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DESTINATION WEBSITE EFFECTIVENESS – A DELPHI STUDY - BASED eMETRIC APPROACH.

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ABSTRACT

This paper outlines the development and evaluation of a comprehensive set of eMetrics for measuring the effectiveness of a Destination Management Systems' (DMS) websites from the perspective of small and medium-sized hotel enterprises. Ultimately, from a hotel's viewpoint, website effectiveness depends on how well a site performs with respect to the related business goals. The priority of the research is thus to establish which criteria are important for destination websites and to determine a mechanism for their measurement. These criteria are divided into both macro- and micro- level metrics which each combine to provide information that is actionable from a business' perspective. This work lays the foundation for the anticipated outcome of this research, a robust methodology for measuring the effectiveness of destination websites coupled with a suite of actionable eMetrics that will accurately relate to the key business goals of a destination website.

Keywords: Website Evaluation, Effectiveness, Delphi Study, EMetrics, DMS, SME, Hotel, Technology.

INTRODUCTION

Traditional businesses have an abundance of available measurement tools to assist assessment of how their business is performing when measured against industry trends, market analysis, industry forecasts, competitors, and their business goals, thus, facilitating more effective business management. eBusiness managers, on the other hand, working in a far more volatile, fluid business environment have few metrics to aid them in their decision making process (Cutler & Sterne, 2000). Websites, in general, produce copious quantities of raw data but little in the way of usable, actionable information (Ryan, 2001). This vast amount of data is relatively worthless unless an effort is made to determine which measures, and what information, is ultimately considered valuable to the business. Web professionals widely acknowledge that there is business intelligence buried within the data that they collect, but there still remains a growing demand for a robust methodology and a consistent set of tools to enable them to extract this information effectively. In the current dynamic, and often turbulent, business environment, it is becoming ever more challenging for destinations and tourism-based enterprises to actively manage and maintain their competitive advantage (Pyo et al., 2002). Adding to this unpredictability, the Internet has reshaped the traditional models of distribution and all of the relationships within the value chain and, ultimately, redefined how goods and services are distributed to customers (Tschanz & Klein, 1997). Classic tourism

distribution models place the tourism provider at one end of the chain and the customer at the other, with a plethora of intermediaries often connecting the two. Regardless of whether the good under consideration is a product, a service or a combination of both, the manner in which hotels bring their product to market is going through a major transformation with new business models poised to alter or destroy the traditional methods of distribution (Moon & Hempell, 2002). The decision as to which channel, or channels, to choose has always been a difficult one. However, the constant influx of new channels into the electronic distribution arena have made this an even more complex, yet vital, undertaking that involves an understanding of a variety of online channels, business models, marketing approaches and sales techniques (Starkov, 2002b). This situation is further compounded by the fact that hotel managers currently have little in the way of tools and methodologies to aid them in choosing and managing the channel of distribution that best suits their businesses needs (Smith, 2003).

The tourism industry is highly heterogeneous, comprising different sized enterprises spread across a variety of sectors and geographic locations that supply an assortment of different products and markets (Sheldon, 2000). In few other areas of activity are the generation, gathering, processing, application and communication of information as important for day-to-day operations as they are for the tourism industry (Buhalis 1994). SMEs in the hospitality industry are broadly defined as establishments that employ fewer than 250 people (European Commission, 2003), have less than 50 rooms, operate in the lower reaches of the market and are often situated in tertiary locations (Buhalis & Main, 1998). The European hotel sector is dominated by small, family type, operations, with nearly 95% being classified as SMEs (WTO, 1997). The importance of SMEs cannot be over-emphasised.

The energetic growth and development of the tourism industry, in recent times, is perhaps only mirrored by one other growth curve, that of the information and communications technologies (ICT), and the accelerating and synergistic interaction between each of these has brought about fundamental changes within the industry (Frew, 2000). The unique characteristics of the tourism industry - heterogeneity, intangibility, and perishability – make the tourism product very information intensive in nature and, thus, conducive for distribution electronically (Proll & Retschitzegger, 2000). Furthermore, the perishable nature of the hotel product, coupled with the industry's high fixed costs, means that effective distribution is not only important for the hotel industry but should become an integral part of any hotel's competitive strategy (O'Connor, 2002a). With the Web being no longer considered a medium in its infancy, but one that is contributing significantly to the volume of business (O'Connor, 2001) there is a growing reliance on it as a viable channel of distribution within hotels (Tierney, 2000). The number, variety and complexity of Web distribution channels are continuously evolving, with many hotels using a combination of channels in an attempt to satisfy their potential customers (Castleberry et al., 1998). Many hotel chains opt for a wide variety of channels to try to reach as big an audience as possible. This approach is impossible from a lot of SME's as many of distribution channels are unavailable to SMEs purely because of the affiliation costs or simply because of the independent nature of an SME (Starkov, 2002a). Furthermore, it is far more important for SMEs to choose the right distribution channel as in many cases they do not have the resources to choose an array of distribution channels. Therefore, SMEs must take a more discriminating approach to

channel choice and channel management and must understand the characteristics, opportunities and challenges associated with participation in each channel both from a supply and a demand perspective.

For hospitality businesses the Web has provided a perfect platform to bring their product directly to the customer (Proll & Retschitzegger, 2000) but it does not, however, completely remove the need for intermediaries (Wynne et al., 2001). There is growing realisation that on-line customers, just like their physical world counterparts, do not want the added inconvenience of having to visit numerous websites to compare and possibly make a purchase when an intermediary can supply a “one-stop shop” that will make their purchase decision a lot less cumbersome and more convenient. Some customers if not most, will want and be willing to pay for the additional benefits of dealing with an intermediary (Bloch & Segev, 1996). Furthermore, empirical evidence suggests that many direct channels of distribution are perceived, especially by SMEs, as being too costly, too complex and ultimately, unmanageable (Tschanz & Klein, 1997). Unfortunately, the vast majority of SMEs do not have the resources, expertise or know-how to undertake a comprehensive direct distribution model alone and are, consequently, very much reliant on outside influences to assist them in effectively bringing their product to market (Squires, 2002). Therefore, Destination Management Systems (DMS) have been designed specifically to distribute information about a diverse and comprehensive range of tourism related products from a distinct geographical region in an attempt to present the destination as a holistic entity (Buhalis & Licata, 2002). Due to the nature of DMS they are more likely to include and to cater for specific requirements of smaller establishments than traditional tourism electronic distribution channels (O'Connor, 2002b). However, with the exception of a small number of European countries the effect of DMS has so far been minimal, as they have in general failed to evolve from their initial conception into profitable, self-sustaining commercial systems (O'Connor & Frew, 2002). To be successful, the DMS, like any other electronic distribution channel, needs to operate as a commercial enterprise with quantifiable performance measures set in place to ensure the efficient use of the right combination of applications of web technology, and effective marketing and promotion strategies for the website (Wang & Fesenmaier, 2003). Currently, electronic distribution channels in general, and Destination Management Organisations (DMO) in particular, have few tools at their disposal to aid them in managing the effectiveness of their distribution strategies (Squires, 2002).

The ever-increasing use of the Web as a channel of distribution within the tourism industry naturally leads to a situation where its effectiveness needs to be examined and justified (Sheldon, 2000). Furthermore, interest in the methods used to measure and evaluate website usage is increasing enormously (Haigh & Megarity, 1998). Unfortunately, while there are a significant number of web-based measurement techniques available they have not kept pace with the intricacies of the complex real world, multi-channel environment of the tourism industry (Sullivan, 2001). Therefore, specific business measurements that effectively represent electronic distribution within the tourism industry need to be thoroughly researched and developed.

The quantity of data captured by websites about customers and potential customers is unparalleled by any other medium (Murphy et al., 2001). While traditional off-line businesses have had to struggle to acquire high quality data, the opposite is the case

with their on-line counterparts. The main difficulty that on-line businesses encounter in this respect is that they have to trawl through very large amounts of this available data in an attempt to extract useful, actionable information (Sterne, 2003). One must keep in mind that with the sheer volume of data that your business has at its disposal, the opportunities for measurement are endless, therefore, measuring what is important to your business is essential (Sterne, 2002). Electronic distribution is a numbers game. It is about focusing on the right numbers so that business' can make informed decisions about how, why, and when to improve their website effectiveness (Eisenberg et al., 2001). However, many hospitality based websites are simply just not concentrating on the right numbers (Pineda and Paraskevas, 2004).

Online measurement techniques often referred to as web analytics or EMetrics have the ability to convert data into truly actionable information that reflects business goals and are critical to the business' long-term success. With eMetrics, businesses have the opportunity to approach the Web from an informed viewpoint and, consequently, move away from methods based on trial and error, to those based on trial, measure, and improve (Eisenberg et al., 2001). The limited amount of published research into the effectiveness of tourism websites suggests that there is a need to move away from making strategic decisions based on simplistic metrics, such as hits and page views, and to move towards metrics that accurately relate to the key business goals (Riggins & Mitra, 2001; Tierney, 2000). EMetric analysis should be subdivided into both macro level and micro level metrics. Macro level metrics provides information about what is happening on a website generally whereas micro levels metrics are far more in-depth and provide information that is truly actionable from a business' perspective. The most effective destination/tourism-based websites will be those that base their strategic business and marketing decisions on the web information they generate (Mena, 2002). To conduct an eMetrics evaluation without first understanding exactly which measurements are important will prove to be a frustrating, time consuming, costly, and ultimately, futile exercise (Ryan, 2001). For these reasons, defining specific metrics in order to determine the effectiveness of your web initiative, while of utmost importance, still remains a difficult and complex undertaking (Cutler & Sterne, 2000). Developing a set of e-business metrics is largely dependent on the type of eBusiness being analysed. In other words, when it comes to eMetrics, one size most definitely does not fit all. With this in mind it becomes even more important to evaluate these issues from a destination website perspective.

The success or failure of any e-metric evaluation is largely reliant on the quality and depth of its information (Mena, 2002). Therefore, it is of extremely importance to investigate and analyse the type of business and the goals of the business before deciding upon the best methodology to use and the correct metrics to employ in the evaluation of its effectiveness. Put simply, in order to measure the effectiveness of DMS-based websites we must first decide on what is important to measure and then, and only then, can we decide on the how to measure it. Therefore, a robust methodology is critical in order to produce good solid actionable metrics (Fattah, 2000). Currently, there is a shortage of research in the area of destination websites effectiveness (Mills & Morrison, 2003). In particular, no current study provides a comprehensive methodology for evaluating destination websites with a focus on effectiveness (Gomolski, 2001). To this end, the purposes of this study is to identify the potential attributes of effectiveness with respect to destination websites, and subsequently test a structural base model of effectiveness with DMS-based websites.

AIMS

The aims of this research are to generate, validate and prioritise a comprehensive set of criteria for measuring the effectiveness of a Destination Management Systems (DMS) from a small and medium-sized enterprises' (SMEs) perspective and, consequently, to incorporate these criteria into an expert system that will be used to measure and improve the effectiveness of the DMS. In order to achieve these aims one must first construct an appropriate definition of a DMS and determine the aims of a DMS-based website.

RESEARCH METHODOLOGY

The methodology, Figure 1, is concerned with qualitative research conducted using a Delphi study to generate, validate and prioritise a portfolio of weighted criteria that could be used to evaluate the general effectiveness of a DMS as a channel of distribution for hotel SMEs. A Delphi study is an iterative process that involves collecting and analysing information gathered from a carefully selected panel of people who are recognised representative sources of expertise within a particular field (Fraser, 2003; Cline, 2000; Cindy, 1994). During this technique the panel completes a series of carefully designed questionnaires. These questionnaires are distributed accompanied by information summaries reports from preceding rounds of the Delphi study (Cindy, 1994). There are several iterations of this process and may continue until some consensus of opinion is reached (Cline, 2000). The Delphi technique has several advantages as it acts as an “informal, subjective model when decisions are based on opinion, can be developed directly into a formal model”, and it does not require face-to-face participation (Cline, 2000). By design, the panel members will remain anonymous until the completion of the Delphi study to help prevent the opinion of any one member having an undue influence on the responses of the others. The information gained from a Delphi study is only as good as the selection of its panel of experts (Fraser, 2003). Therefore, panel selection is a vital part of the Delphi process.

Panel Selection Process: The Delphi study began by identifying a panel of experts for possible inclusion in the research. The panel selection was an extremely rigorous process which commenced in January 2005 and was not completed until February 2006. Panel selection processes must be based on explicit defined selection criteria and cannot just be based on mere personal preference (TECLA Project, 2003). The panel selection criteria for this research comprises of individuals who have delivered three or more presentations on information technology related topics at international hospitality and tourism conferences or written three or more papers in refereed journals (or a combination of both) on topics related to this research over a 48 month period (1st January 2001 – 31st December 2004). This approach was applied as it was decided that it would reveal people who have an intimate knowledge of destination website effectiveness criteria and would have the insight that would allow them to prioritise these criteria effectively (Cline, 2000).

A list of appropriate conferences was compiled from an array of different sources which included events calendars of hospitality and tourism academic journals (both online and offline), hospitality and tourism based websites, existing conference proceedings and through correspondence. In total, 212 conferences were identified and considered relevant to the research study. The next stage of the research was to try to obtain the conference organiser details and, ultimately, the speaker details for

each conference. This proved to be a very laborious and time consuming task. Detailed speaker information was initially sought by searching on the Web and if this information could not be acquired by these means then the conference organiser was contacted. The organiser information was obtained either from events calendars of academic journals or by searching the web. Detailed speaker information was attained for 187 out of the original 212 conferences. Of the remaining 25 conferences, the conference organiser could not be identified in 6 cases, in 5 cases the conference organisers' had no record of the speaker details and for the remaining 14 instances the conference organiser did not reply to numerous attempts at communication both by telephone and by e-mail. The number of relevant conference papers prior to ranking was 861. Furthermore, a list of applicable journals was compiled, this time by searching appropriate journal databases and relevant journals (both online and offline). From these sources a total of 819 related papers were identified prior to ranking. Therefore, the total number of conference and journal papers on topics related to this research delivered at international hospitality and tourism conferences or in refereed journals over the period, 1st January 2001 – 31st December 2004, was 1680.

A database of all papers and authors/presenters was subsequently compiled. At this point it was decided to rank these papers in order to identify papers which were considered to be most applicable to the specific area of research and, thus, to attempt to only identify individuals perceived as being experts in this field. The criteria used to rank these papers are outlined in Table 1. All papers were assigned a ranking ranging from the paper having some relevance (1) to the paper considered extremely relevant (5) to the research being undertaken. Only papers that achieved a rank of 3 or higher were deemed appropriately relevant for this research. Therefore, after the ranking process the number of conference papers had decreased to 566, a fall of 295 papers, and the number of journal papers had changed to 560, a decrease of 245 papers.

The aggregate number of conference and journal papers remaining after the ranking process was 1126. It was found that 562 individual speakers gave a total of 566 presentations at 91 different conferences and 717 individual authors produced 560 journal articles from 295 different journals. The number of authors/presenters who satisfied the panel selection criteria of three or more conferences presentations on topics related to this study or three or more papers in refereed journals, or a combination of both, was 123. Both the authors and an associated research group member were removed from the initial 123 members. That left a total of 120 eligible Delphi members. These members were invited to participate in the study after the completion of the pilot Delphi Study.

The Pilot Delphi Study: The pilot study members were selected from a pool of 120 individuals who delivered two presentations on relevant topics at international hospitality and tourism conferences or who have written two papers in refereed journals (or a combination of both) on topics related to this research over a 48 month period (1st January 2001 – 31st December 2004). A sample of 12 members were randomly chosen from the initial pool of 120 using a randomiser program. The pilot Delphi study was conducted over a four month period from February 2006 to May 2006. The findings from the three round pilot Delphi study confirmed that the structure of the Delphi study was appropriate and the methodology suitable to achieve

the aims of the research and, therefore, with only some minor amendments the actual Delphi study was ready to commence.

The Actual Delphi Study: The actual Delphi study began in July 2006 and did not conclude until January 2007. The study was comprised of a series of three carefully designed consecutive questionnaires. The first questionnaire was composed primarily of open-ended questions which attempt to obtain a broad range of possible criteria for the measurement of destination website effectiveness. Each respondent was asked to complete each question in an open-ended manner in as much detail as possible. Once the completed questionnaire were returned the results were collated and a brief report was subsequently circulated to panel members for further discussion. This report was accompanied by a second questionnaire which was far more specific than the previous questionnaire and the aim was to progressively clarify, expand on and prioritise a portfolio of weighted criteria that can be used to evaluate the effectiveness of a Destination Management System (DMS) as a channel of distribution for hotel SMEs. A third, and final, iteration of the process followed to help consolidate the consensus. The data generated from the Delphi study was analysed using a combination of qualitative analysis software (NVivo) and quantitative analysis software tools (SPSS). The findings from the Delphi study were, subsequently, incorporated into an expert system used to measure and improve the effectiveness of the DMS. This systems is designed to deliver a multidimensional view of the key factors that shape destination website effectiveness involving inputs that include both qualitative and quantitative data assembled from a variety of different sources which include log file analysis, DMO interviews, cookies, page tagging, customer side surveys and supply side surveys.

FINDINGS.

The actual Delphi study began in July 2006 with an e-mail invitation sent to the 120 Delphi panel members. Of those invited, 9 were un-contactable, 13 respondents refused to participate, 47 did not respond and a further 5 agreed to participate but did not. In total there were 46 respondents to the initial round of the study giving a response rate of 38%. Of these 46 panel members who were sent Round Two of the study 40 responded providing a very healthy response rate of 87% for Round Two. The response rate to the final round of the study was also 87%. These questionnaires were analysed using a combination of qualitative and quantitative techniques and the findings are outlined in the following sections.

Respondents Profile.

The occupational breakdown of the respondents to the study, illustrated in Figure 2, showed that the majority of respondents were academics (54%). This was not surprising given the concentration of academics in the complete panel of experts. The occupations of the respondents involved in the “Other” category were comprised of internet consultants, metric consultants, management consultants and system suppliers.

The nationalities of the respondents, Figure 3, was quite varied with the largest percentage of respondents being from the UK (20%), followed by the US with 14%, Greece and Austria both with 12%, Italy, German and Australia with 7% and China with 5% of the respondents. The gender of the respondents was divided into 80% male respondents and 20% female respondents. Again this was not at all surprising

given that the breakdown of the entire expert panel comprised of 79% male and 21% female.

One of the most interesting categories in this section of the findings is the level of expertise of the respondents. The respondents were asked to rank their knowledge of destination website measurement and website effectiveness using a set of guidelines (Table 1). The findings from this section of the survey, illustrated in Figure 4, show that a small percentage of respondents (14%) say that they are competent with regards to the topic area, 30% believe that they have an advanced level of knowledge of the subject and 56% of respondents consider themselves to be experts in the area. The fact that 86% of the respondents rate themselves as having an advanced level of knowledge or being experts in the area is a strong indicator that the panel selection criteria have been successful.

Definition of a Destination Management System.

The aim of this section of the survey was to attempt to come to a consensus concerning an appropriate definition for Destination Management Systems. In Round One of the Delphi study participants were asked to comment on the suitability of a proposed definition of a DMS and to make amendments that they thought were appropriate. During this stage of the study several additions and amendments were proposed and these were included for discussion in the next round. In Round Two the panel was provided with a list of elements for possible inclusion in the definition and asked how strongly they agreed or disagreed with each item. Finally in the third round the panel members were asked to use a voting system in an attempt to weight these components in order of importance to the overall definition.

During the study, there were a total of 42 elements proposed for inclusion in a definition of a DMS. Of these elements 20 received less than 1% each of the votes when weighted. In total these 20 elements only accounted for 9.9% of the votes cast. Of the remaining 22 elements, 16 (82.5% of the votes) were included in the definition and the remaining 7 elements (7.5% of the votes) were not included because they were deemed unnecessary. Many of these elements were excluded on the basis that they were definitions of terms in themselves and terms to do with the management of a DMS rather than definition of a DMS. Many of these should be involved in a mission statement rather than a definition. The proposed definition incorporates all the elements which achieved 2% or more of the votes. This excluded a large number of elements that were deemed by the expert panel to be only ever so slightly appropriate for inclusion in a definition of a DMS. All the elements proposed and the percentage of the votes they achieved are presented in Table 2. Using these elements and the weightings applied the following definition of a Destination Management System was constructed.

Destination Management Systems (DMS) are systems that consolidate and distribute a comprehensive range of tourism products through a variety of channels and platforms, generally catering for a specific region, and supporting the activities of a destination management organisation (DMO) within that region.

DMSs attempt to utilise a customer centric approach in order to manage and market the destination as a holistic entity, typically providing strong destination

related information, real-time reservations, destination management tools and paying particular attention to supporting small and independent tourism suppliers.

There was almost absolute agreement with the criteria proposed by the panel over the course of the study with 98% of the respondents agreeing with the comprehensive nature of the components of the definition.

Aim of a Destination Management System.

The purpose of this section of the research was to come to a consensus regarding what the experts perceive as being the aims of a DMS. There was quite a diverse range of aims proposed by the panel over the course of the study. These proposed aims were weighted by the panel in Round Three of the study and their weightings are displayed in Table 3.

The proposed aims presented by the Delphi panel can be grouped into seven distinct categories namely distribution, marketing, content, destination orientation, customers, stakeholders and management. While it is recognised that all DMOs/DMSs will have their own individual priorities and aims it was considered a very worthwhile and, ultimately, extremely fruitful exercise to formulate the suggestions by the expert panel into a structured set of aims. The aims of a DMS that evolved from the Delphi process are as follows:

- To effectively co-ordinate the marketing activities and branding of a specific destination and the comprehensive range of products it has to offer,
- To provide timely, accurate, unbiased, quality assured destination and product based information (both accommodation and non-accommodation),
- To facilitate the effective distribution and sale of a comprehensive range of tourism products from a destination,
- To present the destination as a holistic entity displaying a destination orientation rather than product orientation.
- To provide an appropriate and sustainable relationship building mechanisms with customers through effective, meaningful and continuous communication,
- To increase the satisfaction level of its suppliers, the local community and all its stakeholders through building and maintaining meaningful relationships,
- To facilitate the management of a destination by supporting DMO activities and through the provision of tools, support and training for its stakeholders.

Areas of Evaluation of Destination Management System Effectiveness

There are a number of areas that need to be evaluated in order to get a comprehensive understanding of the effectiveness of a DMS. The purpose of this section of the research was to identify the evaluation areas and, more importantly, weighting these areas in their order of significance. The results of how the expert panel weighted the importance of the evaluation areas are presented in Table 4. The panel perceived content and design/navigation to be the most important two areas at 17.82% and 14.15% respectively and loyalty (3.81%) and retention (3.54%) to be the least important. These percentages are not all that important when viewed in isolation but when you view these findings as a suite their relevance becomes more apparent. The

fact that we have exact weightings for each of the effectiveness areas is really significant and absolutely imperative if the true overall effectiveness of a DMS is to be measured correctly. In an attempt to better illustrate the relationship between the areas of effectiveness they are presented in a graphical representation in Figure 5.

Criteria Employed to Assess Destination Management System Effectiveness.

The aim of this section of the study is to consolidate the array of criteria and come to agreement as to what criteria should be included in an e-metric evaluation of a DMS based website. There were a vast number of criteria identified by the panel in Round One of the study and these criteria were grouped and ranked by the panel in Round Two. These proposed criteria were weighted by the panel in Round Three and the results are outlined in Table 5a to Table 5l inclusive. Again this stage is absolutely vital in order to identify the overall effectiveness of a DMS. This stage of the research has identified what is to be measured and how these measurements are to combine to calculate the overall effectiveness of a DMS.

Expert System Construction

The Delphi study was completed in January 2007 and the findings were consequently integrated into the construction of an expert system. This system involves an in-depth analysis of the DMS based website at both a macro and micro level. By using this tool, it is hoped that both businesses and stakeholders can utilise a common set of quantifiable metrics to understand what contributes to the overall effectiveness of their website, ensure proper alignment with business goals and continuously improve the effectiveness of their product distribution.

CONCLUSIONS

It is imperative for any business that has an on-line presence to manage and maintain that presence by developing appropriate measurement techniques and to regularly collect, analyse, interpret and use this data effectively. This will provide vital business information that will enable tourism enterprises to keep abreast of what their customers are demanding and to position their business appropriately for the future (Inan, 2001).

The use of this information once it has been gathered is arguably as important, if not more so, than the gathering of the information in the first place. A recent study of DMOs uncovered that analysis does not seem to be a major problem to DMOs with 85% of respondents conducting log file analysis. Yet only around 20% of the respondents to the DMO survey use the information gathered in a meaningful way and none of these considered the influence that the website has on the goals of their business (Horan & Frew, 2004). Considering that website effectiveness depends on how well your site performs with respect to your business goals this is a rather startling statistic.

The interesting part of the evaluation process only comes about when an organisation realises that e-metric evaluations can actually drive website effectiveness and not just monitor it. What is important at this stage is to remember that eMetrics have the potential to play a key role in improving the online customer experience - but only when the vast amounts of data they provide can be made truly actionable.

The findings from this study have made some very valuable steps towards identifying what needs to be measured in order to evaluate the effectiveness of DMS based websites. From this study we can now identify what exact components are combined, and in what proportions, to gauge the effectiveness of a DMS. The next stage of this research plan will be to identify the most appropriate and effective methods to gather the data required to input into the expert system. To conclude, the questions that must be answered by destinations and tourism-based enterprises with reference to their web presence should no longer just be “how did we do?” but instead should extend to include “what does that mean to our business?” and “what do we do next?” (Burby, 2004).

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REFERENCES

- Bloch, M., & Segev, A. (1996). *The Impact of Electronic Commerce on the Travel Industry*. Retrieved 21st January 2003, from <http://haas.berkeley.edu/~citm>.
- Buhalis, D. (1994). Information and Telecommunication Technologies as a Strategic Tool for Small and Medium Tourism Enterprises in the Contemporary Business Environment. In A. V. Seaton (Ed.), *Tourism: The State of the Art*. London: Chichester.
- Buhalis, D., & Licata, M. C. (2002). The Future eTourism Intermediaries. *Tourism Management*, 23(3), 207-220.
- Buhalis, D., & Main, H. (1998). Information Technology in peripheral small and medium hospitality enterprises: strategic analysis and critical factors. *International Journal of Contemporary Hospitality Management*, 10(5), 198-202.
- Burby, J. (2004). *Three Reasons Analytics Fail Companies*. Retrieved 14th June 2004 from http://www.clickz.com/experts/crm/analyze_data/article.php/3307121.
- Castleberry, J. A., Hempell, C., & Kaufman, G. (1998). The Battle for Electronic Shelf Space on the Global Distribution Network. *Hospitality and Leisure Executive Report*, 5(Spring), 19-24.
- Cindy, C. (1994). *Delphi Technique*. Retrieved 13th October 2003, from <http://www.msue.msu.edu/msue/imp/modii/iii00006.html>.
- Cline, A. (2000). *Prioritization Process Using Delphi Technique*. Retrieved 13th October 2003, from <http://www.carolla.com/wp-delph.htm>.
- Cutler, M., & Sterne, J. (2000). *e-Metrics: Business Metrics For The New Economy*. Retrieved 12th February 2003, from <http://digitalenterprise.org/metrics/metrics.html>.
- Eisenberg, B., Novo, J., & Shreeve, J. E. (2001). *The Guide to Web Analytics - How to Understand and Use your Webtrends to Maximise Results*. Retrieved 4th February 2003, from <http://www.futurenowinc.com>.

- European Commission. (2003). *European Union Small and Medium-Sized Enterprise Definition*. Retrieved 4th February 2007, from http://ec.europa.eu/enterprise/enterprise_policy/sme_definition/index_en.htm.
- Fattah, H. (2000). The metrics system. *Adweek*, 41(46), 98-102.
- Fraser, P. (2003). *Delphi Technique*. Retrieved 13th October 2003, from <http://www.betterproductdesign.net/tools/user/delphi.htm>
- Frew, A. J. (2000). Information and communications technology research in the travel and tourism domain: Perspective and direction. *Journal of Travel Research*, 39(2), 136-145.
- Gomolski, B. (2001). An eye on Web analytics. *InfoWorld*, 23(22), 106.
- Haigh, S., & Megarity, J. (1998). Measuring Web Site Usage: Log File Analysis. *Network Notes* (57).
- Horan, P., & Frew, A. J. (2004). *WTO/IFITT Evaluation & Benchmarking Scheme - E-Metric Discussion Paper*.: World Tourism Organisation.
- Inan, H. (2001). *Web Site Traffic Analysis Untangled*. Retrieved 20th March 2003, from http://www.clickz.com/metrics/cust_metrics/article.php/841671.
- Mena, J. (2002). *Bringing Them Back - Customer retention is the name of the game, and "Web mining" your customer interactions can help you win it*. Retrieved 3rd October 2003, from <http://www.intelligententerprise.com/000717/feat2.shtml>.
- Mills, J. E., & Morrison, A. M. (2003, January 2003). *Measuring Customer Satisfaction with Online Travel*. Paper presented at the Information and Communication Technologies in Tourism 2003: The Proceedings of the 10th International Enter Conference, Helsinki, Finland.
- Moon, D., & Hempell, C. E. (2002). *Hospitality eDistribution in the New Economy: Redefining the Value Chain for Consumers*. Retrieved 22nd October 2002, from http://hotel-online/Trends/Anderson/2000_eDistributionValue.html.
- Murphy, J., Hofacker, C. F., & Bennett, M. (2001). Website-Generated Market Research Data - Tracing the Tracks Left Behind by Visitors. *Cornell Hotel and Restaurant Administration Quarterly*, 82-91.
- O'Connor, P. M. (2001). *Developing an Evaluation Model for Hotel Electronic Channels of Distribution*. Unpublished Ph.D. Thesis, Queen Margaret University College, Edinburgh.
- O'Connor, P. (2002a). *An Analysis of On-Line Pricing Strategies of the International Hotel Chains*. Paper presented at the Information and Communication Technologies in Tourism: The Proceedings of the 9th International Enter Conference, Innsbruck, Austria.
- O'Connor, P. (2002b). The Changing Face of Destination Management Systems. *Travel and Tourism Analyst*.
- O'Connor, P., & Frew, A. (2002). The future of hotel electronic distribution: Expert and industry perspectives. *Cornell Hotel and Restaurant Administration Quarterly*, 43(3), 33-45.
- Pineda, J. M., & Paraskevas, A. (2004). *Web Analytics: A missed Opportunity for Hotel Online Strategy?* Paper presented at the Information and Communication

Technologies in Tourism 2004: Proceedings of the 11th International Enter Conference, Cairo, Egypt.

Proll, B., & Retschitzegger, W. (2000). Discovering next generation tourism information systems: A tour on TIScover. *Journal of Travel Research*, 39(2), 182-191.

Pyo, S., Uysal, M., & Chang, H. (2002). Knowledge Discovery in Database for Tourist Destinations. *Journal of Travel Research*, 40(4), 396 -404.

Riggins, F. J., & Mitra, S. (2001). *A Framework for Developing E-Business Metrics*. Retrieved 17th February 2003, from <http://misrc.umn.edu/Presenter%20Slides/e-metrics.pdf>.

Ryan, J. (2001). *More on Buying Processes and Data Analysis*. Retrieved 20th March 2003, from http://www.clickz.com/res/analyze_data/article.php/841131.

Sheldon, P. J. (2000). From the guest editor: Introduction to the special issue on tourism information technology. *Journal of Travel Research*, 39(2), 133.

Smith, M. (2003). *Choosing Your Perfect Software Match, Part 1*. Retrieved 10th November 2003, from http://www.clickz.com/res/analyze_data/article.php/2234881.

Squires, M. (2002). *Rooms channel marketing - what are your options?* Retrieved 29th October 2002, from <http://www.hotelmarketing.com/content/archives/triedtrue/00000264.htm>.

Starkov, M. (2002a). *Brand Erosion or How Not to Market Your Hotel on the Web*. Retrieved 22nd October 2002, from http://www.hotel-online.com/News/PR2002_2nd/Apr02_BrandErosion.html.

Starkov, M. (2002b). *The Internet: Hotelier's Best Ally or Worst Enemy? - What Went Wrong with Direct Web Distribution in Hospitality?* Retrieved 10th September 2002, from http://hotel-online/News/PR2002_4th/Oct02_InternetAlly.html.

Sterne, J. (2002). *Web Metrics: Proven Methods for Measuring Website Success*. New York: John Wiley & Sons, Inc.

Sterne, J. (2003). *The Feedback Loop Gap*. Retrieved 21st November 2003, from <http://www.marketingprofs.com/3/sterne1.asp>.

Sullivan, T. (2001). *Web analytics move across the enterprise*. Retrieved 16th September 2003, from <http://archive.infoworld.com/articles/fe/xml/01/08/20/010820feedge.xml>.

TECLA Project. (2003). *The Delphi Technique*. Retrieved 13th October 2003, from <http://www.aaster.it/leonardo/tecla/modulo1/english/delphien.htm>.

Tierney, P. (2000). Internet-Based Evaluation of Tourism Web Site Effectiveness: Methodological Issues and Survey Results. *Journal of Travel Research*, 39(2), 212-219.

Tschanz, N., & Klein, S. (1997). *Web-enabled Cooperation in Tourism - A Case Study from the Region of Lake Constance*. Paper presented at the Proceedings of the Thirtieth Hawaii International Conference on System Sciences, Wailea, HI, USA.

Wang, Y., & Fesenmaier, D. R. (2003). *Assessing the Determinants of Success of Web-based Marketing Strategies by Destination Marketing Organisations in the United States*. Paper presented at the Information and Communication Technologies

in Tourism 2003: The Proceedings of the 10th International Enter Conference, Helsinki, Finland..

WTO. (1997). *Tourism - 2020 Vision*. Madrid: World Tourism Organisation.

Wynne, C., Berthon, P., Pitt, L., Ewing, M., & Napoli, J. (2001). The impact of the Internet on the distribution value chain - The case of the South African tourism industry. *International Marketing Review*, 18(4).

FIGURES.

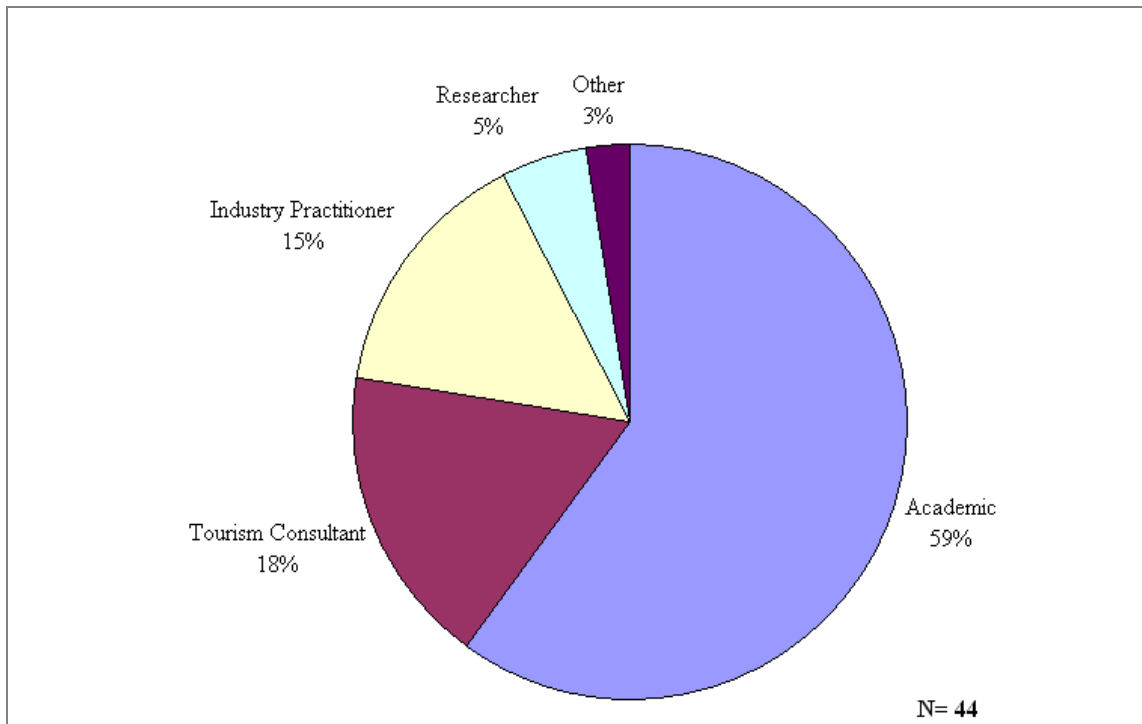


Figure 2. Breakdown of Delphi Respondents by Occupational Category.

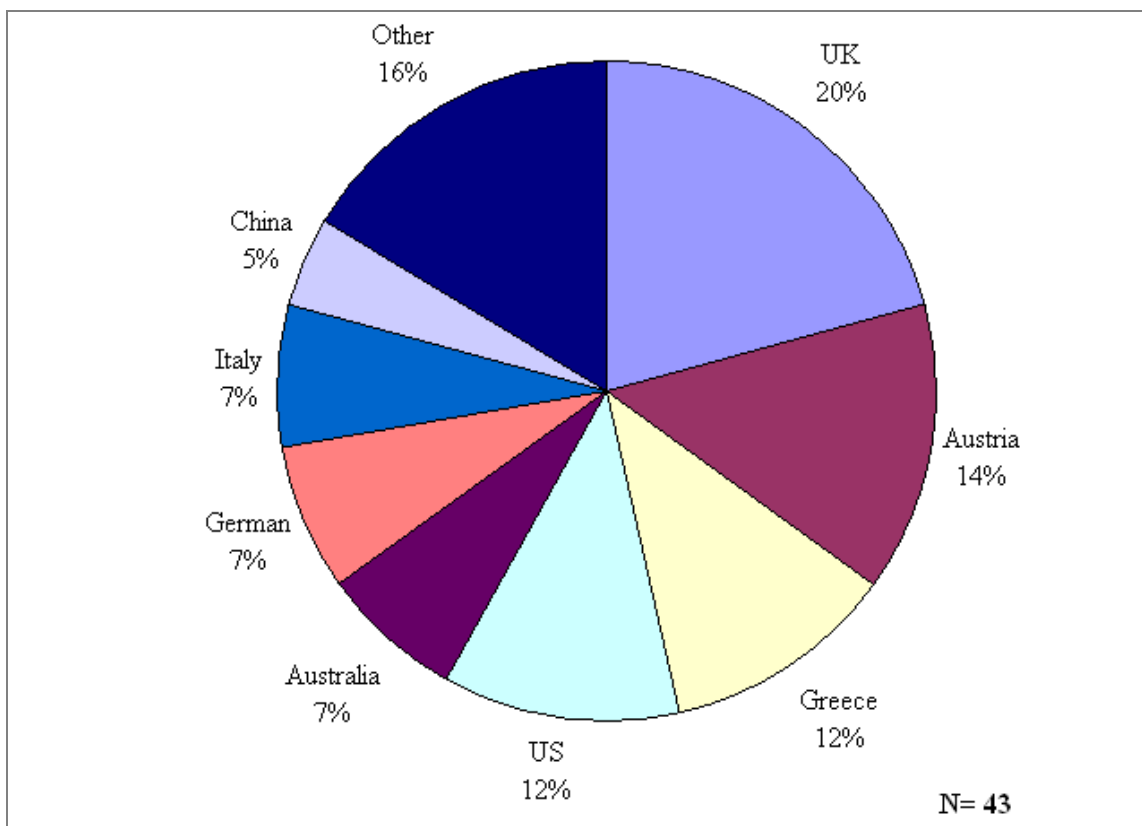


Figure 3. Breakdown of Delphi Respondents by Nationality.

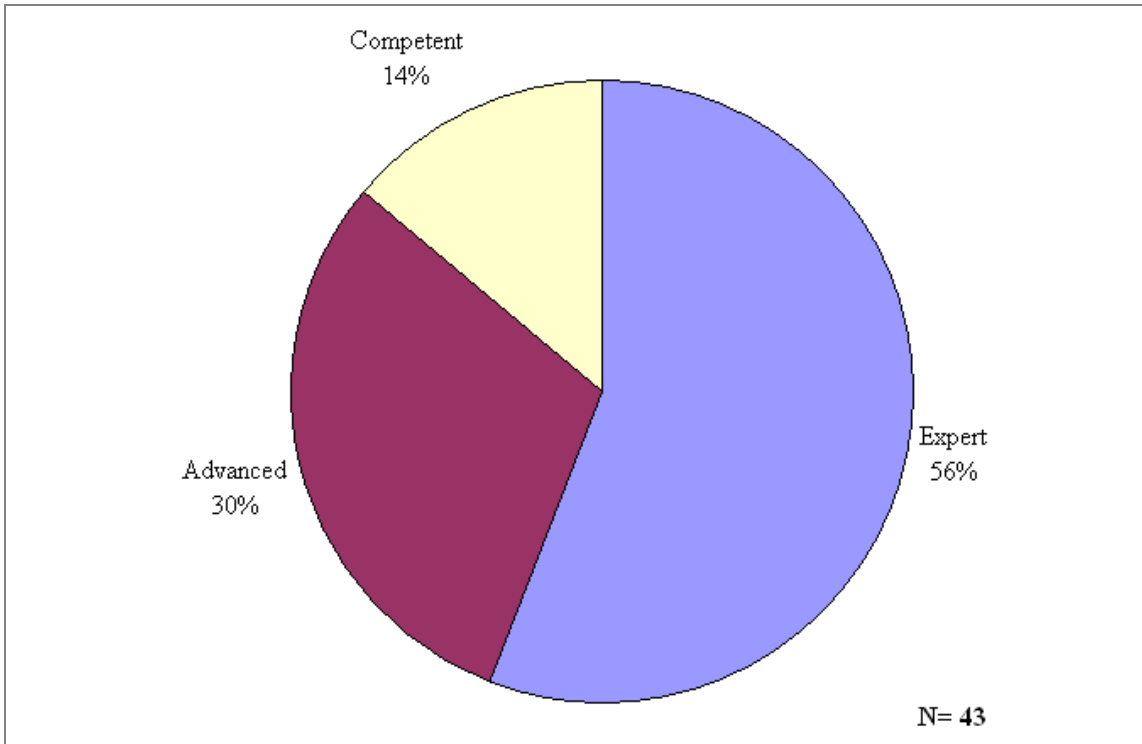


Figure 4. Level of Expertise of Respondents.

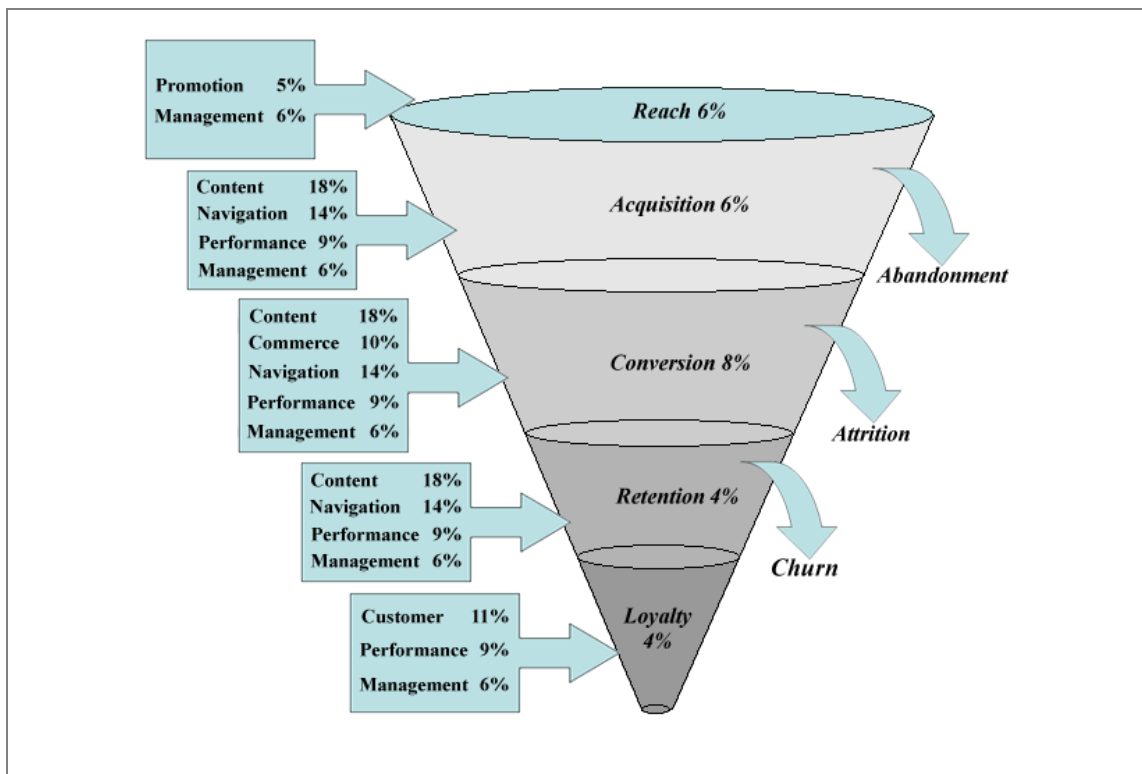


Figure 5. Graphical Representation of Effectiveness Areas Weightings.

TABLES.

Table 1. Criteria Used to Identify Most Applicable Papers	
Little Relevance (1)	IT or Tourism or SME or Web.
Not Very Relevant (2)	IT and Tourism, SMEs in Tourism, Tourism Websites, Mobile Technology.
Relevant (3)	Electronic Distribution, Destination and IT, CRM.
Very Relevant (4)	DMS or Website Measurement or Website Effectiveness or SMEs Website, CRM Tourism, Benchmarking Websites.
Extremely Relevant (5)	DMSs Measurement, Metrics for Tourism Website or Tourism Measurement Criteria, CRM Destination.

Table 2. Proposed Components for Inclusion in a Definition of a DMS	Percentage
Consolidate A Comprehensive Range Of Tourism Products	16.19%
Distribute A Comprehensive Range Of Tourism Products	10.61%
Generally Caters For A Specific Region	8.30%
Present The Destination As A Holistic Entity	8.16%
Include Destination Related Information	8.03%
Include Real-Time Reservations	4.90%
Include A Marketing Element	4.49%
Provide Destination Management Tools	3.95%
Include A "Customer Centric" Approach	3.40%
Include The Words "Support DMO Activities"	2.86%
Pay Particular Attention To Representing Tourism SMEs	2.86%
Include The Term "Web-Based"	2.31%
Provide A Variety Of Platforms/Channels	2.31%
Include A Definition Of A "System"	1.77%
Include A Definition For "Public Sector Involvement"	1.50%
Include The Management Of A Destination	1.50%
Include The Term "Facilitate Networking"	1.50%
Include An Awareness Of Customer Aims	1.09%
Include The Words "Content Management"	1.09%
Include The Words "Create Awareness"	1.09%
Include The Words "Create Tourism Experience"	1.09%
Involve Supplier Feedback	1.09%
Include The Words "Access To Partners"	0.95%
Include The Words "Act As An Enabler For Providers"	0.95%
Should Focus on Partnership between Local Recourses	0.95%
Include B2B & B2G	0.82%
Include A Greater Emphasis On Technology	0.68%
Include Primary Stakeholders	0.68%
Expand The Variety Of Products On Offer	0.54%
Include The Role Of The Destination	0.54%
Include The Word "Portal"	0.54%
Usually Have Public Sector Involvement	0.54%
Include Development Methods: Tailor-Made Solution Or Out Of A Box	0.41%
Include Motivational Aspects	0.41%
Include That A DMS Can Be Thematic In Nature	0.41%
Include The Words "Unbiased Representation/Support"	0.41%
Include DMS Examples	0.27%
Include The Word "Personalisation"	0.27%
Include The Words "Increase Sales"	0.27%
Include A Definition Of A "Customer"	0.14%
Include Benchmarking	0.14%
Remove all DMS Examples	0.00%

Table 3: Aims of a DMS.	Percentage
Co-ordinate Marketing Activities	7.60%
Help Sellers Sell	5.83%
Create Strategic Alliances	4.88%
Co-ordinate Branding	4.61%
Enhancing the Prosperity of the Local Community	4.61%
Provide a Comprehensive Product Range	4.61%
Help Buyers Buy	4.48%
Provide Destination Information	3.93%
Provide Accurate Information	3.26%
Gather Customer Information	3.12%
Provide a Destination Orientation Rather Than Product Orientation	2.99%
Sell a Destination	2.99%
Satisfy Customer Needs	2.71%
Lower Cost of Distribution	2.58%
Provide a Booking System	2.58%
Improve Networking	2.44%
Provide Online Presence	2.44%
Provide User-friendly Online Presence	2.44%
Show the Destination as Holistic Entity	2.44%
Provide Real-Time Availability	2.31%
Improve Customer Retention	2.17%
Include Non-Accommodation Products	2.04%
Increase Visitors	2.04%
Represent SMEs	2.04%
Provide Destination Management Tools	1.76%
Provide Timely Information	1.63%
Provide Management Information	1.36%
Support DMO activities	1.36%
Improve Yield Management	1.22%
Provide a Portal	1.09%
Provide Product Information	1.09%
Use Customer Relationship Management	1.09%
Generate Revenue for DMS Operator	0.95%
Provide Value Creation	0.95%
Increase Percentage of Provider Participation	0.68%
Provide Dynamic Packaging	0.68%
Provide One-Stop Shop	0.68%
Provide Access to Expert Knowledge	0.54%
Provide Cross Channel Management	0.54%
Provide Itinerary Planner	0.54%
Provide Unbiased Representation	0.54%
Supports Providers & Stakeholders	0.54%
Provide Quality Assured Product Range	0.41%
Provide Secure Transactions	0.41%
Provide Supplier Feedback	0.27%
Provide Value for Tourism Providers	0.27%
Provide Online Channel Management	0.14%
Provide Training for SMEs	0.14%
Provide Offline Channel Management	0.00%
Provide Transaction Information	0.00%

Table 4: Areas Used to Evaluate DMS Effectiveness.	Percentage
Content	17.82%
Design & Navigation	14.15%
Customer	10.61%
Commerce	10.20%
Performance	9.25%
Conversion	7.89%
Reach	6.39%
Management	5.71%
Acquisition	5.58%
Promotion	5.03%
Loyalty	3.81%
Retention	3.54%

Table 5a. Weightings Applied to Promotion Criteria for DMSs.	Percentage
Impact on Destination Brand	26.69%
Click-through %	21.70%
Promotion	20.09%
SEO	18.91%
Reduce Perception Gap	12.61%

Table 5b. Weightings Applied to Content Criteria for DMSs.	Percentage
Accuracy	17.53%
Freshness - up to date	13.04%
Content Quality	12.36%
Comprehensive Product Range	11.96%
Content	9.10%
Content Comprehensiveness	7.34%
Multiple Language	5.57%
Stickiness	3.67%
Content Uniqueness	3.40%
Percentage of Supplier Participation	3.13%
Range of Content Providers	2.85%
Intelligibility of Text	2.31%
Product Comparison	2.17%
Value Added Features (Customer Side)	1.77%
Focus	1.63%
Knowledge Creation	1.22%
Slipperiness	0.95%

Table 5c. Weightings Applied to Design & Navigation Criteria for DMSs.	Percentage
Findability	19.27%
Accessibility	18.06%
Usability (inc Navigation)	16.31%
Usefulness	15.77%
Aesthetics	9.30%
Usability - Suppliers Perspective	6.33%
Privacy	5.66%
Use of Graphics	5.12%
Length of Stay	4.18%

Table 5d. Weightings Applied to Performance Criteria for DMSs.	Percentage
24-7 365 Day Operation	21.49%
Speed of Response	15.45%
Reliability	14.89%
Integration with Suppliers Systems	10.81%
Interoperability	10.81%
Robustness	8.99%
Regional-National Integration	8.85%
Seamless	5.48%
Absence of Errors	3.23%

Table 5e. Weightings Applied to Commerce Criteria for DMSs.	Percentage
Secure Transaction	14.50%
Real Time Availability	11.65%
Acquisition Costs	8.13%
Cost per Reservation	8.13%
Percentage of Suppliers getting Bookings	7.32%
Dynamic Packaging	7.05%
Return on Investment	6.37%
Reservation Effectiveness	5.42%
Value of Sales	5.15%
Balanced Cost of Participation	4.34%
DMS % of Overall Sales	4.07%
Value of Visitors	3.25%
Volume of Sales	2.98%
Reservation Existence	2.71%
Reservation for non-accommodation	2.03%
Transaction Cost Suppliers	1.90%
Cost per Contact	1.90%
Average Costs of Different Behaviours	1.49%
Internal Returns	1.36%
Cost of Sales	0.27%

Table 5f. Weightings Applied to Customer-Centric Criteria for DMSs.	Percentage
Customer Satisfaction	20.73%
Cultivate Customer Relationship	16.78%
Reaching Target Market	12.83%
Stakeholder Satisfaction	11.00%
Cater For Target Markets	10.86%
Identify Target Markets	9.03%
Personalisation	9.03%
Customer Interaction	5.92%
Demand Forecasting	2.12%
Customer Recollection	1.69%

Table 5g. Weightings Applied to Management Criteria for DMSs.	Percentage
Achievement of DMS Aims	19.69%
Added Value (Supplier Side)	19.14%
Visitors to Destination	15.81%
Channel Integration	10.82%
No of Partners	10.54%
Supplier Feedback	6.66%
Internal level of integration	5.13%
Ownership of Inventory	3.61%
Depends on DMO Aims	3.33%
Barriers to Entry-Exit	3.05%
Type of Partners	2.22%

Table 5h. Weightings Applied to Reach Criteria for DMSs.	Percentage
Visitor Sessions	20.58%
Volume of Visitors - Reach	16.52%
Percentage of Suppliers getting Visits	15.94%
Volume of Page Views	12.17%
Geographical Spread	11.59%
Reach Percentage	10.58%
Traffic	10.00%
Volume of Hits	2.61%

Table 5i. Weightings Applied to Acquisition Criteria for DMSs.	Percentage
Acquisition	54.48%
Abandonment	45.52%

Table 5j. Weightings Applied to Conversion Criteria for DMSs.	Percentage
Online Conversion	17.44%
Conversion Change Percentage	13.66%
New Registrations	13.23%
No of logins	12.35%
Total Conversion	12.21%
No of Registered Users	10.90%
Offline Conversion	8.14%
Attrition	7.12%
No. of Emails Volunteered	4.94%

Table 5k. Weightings Applied to Retention Criteria for DMSs.	Percentage
Retention	57.40%
Churn	42.60%

Table 5l. Weightings Applied to Loyalty Criteria for DMSs.	Percentage
Volume of Revisits	37.46%
Loyalty (Customer Side)	32.57%
Frequency	29.97%