

COMPUTERS AND IT&C IN HOTEL'S ACTIVITY

Liciniu A. Kovács, Babeş-Bolyai University, Cluj-Napoca, Romania
Cristian I. Chifu, Babeş-Bolyai University, Cluj-Napoca, Romania
Veronica R. Rus, Babeş-Bolyai University, Cluj-Napoca, Romania

ABSTRACT

Computers and IT&C have become very popular and transformed all business operations, including hotel and other accommodation facilities. "Internet facility has become a vital factor for the guest in the selection of hotel for his/her stay" (Harish Chandra, 2007). Since time has become such a precious resource and data accuracy is more and more needed for efficient decision processes, it is expected that hotels implement the information technology on a large scale. This paper is focused on research about the utilization of information and communication technology in the hotel activity. The research uses a classical questionnaire, spreadsheets, and statistical tools and has been carried out in order to enhance the content of our faculty's education materials in the field of IT&C. We now speak about "the art of computer usage" (Kovács et al., 2006); in this sense, special importance is given to finding out and understanding how hotels use their endowment. We conclude that the large majority of hotels have websites but the utilization of computers and IT&C is still at a low level in Romania.

Keywords: hotel industry, exploratory research, IT&C, statistical analysis

1. INTRODUCTION

In 2007, our Faculty of Business carried out some research about time management and how hotel managers organize their time. The final conclusion shows that "hotel managers spend on average 9.65% of their time supervising activities in the hotel and 10.35% for administrative matters. A hotel manager spends a large amount of time – 22.78% of their time – in different types of meetings. We also consider that managers spend too much time reading e-mails, surfing the Internet and talking on the phone. As our study indicates, they use 14.44% of their time for these activities, instead of allocating more time for developing their business. The average time for sleep obtained in our study is very close to the normal average value of 7 hours per day. Based on the results of our research we can conclude that managers need to attend time management courses in order to increase the efficiency and effectiveness of their managerial activity (Kovács et al., 2007).

Starting from the conclusions of the research mentioned above and some observation of the Romanian hospitality market, we have done further research in order to find out how computers and IT&C are used in the hotel activity. This new research has a social relevance as it will provide more data to include in the courses for our students, especially as our curricula for Business Administration in Hospitality Industry are to be accredited. The results will also be used in the short courses provided for the local community of hotel managers. The research has a scientific relevance, being the first of this kind in our faculty and among the few existing in our country. Also, in the near future, we will try to correlate the utilization of IT&C in the hotel activity and the time management by hotel managers.

Objective: to conduct an exploratory and quantitative research in order to find out how hotels from Romania (Cluj county) use their computers and the IT&C.

Methods: We sent a total of 56 paper-based questionnaires to the accommodation facilities (hotels, motels, etc.) in the Cluj county; the name and addresses of these accommodation facilities were found in the yellow pages of Cluj Telephone Directory. After receiving 33 successfully completed answers (successfully completed answers were obtained at the end of January and the beginning of February 2008), the sets of data were placed in a centralized Microsoft Excel worksheet. The statistical analysis was conducted in Statgraphics software package. Among other topics, we were interested in the following:

- The numbers of computers bought or received from donations in 2008, 2007, 2006, 2005, 2004, 2003 and earlier;
- The equipment (copy machines, PCs, laptops, Apple Macintoshes, web cams, modems, printers, and scanners) owned and intended to be bought until the end of year 2008;
- The software packages (operating systems, office suites, DBMSs, Internet browsers, and antivirus packages) used in the computers;
- The hotel's preferences for certain suppliers (manufacturer and processor) of new computers (with arguments);
- The factors that influence the choice of IT&C suppliers;
- The availability of a website in hotels, motels, or pensions;
- The preferred Internet provider;
- The impact of IT&C on the activity;
- The number of computers installed at the front desk, in conference rooms, hotel rooms, and other places;
- The software package for reservation management.

2. STATISTICAL ANALYSIS

Although we sent a number of 56 questionnaires, we received only a total of 33 correctly completed questionnaires. We conducted the statistical analysis in Statgraphics, where we obtained 18 frequency tables or summary statistics and the appropriate interpretations (sample mean, standard error). Using sample means we tried to obtain some results at the population level – accommodation facilities from a larger area e.g. Transylvania/Romania (lower limit and upper limit). Due to space limitations, only the first situation is reproduced as screen capture in fig.1 and fig.2. For all the 18 situations, the levels of confidence are situated at 95%.

Summary Statistics

	less2003	a2003	a2004
Count	33	33	33
Average	0,878788	0,242424	0,666667
	a2005	a2006	a2007
Count	33	33	33
Average	0,878788	1,81818	1,78788
	a2008		
Count	33		
Average	0,484848		

FIG. 1 – SUMMARY STATISTICS FOR BOUGHT COMPUTERS (2008, ..., 2003 AND EARLIER)

95,0 percent confidence intervals

	Mean	Std. error	Lower limit	Upper limit
less2003	0,878788	0,495735	-0,130993	1,88857
a2003	0,242424	0,0976068	0,0436053	0,441243
a2004	0,666667	0,248734	0,160011	1,17332
a2005	0,878788	0,388659	0,0871133	1,67046
a2006	1,81818	0,367873	1,06885	2,56752
a2007	1,78788	0,300749	1,17527	2,40049
a2008	0,484848	0,163538	0,151732	0,817965

FIG. 2 – THE CONFIDENCE LIMITS FOR BOUGHT COMPUTERS

2.1. Bought computers (2008, 2007,..., 2003 and earlier)

The analysis shows that the average number of computers to be bought by the hotel managers in 2008 is between 0.15 and 0.81 which means that, even if they consider computers as being very important for their businesses, they do not want to spend great amount of money on them (fig.2 and fig.3).

2.2. Equipment owned

The analysis of the equipment owned shows that the managers consider IT facilities very important but that they, as above, did not want to spend great amount of money on them (table 1).

TABLE 1 – 95.0% CONFIDENCE INTERVALS FOR OWNED KIND OF EQUIPMENT

	Mean	Standard error	Lower limit	Upper limit
Copy machines	1.24242	0.16301	0.91038	1.57447
PCs	3.69697	0.60847	2.45755	4.93639
Laptops	0.90909	0.18134	0.53970	1.27848
Apple Macintoshes	0.06060	0.06060	0.06284	0.18405
Web cams	0.54545	0.15132	0.23721	0.85369
Modems	0.18181	0.50274	0.79411	2.84225
Printers	2.18182	0.34938	1.47013	2.89350
Scanners	1.00000	0.13762	0.71967	1.28032

Using the results from the sample, we can see that, for example, the average number of laptops for a hotel is between 0,53 and 1,27.

2.3. Intention to buy new equipment until the end of year 2008

The analysis for the intention to buy new equipment shows that the managers consider it as being very important but they, as above, do not want to spend great amount of money on it (table 2).

TABLE 2 – 95.0% CONFIDENCE INTERVALS FOR INTENTION TO BUY NEW EQUIPMENT

	Mean	Standard error	Lower limit	Upper limit
Copy machines	0.12121	0.07226	0	0.26841
PCs	0.24242	0.16301	0	0.57446
Laptops	0.24242	0.15709	0	0.56241
Apple Macintoshes	0.03030	0.03030	0	0.09202
Web cams	0.06060	0.06060	0	0.18405
Modems	0.06060	0.04218	0	0.14652
Printers	0.12121	0.05769	0	0.23873
Scanners	0.06060	0.04218	0	0.14652

2.4. Operating systems

The analysis and the data from table 3 show that the percentage of the hotels which use one or another operating system is between:

- Linux: 2.22% - 19.23%
- Windows '98: 2.22% - 19.23 %

- Windows 2000: 5.81% - 26.73%
- Windows XP: 41.25% - 70.00%
- Windows Vista: 5.81% - 26.73%

TABLE 3 – FREQUENCY TABLE FOR OPERATING SYSTEMS

Class	Value	Frequency	Relative Frequency	Cumulative Frequency	Cum. Rel. Frequency
1	Linux	4	0.0800	4	0.0800
2	Windows '98	4	0.0800	8	0.1600
3	Windows 2000	7	0.1400	15	0.3000
4	Windows Vista	7	0.1400	22	0.4400
5	Windows XP	28	0.5600	50	1.0000

2.5. Office suites

The analysis and the data from table 4 shows that the percentage of the hotels which use one or another office suite is between:

- Corel WordPerfect: 4.93% - 26,25%
- OpenOffice.org (Windows): 6.34% - 28.87%
- OpenOffice.org (Linux): 1.36% - 17.89%
- Microsoft Office: 49.75% - 78.64%

Despite it was very popular, there is no hotel to use an office suite from Lotus Development.

TABLE 4 – FREQUENCY TABLE FOR OFFICE SUITES

Class	Value	Frequency	Relative Frequency	Cumulative Frequency	Cum. Rel. Frequency
1	Corel WordPerfect	6	0.1304	6	0.1304
2	Microsoft Office	30	0.6522	36	0.7826
3	OpenOffice.org (Linux)	3	0.6552	39	0.8478
4	OpenOffice.org (Windows)	7	0.1522	46	1.0000

2.6. Data base management systems (DBMSs)

The analysis and the data from table 5 show that the percentage of the hotels which use one of another DBMS is between:

- FoxPro: 20.21% - 52.54%
- Access: 1.70% - 21.91%
- Oracle: 15.87% - 46.98%
- Paradox: 0.06% - 14.15%
- SQL: 4.32% - 28.33%
- dBASE: 3.02% - 25.41%

TABLE 5 – FREQUENCY TABLE FOR DBMSs

Class	Value	Frequency	Relative Frequency	Cumulative Frequency	Cum. Rel. Frequency
1	FoxPro	13	0.3514	13	0.3514
2	Access	3	0.0811	16	0.4324
3	Oracle	11	0.2973	27	0.7297
4	Paradox	1	0.0270	28	0.7568
5	SQL	5	0.1351	33	0.8919
6	dBASE	4	0.1081	37	1.0000

2.7. Internet browsers

The analysis and the data from table 6 show that the percentage of the hotels which use one of another internet browser is between:

- FireFox: 25.76% - 54.72%
- Internet Explorer: 33.28% - 62.81%

- Opera: 4.72% - 25.24%

TABLE 6 – FREQUENCY TABLE FOR INTERNET BROWSERS

Class	Value	Frequency	Relative Frequency	Cumulative Frequency	Cum. Rel. Frequency
1	FireFox (Mozilla)	19	0.3958	19	0.3958
2	Internet Explorer	23	0.4792	42	0.8750
3	Opera	6	0.1250	48	1.0000

2.8. Satisfaction

The analysis and the data from table 7 show that the percentage of the employees who are satisfied by the IT facilities is between 68.10% and 94.89%.

TABLE 7 – FREQUENCY TABLE FOR SATISFACTION

Class	Value	Frequency	Relative Frequency	Cumulative Frequency	Cum. Rel. Frequency
1	Satisfied	28	0.8485	28	0.8485
2	Not satisfied	5	0.1515	33	1.0000

2.9. Usefulness

The analysis and the data from table 8 show that the percentage of the employees who consider IT&C as being useful is between 75.66% and 98.08%.

TABLE 8 – FREQUENCY TABLE FOR USEFULNESS

Class	Value	Frequency	Relative Frequency	Cumulative Frequency	Cum. Rel. Frequency
1	Useful	30	0.9091	30	0.9091
2	Not useful	3	0.0909	33	1.0000

2.10. Easiness

The analysis and the data from table 9 show that the percentage of the employees who consider IT&C as being easy to use is between 94.24% and 99.92%.

TABLE 9 – FREQUENCY TABLE FOR EASINESS

Class	Value	Frequency	Relative Frequency	Cumulative Frequency	Cum. Rel. Frequency
1	Easy	32	0.9697	32	0.9697
2	Not easy	1	0.0303	33	1.0000

2.11. Manufacturer

The analysis and the data from table 10 indicate that the percentage of the hotels that choose one or another manufacturer is between:

- Apple Macintosh 0.06% - 13.50%
- Asus Tek 0.62% - 17.32%
- Compaq 5.85% - 30.52%
- Dell 13.03% - 42.12%
- Fujitsu-Siemens 0.06% - 13.50%
- Hewlett-Packard 5.85% - 30.52%
- IBM 13.03% - 42.12%
- Toshiba 1.61% - 20.86%

TABLE 10 – FREQUENCY TABLE FOR MANUFACTURER

Class	Value	Frequency	Relative Frequency	Cumulative Frequency	Cum. Rel. Frequency
1	Apple Macintosh	1	0.0256	1	0.0256
2	Asus Tek	2	0.0513	3	0.0769

3	Compaq	6	0.1538	9	0.2308
4	Dell	10	0.2564	19	0.4872
5	Fujitsu-Siemens	1	0.0256	20	0.5128
6	Hewlett-Packard	6	0.1538	26	0.6667
7	IBM	10	0.2564	36	0.9231
8	Toshiba	3	0.0769	39	1.0000

2.12. Processor

The analysis and the data from table 11 show that, in the case of a new hardware (computer) acquisition the preferred processor manufacturer is INTEL. The percent of accommodation facilities (hotels, motels, pensions, etc.) where INTEL processors are preferred is between 53.69% and 85.36%. AMD processors are preferred between 26.84% and 42.68%.

TABLE 11 – FREQUENCY TABLE FOR PROCESSOR

Class	Value	Frequency	Relative Frequency	Cumulative Frequency	Cum. Rel. Frequency
1	AMD	10	0.2857	10	0.2857
2	INTEL	25	0.7143	35	1.0000

2.13. System engineer

The analysis and the data from table 12 show that between 20.39% and 54.87% of the hotels have a system engineer.

TABLE 12 – FREQUENCY TABLE FOR SYSTEM ENGINEER

Class	Value	Frequency	Relative Frequency	Cumulative Frequency	Cum. Rel. Frequency
1	Have system eng.	12	0.3636	12	0.3636
2	Don't have system eng.	21	0.6364	33	1.0000

2.14. Internet provider

The analysis and the data from table 13 show that the percentage of the hotels that have UPC as Internet provider is between 23.14% and 56.53%. Romtelecom, is situated on the second position.

TABLE 13 – FREQUENCY TABLE FOR INTERNET PROVIDER

Class	Value	Frequency	Relative Frequency	Cumulative Frequency	Cum. Rel. Frequency
1	Astral Telecom	1	0.0278	1	0.0278
2	Euroweb	1	0.0278	2	0.0556
3	MaxNet	1	0.0278	3	0.0833
4	Don't have	1	0.0278	4	0.1111
5	Orange	2	0.0556	6	0.1667
6	RDS	1	0.0278	7	0.1944
7	Romtelecom	12	0.3333	19	0.5278
8	StarNet	2	0.0556	21	0.5833
9	UPC	14	0.3889	35	0.9722
10	Other providers	1	0.0278	36	1.0000

2.15. Website

The analysis and the data from table 14 show that between 63.77% and 91.23% of the accommodation facilities have a website.

TABLE 14 – FREQUENCY TABLE FOR WEBSITE

Class	Value	Frequency	Relative Frequency	Cumulative Frequency	Cum. Rel. Frequency
1	Have website	27	0.8182	27	0.8182
2	Don't have website	6	0.1818	33	1.0000

2.16. Importance of IT&C in the hotel activity

The analysis and the data from table 15 show that between 39.21% and 74.52% consider that IT&C facilities are very important for the hotel's activity.

TABLE 15 – FREQUENCY TABLE FOR IMPORTANCE OF IT&C IN A HOTEL'S ACTIVITY

Class	Value	Frequency	Relative Frequency	Cumulative Frequency	Cum. Rel. Frequency
1	Very important	19	0.5758	19	0.5758
2	Important	10	0.3030	29	0.8788
3	Neutral	3	0.0909	32	0.9697
4	Less important	1	0.0303	33	1.0000

2.17. Installed computers

The analysis and the data from table 16 show that the average number of computers that the hotels have is between:

- Front desk 1.20 - 1.88
- Conference rooms 0.35 - 0.85
- Hotel rooms 0.00 - 0.51

TABLE 16 – 95.0% CONFIDENCE INTERVALS FOR INSTALLED COMPUTERS

	Mean	Standard error	Lower limit	Upper limit
Front desk	1.5454	0.1690	1.2010	1.8898
Conference rooms	0.6060	0.1226	0.3562	0.8558
Hotel rooms	0.6969	0.4000	0.0000	0.5117

2.18. Software packages for reservation management

The analysis and the data from table 17 show that between 13.29% and 45.52% of the hotels use Fidelio as a software package for reservation management.

TABLE 17 – FREQUENCY TABLE FOR RESERVATION MANAGEMENT

Class	Value	Frequency	Relative Frequency	Cumulative Frequency	Cum. Rel. Frequency
1	Other software packages	5	0.1515	5	0.1515
2	CLASSOFT	4	0.1212	9	0.2727
3	FIDELIO	9	0.2727	18	0.5455
4	IDEAL HORECA	1	0.0303	19	0.5758
5	MEDALION	3	0.0909	22	0.6667
6	MENTOR	1	0.0303	23	0.6970
7	Don't use	5	0.1515	28	0.8485
8	WinFro Hostware	5	0.1515	33	1.0000

3. CONCLUSIONS

In our research, we chose to use a classical questionnaire because the e-mail based research is unfamiliar in Romania (Kovács et al., 2007). The research shows that:

- more than 51% of existing computers were bought in 2006 and 2007;
- about 13% of the computers were bought earlier than 2003;
- the hotels use various applications for different operational areas – these applications are separate and operate on different operating systems;
- the preferred operating system is Windows XP and the preferred office suite is Microsoft Office;
- the preferred DBMS is FoxPro followed by Oracle. FoxPro and dBase are used mainly because the accounting systems are based on these DBMS. We mention the fact that most of the interviewed persons found it difficult to specify the DBMS used in their activity. We consider that the questioned persons have low level of knowledge in database systems.

- the IT&C is considered as being very important as it gives satisfaction, is useful and easy to use but the managers do not want to spend a great amount of money on it;
- the preferred computer manufacturers (with Intel processor) are Dell and IBM;
- more than 81% of the accommodation facilities have websites;
- the preferred internet provider is UPC followed by Romtelecom;
- there are a few numbers of computers installed in hotels (front desk, conference rooms, hotel rooms and other places);
- Fidelio is the preferred software package for reservation management.

Based on the results of our research we can conclude that the utilization of computers and IT&C in accommodation facilities is still at a low level in Romania.

Acknowledgment – We are grateful to Ms. Emilia S. Plăcintar for revising this paper.

BIBLIOGRAPHY:

- Gálfi, V.M., Kovács, L.A., Chifu-Oros, I.C., Moldovan, Ș., Web presence of travel agencies from Transylvania-Romania and Hungary, SINTES 12 International Symposium, XIIth Edition, October 20-22, 2005, Craiova, Romania, Vol.3, pp. 521-526.
- Harish Chandra, IT Contributions to the Hospitality Industry & It's Further Scope, Friday, 22nd June 2007 (<http://www.4hoteliers.com>).
- Kovács, Chifu C.I., Rus, V.R., Aștilean, D.E., Time management at hotel manager's level: e-mail based research, International Journal of Business Research (IJBR.org), Volume VII, Number 5, 2007, Las Vegas, USA, pp.133-141, ISSN: 1555-1296.
- Kovács, L.A., Plăcintar, S.E., Pop G.M., A platform-independent web-based tutorial suite with adaptable structure, Integrated Design and Process Technology (IDPT-2006) Conference Proceedings, San Diego, Ca. 2006, 437-444.
- Nitulescu, M., Care este structura IT a unui hotel JW Marriott Hotels & Resorts?, Market Watch IT&C, Numarul 33, mai 2004. (<http://www.marketwatch.ro>).

AUTHORS PROFILES:

Dr. Liciniu-Alexandru Kovács earned his Ph.D. (interdisciplinary studies) at Babeș-Bolyai University of Cluj-Napoca, Romania, Faculty of Psychology and Educational Sciences in 2000. Currently he is a professor of information technology and project management at the same university, Faculty of Business.

Dr. Cristian-Ioan Chifu earned his Ph.D. at Babeș-Bolyai University of Cluj-Napoca, Romania, Faculty of Mathematics and Informatics in 2004. Currently he is a professor of mathematics and statistics at the same university, Faculty of Business.

Ms. Veronica Rozalia Rus is a teaching assistant of information technology and lectures the Database Management Systems course at Babeș-Bolyai University of Cluj-Napoca, Romania, Faculty of Business.