost recovering group and the other garden from the partially cost recovering group of botanic gardens.

The two gardens selected were Singapore Botanic Gardens (from the category of botanic gardens with a cost recovery ratio of less than one, 0.54 for FY1997 and 0.39 for FY1998) and Fairchild Tropical Garden in Miami, Florida, United States of America (from the category of botanic gardens with a cost recovery ratio equal or greater than one, 1.86 for FY1997 and 1.46 for FY1998).

The botanic garden with the best cost recovery ratio in 1997 and 1998 was Santa Barbara Botanic Garden and as such, it would have been the first choice as one of the two sites. However, application to Santa Barbara Botanic Garden to use it as a case study was unsuccessful. Fairchild Tropical Garden became the next choice. Fairchild is also an acceptable choice because it showed a consistently good cost recovery performance in 1997 and 1998. It had the second best cost recovery ratio (1.86) out of the 30 botanic gardens in 1997 and the fourth best cost recovery ratio (1.46) in 1998.

While this research selected two gardens as case studies, it also analyzed the data from a sample of 30 relevant gardens. The referral to the 30 garden sample is for the purpose of complementing the findings of the case studies

of the two selected gardens, the Singapore Botanic Garden and Fairchild Tropical Garden.

3.6 Scheduling of overseas field trip

The data for this case study needed to be collected from existing people and botanic gardens, not within the controlled confines of a laboratory or the sanctity of a library. The field trip to the overseas botanic garden was scheduled for July 2001. The timing of the field trip was dictated by several factors: the work schedule of the researcher who holds a full-time job; the availability of the key personnel at the overseas site to meet with the researcher during her visit and the weather conditions of the overseas case site.

3.7 Review of critical factors of proposed model

3.7.1 Review of factor 1

Factor 1 of this research calls for the alignment of revenue generation objectives, principles and activities with the values and motivations that govern a botanic garden as one of four strategies to promote cost recovery performance in a botanic garden.

Of the 30 botanic gardens that responded to the request for data in this research, 19 submitted their mission statement and these are summarized in Appendix III.

For the present comparative case study, several indicators were identified and applied to the two case gardens (Singapore Botanic Gardens and Fairchild Tropical Garden) to see if the results match the predicted “effect” pattern that the presence of revenue generation in the botanic gardens’ mission on botanical and horticultural research, education, conservation and recreation will promote better ($CRR \geq 1$) cost recovery performance (Table 10).

Indicator	Singapore Botanic Gardens	Fairchild Tropical Garden	Remarks
Inclusion of Revenue Generation in mission statement			
Botanic garden administrators aware of the need for revenue generation to fund Botanic Garden			
Sharing with employees and those affected/influenced by the activities of the botanic garden of the need for revenue generating activities			

Table 10: Indicators for critical factor 1

Critical Factor 1: Revenue Generation is included in the botanic garden’s mission on botanical and horticultural research, education, conservation and recreation

The results of the indicator checks were complemented by reviewing other botanic gardens. From the list of 30 botanic gardens that responded to this study, a review was done to assess how many include revenue generation in their mission statement. Statistical tests were done on these other botanic gardens to see if there is a relationship between the inclusion of revenue

generation in the mission statement and the cost recovery performance of the gardens. This study adopted the methodology of Germain and Cooper (1990) to examine the relationship between the inclusion of revenue generation in the mission statement and cost recovery performance of the botanic garden.

A one-tailed t-test was conducted on the 19 botanic gardens which provided their mission statements for this study. The quantitative test was to examine the relationship between the inclusion of revenue generation in the mission statement and the cost recovery ratio of the botanic garden. The null hypothesis states that the inclusion of revenue generation in the mission statement makes no difference to the cost recovery ratio.

$$H_0 : \mu_1 = \mu_2$$

A one-tailed t-test is selected because this study expects the results to turn out in a particular direction and the use of a one-tailed t-test, when used in a case where the correct direction is selected, is more likely to reject the null hypothesis. The significance test will be more powerful in this case.

A chi-square test of independence to examine whether the inclusion of revenue generation in the mission statement and the cost recovery ratio of a botanic garden are independent was also conducted on the botanic gardens that provided their mission statements. A two-sample chi-square test which

includes the two dimensions of cost recovery ratio and the inclusion of revenue generation in the mission statement was done based on the null hypothesis of no association between the inclusion of revenue generation in the mission statement and the cost recovery ratio of a botanic garden:

$$H_0 : p_1 = p_2$$

The present study also reviews those botanic gardens with non-inclusion of revenue generation in their mission statement to assess if they are aware of the need for revenue generation in the organizations. A questionnaire was constructed (Appendix IV) and responses were sought from three independent judges. Each judge was asked to make a three-item rating of the extent to which management of the 19 botanic gardens who responded were cognizant of the importance of cost revenue generation, based on the materials and comments collected and shown in the questionnaire.

3.7.2 Review of factor 2

For critical factor 2 several indicators were identified and applied to the two case gardens to see if the results match the predicted “effect” pattern that the presence of strategic partnerships to fund the botanic garden’s operating budget will promote better ($CRR \geq 1$) cost recovery performance (Table 11). Strategic partnerships in this study refer to raised income (versus earned or other income) as discussed in Chapter Two.

Indicator	Singapore Botanic Gardens	Fairchild Tropical Garden	Remarks
% of strategic partnerships versus botanic garden's operating budget within the % range for botanic gardens with CRR ≥ 1			
Botanic garden administrators aware of the need to establish strategic partnerships with corporations /individuals			
An established Friends of the Garden program			

Table 11: Indicators for critical factor 2

Critical Factor 2: Strategic Partnership is sought to fund the botanic garden's operating budget

The results of the indicator checks were complemented by statistical testing of other botanic gardens. An examination of the 25 botanic gardens that provided information on whether they participate in strategic partnerships to fund the botanic garden's operating budget. The 25 botanic gardens are divided into two groups based on the value of their cost recovery ratios (CRR < 1 and CRR ≥ 1). Pearson's correlation is used to test the relationship between the cost recovery performance of the botanic gardens and the percentage reliance of the gardens on strategic partnerships to fund their operating expenditure.

3.7.3 Review of factor 3

For critical factor 3 several indicators were identified and applied to the two case gardens to see if the results match the predicted "effect" pattern that the presence of customer satisfaction in botanic garden's traditional scientific and

social priorities will promote better (CRR ≥ 1) cost recovery performance (Table 12).

Indicator	Singapore Botanic Gardens	Fairchild Tropical Garden	Remarks
Inclusion of customer satisfaction in botanic garden's traditional scientific and social priorities			
locals $\geq$ tourists			
Overall Performance score in modified SERVQUAL survey			
Level of customer satisfaction focus			
Botanic garden administrators aware of the need for strong focus on customer satisfaction and communicate this to employees and those affected / influenced by the activities of the garden			
Do we see the focus on customer satisfaction translated into improved profitability for the botanic garden?			

Table 12: Indicators for critical factor 3

Critical Factor 3: Customer Satisfaction is included in the botanic garden's traditional scientific and social priorities

In reviewing critical factor 3, customer satisfaction was measured using the SERVQUAL survey. The SERVQUAL survey questionnaire is attached as Appendix V. The 25 questions dealt with specific service criteria relating to five dimensions of service provided by the botanic garden.

3.7.4 Review of factor 4

Financial incentive for the purpose of this study is defined as the incentive of revenue retention. For critical factor 4 several indicators were identified and applied to the two case gardens to see if the results match the predicted "effect" pattern that the presence of financial incentive in the form of revenue

retention will promote better (CRR ≥ 1) cost recovery performance (Table 13).

Indicator	Singapore Botanic Gardens	Fairchild Tropical Garden	Remarks
Organization is allowed to retain part or all of its revenue			
Major or key fundraising efforts in the last five years (FY2001-FY1997)			
% earned revenue ⁷ of total operating budget within the % range of botanic gardens with CRR ≥ 1			
% raised revenue ⁸ of total operating budget within the % range of botanic gardens with CRR ≥ 1			
Creativity in generating revenue			

Table 13: Indicators for critical factor 4

Critical Factor 4: Financial Incentive is present for the botanic garden to enhance its fiscal sustainability

3.8 Summary

Three indicators were thus identified to be applied to critical factor 1, three indicators to critical factor 2, six indicators to critical factor 3 and five to critical factor 4. The checks determine if the results match the predicted “effect” patterns. The findings of the indicator checks and the statistical tests are presented in Chapter Four.

⁷ “Earned revenue” refers to profit driven revenue acquired by the organization through commercial activities.

⁸ “Raised revenue” refers to revenue acquired by the organization through a non-profit driven process. This form of revenue can come from fund raising through traditional philanthropic donations, sponsorships, etc.

CHAPTER FOUR

RESULTS AND ANALYSIS

4.1 Results of cost recovery ratio computation

The details of the computation of the cost recovery ratios for the 30 botanic gardens are found in Appendix II.

4.2 Analysis of cost recovery ratios computed

The computed cost recovery ratios of the 30 botanic gardens are sorted in an ascending order for Financial Years 1997 and 1998 respectively. The results are tabulated in Tables 14 and 15.

From this list, using a cost recovery ratio of one as the benchmark, in FY1997 there are 21 botanic gardens with a cost recovery ratio of less than one ($CRR < 1$) and nine botanic gardens with a cost recovery ratio of one or more than one ($CRR \geq 1$) (Table 14). In FY1998 there are 17 botanic gardens with a cost recovery ratio of less than one ($CRR < 1$) and 13 botanic gardens with a cost recovery ratio of more than one ($CRR \geq 1$) (Table 15).

CRR = cost recovery ratio	Botanic Garden (BG)		Cost Recovery Ratio 1997
CRR < 1	1	Royal Tasmanian Botanical Gardens	0.11
	2	Royal Botanic Gardens Sydney	0.21
	3	National Botanical Institute	0.25
	4	Royal Botanic Garden Edinburgh	0.26
	5	Royal Botanic Gardens Kew	0.32
	6	Kings Park & Botanic Garden	0.38
	7	Singapore Botanic Gardens	0.54
	8	Royal Botanical Gardens Les jardins botaniques royaux	0.58
	9	The Scott Arboretum of Swarthmore College	0.6
	10	Denver Botanic Gardens	0.64
	11	Waipahihi Botanical Society	0.74
	12	Botanic Gardens Wollongong	0.85
	13	Brooklyn Botanic Garden	0.86
	14	Brookgreen Gardens	0.86
	15	Phipps Conservatory and Botanical Garden	0.90
	16	The Dawes Arboretum	0.91
	17	Winterthur Museum, Garden & Library	0.98
	18	Chelsea Physic Garden	0.99
	19	Missouri Botanical Garden	0.99
	20	Cornell Plantations, The Arboretum, Botanical Garden, and Natural Areas of Cornell University	0.99
	21	Strybing Arboretum & Botanical Gardens	0.99
CRR >= 1	22	Bickelhaupt Arboretum	1.00
	23	The Morton Arboretum	1.01
	24	Manaaki Whenua Landcare Research	1.04
	25	Quail Botanical Gardens	1.05
	26	Chicago Botanic Garden	1.09
	27	The Arnold Arboretum	1.17
	28	The Holden Arboretum	1.27
	29	Fairchild Tropical Garden	1.86
	30	Santa Barbara Botanic Garden	2.32

Table 14: Cost recovery ratios of botanic gardens for Financial Year 1997; arranged numerically in ascending order

CRR = cost recovery ratio	Botanic Garden (BG)		Cost Recovery Ratio 1998
CRR < 1	1	Royal Tasmanian Botanical Gardens	0.14
	2	Royal Botanic Gardens Sydney	0.23
	3	Royal Botanic Garden Edinburgh	0.28
	4	National Botanical Institute	0.29
	5	Royal Botanic Gardens Kew	0.36
	6	Singapore Botanic Gardens	0.39
	7	Denver Botanic Gardens	0.43
	8	Kings Park & Botanic Garden	0.54
	9	The Scott Arboretum of Swarthmore College	0.58
	10	Royal Botanical Gardens Les jardins botaniques royaux	0.61
	11	Brooklyn Botanic Garden	0.74
	12	Botanic Gardens Wollongong	0.79
	13	Brookgreen Gardens	0.81
	14	The Dawes Arboretum	0.92
	15	Waipahihi Botanical Society	0.97
	16	Bickelhaupt Arboretum	0.97
	17	Missouri Botanical Garden	0.98
CRR >= 1	18	Winterthur Museum, Garden & Library	1.01
	19	The Morton Arboretum	1.03
	20	Phipps Conservatory and Botanical Garden	1.03
	21	Strybing Arboretum & Botanical Gardens	1.04
	22	Manaaki Whenua Landcare Research	1.05
	23	Chelsea Physic Garden	1.08
	24	Quail Botanical Gardens	1.13
	25	The Holden Arboretum	1.15
	26	Chicago Botanic Garden	1.19
	27	Fairchild Tropical Garden	1.46
	28	Cornell Plantations, The Arboretum, Botanical Garden, and Natural Areas of Cornell University	1.67
	29	The Arnold Arboretum	1.67
	30	Santa Barbara Botanic Garden	2.32

Table 15: Cost recovery ratios of botanic gardens for Financial Year 1998; arranged numerically in ascending order

Of the 13 botanic gardens with a cost recovery ratio equal or more than one for FY1998, 12 of them did equally well in FY1997, indicating a consistent performance by the better performing botanic gardens.

The overall picture from this analysis shows that less than 50% of the botanic gardens sampled (30% in FY1997 and 43% in FY1998) are generating sufficient revenue to cover their operating expenditure. This means that more than half of the gardens sampled have to rely on government support for their operations. However, declining government support will continue to be an issue going forward. Botanic gardens cannot rely on this traditional source of fund in the longer term. They need to adapt to changing economic environment and look at ways to build up their earned and raised income. Botanic gardens need to look at revenue generation seriously.

4.3 Qualitative and quantitative analyses

For the purpose of analysis, the indicators described in Chapter Three are applied to the two selected cases. The analysis looks at whether the results match the predicted “effect” patterns for each critical factor in the two gardens.

The Singapore Botanic Gardens is more than 140 years old. It is a statutory board reporting to the Ministry of National Development. The garden at its present site was founded in 1859 by an Agri-Horticultural Society. Planned as a leisure garden and ornamental park, the Society organised flower shows and horticultural fetes. Today the Singapore Botanic Gardens plays a triple

role as a botanical institution, a tourist destination and a recreational park. It also offers educational outreach programmes for students and gardening enthusiasts. Its collection of plants is displayed in specialised attractions such as Orchid Garden, Evolution Garden, Palm Valley, etc. The garden is 52 hectares in size and the visitorship profile comprises more local than tourist visitors. A tourist visitor is defined as one who is from overseas.

The Fairchild Tropical Garden is more than 60 years old. It is located in Miami, Florida. From its founding, the garden has carried out research in tropical botany, expanding the world's knowledge of plants through scientific exploration, research and publication. Fairchild Tropical Garden's botanical collections and horticultural displays provide an example of how enchanting South Florida can be, as well as being a resource for science and education. It offers programs for local school children and teachers, residents and visitors to the area, undergraduate and post-graduate university students, and professionals in the plant sciences. The garden is among the State of Florida's major scientific and cultural institutions. It receives government grants from the Miami-Dade County and the State of Florida. The garden is 34 hectares in size and the visitorship profile shows more local than tourist visitors. Like the Singapore Botanic Gardens, Fairchild Tropical Garden defines a tourist as a visitor from outside the country. It does not consider visitors from United States of America outside the State of Florida as tourists.

The two case gardens selected are both established gardens; they get funding support from government; and their visitorship profiles are more local than tourist based. While the Singapore Botanic Gardens is larger than Fairchild Tropical Garden, this difference is unlikely to invalidate the comparison since both gardens share key similarities.

4.3.1 Critical factor 1: Revenue generation is included in the botanic garden's mission on botanical and horticultural research, education, conservation and recreation

4.3.1.1 Results of indicator checks for the two case gardens

CF 1: Revenue Generation is included in the botanic garden's mission on botanical and horticultural research, education, conservation and recreation			
Predicted “effect” pattern: The presence of Revenue Generation in the botanic garden's mission on botanical and horticultural research, education, conservation and recreation will promote better (CRR $\geq$ 1) cost recovery performance			
Indicator	Singapore Botanic Gardens No = X Yes = $\checkmark$	Fairchild Tropical Garden No = X Yes = $\checkmark$	Remarks
Inclusion of Revenue Generation in mission statement	X	X	
Botanic garden administrators aware of the need for revenue generation to fund botanic garden	$\checkmark$	$\checkmark$	<p>The Director of the Singapore Botanic Gardens noted in Gardenswise that new activities, additional intensified plantscapes and new displays, mean additional operating costs and the garden must seriously address these issues. He opined that the garden must identify new revenue streams and it will have to expand its strategic and positive partnerships with friends, volunteers, community and corporations (Singapore Botanic Gardens, 2003).</p> <p>In Fairchild Tropical Garden's 1997 Annual Report, the Director of the garden wrote that "...As we look to the future, we can see that the increasing importance and urgency of the work we do will create pressure for more funding...." (Fairchild Tropical Garden, 1997).</p>
Sharing with employees and those affected /influenced by the activities of the botanic garden of the need for revenue generating activities	$\checkmark$	$\checkmark$	<p>The need for revenue generation is communicated to staff of Singapore Botanic Gardens in the Culture statement (Appendix VI) – "... maximize earned and contributed income to maximize long term financial viability and to allow management flexibility".</p> <p>In the FY1998 Annual Report, Fairchild Tropical Garden informed that the Director of the garden is in charge of all program areas (research, education, conservation and horticulture) while the Chief Operating Officer is responsible for all of the garden's revenue generating areas (Fairchild Tropical Garden, 1998).</p>

Table 16: Checking of indicators against critical factor 1 to see if they match predicted “effect” pattern

The results of the indicator checks applied to critical factor 1 appeared to indicate that they do not match the predicted “effect” pattern that including revenue generation in the mission statement will promote better cost recovery performance (Table 16).

Both Singapore Botanic Gardens and Fairchild Tropical Garden do not include revenue generation in their mission statements. This non-inclusion does not seem to have any impact on their cost recovery performance as one garden performed consistently well ($CRR > 1$) for FY1997 and FY1998 while the other garden performed consistently below par ($CRR < 1$) for the same periods.

4.3.1.2 Statistical results for botanic gardens in general

The results of the statistical tests for critical factor 1 also appear to indicate that a botanic garden's cost recovery performance in general is not linked to the inclusion of revenue generation in the mission statement. 19 (63.3%) botanic gardens provided a mission statement upon the request of the researcher and of these, two gardens have revenue generation included in their mission statements (10.5%) and 17 (89.5%) do not have revenue generation included in their mission statements (Tables 17 and 18).

Botanic Garden (BG)		Cost Recovery Ratio 1997	Revenue Generating Mission Statement	
			No =X	Yes =√
1	Royal Botanic Gardens Sydney	0.21	X	
2	National Botanical Institute	0.25	X	
3	Royal Botanic Garden Edinburgh	0.26	X	
4	Royal Botanic Gardens Kew	0.32		√
5	Kings Park & Botanic Garden	0.38	X	
6	Singapore Botanic Gardens	0.54	X	
7	Royal Botanical Gardens Les jardins botaniques royaux	0.58	X	
8	Denver Botanic Gardens	0.64	X	
9	Brooklyn Botanic Garden	0.86	X	
10	Phipps Conservatory and Botanical Garden	0.90	X	
11	The Dawes Arboretum	0.91	X	
12	Missouri Botanical Garden	0.99	X	
13	Strybing Arboretum & Botanical Gardens	0.99	X	
14	The Morton Arboretum	1.01	X	
15	Manaaki Whenua Landcare Research	1.04	X	
16	Quail Botanical Gardens	1.05	X	
17	The Holden Arboretum	1.27	X	
18	Fairchild Tropical Garden	1.86	X	
19	Santa Barbara Botanic Garden	2.32		√

Table 17: Presence/absence of revenue generation in mission statement (FY 1997)

Botanic Garden (BG)		Cost Recovery Ratio 1998	Revenue Generating Mission Statement	
			No =X	Yes =√
1	Royal Botanic Gardens Sydney	0.23	X	
2	Royal Botanic Garden Edinburgh	0.28	X	
3	National Botanical Institute	0.29	X	
4	Royal Botanic Gardens Kew	0.36		√
5	Singapore Botanic Gardens	0.41	X	
6	Denver Botanic Gardens	0.43	X	
7	Kings Park & Botanic Garden	0.54	X	
8	Royal Botanical Gardens Les jardins botaniques royaux	0.61	X	
9	Brooklyn Botanic Garden	0.74	X	
10	The Dawes Arboretum	0.92	X	
11	Missouri Botanical Garden	0.98	X	
12	The Morton Arboretum	1.03	X	
13	Phipps Conservatory and Botanical Garden	1.03	X	
14	Strybing Arboretum & Botanical Gardens	1.04	X	
15	Manaaki Whenua Landcare Research	1.05	X	
16	Quail Botanical Gardens	1.13	X	
17	The Holden Arboretum	1.15	X	
18	Fairchild Tropical Garden	1.46	X	
19	Santa Barbara Botanic Garden	2.32		√

Table 18: Presence/absence of revenue generation in mission statement (FY1998)

The results of the t-test on these 19 botanic gardens confirmed the null hypothesis that the inclusion of revenue generation in the mission statement makes no difference to the cost recovery performance of the botanic gardens ($t_{FY1997, df} = t_{FY1997, 1} = 0.67$, at 0.05 confidence level; $t_{FY1998, df} = t_{FY1998, 1} = 1.25$, at 0.05 confidence level). The results of the chi-square test confirmed the null hypothesis of no association between the two dimensions of cost recovery ratio of a botanic garden and the inclusion of revenue generation in

the mission statement ($\chi^2_{\text{FY1997, df}} = \chi^2_{\text{FY1997, 1}} = 0.35$, at 0.05 confidence level; $\chi^2_{\text{FY1998, df}} = \chi^2_{\text{FY1998, 1}} = 0.06$, at 0.05 confidence level).

However, the indicator checks also revealed that managers of both gardens are aware of the need to generate revenue and they are sharing this awareness with their employees as well as those affected or influenced by the activities of the gardens. The Director of the Singapore Botanic Gardens stressed in the garden's newsletter that new activities, additional intensified plantscapes and new displays mean additional operating costs. He also informed readers that the garden would seriously address these issues. He opined that the garden must identify new revenue streams and it will have to expand its strategic and positive partnerships with friends, volunteers, community and corporations (Singapore Botanic Gardens, 2003). The need for revenue generation is communicated to staff of Singapore Botanic Gardens in the statement which describes the need to maximize earned and contributed income to maximize long term financial viability and to allow management flexibility (Appendix VI).

The Director of Fairchild Tropical Garden highlighted in the garden's 1997 Annual Report that in moving forward, the increasing importance and urgency of the work the garden does would create pressure for more funding (Fairchild Tropical Garden, 1997).

In the FY1998 Annual Report, Fairchild Tropical Garden informed the public that the Director of the garden is in charge of all program areas (research, education, conservation and horticulture) while the Chief Operating Officer is responsible for all of the garden's revenue generating areas (Fairchild Tropical Garden, 1998). This organizational structure highlights the point that revenue generation is an important area the garden is focusing on.

The results of the review of those botanic gardens with non-inclusion of revenue generation in their mission statement to assess if they are aware of the need for revenue generation in the organizations are tabulated in Table 19. The results show that all 19 botanic gardens are aware of the need for revenue generation to fund their gardens.

Botanic Garden (BG)		Cost Recovery Ratio 1997	Botanic garden administrators aware of the need for revenue generation to fund botanic gardens	
			No = X	Yes =√
1	Royal Botanic Gardens Sydney	0.21		√
2	National Botanical Institute	0.25		√
3	Royal Botanic Garden Edinburgh	0.26		√
4	Royal Botanic Gardens Kew	0.32		√
5	Kings Park & Botanic Garden	0.38		√
6	Singapore Botanic Gardens	0.54		√
7	Royal Botanical Gardens Les jardins botaniques royaux	0.58		√
8	Denver Botanic Gardens	0.64		√
9	Brooklyn Botanic Garden	0.86		√
10	Phipps Conservatory and Botanical Garden	0.90		√
11	The Dawes Arboretum	0.91		√
12	Missouri Botanical Garden	0.99		√
13	Strybing Arboretum & Botanical Gardens	0.99		√
14	The Morton Arboretum	1.01		√
15	Manaaki Whenua Landcare Research	1.04		√
16	Quail Botanical Gardens	1.05		√
17	The Holden Arboretum	1.27		√
18	Fairchild Tropical Garden	1.86		√
19	Santa Barbara Botanic Garden	2.32		√

Table 19: Findings on the awareness of botanic garden administrators of the need for revenue generation to fund botanic gardens

A review of the awareness of botanic garden administrators is detailed in

Table 20.

	Botanic Garden (BG)	Botanic garden administrators aware of the need for revenue generation to fund botanic garden
1	Royal Botanic Gardens Sydney	<p>The garden's corporate themes included : "Commercial activities: Enhancing our core business...." (Royal Botanic Gardens, Sydney, 1998)</p> <p>The garden established a Development Office in 1996 to develop programs of corporate and individual giving, sponsorship and bequests. This move acknowledged the increased importance of financial support from private sector. The functions of Marketing and Development were amalgamated under one unit with direct line of accountability to the Director. A prime objective of Marketing is identified as "...increases community understanding and support for the garden as a center of horticultural and botanical excellence; seeks to maximize revenue generating opportunities for the garden without compromising the organization's mission..." (Royal Botanic Gardens, Sydney, 1997)</p>
2	National Botanical Institute	The Institute's 2000 Business Plans included workplans to market and sell the National Botanical Institute publications locally and overseas; to develop new marketing strategies for publications, marketing workshops, etc. (National Botanical Institute, 1998)
3	Royal Botanic Garden Edinburgh	The Chairman of the Board of Trustees of the Garden acknowledged that "... the Trustees are increasingly obliged to look for alternative sources of financial support to ensure further development of the Garden and its activities..." (Royal Botanic Garden Edinburgh, 1997)
4	Royal Botanic Gardens Kew	The garden's mission statement includes "Income Generation Programme: To increase revenue generation ..." (Appendix III)
5	Kings Park & Botanic Garden	The Garden's 2000-2003 Strategic Plan stated that "the Authority will seek new revenue streams through new sponsorships and business initiatives such as merchandising" (www.kpbg.wa.gov.au)
6	Singapore Botanic Gardens	<p>The Director of the garden noted in Gardenswise that new activities, additional intensified landscapes and new displays, mean additional operating costs and the garden must seriously address these issues. He opined that the garden must identify new revenue streams and it will have to expand its strategic and positive partnerships with friends, volunteers, community and corporations (Singapore Botanic Gardens, 2003)</p> <p>The need for revenue generation is communicated to staff of Singapore Botanic Gardens in the Culture statement (Appendix VI) – "... maximize earned and contributed income to maximize long term financial viability and to allow management flexibility"</p>
7	Royal Botanical Gardens Les jardins botaniques royaux	The garden advertises its commercial facilities on its website, eg. Restaurants, Gifts, Private Rentals for weddings and use of Auditorium (www.rbg.ca)

Table 20: Findings on the awareness (detailed) of botanic garden administrators of the need for revenue generation to fund botanic gardens

Table 20 continues

	Botanic Garden (BG)	Botanic garden administrators aware of the need for revenue generation to fund botanic garden
8	Denver Botanic Gardens	Marketing momentum was created in 1997 and continued through a 1998 image campaign to promote the garden and its programs; to plan and execute events; to produce publications; to oversee the rental and use of the facility (Denver Botanic Gardens, 1998) To ensure the financial viability of the garden, the Development and Membership Department seeks community charitable contributions. Seeing a need for increased revenue from charitable foundations, a grant writer was hired (Denver Botanic Gardens, 1997)
9	Brooklyn Botanic Garden	The Chairman of the Board of Brooklyn Botanic Garden revealed that the Board and the Garden administrators "... face up to reality: the need to develop new sources of regular, dependable income over time...." (Schneider, 1997, 22)
10	Phipps Conservatory and Botanical Garden	The Garden recognized that "... the rental of Phipps' facilities, in- and outdoors, is becoming an ever-increasing revenue generator..." (Phipps Conservatory and Botanical Garden, 1997)
11	The Dawes Arboretum	The Garden advertises its commercial facilities on its website, eg. rental of facilities, tours and tram rides (www.dawesarb.org)
12	Missouri Botanical Garden	The Garden advertises its commercial facilities on its website, eg. Catered Events and Giving Programs (www.mobot.org)
13	Strybing Arboretum & Botanical Gardens	The Board Vice President and Development Committee Chair stressed that "Identifying and securing new financial resources had a high priority...." (Strybing Arboretum Society, 1997)
14	The Morton Arboretum	The Garden advertises its commercial facilities on its website, eg. rental of facilities (www.mortonarb.org)
15	Manaaki Whenua Landcare Research	Chief Executive of the institute recognized that "...one challenge for the next few years is to increase return on equity..." (Manaaki Whenua Landcare Research, 1997)
16	Quail Botanical Gardens	President of the garden acknowledged "... the important contribution the Gift Shop continues to make to our bottom line day in and day out..." (Quail Botanical Gardens, 2000)

Table 20: Findings on the awareness (detailed) of botanic garden administrators of the need for revenue generation to fund botanic gardens

Table 20 continues

	Botanic Garden (BG)	Botanic garden administrators aware of the need for revenue generation to fund botanic garden
17	The Holden Arboretum	The Garden advertises its commercial facilities on its website, eg. Offerings from its Shop and rental of facilities (www.holdenarb.org)
18	Fairchild Tropical Garden	<p>In Fairchild Tropical Garden's 1997 Annual Report, the Director of the Garden wrote that "...As we look to the future, we can see that the increasing importance and urgency of the work we do will create pressure for more funding...." (Fairchild Tropical Garden, 1997)</p> <p>In the FY1998 Annual Report, Fairchild Tropical Garden informed that the Director of the Garden is in charge of all program areas (research, education, conservation and horticulture) while the Chief Operating Officer is responsible for all of the Garden's revenue generating areas (Fairchild Tropical Garden, 1998)</p> <p>The Garden has a e-commerce site for on-line book sales (Fairchild Tropical Garden, 1998)</p>
19	Santa Barbara Botanic Garden	The garden's mission statement includes "Ensure long term viability of the garden and its programs" (Appendix III)

Table 20: Findings on the awareness (detailed) of botanic garden administrators of the need for revenue generation to fund botanic gardens

The statistical results of the three-item rating questionnaire by the three judges (Appendix IV) are analyzed. The three-item ratings of the three judges was tested for inter-judge reliability by calculating the Pearson's paired correlations between each pair of judges. All results are positive and significant (Judge 1/Judge 2= 0.43, $p < 0.001$; Judge 1/Judge 3 = 0.62, $p < 0.001$; Judge 2/ Judge3 = 0.67, $p < 0.001$). A single item representing the combined judgements was then calculated and this is labelled "Awareness".

Next the 19 judgements were correlated to the cost recovery ratios of the corresponding botanic gardens. The results show, again, a strong and positive relationship (0.63, $p < 0.001$) between the cost recovery performance

of botanic gardens and the awareness of botanic garden administrators of the need for revenue generation to fund their operations.

4.3.2 Critical factor 2: Strategic Partnership is sought to fund the botanic garden's operating budget

4.3.2.1 Results of indicator checks for the two case gardens

The indicator checks applied to critical factor 2 matched the predicted “effect” pattern that seeking strategic partnerships to fund the botanic gardens’ operating budget will promote better cost recovery ($CRR \geq 1$) performance (Table 21).

CF2: Strategic Partnership is sought to fund the botanic garden's operating budget			
Predicted "effect" pattern: The presence of Strategic Partnerships to fund the botanic garden's operating budget will promote better (CRR ≥ 1) cost recovery performance			
Indicator	Singapore Botanic Gardens No = X Yes = $\checkmark$	Fairchild Tropical Garden No = X Yes = $\checkmark$	Remarks
% of strategic partnerships versus botanic garden's operating budget within the % range for botanic gardens with CRR ≥ 1	FY97: 1% X FY98: 15% X	FY97: 56% $\checkmark$ FY98: 29% $\checkmark$	From the list of botanic gardens with CRR ≥ 1 , the % range for FY97: 17-85% From the list of botanic gardens with CRR ≥ 1 , the % range for FY98: 20 - 99 %
Botanic garden administrators aware of the need to establish strategic partnerships with corporations /individuals	X	$\checkmark$	In its Annual Report for FY97. Fairchild Tropical Garden announced that under the Florida Cultural Endowment Program, if Fairchild Tropical Garden is able to raise US\$340,000 within a year, it will qualify to receive a matching contribution of US\$240,000 (Fairchild Tropical Garden, 1997). President of Board of Trustees of Fairchild Tropical Garden acknowledged that "This is an exciting time in the life of Fairchild Tropical Garden. Our programs in research, education, conservation and horticulture are the very center of the Garden's mission. As we continue to expand our efforts in these areas, funding continues to play a very large role. For all who supported our efforts through gifts, grants, memberships, special events and volunteerism, please accept our most sincere thanks. It is a formidable undertaking to seek the resources to continue to operate each year." (Fairchild Tropical Garden, 1998). No mention of the need for raised income in the data provided by Singapore Botanic Gardens.
An established Friends of the Garden program	X	$\checkmark$	Fairchild Tropical Garden Members FY97: 11,092 FY98: 12,234

Table 21: Checking of indicators against critical factor 2 to see if they match predicted "effect" pattern

Fairchild Tropical Garden's reliance on strategic partnerships, for the financial years under review, to fund its operating budget is within the percentage range of reliance showed by the better cost recovery (CRR ≥ 1) botanic gardens in general. Singapore Botanic Gardens' reliance fell outside the range of reliance of the better cost recovery botanic gardens. Fairchild Tropical Garden is also very aware of the need to rely on strategic

partnerships. In its Annual Report for FY97, Fairchild Tropical Garden announced that under the Florida Cultural Endowment Program, if Fairchild Tropical Garden is able to raise US\$340,000 (S\$547,060⁶) within a year, it would qualify to receive a matching contribution of US\$240,000 (S\$386,160⁶) (Fairchild Tropical Garden, 1997). This matching contribution to Fairchild Tropical Garden is a continuing proposition under the Florida Cultural Endowment Program of the Division of Cultural Affairs and the Florida Arts Council. The President of the Board of Trustees of Fairchild Tropical Garden acknowledged that while the Garden's programs in research, education, conservation and horticulture are the very center of the organization's mission, funding continues to play a very large role if these programs are to be realized. He recognized that it is a formidable undertaking to seek the resources to continue to operate each year (Fairchild Tropical Garden, 1998).

Fairchild Tropical Garden has an established Friends of the Garden programme with a membership of 11,092 and 12,234 in FY1997 and FY1998 respectively.

The Singapore Botanic Gardens does not appear to show a heightened sense of awareness of the need for raised income from the data provided by the garden. The Singapore Botanic Gardens does not even have a Friends programme in place. The level of awareness and the extent of reliance of

⁶ US\$1 = S\$1.6090, FXHistory, OANDA Corporation dated 2 January 1994

both gardens on strategic partnerships are reflected in their cost recovery performances.

4.3.2.2 Statistical results for botanic gardens in general

The review of the 25 botanic gardens that provided information on whether they participate in strategic partnerships to fund the botanic garden's operating budget revealed that 25 out of 25 botanic gardens forged strategic partnerships (Tables 22 and 23).

	Botanic Garden (BG)	Cost Recovery Ratio 1997	Raised Income (% Reliance on strategic partnerships to fund operating expenditure)⁹
1	Royal Tasmanian Botanical Gardens	0.11	2%
2	Royal Botanic Gardens Sydney	0.21	2%
3	National Botanical Institute	0.25	10%
4	Royal Botanic Garden Edinburgh	0.26	10%
5	Royal Botanic Gardens Kew	0.32	4%
6	Kings Park & Botanic Garden	0.38	10%
7	Singapore Botanic Gardens	0.54	1%
8	Royal Botanical Gardens Les jardins botaniques royaux	0.58	14%
9	The Scott Arboretum of Swarthmore College	0.6	69%
10	Denver Botanic Gardens	0.64	26%
11	Brooklyn Botanic Garden	0.86	38%
12	Phipps Conservatory and Botanical Garden	0.9	37%
13	The Dawes Arboretum	0.91	4%
14	Chelsea Physic Garden	0.99	39%
15	Missouri Botanical Garden	0.99	56%
16	Cornell Plantations, The Arboretum, Botanical Garden, and Natural Areas of Cornell University	0.99	40%
17	Strybing Arboretum & Botanical Gardens	0.99	22%
18	Bickelhaupt Arboretum	1.0	71%
19	The Morton Arboretum	1.01	17%
20	Quail Botanical Gardens	1.05	59%
21	Chicago Botanic Garden	1.09	38%
22	The Arnold Arboretum	1.17	85%
23	The Holden Arboretum	1.27	20%
24	Fairchild Tropical Garden	1.86	56%
25	Santa Barbara Botanic Garden	2.32	30%

Table 22: Percentage reliance on strategic partnerships to fund operating expenditure (FY1997)

⁹ The percentage reliance is computed as percentage of the total raised income through donations, sponsorships or any other form of strategic alliances, etc over the total operating expenditure required to fund the botanic garden.

	Botanic Garden (BG)	Cost Recovery Ratio 1998	Raised Income (% Reliance on strategic partnerships to fund operating expenditure)⁹
1	Royal Tasmanian Botanical Gardens	0.14	2%
2	Royal Botanic Gardens Sydney	0.23	3%
3	Royal Botanic Garden Edinburgh	0.28	10%
4	National Botanical Institute	0.29	11%
5	Royal Botanic Gardens Kew	0.36	30%
6	Singapore Botanic Gardens	0.39	14%
7	Denver Botanic Gardens	0.43	19%
8	Kings Park & Botanic Garden	0.54	14%
9	The Scott Arboretum of Swarthmore College	0.58	44%
10	Royal Botanical Gardens Les jardins botaniques royaux	0.61	13%
11	Brooklyn Botanic Garden	0.74	43%
12	The Dawes Arboretum	0.92	3%
13	Bickelhaupt Arboretum	0.97	56%
14	Missouri Botanical Garden	0.98	56%
15	The Morton Arboretum	1.03	22%
16	Phipps Conservatory and Botanical Garden	1.03	44%
17	Strybing Arboretum & Botanical Gardens	1.04	51%
28	Chelsea Physic Garden	1.08	44%
19	Quail Botanical Gardens	1.13	53%
20	The Holden Arboretum	1.15	20%
21	Chicago Botanic Garden	1.19	56%
22	Fairchild Tropical Garden	1.46	29%
23	Cornell Plantations, The Arboretum, Botanical Garden, and Natural Areas of Cornell University	1.67	94%
24	The Arnold Arboretum	1.67	99%
25	Santa Barbara Botanic Garden	2.32	71%

Table 23: Percentage reliance on strategic partnerships to fund operating expenditure (FY1998)

The statistical result for critical factor 2 indicates that there is association between the extent and intensity of strategic partnerships the botanic garden participates in and its cost recovery performance. Pearson's correlation

between the two variables of cost recovery performance and the percentage of reliance on strategic partnerships shows a strong, positive relationship (0.77, $p < 0.001$).

4.3.3 Critical factor 3: Customer satisfaction is included in the botanic garden's traditional scientific and social priorities

4.3.3.1 Results of indicator checks for the two case gardens

CF3: Customer Satisfaction is included in the botanic garden's traditional scientific and social priorities			
Predicted "effect" pattern: The presence of Customer Satisfaction in botanic garden's traditional scientific and social priorities will promote better (CRR $\geq$ 1) cost recovery performance			
Indicator	Singapore Botanic Gardens No = X Yes = $\checkmark$	Fairchild Tropical Garden No = X Yes = $\checkmark$	Remarks
Inclusion of customer satisfaction in botanic garden's traditional scientific and social priorities	$\checkmark$	$\checkmark$	
locals $\geq$ tourists	$\checkmark$	$\checkmark$	Tourist is defined as a visitor from overseas. Like Singapore Botanic Gardens, Fairchild Tropical Garden defines a tourist as a visitor from outside the country. It does not consider visitors from United States of America, outside the State of Florida as tourists.
Overall Performance score for SERVQUAL survey	69.4%	77.7%	Benchmark indicator : 0 –25% Low 26-50% Below Average 51-75% Above Average 76-100% High
Level of customer satisfaction focus based on overall performance score for SERVQUAL survey (Tables 25 and 26)	Above Average	High	
Botanic garden administrators aware of the need for strong focus on customer satisfaction and communicate this to employees and those affected / influenced by the activities of the Garden	X	$\checkmark$	<p>The President of Board of Trustees of Fairchild Tropical Garden affirmed the Garden's emphasis on customer satisfaction: "We must continue to emphasize the importance of that work while enhancing the quality of service we provide to all our audiences – visitors to the Garden, land managers in search of advice, gardeners and growers looking for new plants and information on how to grow them, and teachers seeking new ways to inspire children to be interested in science, the natural work and conservation. We are confident that, if we offer good service and programs of quality, our friends will continue to support us as we pursue our goals." (Fairchild Tropical Garden, 1998).</p> <p>The Singapore Botanic Gardens did not have a dedicated Marketing section within the organization for the years under review (FY1997 and FY1998).</p>
Do we see the focus on customer satisfaction translated into improved profitability for the botanic garden?	X	$\checkmark$	

Table 24: Checking of indicators against critical factor 3 to see if they match predicted "effect" pattern

The indicator checks showed that both case gardens do focus on customer satisfaction in their operations (Table 24). However, the extent of their focus differs and this has an impact on their cost recovery performance.

The results of the SERVQUAL survey for critical factor 3 for Singapore Botanic Gardens is presented in Appendix VII and for Fairchild Tropical Garden in Appendix VIII. The results (Appendices VII and VIII) for both gardens are summarized in the Service Expectation and Performance scores presented in Table 25 (Singapore Botanic Gardens) and Table 26 (Fairchild Tropical Garden).

This study used four ranges of the overall SERVQUAL's Service Expectation and Performance score to benchmark the extent of customer satisfaction focus. The four categories were derived by dividing the scale into quartiles. They are valid in so far as they provide a measurement of the performance score which is along a scale of percentage. They are not absolute. A range of 0 –25% is a "Low", between 26-50% is a "Below Average", between 51-75% is an "Above Average" and between 76-100% is a "High". Based on this definition and their overall performance score for SERVQUAL survey (Tables 25 and 26), Fairchild Tropical Garden showed a "High" level of customer satisfaction focus while the Singapore Botanic Gardens showed an "Above Average" level of customer satisfaction focus. The scores of both case gardens also reflected the level of awareness of the botanic garden administrators of the need for strong focus on customer satisfaction and communicate this to employees and those affected / influenced by the activities of the gardens.

Service Factor (SF)	Visitor's service expectation score (%)	Singapore Botanic Gardens' service performance score (%)
SF1 – Staff I came into contact with are willing to help me	79.6	81.1
SF2 – Staff I came into contact with are consistently courteous	83.5	77.2
SF3 – Staff I came into contact with dealt with me in a caring fashion	77.9	67.7
SF4 – The garden provided programmes and events on time as promised	68.5	48.0
SF5 – The programmes, landscapes and facilities offered by the garden show that it understands my needs	78.7	75.6
SF6 – Clear and concise materials available (eg. brochures, maps, signs)	92.1	82.6
SF7 – Having my best interests at heart (eg. availability of refreshment outlets, handicap access, rain shelters, visitor friendly footpaths)	85.1	79.6
SF8 – Willingness to help me enjoy the garden (eg. provides clear interpretation, well designed maps, attractive landscapes and plant displays)	89.0	81.0
SF9 – Maintain accurate mailing list to keep me informed of the events, programmes, activities organized by the garden	54.4	35.4
SF10 – Informing me through banners, notices and flyers about when services (eg. events, concerts) will be performed	56.7	44.1
SF11 – Providing the services promised	78.7	53.6
SF12 – Garden in which I have confidence will cater to my needs	79.5	62.2
SF13 – Staff who have the knowledge to answer my questions when approached	56.7	85.8
SF14 – Readiness of staff, whom I contacted, in responding to my questions / requests	88.2	70.9
SF15 – Dependability of staff in handling my service problems	82.7	63.0
SF16 – Performing the services right the first time (ie. accuracy of information provided when asked)	88.2	61.4
SF17 – Visually appealing facilities (eg. signboards, shelters, entrances, buildings and landscapes)	85.1	79.6
SF18 – Giving me individual attention	58.3	53.5
SF19 – Staff who have a neat, professional appearance	74.8	81.1
SF20 – Convenient hours and days of operation	88.2	84.2
SF21 – Modern facilities (eg. trams, website, audio-visual aids)	70.1	47.2
SF22 – The counter staff was knowledgeable and confident about the garden programmes and products	67.8	87.4
SF23 – Offering appropriate services and resources for garden users / visitors (eg. guided tours, talks, shows)	46.4	75.6
SF24 – Facilities that function well (eg. toilets, water features, lights)	94.5	81.1
SF25 – Landscapes and plant displays that function well to meet horticultural and botanical needs of visitors	90.6	77.9
Average Score	76.2%	69.1%

Table 25: Service expectation and performance scores for Singapore Botanic Gardens

Service Factor (SF)	Visitor's service expectation score (%)	Fairchild Tropical Garden's service performance score (%)
SF1 – Staff I came into contact with are willing to help me	92.6	87.5
SF2 – Staff I came into contact with are consistently courteous	90.5	84.5
SF3 – Staff I came into contact with dealt with me in a caring fashion	91.2	79.4
SF4 – The garden provided programmes and events on time as promised	71.3	65.5
SF5 – The programmes, landscapes and facilities offered by the garden show that it understands my needs	89.7	84.6
SF6 – Clear and concise materials available (eg. brochures, maps, signs)	86.0	82.4
SF7 – Having my best interests at heart (eg. availability of refreshment outlets, handicap access, rain shelters, visitor friendly footpaths)	94.1	85.3
SF8 – Willingness to help me enjoy the garden (eg. provides clear interpretation, well designed maps, attractive landscapes and plant displays)	77.2	70.6
SF9 – Maintain accurate mailing list to keep me informed of the events, programmes, activities organized by the garden	88.9	80.1
SF10 – Informing me through banners, notices and flyers about when services (eg. events, concerts) will be performed	87.5	76.4
SF11 – Providing the services promised	90.6	85.3
SF12 – Garden in which I have confidence will cater to my needs	86.0	72.8
SF13 – Staff who have the knowledge to answer my questions when approached	89.7	68.4
SF14 – Readiness of staff, whom I contacted, in responding to my questions / requests	67.0	70.6
SF15 – Dependability of staff in handling my service problems	88.2	77.2
SF16 – Performing the services right the first time (ie. accuracy of information provided when asked)	94.1	74.3
SF17 – Visually appealing facilities (eg. signboards, shelters, entrances, buildings and landscapes)	85.3	83.8
SF18 – Giving me individual attention	74.2	79.5
SF19 – Staff who have a neat, professional appearance	83.1	77.2
SF20 – Convenient hours and days of operation	75.0	67.0
SF21 – Modern facilities (eg. trams, website, audio-visual aids)	87.3	80.8
SF22 – The counter staff was knowledgeable and confident about the Garden programmes and products	86.1	76.5
SF23 – Offering appropriate services and resources for garden users / visitors (eg. guided tours, talks, shows)	87.5	78.0
SF24 – Facilities that function well (eg. toilets, water features, lights)	93.4	69.7
SF25 – Landscapes and plant displays that function well to meet horticultural and botanical needs of visitors	89.0	86.0
Average Score	85.8%	77.7%

Table 26: Service expectation and performance scores for Fairchild Tropical Garden

As expected, the analysis of the SERVQUAL data (presented in Tables 25 and 26) by t-test shows that Fairchild Tropical Garden does indeed do better than Singapore Botanic Gardens on service performance (Mean Singapore Service Performance = 69.5, Mean Fairchild Service Performance = 77.7, $t = 2.5$, $p = 0.018$). Visitors to

Fairchild Tropical Garden generally perceived the garden to be performing well in relation to the five service dimensions with expectation and performance scores above 60% for all the service factors (Table 26). On the other hand, there is an opportunity for Singapore as the expectations of Singapore visitors are generally lower than those of Fairchild visitors (Mean Singapore Service Expectation = 76.6, Mean Fairchild Service Expectation = 85.8, $t = 3.1$, $p = 0.005$). To take full advantage of this lower expectation, it is worth looking at the detailed service factors to identify areas in which Singapore Botanic Gardens can make improvements. Generally visitors to the Singapore Botanic Gardens perceived the garden to be performing well in relation to the five service dimensions with expectation and performance scores above 50% except for four service factors where the expectation and performance scores dipped below 50% (SF4, SF9, SF10 and SF21) out of twenty five factors measured (Table 25). Visitors felt that the garden's events and programs are not provided on time as promised. Visitors also felt that the garden does not maintain a mailing list to keep them informed of events, programs and activities organized by the garden. Visitors also felt that the garden does not inform them through banners, notices and flyers about when events, concerts and activities will be performed. The less than satisfactory performance in these three areas indicated a need for more information to be made available to the visitors. Finally visitors felt that modern facilities are lacking in the garden such as trams and audio visual aids.

Oddly enough, the overall SERVQUAL gap (between service expectation and service performance) is lower for Singapore Botanic Gardens than for Fairchild Tropical Garden, which at first seems counter-theoretic (Mean _{Singapore Service Expectation} = 76.6, Mean _{Singapore Service Performance} = 69.5, SERVQUAL gap = 7.1, $t = 2.4$, $p=0.026$; Mean _{Fairchild Service Expectation} = 85.8, Mean _{Fairchild Service Performance} = 77.7, SERVQUAL gap = 8.1, $t = 6.06$, $p = 0.000$). However it should be borne in mind that the relationship between service expectation and service performance is two-way. Expectation drives perception of service performance but perceived performance of service also drives expectation. Thus, what is important here is that the absolute performance level of Fairchild Tropical Garden is higher than Singapore Botanic Gardens. The SERVQUAL gap is to be viewed as a managerial tool which help organizations to raise their overall service levels by identifying and fixing large perceived gaps for particular service factors.

The President of the Board of Trustees of Fairchild Tropical Garden affirmed the Garden's emphasis on customer satisfaction:

“We must continue to emphasize the importance of that work while enhancing the quality of service we provide to all our audiences – visitors to the Garden, land managers in search of advice, gardeners and growers looking for new plants and information on how to grow them, and teachers seeking new ways to inspire children to be

interested in science, the natural work and conservation. We are confident that, if we offer good service and programs of quality, our friends will continue to support us as we pursue our goals” (Fairchild Tropical Garden, 1998).

The Singapore Botanic Gardens did not even have a dedicated marketing section within the organization for the years under review (FY1997 and FY1998).

4.3.4 Critical factor 4: Financial Incentive is present for the botanic garden to enhance its fiscal sustainability

4.3.4.1 Results of indicator checks for the two case gardens

CF 4: Financial Incentive is present for the botanic garden to enhance its fiscal sustainability			
Predicted “effect” pattern: The presence of Financial Incentive in the form of revenue retention will promote better (CRR ≥ 1) cost recovery performance			
Indicator	Singapore Botanic Gardens No = X Yes = $\checkmark$	Fairchild Tropical Garden No = X Yes = $\checkmark$	Remarks
Organization is allowed to retain part or all of its revenue	X	$\checkmark$	
Major or key fundraising efforts in the last five years (FY2001-FY1997)	X	$\checkmark$	Fairchild Tropical Garden stages several profitable special events per year such as Ramble, Mango Month, musical events, etc to raise funds for the garden.
% earned revenue ⁷ of total operating budget within the % range of botanic gardens with CRR ≥ 1	FY97: 54%	FY97: 186%	From the list of botanic gardens with CRR ≥ 1 , the % range is as follows: FY97: 90-232%
	X	$\checkmark$	
	FY98: 41%	FY98: 146%	From the list of botanic gardens with CRR ≥ 1 , the % range is as follows: FY98: 81-232%
% raised revenue ⁸ of total operating budget within the % range of botanic gardens with CRR ≥ 1	FY97: 1%	FY97: 56%	From the list of botanic gardens with CRR ≥ 1 , the % range is as follows: FY97: 17-85%
	X	$\checkmark$	
	FY98: 14%	FY98: 29%	From the list of botanic gardens with CRR ≥ 1 , the % range is as follows: FY98: 20-99%
	X	$\checkmark$	
Creativity in generating revenue	X	$\checkmark$	In Fairchild Tropical Garden, the first Wednesday of each month is “Contribution Day” when visitors set their own admission fee.

Table 27: Checking of indicators against critical factor 4 to see if they match predicted “effect” pattern

The indicators applied to critical factor 4 matched the predicted “effect” pattern that the presence of financial incentive in the form of revenue

⁷ “Earned revenue” refers to profit driven revenue acquired by the organization through commercial activities.

⁸ “Raised revenue” refers to revenue acquired by the organization through a non-profit driven process. This form of revenue can come from fund raising through traditional philanthropic donations, sponsorships, etc.

retention will promote better ($CRR \geq 1$) cost recovery performance (Table 27). Fairchild Tropical Garden is allowed to retain its revenue and the Garden is motivated to be creative in generating more earned and raised income. Fairchild Tropical Garden's percentage of earned income is 186% of its total operating budget for FY1997 and 146% for FY1998. Its percentage of raised income is 56% of its total operating budget for FY1997 and 29% for FY1998. Fairchild Tropical Garden is also proactive and creative in organizing fundraising events. In contrast, the Singapore Botanic Gardens appears to lack the push to generate revenue. The Singapore Botanic Gardens did not organize any fundraising event for the periods under review. Its percentage of earned income for FY1997 and FY1998 fell below the range showed by the better cost recovering botanic gardens; a low 54% of its total operating budget for FY1997 and 41% for FY1998. Its percentage of raised income for FY1997 is a low 1% of its total operating budget and 14% for FY1998.

4.4 Summary

The findings indicate that revenue generation is already a silent priority in botanic gardens even though it may not be included in their mission statements; strategic partnerships promote better cost recovery performance; a high level of customer satisfaction is conducive to cost recovery; and a financial incentive of revenue retention has a positive impact on cost recovery

performance. These results and their implications are discussed in the following chapter.

CHAPTER FIVE

DISCUSSION AND CONCLUSION

5.1 Discussion of research findings

The study proposition states that a botanic garden performs better in terms of cost recovery when certain critical factors are present. The four critical factors identified are:

1. **Revenue Generation** is included in the botanic garden's mission on botanical and horticultural research, education, conservation and recreation
2. **Strategic Partnership** is sought to fund the botanic garden's operating budget
3. **Customer Satisfaction** is included in the botanic garden's traditional scientific and social priorities
4. **Financial Incentive** is present for the botanic garden to enhance its fiscal sustainability

Critical Factor 1: **Revenue Generation** is included in the botanic garden's mission statement on botanical and horticultural research, education, conservation and recreation

The qualitative findings supported by the statistical results appear to indicate that the presence of a revenue generating mission statement makes no difference to the cost recovery performance of a botanic garden. Nevertheless, it can be argued that such a mission is implicitly accepted by administrators.

The botanic garden's formula of botanical and horticultural research, education, conservation and recreation for the administration of a botanical institution bespeaks the priorities of the botanic garden. It tells what the management of the garden feels is important. It is not surprising that revenue generation is not a publicized priority with the botanic garden because traditionally every garden sees its role to be first and foremost a botanical institution. However, implicit to the existence of botanic gardens is the part played by their visitors. Without the public support and endorsement which in turn bring in the much required funding, botanic gardens cannot successfully fulfill their scientific roles.

Revenue generation may not be included in the mission statements of botanic gardens but it is in fact a priority, albeit a silent priority with many gardens.

This point is well illustrated by the findings of a review of the same 19 botanic gardens used in the statistical testing for critical factor 1 in Chapter Four.

While only two of the 19 botanic gardens include revenue generation in their mission statements (Tables 17 and 18), all 19 botanic gardens are aware of the need for revenue generation within their organizations are reported in Chapter Four. There is a strong, positive relationship between the cost recovery performance of botanic gardens and the awareness of botanic garden administrators of the need for revenue generation.

While managers of botanic gardens are struggling with the fear that money making behaviour could be taken to the extreme, compromising their traditional scientific roles of botanical and horticultural research, education and conservation, financial stringency is forcing them to re-think their style of operations. They find themselves having to change their traditional ways of doing business. However, they still need to balance their commercial activities with the scientific and botanical image of the gardens because this is a contentious issue with some visitors. Traditionally, visitors do not expect botanic gardens to be managed as a business or to display the obvious manifestations of business activities (discussed in Chapter Two). It is therefore logical for botanic garden administrators to want to downplay their commercial elements. This could be the reason why revenue generation is not clearly spelled out in their mission statements even though botanic garden managers are increasingly conscious of the need to generate revenue.

Fairchild Tropical Garden is a good example. The garden does not include revenue generation in its mission statement. Yet in the garden's 1997 Annual Report, the then Director, Dr Brinsley Burbidge wrote that

“...As we look to the future, we can see that the increasing importance and urgency of the work we do will create pressure for more funding....” (Fairchild Tropical Garden, 1997, III).

Like Fairchild Tropical Garden, the Royal Botanic Gardens Sydney does not include revenue generation in its mission statement. Yet this garden constituted a revenue committee in 1996 with the terms of reference to evaluate the existing sources of revenue of the organization to see if the net returns can be increased, and to investigate options for revenue streams.

The Singapore Botanic Gardens is a good example of the tightrope the administrators walk to balance their commercial activities with the scientific role of the institution. To manage this attraction which is linear in shape, the Singapore Botanic Gardens is developed and managed along a core concept.

Figure 5: Singapore Botanic Gardens' 3-core concept

The Tanglin Core is at the southern end of the garden; the Tourist Core in the central portion; and the Discovery Core at the northern end. Most of the revenue generators are strategically located in the Tourist Core of the garden to maximise revenue earning opportunities where traffic flow is the heaviest and where targeted visitors may be more willing to spend, leaving the other two cores quietly commercialized with just enough amenities to meet visitors' needs without compromising the scientific ambience of the botanic garden.

This study suggests that while revenue generation is not formalized in the mission statement, it is already a silent priority in many botanic gardens. Therefore, if critical factor 1 is included in the organization's mission statement, it will provide employees of the botanic garden and also those affected and influenced by the garden's activities, with a better shared sense of purpose, direction, significance, and achievement and will motivate them to align revenue generation objectives, principles and activities with the traditional values and motivations of a botanic garden. Including revenue generation in the mission statement elevates the awareness of the need for revenue generation to a priority for the organization and its employees. This would logically promote better ($CRR \geq 1$) cost recovery performance.

Critical Factor 2: **Strategic Partnership** is sought to fund the botanic garden's operating budget

This study shows that the presence of critical factor 2 promotes better ($CRR \geq 1$) cost recovery performance in botanic gardens. Statistical testing of 27 botanic gardens confirms that there is a strong, positive relationship between the extent and intensity of reliance on strategic partnership funding and the cost recovery performance of the gardens. Those botanic gardens with a cost recovery ratio equal or greater than one relied more extensively on strategic partnership funding compared to botanic gardens with a cost recovery ratio of less than one.

The better cost recovery performing botanic gardens seem to recognize the need to create more win-win partnerships with external parties and look beyond the Garden walls to find partners to help them achieve greater results. These botanic gardens recognize that strategic partnership revenue is the key to fund their operations. Many of these gardens use strategic partnership revenue to create larger events, defray event expenses, fund operation and marketing activities.

Santa Barbara Botanic Garden is a good example. It was the best performing cost recovery Garden in FY1997 and FY1998 out of the botanic gardens that provided financial data for this research. At Santa Barbara Botanic Garden the Board practises trustee self-assessment. This self-assessment allows the garden to look at the skills that the trustee is bringing to the organization. The process produces a matrix (Appendix IX). The matrix has the skills listed down one side and trustee's name across the top. Once the matrix is determined and examined relative to the Garden's needs, an inventory of skills in marketing, public relations and fund-raising capability of the Board of trustees will be produced. The Santa Barbara Botanic Garden also set expectations for individual trustee's giving and involvement. The Marketing and Development Committee was charged with drafting guidelines for determining the level of financial support reasonably expected of board trustees, both in terms of their own giving as well as solicitations of gifts from

others (Appendix X). The committee recognized that to achieve the funding goals of the garden there needs to be increased participation by the board of trustees.

Critical factor 2 which calls for the strategic partnerships to be sought to fund the botanic garden's operating budget therefore has strong grounds to be accepted as a strategic factor that promotes cost recovery performance.

Critical Factor 3: **Customer Satisfaction** is included in the botanic garden's traditional scientific and social priorities.

Myers (1999) in his studies found that high customer satisfaction can have positive effects on the bottom-line. Johnson and Gustafsson (2000) linked customer satisfaction to customer loyalty, which in turn translates into revenue growth. The existing literature points to improved profitability for a customer-focused organization that scored high on customer satisfaction.

The SERVQUAL survey results of both Singapore Botanic Gardens and Fairchild Tropical Garden match the predicted "effect" pattern that the presence of the critical factor has an effect on the cost recovery performance. However the results, quantitative and qualitative, also show that Fairchild Tropical Garden performed better than Singapore Botanic Gardens on service performance.

If we look at existing literature, we find that the whole concept of reinventing government as advocated by Osborne and Gaebler (1992) is to make it more responsive to customers needs and wants. When this marketing concept is applied to botanic gardens, customer satisfaction translates to increased revenue generating opportunities; it increases community understanding and support for the botanic garden as a center of horticultural and botanical excellence. A service provider like a botanic garden delivers customer satisfaction through the experience the visitor gets. Service quality generates customer satisfaction. This builds customer loyalty which ultimately has a positive impact on the financial bottom-line if we go by the tested models of Volvo and Sears.

To keep customers coming back, we have to give them reasons to do so. One way to set an organization apart from the competition is through value creation. Value is created at the higher levels of customer service where customers feel different when they are treated with respect and enjoy their interactions with the staff. Since about 50% or more of the annual visitors to Fairchild Tropical Garden and Singapore Botanic Garden are locals (versus overseas tourists), repeat visitation is applicable for both gardens.

Staff of botanic gardens, in carrying out their traditional scientific and social duties, should bear in mind the need to focus on the needs of their customers. They must be aware that they can retain customers through superior

customer service. A repeat customer becomes a stream of earnings. The botanic garden that invests in satisfying its customers will realise gains through long-term relationships that result. Another benefit is that customers who have a solid relationship with a botanic garden are more likely to make referrals. This is an invaluable source of advice that is taken more seriously by potential customers since the information is coming from a trusted source such as family and friends. This leads to the potential of reaching an expanded customer unit. It is important to realise that when a customer chooses a product or service, the return is not just from the customer's wallet but also from the wallets and handbags of his or her family, friends and colleagues. The relationship building that begins today represents a number of streams of future earnings.

Fairchild Tropical Garden delivers high customer satisfaction and it sees this translated into a positive effect on the bottom-line of the Garden. Although the Singapore Botanic Garden delivers above average customer satisfaction, this level of performance is not enough to have the same effect on bottom-line compared to a high level of customer satisfaction focus provided by Fairchild Tropical Garden.

Based on existing literature, research work in the field and experience of established major organizations like Sears and Volvo, there are grounds to accept that an organization culture that emphasizes high customer

satisfaction will see positive effects on the organization performance.

Fairchild Tropical Garden and the Singapore Botanic Gardens are confirmation of this. There are therefore good reasons for accepting that critical factor 3, which calls for customer satisfaction to be included in the botanic garden's traditional scientific and social priorities, is a strategic factor that promotes cost recovery performance.

Critical Factor 4: **Financial Incentive** is present for the botanic garden to enhance its fiscal sustainability

The presence and absence of financial incentives appear to have an impact on the motivation and financial performance of Fairchild Tropical Garden and Singapore Botanic Gardens. If there is an incentive to align results with financial rewards, the Garden is likely to be creative and more positive in innovating new business ventures and diversifying its revenue streams such as growing its raised income through sponsorships, donations and other forms of strategic partnerships. Fairchild Tropical Garden proves this to be the case as it faces up to the reality of the need to develop new sources of regular, dependable income. The self-generated revenue from Fairchild Tropical Garden is retained wholly by the garden and this revenue has no impact on the quantum of funding the garden receives from the government. If its self-generated revenue increases or declines for a particular year, the quantum of funding it receives from the government does not increase or

decrease accordingly. The funds from the government can only be used by the garden for the purposes they were applied for in the first place. Self-generated revenue is used for additional activities identified by the garden.

It finds innovative ways to do this such as designating the first Wednesday of each month as “Contribution Day” whereby visitors can set their own admission fee.

The Singapore Botanic Gardens does not enjoy the financial incentive of revenue retention. The Singapore Botanic Gardens is a statutory board created under the National Parks Act, Chapter 198A on 6 June 1990. As a statutory board, the garden receives grant-in-aid from its parent ministry, in this case, the Ministry of National Development. The garden has a pre-determined budget requirement based on baseline unit rates. It is then given grant-in-aid each year based on a quantum of its budget requirement less revenue earned. This effectively means that the garden does not enjoy the financial incentive of revenue retention since it is funded on the shortfall of its budget requirement less its revenue earned the previous year. The indicators check in Chapter Four shows that the Singapore Botanic Gardens has a very erratic performance in generating earned income from commercial activities and raised income from donations, sponsorships and other strategic partnerships. There seems to be a lack of a business plan to pursue commercialism as a strategy to mitigate the impact of cuts in governmental funding.

The absence of a financial incentive for the Singapore Botanic Gardens to retain the profit it earns from its revenue generating activities is translated into the lack of an incentive for the garden administrators to adopt a more entrepreneurial management approach to raise revenue while focusing on its 'classic' roles of research, education and conservation. Critical factor 4, which calls for a financial incentive to be present for the botanic garden to enhance its fiscal sustainability, is thus likely to be a strategic factor that promotes cost recovery performance.

5.2 Practical applications of findings for botanic gardens

Previous studies on revenue generation are directed mainly at commercial organizations and botanic gardens have received very little attention from researchers and academics. This study makes a primary contribution to the understanding of what drives a botanic garden, how this type of organization grapples with the need to raise its own revenue without compromising its scientific image and the measures that can be put in place to achieve this.

For those botanic gardens who are not performing well in terms of cost recovery, including the Singapore Botanic Gardens, the findings of this study have practical applications. Some suggestions for improvement are offered below.

The issue of revenue generation in botanic gardens is very often a contentious one. Traditionally, visitors do not expect botanic gardens to be managed as businesses or to display the obvious manifestations of business activities. Within botanic gardens themselves, there is also the fear that money making behaviour could be taken to the extreme compromising their traditional roles.

The reality is that botanic gardens are increasingly finding themselves having to change radically their traditional ways of doing business. Declining budget appropriations are forcing them to engage in efforts to reinvent and restructure in order to mitigate the impact of cuts in council/state funding. botanic gardens are compelled to turn to direct commercial activities in order to continue balancing their budgets while fulfilling their roles/missions. Concurrently, they also need to grow their business expertise and to change the staff mindset to accept that commercial activities are a necessary part of the operation.

The text book recommendation is that this is best achieved by having a clear mission and goals with regards to revenue generation and an unambiguous business plan that are well communicated to all staff. Although this study has not provided strong evidence of a positive relationship between the presence of a revenue generating mission statement and the cost recovery

performance of a botanic garden, it does reveal that botanic gardens are very aware of the need to generate revenue for their operations. Revenue generation is already a silent priority with many gardens as discussed in Chapter Five. The discussion has also highlighted reasons why revenue generation is not spelled out clearly in the mission statement, even though botanic garden managers are increasingly conscious of the need to generate revenue. botanic gardens administrators therefore face the challenge of generating revenue without creating the impression that they are aggressively pushing ahead with commercialism.

Botanic gardens should send a clear signal through their organizations on the need for revenue generation to fund the operations of botanic gardens in the face of diminishing governmental funding. An effective way to do this is by incorporating revenue generation into the mission statement. Keeping revenue generation a silent priority very often means that only a handful of staff (usually senior managers) are aware of the priority. The lower-rank staff are very often in the dark and this ambiguity may lead to a lack of synergy within the organization. By including revenue generation in the mission statement, organizational goals and performance targets of employees would now include revenue generation. This means a clearer focus for employees.

Revenue generation is a double-edged sword. Uncontrolled and excessive, its activities can compromise the integrity and ambience of a botanic

institution. On the other hand revenue generation activities that are appropriate, both in intensity and kind, can generate a sustainable income for programmes, facilities, research activities and services to meet the needs of the community while fulfilling the role of the institution and ensuring its continuity. Revenue generation is part of the business of running a botanic garden. The challenge therefore, is to manage it. The first consideration must be the nature of the revenue generating activities that botanic gardens embark on. The choices need to be sensitive to their basic functional roles and ambience, as special places of beauty, contemplation and inspiration. Food and beverage outlets are acceptable commercial activities as these are amenities and services that meet visitor needs, providing places to rest as well as refreshment. Other compatible activities include the provision of outlets dealing with garden and gardening related materials, books and gifts or general merchandise with a nature theme. Most would find the availability of these conveniences add value to their experiences in visiting gardens.

Secondly the provision of commercial outlets must be part and parcel of the overall plan for botanic gardens, taking into consideration the functions of specific areas, kinds and location of horticultural attractions, and visitor flow. While each outlet must be specified to meet the needs of the particular business, it also needs to be carefully sited, designed and landscaped to blend in with the ambience of its general location. The rationale is to maximise the visitor's experience of the gardens. Thirdly the gardens can

plan for ticketed events, new charged attractions and charged car parking and develop new products and explore more innovative ways to generate revenue.

Commercial activities in botanic gardens should be carefully and sensitively packaged. The gardens have to make a conscious and concerted effort to ensure that the range of products and services provided cater to the widest possible spectrum of visitors the gardens receive. Through such means, botanic gardens can pursue revenue generating activities and integrate them into the fabric of the gardens.

With regards to the question of strategic partnerships, previous studies have been mostly in the areas of commercial companies and charitable organizations. This study has provided useful insights into strategic relationships for botanic gardens, highlighting that botanic gardens in general do forge strategic partnerships as part of their fund raising and there is a direct relationship between the cost recovery performance of a botanic garden and the degree of dependence on strategic partnerships as an alternative source of funds. This is significant information for those who manage botanic gardens.

The key learning point from this study is that botanic garden managers must nurture a collaborative relationship and move from a traditional philanthropic

towards a deeper, strategic partnership. As public funds become more scarce, there is an urgent need to partner with businesses communities and public groups to develop programs that fit the interests of the community. What botanic garden managers need to be aware of is that the viability of an alliance depends fundamentally on its ability to create added value for both participants. The more specifically and quantitatively botanic garden managers can articulate the expected benefits to partners and to society, the greater success the collaboration will have. In any relationship it is important for the partners to continually review the value exchange with one another to ensure that they both perceive the benefit flow to be mutually advantageous and equitably balanced. A partner that perceives that it is giving much more than it is getting may well stop investing in a relationship or begin to exercise undue influence over the other partner. Botanic garden managers cannot underestimate the reality that any long-term partnership requires both parties to estimate the value of the partnership and to ensure that the partnership is mutually beneficial.

The study also confirms the importance of giving attention to customer satisfaction. As discussed in Chapter Four, Fairchild Tropical Garden does better than Singapore Botanic Gardens on service performance. Its absolute performance level is higher and this has seen improved cost recovery performance. Delivering high customer satisfaction will result in repeat customers as well as loyal customers. This is especially true for botanic gardens that get a substantial proportion of local (versus overseas) visitors. This in turn will have an impact on the bottom-line of the organization as shown by proven experiences of Volvo and Sears and supported by the findings of Johnson and Gustafsson (2000). Both Fairchild Tropical Garden and Singapore Botanic Gardens have a high proportion of their annual visitorship comprised of local visitors. Unlike most overseas visitors, local visitors will always return in the future as long as they perceive that they are getting satisfaction from their visit to the gardens. Returning visitors contribute to the gardens' revenue through admission charges and patronage at the commercial outlets within the gardens. Hence, delivering a high level of customer satisfaction for botanic gardens will enhance their cost recovery performances.

Finally the case study shows that without the pull factor of financial incentive of revenue retention, the push factor of declining budget appropriations driving the garden to grow existing revenue and identify new revenue streams

lacks impetus. The push factor complemented by the pull factor would be a very strong motivation for garden administrators to adopt a more entrepreneurial management approach to raise revenue while focusing on their “classic” roles of research, education and conservation.

5.3 Limitations of the study

The researcher had exercised great care in designing and completing this research. The Singapore Botanic Gardens and Fairchild Tropical Garden were selected as case studies and data from a sample of 28 other relevant gardens were also analyzed. As a research endeavor, case studies have sometimes been viewed as a less desirable form of inquiry. Perhaps the greatest concern has been the lack of rigor of case study research. It is often perceived that the case study researcher has allowed equivocal evidence or biased views to influence the direction of the findings and conclusions. While bias can also enter into the conduct of experiments (Rosenthal, 1966) and the use of other research strategies, such as designing questionnaires for surveys (Sudman and Bradburn, 1982) or conducting historical research (Gottschalk, 1968), the problems are generally perceived as more frequently encountered and less frequently overcome in case study research. The researcher in doing this study tried to ensure the quality of the case study design through the use of tactics that included use of multiple sources of

evidence, pattern-matching, and having the draft case study report reviewed by key informants.

Another concern is that the botanic gardens selected for this study are confined to those from English-speaking countries. This limits the pool of gardens sampled. The inclusion of a greater number of examples in the statistical tests for critical factor 1 (19 botanic gardens) and critical factor 2 (25 botanic gardens), prevented by resource constraints, would also have strengthened the authority of the conclusions.

One other concern is about the sample size. This study uses Pearson's correlation to measure the degree to which two variables (cost recovery ratio and percentage reliance on strategic partnerships to fund operating expenditure) are related (Chapter Four). The resulting Person's correlation in this case is not perfectly linear but it does show a strong, positive relationship. It is possible that the sample size of 25 botanic gardens, while acceptable, may have an impact on the significance of the linearity.

5.4 Future directions for research

The discussion of the study's findings reveals several key areas which require further studies:

1. This study finds that botanic gardens do forge strategic partnerships with external parties regardless of their cost recovery performance. The study also finds that the better cost recovery performing botanic gardens show a higher reliance on strategic partnerships. However, this study does not examine the extent of the collaborative relationships engaged in by botanic gardens. A question still to be addressed is whether there are any differences in the strategic partnerships forged by a botanic garden with a cost recovery ratio of less than one compared to a botanic garden with a cost recovery ratio of one or greater than one. Others include whether the collaborative relationship is at a philanthropic stage of annual solicitation, a transactional stage where the strategic partners carry out resource exchanges through specific activities like event sponsorships, or has the relationship been integrated to the extent that the partners' missions, people and activities are experiencing a more collective action and organizational integration. Future research can look into whether the stage of a strategic relationship between a botanic garden and its partner is related to its level of cost recovery performance.

2. This study shows that the four identified critical factors have an impact on cost recovery performance of botanic gardens. However, this study does not show whether all four factors are equally important and some factors may have more impact than others on the cost recovery performance. Further

research in this area will be very useful for those who manage botanic gardens.

3. Another possible area for future research is to examine the visitor experiences and attitudes towards evidence of commercialization. Is the traditional view that botanic gardens should not display obvious manifestations of commercial activities still relevant or has the public become more amenable to commercial elements in botanic gardens so long as they are appropriately managed?

5.5 Conclusion

Botanic gardens are products of the juxtaposition between the arts and the sciences. The immediate impact on visitors is the ambience and aesthetics provided by the particular blend of plants, landforms and structural features. The interpretation, educational programmes, research activities and publications, reflect the science in botanic gardens. These provide depth to the plantscape and to visitors' experiences.

The roles of botanic gardens may be represented by the basic formula of recreation, education, conservation and research. Implicit to the existence of gardens is the part played by their clients, the visitors. Without public support

and endorsement, they cannot successfully fulfil their roles, and risk becoming irrelevant.

The curation and interpretation of the living collection, maintenance of the landscapes and facilities, and the successful performance of research and conservation roles, necessitate the hiring of specialist staff. All these incur costs that continually increase. To meet this expenditure in a climate of decreasing funding from traditional sources, typically city councils or state, demands a drastic change in the way botanic gardens see themselves and operate. For botanic gardens to remain relevant and sustainable, they must be crafted and planted to become special places in the hearts and minds of their visitors, and their educational outreach must fill needs, and touch minds in addition to promoting gardening, plants, nature and conservation.

This study is a comparative case study of two botanic gardens, Singapore Botanic Gardens and Fairchild Tropical Garden and the findings are complemented by quantitative tests conducted on other botanic gardens. The study reviewed prevailing literature and existing models. Three existing models of Thurston and Richardson (1996), Osborne and Gaebler (1992) and Radosevich and Kasscieh (1994) are put through a distilling process (Chapter Two). It is found that a common thread of four broad categories runs through the three models. The four categories are expressed into a proposed model of four critical factors that promote cost recovery.

Critical factor 1 calls for revenue generation to be included in a botanic garden's mission on botanical and horticultural research, education, conservation and recreation. The absence of explicit revenue generation in the mission statement of the two case gardens, Singapore Botanic Gardens and Fairchild Tropical Garden, has affected the interpretation of results. This study is not able to provide strong evidence of a positive relationship between the presence of a revenue generating mission statement and the cost recovery performance of a botanic garden. The study has to rely on indirect evidence, that botanic gardens are actually very aware of the need to generate revenue and that revenue generation is actually a silent priority with gardens, to draw a relationship between a revenue generating mission statement and the cost recovery performance of a botanic garden. The "silent priority" is supported by the quantitative finding of a strong, positive relationship between the cost recovery performance of botanic gardens and the awareness of botanic garden administrators of the need for revenue generation. This study is recommending that it is timely and useful for botanic gardens to formalize this in their mission statement so that employees of the botanic garden and also those affected and influenced by the garden's activities will be imbued with a shared sense of purpose, direction, significance, and achievement and will be motivated to align revenue generation objectives, principles and activities with the traditional values and motivations of a botanic garden.

Critical factor 2 calls for strategic partnerships to fund the botanic garden's operating budget. This study has shown that botanic gardens are already doing this and that the better cost recovery performing gardens are doing this more extensively. Botanic gardens should note that while financial stringency is forcing botanic gardens to compete for additional support from corporate donors and foundations, the number of other worthy claimants from the arts, culture, humanitarian and environmental causes continue to increase. The process by which companies and botanic gardens find one another can be facilitated by market makers. Public relations, advertising, and corporate communications firms have been particularly effective at extending their business and marketing expertise into the social sector, especially in cause-related marketing. A note of caution, however, is that companies and botanic gardens should thoroughly assess any cause-related marketing deal in terms of the relationship's strategic implications and organizational fit, and they should be wary of any market maker who aggressively pushes such a deal before it has been well assessed by the potential partners.

Critical factor 3 calls for the inclusion of customer satisfaction in the botanic garden's traditional scientific and social priorities. This study has shown that a very high level of customer satisfaction within the organization culture is required before any impact on profitability is felt. Mediocre performance is not good enough in today's competitive environment. Delivering high customer

satisfaction will result in repeat customers as well as loyal customers. This is especially true for botanic gardens that get a substantial proportion of local (versus overseas) visitors. Both Fairchild Tropical Garden and Singapore Botanic Gardens have a high proportion of their annual visitorship comprised of local visitors. Unlike most overseas visitors, local visitors will always return in the future as long as they perceive that they are getting satisfaction from their visit to the gardens. Returning visitors contribute to the gardens' revenue through admission charges and patronage at the commercial outlets within the gardens. Hence, delivering a high level of customer satisfaction for botanic gardens will enhance their cost recovery performances.

Critical factor 4 calls for financial incentives to be present for a botanic garden to enhance its fiscal sustainability. This study has shown that the financial incentive of revenue retention is a strong motivational factor to push a botanic garden to pursue innovatively and aggressively alternative revenue streams. Without the pull factor of financial incentive of revenue retention, the push factor of declining budget appropriations driving the garden to grow existing revenue and identify new revenue streams lacks impetus. The push factor complemented by the pull factor would be a very strong motivation for garden administrators to adopt a more entrepreneurial management approach to raise revenue while focusing on their "classic" roles of research, education and conservation.

The study proposition is that a botanic garden performs better in terms of cost recovery when certain critical factors are present. The four critical factors identified in this study have been shown to affect the cost recovery performance of botanic gardens to some extent. This study recommends critical factor 1 of including revenue generation in the mission statement and critical factor 3 of including customer satisfaction in the botanic garden's traditional scientific and social priorities as possible factors that will produce better cost recovery performance when present. This study also identifies critical factor 2 of seeking strategic partnerships to fund the botanic garden's operating budget and critical factor 4 of having financial incentive for botanic garden to enhance its fiscal sustainability as factors that produce better cost recovery performance when present. Finally, this study also contributes to a better understanding of the mindset of those managing botanic institutions and the concerns these institutions face as they take the major step to promote cost recovery performance. The challenge is one of attaining greater financial independence while fulfilling a traditional agenda of botany, horticulture, research, conservation, education and recreation.

Appendix I

American Association of Botanic Gardens and Arboreta (AABGA)

Corporate Sponsorship Programs:

Survey and Case Studies of AABGA Institutional Members

Survey Sample and Response Totals

- 1) Do you sell corporate sponsorships at your institution (marketing-oriented vs philanthropic)? *If your answer is "no", answer only questions 1 and 2.*

41 Yes 41 No 9 Currently developing program

- 2) If no, how soon do you plan to develop a corporate sponsorship program?

10 1 year 9 3 years ---- 5 years --- more than 5 years

29 Corporate sponsorships are not being considered at this time

- 3) If yes, how long have you been selling corporate sponsorships?

8 1-2 years 16 3-5 years 16 more than 5 years

- 4) What was your annual sponsorship revenue last fiscal year?
- 15 \$25k or less 7 \$25k - \$50k 3 \$50k - \$75k
- 8 \$100k - \$200k 3 \$200k - \$300k 2 \$300k - \$500k
- \$500k - \$1 million 1 more than \$1 million
- 5) What is your projected annual sponsorship revenue for the current fiscal year?
- 14 \$25k or less 7 \$25k - \$50k 6 \$50k - \$75k
- 6 \$100k - \$200k 6 \$200k - \$300k 5 \$300k-\$500k
- 1 \$500k - \$1 million 1 \$more than 1 million
- 6) What is your total revenue from corporations (sponsorships + philanthropy)
- 11 \$25k or less 7 \$25k - \$50k 6 \$50k - \$75k
- 6 \$100k - \$200k 6 \$200k - \$300k 5 \$300k - \$500k
- 5 \$500k - \$1 million 5 more than \$1 million
- 7) What sponsorship categories are you currently involved in? (check all that apply)
- 43 Cash 42 In-kind 16 Trade 12 Cause-related

8) What is your primary goal for selling sponsorships? (check one only)

7 Increase attendance

27 Create larger events/defray event expenses

8 Fund marketing activities

20 Fund operations

9 Build community relations

Appendix II

Computation of cost recovery ratios (1997)

Botanic Garden		Cost Recovery Ratio 1997	Revenue 97 *	Expenditures 97 *
1	Royal Tasmanian Botanical Gardens	0.11	163,670	1,532,535
2	Royal Botanic Gardens Sydney	0.21	4,368,000	21,304,000
3	National Botanical Institute	0.25	15,617,630	61,895,691
4	Royal Botanic Garden Edinburgh	0.26	1,913,000	7,471,000
5	Royal Botanic Gardens Kew	0.32	8,686,743	26,926,194
6	Kings Park & Botanic Garden	0.38	2,947,023	7,845,951
7	Singapore Botanic Gardens	0.54	3,981,103	7,438,851
8	Royal Botanical Gardens Les jardins botaniques royaux	0.58	3,661,890	6,312,186
9	The Scott Arboretum of Swarthmore College	0.60	591,456	982,433
10	Denver Botanic Gardens	0.64	5,238,968	8,129,073
11	Brooklyn Botanic Garden	0.74	7,522,579	10,118,575
12	Botanic Gardens Wollongong	0.85	99,555,000	117,806,000
13	Phipps Conservatory and Botanical Garden	0.86	2,123,441	2,465,841
14	The Arnold Arboretum	0.90	5,012,565	5,579,830
15	The Dawes Arboretum	0.91	1,997,131	2,205,789
16	Winterthur Museum, Garden & Library	0.98	50,827,917	51,874,504
17	Chelsea Physic Garden	0.99	385,346	390,258
18	Cornell Plantations, The Arboretum, Botanical Garden, and Natural Areas of Cornell University	0.99	1,817,771	1,836,640
19	Missouri Botanical Garden	0.99	20,063,767	20,346,563
20	The Morton Arboretum	0.99	10,124,178	10,277,721
21	Strybing Arboretum & Botanical Gardens	1.00	1,102,240	1,102,240
22	The Holden Arboretum	1.01	3,641,287	3,612,367
23	Manaaki Whenua Landcare Research	1.04	33,991,000	32,616,000
24	Quail Botanical Gardens	1.05	794,155	753,691
25	Brookgreen Gardens	1.09	4,200,919	3,859,082
26	Chicago Botanic Garden	1.09	18,492,000	17,032,000
27	Bickelhaupt Arboretum	1.17	123,399	105,326
28	Waipahihi Botanical Society	1.27	21,175	16,693
29	Fairchild Tropical Garden	1.86	6,173,679	3,315,488
30	Santa Barbara Botanic Garden	2.32	4,692,928	2,024,735

* in the currency of the country where the Botanic Garden is located

Appendix II

Computation of cost recovery ratios (1998)

Botanic Garden		Cost Recovery Ratio 1998	Revenue 98 *	Expenditures 98 *
1	Royal Tasmanian Botanical Gardens	0.14	238,051	1,699,597
2	Royal Botanic Gardens Sydney	0.23	5,104,000	21,928,000
3	Royal Botanic Garden Edinburgh	0.28	2,247,000	8,026,000
4	National Botanical Institute	0.29	18,955,374	64,947,221
5	Royal Botanic Gardens Kew	0.36	10,563,413	29,451,920
6	Singapore Botanic Gardens	0.41	3,309,737	8,066,862
7	Denver Botanic Gardens	0.43	4,957,740	11,648,832
8	Kings Park & Botanic Garden	0.54	4,470,527	8,295,869
9	The Scott Arboretum of Swarthmore College	0.58	767,424	1,326,999
	Royal Botanical Gardens	0.61	3,994,710	6,594,206
10	Les jardins botaniques royaux			
11	Botanic Gardens Wollongong	0.79	100,420,000	126,909,000
12	Phipps Conservatory and Botanical Garden	0.81	2,184,584	2,702,643
13	The Dawes Arboretum	0.92	2,181,245	2,364,458
14	Strybing Arboretum & Botanical Gardens	0.97	1,592,000	1,645,000
15	Brooklyn Botanic Garden	0.97	10,640,754	10,925,305
16	Missouri Botanical Garden	0.98	21,245,206	21,677,284
17	Winterthur Museum, Garden & Library	1.01	57,119,572	56,498,723
18	The Holden Arboretum	1.03	3,772,382	3,668,909
19	The Arnold Arboretum	1.03	5,350,959	5,193,592
20	The Morton Arboretum	1.04	11,012,000	10,577,000
21	Manaaki Whenua Landcare Research	1.05	35,980,000	34,378,000
22	Chelsea Physic Garden	1.08	396,840	369,081
23	Quail Botanical Gardens	1.13	762,723	672,791
24	Waipahihi Botanical Society	1.15	26,387	22,855
25	Chicago Botanic Garden	1.19	23,629,000	19,775,000
26	Fairchild Tropical Garden	1.46	5,213,127	3,559,773
27	Cornell Plantations, The Arboretum, Botanical Garden, and Natural Areas of Cornell University	1.67	2,940,019	1,764,285
28	Bickelhaupt Arboretum	1.67	222,005	133,090
29	Brookgreen Gardens	1.96	9,943,542	5,082,190
30	Santa Barbara Botanic Garden	2.32	4,978,713	2,144,311

* in the currency of the country where the Botanic Garden is located

Appendix III

Mission statements of 19 botanic gardens

	Botanic Garden	Mission Statement
1	Royal Botanic Gardens Sydney	<p>Mission:</p> <p>To work with the community to increase the knowledge and appreciation of plants and their critical role in the sustainability of our natural and urban environment, and to manage our open spaces as inspirational places for recreation, cultural events and celebration.</p>
2	Singapore Botanic Gardens	<p>Mission:</p> <p>Conduct relevant research; publish</p> <p>Develop optimally landscaped gardens of horticultural and botanical interest</p> <p>Maintain the indigenous biodiversity of Singapore</p> <p>Provide appropriate and relevant education</p> <p>Provide excellent visitor facilities and amenities</p> <p>Develop appropriate and relevant businesses</p>
3	National Botanical Institute	<p>Mission:</p> <p>To promote the sustainable use, conservation, appreciation and enjoyment of the exceptionally rich plant life of South Africa, for the benefit of all its people.</p>
4	Royal Botanic Gardens Kew	<p>Mission:</p> <p>To enable better management of the Earth's environment by increasing knowledge and understanding of the plant and fungal kingdoms - the basis of life on earth.</p> <p>To maintain and enhance the collections of living and preserved plants and fungi, and of seed, literature, archives and artefacts; to make them available for scientific study, world-wide exchange, utilization and display; to advise on management systems; to advance the understanding, conservation and sustainable use of the world's floral and fungal diversity.</p> <p>To increase understanding of floral and fungal diversity through the publication of researched information on plant identification, distribution, natural classifications and biology that can be used predictively for economic application, and to underpin conservation and sustainable utilisation.</p>

		<p>To set and maintain an integrated conservation research, training and advisory programme using the institution's collections and its horticultural, educational and scientific expertise, to meet the demands and responsibilities of local, regional and international conservation priorities, aiming to satisfy the aspirations of the UN Convention on Biological Diversity.</p> <p>To increase visitor numbers, while building total visitor revenue, in order to increase public awareness of RBG Kew's mission and to increase the overall satisfaction and value for money of a visit to Kew Gardens or Wakehurst Place.</p> <p>To promote and disseminate information on the role of RBG Kew and on plant, horticulture, conservation, biodiversity and environmental issues. This will be achieved through formal teaching programmes; informal interpretation of the collections, research work and history of Kew; and through publication, using appropriate media, of all appropriate research information.</p> <p>To fulfill our obligations under the National Heritage Act of maintenance, restoration and use of historic buildings, landscapes and artefacts at Kew Gardens and Wakehurst Place.</p> <p>Institutional Management Programme To provide cost-effective infrastructural services within a defined budget, and to the appropriate standards of quality; to review and develop within the organization's mission, resources, and corporate environment, a strategic plan which is accepted by all staff, Trustees and MAFF; to ensure that all staff develop the necessary knowledge, skills and support to achieve their full potential in accordance with the needs of RBG Kew.</p> <p>To increase revenue generation without compromising RBG Kew's statutory and ethical base or high standards.</p>
5	Royal Botanical Gardens Les jardins botaniques royaux	<p>Mission:</p> <p>To be recognized in Canada and throughout the world for our unique contribution to the collection, research, conservation, exhibition and interpretation of the plant world and the development of public understanding and appreciation of the relationship between the plant world, humanity and the rest of nature.</p>
6	Royal Tasmanian Botanical Gardens	<p>Mission:</p> <p>To further sustainable development by: increasing knowledge, awareness and understanding about plants, their economic, social and ecological value; by programs of research and conservation, and; by caring for and stewarding the garden, having regard to their value as a primary scientific, educational, tourism and passive recreation resource.</p>

7	Manaaki Whenua Landcare Research	<p>Mission:</p> <ol style="list-style-type: none"> 1. We will care for the land and its ability to sustain future generations. Land is a source of healthy produce, clean water, recreation, and of spiritual strength. Land provides for the abundant diversity of life, birth, death, decay and regeneration. We are pledged to enhance this, the environmental inheritance of our company. 2. We will honour the principles and spirit of the Treaty of Waitangi. We believe that the spirit of the Treaty provides a model for our dealings with people from all cultures and societies. 3. We are committed to acting in an ethical manner in all aspects of our business. We have developed a code of ethics to guide directors, executives and staff in their decisions and actions. 4. The broad focus of our work is to use science to understand and encourage sustainable use of the resources of Aotearoa - New Zealand. Science must combine the ecological, social and economic components of land use if management systems are to remain viable in the long term. 5. We aim to use both strategic and applied research to support the development of sound policies and management systems. We will also undertake basic research to provide high quality information on the current state of our resources and on environmental process. 6. We will encourage community participation in setting our research directions and strategies. We will aim for transparency as to the distribution of the costs and benefits of any policy recommendations, and we will communicate our results to all those involved. 7. Our recommendations will be based on consistently trying to ensure that adverse environmental effects are avoided, remedied or mitigated. Responsibility for implementing appropriate action should lie with the persons or businesses affecting the environment. 8. We have important roles as information providers and knowledge brokers. Expression of our work will reflect the professional opinion of individuals and teams, and be the subject of on-going peer review. As an organization, we will only adopt an advocacy role in unusual circumstances; when great uncertainty, risk or irreversibility strongly necessitates precautionary action, or when important ethics call for public advocacy. 9. We will publicize our achievements to make our staff, our stakeholders and our clients aware that we are making a difference. We will strive together to become internationally recognized for the quality and effectiveness of our research.
---	----------------------------------	---

8	Santa Barbara Botanic Garden	<p>Mission:</p> <p>Through an emphasis on plants native to California, we advocate knowledge and understanding of plant life and provide a rewarding experience for our visitors</p> <p>Give new vigor and focus to core programs in science, education, and display.</p> <p>Broaden excellence in all programs and operating environment.</p> <p>Ensure long term viability of the Garden and its programs.</p> <p>Serve and involve diverse audiences.</p>
9	Kings Park & Botanic Garden	<p>Mission:</p> <p>To conserve and enhance King's Park, Bold Park and the State's botanic garden for the community.</p> <p>Visitor Services - To conserve, enhance and promote recreational and tourist resources for visitor enjoyment.</p> <p>Visitor awareness and education - To enhance and promote awareness and understanding of Kings Park, Bold Park and the State's botanic garden.</p> <p>Conservation and enhancement of Western Australian Bushland and other flora.</p> <p>Cultural Heritage Management - The conservation, promotion and development of cultural heritage including Aboriginal, colonial and contemporary heritage.</p> <p>Bushland Management - To demonstrate leadership in urban bushland management, especially for the Perth and regional communities.</p> <p>Botanic Research - To undertake and promote leading edge science and interpretation pertinent to integrated conservation of flora for present and future generations.</p>
10	Missouri Botanical Garden	<p>Mission:</p> <p>To discover and share knowledge about plants and their environment, in order to preserve and enrich life.</p>

11	Fairchild Tropical Garden	<p>Mission:</p> <p>Fairchild Tropical Garden aspires to become the premier tropical botanical garden in the world, setting the highest possible standards in landscape design, exhibitions, living collections and horticultural practices; serving as a primary source of information on tropical plants through research and education programs; and inspiring positive attitudes and behaviour towards the urban and natural environment. Essentially the Garden exists to promote the conservation, use, study, understanding and enjoyment of tropical plants.</p>
12	Denver Botanic Gardens	<p>Mission:</p> <p>Denver Botanic Gardens shall be the leader in the stewardship of the Rocky Mountain Regional Landscape, and shall encourage and increase the public's enjoyment and knowledge of plants and horticulture.</p> <p>Denver Botanic Gardens will have exemplary gardens, collections, exhibits, educational programs and scientific research which are particularly focused upon, but not wholly limited to, plants, native and non-native, suited to the growing conditions of the Rocky Mountain Region.</p>
13	Quail Botanical Gardens	<p>Mission:</p> <p>To actively participate in the conservation of rare, threatened and endangered plant species, to serve the botanical and horticultural needs of San Diego County, and to exist as an urban retreat.</p>
14	Royal Botanic Garden Edinburgh	<p>Mission:</p> <p>Central mission of the Royal Botanic Garden Edinburgh is to explore and explain the diversity of plants and fungi on earth - past, present and future - and their importance to humankind. The Garden is thus, first and foremost, an international scientific institution. Its prime task is to pursue whole plant and fungal science, notably through systematics research of the highest quality, on the diversity and relationships of plants and fungi, and their significance to the environment. Through the acquisition of knowledge in this way, an understanding of plants and fungi is achieved that may lead to the development of strategies for their better conservation and sustainable utilization. In addition, the Garden has vitally important roles in curating its living and preserved collections of plants and fungi as a basis for research and education, in training new professional botanists and horticulturists, in maintaining an innovative schools education programme and in promoting the public understanding and appreciation of plant science and conservation. Last, but not least, the Garden displays its Living Collections in such a way as brings pleasure and spiritual refreshment to all who visit them.</p>

15	Brooklyn Botanic Garden	<p>Mission:</p> <p>To serve people in our community and throughout the world by:</p> <p>Displaying plants and practicing the high art of horticulture to provide a beautiful and hospitable setting for the delight and inspiration of the public;</p> <p>Engaging in research in plant sciences to expand human knowledge of plants, and disseminating the results to plant science professionals and the general public;</p> <p>Teaching children and adults about plants at a popular level, as well as making available instruction in the exacting skills required to grow plants and make beautiful gardens;</p> <p>Reaching out to help people of all of our diverse urban neighborhoods to enhance the quality of their surroundings and their daily lives through the cultivation and enjoyment of plants; and</p> <p>Seeking actively to arouse public awareness of the fragility of our natural environment, both local and global, and providing information about ways to conserve and protect it.</p>
16	The Holden Arboretum	<p>Mission:</p> <p>The Holden Arboretum will acquire, maintain, and display collections of plants and conserve natural areas for education, scientific inquiry, and personal inspiration.</p> <p>Major Methods:</p> <p>Develop and maintain documented horticultural collections, emphasizing woody plant appropriate to the climatic zone of northeast Ohio;</p> <p>Make significant contributions to the plant sciences by developing improved plants for the landscape through breeding and selection;</p> <p>Study, manage, and conserve the natural environment, including flora and fauna of The Holden Arboretum lands; and</p> <p>Provide diverse learning experiences in horticulture, botany, and natural history that contribute to a process of life-long learning.</p>
17	The Morton Arboretum	<p>Mission:</p> <p>To collect and study trees, shrubs, and other plants from around the world, to display them across naturally beautiful landscapes for people to study and enjoy, and to learn how to grow them in ways that enhance our environment. Our goal is to encourage the planting and conservation of trees and other plants for a greener, healthier, and more beautiful world.</p>

18	Strybing Arboretum & Botanical Gardens	<p>Mission:</p> <p>Strybing Arboretum & Botanical Gardens is a living museum for the enjoyment and exploration of the natural world. As a public garden, we serve the residents of San Francisco, the Bay area community and our visitors by:</p> <p>Cultivating and displaying a unique and diverse collection of plants from around the world in a setting of exceptional beauty;</p> <p>Educating children and adults in gardening, horticulture, botany and the natural environment, and;</p> <p>Instilling appreciation of the value of plants in our lives and the importance of conserving them.</p>
19	Phipps Conservatory and Botanical Garden	<p>Mission:</p> <p>To promote awareness, enjoyment and understanding of plants and their diverse interactions with mankind. Phipps Conservatory and Botanical Gardens collects, maintains and displays living plants for the appreciation and benefit of all persons in Western Pennsylvania and abroad. Phipps Conservatory and Botanical Gardens fosters learning about plants through educational and recreational programs and promotes research on their cultivation and natural history while conserving the architectural heritage of its historic building. Phipps Conservatory and Botanical Gardens fulfills its role as part of a larger botanical community by advocating responsible stewardship for plants and the habitats they sustain worldwide.</p>

Appendix IV

Three-item rating questionnaire

Please use the following scale to make a judgment of the following statements

Agree Strongly						Disagree Strongly
1	2	3	4	5	6	7

This botanic garden is really aware of the need for income generation	—
There is no perceived need expressed for revenue generation	—
Revenue generation is clearly very important to this garden operator	—

	Botanic Garden (BG)	Botanic garden administrators aware of the need for revenue generation to fund botanic garden	
1	Royal Botanic Gardens Sydney	<p>The garden's corporate themes included : "Commercial activities: Enhancing our core business...." (Royal Botanic Gardens, Sydney, 1998)</p> <p>The garden established a Development Office in 1996 to develop programs of corporate and individual giving, sponsorship and bequests. This move acknowledged the increased importance of financial support from private sector. The functions of Marketing and Development were amalgamated under one unit with direct line of accountability to the Director. A prime objective of Marketing is identified as "...increases community understanding and support for the garden as a center of horticultural and botanical excellence; seeks to maximize revenue generating</p>	<p>This botanic garden is really aware of the need for income generation —</p> <p>There is no perceived need expressed for revenue generation —</p> <p>Revenue generation is clearly very important to this garden operator —</p>

		opportunities for the garden without compromising the organization's mission..." (Royal Botanic Gardens, Sydney, 1997)	
2	National Botanical Institute	The Institute's 2000 Business Plans included workplans to market and sell the National Botanical Institute publications locally and overseas; to develop new marketing strategies for publications, marketing workshops, etc. (National Botanical Institute, 1998)	<p>This botanic garden is really aware of the need for income generation —</p> <p>There is no perceived need expressed for revenue generation —</p> <p>Revenue generation is clearly very important to this garden operator —</p>
3	Royal Botanic Garden Edinburgh	The Chairman of the Board of Trustees of the Garden acknowledged that "... the Trustees are increasingly obliged to look for alternative sources of financial support to ensure further development of the Garden and its activities..." (Royal Botanic Garden Edinburgh, 1997)	<p>This botanic garden is really aware of the need for income generation —</p> <p>There is no perceived need expressed for revenue generation —</p> <p>Revenue generation is clearly very important to this garden operator —</p>
4	Royal Botanic Gardens Kew	The garden's mission statement includes "Income Generation Programme : To increase revenue generation ..." (Appendix III)	<p>This botanic garden is really aware of the need for income generation —</p> <p>There is no perceived need expressed for revenue generation —</p> <p>Revenue generation is clearly very important to this garden operator —</p>

5	Kings Park & Botanic Garden	<p>The Garden's 2000-2003 Strategic Plan stated that "the Authority will seek new revenue streams through new sponsorships and business initiatives such as merchandising" (www.kpbq.wa.gov.au)</p>	<p>This botanic garden is really aware of the need for income generation —</p> <p>There is no perceived need expressed for revenue generation —</p> <p>Revenue generation is clearly very important to this garden operator —</p>
6	Singapore Botanic Gardens	<p>The Director of the garden noted in Gardenswise that new activities, additional intensified plantscapes and new displays, mean additional operating costs and the garden must seriously address these issues. He opined that the garden must identify new revenue streams and it will have to expand its strategic and positive partnerships with friends, volunteers, community and corporations (Singapore Botanic Gardens, 2003)</p> <p>The need for revenue generation is communicated to staff of Singapore Botanic Gardens in the Culture statement (Appendix VI) – "... maximize earned and contributed income to maximize long term financial viability and to allow management flexibility"</p>	<p>This botanic garden is really aware of the need for income generation —</p> <p>There is no perceived need expressed for revenue generation —</p> <p>Revenue generation is clearly very important to this garden operator —</p>
7	Royal Botanical Gardens Les jardins botaniques royaux	<p>The garden advertises its commercial facilities on its website, eg. Restaurants, Gifts, Private Rentals for weddings and use of Auditorium (www.rbq.ca)</p>	<p>This botanic garden is really aware of the need for income generation —</p> <p>There is no perceived need expressed for revenue generation —</p> <p>Revenue generation is clearly very important to this garden operator —</p>

8	Denver Botanic Gardens	<p>Marketing momentum was created in 1997 and continued through a 1998 image campaign to promote the garden and its programs; to plan and execute events; to produce publications; to oversee the rental and use of the facility (Denver Botanic Gardens, 1998)</p> <p>To ensure the financial viability of the garden, the Development and Membership Department seeks community charitable contributions. Seeing a need for increased revenue from charitable foundations, a grant writer was hired (Denver Botanic Gardens, 1997)</p>	<p>This botanic garden is really aware of the need for income generation —</p> <p>There is no perceived need expressed for revenue generation —</p> <p>Revenue generation is clearly very important to this garden operator —</p>
9	Brooklyn Botanic Garden	<p>The Chairman of the Board of Brooklyn Botanic Garden revealed that the Board and the Garden administrators "... face up to reality: the need to develop new sources of regular, dependable income over time...." (Schneider, 1997, 22)</p>	<p>This botanic garden is really aware of the need for income generation —</p> <p>There is no perceived need expressed for revenue generation —</p> <p>Revenue generation is clearly very important to this garden operator —</p>
10	Phipps Conservatory and Botanical Garden	<p>The Garden recognized that "... the rental of Phipps' facilities, in- and outdoors, is becoming an ever-increasing revenue generator..." (Phipps Conservatory and Botanical Garden, 1997)</p>	<p>This botanic garden is really aware of the need for income generation —</p> <p>There is no perceived need expressed for revenue generation —</p> <p>Revenue generation is clearly very important to this garden operator —</p>
11	The Dawes Arboretum	<p>The Garden advertises its commercial facilities on its website, eg. rental of facilities, tours and tram rides (www.dawesarb.org)</p>	<p>This botanic garden is really aware of the need for income generation —</p> <p>There is no perceived need expressed for revenue</p>

			<p>generation —</p> <p>Revenue generation is clearly very important to this garden operator —</p>
12	Missouri Botanical Garden	<p>The Garden advertises its commercial facilities on its website, eg. Catered Events and Giving Programs (www.mobot.org)</p>	<p>This botanic garden is really aware of the need for income generation —</p> <p>There is no perceived need expressed for revenue generation —</p> <p>Revenue generation is clearly very important to this garden operator —</p>
13	Strybing Arboretum & Botanical Gardens	<p>The Board Vice President and Development Committee Chair stressed that “Identifying and securing new financial resources had a high priority....” (Strybing Arboretum Society, 1997)</p>	<p>This botanic garden is really aware of the need for income generation —</p> <p>There is no perceived need expressed for revenue generation —</p> <p>Revenue generation is clearly very important to this garden operator —</p>
14	The Morton Arboretum	<p>The Garden advertises its commercial facilities on its website, eg. rental of facilities (www.mortonarb.org)</p>	<p>This botanic garden is really aware of the need for income generation —</p> <p>There is no perceived need expressed for revenue generation —</p> <p>Revenue generation is clearly very important to this garden operator —</p>
15	Manaaki Whenua Landcare Research	<p>Chief Executive of the Institute recognized that “...one challenge for the next few years is to increase return on equity...” (Manaaki Whenua Landcare Research, 1997)</p>	<p>This botanic garden is really aware of the need for income generation —</p> <p>There is no perceived need expressed for revenue generation —</p>

			Revenue generation is clearly very important to this garden operator —
16	Quail Botanical Gardens	President of the garden acknowledged "... the important contribution the Gift Shop continues to make to our bottom line day in and day out..." (Quail Botanical Gardens, 2000)	<p>This botanic garden is really aware of the need for income generation —</p> <p>There is no perceived need expressed for revenue generation —</p> <p>Revenue generation is clearly very important to this garden operator —</p>
17	The Holden Arboretum	The Garden advertises its commercial facilities on its website, eg. Offerings from its Shop and rental of facilities (www.holdenarb.org)	<p>This botanic garden is really aware of the need for income generation —</p> <p>There is no perceived need expressed for revenue generation —</p> <p>Revenue generation is clearly very important to this garden operator —</p>
18	Fairchild Tropical Garden	<p>In Fairchild Tropical Garden's 1997 Annual Report, the Director of the Garden wrote that "...As we look to the future, we can see that the increasing importance and urgency of the work we do will create pressure for more funding..." (Fairchild Tropical Garden, 1997)</p> <p>In the FY1998 Annual Report, Fairchild Tropical Garden informed that the Director of the Garden is in charge of all program areas (research, education, conservation and horticulture) while the Chief Operating Officer is responsible for all of the Garden's revenue generating areas (Fairchild Tropical Garden, 1998)</p>	<p>This botanic garden is really aware of the need for income generation —</p> <p>There is no perceived need expressed for revenue generation —</p> <p>Revenue generation is clearly very important to this garden operator —</p>

		The Garden has a e-commerce site for on-line book sales (Fairchild Tropical Garden, 1998)	
19	Santa Barbara Botanic Garden	The garden's mission statement includes "Ensure long term viability of the Garden and its programs" (Appendix III)	<p>This botanic garden is really aware of the need for income generation —</p> <p>There is no perceived need expressed for revenue generation —</p> <p>Revenue generation is clearly very important to this garden operator —</p>

Appendix V

SERVQUAL survey questionnaire

Botanic Garden User Satisfaction Survey (Part 1)

We would like your impressions of **Singapore Botanic Gardens'** service performance relative to your service expectations. Please consider the following areas as you think about the qualities listed in the survey below : events, performances, gardening courses, visitor amenities, guided tours, Gardens infrastructure, landscapes, plants and staff.

Based on your experiences as a visitor to **Singapore Botanic Gardens**, please think about the kind of Garden that would deliver excellent quality service. In Part II below, please indicate how important you perceive the factors, described in Part I, are to a Botanic Gardens. If you feel a factor is very important for Gardens in general, circle 5. Circle a number in between if you feel less strongly about that factor.

In Part III, indicate your perception of **Singapore Botanic Gardens'** service. Circle one of the numbers according to how strongly you feel the Gardens provides the factor in the first column. If you have no perception of or experience with the factor, circle N.

Part I		Part II				Part III						
How important do you feel the following factors are at any Botanic Gardens?		Very Important				How do you rate the Singapore Botanic Gardens' service performance for each factor?						
		Unimportant				Low		High		No Opinion		
1. Staff I came into contact with are willing to help me		1	2	3	4	5	1	2	3	4	5	N
2. Staff I came into contact with are consistently courteous		1	2	3	4	5	1	2	3	4	5	N
3. Staff I came into contact with dealt with me in a caring fashion		1	2	3	4	5	1	2	3	4	5	N
4. The Gardens provided programmes and events on time as promised		1	2	3	4	5	1	2	3	4	5	N
5. The programmes, landscapes and facilities offered by the Gardens show that it understands my needs		1	2	3	4	5	1	2	3	4	5	N
6. Clear & concise materials available (eg. brochures, maps, signs)		1	2	3	4	5	1	2	3	4	5	N

Part I		Part II				Part III						
How important do you feel the following factors are for service at any Botanic Garden?		How do you rate Singapore Botanic Gardens' service performance for each factor?										
		Unimportant			Very Important		Low		High		No Opinion	
		1	2	3	4	5	1	2	3	4	5	N
7. Having my best interests at heart (eg. availability of refreshment outlet, handicap access, rain shelter, visitor friendly footpaths)		1	2	3	4	5	1	2	3	4	5	N
8. Willingness to help me enjoy the Gardens (eg. provides clear interpretation, well designed maps, attractive landscapes and plant displays)		1	2	3	4	5	1	2	3	4	5	N
9. Maintaining accurate mailing list to keep me informed of the events, programmes, activities organised by the Gardens		1	2	3	4	5	1	2	3	4	5	N
10. Informing me through banners, notices, flyers, etc about when services (eg. events, concerts) will be performed		1	2	3	4	5	1	2	3	4	5	N
11. Providing the services promised		1	2	3	4	5	1	2	3	4	5	N
12. Garden in which I have confidence will cater to my needs		1	2	3	4	5	1	2	3	4	5	N
13. Staff who have the knowledge to answer my questions when approached		1	2	3	4	5	1	2	3	4	5	N
14. Readiness of staff, whom I contacted, in responding to my questions / requests		1	2	3	4	5	1	2	3	4	5	N
15. Dependability of staff in handling my service problems		1	2	3	4	5	1	2	3	4	5	N
16. Performing the services right the first time (ie. accuracy of information provided when asked)		1	2	3	4	5	1	2	3	4	5	N

Part I		Part II				Part III						
How important do you feel the following factors are for service at any Botanic Garden?						How do you rate Singapore Botanic Gardens' service performance for each factor?						
		Unimportant			Very Important		Low			High	No Opinion	
		1	2	3	4	5	1	2	3	4	5	N
17. Visually appealing facilities (eg. signboards, shelters, entrances, buildings and landscapes)		1	2	3	4	5	1	2	3	4	5	N
18. Giving me individual attention		1	2	3	4	5	1	2	3	4	5	N
19. Staff who have a neat, professional appearance		1	2	3	4	5	1	2	3	4	5	N
20. Convenient hours and days of operation		1	2	3	4	5	1	2	3	4	5	N
21. Modern facilities (eg. trams, website, audio-visual aids)		1	2	3	4	5	1	2	3	4	5	N
22. The counter staff was knowledgeable and confident about the Gardens programmes and products		1	2	3	4	5	1	2	3	4	5	N
23. Offering appropriate services and resources for Gardens users/visitors (eg. guided tours, talks, shows)		1	2	3	4	5	1	2	3	4	5	N
24. Facilities that function well (eg. toilets, water features, lights)		1	2	3	4	5	1	2	3	4	5	N
25. Landscapes and plant displays that function well to meet horticultural and botanical needs of visitors		1	2	3	4	5	1	2	3	4	5	N

Appendix VI

Culture statement of Singapore Botanic Gardens

Management	cooperation, sharing, respecting, openness and prudence to realize potential and maximize productivity of all staff, to optimize use of financial, physical, horticultural and historical resources
Learning & Research	increase skills and knowledge in horticulture, botany and management Staff to continually increase knowledge in their area of work, to carry out leading taxonomic research on flora of the region and on orchid breeding and micro-propagation, to improve quality and diversity of our horticultural displays and plant collections
Teaching	train students, share information, write and publish, interact with, educate and influence public to increase horticultural, landscape and botanical expertise in Singapore, to inculcate a love-for-nature and conservation, to share research findings by publishing in international journals
Service	provide quality visitor services, facilities and amenities and expert services in botany and horticulture to be a leading visitor destination for recreation and education and research
Financial	maximize earned and contributed income to ensure long term financial viability and to allow management flexibility

Appendix VII

Results of SERVQUAL survey for Singapore Botanic Gardens

Dimension: Responsiveness

Q (1): Staff I came into contact with are willing to help me

The symbols on the quadrant diagram represent the number of respondents. The larger and darker the symbol (intensity) the more the number of respondents giving the same response to the question.

Graph: Singapore Botanic Gardens' performance relative to visitor's expectation for Responsiveness service dimension; Q1

Q11II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	0.8	0.8	0.8
	2	4	3.1	3.2	4.0
	3	20	15.7	15.9	19.8
	4	66	52.0	52.4	72.2
	5	35	27.6	27.8	100.0
	Total	126	99.2	100.0	
Missing	99	1	0.8		
Total		127	100.0		

Table: Frequency table of visitors' service expectation for Q1

Q11III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	9	7.1	7.1	7.1
	4	64	50.4	50.8	57.9
	5	39	30.7	31.0	88.9
	6	14	11.0	11.1	100.0
	Total	126	99.2	100.0	
Missing	99	1	0.8		
Total		127	100.0		

Table: Frequency table of visitors' perception of service performance for Q1

79.6% of the surveyed visitors perceived that it is important for staff of the Botanic Gardens that he or she comes into contact with are willing to help. 81.1% indicated that the Singapore Botanic Gardens performed well for this service factor; specifically 50.4% rated the performance as above average and 30.7% rated the performance as high.

Dimension: Responsiveness

Q (4): The garden provided programmes and events on time as promised

Graph: Singapore Botanic Gardens' performance relative to visitor's expectation for Responsiveness service dimension; Q4

QI4II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	2.4	2.5	2.5
	2	4	3.1	3.4	5.9
	3	25	19.7	21.0	26.9
	4	43	33.9	36.1	63.0
	5	44	34.6	37.0	100.0
	Total	119	93.7	100.0	
Missing	99	8	6.3		
Total		127	100.0		

Table: Frequency table of visitors' service expectation for Q4

QI4III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	0.8	0.8	0.8
	3	15	11.8	11.9	12.7
	4	41	32.3	32.5	45.2
	5	20	15.7	15.9	61.1
	6	49	38.6	38.9	100.0
	Total	126	99.2	100.0	
Missing	99	1	0.8		
Total		127	100.0		

Table: Frequency table of visitors' perception of service performance for Q4

68.5% of surveyed visitors perceived it is important that the Singapore Botanic Gardens delivered programmes and events on time as promised. 48% ranked the garden performing well for this service factor; specifically 32.3% rated the performance as above average and 15.7% rated the performance as high.

Dimension: Responsiveness

Q (8): Willingness to help me enjoy the garden (eg. provides clear interpretation, well designed maps, attractive landscapes and plant displays

Graph: Singapore Botanic Gardens' performance relative to visitor's expectation for Responsiveness service dimension; Q8

Q18II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	0.8	0.8	0.8
	3	12	9.4	9.5	10.3
	4	56	44.1	44.4	54.8
	5	57	44.9	45.2	100.0
	Total	126	99.2	100.0	
Missing	99	1	.8		
Total		127	100.0		

Table: Frequency table of visitors' service expectation for Q8

Q18III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	1.6	1.6	1.6
	3	15	11.8	12.0	13.6
	4	57	44.9	45.6	59.2
	5	46	36.2	36.8	96.0
	6	5	3.9	4.0	100.0
	Total	125	98.4	100.0	
Missing	99	2	1.6		
Total		127	100.0		

Table: Frequency table of visitors' perception of service performance for Q8

89% of the surveyed visitors perceived it is important that the Singapore Botanic Gardens is willing to help him/her enjoy the garden (ie. provides clear interpretation, well designed maps, attractive landscapes and plant displays).

81% felt that the garden performs well for this service factor; specifically 44.9% ranked the performance above average and 36.2% ranked the performance as high.

Dimension: Responsiveness

Q (10): Informing me through banners, notices, flyers, etc about when services (eg. events, concerts) will be performed.

Graph: Singapore Botanic Gardens' performance relative to visitor's expectation for Responsiveness service dimension; Q10

Q110II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	5.5	6.0	6.0
	2	7	5.5	6.0	12.1
	3	30	23.6	25.9	37.9
	4	46	36.2	39.7	77.6
	5	26	20.5	22.4	100.0
	Total	116	91.3	100.0	
Missing	99	11	8.7		
Total		127	100.0		

Table: Frequency table of visitors' service expectation for Q10

Q10III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	0.8	0.8	0.8
	2	3	2.4	2.4	3.2
	3	20	15.7	16.1	19.4
	4	34	26.8	27.4	46.8
	5	22	17.3	17.7	64.5
	6	44	34.6	35.5	100.0
	Total	124	97.6	100.0	
Missing	99	3	2.4		
Total		127	100.0		

Table: Frequency table of visitors' perception of service performance for Q10

56.7% of the surveyed visitors perceived it is important for the Singapore Botanic Gardens to inform him/her through banners, notices, flyers, etc about when services (eg. events, concerts) will be performed. 44.1% ranked the garden as performing well for this service factor; specifically 26.8% ranked the garden's performance above average, 7.3% ranked the garden's performance as high.

Dimension: Responsiveness

Q (14): Readiness of staff, whom I contacted, in responding to my questions/requests

Graph: Singapore Botanic Gardens' performance relative to visitor's expectation for Responsiveness service dimension; Q14

Q114II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	1.6	1.6	1.6
	3	11	8.7	8.8	10.4
	4	61	48.0	48.8	59.2
	5	51	40.2	40.8	100.0
	Total	125	98.4	100.0	
Missing	99	2	1.6		
Total		127	100.0		

Table: Frequency table of visitors' service expectation for Q14

Q114III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	0.8	0.8	0.8
	3	10	7.9	8.1	8.9
	4	50	39.4	40.3	49.2
	5	40	31.5	32.3	81.5
	6	23	18.1	18.5	100.0
	Total	124	97.6	100.0	
Missing	99	3	2.4		
Total		127	100.0		

Table: Frequency table of visitors' perception of service performance for Q14

88.2% of the surveyed visitors perceived it is important that the garden staff, whom he/she contacted, show readiness in responding to his/her

questions/requests. 70.9% indicated that the garden performed well for this service factor; specifically 39.4% rated the performance above average and 31.5% rated the performance as high.

Dimension: Responsiveness

Q (23): Offering appropriate services and resources for garden users/visitors (eg. guided tours, talks, shows)

Graph: Singapore Botanic Gardens' performance relative to visitor's expectation for Responsiveness service dimension; Q23

Q123III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	3.1	3.3	3.3
	2	7	5.5	5.7	8.9
	3	19	15.0	15.4	24.4
	4	23	18.1	18.7	43.1
	5	36	28.3	29.3	72.4
	6	34	26.8	27.6	100.0
	Total	123	96.9	100.0	
Missing	99	4	3.1		
Total		127	100.0		

Table: Frequency table of visitors' service expectation for Q23

Q123II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	1.6	1.6	1.6
	2	3	2.4	2.4	4.1
	3	22	17.3	17.9	22.0
	4	63	49.6	51.2	73.2
	5	33	26.0	26.8	100.0
	Total	123	96.9	100.0	
Missing	99	4	3.1		
Total		127	100.0		

Table: Frequency table of visitors' perception of service performance for Q23

46.4% of the surveyed visitors perceived that it is important for the Singapore Botanic Gardens to offer appropriate services and resources for garden users/visitors (eg. guided tours, talks, shows). 75.6% rated the garden as performing well for this service factor; specifically 49.6% rated the performance as above average and 26% rated the performance as high.

Dimension: Assurance

Q (2): Staff I came into contact with are consistently courteous

Graph: Singapore Botanic Gardens' performance relative to visitor's expectation for Assurance service dimension; Q2

Q12II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	0.8	0.8	0.8
	2	3	2.4	2.4	3.2
	3	16	12.6	12.7	15.9
	4	64	50.4	50.8	66.7
	5	42	33.1	33.3	100.0
	Total	126	99.2	100.0	
Missing	99	1	0.8		
Total		127	100.0		

Table: Frequency table of visitors' service expectation for Q2

Q12III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	0.8	0.8	0.8
	3	14	11.0	11.1	11.9
	4	50	39.4	39.7	51.6
	5	48	37.8	38.1	89.7
	6	13	10.2	10.3	100.0
	Total	126	99.2	100.0	
Missing	99	1	0.8		
Total		127	100.0		

Table: Frequency table of visitors' perception of service performance for Q2

83.5% of the surveyed visitors perceived it is important that staff he/she came into contact with are consistently courteous. 77.2% rated the Singapore Botanic Gardens as performing well for this service factor; specifically 39.4% rated the performance as above average and 37.8% rated the performance as high.

Dimension: Assurance

Q (12): Garden in which I have confidence will cater to my needs

Graph: Singapore Botanic Gardens' performance relative to visitor's expectation for Assurance service dimension; Q12

Q12II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	1.6	1.6	1.6
	3	21	16.5	16.9	18.5
	4	61	48.0	49.2	67.7
	5	40	31.5	32.3	100.0
	Total	124	97.6	100.0	
Missing	99	3	2.4		
Total		127	100.0		

Table: Frequency table of visitors' service expectation for Q12

Q12III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	20	15.7	16.1	16.1
	4	38	29.9	30.6	46.8
	5	41	32.3	33.1	79.8
	6	25	19.7	20.2	100.0
	Total	124	97.6	100.0	
Missing	99	3	2.4		
Total		127	100.0		

Table: Frequency table of visitors' perception of service performance for Q12

79.5% of the surveyed visitors perceived that it is important that the Singapore Botanic Gardens inspire confidence in the visitor that it will cater to his/her needs. 62.2% indicated that the garden has performed well for this

service factor; specifically 29.9% rated the performance as above average and 32.3% rated the performance as high.

Dimension: Assurance

Q (13): Staff who have the knowledge to answer my questions when approached

Graph: Singapore Botanic Gardens' performance relative to visitor's expectation for Assurance service dimension; Q13

Q113III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	1.6	1.6	1.6
	3	14	11.0	11.2	12.8
	4	39	30.7	31.2	44.0
	5	33	26.0	26.4	70.4
	6	37	29.1	29.6	100.0
	Total	125	98.4	100.0	
Missing	99	2	1.6		
Total		127	100.0		

Table: Frequency table of visitors' service expectation for Q13

Q13II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	0.8	0.8	0.8
	3	15	11.8	12.0	12.8
	4	62	48.8	49.6	62.4
	5	47	37.0	37.6	100.0
	Total	125	98.4	100.0	
Missing	99	2	1.6		
Total		127	100.0		

Table: Frequency table of visitors' perception of service performance for Q13

56.7% of the visitors surveyed perceived it is important that the Singapore Botanic Gardens staff have the knowledge to answer his/her questions when approached. 85.8% indicated that the garden has performed well for this service factor; specifically 48.8% rated the performance as above average and 37% rated the performance as high.

Dimension: Assurance

Q (22): The counter staff was knowledgeable and confident about the garden programmes and products

Graph: Singapore Botanic Gardens' performance relative to visitor's expectation for Assurance service dimension; Q22

Q122III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	0.8	0.8	0.8
	3	9	7.1	7.3	8.1
	4	44	34.6	35.8	43.9
	5	43	33.9	35.0	78.9
	6	26	20.5	21.1	100.0
	Total	123	96.9	100.0	
Missing	99	4	3.1		
Total		127	100.0		

Table: Frequency table of visitors' service expectation for Q22

Q122II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	0.8	0.8	0.8
	3	12	9.4	9.7	10.5
	4	63	49.6	50.8	61.3
	5	48	37.8	38.7	100.0
	Total	124	97.6	100.0	
Missing	99	3	2.4		
Total		127	100.0		

Table: Frequency table of visitors' perception of service performance for Q22

67.8% of the surveyed visitors perceived that it is important the Singapore Botanic Gardens counter staff is knowledgeable and confident about the garden programmes and products. 87.4% gave a “performed well” rating about the garden’s performance for this service factor; specifically 49.6% rated the performance as above average and 37.8% rated the performance as high.

Dimension: Empathy

Q (3): Staff I came into contact with dealt with me in a caring fashion

Q13II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	5	3.9	4.0	4.0
	3	21	16.5	16.8	20.8
	4	55	43.3	44.0	64.8
	5	44	34.6	35.2	100.0
	Total	125	98.4	100.0	
Missing	99	2	1.6		
Total		127	100.0		

Table: Frequency table of visitors' service expectation for Q3

Q13III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	0.8	0.8	0.8
	3	17	13.4	13.4	14.2
	4	49	38.6	38.6	52.8
	5	37	29.1	29.1	81.9
	6	23	18.1	18.1	100.0
	Total	127	100.0	100.0	

Table: Frequency table of visitors' perception of service performance for Q3

77.9% of the surveyed visitors perceived it is important that the Singapore Botanic Gardens staff he/she came into contact with dealt with him/her in a caring fashion. 67.7% rated the garden as performing well for this service

factor; specifically 38.6% rated the performance as above average and 29.1% rated the performance as high.

Dimension: Empathy

Q (5): The programmes, landscapes and facilities offered by the garden show that it understands my needs

Graph: Singapore Botanic Gardens' performance relative to visitor's expectation for Empathy service dimension; Q5

Q15II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	0.8	0.8	0.8
	3	25	19.7	19.8	20.6
	4	53	41.7	42.1	62.7
	5	47	37.0	37.3	100.0
	Total	126	99.2	100.0	
Missing	99	1	0.8		
Total		127	100.0		

Table: Frequency table of visitors' service expectation for Q5

Q15III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	19	15.0	15.0	15.0
	4	47	37.0	37.0	52.0
	5	49	38.6	38.6	90.6
	6	12	9.4	9.4	100.0
	Total	127	100.0	100.0	

Table: Frequency table of visitors' perception of service performance for Q5

78.7% of the surveyed visitors perceived it is important that the programmes, landscapes and facilities offered by the Singapore Botanic Gardens show that it understands his/her needs. 75.6% indicated that the garden has performed well for this service factor; specifically 37% rated the performance as above average and 38.6% rated the performance as high.

Dimension: Empathy

Q (7): Having my best interests at heart (eg. availability of refreshment outlets, handicap access, rain shelters, visitor friendly footpaths)

Graph: Singapore Botanic Gardens' performance relative to visitor's expectation for Empathy service dimension; Q7

Q17II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	0.8	0.8	0.8
	3	17	13.4	13.5	14.3
	4	58	45.7	46.0	60.3
	5	50	39.4	39.7	100.0
	Total	126	99.2	100.0	
Missing	99	1	0.8		
Total		127	100.0		

Table: Frequency table of visitors' service expectation for Q7

Q17III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	0.8	0.8	0.8
	2	1	0.8	0.8	1.6
	3	21	16.5	16.7	18.3
	4	58	45.7	46.0	64.3
	5	43	33.9	34.1	98.4
	6	2	1.6	1.6	100.0
	Total	126	99.2	100.0	
Missing	99	1	0.8		
Total		127	100.0		

Table: Frequency table of visitors' perception of service performance for Q7

85.1% of the surveyed visitors perceived it is important the garden has his/her best interests at heart as indicated by the availability of refreshment outlets, handicap access, rain shelters and visitor friendly footpaths. 79.6% indicated that the garden has performed well for this service factor; specifically 45.7% rated the performance as above average and 33.9% rated the performance as high.

Dimension: Empathy

Q (19): Giving me individual attention

Graph: Singapore Botanic Gardens' performance relative to visitor's expectation for Empathy service dimension; Q18

Q18II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	3.9	4.0	4.0
	2	4	3.1	3.2	7.3
	3	41	32.3	33.1	40.3
	4	48	37.8	38.7	79.0
	5	26	20.5	21.0	100.0
	Total	124	97.6	100.0	
Missing	99	3	2.4		
Total		127	100.0		

Table: Frequency table of visitors' service expectation for Q18

Q18III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	1.6	1.6	1.6
	2	4	3.1	3.3	4.9
	3	20	15.7	16.3	21.1
	4	36	28.3	29.3	50.4
	5	32	25.2	26.0	76.4
	6	29	22.8	23.6	100.0
	Total	123	96.9	100.0	
Missing	99	4	3.1		
Total		127	100.0		

Table: Frequency table of visitors' perception of service performance for Q18

58.3% perceived that it is important the Singapore Botanic Gardens gives him individual attention. 53.5% indicated that the garden has performed well for this service factor; specifically 28.3% rated the performance as above average and 25.2% rated the performance as high.

Dimension: Empathy

Q (20): Convenient hours and days of operation

Graph: Singapore Botanic Gardens' performance relative to visitor's expectation for Empathy service dimension; Q20

Q120II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	0.8	0.8	0.8
	3	12	9.4	9.6	10.4
	4	56	44.1	44.8	55.2
	5	56	44.1	44.8	100.0
	Total	125	98.4	100.0	
Missing	99	2	1.6		
Total		127	100.0		

Table: Frequency table of visitors' service expectation for Q20

Q120III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	1.6	1.6	1.6
	3	6	4.7	4.8	6.4
	4	38	29.9	30.4	36.8
	5	69	54.3	55.2	92.0
	6	10	7.9	8.0	100.0
	Total	125	98.4	100.0	
Missing	99	2	1.6		
Total		127	100.0		

Table: Frequency table of visitors' perception of service performance for Q20

88.2% of the surveyed visitors perceived that it is important for the garden to have convenient hours and days of operation. 84.2% indicated that the

garden has performed well for this service factor; specifically 29.9% rated the performance as above average and 54.3% rated the performance as high.

Dimension: Tangibles

Q (6): Clear and concise materials available (eg. brochures, maps, signs)

Graph: Singapore Botanic Gardens' performance relative to visitor's expectation for Tangibles service dimension; Q6

QI6II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	9	7.1	7.1	7.1
	4	41	32.3	32.5	39.7
	5	76	59.8	60.3	100.0
	Total	126	99.2	100.0	
Missing	99	1	0.8		
Total		127	100.0		

Table: Frequency table of visitors' service expectation for Q6

QI6III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	0.8	0.8	0.8
	3	9	7.1	7.1	7.9
	4	45	35.4	35.4	43.3
	5	60	47.2	47.2	90.6
	6	12	9.4	9.4	100.0
	Total	127	100.0	100.0	

Table: Frequency table of visitors' perception of service performance for Q6

92.1% of the surveyed visitors perceived that it is important for the Singapore Botanic Gardens to have clear and concise materials available such as brochures, maps and signboards. 82.6% rated the garden as performing well for this service factor; specifically 35.4% rated the performance as above average and 47.2% rated the performance as high.

Dimension: Tangibles

Q (17): Visually appealing facilities (eg. signboards, shelters, entrances, buildings and landscapes)

Graph: Singapore Botanic Gardens' performance relative to visitor's expectation for Tangibles service dimension; Q17

Q17II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	0.8	0.8	0.8
	3	17	13.4	13.5	14.3
	4	58	45.7	46.0	60.3
	5	50	39.4	39.7	100.0
	Total	126	99.2	100.0	
Missing	99	1	0.8		
Total		127	100.0		

Table: Frequency table of visitors' service expectation for Q17

Q17III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	0.8	0.8	0.8
	2	1	0.8	0.8	1.6
	3	21	16.5	16.7	18.3
	4	58	45.7	46.0	64.3
	5	43	33.9	34.1	98.4
	6	2	1.6	1.6	100.0
	Total	126	99.2	100.0	
Missing	99	1	0.8		
Total		127	100.0		

Table: Frequency table of visitors' perception of service performance for Q17

85.1% of the surveyed visitors perceived it is important that the Singapore Botanic Gardens provides visually appealing facilities such as signboards, shelters, entrances, buildings and landscapes. 79.6% indicated that the garden has performed well for this service factor; specifically 45.7% rated the performance above average and 33.9% rated the performance as high.

Dimension: Tangibles

Q (19): Staff who have a neat professional appearance

Graph: Singapore Botanic Gardens' performance relative to visitor's expectation for Tangibles service dimension; Q19

Q119II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	1.6	1.6	1.6
	2	3	2.4	2.4	4.0
	3	24	18.9	19.4	23.4
	4	56	44.1	45.2	68.5
	5	39	30.7	31.5	100.0
	Total	124	97.6	100.0	
Missing	99	3	2.4		
Total		127	100.0		

Table: Frequency table of visitors' service expectation for Q19

Q119III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	0.8	0.8	0.8
	3	10	7.9	8.0	8.8
	4	63	49.6	50.4	59.2
	5	40	31.5	32.0	91.2
	6	11	8.7	8.8	100.0
	Total	125	98.4	100.0	
Missing	99	2	1.6		
Total		127	100.0		

Table: Frequency table of visitors' perception of service performance for Q19

74.8% of the surveyed visitors perceived it is important for the Singapore Botanic Gardens staff to have a neat professional appearance. 81.5% indicated that the garden has performed well for this service factor; specifically 49.6% rated the performance as above average and 31.5% rated the performance as high.

Dimension: Tangibles

Q (21): Modern facilities (eg. trams, website, audio-visual aids)

Graph: Singapore Botanic Gardens' performance relative to visitor's expectation for Tangibles service dimension; Q21

Q121II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	1.6	1.6	1.6
	2	3	2.4	2.5	4.1
	3	28	22.0	23.0	27.0
	4	51	40.2	41.8	68.9
	5	38	29.9	31.1	100.0
	Total	122	96.1	100.0	
Missing	99	5	3.9		
Total		127	100.0		

Table: Frequency table of visitors' service expectation for Q21

Q121III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	2.4	2.4	2.4
	2	11	8.7	8.8	11.2
	3	23	18.1	18.4	29.6
	4	38	29.9	30.4	60.0
	5	22	17.3	17.6	77.6
	6	28	22.0	22.4	100.0
	Total	125	98.4	100.0	
Missing	99	2	1.6		
Total		127	100.0		

Table: Frequency table of visitors' perception of service performance for Q21

70.1% of the surveyed visitors perceived it is important for the Singapore Botanic Gardens to have modern facilities such as trams, website, audio-visual aids, etc. 47.2% indicated that the garden has performed well for this service factor; specifically 29.9% rated the performance as above average and 17.3% rated the performance as high.

Dimension: Reliability

Q (9): Maintaining mailing list to keep me informed of events, programmes, activities organised by the garden.

Graph: Singapore Botanic Gardens' performance relative to visitor's expectation for Reliability service dimension; Q9

QI9II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	13	10.2	10.9	10.9
	2	10	7.9	8.4	19.3
	3	27	21.3	22.7	42.0
	4	43	33.9	36.1	78.2
	5	26	20.5	21.8	100.0
	Total	119	93.7	100.0	
Missing	99	8	6.3		
Total		127	100.0		

Table: Frequency table of visitors' service expectation for Q9

QI9III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	4	3.1	3.2	3.2
	3	21	16.5	16.9	20.2
	4	24	18.9	19.4	39.5
	5	21	16.5	16.9	56.5
	6	54	42.5	43.5	100.0
	Total	124	97.6	100.0	
Missing	99	3	2.4		
Total		127	100.0		

Table: Frequency table of visitors' perception of service performance for Q9

54.4% of the surveyed visitors perceived it is important for the Singapore Botanic Gardens to maintain accurate mailing list to keep him/her informed of events, programmes, activities organised by the garden. 35.4% indicated that the garden has performed well for this service factor; specifically 18.9% rated the performance as above average and 16.5% rated the performance as high.

Dimension: Reliability

Q (11): Providing the services promised

Graph: Singapore Botanic Gardens' performance relative to visitor's expectation for Reliability service dimension; Q11

Q11III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	1.6	1.7	1.7
	3	18	14.2	15.0	16.7
	4	54	42.5	45.0	61.7
	5	46	36.2	38.3	100.0
	Total	120	94.5	100.0	
Missing	99	7	5.5		
Total		127	100.0		

Table: Frequency table of visitors' service expectation for Q11

Q11IIII

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	21	16.5	16.9	16.9
	4	42	33.1	33.9	50.8
	5	26	20.5	21.0	71.8
	6	35	27.6	28.2	100.0
	Total	124	97.6	100.0	
Missing	99	3	2.4		
Total		127	100.0		

Table: Frequency table of visitors' perception of service performance for Q11

78.7% of the surveyed visitors perceived it is important for the Singapore Botanic Gardens to ensure the provision of services that are promised.

53.6% rated the garden as performing well for this service factor; specifically 33.1% rated the performance as above average and 20.5% rated the performance as high.

Dimension: Reliability

Q (15): Dependability of staff in handling my service problems

Graph: Singapore Botanic Gardens' performance relative to visitor's expectation for Reliability service dimension; Q15

Q15II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	1.6	1.6	1.6
	3	15	11.8	12.3	13.9
	4	55	43.3	45.1	59.0
	5	50	39.4	41.0	100.0
	Total	122	96.1	100.0	
Missing	99	5	3.9		
Total		127	100.0		

Table: Frequency table of visitors' service expectation for Q15

Q15III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	11	8.7	8.9	8.9
	4	43	33.9	34.7	43.5
	5	37	29.1	29.8	73.4
	6	33	26.0	26.6	100.0
	Total	124	97.6	100.0	
Missing	99	3	2.4		
Total		127	100.0		

Table: Frequency table of visitors' perception of service performance for Q15

82.7% of the surveyed visitors perceived it is important for the Singapore Botanic Gardens to be dependable in handling his/her service problems. 63% indicated that the garden has performed well for this survey factor; specifically 33.9% rated the performance as above average and 29.1% rated the performance as high.

Dimension: Reliability

Q (16): Performing the service right the first time (ie. accuracy of information provided when asked)

Graph: Singapore Botanic Gardens' performance relative to visitor's expectation for Reliability service dimension; Q16

Q16II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	0.8	0.8	0.8
	3	12	9.4	9.6	10.4
	4	55	43.3	44.0	54.4
	5	57	44.9	45.6	100.0
	Total	125	98.4	100.0	
Missing	99	2	1.6		
Total		127	100.0		

Table: Frequency table of visitors' service expectation for Q16

Q16III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	0.8	0.8	0.8
	3	9	7.1	7.3	8.1
	4	38	29.9	30.6	38.7
	5	40	31.5	32.3	71.0
	6	36	28.3	29.0	100.0
	Total	124	97.6	100.0	
Missing	99	3	2.4		
Total		127	100.0		

Table: Frequency table of visitors' perception of service performance for Q16

88.2% of the surveyed visitors perceived it is important for the Singapore Botanic Gardens to be performing the service right the first time. An example is the accuracy of the information provided when asked. 61.4% rated the garden as performing well for this service factor; specifically 29.9% rated the performance as above average and 31.5% rated the performance as high.

Dimension: Reliability

Q (24): Facilities that function well (ie. toilets, water features, lights)

Graph: Singapore Botanic Gardens' performance relative to visitor's expectation for Reliability service dimension; Q24

QI24II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	6	4.7	4.8	4.8
	4	55	43.3	43.7	48.4
	5	65	51.2	51.6	100.0
	Total	126	99.2	100.0	
Missing	99	1	0.8		
Total		127	100.0		

Table: Frequency table of visitors' service expectation for Q24

QI24III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	0.8	0.8	0.8
	3	8	6.3	6.4	7.2
	4	58	45.7	46.4	53.6
	5	45	35.4	36.0	89.6
	6	13	10.2	10.4	100.0
	Total	125	98.4	100.0	
Missing	99	2	1.6		
Total		127	100.0		

Table: Frequency table of visitors' perception of service performance for Q24

94.5% of the surveyed visitors perceived it is important for the Singapore Botanic Gardens to provide facilities that function well, for example, toilets, water features and lights that work. 81.1% rated the garden as performing

well for this service factor; specifically 45.7% rated the performance as above average and 35.4% rated the performance as high.

Dimension: Reliability

Q (25): Landscapes and plant displays that function well to meet horticultural and botanical needs of visitors

Graph: Singapore Botanic Gardens' performance relative to visitor's expectation for Reliability service dimension; Q25

Q125II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	0.8	0.8	0.8
	3	9	7.1	7.2	8.0
	4	49	38.6	39.2	47.2
	5	66	52.0	52.8	100.0
	Total	125	98.4	100.0	
Missing	99	2	1.6		
Total		127	100.0		

Table: Frequency table of visitors' service expectation for Q25

Q125III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	1.6	1.6	1.6
	3	8	6.3	6.5	8.1
	4	45	35.4	36.3	44.4
	5	54	42.5	43.5	87.9
	6	15	11.8	12.1	100.0
	Total	124	97.6	100.0	
Missing	99	3	2.4		
Total		127	100.0		

Table: Frequency table of visitors' perception of service performance for Q25

90.6% of the surveyed visitors perceived it is important for the Singapore Botanic Gardens to have landscapes and plant displays that meet the horticultural and botanical needs of visitors. 77.9% indicated that the garden has performed well for this service factor; specifically 35.4% rated the performance as above average and 42.5% rated the performance as high.

Appendix VIII

Results of SERVQUAL survey for Fairchild Tropical Garden

Dimension: Responsiveness

Q (1): Staff I came into contact with are willing to help me

The symbols on the quadrant diagram represent the number of respondents. The larger and darker the symbol (intensity) the more the number of respondents giving the same response to the question.

Graph: Fairchild Tropical Garden's performance relative to visitor's expectation for Responsiveness service dimension; Q1

Q11II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	1.5	1.5	1.5
	2	2	1.5	1.5	3.0
	3	5	3.7	3.7	6.7
	4	38	27.9	28.1	34.8
	5	88	64.7	65.2	100.0
	Total	135	99.3	100.0	
Missing	99	1	0.7		
Total		136	100.0		

Table: Frequency table of visitors' service expectation for Q1

Q11III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	0.7	0.8	0.8
	2	1	0.7	0.8	1.5
	3	6	4.4	4.5	6.0
	4	33	24.3	24.8	30.8
	5	86	63.2	64.7	95.5
	6	6	4.4	4.5	100.0
	Total	133	97.8	100.0	
Missing	99	3	2.2		
Total		136	100.0		

Table: Frequency table of visitors' perception of service performance for Q1

92.6% of the surveyed visitors perceived that it is important for staff of the Botanic Gardens that he or she comes into contact are willing to help. 87.5% indicated that the Fairchild Tropical Garden performed well for this service factor; specifically 24.3% rated the performance as above average and 63.2% rated the performance as high.

Dimension: Responsiveness

Q (4): The garden provided programmes and events on time as promised

Graph: Fairchild Tropical Garden's performance relative to visitor's expectation for Responsiveness service dimension; Q4

Q14II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	2.9	3.1	3.1
	2	1	0.7	0.8	3.8
	3	2	1.5	1.5	5.4
	4	44	32.4	33.8	39.2
	5	79	58.1	60.8	100.0
	Total	130	95.6	100.0	
Missing	99	6	4.4		
Total		136	100.0		

Table: Frequency table of visitors' service expectation for Q4

Q14III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	0.7	0.8	0.8
	3	1	0.7	0.8	1.6
	4	38	27.9	29.7	31.3
	5	77	56.6	60.2	91.4
	6	11	8.1	8.6	100.0
	Total	128	94.1	100.0	
Missing	99	8	5.9		
Total		136	100.0		

Table: Frequency table of visitors' perception of service performance for Q4

90.5% of surveyed visitors perceived it is important that the Fairchild Tropical Garden delivered programmes and events on time as promised. 84.5% ranked the garden performing well for this service factor; specifically 27.9% rated the performance as above average and 56.6% rated the performance as high.

Dimension: Responsiveness

Q (8): Willingness to help me enjoy the garden (eg. provides clear interpretation, well designed maps, attractive landscapes and plant displays

Graph: Fairchild Tropical Garden's performance relative to visitor's expectation for Responsiveness service dimension; Q8

Q18II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	2.2	2.3	2.3
	3	4	2.9	3.0	5.3
	4	42	30.9	31.8	37.1
	5	82	60.3	62.1	99.2
	6	1	0.7	0.8	100.0
	Total	132	97.1	100.0	
Missing	99	4	2.9		
Total		136	100.0		

Table: Frequency table of visitors' service expectation for Q8

Q18III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	0.7	0.8	0.8
	2	3	2.2	2.3	3.1
	3	13	9.6	10.0	13.1
	4	50	36.8	38.5	51.5
	5	58	42.6	44.6	96.2
	6	5	3.7	3.8	100.0
	Total	130	95.6	100.0	
Missing	99	6	4.4		
Total		136	100.0		

Table: Frequency table of visitors' perception of service performance for Q8

91.2% of the surveyed visitors perceived it is important that the Fairchild

Tropical Garden is willing to help him/her enjoy the garden (ie. provides clear

interpretation, well designed maps, attractive landscapes and plant displays).
79.4% felt that the garden performs well for this service factor; specifically
36.8% ranked the performance above average and 42.6% ranked the
performance as high.

Dimension: Responsiveness

Q (10): Informing me through banners, notices, flyers, etc about when
services (eg. events, concerts) will be performed.

Graph: Fairchild Tropical Garden's performance relative to visitor's
expectation for Responsiveness service dimension; Q10

Q10II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	2.9	3.3	3.3
	2	5	3.7	4.1	7.3
	3	17	12.5	13.8	21.1
	4	42	30.9	34.1	55.3
	5	55	40.4	44.7	100.0
	Total	123	90.4	100.0	
Missing	99	13	9.6		
Total		136	100.0		

Table: Frequency table of visitors' service expectation for Q10

Q10III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	0.7	0.8	0.8
	2	1	0.7	0.8	1.6
	3	12	8.8	9.7	11.3
	4	36	26.5	29.0	40.3
	5	53	39.0	42.7	83.1
	6	21	15.4	16.9	100.0
	Total	124	91.2	100.0	
Missing	99	12	8.8		
Total		136	100.0		

Table: Frequency table of visitors' perception of service performance for Q10

71.3% of the surveyed visitors perceived it is important for the Fairchild Tropical Garden to inform him/her through banners, notices, flyers, etc about when services (eg. events, concerts) will be performed. 65.5% ranked the garden as performing well for this service factor; specifically 26.5% ranked the garden's performance above average, 39% ranked the garden's performance as high.

Dimension: Responsiveness

Q (14): Readiness of staff, whom I contacted, in responding to my questions/requests

Graph: Fairchild Tropical Garden's performance relative to visitor's expectation for Responsiveness service dimension; Q14

Q14II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	1.5	1.6	1.6
	3	5	3.7	3.9	5.4
	4	31	22.8	24.0	29.5
	5	91	66.9	70.5	100.0
	Total	129	94.9	100.0	
Missing	99	7	5.1		
Total		136	100.0		

Table: Frequency table of visitors' service expectation for Q14

Q14III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	0.7	0.8	0.8
	2	2	1.5	1.5	2.3
	3	3	2.2	2.3	4.6
	4	33	24.3	25.4	30.0
	5	82	60.3	63.1	93.1
	6	9	6.6	6.9	100.0
	Total	130	95.6	100.0	
Missing	99	6	4.4		
Total		136	100.0		

Table: Frequency table of visitors' perception of service performance for Q14

89.7% of the surveyed visitors perceived it is important that the garden staff, whom he/she contacted, show readiness in responding to his/her questions/requests. 84.6% indicated that the garden performed well for this service factor; specifically 24.3% rated the performance above average and 60.3% rated the performance as high.

Dimension: Responsiveness

Q (23): Offering appropriate services and resources for garden users/visitors (eg. guided tours, talks, shows)

Graph: Fairchild Tropical Garden's performance relative to visitor's expectation for Responsiveness service dimension; Q23

Q123II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	1.5	1.6	1.6
	3	10	7.4	7.8	9.3
	4	40	29.4	31.0	40.3
	5	77	56.6	59.7	100.0
	Total	129	94.9	100.0	
Missing	99	7	5.1		
Total		136	100.0		

Table: Frequency table of visitors' service expectation for Q23

Q123III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	0.7	0.8	0.8
	3	6	4.4	4.6	5.4
	4	42	30.9	32.3	37.7
	5	70	51.5	53.8	91.5
	6	11	8.1	8.5	100.0
	Total	130	95.6	100.0	
Missing	99	6	4.4		
Total		136	100.0		

Table: Frequency table of visitors' perception of service performance for Q23

86% of the surveyed visitors perceived that it is important for the botanic garden to offer appropriate services and resources for garden users/visitors (eg. guided tours, talks, shows). 82.4% rated Fairchild Tropical garden as performing well for this service factor; specifically 30.9% rated the performance as above average and 51.5% rated the performance as high.

Dimension: Assurance

Q (2): Staff I came into contact with are consistently courteous

Graph: Fairchild Tropical Garden's performance relative to visitor's expectation for Assurance service dimension; Q2

Q12II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	1.5	1.5	1.5
	2	2	1.5	1.5	3.0
	3	3	2.2	2.2	5.2
	4	37	27.2	27.4	32.6
	5	91	66.9	67.4	100.0
	Total	135	99.3	100.0	
Missing	99	1	0.7		
Total		136	100.0		

Table: Frequency table of visitors' service expectation for Q2

Q12III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	0.7	0.8	0.8
	3	4	2.9	3.1	3.8
	4	34	25.0	26.2	30.0
	5	82	60.3	63.1	93.1
	6	9	6.6	6.9	100.0
	Total	130	95.6	100.0	
Missing	99	6	4.4		
Total		136	100.0		

Table: Frequency table of visitors' perception of service performance for Q2

94.1% of the surveyed visitors perceived it is important that staff he/she came into contact with are consistently courteous. 85.3% rated the Fairchild Tropical Garden as performing well for this service factor; specifically 25% rated the performance as above average and 60.3% rated the performance as high.

Dimension: Assurance

Q (12): Garden in which I have confidence will cater to my needs

Graph: Fairchild Tropical Garden's performance relative to visitor's expectation for Assurance service dimension; Q12

Q12II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	3.7	4.0	4.0
	2	4	2.9	3.2	7.3
	3	10	7.4	8.1	15.3
	4	49	36.0	39.5	54.8
	5	56	41.2	45.2	100.0
	Total	124	91.2	100.0	
Missing	99	12	8.8		
Total		136	100.0		

Table: Frequency table of visitors' service expectation for Q12

Q12III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	10	7.4	8.1	8.1
	4	45	33.1	36.6	44.7
	5	51	37.5	41.5	86.2
	6	17	12.5	13.8	100.0
	Total	123	90.4	100.0	
Missing	99	13	9.6		
Total		136	100.0		

Table: Frequency table of visitors' perception of service performance for Q12

77.2% of the surveyed visitors perceived that it is important that the botanic garden inspire confidence in the visitor that it will cater to his/her needs.

70.6% indicated that Fairchild Tropical Garden has performed well for this service factor; specifically 33.1% rated the performance as above average and 37.5% rated the performance as high.

Dimension: Assurance

Q (13): Staff who have the knowledge to answer my questions when approached

Graph: Fairchild Tropical Garden's performance relative to visitor's expectation for Assurance service dimension; Q13

Q113II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	1.5	1.6	1.6
	3	5	3.7	3.9	5.5
	4	35	25.7	27.3	32.8
	5	86	63.2	67.2	100.0
	Total	128	94.1	100.0	
Missing	99	8	5.9		
Total		136	100.0		

Table: Frequency table of visitors' service expectation for Q13

Q113III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	1.5	1.6	1.6
	3	4	2.9	3.1	4.7
	4	40	29.4	31.3	35.9
	5	69	50.7	53.9	89.8
	6	13	9.6	10.2	100.0
	Total	128	94.1	100.0	
Missing	99	8	5.9		
Total		136	100.0		

Table: Frequency table of visitors' perception of service performance for Q13

88.9% of the visitors surveyed perceived it is important that the Fairchild

Tropical Garden staff have the knowledge to answer his/her questions when

approached. 80.1% indicated that the garden has performed well for this service factor; specifically 29.4% rated the performance as above average and 50.7% rated the performance as high.

Dimension: Assurance

Q (22): The counter staff was knowledgeable and confident about the garden programmes and products

Graph: Fairchild Tropical Garden's performance relative to visitor's expectation for Assurance service dimension; Q22

Q122II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	2.2	2.4	2.4
	2	1	0.7	0.8	3.2
	3	3	2.2	2.4	5.6
	4	48	35.3	38.1	43.7
	5	71	52.2	56.3	100.0
	Total	126	92.6	100.0	
Missing	99	10	7.4		
Total		136	100.0		

Table: Frequency table of visitors' service expectation for Q22

Q122III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	0.7	0.8	0.8
	3	6	4.4	4.8	5.6
	4	41	30.1	32.5	38.1
	5	63	46.3	50.0	88.1
	6	15	11.0	11.9	100.0
	Total	126	92.6	100.0	
Missing	99	10	7.4		
Total		136	100.0		

Table: Frequency table of visitors' perception of service performance for Q22

87.5% of the surveyed visitors perceived that it is important the Fairchild Tropical Garden counter staff is knowledgeable and confident about the garden programmes and products. 76.4% gave a “performed well” rating about the garden’s performance for this service factor; specifically 30.1% rated the performance as above average and 46.3% rated the performance as high.

Dimension: Empathy

Q (3): Staff I came into contact with dealt with me in a caring fashion

Graph: Fairchild Tropical Garden's performance relative to visitor's expectation for Empathy service dimension; Q3

Q13II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	1.5	1.5	1.5
	2	3	2.2	2.2	3.7
	3	6	4.4	4.5	8.2
	4	42	30.9	31.3	39.6
	5	81	59.6	60.4	100.0
	Total	134	98.5	100.0	
Missing	99	2	1.5		
Total		136	100.0		

Table: Frequency table of visitors' service expectation for Q3

Q13III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	1.5	1.5	1.5
	3	6	4.4	4.6	6.1
	4	44	32.4	33.6	39.7
	5	72	52.9	55.0	94.7
	6	7	5.1	5.3	100.0
	Total	131	96.3	100.0	
Missing	99	5	3.7		
Total		136	100.0		

Table: Frequency table of visitors' perception of service performance for Q3

90.6% of the surveyed visitors perceived it is important that the Fairchild Tropical Garden staff he/she came into contact with dealt with him/her in a caring fashion. 85.3% rated the garden as performing well for this service factor; specifically 32.4% rated the performance as above average and 52.9% rated the performance as high.

Dimension: Empathy

Q (5): The programmes, landscapes and facilities offered by the garden show that it understands my needs

Graph: Fairchild Tropical Garden's performance relative to visitor's expectation for Empathy service dimension; Q5

Q15II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	1.5	1.6	1.6
	2	4	2.9	3.1	4.7
	3	6	4.4	4.7	9.3
	4	46	33.8	35.7	45.0
	5	71	52.2	55.0	100.0
	Total	129	94.9	100.0	
Missing	99	7	5.1		
Total		136	100.0		

Table: Frequency table of visitors' service expectation for Q5

Q15III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	1.5	1.6	1.6
	3	13	9.6	10.1	11.6
	4	40	29.4	31.0	42.6
	5	59	43.4	45.7	88.4
	6	15	11.0	11.6	100.0
	Total	129	94.9	100.0	
Missing	99	7	5.1		
Total		136	100.0		

Table: Frequency table of visitors' perception of service performance for Q5

86% of the surveyed visitors perceived it is important that the programmes, landscapes and facilities offered by the Fairchild Tropical Garden show that it understands his/her needs. 72.8% indicated that the garden has performed well for this service factor; specifically 29.4% rated the performance as above average and 43.4% rated the performance as high.

Dimension: Empathy

Q (7): Having my best interests at heart (eg. availability of refreshment outlets, handicap access, rain shelters, visitor friendly footpaths)

Graph: Fairchild Tropical Garden's performance relative to visitor's expectation for Empathy service dimension; Q7

Q17II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	2.2	2.3	2.3
	2	2	1.5	1.5	3.8
	3	4	2.9	3.0	6.8
	4	52	38.2	39.4	46.2
	5	70	51.5	53.0	99.2
	6	1	0.7	0.8	100.0
	Total	132	97.1	100.0	
Missing	99	4	2.9		
Total		136	100.0		

Table: Frequency table of visitors' service expectation for Q7

Q17III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	5	3.7	3.8	3.8
	3	26	19.1	20.0	23.8
	4	47	34.6	36.2	60.0
	5	46	33.8	35.4	95.4
	6	6	4.4	4.6	100.0
	Total	130	95.6	100.0	
Missing	99	6	4.4		
Total		136	100.0		

Table: Frequency table of visitors' perception of service performance for Q7

89.7% of the surveyed visitors perceived it is important the garden has his/her best interests at heart as indicated by the availability of refreshment outlets, handicap access, rain shelters and visitor friendly footpaths. 68.4% indicated that Fairchild Tropical Garden has performed well for this service factor; specifically 34.6% rated the performance as above average and 33.8% rated the performance as high.

Dimension: Empathy

Q (19): Giving me individual attention

Graph: Fairchild Tropical Garden's performance relative to visitor's expectation for Empathy service dimension; Q18

Q18II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	3	2.2	2.4	2.4
	3	10	7.4	7.9	10.3
	4	48	35.3	38.1	48.4
	5	48	35.3	38.1	86.5
	6	17	12.5	13.5	100.0
	Total	126	92.6	100.0	
Missing	99	10	7.4		
Total		136	100.0		

Table: Frequency table of visitors' service expectation for Q18

Q18III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	2.9	3.1	3.1
	2	6	4.4	4.7	7.8
	3	25	18.4	19.5	27.3
	4	47	34.6	36.7	64.0
	5	44	32.4	34.4	98.4
	6	2	1.4	1.6	100.0
	Total	128	94.1	100.0	
Missing	99	8	5.9		
Total		136	100.0		

Table: Frequency table of visitors' perception of service performance for Q18

67% perceived that it is important the Fairchild Tropical Garden gives him individual attention. 70.6% indicated that the garden has performed well for this service factor; specifically 35.3% rated the performance as above average and 35.3% rated the performance as high.

Dimension: Empathy

Q (20): Convenient hours and days of operation

Graph: Fairchild Tropical Garden's performance relative to visitor's expectation for Empathy service dimension; Q20

Q120II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	2.2	2.3	2.3
	2	1	0.7	0.8	3.0
	3	8	5.9	6.1	9.1
	4	34	25.0	25.8	34.8
	5	86	63.2	65.2	100.0
	Total	132	97.1	100.0	
Missing	99	4	2.9		
Total		136	100.0		

Table: Frequency table of visitors' service expectation for Q20

Q120III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	3	2.2	2.3	2.3
	3	10	7.4	7.8	10.1
	4	39	28.7	30.2	40.3
	5	66	48.5	51.2	91.5
	6	11	8.1	8.5	100.0
	Total	129	94.9	100.0	
Missing	99	7	5.1		
Total		136	100.0		

Table: Frequency table of visitors' perception of service performance for Q20

88.2% of the surveyed visitors perceived that it is important for the Garden to have convenient hours and days of operation. 77.2% indicated that Fairchild Tropical Garden has performed well for this service factor; specifically 28.7% rated the performance as above average and 48.5% rated the performance as high.

Dimension: Tangibles

Q (6): Clear and concise materials available (eg. brochures, maps, signs)

Graph: Fairchild Tropical Garden's performance relative to visitor's expectation for Tangibles service dimension; Q6

QI6II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	1.5	1.5	1.5
	2	1	0.7	0.7	2.2
	3	4	2.9	3.0	5.2
	4	42	30.9	31.1	36.3
	5	86	63.2	63.7	100.0
	Total	135	99.3	100.0	
Missing	99	1	0.7		
Total		136	100.0		

Table: Frequency table of visitors' service expectation for Q6

QI6III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	1.5	1.5	1.5
	2	4	2.9	3.1	4.6
	3	16	11.8	12.3	16.9
	4	30	22.1	23.1	40.0
	5	71	52.2	54.6	94.6
	6	7	5.1	5.4	100.0
	Total	130	95.6	100.0	
Missing	99	6	4.4		
Total		136	100.0		

Table: Frequency table of visitors' perception of service performance for Q6

94.1% of the surveyed visitors perceived that it is important for the Fairchild Tropical Garden to have clear and concise materials available such as brochures, maps and signboards. 74.3% rated the garden as performing well for this service factor; specifically 22.1% rated the performance as above average and 52.2% rated the performance as high.

Dimension: Tangibles

Q (17): Visually appealing facilities (eg. signboards, shelters, entrances, buildings and landscapes)

Graph: Fairchild Tropical Garden's performance relative to visitor's expectation for Tangibles service dimension; Q17

Q17II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	2.2	2.3	2.3
	2	2	1.5	1.5	3.8
	3	10	7.4	7.6	11.4
	4	35	25.7	26.5	37.9
	5	81	59.6	61.4	99.2
	6	1	0.7	0.8	100.0
	Total	132	97.1	100.0	
Missing	99	4	2.9		
Total		136	100.0		

Table: Frequency table of visitors' service expectation for Q17

Q17III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	0.7	0.8	0.8
	3	10	7.4	7.8	8.5
	4	45	33.1	34.9	43.4
	5	69	50.7	53.5	96.9
	6	4	2.9	3.1	100.0
	Total	129	94.9	100.0	
Missing	99	7	5.1		
Total		136	100.0		

Table: Frequency table of visitors' perception of service performance for Q17

85.3% of the surveyed visitors perceived it is important that the Fairchild Tropical Garden provides visually appealing facilities such as signboards, shelters, entrances, buildings and landscapes. 83.8% indicated that the garden has performed well for this service factor; specifically 33.1% rated the performance above average and 50.7% rated the performance as high.

Dimension: Tangibles

Q (19): Staff who have a neat professional appearance

Graph: Fairchild Tropical Garden's performance relative to visitor's expectation for Tangibles service dimension; Q19

Q119II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	3.7	3.8	3.8
	2	4	2.9	3.1	6.9
	3	18	13.2	13.7	20.6
	4	46	33.8	35.1	55.7
	5	55	40.4	42.0	97.7
	6	3	2.2	2.3	100.0
	Total	131	96.3	100.0	
Missing	99	5	3.7		
Total		136	100.0		

Table: Frequency table of visitors' service expectation for Q19

Q119III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	10	7.4	7.9	7.9
	4	44	32.4	34.6	42.5
	5	64	47.1	50.4	92.9
	6	9	6.6	7.1	100.0
	Total	127	93.4	100.0	
Missing	99	9	6.6		
Total		136	100.0		

Table: Frequency table of visitors' perception of service performance for Q19

74.2% of the surveyed visitors perceived it is important for the Fairchild Tropical Garden staff to have a neat professional appearance. 79.5% indicated that the garden has performed well for this service factor; specifically 32.4% rated the performance as above average and 47.1% rated the performance as high.

Dimension: Tangibles

Q (21): Modern facilities (eg. trams, website, audio-visual aids)

Graph: Fairchild Tropical Garden's performance relative to visitor's expectation for Tangibles service dimension; Q21

Q121II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	2.2	2.3	2.3
	2	3	2.2	2.3	4.6
	3	12	8.8	9.2	13.7
	4	49	36.0	37.4	51.1
	5	64	47.1	48.9	100.0
	Total	131	96.3	100.0	
Missing	99	5	3.7		
Total		136	100.0		

Table: Frequency table of visitors' service expectation for Q21

Q121III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	8	5.9	6.4	6.4
	4	53	39.0	42.4	48.8
	5	52	38.2	41.6	90.4
	6	12	8.8	9.6	100.0
	Total	125	91.9	100.0	
Missing	99	11	8.1		
Total		136	100.0		

Table: Frequency table of visitors' perception of service performance for Q21

83.1% of the surveyed visitors perceived it is important for the Fairchild

Tropical Garden to have modern facilities such as trams, website, audio-

visual aids, etc. 77.2% indicated that the garden has performed well for this service factor; specifically 39% rated the performance as above average and 38.2% rated the performance as high.

Dimension: Reliability

Q (9): Maintaining mailing list to keep me informed of events, programmes, activities organised by the garden.

Graph: Fairchild Tropical Garden's performance relative to visitor's expectation for Reliability service dimension; Q9

Q1911

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	4.4	4.9	4.9
	2	3	2.2	2.4	7.3
	3	12	8.8	9.8	17.1
	4	39	28.7	31.7	48.8
	5	63	46.3	51.2	100.0
	Total	123	90.4	100.0	
Missing	99	13	9.6		
Total		136	100.0		

Table: Frequency table of visitors' service expectation for Q9

Q19III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	6	4.4	4.8	4.8
	4	27	19.9	21.4	26.2
	5	64	47.1	50.8	77.0
	6	29	21.3	23.0	100.0
	Total	126	92.6	100.0	
Missing	99	10	7.4		
Total		136	100.0		

Table: Frequency table of visitors' perception of service performance for Q9

75% of the surveyed visitors perceived it is important for the Fairchild Tropical Garden to maintain accurate mailing list to keep him/her informed of events, programmes, activities organised by the Garden. 67% indicated that the garden has performed well for this service factor; specifically 19.9% rated the performance as above average and 47.1% rated the performance as high.

Dimension: Reliability

Q (11): Providing the services promised

Graph: Fairchild Tropical Garden's performance relative to visitor's expectation for Reliability service dimension; Q11

Q111II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	3	2.2	2.4	2.4
	3	2	1.5	1.6	4.0
	4	36	26.5	28.8	32.8
	5	84	61.8	67.2	100.0
	Total	125	91.9	100.0	
Missing	99	11	8.1		
Total		136	100.0		

Table: Frequency table of visitors' service expectation for Q11

Q111III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	6	4.4	4.8	4.8
	4	41	30.1	32.5	37.3
	5	69	50.7	54.8	92.1
	6	10	7.4	7.9	100.0
	Total	126	92.6	100.0	
Missing	99	10	7.4		
Total		136	100.0		

Table: Frequency table of visitors' perception of service performance for Q11

87.3% of the surveyed visitors perceived it is important for the Fairchild

Tropical Garden to ensure the provision of services that are promised. 80.8%

rated the garden as performing well for this service factor; specifically 30.1% rated the performance as above average and 50.7% rated the performance as high.

Dimension: Reliability

Q (15): Dependability of staff in handling my service problems

Graph: Fairchild Tropical Garden's performance relative to visitor's expectation for Reliability service dimension; Q15

Q15II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	1.5	1.6	1.6
	3	6	4.4	4.8	6.4
	4	47	34.6	37.6	44.0
	5	70	51.5	56.0	100.0
	Total	125	91.9	100.0	
Missing	99	11	8.1		
Total		136	100.0		

Table: Frequency table of visitors' service expectation for Q15

Q15III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	5	3.7	3.9	3.9
	4	36	26.5	28.1	32.0
	5	68	50.0	53.1	85.2
	6	19	14.0	14.8	100.0
	Total	128	94.1	100.0	
Missing	99	8	5.9		
Total		136	100.0		

Table: Frequency table of visitors' perception of service performance for Q15

86.1% of the surveyed visitors perceived it is important for the Fairchild Tropical Garden to be dependable in handling his/her service problems. 76.5% indicated that the garden has performed well for this survey factor; specifically 26.5% rated the performance as above average and 50% rated the performance as high.

Dimension: Reliability

Q (16): Performing the service right the first time (ie. accuracy of information provided when asked)

Graph: Fairchild Tropical Garden's performance relative to visitor's expectation for Reliability service dimension; Q16

Q16II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	1.5	1.6	1.6
	3	5	3.7	4.0	5.6
	4	37	27.2	29.4	34.9
	5	82	60.3	65.1	100.0
	Total	126	92.6	100.0	
Missing	99	10	7.4		
Total		136	100.0		

Table: Frequency table of visitors' service expectation for Q16

Q16III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	1.5	1.6	1.6
	3	4	2.9	3.1	4.7
	4	42	30.9	33.1	37.8
	5	64	47.1	50.4	88.2
	6	15	11.0	11.8	100.0
	Total	127	93.4	100.0	
Missing	99	9	6.6		
Total		136	100.0		

Table: Frequency table of visitors' perception of service performance for Q16

87.5% of the surveyed visitors perceived it is important for the Fairchild Tropical Garden to be performing the service right the first time. An example is the accuracy of the information provided when asked. 78% rated the garden as performing well for this service factor; specifically 30.9% rated the performance as above average and 47.1% rated the performance as high.

Dimension: Reliability

Q (24): Facilities that function well (ie. toilets, water features, lights)

Graph: Fairchild Tropical Garden's performance relative to visitor's expectation for Reliability service dimension; Q24

QI24II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	1.5	1.5	1.5
	3	2	1.5	1.5	3.1
	4	29	21.3	22.1	25.2
	5	98	72.1	74.8	100.0
	Total	131	96.3	100.0	
Missing	99	5	3.7		
Total		136	100.0		

Table: Frequency table of visitors' service expectation for Q24

QI24III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	0.7	0.8	0.8
	2	1	0.7	0.8	1.6
	3	20	14.7	15.6	17.2
	4	36	26.5	28.1	45.3
	5	59	43.4	46.1	91.4
	6	11	8.1	8.6	100.0
	Total	128	94.1	100.0	
Missing	99	8	5.9		
Total		136	100.0		

Table: Frequency table of visitors' perception of service performance for Q24

93.4% of the surveyed visitors perceived it is important for the Fairchild Tropical Garden to provide facilities that function well, for example, toilets, water features and lights that work. 69.7% rated the garden as performing well for this service factor; specifically 26.5% rated the performance as above average and 43.4% rated the performance as high.

Dimension: Reliability

Q (25): Landscapes and plant displays that function well to meet horticultural and botanical needs of visitors

Graph: Fairchild Tropical Garden's performance relative to visitor's expectation for Reliability service dimension; Q25

Q125II

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	2.2	2.3	2.3
	2	1	0.7	0.8	3.1
	3	4	2.9	3.1	6.2
	4	31	22.8	24.0	30.2
	5	90	66.2	69.8	100.0
	Total	129	94.9	100.0	
Missing	99	7	5.1		
Total		136	100.0		

Table: Frequency table of visitors' service expectation for Q25

Q125III

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	0.7	0.8	0.8
	3	3	2.2	2.3	3.1
	4	40	29.4	30.8	33.8
	5	77	56.6	59.2	93.1
	6	9	6.6	6.9	100.0
	Total	130	95.6	100.0	
Missing	99	6	4.4		
Total		136	100.0		

Table: Frequency table of visitors' perception of service performance for Q25

89% of the surveyed visitors perceived it is important for the Fairchild Tropical Garden to have landscapes and plant displays that meet the horticultural and botanical needs of visitors. 86% indicated that the garden has performed well for this service factor; specifically 29.4% rated the performance as above average and 56.6% rated the performance as high.

Appendix IX

Santa Barbara Botanic Garden Board Profile

Table 1: Skills

	Current Board Members																New Board Candidates					
Area of Expertise / Professional Skills	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	A	B	C	D	E	F
Academic																						
Business/Corporate																						
Community Leader																						
Executive Director																						
Finance																						
Accounting																						
Banking & Trust																						
Investments																						
Foundation Representative																						
Fundraising																						
General Management																						
Government Representative																						
Grower/Agriculture																						
Legal																						
Human Resources																						
Marketing																						
Membership																						
Museum																						
Public Relations																						
Real Estate/Facilities																						
Recruiting																						
Strategic Planning																						
Special Program Focus																						
Board Committee																						
Development																						
Executive																						
Finance																						
Nominations																						

Using the board profile: Fill in the names of your board members and board candidates, then fill in the appropriate columns for each individual in both tables. After the profile is completed, you will quickly note areas of board weakness.

	Current Board Members																New Board Candidates					
Demographics	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	A	B	C	D	E	F
Age																						
Under 35																						
From 36 to 50																						
From 51 to 65																						
Over 65																						
Gender																						
Women																						
Men																						
Race/Ethnic Background																						
Asian																						
Black																						
Hispanic/Latino																						
Caucasian																						
Other																						
Geographic Location																						
City																						
Suburbs																						
State																						
Country																						
Contribution in Kind (I), Donation (D), Solicited (S)																						
>10K																						
5-10K																						
2-5K																						
1-2K																						
< 1K																						
Length of Board Service																						
Over 10 years																						
5 to 10 years																						
2 to 4 years																						
Less than 2 years																						
None																						
Attendance																						
75-100%																						
50-74%																						
25-49%																						
< 24%																						
Term of Expiration																						

Appendix X

Santa Barbara Botanic Garden Board Giving Expectations

MEMORANDUM

TO: Richard Rogers, President
Santa Barbara Botanic Garden

FROM: Gary W. Robinson, Chair
Marketing and Development committee

RE: Proposed Guidelines For Financial Support of Board Members

DATE: May 9, 1996

One of the seven priorities established by the marketing and development committee for 1996 was to recommend to the board a set of guidelines or policies for determining the level of financial support reasonably expected of board trustees, both in terms of their own giving as well as solicitations of gifts from others. In doing this, the committee reviewed the Garden's Strategic Plan, and is now in the process of developing an action plan for ensuring the success of the Garden in meeting its long term funding goals. Given the Garden's expansion plans, these funding goals are quite significant and necessitate increased participation by the board of trustees in order for the Garden to be successful. Accordingly, the Marketing and Development

committee is recommending the following guidelines to the board for its consideration:

A. Financial Contributions by board Trustees

1. Garden Membership

Presently, the Garden has only sixteen of its total membership (3,000 members) who participate at the Director's Club level (\$1,000 per year). Only four of these are trustees of the Garden (20 trustees). The marketing and development committee has established a goal for 1996 of increasing this level of membership by twenty new members. Accordingly, all board trustees are urged to participate as a member of the Garden at the Director's Club level. If individual members feel they cannot contribute at the Director's Club level, then they are urged to participate at a level they feel they can afford. The board's membership committee has stated that in the future all new members will be told that membership on the board carries with it an expectation that they will participate at the Director's Club level.

2. Routine Events and Activities

During the year, the Garden hosts numerous events and activities on a routine basis. These include: monthly trustee meetings, Staff/trustee Appreciation Day, the Annual Board Retreat, etc. It is our committee's recommendation that each board Member be asked to make a \$200 payment at the beginning of each calendar year to offset the cost of these routine

events and activities. This annual fee will replace the practice of asking board members for repeated smaller payments during the year as these events occur.

3. Special Fund-Raising Events

It is anticipated that each year the Garden will sponsor a limited number of special fund-raising events, such as last year's garden tour and barbecue, and prior years ' "Art in the Garden". Board Members should be strongly encouraged to attend these events and pay whatever amount is charged to invitees. The difference between that paid and the value of the goods received would be considered a tax deductible donation to the garden.

4. Sponsorships

During the year, the Garden offers various lectures, classes, and other educational opportunities to the public, such as internships, plant scholars, undergraduate and graduate research. Frequently, these activities are sponsored by an individual or corporate entity. To the extent board Members are able to help sponsor these activities by making a donation to the Garden, it would be greatly appreciated.

1. Major Gifts

A major gift is considered to be an unrestricted donation of \$10,000 or more. It is certainly the hope that the Garden will be able to recruit among its

trustees individuals who have the willingness and financial ability to make a major gift to the Garden.

2. Restricted Gifts

In the past, individual trustees have given to the Garden with a request that the funds be used for a specific purpose. These types of restricted gifts are certainly welcome, however, the Garden would generally encourage board Members to consider unrestricted gifts.

B. Solicitations of Donations From Others

In addition to helping the Garden reach its funding goals by making their own contributions to the Garden, trustees are urged to help in the effort to solicit donations from others by:

1. Providing names of potential major donors to the Garden's Director of Marketing and Development.

2. Contact potential donors and assist staff in obtaining annual donations and memberships.

3. Recruit at least five new members to the Garden each year, hopefully at a Patron level (\$500) or above.

4. Assist Garden staff in increasing the level of corporate support for the Garden.

The Marketing and Development committee recognizes that these proposed guidelines are a departure from the way in which trustees have been asked to contribute in the past. We also recognize that it will not be possible for all current trustees to participate at the financial levels indicated above. That is completely acceptable. We know that our trustees contribute in a variety of ways, not all of which are financial, but just as valued. Accordingly, this document is intended to provide guidance to current board members in terms of what this committee feels will be necessary in order for the Garden to reach its long-term funding goals. It is not intended to constitute a set of rules or requirements.

Bibliography

Annison, M. H. (1991), Managing the Whirlwind: Opportunities for Park and Recreation Services, *Trends*, 28(2).

Argyle, M. (1989), *The Social Psychology of Work*, Penguin, London.

Audibert, M. and Mathonnat, J. (2000), Cost recovery in Mauritania: initial lessons, Centre d'Etudes et de Recherches sur le Development International (CERDI), Clermont-Ferrand, France, *Health Policy and Planning*, Oxford University Press, Oxford.

Austin, J. E. (2000), *The Collaboration Challenge, How Nonprofits and Businesses Succeed Through Strategic Alliances*, Jossey-Bass Publishers, San Francisco.

Barnes, J. G. (2001), *Secrets of Customer Relationship Management*, McGraw-Hill, New York.

Berry, L. L. and Parasuraman, A. (1997), Listening to the Customer – The Concept of a Service Quality Information System, *Sloan Management Review*, 38 (Spring), 65-76.

Berry, L. L. and Parasuraman, A. (1991), *Marketing Services Competing Through Quality*, The Free Press, New York.

Bhoto, K. R. (1997), *Beyond Customer Satisfaction to Customer Loyalty: The Key to Greater Profitability*, AMA Management Briefing, AMA Membership Publications Division, American Management Association, New York.

Bickelhaupt Arboretum (1998), *Annual Report, February 1, 1998-January 31, 1999*, Bickelhaupt Arboretum, Iowa.

Bickelhaupt Arboretum (1997), *Annual Report, February 1, 1997-January 31, 1998*, Bickelhaupt Arboretum, Iowa.

Blau, P. M. (1955), *The Dynamics of Bureaucracy*, University of Chicago Press, Chicago.

Botanic Gardens Conservation International (2000), *International Agenda for Botanic Gardens in Conservation*, London.

Boulton, W. R. (1984), *Business Policy: The Art of Strategic Management*, Macmillan Publishing Company, New York.

Bower, M. (1997), *The Will to Lead: Running a Business with a Network of Leaders*, Harvard Business School Press, Boston.

Bradley, R. B. (1992), Marketing Leisure Facilities and Programs, *Trends*, 29(1), November.

Beward, A. (1998), The Business of Sport, *Australian Parks & Recreation*, 34(1), Autumn.

Brinckerhoff, P. C. (2001), *Mission-based Management An Organizational Development Workbook*, John Wiley & Sons, Inc, New York.

Brooklyn Botanic Garden (1998), 1998 *Annual Report*, Brooklyn Botanic Garden, New York.

Brooklyn Botanic Garden (1997), 1997 *Annual Report*, Brooklyn Botanic Garden, New York.

Burns, R. B. (2000), *Introduction to Research Methods*, Sage Publications Ltd, London.

Campbell, D. T. (1975), Degrees of freedom and the case study, *Comparative Political Studies*.

Caribbean Country Operations Division, Country Operations III, Latin America and the Caribbean Region, The World Bank (1996), *Public Sector Modernization in the Caribbean*,
<http://www2.worldbank.org/cgced/pubsect.htm>.

Carr, J. A. (1990), Trends in Tourism Market Research, *Trends*, 27(3), 10-13.

Chadwick, G. F. (1966), *The Park and the Town*. The Architectural Press, London.

Chakrapani, C. (1998), *How to Measure Service Quality & Customer Satisfaction*, American Marketing Association, Chicago.

Chapman, D. and Cowdell, T. (1998), *New Public Sector Marketing*, Financial Times Professional Limited, London.

Charters, T., Michael, G. & Prasser, S. (2001), *National Parks Private Sector's Role*, USQ Press, Queensland.

Chua, G. W. (1991), *Government Services to the Public – How do you effectively cost and price them*, The First Annual Conference on Public Sector

Accounting and Financial Management, Accountant-General's Department,
Institute for International Research, Singapore.

City Services/Parks & Recreation/National Park Land Standards (1998), *Park, Recreation, and Open Space Standards*, http://www.ci.cedar-park.tx.us/services/parks/park_standards.html.

Clover, V. T. and Balsley, H. L. (1979), *Business Research Methods*, Grid Publishing Inc, Columbus, Ohio.

Coombs, H. C. (1992), Multi-function parks, *Australian Business Monthly*, 12 (11).

Cooper, B. J., Leung, P., Mathews, C. & Carlson, P. (1998), *Accounting & Finance for Managers*, John Wiley & Sons, New Zealand.

Cornell Plantations, The Arboretum, Botanical Garden, and Natural Areas of Cornell University (1998), *Plantations Annual Report*, Cornell Plantations, New York.

Cornell Plantations, The Arboretum, Botanical Garden, and Natural Areas of Cornell University (1997), *Plantations Annual Report*, Cornell Plantations, New York.

Creese, A. and Kutzin, J. (1995), *Discussion Paper No 2, Lessons From Cost-Recovery In Health*, Forum on Health Sector Reform, National Health Systems and Policies Unit, Division of Strengthening Health Services, World Health Organization.

Creswell, J. W. (2003), *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, Sage Publications, London.

Crompton, J. L. (1993a), Repositioning Recreation and Park Services, *Trends*, 30(4), 2-5.

Crompton, J. L. (1993b), Economic Impact Analysis: Myths and Misapplications, *Trends*, 30(4), 9-13.

Crompton, J. L. and Witt, P. A. (1997), Repositioning: The Key to Building Community Support, *Parks and Recreation*, October, <http://www.nrpa.org/p&r/oct97/reposition>.

Davis, J. (1998), *Municipal/Corporate Partnerships Make a Splash*, <http://www.nrpa.org/p&r/feb98/cignaswim.htm>.

Davison, J. P. (1958), *Productivity and Economics Incentives*, Allen & Unwin, London.

Dawson, B. (1996), Parks and Wildlife Faces Fewer Visitors, Less Funds, *Houston Chronicle*, August 29.

Dawson, B. (1996), Falling Down, Falling Apart: Repair Urgency is Mounting, *Houston Chronicle*, July 19.

Dawson-House, D. M. (1998), South Carolina State Parks' New Vision for the 21st Century, *Trends*, 35(1), 23-30.

Denver Botanic Gardens (1999), *Annual Report 1999*, Denver Botanic Gardens, Denver.

Denver Botanic Gardens (1998), *Annual Report 1998*, Denver Botanic Gardens, Denver.

Denver Botanic Gardens (1997), *Annual Report 1997*, Denver Botanic Gardens, Denver.

Doig, J. W. and Hargrove, E.C. (1987), *Leadership and Innovation: a biographical perspective on entrepreneurs in government*, John Hopkins University Press, Baltimore.

Dominowski, R. L. (1980), *Research Methods*, Prentice Hall, Inc, New York.

Drucker, P. F. (1993), *Innovation and Entrepreneurship*, Harper Business, New York.

Drucker, P. F. (1995), *Managing in a time of great change*, Butterworth Heinemann, Oxford.

Duncan, I. and Bollard, A. (1992), *Corporatization & Privatization: Lessons from New Zealand*, Oxford University Press, Auckland.

Duncan, W. J., Ginter, P. M. & Swayne, L. E. (1995), *Strategic management of health care organizations*, Blackwell Publishers, Cambridge, Massachusetts.

Espeseth, R. D. (1993), Marine Recreation and Tourism: Dimensions and Opportunities, *Trends*, 30(2), 30-34.

Falsey, T. A. (1989), *Corporate Philosophies & Mission Statement: a survey and guide for corporate communicators and management*, Quorum Books, New York.

Fairchild Tropical Garden (1998), *Annual Report 96/97*, Fairchild Tropical Garden, Florida.

Fairchild Tropical Garden (1997), *Annual Report 96/97*, Fairchild Tropical Garden, Florida.

Finkler, S. A. (2000), *Financial Management for Public, Health and Not-for-Profit Organizations*, Prentice Hall, New Jersey.

Foehr, S. (1989), Parks and Politics Way Down Under, *Buzzworm*, 1 (3).

GAO, United States General Accounting Office (1998), *Forest Service: Barriers to Generating Revenue or Reducing Costs*, February 13, GAO/RCED-98-58.

GAO, United States General Accounting Office (1997a), *Land Ownership: Similarities and Differences in the Management of Selected State and Federal Land Units*, June 27, GAO/RCED-97-158.

GAO, United States General Accounting Office (1997b), Forest Service Decision-Making: A Framework for Improving Performance, April 29, GAO/RCED-97-71.

GAO, United States General Accounting Office (1996), *Fees for Recreation Special-Use Permits Do Not Reflect Fair Market Value*, December 20, GAO/RCED-97-16.

GAO, United States General Accounting Office (1993), *Forest Service: Little Assurance That Fair Market Value Fees Are Collected From Ski Areas*, April 16, GAO/RCED-93-107.

Gazzo, R., Jette, R. D. & Katzell, R. A. (1985), The Effects of Psychologically based Intervention Programs on Worker Productivity: a Meta Analysis, *Personnel Psychology*.

Gemmell, N. (1993), *The Growth of the Public Sector Theories and International Evidence*, Edward Elgar Publishing Ltd, London.

Germain, R. and Cooper, M. B. (1990), How a Customer Mission Statement Affects Company Performance, *Industrial Marketing Management*, 19(1).

Geoghegan, T. (1998), *Revenue Generation to Sustain Coral Reef Conservation*, <http://brooktrout.gso.uri.edu/comm/ic/IC27/rev.gen.html>.

Ghosh, B. C., Low, A. M., Tan, T. M. & Chan, C. O. (1996), An Exploratory Study of Strategic Planning Behaviour in SMEs in the Singapore / Malaysia Context, *Entrepreneurs, entrepreneurship and Enterprising Culture*, Addison-Wesley Publishing Company, Singapore.

Gillham, B. (2000), *Case Study Research Methods*, Continnum, London.

Gold, S. M. (1973), *Urban Recreation Planning*, Lea and Febiger, Philadelphia.

Gomm, R., Hammersley, M. & Foster, P. (2000), *Case Study Method: Key Issues, Key Texts*, Sage Publications Ltd, London.

Goodsell, C. T. (1985), *The Case for Bureaucracy: A Public Administration Polemic*, Chatham, Chatham House, New Jersey.

Gottschalk, L. (1968), *Understanding history: A primer of historical method*, Knopf, New York.

Graham, J. W. and Havlick, W. C. (1994), *Mission Statements – A Guide to Corporate and Nonprofit Sectors*, Garland, New York.

Granof, M. H. (1998), *Government and Not-For-Profit Accounting Concepts and Practices*, John Wiley & Sons, Inc, New York.

Gratton, C. and Taylor, P. (1991), *Sport and Recreation: An Economic Analysis*, Venture Publishing Inc, London.

Greenhalgh, L. and Warpole, K. (1996), *People, Parks & Cities, A guide to current good practice in urban parks, A Report for the Department of the Environment*.

Gulied, A. (1998), *Cost-recovery and equity in the health sector: issues for developing countries*,
<http://www.ecdpm.org/textver/oxfam/policy/research/helsinki.htm>.

Gunn, C. A. (1990), *Must Tourism Threaten Parks?*, *Trends*, 27(3), 5-9.

Haiven, L. (1998), *“Cost Recovery” Degree Programs Threaten The University*, <http://www.commerce.usask.ca/faculty/haiven/costrecovery.htm>.

Hammer, M. and Champy, J. (1993), *Reengineering the Corporation: A Manifesto for Business Revolution*, Harper Collins, New York.

Hammermesh, R. G., Anderson, M. J. & Harris, J. E. (1978), Strategies for Low Market Share Businesses, *Harvard Business Review*, 56(3), May-June, 95-102.

Han, K. H. (1991), Management Accounting in the Public Sector, *Working Paper Series No: 4-91*, School of Accountancy and Business, SABRC Centre, Nanyang Technological University, Singapore.

Harvard Business Review on Nonprofits (1999), Harvard Business School Press, Boston.

Heath, E. and Wall, G. (1992), *Marketing Tourism Destinations : A Strategic Planning Approach*, Wiley, New York.

Hedrick, T., Bickman, L. & Rog, D. J. (1993), *Applied research design*, Sage Publications, California.

Henderson, D. M. (1983), *International Directory of Botanical Gardens IV*, Koeltz Scientific Books, Germany.

Hendon, W. S. (1981), *Evaluating Urban Parks and Recreation*, Praeger Special Studies, Praeger Scientific, New York.

Heywood, A. C., Heywood, V. H. & Jackson, P. W. (1990), *International Directory of Botanical Gardens V*, Koeltz Scientific Books, Germany.

Hill, B. J. (1990), Servicing Visitors in the National Parks, *Trends*, 27(3), 27-31.

Holliday, R. (1995), Texas' Entrepreneurial Budget System, *Different Drummer*, Summer, 24-28.

Hornback, K. E. (1991), Socio-Economic Outlook: Outdoor Recreation 2000, *Trends*, 28(2), 14-18.

Hornek, B., Brantley, H. & Brown, M. (1995), Enhancing Quality of Life Through Design and Management, *Trends*, 32(4), 38-43.

Iacobucci, D. (2001), *Kellogg on Marketing*, John Wiley & Sons, Inc, New York.

International Business Corporation (1990), *Maximizing Customer Satisfaction: Meeting The Demands of the New Global Marketplace*, New York.

Issac-Henry, K., Painter, C. & Barnes, C. (1993), *Management in the Public Sector*, Chapman & Hall, London.

Jacobs, J. (1961), *The death and life of great American cities*, Random House, New York.

Johnson, M. D. and Gustafsson, A. (2000), *Improving Customer Satisfaction, Loyalty, and Profit*, Jossey-Bass, San Francisco.

Jimenez, E. (1987), *Pricing Policy in the Social Sectors: Cost Recovery for Education and Health in Developing Countries*, The John Hopkins University Press, Baltimore.

Jones, L. P. (1975), *Public Enterprise and Economic Development: the Korean Case*, The Korea Development Institute, Seoul.

Jones, L. P. and Vogelsang, I. (1983), *The Effects of Markets on Public Enterprise Conduct; and Vice Versa*, International Center for Public Enterprises in Developing Countries, Yugoslavia.

Joyce, P. (1999), *Strategic Management for the public services*, Open University Press, Philadelphia.

Juneja, J. S. (1990), *Entrepreneurship in public enterprises*, Paper prepared for International Center for Public Enterprises in Developing Countries and International Labour Office, Geneva, p85, Mimeo.

Kassicieh, S. K. and Radosevich, H. R. (1993), *From Lab to Market Commercialisation of Public Sector Technology*, Plenum Press, New York.

Kearns, K. P. (1996), *Managing for Accountability: Preserving the Public Trust in Public and Non Profit Organizations*, Jossey-Bass Publishers, San Francisco.

Kerr, J. (1991), *Making Dollars and Sense out of Ecotourism/Nature Tourism, Developing and Financing and Managing Leisure and Tourism Project*, Institute for International Research, Kuala Lumpur.

Kessler, L. E. (1997), *Linking Marketing to Revenue Generation*, Bank Marketing Association.

Killan, G. (1998), *Protected Places : A History of Ontario's Provincial Park System*, Dunburn Press Limited, Toronto.

King, B. E. M. (1997), *Creating Island Resorts*, Routledge, London.

Kings Park & Botanic Garden (2000), *Newsletter of the Friends of Kings Park*, Botanic Gardens and Parks Authority, Perth.

Koh, L. (1999), *Greater Fiscal Autonomy for Ministries*, Straits Times, August 25 (38), Singapore.

Kohler, E. L. (1975), *A Dictionary for Accountants*, Prentice-Hall Inc, New Jersey.

Koteen, J. (1997), *Strategic Management in Public and Nonprofit Organizations : Managing Public Concerns in an Era of Limits*, Praeger Publishers, Westport

Kotler, P. (1997), *Marketing Management*, Prentice Hall, New Jersey.

Kotler, P. (1982), *Marketing for nonprofit organizations*, Prentice-Hall, New Jersey.

Kotler, P., Ferrell, O. C. & Lamb, C. W. (1983), *Nonprofit organizations: Marketing; Case studies*, Prentice-Hall, New Jersey.

Laarman, J. G. and Gregersen, H. M. (1996), Pricing policy in nature-based tourism, *Tourism Management*, 17(4), 247-254.

Lane, J. E. (1993), *The Public Sector Concepts, Models and Approaches*, Sage Publications, London.

LaPage, W. (1995), New Hampshire's Self-Funding Parks, *Different Drummer*, Summer, 29-32.

Lawton, A. and Rose, A. (1994), *Organizations and Management in the Public Sector*, Pitman Publishing, London.

Leal, D. R. and Fretwell, H. L. (1997a), Back to Future to Save Our Parks in A *New Vision for Park Management*, 10, <http://www.perc.org/ps10.htm>, 1-24.

Leal, D. R. and Fretwell, H. L. (1997b), *Parks in Transition: A Look at State Parks*, <http://www.perc.org/stpk.htm>, 1-32.

Lee, S. K. and Chua, S. E. (1992), *More than a Garden City*, Parks & Recreation Department, Ministry of National Development, Singapore.

Lewis, E. (1980), *Public Entrepreneurship: Toward a Theory of Bureaucratic Political Power*, Indiana University Press, Bloomington.

Lindberg, K. and Huber, R. M. (1993), *Economic issues in ecotourism management*, Ecotourism Society, North Bennington, Vermont.

Lockwood, M. and Tracer, K. (1995), Nonmarket valuation of an urban recreation park, *Journal of Leisure Research*, Spring, 155-168.

Los Angeles County (1996), *Park, Beach & Recreation Bond Initiative* (Prop...A, 1996), <http://www.co.la.ca.us/bos/zev/scripts/propa.htm>, 1-28.

Lovelock, C. H. and Weinberg, B. W. (1984), *Marketing for Public and Nonprofit Managers*, John Wiley & Sons, Inc, New York.

Lovelock, C. H. (1996), *Services Marketing*, Prentice Hall, New Jersey.

Maple Grove Parks & Recreation Department (1998), *Park Classification System*, <http://www.ci.maple-grove.mn.us/parkrec/future.htm>.

Masiello, T. (1988), Developing market responsiveness throughout your company, *Journal of Marketing Management*, 17, 85-93.

Massarsky, C. W. and Beinhacker, S. L. (2002), *Enterprising Nonprofits : Revenue Generation in the Nonprofit Sector*, Yale School of Management, The Goodman Sachs Foundation Partnership on Nonprofit Ventures.

McBurney, D. H. (2001), *Research Methods*, Wadsworth Thomson Learning, Belmont, California.

McChesney, J. (1997), *Applying the Marketing Concept to Recreation*, <http://www.nrpa.org/p&r/july/mcches.htm>.

McCracken, D. P. (1997), *Gardens of Empire*, Leicester University Press, London.

McCrory, M. (1996), Exercise and Exhilaration: A Growing Tourism Attraction, *Trends*, 33(3), 26-28).

McDaniel, R. A. (1996), *The National Parks on a Business Basis: Stephen Mather and the National Park Service*, Working Paper 96-8, Political Economy Research Center, Bozeman, Montana.

McEnroe, S. (2002), Can Marketing Save the National Parks? *Adweek*, 31(27).

McKenzie, R. B. (1998), *Managing Through Incentives: How to develop a more collaborative, productive and profitable organization*, Oxford University Press, New York.

McMahon, R. C. (1997), *Cost Recovery and Statistics Canada*,
<http://www.gov.sk.ca/bureau.stats/docs/costrec.htm>.

Mentzer, J.T., Bienstock, C. C. & Kahn, K. B. (1995), Benchmarking Satisfaction, *Marketing Management*, 4 (Summer), 41-46.

Middleton, V. T. C. and Hawkins, R. (1998), *Sustainable Tourism : A Marketing Perspective*, Butterworth Heinemann, London.

Missouri Botanical Garden (1995), *Annual Report 1994*, Missouri Botanical Garden, St Louis.

Mokwa, M. P. and Permut, S. E. (1981), *Government marketing: theory and practice*, Praeger Publications, New York.

Morgan, M. (1996), *Marketing for Leisure and Tourism*, Prentice Hall, London.

Morris, M. H. and Kuratko, D. E. (2002), *Corporate Entrepreneurship: entrepreneurial development within organizations*, Fort Worth, Harcourt College Publishers.

Myers, A. H. (1999), *Measuring Customer Satisfaction : Hot Buttons and Other Measurement Issues*, American Marketing Association, Chicago.

National Botanical Institute (1998), *Business Plans 2000 Research & Scientific Services*, National Botanical Institute, Pretoria.

National Botanical Institute (1998), *Annual Review 1997-1998*, National Botanical Institute, Pretoria.

National Botanical Institute (1997), *Annual Review 1996-1997*, National Botanical Institute, Pretoria.

National Parks Board (2001), *Annual Report 00/01*, National Parks Board, Singapore.

National Parks Board (2000), *Annual Report 99/00*, National Parks Board, Singapore.

National Parks Board (1999), *Annual Report 98/99*, National Parks Board, Singapore.

National Parks Board (1998), *Annual Report 97/98*, National Parks Board, Singapore.

National Parks Board (1997), *Annual Report 96/97*, National Parks Board, Singapore.

National Parks Board (1996), *Annual Report 95/96*, National Parks Board, Singapore.

National Parks Board (1995), *Annual Report 94/95*, National Parks Board, Singapore.

National Parks Board (1994), *Annual Report 93/94*, National Parks Board, Singapore.

National Parks Board (1993), *Annual Report 92/93*, National Parks Board, Singapore.

National Parks Board (1992), *Annual Report 91/92*, National Parks Board, Singapore.

Naumann, E. and Giel, K. (1995), *Customer Satisfaction Measurement and Management*, Thomson Executive Press, Cincinnati, Ohio.

Naumann, E. and Shannon, P. (1992), What is customer-driven marketing? *Business Horizons*, 35(6), 44-52.

Ndlela, D. (2000), *ZNCC calls for Revenue Generation-Driven Budget*, Africa News Service, AllAfrica.com.

New York Botanical Garden (1997), *Annual Report 96/97*, New York Botanical Garden, New York.

Noether, G. E. (1991), *Introduction to Statistics, The Nonparametric Way*, Springer-Verlag, New York.

Nolan, H. J. Jr (1991), Perceived Risks As a Marketing Factor in Recreation and Tourism Services, *Trends*, 28(1), 3-7.

Nolan, H. J. Jr (1990), Economic Trends in Tourism Valuation, *Trends*, 27(3), 22-26.

Norsusis, M. J. (1997), *Guide to Data Analysis*, Prentice Hall, New Jersey.

Obuteru, T. (2003), *Oshiomhole Advises States on Revenue Generation*, AllAfrica.com.

O'Leary, J. T. and McGuire, F. A. (1990), International Travel and National Parks: A Japanese Example, *Trends*, 27(3), 40-44.

O'Sullivan, E. (1996), The Four E's: Changing Roles for Parks and Recreation, *Parks and Recreation*, October, 1996.

O'Sullivan, E. (1991), Who's In? Future Target Markets for Parks and Recreation, *Trends*, 28(2), 5-9.

Ohio Parks and Recreation Association (1998), *Ohio Parks and Recreation...The Benefits are Endless*,
http://www.opraonline.org/benefits/oh_econ.htm.

Osborne, D. and Gaebler, T. (1992), *Reinventing Government: how the entrepreneurial spirit is transforming the public sector*, Addison-Wesley Publishing Company, Reading.

Oster, S. M. (1995), *Strategic Management for Nonprofit Organizations Theory and Cases*, Oxford University Press, New York.

Parasuraman, A., Berry, L. L. & Zeithaml, V. A. (1991), Understanding Customer Expectations of Services, *Sloan Management Review*, Spring 1991.

Parasuraman, A., Berry, L. L. & Zeithaml, V. A. (1990), Guidelines for Conducting Quality Service Research, *Marketing Research*, December, 34-44.

Parasuraman, A., Zeithaml, V. A. & Berry, L. L. (1988), SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality, *Journal of Retailing*, April 1988.

Parasuraman, A., Zeithaml, V. A. & Berry, L. L. (1986), SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality, Report No. 86-108, *Marketing Science Institute*, Cambridge, Massachusetts.

Parasuraman, A., Zeithaml, V. A. & Berry, L. L. (1985), A Conceptual Model of Service Quality and its Implications for Future Research, *Journal of Marketing*, 49 (Fall), 41-50.

Parasuraman, A., Zeithaml, V. A. & Berry, L. L. (1984), A Conceptual Model of Service Quality and Its Implications for Future Research, Report No. 84-106, *Marketing Science Institute*, Cambridge, Massachusetts.

Park & Recreation (1998), *The Parks*,
http://www.gainesville.org/park_rec/park_rec_parks.htm

Peterson, R. (1989), Small business adoption of the marketing concept versus other business strategies, *Journal of Small Business Management*, January, 38-46

Peters, T. and Waterman, R. H. Jr (1982), *In Search of Excellence*, Warner Books, New York.

Peterson, S. L. (1998), *The Research Writers' Phrase Book*, International Scholars Publications, Bethesda.

Philip, N. P. (1983), *State Enterprise in Singapore: Legal Importation & Development*, Singapore University Press Pte Ltd, Singapore.

Phipps Conservatory and Botanical Gardens (1998), *Annual Report*, Phipps Conservatory and Botanical Gardens, Pennsylvania.

Phipps Conservatory and Botanical Gardens (1997), *Annual Report*, Phipps Conservatory and Botanical Gardens, Pennsylvania.

Pizam, A. and Milman, A. (1990), Current Trends in Manpower Needs for the Tourism Industry, *Trends*, 27(3), 14-17.

Potts, F. C., Goodwin, H. J. & Walpole, M. J. (1996), People, wildlife and tourism in and around Hwange National Park, Zimbabwe, Wiley, Chichester.

Porter, E. M. (1979), How Competitive Forces Shape Strategy, *Harvard Business Review* 57(2), March-April, 137-45.

Potts, F. C., Goodwin, H. J. & Walpole, M. J. (1996), *People, wildlife and tourism in and around Hwange National Park*, Zimbabwe, Wiley, Chichester.

Prokopenko, J. and Igor, P. (1991), *Entrepreneurship development in public enterprises*, International Labour Office, Geneva and International Center for Public Enterprises in Developing Countries, Ljubljana.

Quail Botanical Gardens (2000), *Quail Tracks*, 11(1), Quail Botanical Gardens, California.

Quail Botanical Gardens (1999), *Quail Tracks*, 10(1), Quail Botanical Gardens, California.

Quail Botanical Gardens (1999), *Quail Tracks*, 9(4), Quail Botanical Gardens, California.

Radosevich, R. and Kasscieh, S. (1994), *From Lab to Market Commercialisation of Public Sector Technology*, Plenum Press, New York.

Rakstis, T. (1992), Customer service's big payoff, *Kiwanis Magazine*, October, 32-35.

Ramamurti, R. (1986), *Public entrepreneurs: who they are and how they operate*, Division of Research, Graduate School of Business Administration, Harvard University, Boston.

REDO, OTCA AND I'ATO (1997), *Tourism Opportunities Study: Canada's Capital Region*, March, 1-29.

Reiss, A. H. (2000), *CPR for Nonprofits Creative Strategies for Successful Fundraising, Marketing, Communications and Management*, Jossey-Bass, San Francisco.

Rockwood, L. R. (1978), Setting User Fees and Charges, *Parks and Recreation*, 13(3), 29-30.

Rosenthal, R. (1966), *Experimenter effects in behavioural research*, Appleton-Century-Crofts, New York.

Royal Botanic Garden Edinburgh (1999), *Annual Report 1998-1999*, Royal Botanic Garden Edinburgh, Edinburgh.

Royal Botanic Garden Edinburgh (1998), *Annual Report 1997-1998*, Royal Botanic Garden Edinburgh, Edinburgh.

Royal Botanical Gardens Les jardins botaniques royaux (1998), *Annual Report 1998*, Royal Botanical Gardens, Hamilton.

Royal Botanical Gardens Les jardins botaniques royaux (1997), *Annual Report 1997*, Royal Botanical Gardens, Hamilton.

Royal Botanic Gardens Sydney (1999), *Annual Report 98/99*, Royal Botanic Gardens Sydney.

Royal Botanic Gardens Sydney (1998), *Annual Report 97/98*, Royal Botanic Gardens Sydney.

Royal Botanic Gardens Sydney (1997), *Annual Report 96/97*, Royal Botanic Gardens Sydney.

Royal Botanic Gardens Sydney (1996), *Annual Report 95/96*, Royal Botanic Gardens Sydney.

Russell, C. (1990), Ten Particle Markets, *American Demographics*, 12(8), 2.

Salkind, N. J. (2000), *Statistics For People Who Hate Statistics*, Sage Publications, Inc, California.

Samuels, J. B. (1990), Marketing Tourism into the '90s: Ideas for Facing a More Competitive Market, *Trends*, 27(3), 36-39.

Schneider, E. L. (1997), *CEOs and Trustees: Building Working Partnerships*, American Association of Botanical Gardens and Arboreta, New York.

Seah, S. C. (2004), *Get donors' consent to use data, Case tells NKF*, Aviva, Straits Times , April 7 (31), Singapore.

Singapore Botanic Gardens (2003), *Gardenswise, July 2003*, Singapore Botanic Gardens, National Parks Board, Singapore.

Smith, I. (1989), *Incentive Schemes, People & Profit*, Croner Publications Ltd, Surrey.

Smith, T. A. (1977), *Dynamic Business Strategy*, McGraw-Hill Book Co, New York.

Spilling, O. R. (1994), *The Entrepreneurial system: On Entrepreneurship in the Context of a Mega Event*, Eastern Norway Research Institute, Lillehammer.

Stahl, M. J. and Grigsby, D. W. (1992), *Strategic Management for Decision Making*, PWS-Kent Publishing Company, Boston.

Starkie, D. N. M., Grenning, M. R. & Starrs, M. M. (1982), *Developments in Transport Studies 4, Pricing and Cost Recovery in Long Distance Transport*, Martinus Nijhoff Publishers, The Hague.

State Parks Futures Committee (1990), *The State Park System : Montana's Legacy-A New Growth Industry*, A Report to Governor Stan Stephens and the 52nd Legislature, November.

Sterling, D. (1989), USA's Race for Health Leaves Most Gasping, *USA Today*, 8/22/89.

Strauss, C. H. and Lord, B. E. (1991), Impact of State Parks on Pennsylvania's Economy, *Trends*, 28(1), 31-37.

Stevenson, H. H., Roberts, M. J. & Grousbeck, H. I. (1989), *New Business Ventures and the entrepreneur*, Irwin, Homewood, Illinois.

Strybing Arboretum Society (1998), *1998 Annual Report*, Strybing Arboretum Society, San Francisco.

Strybing Arboretum Society (1997), *1997 Annual Report*, Strybing Arboretum Society, San Francisco.

Sudman, S. and Bradburn, N. M. (1982), *Asking questions: A practical guide to questionnaire design*, Jossey-Bass, San Francisco.

Swarbrooke, J. (1995), *The Development and Management of Visitor Attractions*, Butterworth-Heinemann Ltd, Oxford.

Taplin, J. H. E. (1982), *A Pricing Framework for Cost Recovery*, Martinus Nijhoff Publishers, The Hague.

Tan, L. (2004), *NKF's \$5m tie-up with Aviva: Creative move or invasion of privacy?*, Straits Times, April 3 (A32), Singapore.

Tan, W. K. (1999), Keeping Botanic Gardens Relevant, *Gardenwise XIII*, July, 3-5, Singapore Botanic Gardens, National Parks Board, Singapore.

Tasmanian Regional Forest Agreement (1996), *The Social and Economic Report: a summary*,
<http://www.environment.gov.au/land/forests/cra/tas/summary/chpt3.html>.

Taylor, G. (1996), Per Person Pricing Now in Effect, *Field & Stream*, July.

Thacker, C. (1979), *The History of Gardens*, Croom Helm Ltd Publishers, London.

The Arnold Arboretum (1998), *Director's Report 1996-1997*, The Arnold Arboretum, Massachusetts.

The Dawes Arboretum (1998), *Annual Report*, The Dawes Arboretum, Ohio.

The Dawes Arboretum (1997), *Annual Report*, The Dawes Arboretum, Ohio.

The Holden Arboretum (1998), *Annual 1998 Report*, The Holden Arboretum, Ohio.

The Holden Arboretum (1997), *Annual 1997 Report*, The Holden Arboretum, Ohio.

The Morton Arboretum (1998), *1998 Annual Report*, The Morton Arboretum, Illinois.

The Morton Arboretum (1997), *1997 Annual Report*, The Morton Arboretum, Illinois.

Thompson, A. A. and Strickland, A. J. III (1990), *Strategic Management: Concepts and Cases*, Richard D Irwin, Inc, New York.

Thurston, L. and Richardson, P. R. (1996), Revenue generation – making it pay, *Optimum*, Spring, 45-49.

Thynne, I. and Ariff, M. (1998), *Privatisation : Singapore's Experience in Perspective*, Longman Publishers Pte Ltd, Singapore.

Tilden, F. (1962), *The State Parks: Their Meaning in American Life*, Alfred A. Knopf, New York.

Trauer, B. B. and McIntyre, N. (1998), World Heritage Listing As An Entrepreneurial Event: An Australian Case Study, *Australian Parks & Recreation*, Autumn 34(1), 44-47.

Travers, M. (2001), *Qualitative Research Through Case Studies*, Sage Publications Ltd, London.

Tribe, J. (1996), *The Economics of Leisure and Tourism*, Butterworth-Heinemann Ltd, London.

Trussell, G. R. (1996), Selling Sunrises and Sunsets - Changes in Rural Tourism Development, *Trends*, 33(3), 44-47.

University of Virginia Library (1998), *Library User Satisfaction Survey*, Virginia.

Vause, B. (1997), *Guide to Analysing Companies*, Profile Books Ltd, London.

Walpole, M. J., Goodwin, H. J. & Ward, K. G. R. (2001), Pricing Policy for Tourism in Protected Areas: Lessons from Komodo National Park, Indonesia, *Conservation Biology*, February 2001, 15(1), 218-227 (10).

Washington State Parks and Recreation (1994), *Restructuring Washington State Parks and Recreation*, Olympia, December.

Weiler, B. and Hall, C. M. (1992), *Special Interest Tourism*, Belhaven Press, London.

Wicks, B. E. (1996), Celebrating Festivals of the Future, *Trends*, 33(3), 29-31.

Wilkins, O. N. and Quatman, W. (1997), *Youth on Wheels: Youth Hockey Partnership*, <http://www.nrpa.org/p&r/august/wilkins.htm>.

Wilson, J. (1998), *Financial Management for the Public Services*, Open University Press, Philadelphia.

Wisdom, D. and Nsoikan, J. (1997), *The Revenue Race: Desperation to meet revenue targets drives some state governments to adopt some unconventional methods, eliciting increasing complaints of excesses*, The Week; Ethnic News Watch, June 2.

Wood, M. S. (1985), *Cost Analysis, Cost Recovery, Marketing, and Fee-Based Services, A Guide for the Health Sciences Librarian*, The Haworth Press, New York.

Woodburn, B., Fraser, L. & Balmer, K. (1992), *The Benefits of Parks and Recreation: A Catalogue*, <http://www.lin.ca/resource/html/bencat.htm>.

Woodruff, R. B. and Gardial, S. (1996), *Know your customer: new approaches to customer value and satisfaction*, Blackwell Publishers, Inc, Oxford.

Yin, R. K. (1994), *Case Study Research Design and Methods*, Sage Publications, California.

Yin, R. K., Bateman, P. G. & Moore, G. B. (1983), *Case Studies and organizational innovation: Strengthening the connection*, Cosmos Corporation, Washington DC.

Yuen, B. (1996), Creating the Garden City: the Singapore experience, *Urban Studies*, 33(6), 955-971.

Zan, L., Zambon, S. & Pettigrew, A. M. (1993), *Perspectives on Strategic Change*, Kluwer Academic Publishers, Massachusetts.

Zeithaml, V. A., Parasuraman, A. & Berry, L. L. (1990), *Defining Quality Service: Balancing Customer Perceptions and Expectations*, Free Press, New York.

Zeithaml, V. A. (1986), *Defining and Relating Price, Perceived Quality, and Perceived Value*, Working Paper, Duke University.

Zuylen, G. (1994), *The Garden Visions of Paradise*, Thames and Hudson Ltd, London.