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# STATISTICAL ANALYSIS SUPPORTING DECISION-MAKING ABOUT OPENING AN UNIVERSITY LIBRARY ON SATURDAYS

ANÁLISE ESTATÍSTICA COMO SUPORTE AO PROCESSO DECISÓRIO SOBRE O  
FUNCIONAMENTO AOS SÁBADOS DE UMA BIBLIOTECA UNIVERSITÁRIA

ANÁLISIS ESTADÍSTICO COMO SOPORTE AL PROCESO DECISIVO SOBRE EL  
FUNCIONAMIENTO EN LOS SÁBADOS DE UNA BIBLIOTECA

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**RESUMO:** A preocupação com o bem-estar dos funcionários e a redução significativa na demanda de empréstimo de livros aos sábados por alunos da pós-graduação levou à alteração dos dias de funcionamento das unidades de informação da Biblioteca Central Professor Faris Michaelle (BICEN) da Universidade Estadual de Ponta Grossa (UEPG), no município de Ponta Grossa – PR. Logo, o estudo buscou suportar a decisão de fechamento da biblioteca universitária aos sábados em 2016. Verificou-se se há significância estatística na relação entre o tipo de usuário da biblioteca e a quantidade de exemplares emprestados aos sábados, e se o empréstimo de livros por alunos de pós-graduação era relevante em relação aos demais. Determinou-se, com base nos dados de empréstimo entre fevereiro de 2014 e dezembro de 2015, que há significância na relação entre o tipo de usuário da biblioteca e a quantidade de exemplares emprestados, e que o empréstimo de livros por alunos da graduação tem maior relevância em relação aos demais. Considerando ainda a economia de recursos como luz e horas extras e a manutenção do atendimento às normas do Ministério da Educação (MEC) para aprovação de cursos de graduação, o fechamento aos sábados durante o ano letivo de 2016 foi a decisão correta.

**PALAVRAS CHAVE:** Biblioteca universitária. Estudo de usuário. Análise de dados.

**ABSTRACT:** The concern with the welfare of employees and the significant reduction in the demand of books loans by postgraduate students on Saturdays led to a change in operating days at the information units of Central Library Professor Faris Michaelle (BICEN), in State University of Ponta Grossa (UEPG), in Ponta Grossa, PR. Therefore, the study intended to support the decision of closing the university library on Saturdays in 2016. It was verified whether there is statistical significance in the relationship between the type of library user and the number of books borrowed on Saturdays, and whether the loan of books by postgraduate students was relevant compared to others. Based on the loan data between February 2014 and December 2015, it was determined that there is a significant relationship between the type of library user and the number of borrowed books, and that the loan of books by undergraduate students is the most relevant. Also considering the saving of resources such as light and overtime and the maintenance of compliance with the norms of the Ministry of Education (MEC) for the approval of undergraduate courses, closing the units on Saturdays during the academic year of 2016 was the right decision.

**KEYWORDS:** University library. User study. Data analysis.

**RESUMEN:** La preocupación con el bienestar de los funcionarios y la reducción significativa de la demanda de préstamos de libros durante los sábados por alumnos del pos-grado llevó a la alteración de los días de funcionamiento de las unidades de información de la Biblioteca Central Profesor Faris Michaelle (BICEN) de la Universidade Estadual de Ponta Grossa (UEPG), en el municipio de Ponta Grossa-PR. Luego, el estudio busca apoyar la decisión del cierre de la biblioteca universitaria durante los sábados en 2016. Fue verificado si hay una estadística relevante en la relación entre el tipo de usuario de la biblioteca y la cantidad de ejemplares prestados durante los sábados, y si el préstamo de libros por alumnos de pos-grado era relevante en relación a los demás. Se determinó con base en los datos de préstamo entre febrero de 2014 y diciembre de 2015, que hay importancia en la relación entre el tipo de usuario de la biblioteca y la cantidad de ejemplares prestados, y que el préstamo de libros por alumnos de grado tiene mayor importancia en relación a los demás. Considerando todavía la economía de recursos como luz y horas extras y el mantenimiento del tratamiento a las normas del Ministerio de Educación (MEC) para la aprobación de carreras de grado, el cierre durante los sábados del año lectivo 2016, fue una decisión correcta.

**PALAVRAS-CLAVE:** Biblioteca universitaria. Estudio del usuario. Análisis de datos.

## 1 INTRODUCTION

Over the past twenty years, the updating and the expansion of informational demands induced a focus change at information units: from the archive formation and maintenance to excellence in customer care. The university library needs to be more dynamic in order to attract the whole community and to ensure that their demands are satisfied. For this purpose, several user studies have emerged involving questionnaires to determine the most used services and the quality of client service in libraries. The analysis of these studies allows the application of management and quality tools, previously used mainly by industry and commerce sectors, bringing a new perspective to public educational institutions and demanding a better employee qualification. A more humane and specialized service in libraries is an attraction for generations that have access to lots of information but often without the know-how required to use it properly.

Prioritizing quality over quantity led to a reassessment of working hours of the information units from the University Library Professor Faris Michael (BICEN) at the State University of Ponta Grossa (UEPG), located at the city of Ponta Grossa, PR, Brazil. Two information units, Central Campus and Uvaranas Campus, used to open on Saturday afternoons during four hours with the main objective of serving graduate students who have classes only on Fridays and Saturdays. Over the past two years, however, there has been a significant decrease in demand from this public, so this study aims to support the decision of closing the university library on Saturdays in 2016.

By using statistical methods as support, it was determined whether there is or not a significant difference between the kind of library user and the number of copies borrowed on Saturdays, and also if the book loans by graduate students is relevant in relation to others users. Therefore, it was sought the support to the decision-making process over the real need of opening the units of the university library on Saturdays, considering the employees' well-being, saving resources such as light and overtime hours, and maintaining compliance with the rules of the Ministry of Education (MEC) for undergraduate programs approval.

## 2 UNIVERSITY LIBRARY AND THE MODERN CONTEXT

In the 21st century, with globalization and easy access to new technologies, we are a touch from worldwide information. Within the university context, there is the dynamization of studies and partnerships, through papers, scientific articles and e-books, helping researchers in knowledge construction and minimizing the need for physical files. Nevertheless, the university library is the main resource in facilitating informational access and it should be a co-participant in the projects, acting as a mediator between the generated knowledge and the user (SANTOS, 2012).

Girard and Girard (2013) and Mueller (1984) pointed that university libraries are going

through a utmost transition for society, even though their main services are remaining the same. As Mueller (1984, p. 50) points out:

The basic functions of its services have remained and will remain the same, i. e., the preservation, organization and diffusion of knowledge and information. What has changed and will continue changing are the ways of performance and the use that is made of its activities.

Changes are guided by greater access to information, which is the result of digital media use, that reinforces the role of information units in intermediating the relation between users and knowledge. The focus of their activities goes from the maintenance of a considerable book collection to continuous improvement of the user care service. We keep the importance of planning, acquisition, organization, control and development of book collections, but user studies are incorporated in order to act effectively on the quality of provided services (PALETTA *et al.*, 2016).

For a quality care, we must also consider the well-being of the employees who work directly with users, by respecting their values, giving training and providing suitable working hours. Meireles and Santos (2010) point out that systems automation allowed that most of the daily tasks are made in front of a computer in addition to activities related to the collection, creating a greater need for training and consequently increasing the workload. The quality of life on the job can be defined by “the balance between worker’s satisfaction, well-being, working conditions to perform his tasks, and the financial stability of organizations”, according to Oliveira and Mello (2016, p. 271). Currently this is one of the factors that attracts people from different age groups to public institutions.

According to Maculan *et al.* (2011, p. 4), “establishing a culture of good service demands time and knowledge of the people involved in the process, it involves their affectivity and their ways of relating to others, and it depends on managers to get consolidated”. Quality in services, as discussed by Silva and Rados (2002), can be perceived through tangible factors, as the level of organization in the environment, and intangible, as the cordiality and cooperation in service.

Specific methodologies should be applied to support user studies, for which authors defend the use of statistical methods, by defining quantitative and qualitative variables. These studies, when precise, result in possibilities of improvement to library services and end-user satisfaction (METCHKO, 1981; LÜCK *et al.*, 2000; PALETTA *et al.*, 2016; MACULAN *et al.*, 2011).

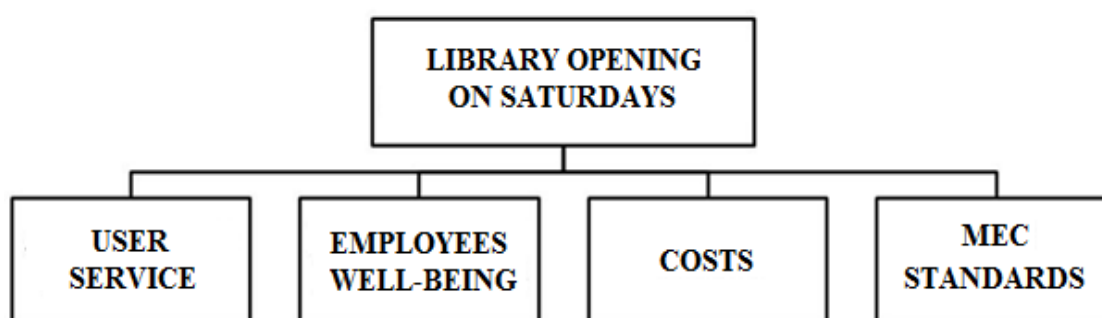
Any implements must also ensure compliance with the minimum requirements established by the Ministry of Education (MEC) for the approval of undergraduate programs. In the category involving university library’s analysis, the physical space, the collection and the offered services are considered. In the aspect of the library’s working hours, MEC demands that it opens in, at least, two shifts (including the one of the graduate course), one of

them being nocturnal (BRASIL, 2002).

The combination of factors must ensure users' and employees' satisfaction, by transforming the relationship between the university library and society. This is the main objective of educational institutions.

### 3 METHODOLOGY

Decision-making process regarding working hours of the libraries system BICEN follows some premises, illustrated in Figure 1.



**Figure 1.** Illustration of decision-making process over BICEN's working hours.

Source: Created by the authors (2016) based on the process used at BICEN.

Employees' well-being was evaluated only speculatively, without any quantitative or qualitative data in this study. The guarantee of compliance with the MEC standards was verified considering that the units would remain open from Monday to Friday from 8 a.m. to 10 p.m.

#### 3.1 Statistical methods

The data collection used as basis for the statistical analysis of user service was the number of copies - only books – borrowed on Saturdays from February 2014 to December 2015 at UEPG Central and Uvaranas libraries, obtained through reports generated by Pergamum system (PUCPR, 2016).

Table 1 presents the classification employed in user typification, type 5 (Administrative Technician) representing all institution's workers and type 6 (Other users) the entire external community. Therefore, we are able to define user type as an ordinal variable.

**Table 1.** User type description at UEPG’s university library.

Type	User
1	Undergraduate student
2	<i>Lato sensu</i> student
3	<i>Stricto sensu</i> student
4	Professor
5	Administrative Technician
6	Other users

Source: Created by the authors based on Pergamum system (PUCPR, 2016).

The Software Package Used for Statistical Analysis (SPSS) version 23.0 was loaded with the categorized data to run (i) normality, (ii) correlation, (iii) variance tests. First of all the variables were categorized in qualitative and quantitative for test definition. The average number of book loans was determined for each type of user in order to define the ones that borrowed the most during the period analyzed.

### 3.1.1 Normality and correlation tests

For the normality tests from the quantitative variable, it was checked the presence of discrepant values, the skewness and kurtosis, and the statistical significance by Shapiro-Wilk method. After determining the non-normality of the data, the nonparametric Spearman’s test was used to verify the correlation between the number of borrowed books and the user type, in order to determine whether there was correlation or not, in case the significance level was lower than 95%. The correlation being attested, the signal (positive or negative correlation) and the rho value were checked to determine if the correlation is weak (between 0.0 and 0.4), moderate (between 0.4 and 0.7) or strong (between 0.7 and 1.0).

### 3.1.2 Analysis of variance

The Kruskal-Wallis test, employed to determine whether there is or not significant difference between user types, was followed by Mann-Whitney U tests to determine which user groups presented significant variance in loans when compared to each other. The level of significance adopted for the tests was 95%.

For the Kruskal-Wallis test, the null hypothesis (H0) considers that the type of user does not affect the number of book loans on Saturdays. The alternative hypothesis (H1) considers that the type of user does affect the number of book loans on Saturdays.

### 3.2 Cost estimation method

In cost evaluation, only the most relevant indicators were considered, which would be:

- a) electricity: in the estimation of costs with electric energy, the data on the quantity of lamps and computers, as well as their corresponding consumption values, was summed and multiplied by the cost per kWh paid by the institution in October 2016, according to the responsible office;
- b) overtime hours: in this calculation a number of four library technicians for each information unit opened on Saturdays was assumed, based on historical values, in a total of eight people. The cost of each overtime hour was determined according to the average between levels 1 and 12 of 2016’s UEPG base salary for university agents of high school level class 1 (workers with complete college education) divided by 180 hours and multiplied by 150% (50% Saturday’s additional) (UNIVERSIDADE ESTADUAL DE PONTA GROSSA, 2016b).

The total avoided cost in 2016 can be estimated by multiplying the values per hour of electricity consumption plus the four overtime hours on Saturdays and by the 34 academic Saturdays of 2016, foreseen in UEPG’s academic calendar (UNIVERSIDADE ESTADUAL DE PONTA GROSSA, 2016a).

## 4 RESULTS AND DISCUSSION

First it was determined that the number of borrowed books on Saturdays would be the study’s quantitative variable and the user type (Table 1) would be the ordinal qualitative variable. After the data was loaded in the software, the results were obtained for the following analysis.

### 4.1 Mean values analysis

The mean values for number of borrowed books on Saturdays in relation to user type are presented in Table 2.

**Table 2.** Mean values, number of events (N) and standard deviation (Stand. Dev.) of borrowed books on Saturdays according to user types.

User	Mean value	N	Stand. Dev..
Undergraduate student	13.45	102	7.971
<i>Lato Sensu</i> student	3.86	7	1.574
<i>Stricto Sensu</i> student	4.04	28	3.626
Professor	2.91	22	2.348
Administrative technician	2.43	23	1.879
Other users	2.89	9	1.965
Total	8.68	191	7.958

Source: Created by the authors (2016).

Considering only the mean values of borrowed books, the undergraduate students represented an amount almost twice larger than the *Stricto Sensu* and *Lato Sensu* students together. Besides that, the number of loan events by undergraduate students (102 events) represented more than half the total number in the two years (191 events), indicating that in addition to lending more copies they also went to the library more often.

#### 4.2 Normality and correlation tests

The results of normality tests (Table 3) indicate that the number of borrowed books on Saturdays from February 2014 to December 2015 correspond to non-normal data, so it is justified the use of nonparametric tests in the analysis.

**Table 3.** Results of normality tests for number of borrowed books.

	Real	Padrão normalidade	Conclusão
<b>Number of events (N)</b>	191	> 30	Normal
<b>Discrepant values</b>	5	0	Non-normal
<b>Skewness</b>	1.501	<  1.5	Non-normal
<b>Kurtosis</b>	2.653	<  1.5	Non-normal
<b>Shapiro-Wilk test (Sig.)</b>	<0.001	> 0.05	Non-normal

Source: Created by the authors (2016).

Nonparametric Spearman's test (Table 4) showed  $p < 0.001$ , which indicates that there is correlation between the quantitative and qualitative variables.

**Table 4.** Data for the nonparametric correlation test.

	Spearman's rho	Sig. (bilateral)	N
Number of books vs. user type	-0.737	<0.001	191

Source: Created by the authors (2016).

The correlation is considered strong (Spearman's rho higher than 0.7), indicating that the number of borrowed books is related to the user type that made the loan. This shows that it is valid to consider these variables in decision making about the working hours of the university library on Saturdays.

It can also be noticed that the correlation has a negative value, so for high values of number of borrowed books we can expect low values for user type. This fact corroborates with the means analysis, that indicated that type 1 users - undergraduate students - borrowed a larger number of copies.

#### 4.3 Variance tests

After verifying the strong correlation between the variables, the Kruskal-Wallis test was used to determine whether there is or not significant difference between mean values, i. e., if one should accept or reject the null hypothesis ( $H_0$ ) that the type of user does not affect



the number of books borrowed on Saturdays. According to results presented in Table 5, considering p value of 0.05, H0 can be rejected.

**Table 5.** Results for nonparametric variance tests.

	<b>Chi-square</b>	<b>Sig. (bilateral)</b>	<b>d.f.</b>
Number of books vs. user type	108.173	<0.001	5

Source: Created by the authors (2016).

In order to determine between each user types this mean value difference is significative the Mann-Whitney U test was used, with the results for significance level indicated on Table 6.

**Table 6.** Significance levels obtained from Mann-Whitney U test according to user types compared.

User	Undergraduate student	<i>Lato sensu</i> student	<i>Stricto sensu</i> student	Professor	Administrative technician	Other users
<b>Undergraduate student</b>		<0.001	<0.001	<0.001	<0.001	<0.001
<i>Lato Sensu</i> student			0.476	0.094	0.025	0.206
<i>Stricto Sensu</i> student				0.195	0.051	0.460
<b>Professor</b>					0.579	0.839
<b>Administrative technician</b>						0.514
<b>Other users</b>						

Source: Created by the authors (2016).

It can be infer that undergraduate students have a significant difference of mean values when compared to all other categories, while *Lato Sensu* students only show a significant difference when compared to the institution employees. This corroborates with the mean values of borrowed books by user type, which leads to the conclusion that undergraduate students have an expressive representation when compared to any category of user type.

From the results of the statistical analysis of mean values, correlation and variance, it can be inferred that the category of user that most used the two information units for book loans was the undergraduate students from UEPG, thus breaking the paradigm that the university library should open on Saturdays to meet the demand of graduate students. One of the reasons that contributes the most to a smaller number of book loans is the loan period, which is of one week for undergraduate students, being extendable up to six weeks, and of one month for graduate students, being extendable up to six months. In addition graduate students are entitled to borrow up to eight copies at a time, while the undergraduate ones can

borrow only four per unit of information. Loynes and Proctor (2000), in their study over the impact of reduced working hours in public libraries, pointed out that this reduction is usually too small to isolate the many variables that lead students to attend less the libraries.

Considering that few graduate students make use of the library on Saturdays, and that these programs also take place on Fridays, students are able to use the services during the week, in their counter-class time, since both units are open in the morning, afternoon and evening period. Kapoor (2010) notes that with the opening hours of the library after classes and during lunch time, students tend to use more these hours to consult the collection and borrow books, increasing the frequency of users. Thus, the MEC standards for the university library services in order to approve undergraduate programs keep attended, since the students are given the opportunity of studying during his course hours and in other time periods, including at evening (BRASIL, 2002).

The closure of Central and Uvaranas Campus units on Saturdays during 2016 academic year avoided an estimated cost of R\$ 38,637.95, considering 34 academic Saturdays with eight technicians working by R\$ 33.96 per hour and an electric energy consumption of 19.44 kW per hour. This is not an exact number since wages vary according to degree and service time of the employees, as well as the cost and consumption of electric energy vary throughout the year. The estimative, however, is representative and it is a factor that supports the statistical analysis, pointing out the economic disadvantage generated if the library opens on Saturdays.

## 5 CONCLUSIONS

A number of factors contribute to quality service and employees' well-being is one of these. Aligned with the reduction in user's demand and the maintenance of staff rest, UEPG's library system chose not to open on Saturdays in 2016 based on user service's factors, cost reduction and compliance with MEC's standards. Statistical analysis on data of book loan on Saturdays between February 2014 and December 2015 demonstrated that there is a relationship among user type and the number of borrowed books. More than half of the book loans in the period were carried out by undergraduates, contradicting the idea that students from *Stricto Sensu* and *Lato Sensu* programs depend more on the library on weekends. Since undergraduate students can use the services during the week, in three shifts, the MEC standards for graduate programs approval are still met. Thus closing on Saturdays during the 2016 academic year was the correct decision, which also avoided a cost of about R\$ 38,637.95. In this study, only book loans on Saturdays data were used, disregarding users who use the library environment for study and local consultation purposes. Opinion studies with users and employees from the institution about the decision taken and the impact on the quality of the service, through questionnaires by example, could contribute to a deeper analysis.

## REFERENCES

BRASIL. Ministério da Educação. Secretaria de Educação Superior. **Manual de verificação in loco das condições institucionais**: credenciamento de instituições não universitárias; autorização de cursos superiores (ensino presencial e a distância). Brasília: MEC; SESu, 2002. 85 p. Disponível em: <<http://portal.mec.gov.br/sesu/arquivos/pdf/Manual1.pdf>>. Acesso em: 09 nov. 2016.

GIRARD, Carla Daniella Teixeira; GIRARD, Cristiane Marina Teixeira. A importância da biblioteca universitária como mediadora do processo de ensino-aprendizagem na educação superior: um estudo de caso da Biblioteca Paulo Freire da UEPA. **Múltiplos Olhares em Ciência da Informação**, Belo Horizonte, v. 3, n. 2, 2013. Disponível em: <<http://portaldeperiodicos.eci.ufmg.br/index.php/moci/article/viewFile/1996/1420>>. Acesso em: 09 nov. 2016.

IBM Corp. **IBM SPSS Statistics for Windows, v. 23.0**. Armonk: IBM Corp, [S.I.]. Software para análise estatística.

KAPOOR, Kanta. Print and electronic resources: usage statistics at Guru Gobind Singh Indraprastha University Library, **Program**, [S.I.], v. 44, n. 1, p.59-68, fev. 2010. Disponível em: <<http://dx.doi.org/10.1108/00330331011019690>>. Acesso em: 10 nov. 2016.

LOYNES, Robert; PROCTOR, Richard. The effect of reductions in public library opening hours on book issues: a statistical analysis. **Journal of Documentation**, [S.I.], v. 56, n. 6, p.605-623, dez. 2000. Disponível em: <<http://dx.doi.org/10.1108/eum000000007129>>. Acesso em: 10 nov. 2016.

LÜCK, Esther Hermes et al. A Biblioteca Universitária e as diretrizes curriculares do ensino de graduação. In: SEMINÁRIO NACIONAL DE BIBLIOTECAS UNIVERSITÁRIAS, 11., Florianópolis, 2000. **Anais...** Disponível em: <<http://snbu.bvs.br/snbu2000/docs/pt/doc/t024.doc>>. Acesso em: 01 nov. 2016.

MACULAN, Benildes Coura Moreira dos Santos et al. Levantamento de usos e usuários: biblioteca do curso de biblioteconomia da Universidade Federal de Minas Gerais. **Múltiplos Olhares em Ciência da Informação**, Belo Horizonte, v. 1, n. 1, mar. 2011. Disponível em: <<http://portaldeperiodicos.eci.ufmg.br/index.php/moci/article/viewFile/1223/823>>. Acesso em: 09 Nov. 2016.

MEIRELES, Maria Lucia Araujo; SANTOS, Jussara Pereira. Tecnologias da informação e a saúde dos funcionários das bibliotecas do campus da saúde da UFRGS: avaliação da necessidade de implantação de um programa de ginástica laboral. In: Seminário Nacional de Bibliotecas Universitárias, 16., 2010, Rio de Janeiro. **Anais eletrônicos...** Rio de Janeiro: UFRJ, 2010. Disponível em: <[http://www.sibi.ufrj.br/snbu2010/pdfs/posters/final\\_111.pdf](http://www.sibi.ufrj.br/snbu2010/pdfs/posters/final_111.pdf)>. Acesso em: 09 nov. 2016.

METCHKO, Dulce Maria Bastos. Demandas de usuários de bibliotecas: revisão de literatura. **Educ. rev.**, Curitiba, n.1, p.75-107, dez. 1981. Disponível em:

<[http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S0104-40601981000100006](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-40601981000100006)>. Acesso em: 09 nov. 2016.

MUELLER, Suzana Pinheiro Machado. Bibliotecas e sociedade: evolução da interpretação de função e papéis da biblioteca. **R. Esc. Bibliotecon. UFMG**, Belo Horizonte, v. 13, n. 1, p. 7-54, mar. 1984. Disponível em: <<http://basessibi.c3sl.ufpr.br/brapci/v/a/2698>>. Acesso em: 09 Nov. 2016.

OLIVEIRA, Eunice Câmara de; MELLO, Josiane. Qualidade de vida no trabalho: um estudo realizado numa Biblioteca Universitária no Rio Grande do Norte. **Revista ACB**, [S.l.], v. 21, n. 2, p. 270-293, set. 2016. Disponível em: <<https://revista.acbsc.org.br/racb/article/view/1147>>. Acesso em: 09 nov. 2016.

PALETTA, Francisco Carlos et al. Estudos de usuário e o planejamento dos serviços de informação em biblioteca. **Revista ACB**, [S.l.], v. 21, n. 1, p. 145-155, mar. 2016. Disponível em: <<https://revista.acbsc.org.br/racb/article/view/1043>>. Acesso em: 09 nov. 2016.

PUCPR. **Pergamum v. 9 s. 0**. Curitiba: Associação Paranaense de Cultura da PUCPR, 2016. Sistema informatizado de gerenciamento de dados.

SANTOS, Marivaldina Bulcão dos. Biblioteca universitária: acesso à informação e conhecimento. In: SEMINÁRIO NACIONAL DE BIBLIOTECAS UNIVERSITÁRIAS, 17., 2012, Gramado. **Anais eletrônicos...** Gramado: [S.I.], 2012. Disponível em: <<http://www.snbu2012.com.br/anais/pdf/4QHV.pdf>>. Acesso em: 09 nov. 2016.

SILVA, Chirley Cristiane Mineiro da; RADOS, Gregório Jean Varvakis. Gestão de serviços em bibliotecas: melhoria com foco no cliente. **Revista ACB**, [S.l.], v. 7, n. 2, p. 198-218, 2002. Disponível em: <<https://revista.acbsc.org.br/racb/article/view/370>>. Acesso em: 09 nov. 2016.

UNIVERSIDADE ESTADUAL DE PONTA GROSSA. **Calendário da Universidade Estadual de Ponta Grossa para o ano de 2016**. Disponível em: <<http://sites.uepg.br/prograd/wp-content/uploads/2013/09/Resolu%C3%A7%C3%A3o41.pdf>>. Acesso em: 21 nov. 2016a.

UNIVERSIDADE ESTADUAL DE PONTA GROSSA. **Tabela de vencimento básico e remuneração carreira técnica universitária - IEES**. Disponível em: <[https://sistemas.uepg.br/producao/pro-reitorias/prorh/sistemasproreitoria/PortalServidor/paginas/MenuEsquerdo/CarreirasSalarios/corpo\\_tec\\_administrativo/tabelasalarial2.php](https://sistemas.uepg.br/producao/pro-reitorias/prorh/sistemasproreitoria/PortalServidor/paginas/MenuEsquerdo/CarreirasSalarios/corpo_tec_administrativo/tabelasalarial2.php)>. Acesso em: 09 nov. 2016b.

