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# The Web and Traditional Information Resources: How do they contribute to overall satisfaction with an information service?

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## ABSTRACT

This paper considers the change in information seeking behaviour of tourists as a result of the increased use of the World Wide Web as an information resource in the context of information services provided by visitor information centres (VICs). The theoretical approach adopts the model of expectation-disconfirmation effects on web customer satisfaction. The paper proposes that visitor information centres are analogous to an information system and that the user experience of visiting the centre can partially be explained by users perception of the information quality of information resources used at the centre and a prior use of the web. The research proposition explored in the reported research is that a priori usage of the web may influence tourists' perceptions of the information services provided by visitor information centres. In order to investigate this proposition a survey was conducted at the Sydney Visitor Information Centre resulting in 519 responses. The analysis of the data collected, using structural equation modeling, found that perceived information quality of staff and brochures used at the centre explained 63% of the variance of the user experience at the centre, a prior use of the web did not explain any of the variance. The implications for VICs' strategic information resource management to meet visitor needs are discussed.

## Keywords

Information quality, web usage, information seeking behaviour, visitor information centres.

## INTRODUCTION

As use of the World Wide Web (The Web) continues to grow exponentially, scholars have recognized the need to measure a number of important issues related to information and interactive-service delivery via the Web (Hoffman & Novak, 1996; Straub & Watson 2001; Straub et al. 2002). Straub et al. indicate that when measuring the new technology, both new and old perspectives of measuring effectiveness and other issues of the Web need to be applied differentially. This paper proposes that the Web is a new technology replacing traditional media, that many information based tasks that had previously been executed outside the mediation of technology are now being mediated by the Web. In addressing the need to develop metrics, specifically in evaluating the Web as an information resource for non-work based tasks this paper considers information seeking behaviour in the domain of tourism, specifically perceptions of information quality of information resources used at the Sydney Visitor Information Centre and a priori usage of the Web.

The application of the use of the Web in tourism has been well documented (Gretzel and Fesenmaier 2002; Baran 2001; Cohn 2001). In parallel to this high level of adoption of the web in the tourism domain there has been limited research investigating the change in the information seeking behaviour of travelers within the context of web usage (Fondness & Murray 1999). It is generally acknowledged that tourism is information intensive and that tourists need information before, during and sometimes after their trip (Sheldon, 1997). Tourists use various types and amounts of information sources to respond to internal and external contingencies in vacation planning (Fodness and Murray, 1999). Although there are many traditional information resources, information and communication technology, particularly the Internet and the World Wide Web, has brought about a major shift in the information seeking behaviour of tourists. The Web now has made a major impact on the information seeking behavior of visitors and their perception of, and the impact of, information provided by a variety of media (D'Ambra and Wilson, 2004). Visitor information centres (VICs), the focus for this paper, are just one information resource for visitors. In Australia, VICs' core business is the promotion of local tourism through the provision of information, though their functions can include visitor servicing, local marketing, tourism industry development and tourism operations. In the context of VICs, management must assess the impact of new Technologies, like the Web, on their visitors' perceptions

of the traditional media used in VICs, namely staff and brochures - the proposition being that a priori usage of the web before visiting the centre may influence visitors' perceptions of the quality of resources used at the centre. This paper proposes to measure visitors' perceived quality of the information resources available at the Sydney VIC (staff and brochures) as well as a priori usage of the web; it also aims to determine the relationship between that perceived quality of these information resources and the visitor experience at the VIC.

## THEORETICAL BACKGROUND

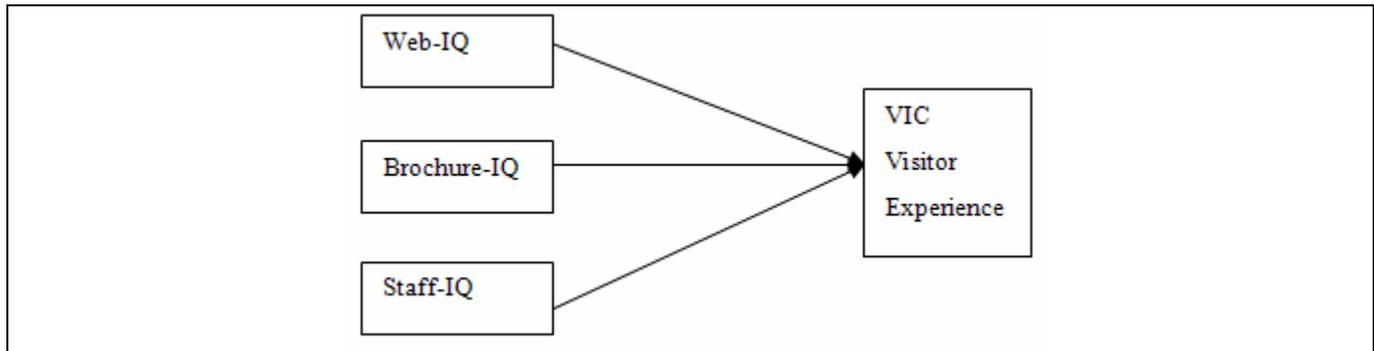
The proportion of visitors who use a VIC as a resource in their information search is considered important, though hard to quantify for all destinations and market segments (Parolin, 2001:21). Within the VICs, managers are faced with many alternate means of distributing information to tourists, including pamphlets and other printed material, personal client services (supported by the web) and online touch screens for information and perhaps reservation. There is no doubt that information and communication technology is having a profound effect on information dissemination (Buhalis, 1998; 2003). In Australia, a growing number of visitors (domestic and international) are using the Internet to seek information and/or make a reservation. In 2003, about twenty-two percent of international visitors used the Internet (Australian Tourist Commission, 2004); this proportion continues to grow, along with that for domestic visitors. Further there are other challenges for VICs to identify the needs of all their stakeholders, to raise operating revenue and to conduct business in a more user friendly manner. However, a strategic planned approach to managing information resources in VICs is not yet evident. The theoretical approach adopted below may assist in the strategic management of information resources in VICs.

Information needs are generally represented as a stage in an information-processing or decision-making process for consumers, including tourists (Vogt and Fesenmaier, 1998). Fodness and Murray (1998 and 1999) present a model of the tourist information search strategy process, which is composed of three distinct strategies for information searching: spatial, temporal and operational. In investigating correlates of tourist information search behaviour within the context of the operational dimension, Fodness and Murray (1999) found that travellers used various types and amounts of information sources to respond to internal and external contingencies in vacation planning. From a marketing perspective Kotler (1997) considers consumers satisfaction with products and services as a consequence of their experience during various purchasing stages: a) need arousal; b) information search; c) alternative evaluation; d) purchase decision; e) post-purchase behaviour. The Internet offers extensive benefits to Web users by reducing their search costs and increasing shopping convenience, vendor choices, and product options (D'Ambra & Rice 2001).

Successful use of the Web as an information resource depends on web site information to compensate for the lack of physical contact and causes users to rely heavily on technology and system quality to keep them interested and satisfied (Mckinney et al. 2002). So consumers make inferences about information and product attractiveness on the basis of 1) information provided by retailers 2) design elements of the web site such as ease of use and fun and navigation (D'Ambra and Rice 2001).

Based on IS success literature Delone and McLean's highly cited technology and acceptance model (1992 & 2003) identified information quality, service quality and system quality as antecedents of user satisfaction and intention to use/use. A similar approach can be found in marketing. In modelling overall satisfaction, Spreng et al. (1996) identified attribute satisfaction (consumers level of contentment with a product) and information satisfaction (quality of information used in deciding to purchase a product) as important determinants in forming customer satisfaction with a product purchase. Mckinney et al. (2002) in considering the measurement of web-customer satisfaction in an online purchasing context develop a two dimensional model of web-customer satisfaction, the Web-customer Satisfaction Model. Consistent with the Delone and Maclean approach of their 1992 model, the two dimensions of the web-customer satisfaction model are web-information quality and web-service quality satisfaction, with web-customer satisfaction being the dependant variable. The two dimensions recognise that overall satisfaction is dependant on both the perceived quality of the information provided and the perceived quality of the service that delivers the information. Satisfaction has been an important area of research both within the information systems (IS) and marketing domains. Mckinney et al. enhance the Delone & Maclean model further by considering web users expectations (formed by their experiences and exposure to vendors marketing efforts) possible discrepancies (e.g. disconfirmation) between such expectations and perceived performance of a web site. Expectations and disconfirmation for both IQ and SQ are operationalised in the Mckinney et al study.

The current research proposes that the VIC is analogous to an information system. The VIC is a service (a system) that provides information (via two media: staff and brochures and perhaps touch screens/online kiosks) to satisfy the information need of its users (visitors). Therefore user satisfaction with their experience of the VIC may be explained by the users' perceptions of the information quality (IQ) of the resources used at the centre to meet their information needs vis a vis their visit to Sydney as well as their prior use of the web to obtain information for their Sydney visit. To test this proposition we adopt a modified Mckinney et al model, presented in figure 1.



**Figure 1 Information Quality (IQ) Effects on VIC Visitor Experience**

In figure 1 the researchers adopt the web-information quality dimension of the Mckinney et al. model considering users perception of the quality of information resources used. Web-IQ is the construct to measure the perceived quality of information on visiting Sydney obtained through usage of the web before using the VIC. Brochure-IQ and Staff-IQ are the perceived information quality of the information resources used at the centre. Web-IQ is for a priori usage of the web, while Brochure-IQ and Staff-IQ measure the perceived information quality of the resources used at the VIC. VIC visitor experience is the user's overall satisfaction with the VIC as an information service. The model hypothesises that the visitor experience at the VIC is related to the perceived quality of information resources used at the VIC and a prior usage of the web for the same information task. Information quality is a complex and multidimensional construct. The approach adopted here is that of Mckinney et al. where five dimensions of information quality are identified: relevance; timeliness; reliability; scope; perceived usefulness. These five dimensions were reduced to three (through analysis by Mckinney et al.): understandability; reliability; usefulness.

## METHOD

To measure perceived quality the paper uses scales derived from models considering the process by which web-customer satisfaction is formed at the information search stage (Mckinney et al. 2002). The scales have been calibrated to measure the quality of non-web based resources as well as the web. This exploratory research will seek to answer the following research questions:

1. What is the *perceived quality* of electronic and other information resources used by visitors to the Sydney VIC in terms of meeting their information needs?
2. What is the efficacy of the proposed model in measuring the relationship between the perceived quality of information resources used at the VIC as well as the web a priori on the one hand and the visitor experience at the VIC on the other?
3. What are the *implications* for VIC's strategic information resource management to meet visitor needs?

Based on the research model a questionnaire was developed, including questions on the following constructs:

- individual visitor socioeconomic, computer and web usage attributes;
- the sources which were used by the visitors (the Web a priori and various media while visiting the VIC) and the level of usage of each resource;
- the perceived quality of the information resources used at the centre;
- the visitor experience at the VIC.

The Mckinney et al. scales to measure information quality were adopted. To measure information quality Mckinney et al. used three dimensions: understandability, reliability and usefulness. In the current research these constructs were calibrated to measure the visitors perceptions of web\_iq, brochure\_iq and staff\_iq on one dimension only. All items were measured on a continuous 11-point semantic differential scale, where 0 = very poor and 10 = very good.

The construct of visitor experience at the VIC was operationalised by the following three items:

How would you rate the standard of service you received?

How would you rate the range of products available?

How would you rate your experience in the VIC?

These items were measured on a continuous 11-point semantic differential scale, where 0 = poor and 10 = excellent.

The data were collected at the major VIC for Sydney, which is located in one of the main tourist destinations of Sydney, The Rocks - the Sydney Tourist Centre. It has an average 2000 visitors/day and up to 6000 visitors/day at busy time for example when a cruise ships docks nearby (Corbett personal interview, 2002). It installed touch screens for visitors in 2002 and also updated its computer information systems. The centre manages and distributes information 'to make the visit memorable' for planning trips within Sydney, to Sydney and from Sydney to other parts of the state; it also takes bookings, both electronic and commission-based. It is self funded so it must raise funds.

The study was undertaken with the full co-operation of the VIC. The authors discussed the research instrument with the VIC senior managers and pre-tested it; they then trained the research assistants who pilot tested the instrument under supervision. Modifications were made at each step. The data were collected in face to face interviews daily over a two-week period in January 2004; 519 usable responses were collected. Two alternating pairs of research assistants were placed in the VIC. Each research assistant approached visitors seeking their consent to take part in the study. If consent was given the research assistant then administered the survey.

The approach taken in analysing the results is as follows:

- The derivation of descriptive statistics.
- Structural equation modelling was used to test the basic proposition of this paper.

## RESULTS

In analysing the data the descriptive statistics of the sample were derived and then to test the strength of the theoretical model, a Structured Equation Modelling (SEM) technique was used, specifically Partial Least Squares (PLS). Gefen et al. (2001) provide guidelines for use of SEM techniques. The current research satisfies the requirements for PLS analysis: the model is based on a set of path specific null hypothesis of no effect; the objective of the analysis is to confirm the variance of the dependent variable; the research is both exploratory and confirmatory; the sample size confidently meets the requirements of assumed distribution and required minimal sample size.

Table 1 provides the descriptive statistics for the sample. The visitor socioeconomic profile showed that most respondents (70%) were female – due to the female of the couple having made the travel arrangements and so preferring to be the respondent; their median age was 30-34 years. About one quarter were Australian in origin, the rest predominantly from the UK (27%), Europe (20%) and North America (18%), with a few (9%) from Asia. Although all were quite familiar with computer use, more international visitors (84%) than Australian visitors (75%) reported web usage, hours per week using the web, years of computing experience, and computer experience, though they knew similar proportions of people using the web (Table 1). Web usage diminished markedly with age.

Table 2 shows the information resources used in planning the trip. The top three sources of information for their trip were internet (two thirds), guide books and friends and relatives (each about one half); about one tenth used a VIC or tourist office. Table 3 indicates the use of brochures and the counter staff at the centre. Most of both cohorts equally tended to collect brochures whilst fewer Australian than international visitors asked staff for information.

	<b>%</b>	<b>Mean</b>
<b>Country of origin (n = 519)</b>		
Australia	23	
UK	27	
Europe	20	
Nth America	18	
New Zealand	3	
Asia	9	
Others	2	
<b>Web usage (n = 519)</b>		
Australia	75	
International	84	
<b>Hours per week using the Web (n = 425)</b>		
Australia		7hrs
International		9hrs
<b>Years of computing experience (n = 425)</b>		
Australia		9yrs
International		11yrs
<b>Computing expertise (n = 519)</b>		
<b>None</b>		
Australia	5	
International	2	
<b>Novice</b>		
Australia	11	
International	5	
<b>Somewhat familiar</b>		
Australia	20	
International	22	
<b>Familiar</b>		
Australia	34	
International	39	
<b>Very familiar</b>		
Australia	30	
International	32	

Table 1. Descriptive statistics of the visitor sample

Information Source	%
Internet	66
Travel book/guide	54
Friends or relatives	49
Travel agent	30
Tourist office/VIC/GTO	11
Airline	11
Newspaper, magazine, TV, radio advert.	10
Travel article in newspaper or magazine	9
Films or TV/radio program	6
Tour operator	6
Other	3
Information kiosk	3
Motoring association	2

**Table 2 Sources of Sydney Information (n = 519)**

	Brochures %	Asked staff %
Australian	85	28
International	88	41

**Table 3. Australian and international visitors who collected brochures, asked staff for information (n = 519)**

Table 4 ranks the three resources, the Web, brochures available in the centre and centre staff, and provides the overall mean for each resource. In terms of perceived quality of information resources, all ranked quite highly with an average of seven on a scale of eleven (0-10), though the web was slightly lower than the others, especially relative to staff in the trustworthy, accurate and credible criteria. The kiosk was discarded in the analysis as very few visitors used it. The mean visitor experience at the VIC was rated very highly (8.6 on a scale of 0-10).

	Web	Brochure	Staff
Overall mean	7.78	8.53	8.95
Clear in meaning	7.75	8.5	8.93
Easy to comprehend	7.9	8.66	9.02
Easy to read	8.14	8.74	-----
Trustworthy	7.4	8.51	9.03
Accurate	7.6	8.42	8.96
Credible	7.57	8.48	9.06
Informative to purpose	.95	8.46	8.96
Valuable to making visit	7.84	8.5	8.71
In general, useful to visit	7.84	8.54	8.87

**Table 4. Perceived quality of Web, Brochure and Staff (scale 0 – 10)**

Table 5 presents the confirmatory factor analysis (loadings and T-statistics) for the observed variables (scales) used to determine the constructs of Web-IQ, Brochure-IQ and Staff-IQ. The construct reliability for the three constructs is high with all loading above 0.70 (Segars, 1997; Hair et al., 1998).

	loading	T-statistic
<b>Staff_iq</b>		
Staff's performance: clear in meaning	.85	12.92
Staff's performance: easy to comprehend	.87	30.40
Staff's performance: trustworthy	.89	35.43
Staff's performance: accurate	.88	29.46
Staff's performance: credible	.87	29.36
Staff's performance: informative to the purpose of your visit	.85	21.77
Staff's performance: valuable to making visit decisions	.86	19.88
Staff's performance: in general, useful in visit decisions	.91	37.93
<b>Web_iq</b>		
Web's performance: clear in meaning	.85	30.54
Web's performance: easy to comprehend	.85	31.24
Web's performance: easy to read	.85	39.54
Web's performance: trustworthy	.76	29.90
Web's performance: accurate	.76	23.15
Web's performance: credible	.83	33.15
Web's performance: informative to the purpose of your visit	.85	42.57
Web's performance: valuable to making visit decisions	.81	32.01
Web's performance: in general, useful in visit decisions	.85	39.66
<b>Brochure_iq</b>		
Brochure's performance: clear in meaning	.86	26.70
Brochure's performance: easy to comprehend	.86	43.67
Brochure's performance: easy to read	.84	25.98
Brochure's performance: trustworthy	.80	24.08
Brochure's performance: accurate	.83	31.32
Brochure's performance: credible	.85	35.29
Brochure's performance: informative to the purpose of your visit	.81	24.14
Brochure's performance: valuable to making visit decisions	.79	20.92
Brochure's performance: in general, useful in visit decisions	.87	40.30
<b>experience</b>		
How would you rate the standard of service you received?	0.88	46.29
How would you rate your experience in the SVC?	0.91	14.76
How would you rate the range of products available?	0.79	67.00

**Table 5. Confirmatory Factor analysis of observed variables: Staff-IQ, Web-IQ, Brochure IQ and Experience**

In order to determine if visitors perception of the quality of brochures and/or staff may be influenced by their country of origin (international or local). The hypothesis being that local visitors, having more local knowledge may be more discriminating in the utility of information received at the centre than those visitors with less local knowledge. Analysis of variance was conducted on the constructs of brochure quality and staff quality controlling for origin of visitors and whether visitors used the web to obtain information on Sydney before their visit to the centre. No significant difference in the means was reported.

Figure 2 presents the structural results of fitting the model in figure 1 to the data. To be consistent with the objectives of the study, only data from those respondents who had indicated that they had used the web to obtain information on Sydney before their visit to the centre, were entered into the PLS analysis. The multiple  $r^2$  for experience is 0.63. The significant paths are Brochure-IQ, ( $p < 0.05$ ) and Staff-IQ ( $p < 0.01$ ). The path for a prior usage of the Web is not significant, confirming that users' perceptions of their overall satisfaction with the centre were not influenced by previous web usage. It should be noted, though, that staff at the centre do use the web to assist with visitor enquiries. This may indicate a significant finding in terms of human mediation and information provision via the Web.

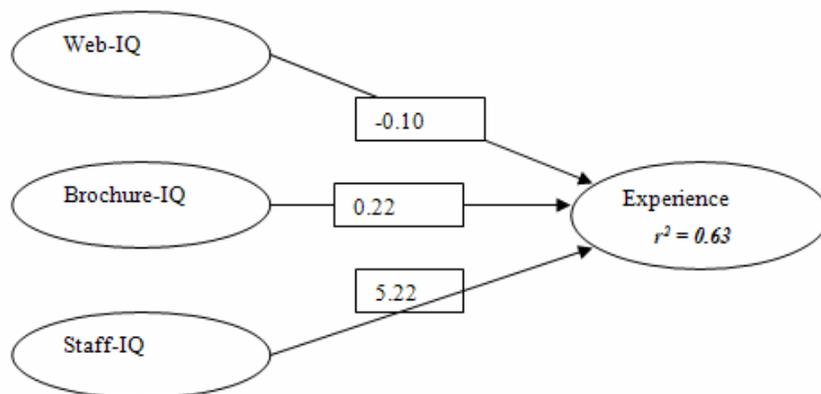


Figure 2 Path coefficients

## DISCUSSION

The paper has presented a model capable of determining the relationship between the perceived quality of information resources used at the VIC as well as a priori web usage on the one hand and the visitor experience at the VIC on the other. The resources analysed included a priori web usage and mainly the staff and brochures available at the VIC. The results demonstrate that the web is a significant resource in the information seeking behaviour of international visitors to the Sydney VIC, though not so significant for domestic visitors. However an important finding is that traditional resources have *higher* perceived levels of information *quality* for most visitors.

This exploratory study has demonstrated that visitors to the Sydney VIC do differentiate between a priori use of the web and the use of other information resources at the VIC. The structural model does demonstrate some efficacy for the theoretical approach in assessing the relationship between the perceived quality of information resources used at the centre and the visitor experience at the VIC, with the model explaining 63% of the variance. That is, the visitor experience at the VIC is partially determined by the quality of the information provided by its staff and brochures. This has important implications for managers of VICs in their strategic information resource management.

It should be noted that that the *type of information resources* visitors used will vary according to certain visitor characteristics and market segment (or visitor population); further the visitors' perceived quality of information resources in terms of fulfilling the information needs for their trip, will also vary for these and other reasons. So results may well differ in other visitor centres according to their visitor population, the resources available and used, and their delivery of customer service. Indeed, as the distribution of visitors to the Sydney VIC changes according to the tourist season, major tourist events or VIC promotion, so too will the resources used by visitors and their perceived quality. However there is strong evidence to suggest the efficacy of the model, so that it may be applied in other VICs and contexts successfully – to determine the precise relationship between perceived quality of information resources and the visitor experience in the VIC.

There are several implications for VIC's strategic information resource management to meet visitor needs. First, in spite of increasing use of the web as an a priori information resource for visitors, VICs still make a significant contribution to the overall visitor experience at the VIC in terms of perceived quality of traditional information resources (staff, brochures). Second staff in this study used the web to provide information to visitors. This may be a significant finding in terms of human mediation and interpretation between the visitor and the web as an information resource - an issue for further research. Third the perceived information quality is a significant factor in explaining the visitor experience at the VIC - therefore managers must invest resources in maintaining the *quality* of information delivered by staff and brochures.

This exploratory research has developed a model, which determines the *perceived quality* of information resources used by visitors a priori and at the Sydney VIC. The model developed can be applied to any VIC in order first to determine the nature and extent of its visitors' resource use and the perceived quality of information; these results then inform its strategic information resource management. The *implication* for VIC's is that the perceived quality of information is an important determinant, or at least factor, to consider in its strategic information resource management. The ultimate reason of course for strategic management of these information resources lies in enhancing the visitor stay and yield.

## LIMITATIONS

The research presented in this paper explores the impact of a priori usage of the Web on user's perception of satisfaction with the overall experience of a visitor information centre. In a broader context the study considers the changing information seeking behaviour of tourists and what impact that change may have on information services provided by a VIC. To the knowledge of the authors such a study has not been undertaken before.

A major limitation of the study is that web usage, as measured within the study, was undertaken before the respondents visited the VIC. The web is not available to visitors in the centre where the study was conducted but is an important information resource used by visitors to the centre. The questions related to the users perception of the information quality of the web will suffer from a recency effect as the web was used before their visit to the centre while the other resources, brochures and staff, were used immediately before respondents took part in the study. Data on when the web was last used for information related to the visit to Sydney was not collected. Data on types of web usage, information gathering or more task related, was also not collected. This to, could be a factor to consider when assessing the perceived information quality if the web. There may be bias in the sample as the sample only includes those travelers who used the VIC. The sample does not include those travelers who were very satisfied with the information quality they found on the Web and as a consequence, did not visit the centre. Any replication of this study should address these limitations thereby ensuring that the perception of the information quality of the web is based on a common task and need to that which is being met by the VIC using traditional information resources.

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