

# A STUDY OF THE RELATIONSHIP BETWEEN THE QUALITY OF ADMINISTRATIVE SERVICES AND ACADEMIC PERFORMANCE AT TSHWANE UNIVERSITY OF TECHNOLOGY



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## ABSTRACT

The purpose of the study was to identify and quantify factors that affect the ability of administrative employees of Tshwane University of Technology (TUT) to provide highly professional admission related services to students and relevant stakeholders at the 8 residential campuses of TUT in South Africa. The study was conducted by collecting data from a stratified random sample of size 120 employees of TUT. Data was gathered by use of a structured questionnaire and in-depth interviews. The sample size of the study was equal to  $n=120$ . A combination of quantitative and qualitative methods of data collection and analysis were used for conducting the study. As part of the quantitative aspect of study, data analysis was performed by using methods such as frequency tables, cross-tab analyses, logit analysis, Markov Chain Monte Carlo (MCMC) algorithms and Bayesian analysis. The performance of employees was assessed by using a composite index developed by Korschun, Bhattacharya and Swain (2014) for conducting a similar study. The study found that 68 of 120 respondents who were selected for the study (56.67%) were capable of providing highly professional services to students and relevant stakeholders by the standards of Korschun, Bhattacharya and Swain (2014), whereas the remaining 52 respondents (43.33%) were incapable of doing the same. Results obtained from logit analysis, MCMC algorithms and Bayesian analysis showed that the ability of employees to provide highly professional admission related services to students and relevant stakeholders was significantly influenced by 3 factors. These predictor variables were having the best interest of customers at all times, having adequate knowledge about procedures and queries from customers, and showing courtesy to customers at all times, in a decreasing order of strength.

**Keywords:** Tshwane University of Technology, Admission

services, Logit analysis, Bayesian analysis

## INTRODUCTION

The overall objective of study was to assess and evaluate factors that affect the ability of administrative employees of Tshwane University of Technology (TUT) to provide highly professional admission related services to students and relevant stakeholders at the 8 residential campuses of TUT in South Africa. TUT is the largest residential university in South Africa. Annually, TUT attracts over 60,000 new applicants at its eight campuses in South Africa. TUT offers a wide variety of training programmes at six faculties (engineering, science, information and communication technology, management sciences, humanities and health sciences). The key attributes of TUT in South Africa are affordability, easy access and the provision of quality education at its eight residential campuses. In terms of research output, patents and scientific merits, TUT is the leading and most reputable university of technology in South Africa. Securing admission into TUT is not so easy due to a large number of applications and stiff competition among applicants. TUT uses highly innovative and modern teaching and learning methods as a means of ensuring the highest quality of teaching and learning at local, continental and global levels. TUT places emphasis on the mastery of practical scientific and technological applications in all its programmes and academic offerings. The study was conducted with a view to critically assess and evaluate factors that affect the ability of administrative employees of Tshwane University of Technology (TUT) to provide highly professional admission related services to students and relevant stakeholders at the 8 residential campuses of TUT in South Africa.

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Administrative employees of TUT offer a wide variety of services to applicants. The services include assistance with regards to completing application forms (paper-based and on-line), outlining the list of requirements for admission, checking and verifying requirements for admission, the provision of residence-related services, the provision of health-related services, the provision of library-related services, the provision of transportation related services, the provision of security on campus, the provision of food and catering services, liaison with student representatives on all campuses, checking and verifying the authenticity of academic records and identity documents, providing finance related information to applicants, the collection of application fees to applicants, confirmation of admission to applicants, providing answers to questions, resolving queries from applicants, collecting and storing academic and financial records of applicants, and the provision of general and field-specific information to applicants. The quality of administrative services that are provided to applicants are critically important to applicants in view of the fact that first-time applicants are often not fully and accurately informed about the choices they can make on admission and enrolment at TUT. In certain cases, administrative employees of TUT are required to provide field-specific advisory services to first-time applicants and their parents and families.

### **Background of problem**

Studies conducted by Bharuthram (2012), Basch (2011) and Belle (2013) have shown that there is a significant association between the quality of administrative services that are provided by administrative employees of tertiary level academic institutions and overall academic performance. The study conducted by Cerasoli, Nicklin and Ford (2014) has shown that intrinsic motivation and extrinsic incentives jointly predict overall academic performance by learners. According to Kunter, Klusmann, Baumert, Richter, Voss and Hachfeld (2013), there is a three-way statistically significant association among the professional competence of teachers, the quality of instruction and student development. The study conducted by Lepp, Barkley and Karpinski (2014) has shown that there is a significant relationship between academic performance and the ability of universities to provide satisfactory administrative services to learners. There is a shortage of studies that could show the relationship between administrative services and overall academic performance within TUT. This study aims to fill the gap by collecting empirical data from employees of TUT who are responsible for providing routine administrative services to students who are enrolled at the eight residential campuses of TUT in South Africa.

## **LITERATURE REVIEW**

The study conducted by Padro (2015) has highlighted the list of factors that must be satisfied in order to provide quality higher education in universities such as TUT. The author has recommended a comprehensive monitoring and evaluation programme as a means of ensuring quality administrative services to students and relevant stakeholders. In the past several years, there have been protests at TUT campuses over fees and administrative requirements and procedures that must be adhered to by all students. The leaderships of TUT have handled such protests by using constructive dialogues and innovative methods that were mutually beneficial for students and the university. Annual reports issued by TUT since 2004 show that improving the quality and efficiency of administrative services to students has a significant association with overall satisfaction with the quality of services provided to students and applicants.

Recently, the management of TUT have rolled out an online registration and admission system to all students and first-time applicants. The online system is highly beneficial to both students and management. Although the online system has been characterised by teething problems and lack of access to the internet, it has been found to be highly effective and beneficial. All first time applicants are required to meet registration requirements. TUT has a dedicated office for admission and registration at all campuses. New applicants are required to complete admission forms and to have the completed forms submitted with supporting legal and academic documents to the admissions office. Every semester, students who are on the TUT system are required to complete registration forms for selected courses in the upcoming academic semester. The online system is designed to save valuable time. It also enables administrative employees to resolve queries and capture information efficiently and promptly.

All universities and colleges have physical or traditional admission and registration systems in addition to some partially automated systems like course registration, where current students have to login and electronically enrol in courses of interest, while some major admission process is still not fully automated. Admission and Registration processes are extremely important to both students and universities. Universities cannot create full admission records of new and current students without proper admission and registration system. Such a system is also essential and convenient to students because it provides them with a faster and less cumbersome procedure and easy to use tools to register and enrol in selected courses. The scale and the persisting nature of students' admission and courses registration issues in many universities in South Africa, warrant the need for a sophisticated and advanced au-

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tomated system. The online system at TUT has introduced a remarkably efficient system of administration, data capturing and verification to both students and administrative staff. The online system at TUT is expected to be highly successful and widely adopted by both students and administrative employees.

There is a shortage of studies conducted for assessing the degree to which administrative employees provide practical assistance to students and applicants who wish to be enrolled at TUT. There is also a shortage of studies that could be used for identifying key barriers that are known to undermine the quality of administrative services that are provided to applicants and students. The study conducted by Al-Smadi (2012) shows that online enrolment systems are quite vital for TUT as a means of ensuring the provision of highly efficient routine administrative services to applicants and students. Adebayo (2013) has reported that the quality of administrative services provided to tertiary level students has a significant impact on overall academic performance. In a similar study, Dipaola and Tschannen-Moran (2014) has reported that the ability of schools and tertiary level academic institutions to provide efficient administrative services has a bearing on pass rates and throughputs. Oliha (2014) and Mertens (2014) have found that the use of innovative methods such as online registration and enrollment are quite helpful for enhancing academic quality, integrity of academic records, relevance of academic assessment and evaluation procedures and professionalism at tertiary level academic institutions such as TUT.

According to the South African National Department of Higher Education and Training (2006), the South African Higher Education Act of 1997 (Act 101 of 1997) defines higher education as all learning programs leading to a qualification that meets the requirements of the Higher Education Qualifications Framework. The programs are of post-secondary education level, assigned exclusively to universities and universities of technology (referred to as institutions). Higher education institutions provide necessary repetitive work processes which are both administrative and academic in nature. A “process” is step-by-step collection of interdependent actions that together produce outcomes that contribute to the success of an organisation (Oliha, 2014). According to Mertens (2014), academic programmes require total quality control and assurance in areas related to record keeping, the production and dissemination of academic records, the setting out and administration of exams and assessments, the admission and recruitment of students, the provision of advisory services, registration, admission, and the provision of security-related, administrative and financial services to students. In 2004, the South African Government merged institutions of

higher education in order to create newly merged universities such as TUT. The merger was characterised by lack of harmony and inability to provide efficient administrative services to students (Thapa, Cohen, Guffey and Higgins-D’Alessandro, 2013) due to diverse demographic, economic, legal and cultural characteristics. According to the South African National Department of Higher Education and Training (2016), managing problems that arose from mergers was not so easy. According to Talib, Rahman and Qureshi (2013), lack of homogeneity and lack of cohesion have the potential for derailing vital academic programmes that are rolled out by national governments. According to the authors, one key area of contention has been the stiff competition for scarce resources. The management of divergent cultures could be alleviated by introducing highly efficient administrative methods (Black, 2004). According to Asif and Krogstie (2011), online and mobile systems are quite vital for alleviating problems arising from scarce educational resources and heterogeneity.

The study conducted by Seeman and Ohara (2006) shows that academic institutions must use monitoring and evaluation mechanisms for assessing the quality of administrative services that are provided routinely to students and first-time applicants. The authors have proposed that a strict assessment of the quality of administrative services must be made at regular intervals in order to ensure satisfactory academic performance and research outputs by students and academics. Based on a study carried out at the University of the Western Cape in South Africa, Kongolo (2012) has also made a similar recommendation to the South African National Department of Higher Education and Training. According to Korschun, Bhattacharya and Swain (2014), students must be treated as customers, and employees who fail to provide satisfactory administrative services to students must be punished. The authors have recommended that rewards should be provided to top-performing administrative employees as a means of boosting staff morale and commitment to the basic needs of students at the workplace. According to the South African National Department of Higher Education and Training (2016), the overall performance of all South African tertiary level academic institutions including TUT is taken into account in allocating operational budgets, developmental awards and research grants. Subsidies earned from the South African Government for throughput and research outputs depend strictly on performance. According to Black (2004), South African universities including TUT need to streamline routine operational administrative tasks as a means of cutting down operational cost and improving output. According to Loudon and Loudon (1993, 2007), academic institutions that do not perform adequately are characterised by frequent student protests, low

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staff morale, poor throughput and inadequate research output.

It is the duty and responsibility of TUT to ensure satisfactory performance from all administrative employees working in all its eight campuses in South Africa. Administrative employees who are responsible for assisting first time applicants and enrolled students must be encouraged to sign performance monitoring and evaluation contracts as a means of ensuring satisfactory performance. Rewards must be provided to administrative employees who provide outstanding services to applicants and students. Likewise, underperforming administrative employees must be provided with training opportunities so that they can improve their degree of performance. According to Black (2008), several South African institutions of higher learning often struggle to utilise modern technological methods of teaching and learning. According to Kongolo (2012), the key areas of failure are inability to use online administrative systems, failure to resolve queries from students and stakeholders fast enough, inability to provide accurate information promptly to students and applicants, inability to store and retrieve documents electronically, and failure to monitor and evaluate the performance of administrative employees at regular intervals.

## OBJECTIVE OF STUDY

The overall aim of the study was to assess and evaluate factors that affect the ability of administrative employees of Tshwane University of Technology (TUT) to provide highly professional admission related services to students and relevant stakeholders at the 8 residential campuses of TUT in South Africa. The study had the following specific objectives:

To identify and quantify factors that affect the quality of administrative services that are provided to applicants and students at TUT; and

To assess and evaluate the relationship between the quality of administrative services and improved academic performance by students at TUT.

## METHODS AND MATERIALS OF STUDY

The design of study was descriptive and cross-sectional. It was descriptive because the aim of the study was to explain and describe factors that affect the capacity of administrative employees of TUT to provide highly professional admission related services to students and relevant stakeholders at the eight residential campuses of TUT in South Africa. The study was cross-sectional because data was collected from the 120 respondents of study who were selected for the study only once during the course of study. According to Bryman (2015), a descriptive study design is suitable for an exploratory study of

this kind.

The design of study was descriptive and cross-sectional. The design of study was descriptive because the purpose of the study was to explore factors that affect the capacity of administrative employees of TUT to provide highly professional admission related services to students and relevant stakeholders at the eight residential campuses of TUT in South Africa. The design of study was cross-sectional because data was collected from the 120 respondents who took part in the study only once during the course of study. The total number of administrative employees providing administrative services to students and relevant stakeholders in TUT is about 983. The sample size of study was equal to 120. Stratified random sampling (Levy and Lemeshow, 2013) was used for selecting a random sample of size 120 respondents from the 8 residential campuses of TUT in South Africa.

The level of significance of study is fixed at the  $\alpha = 0.05$  level of significance. The sample size of study is denoted by, and is determined using the formula shown below:

In the above expression, the following values of  $\alpha$ ,  $Z_{\alpha/2}$ , and  $d$  were used:

$\alpha = 0.05$  = level of significance

$Z_{\alpha/2} = 1.96$  = value of standard normal random variable at the  $\alpha = 0.05$  level of significance

$d = 0.95$

$d = 0.05$

$d$  is the margin of error = 0.05

By using the above values, the sample size of study was equal to 120. For a socioeconomic survey, a sample of size 120 is large enough according to Levy and Lemeshow (2013). Each respondent of study was interviewed by using a structured, pre-tested and validated questionnaire of study. The SurveyMonkey tool was used for collecting responses from respondents who took part in the study.

Data was collected from each one of the 120 respondents who took part in the study on a total of 30 indicators of service quality. Data was collected from each of the 120 respondents of study by using a structured, pre-tested and validated questionnaire of study. Respondents had to provide answers to 30 questions related to personal characteristics and service quality. Measurements of perceptions were done by using a 5-point ordinal scale. Face validity was used for ensuring validity. The Cronbach Alpha test was used for ensuring reliability and internal consistency.

The performance of administrative employees was assessed by using a composite index developed by Korschun, Bhat-tacharya and Swain (2014) for conducting a similar study. According to Hair, Black, Babin and Anderson (2010), a structured questionnaire is ideal for gathering information from

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respondents effectively without introducing bias. The questionnaire used for data collection was pre-tested before it was used. Face validation was used in order to have the questionnaire of study validated.

The questionnaire of study had a total of 30 questions. The 30 questions assess the ability of the respondents to provide highly professional services to students and relevant stakeholders. Appendix A shows a copy of the questionnaire of study.

### **Dependent variable of study (Y)**

The dependent variable of study was an indicator of the ability of ability of the respondents to provide highly professional services to students and relevant stakeholders. As such, the dependent variable of study was dichotomous variable (a variable that can have 2 possible values only). The dependent variable of study (Y) had two possible values.

are independent or explanatory variables that affect the ability of ability of respondents to provide highly professional services to students and relevant stakeholders.

Quantitative methods of data analyses were used in the study. Quantitative methods such as frequency tables, cross-tab analyses (Hair, Black, Babin & Anderson, 2010), logit analysis (Hosmer & Lemeshow, 2013), MCMC algorithms and Bayesian analysis (Browne & Goldstein, 2010) were used for performing statistical data analyses. Face validity was used for ensuring validity, whereas the Cronbach Alpha test was used for ensuring reliability and internal consistency (Hair, Black, Babin & Anderson, 2010). The dependent variable of study was a measure of the ability of employees to provide highly professional services to students and relevant stakeholders. This is a dichotomous variable of study as it can only have 2 possible values. According to Hair, Black, Rabin and Anderson (2010), the following statistical methods of data analyses are suitable for conducting multivariate statistical data analyses in the study:

Frequency tables for categorical variables of study Bar charts, pie charts and box plots Cross-tab analyses for pairs of categorical variables Binary logistic regression analysis (Hosmer & Lemeshow, 2013) Makov Chain Monte Carlo (MCMC) algorithms and Bayesian analysis (Browne & Goldstein, 2010)

The statistical package STATA version 14 (STATA Corporation, 2015) was used for data entry and analyses.

### **The Pearson chi-square test of association**

The Pearson chi-square test of association (Hair, Black, Babin and Anderson, 2010) was used to measure the strength of association between two or more categorical (discrete) variables.

The null hypothesis states that the association between variables 1 and 2 is insignificant. The alternative hypothesis states that there is a significant association between the two variables. The null hypothesis is rejected if the p-value is less than the level of significance. The null hypothesis is accepted if the P-value is greater than or equal to the level of significance. If the null hypothesis is rejected, it means that the association or interdependence between variables 1 and 2 is quite significant.

That is, if a randomly identified observation belongs to category 1 of variable 1, it is also likely to belong to category 1 of variable 2 (assuming that the categories of variables 1 and 2 have been ordered systematically, in an increasing or decreasing order of strength of influencing the dependent variable Y).

Validity was ensured by using face validity (Hair, Black, Babin & Anderson, 2010). This was done by pre-testing the questionnaire of study based on a pilot study of size 5 respondents. Reliability and internal consistency were ensured by using the Cronbach Alpha test (Hair, Black, Babin & Anderson, 2010). The Cronbach Alpha test produces a coefficient that could be used for assessing degree of reliability and internal consistency. Cronbach Alpha coefficients of 75% or above indicate that the data collection tools and instruments are internally consistent and reliable (Hair, Black, Babin & Anderson, 2010).

Ethical approval was obtained for the study from the Research Ethics Committee at Tshwane University of Technology (TUT) through the supervisor of study. Standard ethical guidelines and procedures were followed for gathering data from each of the 120 respondents who took part in the study. Each of the participants took part in the study voluntarily, and signed an informed consent form prior to data collection. An explanation was provided to each of the respondents about the purpose of the study, along with their right to drop out of the study without having to explain why. They were informed that responses obtained from each participant would be kept in confidence, and that responses provided by respondents would be made anonymous. Respondents were not exposed to any risk as a result of taking part in the study.

## **RESULTS OF DATA ANALYSES**

The results showed that 68 of the 120 respondents (56.67%) were capable of providing highly professional administrative services to students and relevant stakeholders, whereas the remaining 52 respondents (43.33%) were unable to do the same. Table 1 shows a summary of personal characteristics of the 120 respondents who took part in the study.

It can be seen from Table 1 that about 66% of the 120 respondents were female, whereas about 34% of respondents

**Table 1** Personal characteristics of respondents (n=120)

General characteristics of respondents	Frequency (Percentage)
Gender of respondents	Male: 41 (34.17%) Female: 79 (65.83%)
Age category of respondents in years	Less than 20: 1 (0.83%) 20 to 30: 16 (13.33%) 31 to 40: 55 (45.83%) 41 to 50: 33 (27.50%) 51 or more: 15 (12.50%)
Highest level of education of respondents	Senior certificate: 25 (20.83%) Diploma: 30 (25.00%) Bachelor's degree: 58 (48.33%) Master's degree: 7 (5.83%)
Position of respondents	Administrator: 96 (80.00%) Senior administrator: 24 (20.00%)
Duration of service in years	Three or less: 14 (11.67%) Four to seven: 36 (30.00%) More than seven: 70 (58.33%)

were male. The percentage of respondents whose ages were between 31 and 40 years was about 46%. The percentage of respondents with Master's degree qualifications was about 6%. The percentage of senior administrators was equal to 20%. About 58% of respondents had served TUT for more than seven years at the time of the study.

Pearson's chi-square tests of associations (Hair, Black, Babin and Anderson, 2010) of two-by-two cross-tab analyses were used for assessing the strength of association between the ability to provide students with highly professional admission related services and various socioeconomic characteristics of the 120 respondents who were selected for the study. Table 2 shows significant two-by-two associations that were obtained from cross-tab analyses. The table shows observed chi-square values and P-values for 10 significant two-by-two associations between the ability of respondents to provide students with highly professional services and various socioeconomic characteristics of the 120 respondents who were selected for the study. At the 0.05 level of significance, significant associations have P-values that are smaller than 0.05.

Legend: Significance of association at \*  $P < 0.05$ ; \*\*  $P < 0.01$ ; \*\*\*  $P < 0.001$

In Table 2, it can be seen that the ability to provide students with highly professional services was significantly associated with 10 variables. These 10 variables are: Having the best interest of customers at all times, showing courtesy to customers at all times, complete devotion to customers at all times, understanding the specific needs of customers, providing customers accurate and prompt information about services at all times, having adequate knowledge about procedures and queries from customers, having enough confidence about procedures and queries from customers, willingness to assist customers at all times, ability to give individual attention to customers at all times, and sincerity to customers, in a decreasing order of strength.

Logit analysis (Hosmer and Lemeshow, 2013) was used in order to identify key predictors of the ability of the 120 respondents who were selected for the study to provide highly pro-

fessional services to students and relevant stakeholders. The procedure showed that the ability of the 120 respondents in the study to provide highly professional services to students and relevant stakeholders was significantly influenced by 3 predictor variables. These predictor variables were having the best interest of customers at all times, having adequate knowledge about procedures and queries from customers, and showing courtesy to customers at all times, in a decreasing order of strength. In logistic regression analysis, the measure of effect is the odds ratio. At the 5% level of significance, significant predictor variables are characterised by odds ratios that differ from 1 significantly, P-values that are smaller than 0.05, and 95% confidence intervals that do not contain 1. Table 3 shows odds ratios estimated from logit analysis. It can be seen from the table that all 3 predictor variables were highly significant at the 5% level of significance.

The percentage of overall correct classification for this procedure was equal to 91.60%. Percentage sensitivity for the fitted logistic regression model was equal to 90.38%. Percentage specificity for the fitted logistic regression model was equal to 92.54%. The P-value obtained from the Hosmer-Lemeshow goodness-of-fit test was equal to 0.2296  $> 0.05$ . This indicates that the fitted logistic regression model is fairly well reliable.

### Interpretation of significant odds ratios

The odds ratio of the variable "having the best interest of customers at all times" is equal to 158.50. This indicates that an employee who does not have the best interest of customers at all times is 158.50 times as likely to fail in comparison with another employee who has the best interest of customers at all times with regards to providing highly professional services to students and relevant stakeholders.

The odds ratio of the variable "having adequate knowledge about procedures and queries from

customers" is equal to 8.68. This indicates that an employee who does not have adequate knowledge about procedures and queries from customers is 8.68 times as likely to fail in com-

**Table 2** Results obtained from cross-tab analyses (n=120)

List of 10 variables significantly associated with the ability of employees to provide highly professional services to students	Chi-square value	P-value
Having the best interest of customers at all times	86.1015	0.000***
Showing courtesy to customers at all times	66.5520	0.000***
Complete devotion to customers at all times	60.4042	0.000***
Understanding the specific needs of customers	57.6980	0.000***
Providing customers accurate and prompt information about services at all times	49.6062	0.000***
Having adequate knowledge about procedures and queries from customers	47.6640	0.000***
Having enough confidence about procedures and queries from customers	46.8382	0.000***
Willingness to assist customers at all times	45.8084	0.000***
Ability to give individual attention to customers at all times	40.7294	0.000***
Sincerity to customers	40.0990	0.000***

**Table 3** Results from binary logistic regression analysis

Factors that affect ability to provide highly professional services to students and relevant stakeholders	Odds Ratio	P-value	95% C. I.
Having the best interest of customers at all times	158.50	0.000	(12.06, 2084.025)
Having adequate knowledge about procedures and queries from customers	8.68	0.021	(1.39, 54.18)
Showing courtesy to customers at all times	8.04	0.023	(1.33, 48.43)

parison with another employee who has adequate knowledge about procedures and queries from customers with regards to providing highly professional services to students and relevant stakeholders.

The odds ratio of the variable “showing courtesy to customers at all times” is equal to 8.04. This indicates that an employee who does not show courtesy to customers at all times is 8.04 times as likely to fail in comparison with another employee who shows courtesy to customers at all times with regards to providing highly professional services to students and relevant stakeholders.

Makov Chain Monte Carlo (MCMC) algorithms and Bayesian analysis (Browne and Goldstein, 2010) were used for performing bootstrapping simulations. MCMC algorithms are used for solving multilevel problems that involve the construction of constrained variance matrices in cases where linear estimation techniques fail to produce theoretically reliable estimates of parameters.

Table 4 shows egression coefficients estimated from MCMC algorithms and Bayesian analysis. At the 5% level of significance, influential predictor variables of satisfactory performance are characterized by estimated regression coefficients that differ from 0 significantly, P-values that are smaller than 0.05, and 95% confidence intervals that do not contain the number 0.

It can be seen from Table 4 that the ability of the 120 respondents in the study to provide highly professional services to

students and relevant stakeholders was significantly influenced by 3 predictor variables. These predictor variables were having the best interest of customers at all times, having adequate knowledge about procedures and queries from customers, and showing courtesy to customers at all times, in a decreasing order of strength. These findings are quite similar to the ones obtained from logit analysis.

## DISCUSSION OF RESULTS

The study has shown that about 57% of administrative employees were capable of providing highly professional services to students and relevant stakeholders by the standards of Korschun, Bhattacharya and Swain (2014), whereas the remaining 43% of employees were incapable of doing the same. Results obtained from logit analysis, MCMC algorithms and Bayesian analysis showed that the ability of employees to provide highly professional admission related services to students and relevant stakeholders was significantly influenced by 3 factors. These predictor variables were having the best interest of customers at all times, having adequate knowledge about procedures and queries from customers, and showing courtesy to customers at all times, in a decreasing order of strength.

Findings obtained from the study could be used for improving the quality of administrative services that are provided to students of TUT. Administrative employees of TUT offer a wide variety of essential services to first time appli-

**Table 4** Regression coefficients estimated from Bayesian analysis

Factors that affect ability to provide highly professional services to students and relevant stakeholders	Regression coefficient	95% Confidence Interval	P-value
Having the best interest of customers at all times	5.07	(4.17, 8.58)	0.000
Having adequate knowledge about procedures and queries from customers	2.16	(1.89, 4.34)	0.002
Showing courtesy to customers at all times	2.08	(2.63, 4.19)	0.007

cants and enrolled students. Examples of such services are the provision of basic information on admission and enrollment requirements, clarification on issues, completing application forms (paper-based and online), checking and verifying requirements, the provision of residence-related services, the provision of health-related services, the provision of library-related services, the provision of transportation related services, the provision of security on campus, the provision of food and catering services, liaison with student representatives on all campuses, checking and verifying the authenticity of academic records and identity documents, providing finance related information to applicants, the collection of application fees to applicants, confirmation of admission to applicants, providing answers to questions, resolving queries from applicants, collecting and storing academic and financial records of applicants, and the provision of general and field-specific information to applicants. The quality of administrative services that are provided to applicants are critically important to applicants in view of the fact that first-time applicants are often not fully and accurately informed about the choices they can make on admission and enrolment at TUT.

According to Bharuthram (2012), Basch (2011) and Belle (2013), there is a significant association between the quality of administrative services that are provided by administrative employees of tertiary level academic institutions and overall academic performance. The study conducted by Cerasoli, Nicklin and Ford (2014) has shown that intrinsic motivation and extrinsic incentives jointly predict overall academic performance by learners. Kunter, Klusmann, Baumert, Richter, Voss and Hachfeld (2013) have pointed out that there is a significant association among the professional competence of teachers, the quality of instruction and student development. Lepp, Barkley and Karpinski (2014) have reported that there is a significant relationship between academic performance and the ability of universities to provide satisfactory administrative services to learners.

Padro (2015) has recommended the use of a comprehensive monitoring and evaluation programme as a means of ensuring the provision of highly efficient, affordable and quality administrative services to all enrolled students and relevant stakeholders. Students have staged protests over poor service delivery at many South African academic institutions includ-

ing TUT in the past several years. According to the author, the only reliable method of addressing the likelihood of protests is to render quality and affordable services at all TUT campuses. Students must be educated on fees and administrative requirements and procedures that must be adhered to by all students. The leaderships of TUT have handled such protests by using constructive dialogues and innovative methods that were mutually beneficial for students and the university. Annual reports issued by TUT since 2004 show that improving the quality and efficiency of administrative services to students has a significant association with overall satisfaction with the quality of services provided to students and applicants.

The leadership at TUT have implemented an online registration and admission system to all students and first-time applicants. The online system is highly beneficial to both students and management. Although the online system has encountered a few problems such as lack of access to the internet, it has been found to be highly effective and beneficial. All first time applicants are required to meet registration requirements. TUT has a dedicated office for admission and registration at all campuses. New applicants are required to complete admission forms and to have the completed forms submitted with supporting legal and academic documents to the admissions office. Every semester, students who are on the TUT system are required to complete registration forms for selected courses in the upcoming academic semester. The online system rolled out by TUT is expected to save valuable resources such as time and money to both students and TUT. The annual report issued by the Registrar's Office of TUT indicates that the online system has enabled administrative employees to resolve queries and capture information efficiently and promptly.

### Recommendations of study

Based on the findings of study, the following recommendations are made to the top management of Tshwane University of Technology with a view to contribute for the improvement of the quality of administrative services that are provided to first time applicants and enrolled students:

Awareness campaigns should be launched at all campuses about the online system at TUT so that people could use the system more effectively;

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The online system at TUT should be made as user-friendly. This could be achieved by providing online assistance, by giving users the choice of preferred language, and by providing sample duly completed forms available as an example to first time users;

Users should be provided with online help;

Additional bandwidth should be provided to the online system at TUT in order to avoid the incidence of network related crashes;

Training should be provided to administrative employees who need to upgrade their skills;

A comprehensive monitoring and evaluation programme should be implemented as a means of ensuring service quality at all campuses of TUT.

Rewards should be provided to top-performing employees as a means of boosting morale.

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