



# Organizational Dimension as an Influential Agent on Internet Usage in Hotel Businesses in Recife - Brazil

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## ABSTRACT

*The Internet technology changed the world, creating new forms of interaction between people, organizations and businesses. Hotel business is a branch of activity which has improved with the services given by the internet. The purpose of this study is to identify in the organizational factor variables which influence the standard usage of the Internet. An evaluation model was postulated containing five independent variables over two dependent variables, relating to the standard Internet usage. Data was collected from 52 hotels located on the city of Recife coast, in Pernambuco State, Brazil. The result of the data analysis showed a differential standard of internet usage in small, medium and five star hotels and showed how some organizational aspects could be better explored to reach an efficient standard of usage, increasing their competitive positions. At the end of this paper are outlined a few suggestions and inferences for future research.*

## 1. INTRODUCTION

The innovation theory examines a variety of innovations in different contexts and provides a valuable foundation for studies on the adoption of new Information Technology. Information Technology (IT) refers to computer and telecommunication technology of organizations, including data, voice, graphics and video processing and transmission (APPLEGATE, MCFARLAN AND MCKENNEY, 1996).

For Porter (2001), the Internet has been acclaimed as a technology that provides opportunity for companies to establish strategic differentiated positions. Porter advises the organizations to include Internet technology as a complement of their strategies in the search for competition accrediting the Internet with unique characteristics. This includes tools to obtain potential clients on-line, research on the web, customer service by email, management on-line. The Internet has the most varied resources for all types of communication and, every day new resources are developed and incorporated to it (Torres and Cozer, 2000).

Tourism, together with the hotel business, progressively depends on resources of new information technology to accompany and become updated with tools which permit the performance of functions in each section of the hotel business (MATOSO, 1999). In hotel management, the usage of information technology results in having competitive advantages, decrease in costs, increase of time and an efficient means of obtaining and sharing information (AKSU; TARCAN, 2002). Internet, Intranet, connections for electronic mail (e-mail), electronic commerce, central system for reservations and applications of the Web are a few examples. Internet technology has been fundamental for the management of activities, as a tool of communication and interaction with clients in the Tourism business.

In this paper, Internet was considered an innovation technology and the section where it was applied was the hotel business on the city of Recife coast, Pernambuco, Brazil. The study examines mainly the research questions: "What is the standard Internet usage in hotel management?" and "What are the factors which relate to Internet usage in hotels"? These questions were directed to directors, managers and owners of 52 hotels of large, medium and small size.

The article is structured so that section 2 contains a general discussion of the problem, with revision of conceptions and studies related to the theme. Section 3 tells about the typology of the research, the composition of the instrument and the methodological proceedings that were applied to answer the research questions. The presentation and analysis of empirical results are approached in the fourth section. The final section summarizes the conclusions and discusses their implications.

## 2. LITERATURE REVISION

### 2.1 Information technology and innovation

The study conducted in this paper is aimed at technological innovation. For Rogers (1995), innovation is an idea, practice or object which is perceived as new by an individual or other adoption unit. Dosi (1988) defines innovation as a process of search, discovery, experimentation, development, imitation and adoption of new products and new organizational forms. Jonash and Sommerlatte (2001) treat innovation as a common idea to be used by organizations in a context form and they refer to technological innovation when it is seen as an innovation process in a social and individual constructive process which involves several conditioning dimensions for its adoption.

Rogers (1995) shows the importance of considering the characteristics of this innovation process and the organization which affects this adoption handling in this way the levels of adoption. Reich and Benbasat (2000) include the adoption of technology using these same principles to justify the benefits brought for its implantation, implementation and its usage. Clemons et al. (1993) summarize the discussion about a successful adoption of technology in the organizations mentioning three critical factors which will need to be managed: human factors, different objectives and different traditions (cultural and historical business).

In this perspective, all these matters require attention before implanting innovation. The study of innovation gives a relevant contribution to organizations which want to develop a competitive profile, by the comprehension of adopting information technology, its characteristics and its levels of perception.

## 2.4 Correlated Studies in Adoption and Usage of Information/Internet Technology

Literature is abundant on the theme Usage and Adoption of Information Technology. Besides the classics, several other studies contributed with the choice and formulating of factors which affect the IT diffusion here presented. Several papers have been published on the adoption process, usage and impacts in the utilization of systems and information technology, giving emphasis on using the Internet in the Tourism business (ABREU, ANJOS and OLIVEIRA (2001); MENDES FILHO and RAMOS(2003), VICENTI and HOPPEN (2003)).

All these studies have contributed direct or indirectly in the sense of helping in the choice of pertinent variables and in the conception of the model of the proposed research, to be presented in the next topic.

## 2.5 Conceptual Model of Research and Hypothesis

Based on literature revision and the objectives of the study, a research model is presented in Diagram 1. This framework outlines the organizational factor as a determiner of adoption and IT (Internet) usage. The construction Standard Usage of the Internet, as a dependent variable, is affected by the organizational factor to which composes the independent variables. Both defined and enunciated below according to readings, the independent variables followed by hypothesis.

### DEPENDENT VARIABLES

#### Standard Usage

##### Frequency

This refers to the perception of regularity with which technology is used (RAMOS, 1997). The main justification of the usefulness of this indicator of usage is that it measures the level of adoption and continued use. The variable is measured by the frequency of Internet usage.

##### Diversity

The diversity usage, added to the measuring of the standard usage, is an indicator of a successful diffusion of a technology, through choices of technology available in the system, independent of intensity of usage as a whole (RICE, 1990). Lal (1999) used the extension of the IT tool usage as a dependent variable to measure the intensity of the IT usage. In this article the usage intensity will be measured by the quantity of technology (Internet) which are effectively used in the hotels.

### INDEPENDENT VARIABLES

#### Organizational Factor

##### Organizational Structure

The way that the organization is structured influences the adoption of IT directly. Several authors have demonstrated the reverse relation between organizational centralization and the degree of IT adoption. The reasons presented are that decentralization causes more elaborate coordination, communication and mechanisms of control, where information technology favors such a structure (STAIR, 1998; DAVENPORT, 2000).

*Hypothesis 1: The decentralized organizational structure of the hotels is a factor which positively influences the standard usage of the Internet.*

##### Influence from IT branch

The influence that the IT Section has in the decisions of adopting certain technology demonstrates the level of adaptation that this

section has in the organization, also reflecting the implementation success, usage and adoption of new technology (STAIR 1998; GRAEML, 2000).

*Hypothesis 2: The main influence in the IT section in the decisions of using certain technology is the factor that positively influences the standard usage of the Internet.*

##### Subordination Level in the IT branch

The position that the information branch occupies in the organization chart of the company indicates the importance that the organization gives to technology (Stair, 1998; Fernandes and Alves, 1992).

*Hypothesis 3: The subordination level occupied by the information branch directly connected to the management is a factor that positively influences the standard usage of the Internet in Hotels.*

##### Size

The size of the organization has been shown in studies related with the impacts of the adoption of new technology. In a large scale, organizations which have more resources possess capacity to experience and implement innovations and the larger the size of the business, the easier it is for technology to be adopted (Rogers, 1995; Premkumar and Roberts, 1999).

*Hypothesis 4: Larger hotels(five star) positively influence Internet adoption.*

##### Investment Level in IT

In a general manner, the businesses which intend to take advantage of the adoption of innovation equipped themselves through costs associated to the adoption of this. The companies which notice its importance and adopt IT are those that invest most. (PREMKUMAR and ROBERTS, 1999; DAVENPORT, 2000; GRAEML, 2000).

*Hypothesis 5: Hotels which invest more in computing positively influence the standard Internet usage*

## 3. RESEARCH METHODOLOGY

Research is the descriptive type, having in view its objectives which are: i) identify the standard internet usage in the hotels on the southern coast of the city of Recife in Brazil and ii) verify the existence of relations between variables, more specifically, how the organizational factor is related to the standard internet usage in hotels. The approach to the research problem is a quantitative one. Coherent with this methodological choice, the investigation technique applied was the survey type. The questionnaire was the instrument of data collection used in this research.

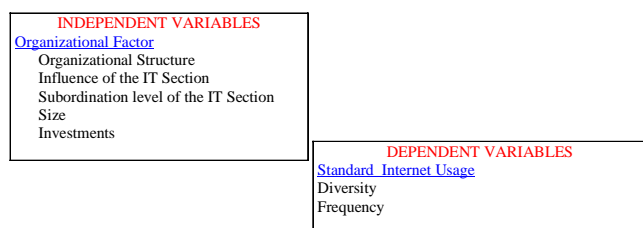
### 3.1 Population and sample

In the present research, the census was the best alternative for a more exact populational reality. This research was done in 52 hotels located on the coast of Recife in Pernambuco.

### 3.2 Methodological Proceedings

To reach the purpose of this research, a compound method of the application of a questionnaire used in August, 2003 was used. The research was filled out by owners and managers of 52 hotels located on the coast of the city of Recife, Pernambuco. The questionnaire presents a total of 7 questions containing a set of 7 variables and the questions referring to each one of them; two blocks were created to separate the dependent variables from the independent variables, respectively related to the standard usage and the organizational agent. A list issued by EMPETUR (Tourism Company of the State of Pernambuco) was classified in alphabetical order and subdivided into hotels, flats, lodgings and inns (<http://www.empetur.com.br>).

Diagram 1: Configuration of the theoretic model of research



### 3.3 Data Analyses and Usage

The data was initially codified and catalogued on software of statistical analysis SPSS 11.01. Each variable was coded and prepared to function according to its type and description, adjusting itself to the non parametric square with a level of significance  $\alpha = 0,05$ . The factor analysis was also used to examine the convergence and construction validity, using a component of the VARIMAX analysis, that had rotation of the right angled axes as reference to maximize the association. The coefficient Cronbach Alpha was applied to evaluate the reliability of the variable construction instrument, for which the obtained values were  $\alpha = 0,76$  and  $\alpha = 0,73$ . Readings indicate that the Alpha value of 0,70 reflects an acceptable reliability. Therefore, the influence of the factor that was studied was able to be evaluated and answered by the technician.

## 4. RESULTS AND ARGUMENTATION

### 4.2 Descriptive analysis of the Standard Usage of the Internet

Some important implications permitted answers to the two main questions of the research.

#### Standard Usage

The findings showed that, for the population studied, Internet usage is important in its managing procedures. With smaller hotels, a rather unsatisfactory standard usage is noticed in terms of the number of daily access, as well as in the technology diversity list or Internet application, denoting the small importance on the part of the owners and managers about its usage, however in medium size hotels there is a slight increase.

All Five Star hotels have continuous Internet usage in their management proceedings as a basic tool, confirming in this way the strategic Internet usage as a tool of organizational support.

According to Table 1, 78,84% of the population uses the Internet and email is the most used technology. Small hotels use 31,81% of the information system to make room reservations, indicating a good level of perception as for the use of information. In medium size hotels this perception increases by 50% , while in large hotels there is an increase of 68,42%. In small hotels the www pages are pretty well used, indicating that most have a website, revealing their recognition of the Internet as a marketing and sociability tool. E-commerce and e-business are presented as balanced categories for medium and large size hotels.

Videoconference usage in the large size hotels suggests a small number of corporative organizations in the State of Pernambuco, contrasting with the characteristic of these hotels, which mostly deal with tourism business. The Information System to make reservation of air tickets presents 57,89% of usage in large hotels. This reality is demonstrated by the intervention of travel agents who still use personal contact to make reservations or directly by the systems on the web owned by air companies. The Information System for entertainment has a percentage of 47,36% in large hotels indicating recognition of the added value which entertainment gives to the satisfaction of the client.

### 4.3 Hypothesis Test

Following the Research Model, the **usage standard** was tested. This involves *frequency* and *usage diversity*, with each independent variable. Table 2 gives the results of this correlation, identifying the region for rejection of the nullified hypothesis.

Table 1: Number of technology types used in hotels according to size

TECHNOLOGY USED	% Frequency Small Size	% Frequency Medium Size	% Frequency Large Size
Electronic Mail (E-mail)	63,63	66,66	100
Pages WWW	50	66,66	100
IS to make room reservations through Internet	31,81	50	68,42
E-commerce / E-business	4,54	33,33	42,1
Videoconference			21,05
IS to make reservations of air tickets through Internet		8,33	57,89
IS for entertainment on the Internet			47,36
No Internet technology	36,36	33,33	0

Source: Field Research, 2003.

Table 2: Hypothesis Test – Determining Factors of the Internet Standard Usage

Hypothesis	Independent Variables	Dependent Variables		Qui Square	
		Usage Frequency $\chi^2_{calc}$	Usage Diversity $\chi^2_{calc}$	$\chi^2_{tab}$	Nullified Hypothesis

#### Organizational Factor

H1	Organizational Structure	12,215	2,547	7,81	Does not reject
H2	Influence of the Computing Sector	5,104	7,761	7,81	rejects
H3	Subordination Level	10,800	21,539	7,81	Does not reject
H4	Size	5,649	5,649	7,81	rejects
H5	Investment	1,427	2,210	7,81	rejects

Hypothesis 4, 5 and 6, presented good correlation and the rejection of the nullified hypothesis, being confirmed by the literature on the positive influence of size investment and the influence of the computing sector in the decisions of adopting technology. Hypothesis 1 and 2, related to the variables, Organizational Structure and Subordination Level were not confirmed as determinants of Internet usage in Hotels, not being statistically significant to reject a nullified hypothesis. An explanation for the rejection can be credited to the increase of third party services of computing, specially in the large size hotels. Hotels in this category have a high standard usage, in this way justifying the non influence of the standard usage in the population studied.

## 5. CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

Hotel business is an organization which has benefited from the services supported by the Internet, to aggregate value to quality of their services and to win and keep clients. In this paper was discussed that the standard usage/adoption of the Internet would be potentially determined by Organizational Structure, Influence of the Computing Sector, Level of Subordination of the computing sector, Size of the Hotel and Level of investment. Of these variables, only two were not confirmed as expected: Organizational Structure and Level of Subordination of the computing sector. The rest were in accordance with the results found in literature. Synthetically, the conclusions show that the standard usage of the Internet in hotels of the sample are in accordance with the empirical results of the studies researched in literature, with the main use being in electronic mail and web and that the computing sector affects the way the organization adopts and used the internet in the context of the hotels that were researched.

This paper seeks to show the Internet usage in hotel management. However, such study has some limitations such as adoption of the survey format, the selection of a restricted sample, the obliquity potential in the answers associated to the type of informant, the internet dynamic itself, and gives a static vision of the phenomenon studied. Despite these limitations, this study promotes a path for future research, advancing the knowledge on the subject.

Some recommendations appear: Small and medium size hotels should try to use more information system and seek solutions for investment in computing; develop a more open organizational culture, in a way to favor the use and development of new technology.

In the academic point of view , because of the global range of the Internet, it is indispensable that a variety of follow-up studies be made in a variety of sections, applying methods and reaching distinct populations.

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