



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDES/ CARICAD

**Information & Communication Technologies and Tourism:
Information Systems Implementation and IT-enabled
Organisational Change in the Tourism Sector**

by

Dr. Cletus K. Bertin

Knowledge and Information Manager



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

TABLE OF CONTENTS

1. Introduction.....	3
2. Background.....	3
3. Internet Adoption.....	5
3.1 St. Lucia Tourist Board.....	5
3.2 Accommodation Sector.....	6
4. Strategic Planning Framework.....	9
5. IT-enabled Organisational Change.....	10
6. Impact of Internet Adoption: Visitor Arrivals.....	14
7. Conception-Reality Gap Analysis.....	16
7.1 Gap Analysis: Context Variables.....	19
7.2 Gap Analysis: St. Lucia Tourist Board.....	23
8. Discussion: Research Questions and Related Hypotheses.....	25
9. Contributions of the Study.....	29
9.1 Implications for Public Sector Policy and Practice.....	29
9.2 Theoretical Contribution.....	33
10. Recommendations for Future Research.....	35
11. Conclusions.....	36
12. Selected Bibliography and References.....	36
Appendix 1: Organisational Structure- SLTB.....	40
Appendix 2: Application of Strategic Framework.....	41



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

1. Introduction

This paper addresses some of the findings from research undertaken on the use of the Internet and implementation of web-based systems in the tourism sector in the Saint Lucia. An analysis of the factors which impact upon the systems implementation process and IT-enabled organizational change; levels of Internet adoption and maturity and the levels of success of e-business activities in the Eastern Caribbean tourism sector are presented.

In-depth case studies were conducted and data collected, utilizing a combination of qualitative and quantitative approaches: interviews, questionnaires, web site analysis and secondary data, in five islands, from July 2001 to January 2003. Data was collected from a wide range of sources, including: National Tourist Offices, the Caribbean Tourism Organization, Ministries of Tourism, Hotel and Tourism Associations and industry personnel.

Tourism is of immense importance to the economy of Saint Lucia. In 2000, the Tourism sector was the second largest contributor to real GDP at almost thirteen percent - (12.9%), second only to the Wholesale and Retail Trade Sector (at 13.96%). The performance of the tourism sector throughout the 1990s contributed to the gradual transformation of the economy to a more services-oriented economy. Further, by virtue of its 'networked nature', with linkages to most of the other productive economic sectors, this sector is the single largest contributor to economic activity in Saint Lucia (Ministry of Finance and Economic Affairs, 2001).

Some of the specific areas in which the tourism sector has a notable impact are: employment generation (especially as hotels and restaurants are labour intensive operations); government revenues, (for example accounting for almost 10% of government revenue in 1998; financial services sector (interest revenue and net foreign exchange earnings); and creation of significant economic linkages (St. Lucia Tourist Board, 1999).

2. Background

The Tourist Ordinance Act of 1959 established the Tourist Trade Development Board of St. Lucia for the primary purpose of spearheading the development of the island's tourism industry. That entity was succeeded by the St. Lucia Tourist Board (SLTB) through the adoption of the Tourism Industry Development Act of 1981. SLTB is a governmental statutory body attached to the Ministry of Tourism. At the time of incorporation the Board's core function was marketing St. Lucia overseas as a tourist destination. It was also vested with the responsibilities of facilitating product development, leading efforts in investment promotion for the tourism industry and negotiating air service agreements.



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

While the Minister of Tourism has overall responsibility for the functioning of the SLTB, policy direction and execution of tactical and operational matters have been delegated to the Board of Directors, headed by a Chairperson and a twelve member Board appointed by the Minister of Tourism for a two-year term. Although the SLTB is a statutory body, with its operations funded primarily by the government, board members are chosen largely from the private sector and are each representative of key stakeholder interests within the industry. In addition to the head office in St. Lucia, the St. Lucia Tourist Board (SLTB) has offices or representation in the United States, Canada, United Kingdom and Germany (see Appendix 1).

In 1997, Coopers & Lybrand was commissioned to undertake a comprehensive review of the administration of the tourism industry in St. Lucia. Following this review the organisation was mandated to be responsible *primarily* for the marketing and promotion of St. Lucia regionally and internationally as a tourist destination. The refocusing of the mandate of the St. Lucia Tourist Board, which entailed a participatory industry-wide consultation, resulted in the formulation of three main goals: 1. to market and promote St. Lucia as a tourist destination; 2. to conduct market research; and 3. to develop events for the specific purpose of attracting visitors to the island.

In 2000, another review was undertaken, focused more at the organisational, as opposed to the industry level. The primary objective of the review exercise, as stated by the Director of Tourism, was 'to create an administrative structure to support the new marketing strategy'. The key elements of the review entailed the: branding of the St. Lucia Tourism product to create its unique identity in the market; development of a new marketing thrust to be more consumer oriented; and the adjustment of administrative structure to support the new marketing thrust.

Consequent upon the organisational review, the following goals were articulated: to increase St. Lucia's presence in the main tourist generating markets and to increase arrivals to, and expenditure in St. Lucia; to create a better capability to develop new markets; and to further penetrate existing markets.

The sales representatives and overseas offices form a critical link between the destination and the marketplace in the efforts to promote and market the destination. Changes with respect to the overseas offices entailed: the appointment of a Public Relations Agency in Germany and the use of the UK office to handle enquires and fulfilment from that market; the employment of five (5) sales representatives and the significant improvement to the web site, with greater focus on internet marketing. From a technological standpoint, the St. Lucia Tourist Board's computer system was described by the Chairman, Desmond Skeete, as "...an organisational system founded on yesterday's technology and...not reaching anybody" (Skeete, 2000).



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

3. Internet Adoption

3.1 St. Lucia Tourist Board

Saint Lucia, as well as all of the National Tourist Offices (NTO's) in the Eastern Caribbean had a web presence from the mid 1990s. This was primarily due to their favourable response to an offer by a company, based in North America, to build, host and maintain a web site for each of the destinations in the Eastern Caribbean. From 1996, therefore, the SLTB had a web site which was fully outsourced serving as the official site for the destination. This web site had very little impact on the operations of the organisation. The following statement is characteristic of the initial attempts of all the Eastern Caribbean NTO's:

“Our IT strategy was let's get involved, everybody has a web site...there really wasn't a strategy at first, the strategic position sort of developed along the way as the situation unfolded”. (Respondent - SLTB)

These initial versions of the NTO web sites were simply electronic versions of their existing print material. As noted by Pollock (1997), “...many National Tourist Offices merely converted print publications into HTML format and published them on the web”. From about the latter part of 1998, there was a growing recognition by many of the marketing, research and statistics personnel of these organisations, of the real potential of a web presence. A much closer interest was paid to the administration and content on their respective sites. Efforts were made to liaise with the developers with regard to posting special promotions and updating relevant destination information on the web sites. The response from the hosting company was very unsatisfactory and with very little or no response forthcoming, the relationship became increasingly strained.

The hosting company had apparently been undergoing frequent changes in ownership and management. The rates imposed for maintenance services were constantly increasing and the overall level of service was reportedly quite poor. By 2000, St. Lucia, Grenada and the Caribbean Tourism Organisation were actively engaged in measures, independent of the hosting company, to upgrade and re-launch their sites.

The resolution of ownership and intellectual property issues, as regards the existing web sites, proved to be a major challenge, however. The contractual arrangements and conditions were never quite in place, resulting in much uncertainty with respect to the ownership and intellectual property rights issues. None of the DMO's were able to successfully secure the transfer of the ownership of their respective domain names or uniform resource locators (URLs) to their organisations. In the case of St. Lucia, (as was the case for most of the other Eastern Caribbean destination), after a protracted period of discussions and exchange of 'strongly worded correspondence', the official site for the St. Lucia Tourist Board had to be changed from www.stlucia.com to www.stlucia.org.



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

In addition to the use of web-based innovations, organisational structural adjustments and limited process changes were also done. The SLTB decided to close its New York Office and have no administrative staff in the United States. Only Sales Persons were now hired in the United States. Two sales persons now cover New York North to Boston and New York South to Philadelphia, respectively, one in Atlanta, one in Chicago and for the first time, one sales person in Los Angeles.

A new web site for the St. Lucia Tourist Board was developed. The site comprised three parts:

- an Internet, containing generic information on St. Lucia as a destination – similar to the previous web site, but more interactive and rich in functionality.
- an Intranet, permitting the Tourist Board to manage its field operatives (sales persons), equipped with mobile phones and a laptop, working from home. All support for the field operative is provided from St. Lucia (Head Office) with a 1-800 number set up at this location.
- An Extranet, enabling the Tourist Board to communicate with industry partners, such as tour operatives and travel agents, worldwide.

Similar to the United States scenario, the SLTB office in Germany was closed. Skeete (2000) indicated that more than fifty percent (50%) of SLTB's budget for Germany was spent on administrative cost and there was hardly any money left for promotional activity.

As an alternative measure, a public relations firm in Germany was hired to build the island's image there. Further, a public relations firm was also hired to promote St. Lucia in France. According to the Chairman, "...now we are addressing markets we had turned our backs on and we are beginning to build our image...if the numbers build up again and the demands justify it, then we can begin to put administrative personnel back into those markets" (Skeete, 2000).

3.2 Accommodation Sector

Although this work focused on the public sector NTO's in the Eastern Caribbean, it was recognised that the level of connectivity of local stakeholders in the tourism industry, particularly the accommodation sector, is an important consideration with respect to the web-based activities of NTO's (WTO, 2001). Accordingly, the author undertook secondary data analysis on the listings of accommodation establishments, and those which had web sites or email addresses for their respective organisations.

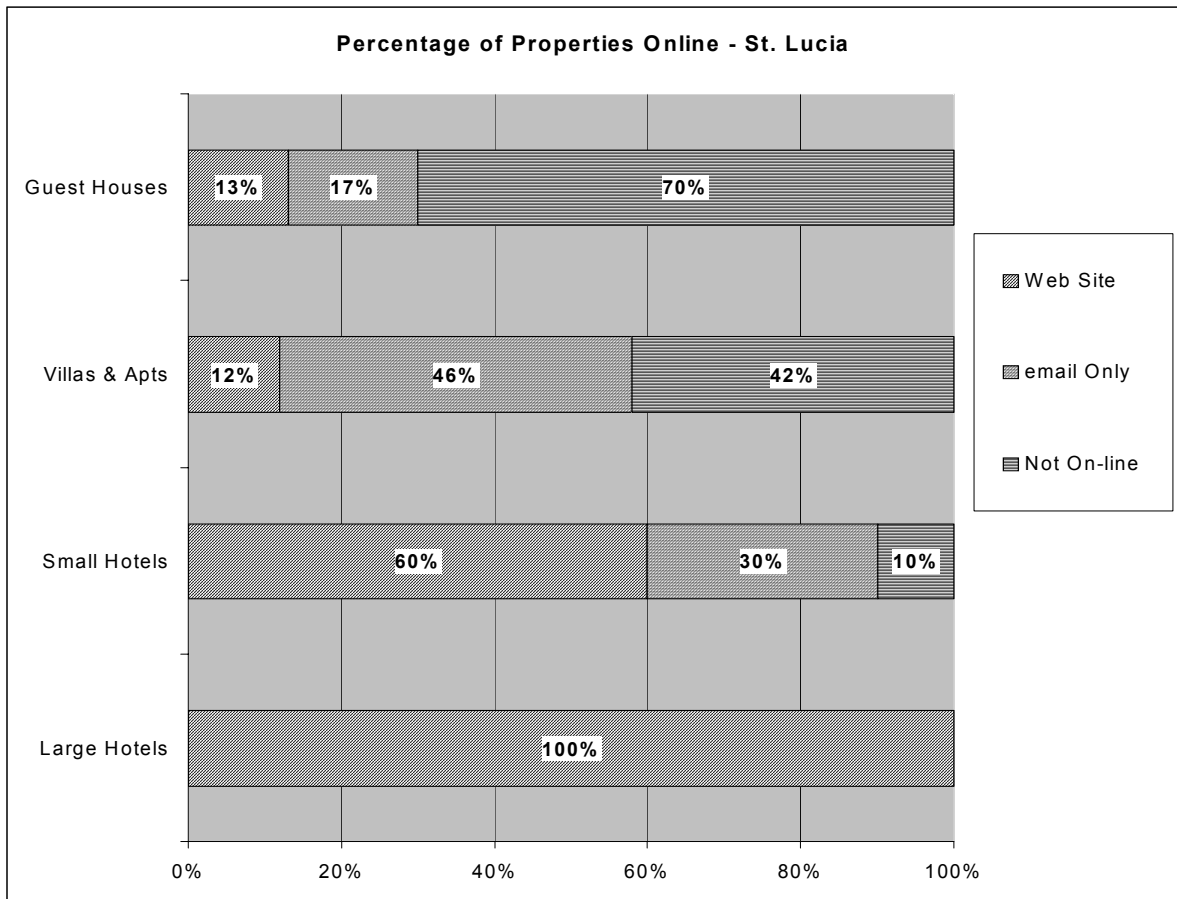
This information was gathered from the Hotel and Tourism Associations and the National Tourist Offices in the three islands in which the in-depth case studies were done: Barbados, Grenada and St. Lucia, and was used to determine the extent of Internet adoption in the accommodation sector. The data on accommodation establishments with web sites and



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

email addresses were collated and the level of 'Internet penetration' was established based on the percentage of properties which had web sites or email accounts for their respective organisations.

Figure 1: Level of Internet Penetration: Accommodation Sector: St. Lucia



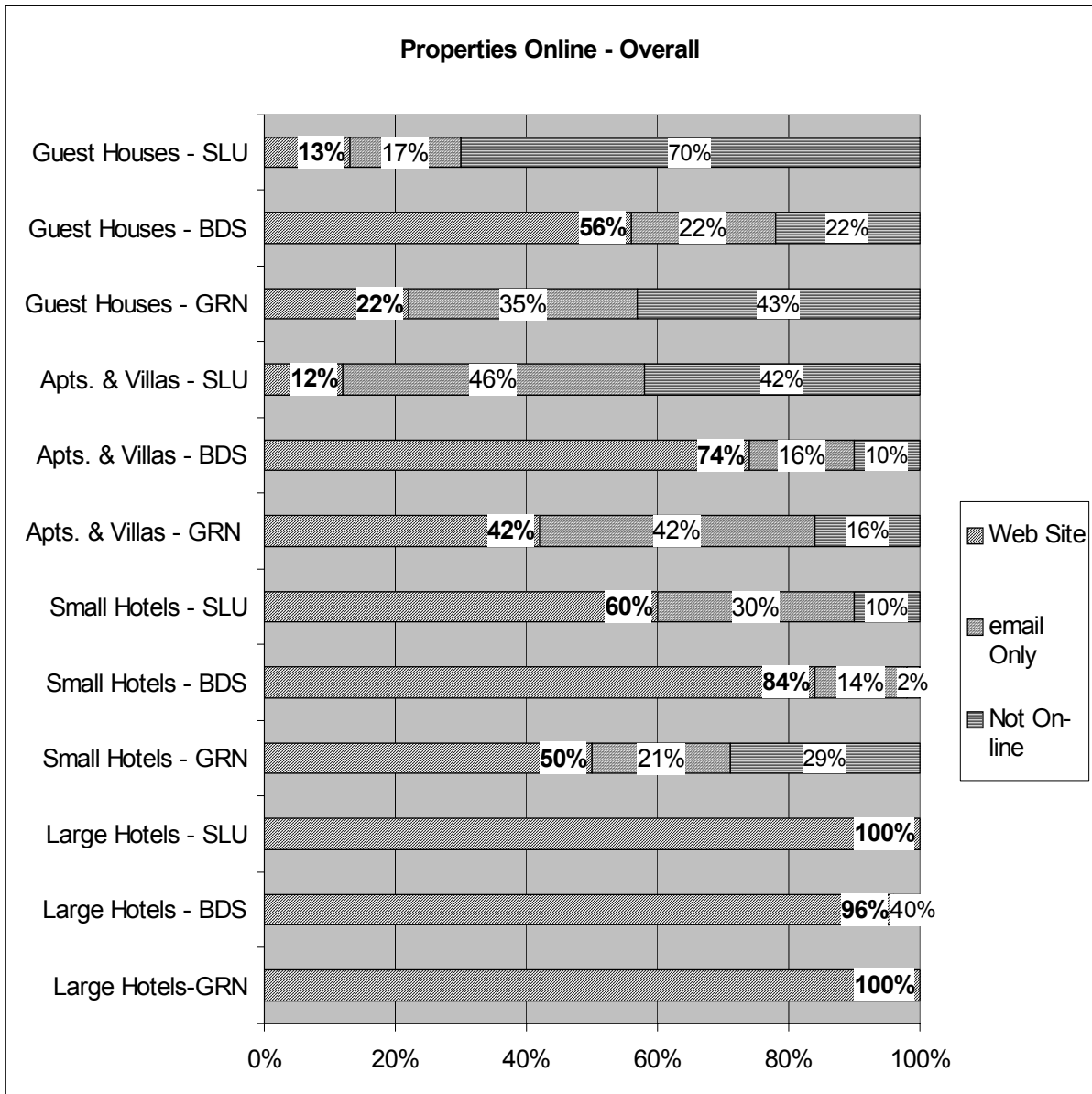
Sources: Barbados Tourism Authority; Grenada Board of Tourism; Grenada Industrial Development Corporation; St. Lucia Hotel and Tourism Association; St. Lucia Tourist Board.

The low rate of penetration with respect to Guest Houses and Villas and Apartments in St. Lucia is striking. These establishments are owned almost exclusively by St. Lucian nationals. The primary reasons for this are the low level of awareness and financial constraints. A comparative analysis of the levels of connectivity by the type of accommodation, across the three islands (St. Lucia - SLU, Barbados - BDS and Grenada - GRN), is presented in Figure 2, below:

Figure 2: Level of Internet Penetration: By type of Accommodation



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD



Sources: Barbados Tourism Authority; Grenada Board of Tourism; Grenada Industrial Development Corporation; St. Lucia Hotel and Tourism Association; St. Lucia Tourist Board.



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

4. Strategic Planning Framework

The adoption of the Internet, electronic business and the development of web-based systems in the National Tourist Offices in the Eastern Caribbean is not done in the context of a broader National IT Policy or Strategy. There is very little integration, within an overall strategic framework (see Appendix 2). At the organisational/NTO level the initial driver was essentially a ‘me-too’ approach, where the institutions adopted web sites merely on the basis that others have done so and it seemed to be the ‘right thing to do’ at that particular time. As noted by the Director of Information Management and Research at the CTO, with respect to the implementation of web-based initiatives:

*“They are promoting an industry and they know that it is now generally recognised that the Internet is a critically important component...so they set about to get a web site. In the more extreme cases you have countries, simply finding someone [outside the organisation] to assign that responsibility to, agreeing on a price to build a web site and **that’s it...** [with respect to the NTO involvement]” (Sobers: CTO)*

Developments with respect to the use of the Internet and web-based systems tended to be done in an ad hoc manner, “it has been happening, but more in response to, more in a reactive rather than a proactive manner” (Sobers: CTO). More recently, however, there has been evidence of a slow shift towards a more strategic and structured approach to the development and use of the Internet and web-based systems. The St. Lucia Tourist Board (SLTB), for example, has been attempting to leverage the use of IT at the organisational level. One of the strategic roles of the upgraded web site was to re-structure operations of the organisation in the North American market.

The intention was to use the Extranet as the focal point for co-ordinating the activities of sales representatives in that market. In preparation for this, and in light of cost considerations, the SLTB office in New York was closed in June, 2001. Sales representatives were required to work from home, and on the road, with online support and collaboration with the SLTB head office in St. Lucia, via email, and the Extranet in particular.

The basis of collaboration, however, is still primarily via email, telephone and fax. The limited role of the Extranet in this new strategic direction was acknowledged:

“In terms of the new organisational structure in the North American Market, it [the web site] is helping them, it is so much more detailed that it is very easy to refer people to the web site. But in terms of using the Extranet as a tool for sharing information and collaborating with them, we are not doing that properly” (Respondent - SLTB).



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

Some degree of integration at the level of the marketing *activities* and the information systems (IS) *function*, was evident, however, in the *development* of the upgraded St. Lucia Tourist Board Web Site. All the respondents indicated that there was significant collaboration between the IS and marketing functions, at various levels. A major re-branding exercise was also undertaken, which coincided with the launch of the new site. While both the web development and the re-branding exercise were outsourced to two separate companies, one in the United States and the other in the United Kingdom – a significant level of coordination was achieved. The above developments notwithstanding, the present situation is perhaps best illustrated by the following statement:

“They [Eastern Caribbean NTO’s] have not yet integrated IT into the overall developmental strategy...it is often not a deliberate, integrated part of the overall strategic thrust. A lot of countries, even now, still have a difficulty with what sort of mix they will have amongst the marketing tools at their disposal....and IT still tends to be out there. They recognize its significance and the need to act and they are doing something about it...but the idea that it is all coordinated and strategic...is not a reality” (Sobers: Director of Information Management & Research, Caribbean Tourism Organisation).

5. IT-enabled Organisational Change

The introduction of information and communications technologies (ICT) into organisations increasingly changes jobs, skill needs, work and relationships (Scott-Morton, 1991; Davenport, 1993, O’Brien, 2001). Implementing web-based systems and Internet technologies is but part of a larger process of managing major changes in business processes, organisational structures, managerial roles, and employee work assignments (O’Brien, 2001).

It has been recognised that the early exploitation of destination management systems have been through self-contained systems (Pollock, 1997). These systems were designed to support specific areas of operations, often acquired on a piecemeal or ad hoc basis, by different departments, and operated independently of each other (Benckendorff and Black, 1999; Cooper and Lewis, 2001). The corresponding level of organisational transformation, arising out of the implementation of IT in this manner, tends to be quite minimal (Holtham, 2000; Venkatraman, 1994).

The Venkatraman five levels of IT-enabled organisational transformation framework (1994) was utilised for purposes of operationalising and categorising the construct ‘web-enabled organisational change’ in the destination management organisations investigated. The model proposes five levels of organisational change, from localised exploitation to business scope redefinition, outlined in Table 1 and illustrated in Figure 3, respectively, below.



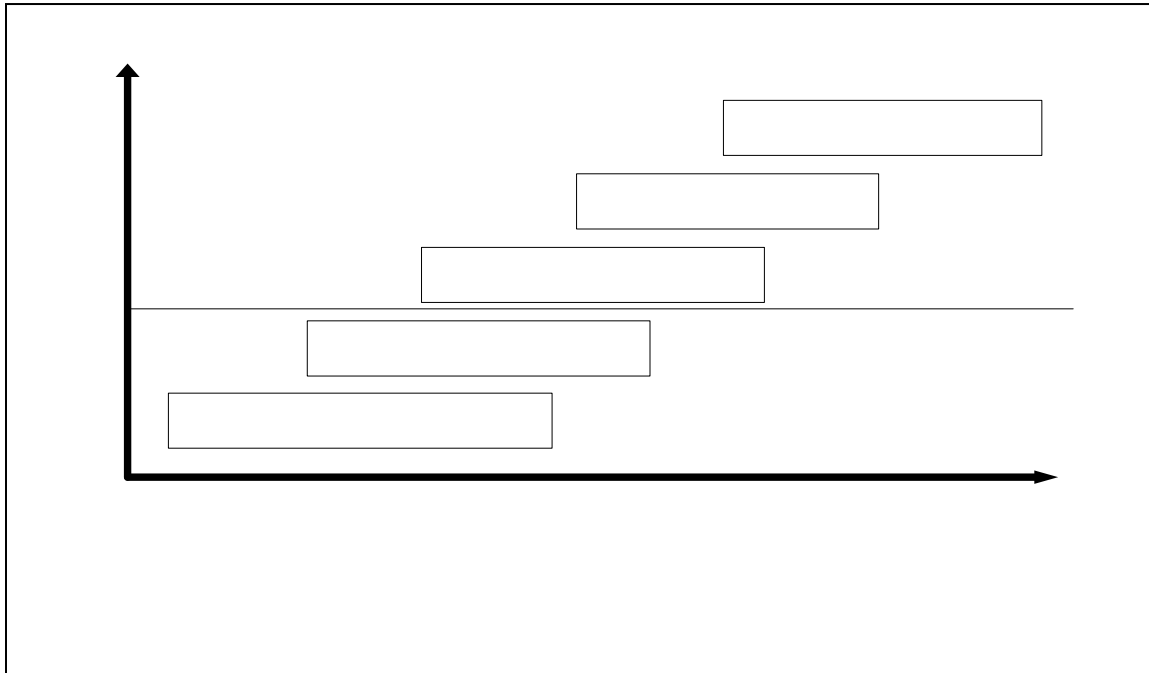
Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

Table 1: Levels of Transformation and Corresponding Characteristics

Levels of Transformation	Distinctive Characteristics
Localized Exploitation	Leveraging of IT to redesign focused, high-value areas
Internal Integration	Use of IT capability to create a seamless organizational process, encompassing technical interconnectivity & organizational interdependence
Business Process Redesign	Redesigning key processes to derive capabilities for competing in the future
Business Network Redesign	Redesign of the nature of exchange among participants in a business network for the enhanced provision of products and services, coordination, control and to learn from the extended network
Business Scope Redefinition	Redefining the corporate scope, adjustment of internal activities, new partnerships and alliances along the value chain

Source: Venkatraman (1994)

Figure 3. Levels of IT-enabled Transformation



Source: Venkatraman (1994)

Localised Exploitation entails the leveraging of an IT function or system, to redesign focused, high-value areas of business operations. Deployment of isolated systems (for example, toll-free customer service and internal electronic mail system) would typically be decentralized to functional, operational managers (Venkatraman, 1994).

For purposes of this study, and the tourism sector as a whole, this would entail, for example, simply the use of a web site for marketing a destination. A simple, static web site with limited interactivity and functionality, exclusively for disseminating information about the destination, would be at this level of IT-enabled transformation – localised exploitation. This level of change is characterized by minimal changes to business processes, and essentially the systems are no different from standard business practice in the marketplace at the time.

If accompanied by corresponding changes in internal business processes, this level of IT transformation can, however result in significant advantages (Davenport, 1993; Venkatraman, 1994). For this to materialize, activities should be motivated by a focus on differentiation and strategic advantage, for example, superior customer service, rather than efficiency alone. Management must seek to benchmark exploitation and results against 'best practice' to achieve competitive differentiation.



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

Data on the levels of IT-enabled change in the case studies under investigation was collected primarily through semi-structured interviews and a questionnaire. Additionally, information was collected during the course of many unstructured interviews with public sector and industry personnel in the tourism industry. In terms of the initial web sites launched by the Eastern Caribbean NTO's, from 1996, there is little advancement past the level of localised exploitation.

For the most part Eastern Caribbean NTO's have limited their online initiatives to the areas of market research, market communication, public relations and sales promotion. Extending the tasks of the National Tourism Organisations into emerging areas such as online brand policy management, information and product management as well as direct distribution and online sales, would no doubt require a considerable restructuring effort. At the level of business scope redefinition it is argued that the NTO could develop into a kind of 'incoming tour operator', as the marketing of destination-oriented products is given greater prominence in the activities of the various entities (WTO, 1999).

The level of IT-enabled transformation is largely at the level of localised exploitation and to a lesser extent internal integration. There remains clear potential for higher levels of change, given the technological platforms in place and the level of awareness, internally, and the significant developments in the global industry.

Increasingly, National Tourist Organisations are expected to exhibit levels of change, beyond the evolutionary levels – localised exploitation and internal integration. Internal Integration is achieved when a firm is able to leverage IT capability to create a seamless organizational process which reflects both technical interconnectivity, which is interconnectivity and interoperability of the different systems and applications through a common IT platform. As well as business process interdependence, which refers to the interdependence of organizational roles and responsibilities across distinct functional lines. When this occurs full internal integration is considered to have taken place (Venkatraman, 1994).

The evidence suggests that the St. Lucia Tourist Board is at the Internal Integration stage. The initial leveraging of the web site, initially for marketing purposes, has resulted in measures taken towards technical interconnectivity as well as displaying characteristics of business process interdependence. Commenting on these two primary indicators of this level of organisational change, Venkatraman (1994) notes that the lack of attention to creating interdependent business processes weakens the organisation's ability to leverage a seamless and interoperable technical system. Most organisations tend to concentrate on advancing the latter, but fail to derive the full benefits of investments in technological infrastructure.



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

This is reflected by the following statement:

“The major change [since the launch of the upgrade site] was the management of the site, which forced a change in the management of internal information systems, there was a change in responsibilities and the way information flows within the organization...responsibilities have been assigned to various members of staff as regards content management and other tasks, across different departments”
(Respondent - SLTB).

There is clearly some deficiency, however, in the level of integration achieved:

“There has been some level of synergy between the offline and online activities that the SLTB is doing, the efforts are sort of being integrated in that regard. But I think that it needs to come through the whole organisation, from top to bottom...and that is definitely a challenge, it is a challenge from doing things in a different way”
(Respondent - SLTB).

6. Impact of Internet Adoption: Visitor Arrivals

One of the aims of the quantitative analysis was to establish whether a causal relationship exists between visits to the web sites of Eastern Caribbean NTO's and subsequent arrivals to the region. The data sources which were required to determine conclusively the nature of the relationship between web usage and arrivals were: arrival data by region/source market; web usage by region (visitor session on NTO web sites); and data to confirm the extent to which persons were influenced by the official *NTO web site* during their decision making /travel planning process.

The focus of this analysis was on the United States market. Given that the most active country in terms of web traffic is the United States, which is also a major source market for arrivals to the destinations in question. Empirical data was collected for the first two aspects: arrival data (from the CTO Annual Statistical Report and the Intranet Site - onecaribbean.org) and web usage (from Web Trends statistics compiled by the NTO's, but data was only available on the extent to which persons were influenced by the Internet in general as a source of information, as opposed to the NTO web site in particular.

Arrangements were made between the researcher and two of the National Tourist Offices, to undertake an online survey of visitors to the NTO web site, as well as to amend the Visitor Exit Survey to capture the critical data on the specific web sites visited by prospective visitors and to determine why such visits were made. The attempts to arrange for the collection of this data were not successful, however.



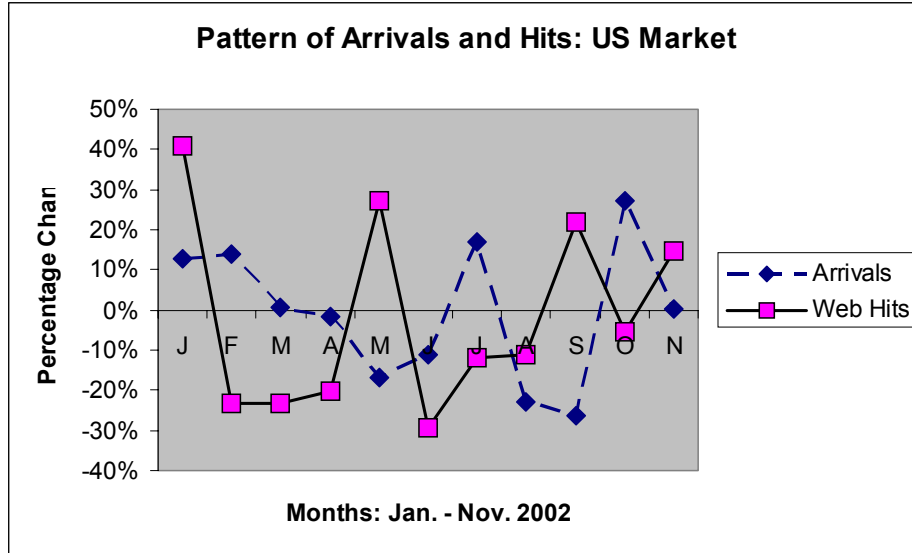
Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

One of the key indicators examined for this study was visitor sessions on NTO web sites, with attention paid to the country of origin. Visitor sessions are a far more useful measure of a web site's traffic, as opposed to "hits". A hit is the transmission of a single file whether an HTML file, an image file, or another file type. A single request for a Web page can bring with it a number of individual files, each of which is counted as a hit. For example, a page that is made up of a block of text and two graphics will record as three hits. Hence, the number of hits for a site is an exaggeration of the site's actual use and is a misleading basis for usage statistics, and the more appropriate measure is to monitor Visitor Sessions. For purposes of abbreviation, however, the remaining discussion, as well as Figure 4. refers to Visitor Sessions simply as 'Web Hits'.

The St. Lucia Tourist Board (SLTB) officially launched their new web site in November, 2001. The measurement of activity or usage of the site commenced shortly thereafter, in December, 2001. Data analysis with respect to usage patterns was done for the period January to November, 2002 and the findings are illustrated in Figure 4. below:

A reasonably clear correlation can be discerned between the usage patterns of the SLTB web site and arrivals from the US market. From January to February, there was a dramatic decline in visitor sessions (Web Hits) on the SLTB website, followed by a period of 'levelling off' over the February to April Period. A corresponding drop in arrivals occurred from February, which continued through to May 2002. The increase in visitor sessions from April to May and June to September was also followed by corresponding increases in arrivals for the two ensuing periods: May to July, and September to October. Likewise, the drop in visitor sessions for the periods May to June and September to October was also followed by periods of declines in visitor arrivals for the subsequent periods: July to August and October to November.

Figure 4: St. Lucia: US Arrivals and Visitor Web Sessions - 2002



Source: St. Lucia Tourist Board (2003); Caribbean Tourism Organisation (2003)

7. Conception-Reality Gap Analysis

An examination of the fundamental factors impacting upon the implementation of IS, as independent or 'stand-alone' initiatives or as part of IT-enabled change or reform programmes, indicate that one of the central issues is the existence of 'conception-reality gaps' (Heeks, 1999). In other words the success and failure of such IS implementation, is explained in terms of the extent to which gaps exists between the requirements and conceptual models - assumptions inherent or implicit within - new information systems on the one hand and the existing public sector realities, on the other. These gaps are classified, in the Heeks Model (1999), under three broad archetypes: rationality-reality gaps; private-public gaps and country context gaps.

In addition to these three broad conception reality gap archetypes, a more detailed level of the Heeks model (1999) seeks to explain the success and failure in IT-enabled public sector reform in terms of specific dimensions of the 'conception-reality gap'. Seven dimensions of this gap are identified, these are: Information factors; Technical factors; Process factors; People factors: Objectives, values and motivations; People factors: Staffing and skills; Management and structures; and Other resources: money and time (Heeks and Bhatnagar, 1999).

Figure 5 below illustrates the concept of the gaps between the conceptions or assumptions that are made about conditions and requirements for the successful implementation of

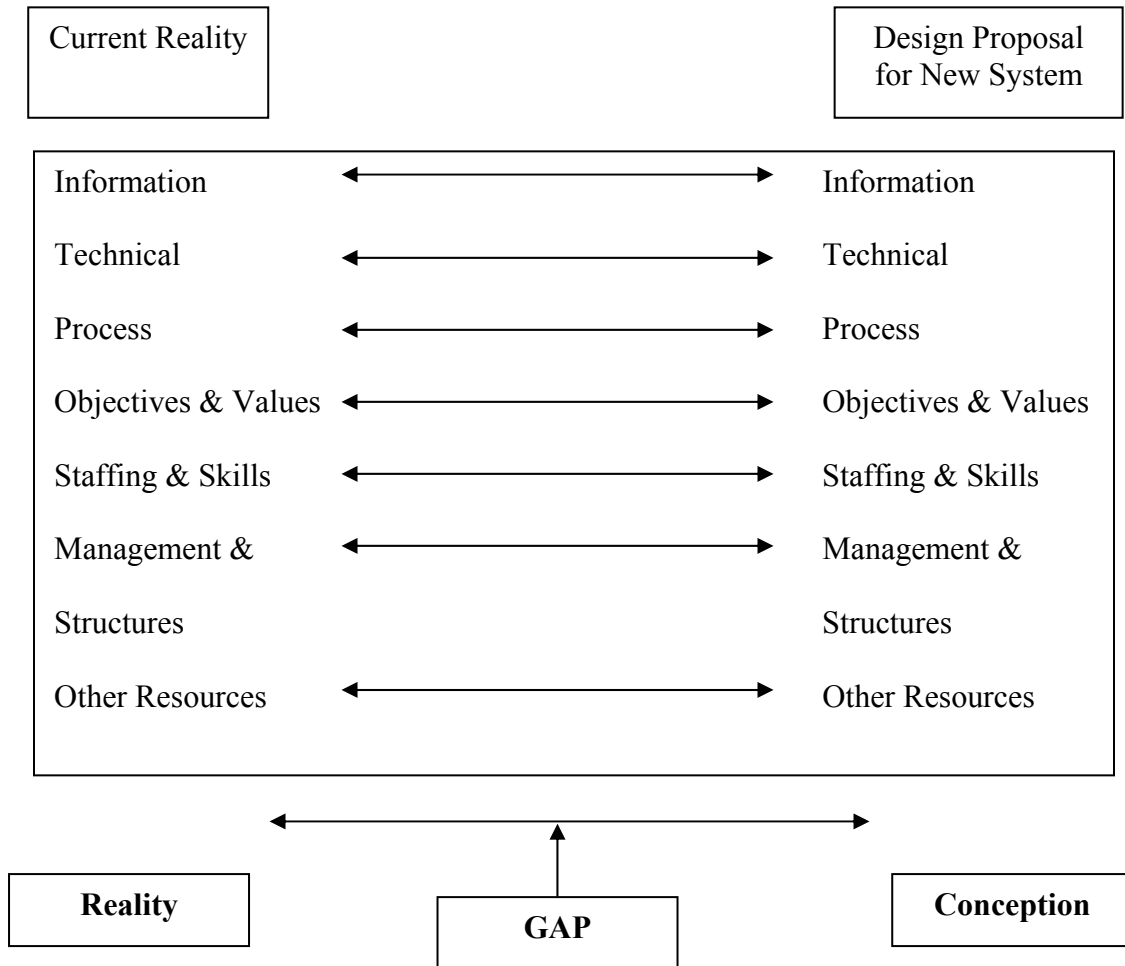


Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

information systems and the realities that organisations face, which result in information systems implementation failure.

Fundamentally, the conceptual underpinnings of this framework, is analogous to established theories on process innovation, developed over the last two to three decades. The compatibility of an innovation is the degree to which it is perceived as being consistent with existing values, past experiences and needs of the receivers of the innovation (Rogers and Shoemaker, 1971; Rogers, 1983). This definition suggests that compatibility can be related to; (1) how people think and feel about a technology or (2) how it fits operationally with what they are doing.

Figure 5. Dimensions of the Conception Reality Gap



Adapted from Heeks (1999).

Research that has tested compatibility has typically used either one of these definitions in an attempt to understand innovation characteristics and adoption. Findings suggest that the more an innovation is perceived as being compatible with an organisation’s current systems, procedures, and values, the greater the likelihood of adoption and implementation (Kimberly and Evaniskov, 1981). Low compatibility of an innovation would, therefore, be reflected by the existence of wide gaps with respect to several dimensions of the ‘conception-reality’ model, leading to an increased likelihood of implementation failure.

The additional utility of the conception-reality model, however, is that it deals with the analysis of information systems failure in a manner that allows for the clearer identification



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

and provides a richer set of elements upon which to deconstruct and elucidate the influence of the various aspects of 'lack of compatibility', in cases where significant conception-reality gaps exist. The utility and validity of the model is also enhanced by the ability to determinate appropriate measures to close the various gap dimensions – in terms of changing the organisational reality or adjusting the design and conceptual model of the proposed system.

Data gathered for this study was based primarily on the various dimensions of the Heeks (1999) conception-reality model, and extended with other variables based on the literature review and semi-structured interviews with industry personnel. The identification and measurement of the existence and extent of gaps was done through survey items soliciting the levels of agreement - from strongly agree to strongly disagree - on a range of areas representative of the dimensions of the conception- reality model illustrated in Figure 4. above and the additional variables included in the study.

Data was triangulated with the findings from semi-structured interview questions on the barriers/constraints to the adoption and effective use of IT, as well as the facilitators/enablers to the same. The Heeks 'TIPOSMO' model (1999), was extended to include the following dimensions, based on extensive interviews with industry personnel and academics and the relevant themes arising out of the literature on information systems implementation and information technology and tourism: Emphasis given to the Internet and web-based systems; Sense of Urgency; Integration with traditional marketing and operational processes; Communication to staff members; Staff Participation and acceptance; Continuous upgrade of Web-based systems.

Data was also collected through semi-structured interviews. The findings of the survey (numeric gap scores) were triangulated with the qualitative interview data. The analysis of most of the gap dimensions was found to be consistent across the data sources and methodological approaches. Where the findings seemed incongruent across the different methodological approaches, further probing, data validation and verification processes resulted in more detailed clarification and more in-depth explanations of seemingly contradictory indicators from the initial analysis and triangulation process.

7.1 Gap Analysis: Context Variables

The fieldwork, leading to the assessment of the gap dimensions, was done across five (5) National Tourist Offices and the regional destination management organisation. Scores from the respondents across all of the sites where data was collected were aggregated to arrive at the overall assessment of each dimension of the conception-reality gap. The analysis here can therefore be considered to be 'variable-led', with the focus on dimensions of the conception-reality gap, at a multi-country (regional level).



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

The top five largest gap dimensions, all with an aggregate score over three (3) or moderate were as follows:

Table 2.: Significant Gap Dimensions: Top Five

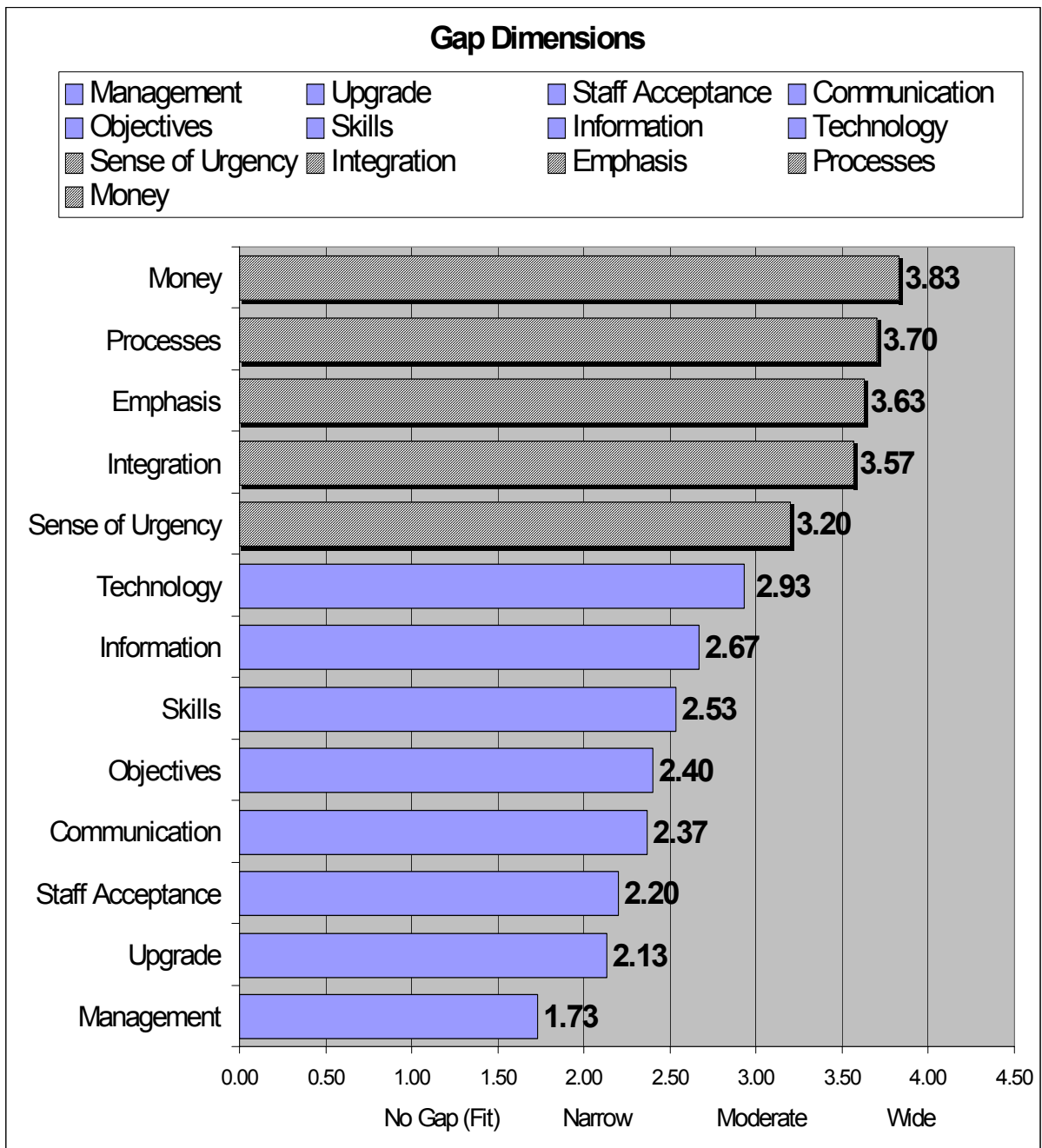
Rank	Gap Dimension	Score
1	Money	3.83
2	Processes	3.70
3	Emphasis	3.63
4	Integration	3.57
5	Sense of Urgency	3.20

All of the conception-reality gap dimensions examined and the corresponding gap measures are presented in Figure 6 below:



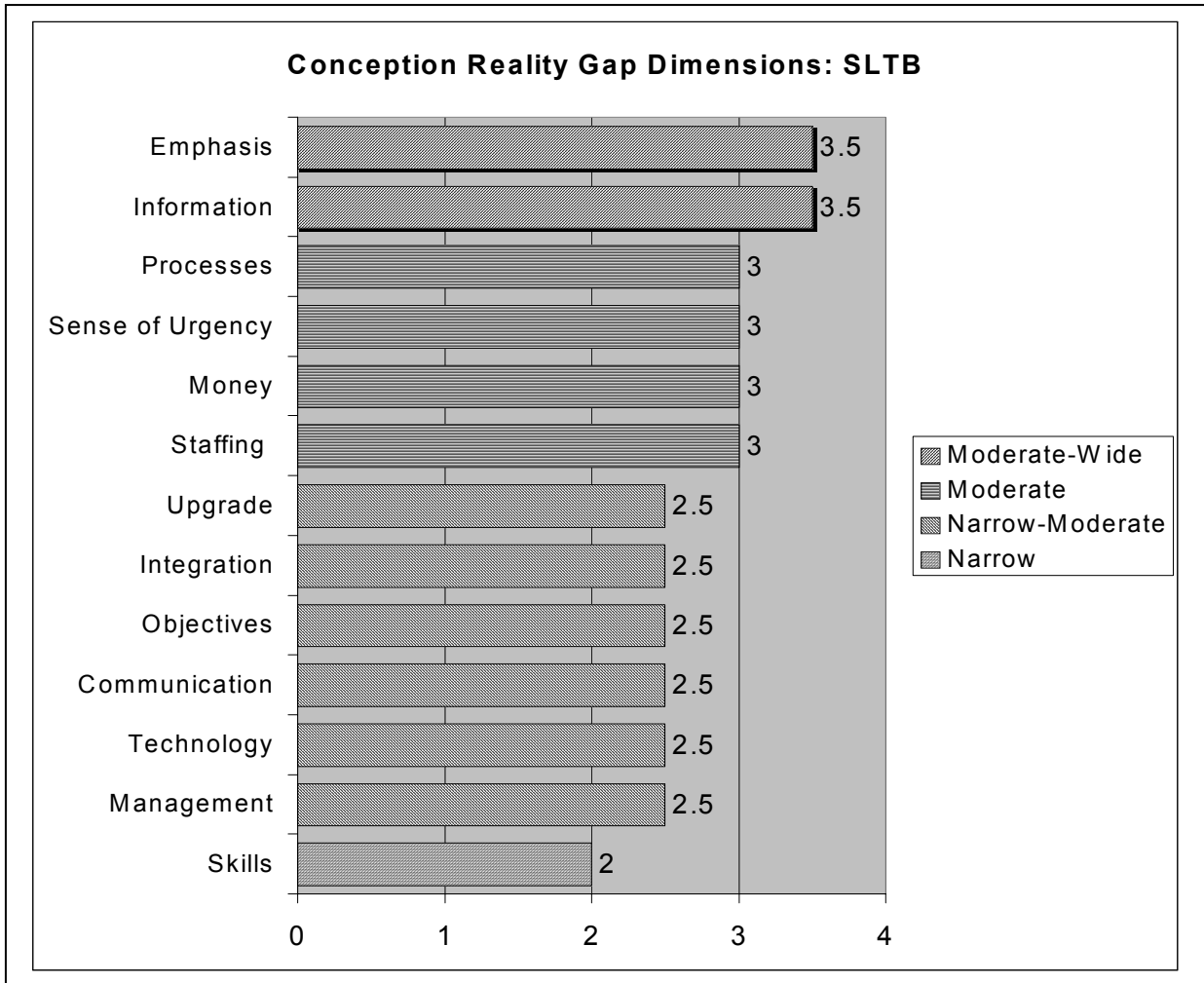
Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

Figure 6: Graphical Display of Gap Dimensions



The specific conception reality gap dimensions for the St. Lucia Tourist Board are outlined in Figure 7. below:

Figure 7: Gap Dimension: St. Lucia Tourist Board (SLTB)



The significant gaps above, with the exception of the ‘information’ dimension, are consistent with the pattern in the overall gap dimensions found in the variable led analysis presented in above:



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

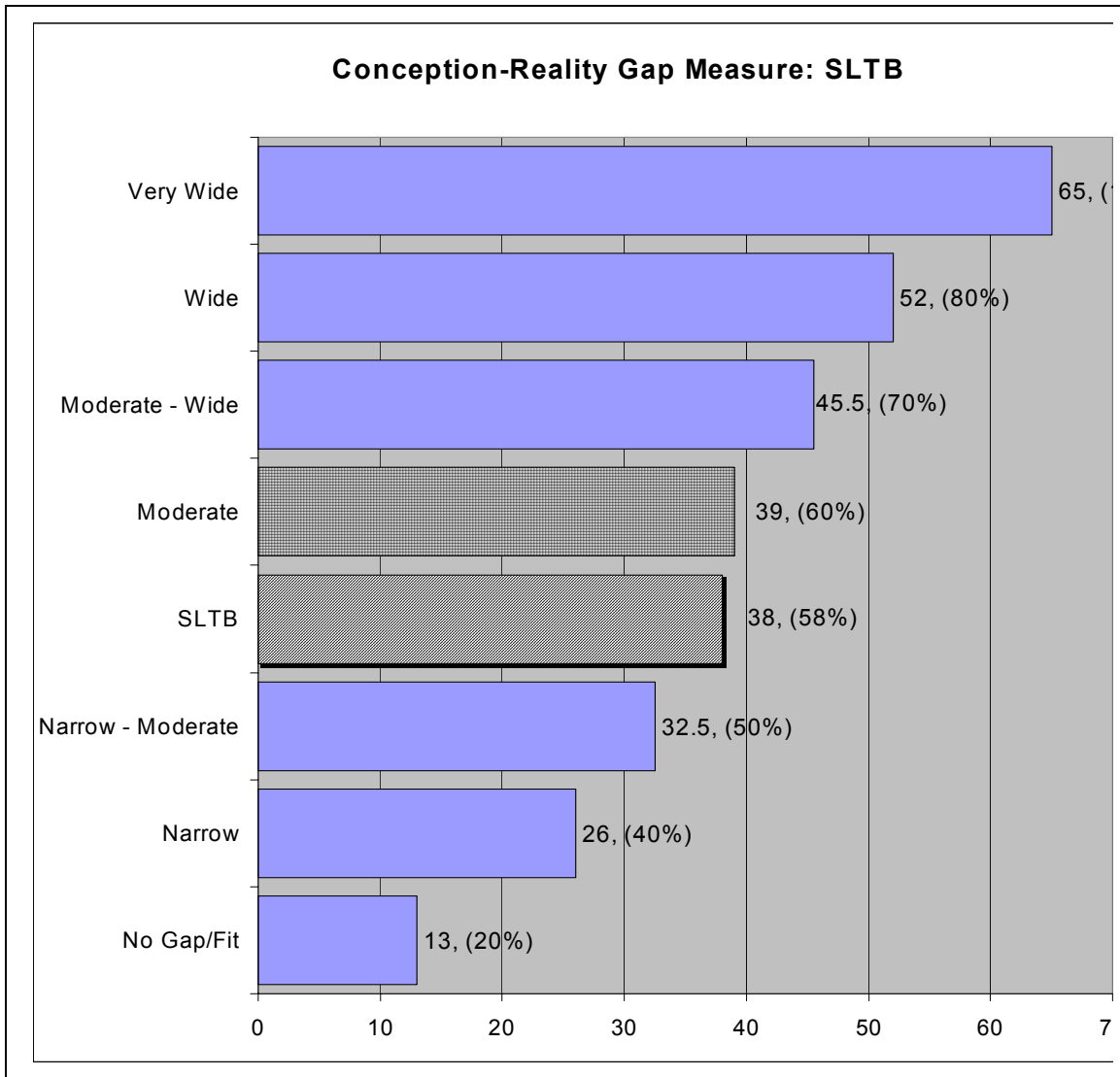
<u>Top Five Gap Dimensions</u>	<u>SLTB Rank</u>	<u>Overall Rank</u>
Emphasis	1	3
Information	1	7
Processes	2	2
Sense of Urgency	2	5
Money	2	1

7.2 Gap Analysis: St. Lucia Tourist Board

Analysis of the conception reality gap dimensions was also done on the basis of the four case study sites. The unit of analysis is therefore at the level of the respective organisations, the *national tourist office*. In order to arrive at gap measures for each case study site, the measures were aggregated across the thirteen items. The range of the total possible scores, reflecting the outer extremes of the gap dimension for each site and was computed as follows: (thirteen items for each site multiplied by one (1): 'No Gap fit' = thirteen (13) and thirteen items multiplied by five (5): 'very wide' = Sixty-five (65).

The overall gap dimension for the SLTB was thirty-eight (38), portrayed in Figure 8 below. This represents a moderate score, in terms of the extent of the conception reality gap across all of the thirteen dimensions measured for the SLTB.

Figure 8: Gap Measure: St. Lucia Tourist Board





Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

8. Discussion: Research Questions and Related Hypotheses

One of the major research questions which guided the study dealt with Internet adoption patterns and the level of advancement of web-based systems. The two aspects of this question can be expressed as follows: research question (1a): what is the Internet Adoption pattern in the Tourism Industry in the Eastern Caribbean?, and secondly, research question (1b): what is the level of advancement, with respect to the objectives - operational and strategic - and technological development, of the NTO Web Sites in the Eastern Caribbean? (Angehrn, 1997; Powell, 1998).

The initial hypotheses with respect to each of the above parts of this research question were as follows: hypothesis (1a): Internet adoption is widely diffused in the tourism industry in the Eastern Caribbean, and; hypothesis (1b): web sites are at the low end of the complexity spectrum and are simple, “static” sites, focusing largely on information provision and promotion, as opposed to complex, ‘dynamically created sites’ or ‘web-based software applications’, utilized for Transaction and Processing type activities (Powell, 1998; Angehrn, 1997; Burgess, 1998, 2000).

It was found that there are fairly wide levels of Internet adoption and diffusion throughout the tourism industry in the Eastern Caribbean, in both private and public sector organisations. The main area of deficiency is with respect to the smaller accommodation providers, where there is a much lower level of internet presence by Guest Houses and Apartments. While Internet adoption is relatively high, most web sites and web-based systems still have a limited focus on basic information provision and communication, as opposed to distribution and transaction oriented activities. This is consistent with findings elsewhere, that destination management organisation value chains are strong on destination information and weak on transactions (UNCTAD, 2002; World Tourism Organisation, 2001; Gretzel, Yuan and Fesenmaier, 2000).

The web sites are predominately ‘pure static’ sites and ‘static sites with entry forms’. Increasingly, the Eastern Caribbean tourism web sites employ ‘dynamic data access’, for example search facilities, but have not advanced to the level of ‘dynamically created sites’ (personalised web pages) or ‘web-based applications’ (Powell, 1998). The CTO Management Information System for Tourism (MIST) and the CTO Intranet/Extranet, are the primary exceptions in this regard. These applications undoubtedly have tremendous potential, if successfully implemented and diffused; to serve as a major catalyst to the advancement of the technology platforms of public and private sector web-based systems in the Eastern Caribbean.



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

Consequently, both aspects of the hypothesis above: (1a) and 1b), were confirmed and validated. The main contributory factor with respect to the reasonable high level of Internet penetration (Hypothesis 1a, above) was the favourable telecommunications environment, in light of the recent liberalisation of telecommunications services in the Eastern Caribbean and the high level of *basic awareness* and the initial pursuit of an eager ‘me-too’ strategy in the early stages of the adoption of an Internet presence. Advancement of web developments seems to be constrained primarily by a lack of management *understanding or knowledge* of the full potential of the technologies, which results in inadequate allocation of funds and a low sense of urgency and emphasis to this area.

Another critical area which accounts for the slow progress of web-based developments is the absence of broader strategic frameworks to guide, shape and give further impetus to the related technological initiatives. One of the research questions centred on the issue of whether Eastern Caribbean NTO web-based systems is being developed within a broader strategic framework. That is whether, in addition to functional level strategies (e-business, Information Systems and Marketing), the use of corporate, industry and national policies, strategies and plans, were employed.

The basic premise of this question is that desired levels of progress and deriving optimal benefits from the introduction of information systems (IS) in Eastern Caribbean NTO’s can only be achieved if these IS are developed and implemented in the context of a strategic plan (e-business strategy), which serves to support, drive or extend other broader strategies (Porter, 2001; Galliers and Swan, 1999). Findings in the management of tourism literature, also suggests that long term planning and strategy, in relation to the strategic use of information technology is an essential prerequisite for success (Moutinho, 2000; Vaughan, Jolley and Mehrer, 1999; Buhalis, 1998).

The penultimate research question deals with the elements of the conception reality gap (Heeks, 1999) which most significantly affect the web-based systems implementation process:

In this era of rapid and fundamental structural change, DMO’s face numerous barriers when trying to integrate online advertising strategies into their overall organisational concept. Acknowledging that barriers exists and identifying their scope and nature can already be very helpful in the attempt to successfully overcome these obstacles (Gretzel, Yuan and Fesenmaier, 2000:154).

Given the ‘context-sensitive’ nature of innovation, it has been argued that careful attention must be paid to the ‘personal, organizational, technological and environmental context within which it takes place’ (Tornatzky and Fleisher, 1990). Indeed, the level of compatibility and complexity, with regard to the innovation itself and the organisation, has consistently



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

been found to play a pivotal role in the relative success, or otherwise of the information systems implementation process (Heeks, 1999; Barki and Hartwick, 1994; Premkumar and King, 1994; Tornatzky and Fleisher, 1990; Van de Ven and Rogers, 1988; Rogers and Shoemaker, 1971).

In the operationalisation and measurement of the conception-reality gap dimensions, the Heeks 'TIPOSMO'¹ model (1999), was extended to include several other dimensions: *Emphasis* given to the Internet and web-based systems; *Sense of Urgency*; *Integration* with traditional marketing and operational processes; *Communication* to staff members; *Staff Participation* and acceptance; *Continuous upgrade* of web-based systems.

Hypothesis (4) contends that the most significant gaps exist with respect to the 'process', 'integration' and 'management' dimensions of the conception-reality gap model. The most significant gap dimensions found in this study are: Money - 3.83; Processes - 3.70, Emphasis - 3.63; Integration - 3.57; and Sense of Urgency - 3.20.

Hypothesis (4) was upheld in part, with the exception of the 'management' gap dimension, as the other two conception-reality gaps proved to be significant, that is 'process' and 'integration'. It should be noted that the 'management' dimension was the lowest of all the dimensions examined, based on the quantitative measure, arising out of the questionnaire/survey method employed in the data collection and analysis process. The triangulation procedure, using the qualitative data analysis and validation process² and the results of the quantitative survey data analysis (the questionnaire scores for the various dimensions) was tremendously beneficial to this work and in the analysis of this dimension, in particular.

This process led to a very useful deconstruction of this item into: 'management *awareness*' on the one hand and 'management *understanding*' on the other. The gap with respect to the 'awareness' aspect was quite narrow, as reflected in the score from the survey data analysis - 1.73, but quite large in terms of 'understanding', as illustrated by the validated gap assessment (VGA) of 'wide', derived from the qualitative data analysis and verification process.

¹ Information; Technology; Processes; Objectives, values and motivations; Staffing & skills, Management & structures; and Other resources.

² Leading to the Validated Gap Assessment (VGA) Metric



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

The validity of the extension of the conception-reality gap, 'TIPOSMO' model was confirmed by the fact that three of the dimensions included by the author were in the top five largest conception reality gaps: *Emphasis, Integration and Sense of Urgency*. Also of note is the unmistakable correlation between the following elements at the lower end of the conception-reality gap spectrum: *'clarity of objectives'* (Gap width: 2.40), *'communication'* (Gap width: 2.37), *'staff acceptance'* (Gap width: 2.20), *'user participation'* (Validated Gap Assessment: No Gap-Fit) and *'motivation'* (Validated Gap Assessment: Narrow).

The likely relationship between these variables is such that the high levels of communication and user participation, led to low gaps with respect to clarity of objectives, staff acceptance and motivation (Lui and Arnett, 2000; Mc Keen, Guimaraes, and Wetherbe, 1994; Davies, 1989; Franz and Robey, 1986; Ives and Olsen, 1984; Olsen and Ives, 1981; Barki and Hartwick, 1989; 1994).

It is of interest that the 'technology' dimension did not feature prominently as a significant conception-reality gap dimension. Though still an area of some concern, falling in the moderate range in the quantitative measure - 2.93, with a larger gap suggested by the qualitative validated gap assessment (VGA) measure (Technology: VGA - Wide), 'technology' did not fall into the top five widest gaps. The Eastern Caribbean NTO's, however, seem to be successful in accomplishing the technological 'leap-frogging' process that is required for developing states to compete effectively in the new global economy and the highly competitive international tourism industry, in particular.

What is paramount however is the recognition that the over-emphasis of the technology dimension, as manifested for example by the universal preoccupation presently with the concept of the *'digital divide'* and the many years of *'transfer of technology'*, initiatives are perhaps misplaced. Undoubtedly, real social, economic and cultural benefits certainly can *accrue from* the effective adoption and use of new information and communications technologies, when viewed *as a means to an end*.

It is ironic however, that the very likelihood of successful adoption, implementation and diffusion of these technologies can actually be hindered by the disproportionate attention on the 'tangible' strands, in particular, 'information systems' and 'technology' and the failure to appreciate and deal with the more intangible, and evidently, given the findings of this work, the more influential strands, such as direction or strategy, knowledge, process and culture (Holtham, 2001; Osborne, 2000; Hammer, 1995; Mechling, 1994).

The final area of concern - research question (5), relates to the key outcomes of the Web Sites of the Eastern Caribbean NTO's, with respect to levels of success: usage patterns, user satisfaction and visitor arrivals (DeLone and McLean, 1992; Franz and Robey, 1986; Ives and Olsen, 1984; Barki and Hartwick, 1994; Lucas, 1981). One of the aims of the study was



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

to establish whether a causal relationship exists between visits to the web sites of Eastern Caribbean NTO's and subsequent arrivals to the region.

While there are clear correlations between visitor sessions on the SLTB and GBT web sites and arrivals from the United States, in the absence of specific data on the purposes for the visits to the web site and the timing of such visits, conclusions cannot be extended into the realm of causality. In other words, data needs to be gathered on whether persons who visit the NTO web sites are significantly influenced in arriving at a decision to visit the destination or whether upon deciding to visit the destination, persons then go to the NTO web site for further information and vacation planning.

Correlations between the extent of conception-reality gaps and web site success is weak, and at best tenuous with respect to the two sites where data was available on the level of activity on the web sites and visitor arrivals to the destination, that is Grenada and St. Lucia and certainly does not allow for the determination of causality between the two variables.

9. Contributions of the Study

The following statement is quite useful, with respect to the assessment of the overall contribution of this work to the Caribbean region:

There is a large hole in the tourism research agenda of the region and it cannot be filled by the CTO alone which has serious constraints of human and financial resources. Research is a time consuming and costly activity...at both the regional and national levels our information is, for the most part neither adequate nor timely (Jean Holder, Secretary General of the Caribbean Tourism Organisation, CTO Annual Report, 2002:34)

The primary implications and contributions of this study are discussed below, from perspective of *public sector policy and practice* and *theoretical aspects*, with respect to information systems implementation and IT-enabled organisational change.

9.1 Implications for Public Sector Policy and Practice

The most critical element arising out of this work, in terms of the implications for information systems and information technology related policy formulation and implementation processes, is that close attention must be given to conception-reality gaps which may exist. Assumptions about existing conditions, explicit or inherent in the design of new systems, are often grossly mismatched with organisational realities. Appropriate measures should be taken to prevent, reduce or close gaps which often result in tremendous difficulties, delays and the partial or complete failure of the systems implementation process.



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

Conception-reality gaps, which adversely impact upon the likelihood of implementation success, can be dealt with in several ways. The use of policies and techniques to prevent the existence of large gaps, reduce gaps once they have been identified, can be focused on either; *changing the proposal* to make it closer to the reality or *changing the current reality* to make it closer to the proposal (Heeks, 1999). Far less desirable alternatives would be to *do nothing* and hope that the implementation will be successful notwithstanding or be forced to *abandon the implementation* process, upon recognition that it is a total or partial failure, due to the inability to reconcile and overcome the ‘great divide’ between what is required or being imposed by the new system and the existing realities or organizational context variables.

Some specific gap closing measures were identified in this study, which seemed to have been effective for various gap dimensions under investigation. With respect to the largest gap dimension - money, for example, the use of the following techniques served to mitigate the effects of this gap: price negotiations, subsequent to contractual agreements; the reallocation of NTO budgetary provisions towards web-based activities; sensitization of key stakeholders and management; funding from International Donor Agencies; and the change of implementation approach to a more phased, gradual approach.

With respect to the skills gap, the primary approaches entailed the use of consultants, outsourcing systems development and maintenance functions and the provision of training for relevant staff. In one of the cases, with the smallest overall conception reality gap, several measures adopted served to prevent or close many of the gap dimensions: the reallocation of funds from other areas; IT training for all staff, from top management to the lowest levels of the organisation; excellent management of the outsourcing arrangement; strategic planning employed at various levels; and the cross-departmental coordination of web activities.

As noted in the earlier discussion with respect to Hypothesis (3), the focus of the process gap needs to be on ‘enhancing capacity’, as opposed to ‘seeking efficiency’ as the driver of business process redesign (Venkatraman, 1994). This will serve as the catalyst for more substantial and meaningful *organisational change*, with the ‘lever’ being business processes, and eventually, ‘intellectual capital, relationships and cooperation’ as opposed to being driven by ‘technological infrastructure and software applications’³, arising out of efforts to transfer *technology* to bridge the *digital* divide.

The other three significant gaps (emphasis, integration and sense of urgency) can be addressed by the closing of one pivotal gap, identified in the deconstruction of the management dimension: ‘management understanding’. It is argued here that if this ‘intangible’ strand of the information fabric, that is knowledge, is carefully weaved through innovative and creative means, into the management levels, with respect to the systems

³ (Kettinger and Hackbarth, 2000) in (Turban et al.2002).



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

implementation and IT-enabled change processes, then the other significant gaps, namely: 'emphasis', 'integration' and 'sense of urgency' will, as a consequence of the clearer vision from the top, be shrunk and adjusted to smaller dimensions.

As noted by Gretzel, Yuan and Fesenmaier (2000:154):

Understanding usually comes from knowledge. Since no expertise is readily available, learning, collaboration and the active sharing of online experience become extremely important in the process of knowledge creation. As the Web matures, waiting is not an option.

A wealth of literature espouses the need for top management support as a key criterion for systems implementation success (Bajjaly, 1999; Montealegre, 1999; Davidson, 1997; De Conti, 1998; Coulson-Thomas, 1998; McKeen, Guimaraes and Wetherbe, 1994). An even more fundamental reason for the contention that enhancing top management understanding and knowledge is imperative for the closing of other conception reality gaps in this context, is the very nature of public sector bureaucracies generally, and in developing countries in particular. Some of the significant characteristics identified in developing country public sector organisations are the high level of risk aversion; disinclination towards dramatic or rapid changes; rigid, authoritarian, bureaucratic structures; and a lack of incentives for innovation and changing the status quo (Heeks, 1999; Halamchi and Bovaird 1997; Kock and McQueen, 1996; Willcocks, 1994; Bhatnagar, 1990;1992; Willcocks and Mark, 1989).

On the issue of the role of top management, Gretzel, Yuan and Fesenmaier (2000:154), declares that:

Top-down management reinforces fear and distrust and internal competition and reduces collaboration and cooperation. It leads to compliance, but a high capacity to change required commitment...the real issue is the organisations' inability to deal with change. This inability stems from the belief that change can be managed using traditional bureaucratic management approaches. Bureaucracy has been design to resist change (Waterman, 1990). It is necessary for establishing consistency and stability...but hierarchies make the free exchange of knowledge more difficult and thus, limit the organisational capacity to change (Gretzel, Yuan and Fesenmaier, 2000:153)

Substantial IT-enabled organisational process changes; the required level of resources and emphasis assigned to IT related initiatives; the extent to which these activities are integrated into the operations of the organisation; and the speed and resolve (sense of urgency) with which this is executed invariably depends on the direct *influence and actions* of top management. This influence and actions, it is argued, will only be forthcoming, with a greater level of management understanding and knowledge of the potential of the new information



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

and communications technologies. It should also be emphasised that such knowledge does not need to be centred on the more technical aspects, but should deal with the management and organisational issues relating to the adoption and implementation of ICTs, as well as enhancing managerial capabilities for the use of relevant ICT applications for greater personal productivity and efficiency.

In addition to specific gap closing measures for the dimensions identified above, information systems implementation strategies should employ the prototyping approach, with the use of other measures where necessary. The importance of well managed outsourcing and consultancy arrangements is critical: ensuring that clear roles and responsibilities exists, that the requisite transfer of knowledge and capacity building at the local level occurs and provisions for long-term sustainability and viability of initiatives are put in place. Also critical is the software selection process, end user participation and involvement and the use of post implementation evaluation measures. Further, there is a distinct need for a greater degree of strategic planning at various levels, as well as the interlinking or integration of these strategies. Foremost of which is the development of well articulated national development policies and national ICT policies and strategies.

Finally, a greater level of resources and emphasis needs to be placed on research as part of NTO activities. Specifically, research into the use of NTO web sites, through online surveys, seeking to establish possible correlations and causal relationships, needs to be undertaken. The level of NTO expenditure on research, as compared to other areas of activity (advertising, public relations, promotional activities and public information) for Caribbean tourism is significantly below average. It is perhaps instructive that the fastest growing region in terms of visitor arrivals (8.6% from 1980-2000), the East Asia Pacific region, is also the region which allocates the greatest percentage of its budget to research. The Caribbean region has one of the lowest levels of expenditure on research.



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

Table 3. NTO Budgets by Region and Area of Activity: 1980-1998

Region	Research Component of Overall NTO Budget
East Asia & the Pacific	5.4%
World Average	3.5%
Caribbean	0.9%

Source: World Tourism Organisation (1999b)

9.2 Theoretical Contribution

The primary contribution of this work is the operationalisation, application and validation of a wide range of concepts, frameworks and models. Many of these frameworks were also extended and enhanced, drawing on quantitative and qualitative data, and applied in an interlocking manner, showing the interrelationships and synergies between concepts and models developed over a period of about thirty years. Specifically, the key contributions in this regard are evident in three primary areas, discussed below. Moreover, this was undertaken in an area marked by a paucity of empirical research in the field on information technology and tourism, the small island developing states of the Eastern Caribbean.

One of the notable contributions of this study is the integration of the concept of an 'organisational lag' - between 'administrative' or 'process' innovations and 'technical' or 'technological' innovations - with the seminal work on the 'levels of IT-enabled process change' ((Damanpour and Evan, 1984; Clark and Stoddard, 1996) (Venkatraman, 1994). The levels of organisational change were at 'localised exploitation' and 'internal integration', as opposed to the higher levels of business process redesign (BPR), business network redesign (BNR) and business scope redefinition (BSR), (Venkatraman, 1994). This corresponds with the concept of a 'lag' between the introduction of 'technical' or 'technological innovation and the implementation of 'administrative' or 'process' innovation', in the process of information systems implementation initiatives.

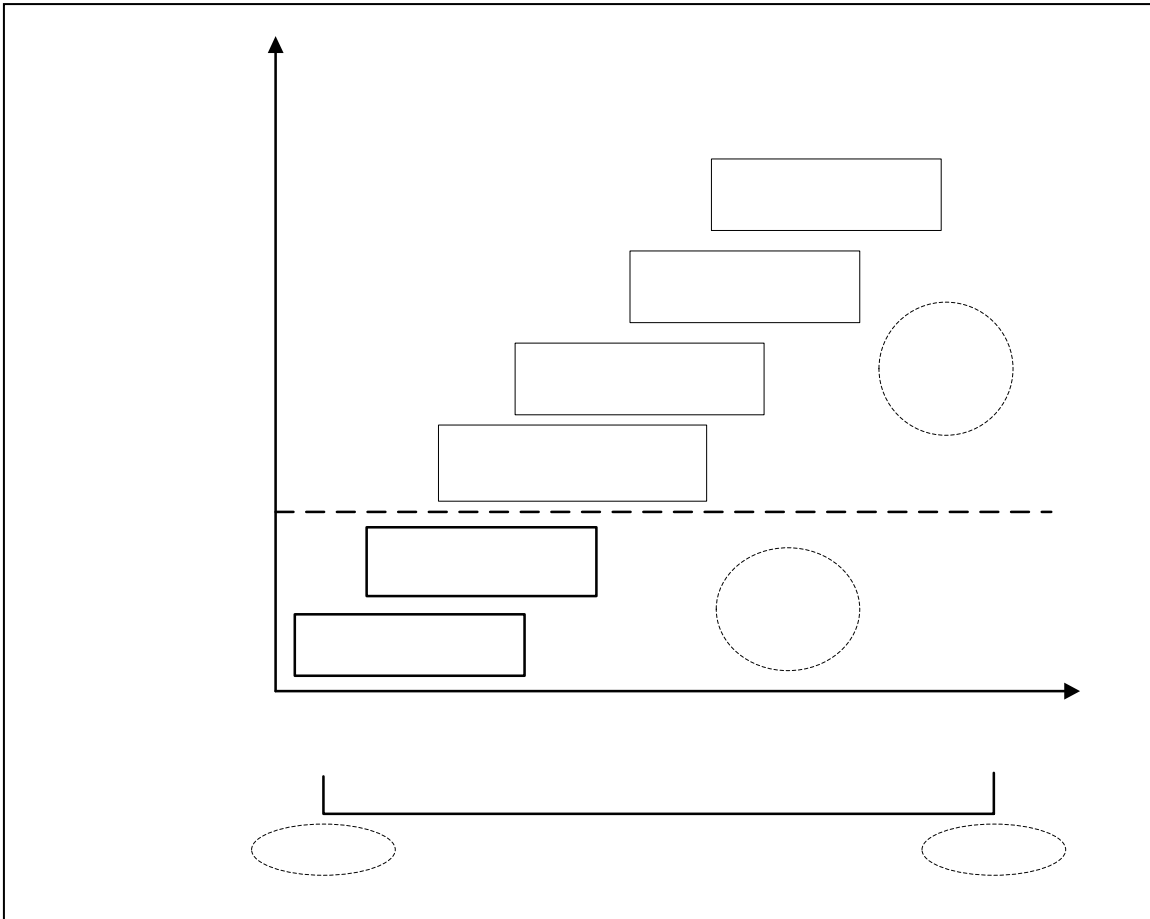
Administrative or process innovation - is clearly necessary for and may be analogous to the higher levels of change – BPR, BNR and BSR. These were found to be almost non-existent in all of the case studies. The 'organisational lag' was also evident at the level of 'internal integration'⁴ IT-enabled change. While there was some measure of 'technical interconnectivity', there was very little evidence of the attainment of 'organisational interdependencies', which would also have to be effected largely through 'administrative' or 'process' innovations.

A model was developed to portray the above relationship between the theoretical frameworks discussed above and the data set analysed in this study. As illustrated in Figure 8 below, the

⁴ Internal Integration entails both technical interconnectivity and organisational interdependence

primary driver for ‘localised exploitation’ and the ‘technical interconnectivity’ can be considered to be technical or technological innovations. On the other hand, administrative or process innovations would be the driver for the higher levels of organisational change. Another similar perspective on this would be that ‘localised exploitation’ and the ‘technical interconnectivity’ aspect of ‘internal integration’ are akin to ‘technical’ or ‘technological’ innovation. On the other hand, the ‘organisational interdependencies’ aspect of internal integration, business process redesign (BPR), business network redesign (BNR) and business scope redefinition (BSR) are similar to ‘administrative’ or ‘process’ innovations.

Figure 9. Levels of Change, Innovation and Organisational Lag



Adapted from: Venkatraman (1994); Damanpour & Evan (1984); Clark & Stoddard (1996); Roger & Shoemaker (1971)

The compatibility and complexity dimensions are also reflected in the above and it can be argued that ‘organisational lag’ is primarily a function of the level of complexity as reflected by the differentiation between technological versus process innovations.



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

10. Recommendations for Future Research

Future research in this area should focus on the assessment of the levels of success with respect to Internet marketing. Some dependent variables or indicators of success can be: the extent to which the decision making process of visitors to the NTO web sites are influenced, the level of satisfaction with NTO online sources of information. This data should be analysed in light of visitor arrivals from the various sources markets in order to establish correlations or causality in the relationship between these variables. Efforts should focus on the use of online surveys, linked to the NTO web sites, and the adjustment of the relevant questions on Visitor Exit Surveys to allow for a clearer indication of the role of the NTO web site in the decision making and pre-trip planning process.

Other areas for future research include exploration of the optimal mix between business to business versus business to consumer strategies and activities of NTO's. The issues of disintermediation, re-intermediation and the role of the NTO in the Caribbean and International tourism value chain, or the emerging value net, require further investigation. The options for electronic commerce - accommodation booking services, for example, are quite varied. These range from direct booking on the NTO web site, outsourcing to one or more commercial agencies, or referrals to booking agencies used by accommodation establishments or to intermediary booking engines - tour operators or travel agents. These alternatives require careful consideration, supported by current data on relevant trends, market and industry developments, user expectations and attitudes.

Areas of collaboration with the private sector and the balance between collaborative strategies with other destinations and global players, as compared to areas where more vigorous competitive measures should be adopted, needs to be examined empirically. Research on the role of the NTO in customer relationship management, at the destination level, is of critical importance, and should focus on visitors' use of information before and after their decision to travel to a specific destination, and the use of information and communication patterns before, during and after the actual visit to the destination.



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

11. Conclusions

Several themes prominent in the Information Systems literature are also addressed and confirmed in this work. For example, the importance of user involvement and participation in the systems implementation process; the critical role of strategy formulation at various levels; the importance of organisational context and contingency variables and factors which impact on the implementation of web-based information systems.

The social and economic advancement in developing countries can undoubtedly be enhanced by the use of the new information and communications technology (ICT) in public sector organisations in the tourism sector. The first step, however, invariably requires the *successful adoption, implementation and diffusion* of these technologies within the relevant organisations. In order to achieve this, due attention must be given to bridging key dimensions of the 'conception-reality' gap or overcoming organisational context variables and inhibiting factors, in the information systems implementation process, of which technology is but one aspect. A broad and comprehensive approach is necessary to enable fundamental changes, at the individual, organisational and national levels, which would undoubtedly lead to greater levels of social, economic and cultural progress, as well as, in the process, narrow the 'digital divide'.

12. Selected Bibliography and References

- Angehrn, A. (1997), 'Strategic Implications of the Internet', Working Paper, INSEAD, France.
- Barki, H. and Hartwick, J. (1994), 'Measuring User Participation, User Involvement, and User Attitude', MIS Quarterly, volume 18, number 1, pp. 59-82.
- Barki, H. and Hartwick, J. (1989), 'Rethinking the Concept of User Involvement', MIS Quarterly, volume 13, number 1, pp. 53-63.
- Benckendorff, P. and Black, N. (1999), 'Destination Marketing on the Internet: A Case Study of Australian Regional Tourism Authorities', Working Paper, James Cook University.
- Buhalis, D. (1998). 'Strategic Use of Information Technology in the Tourism Industry. Tourism Management', Journal of Information Technology & Tourism, volume 9, no. 5, pp. 12-23.
- Burgess, L and Cooper, J. (2000), 'Extending the Viability of MICA (Model of Internet Commerce



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

- Adoption) as a Metric for Explaining the Process of Business Adoption of Internet Commerce', Working Paper, University of Wollongong, Australia.
- Clark, T. and Stoddard, D. (1996), 'Interorganizational Business Process Redesign: Merging Technological and Process Innovation', *Journal of Management Information Systems*, volume 13, number 2, pp. 9-28.
- Cooper, C. and Lewis, J. (2001), 'Transformation and Trends in the Tourism Industry: Implications for Distribution Channels', in *Tourism Distribution Channels: Practices, Issues and Transformations*, Buhalis, D. and Laws, E., (eds.) pp. 315-331.
- Damanpour, F. and Evan, W. (1984), 'Organisational Innovation and Performance: The Problem of 'Organisational Lag'', *Administrative Science Quarterly*, volume 29, number 3, pp.392-409.
- Davenport, T.H. (1993), *Process Innovation: Reengineering Work through Information Technology*, Ernst & Young, USA.
- Davies (1989), 'Perceived Usefulness, Ease of Use and User Acceptance of Information Technology', *MIS Quarterly*, volume 13, number 3.
- Franz, C. and Robey, D. (1986), 'Organizational Context, User Involvement, and the Usefulness of Information Systems', *Decision Sciences*, volume 17, number 3, pp. 329-356.
- Galliers, R. D. and J. A. Swan (1999), 'Information Systems and Strategic Change: A Critical Review of Business Process Re-Engineering' in *Rethinking Management Information Systems*, Currie, W. L. and R. D. Galliers (eds) Oxford University Press, Oxford, pp. 361-387.
- Gretzel, Yuan and Fesenmaier (2000), 'Preparing for the New Economy: Advertising Strategies and Change in Destination Management Organisations', *Journal of Travel Research*, volume 39, Sage Publications.
- Halachmi, A. and Bovaird (1997), 'Process Reengineering in the Public Sector: Learning Some Private Sector Lessons?' *Technovation*, volume 17, number 5, pp.227-235.
- Hammer, M. (1995), 'Public Sector Reengineering', *Government Technology*, September.
- Heeks, R. and Bhatnagar (1999), 'Understanding Success and Failure in Information Age Reform', in *Reinventing Government in the Information Age: International Practice in IT-enabled Public Sector Reform*, Routledge: London, pp. 49-74
- Heeks, R. (1999) *Reinventing Government in the Information Age: International Practice in IT-enabled Public Sector Reform*, Routledge: London.



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

- Holtham, C. (2000), 'E-Government: A Half-hearted Revolution', *Public Finance*, June, pp. 48-49.
- Holtham, C. (2001), 'The Information Fabric: A Framework for the Analysis of Information Systems' Working Paper, City University Business School, London.
- Ives, B. and Olsen, M.H. (1984), 'User Involvement and MIS Success: A Review of Research',
Management Science, volume 30, number 5, pp. 586-603.
- Kimberly, J. and Evanisko, M. (1981), 'Organisational Innovation: The Influence of Individual,
Organisational and Contextual Factors on Hospital Adoption of Technology and Administrative Innovations', *Academy of Management Journal*, volume 24, number 4, pp. 689-713.
- Kock, N.F. Jr. and McQueen, R. J. (1996), 'Is Reengineering Possible in the Public Sector? A Brazilian Case Study', *Business Change and Reengineering*, volume 3, pp. 3-12.
- Liu, C. and Arnett, K. (2000), 'Exploring the Factors Associated with Web Site Success in the
Context of Electronic Commerce', *Information and Management*, volume 38, pp. 23-33.
- Lucas, H. (1981), *Implementation: The Key to Successful Information Systems*, New York: Columbia University Press.
- McKeen, J., Guimaraes, T., and Wetherbe, J. (1994), 'The Relationship Between User Participation
and User Satisfaction: An Investigation of Four Contingency Factors', *MIS Quarterly*, volume 18, number 4, pp. 427-451.
- Mechling, J. (1994), 'Reengineering Government: Is There a "There" There?', *Public Productivity
and Management Review*, volume 18, number 2, pp.189-197.
- Moutinho, L (2000), *Strategic Management in Tourism*, CABI Publishing, Oxon, UK.
- O'Brien, J. (2001), 'Introduction to IS: Essentials for the Interneted E-Business Enterprise',
10th Edition McGraw-Hill Irwin
- Olsen, M.H. and Ives, B. (1981), 'User Involvement in System Design: An Empirical Test of
Alternative Approaches', *Information and Management*, Volume (4), pp. 183-195.
- Osborne, D. (2000), 'Lessons From Abroad', *Government Executive*, volume 32, no. 1, pp. 35-37.
- Pollock, A. (1997), *Marketing Destinations on the Internet: Why and How?*, The Strategy Group.
- Porter, M.E. (2001), 'Strategy and the Internet', *Harvard Business Review*, March.
- Premkumar, G. and King, W. (1994), 'Organisational Characteristics and Information Systems
Planning: An Empirical Study', *Information Systems Research*, volume 5, no. 2, pp. 75-109.



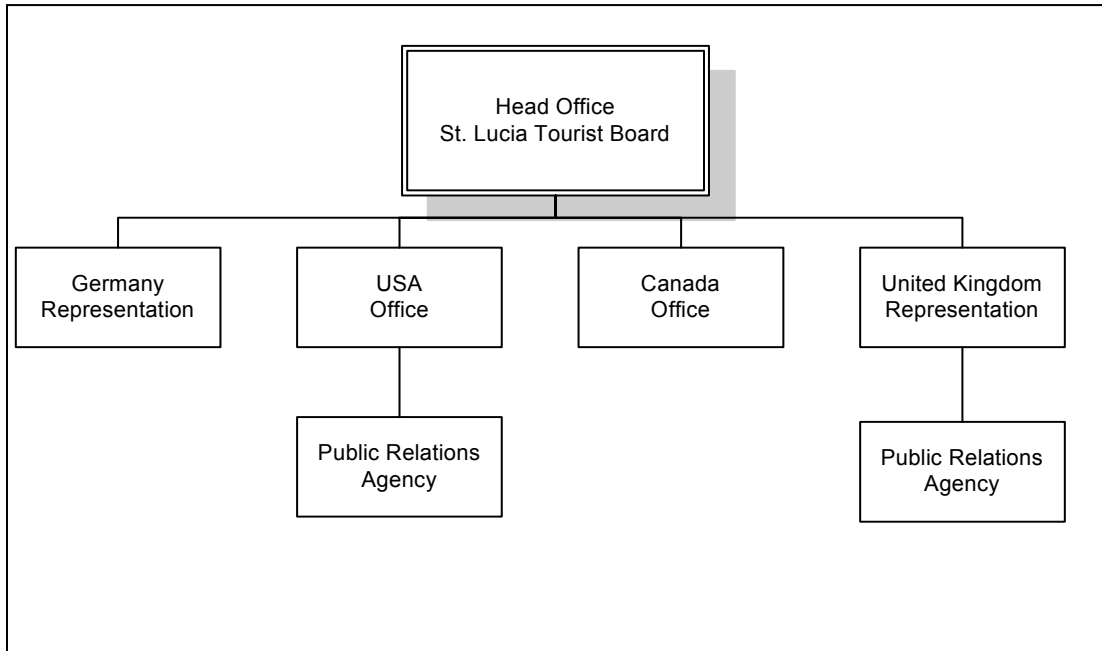
Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

- Powell, T. (1998), *Web Site Engineering: Beyond Web Page Design*. Prentice Hall, London
- Rogers, E. (1983), *Diffusion of Innovation*, Free Press, New York.
- Rogers, E. and Shoemaker, F. (1971), *Communication of Innovation: A Cross Cultural Approach*,
The Free Press, New York.
- Scott Morton, M. (1991), *The Corporation of the 1990's: Information Technology and Organizational Transformation*, Oxford University Press Inc.
- Tornatzky, L. and Fleisher, M. (1990), 'The Process of Technological Innovation: Reviewing the Literature', Washington, DC: National Science Foundation.
- UNCTAD (2002), *E-Commerce and Development Report: 2002*. United Nations Conference on Trade and Development .
- Van de Ven, A. and Rogers, E. (1988), 'Innovation and Organisations: Critical Perspectives', *Communications Research*, volume 15, pp. 632-651.
- Vaughan, D, Jolley, A. and Mehrer, P. (1999), 'Local Authorities in England and Wales and the Development of Tourism Internet Sites', *Information Technology and Tourism*, volume 2, pp. 115-129.
- Venkatraman, N. (1994), 'IT-Enabled Business Transformation: From Automation to Business Scope Redefinition', *Sloan Management Review*, Winter: 73-87.
- Willcocks, L. (1994), 'Managing Information Systems in UK Public Administration: Issues and Prospects', *Public Administration*, volume 72, spring, pp.13-32.
- World Tourism Organisation (1999a), *Marketing Tourism Destinations Online: Strategies for the Information Age*, WTO Business Council, Madrid.



Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

Appendix 1: Organisational Structure- SLTB





Caribbean Technical and Advisory Support Facility (TASF) on eGovernment
UNDESA/ CARICAD

Appendix 2: Application of Strategic Framework

Strategy: Case Study Summary			
Strategy Levels	Barbados Tourism Authority	St. Lucia Tourist Board	Grenada Board of Tourism
Information Systems Strategy	Level (0): None Exists ⁵	Level (0): None Exists	<i>Level (2): Integration</i>
E-Business Strategy	Level (1): Experimentation	Level (0): None Exists	<i>Level (2): Integration</i>
Marketing Strategy	Level (1): Experimentation	Level (1): Experimentation	<i>Level (2): Integration</i>
Corporate Strategy	Level (1): Experimentation	Level (1): Experimentation	Level (1): Experimentation
Tourism Policy & Strategy	Level (1): Experimentation	Level (0): None Exists	Level (1): Experimentation
National ICT Strategy	Level (0): None Exists	Level (0): None Exists	Level (1): Experimentation
National Development Strategy	Level (1): Experimentation	Level (0): None Exists	Level (1): Experimentation

Adapted from Kettinger and Hackbarth (2000) in Turban et al. (2002)

⁵ The three levels of development of e-business activities used were: experimentation, integration and transformation. Where a given level of Strategy does not exist, this is denoted as (0), instead of (1), so as to highlight the distinction between the 'Experimental' use, designated as Level (1) and the complete absence of the Strategy, Level (0). The data analysis revealed that there was very limited development in terms of the existence and use of strategic frameworks at the various strategy levels. Where such strategic frameworks exist, they were generally not integrated with other related strategies, with the exception of Grenada, in some instances. In no case was the 'transformation' level (3) evident in any of the organisations examined.