



A FACTOR ANALYSIS APPROACH TOWARDS A STUDY OF THE FACTORS AFFECTING STUDENTS' CHOICE OF HIGHER EDUCATION INSTITUTION: A CASE STUDY OF PRIVATE INSTITUTION (TWINTECH INTERNATIONAL UNIVERSITY COLLEGE TECHNOLOGY)

Khamsiah Ishak¹

¹International Islamic University Malaysia

ABSTRACT

This study was conducted to discover the input that will help in the strategic management of the educational institution. The input is focused on information of the factors affecting students' choice of a higher educational institution. For private educational institutions, the input also aids them in strategic marketing to gain competitive advantage. Specifically the study was done to discover the most important underlying factor that affects students' choice of an educational institution and also to show what aspects of the institutional factor are considered by students when they make their choices of educational institutions. This research followed a quantitative research design, where a survey, using a questionnaire, was used to gather the data on the factors that affect students' choice criteria. By employing the pertinent research methodology, which is the Factor Analysis, more specifically the principal component analysis (P.C.A.) the researcher was able to reduce all the 51 items of students' responses to six (6) significant factors. The overall findings revealed that students chose more institutional factors than other factors. Based on this finding, a one factor solution was discovered to the study of students' choice, which is the factor of the "institution" with the highest factor loadings. No other studies had covered comprehensively all the items from the literature review (social, economic, physical, institutional and environmental, academic, marketing and administrative items) regarding students' choice of tertiary education.

Keywords: Student's choice, Higher education, Institutional factor, Factor analysis, Principle component analysis, Competitive advantage, Positioning, Brand, Strategic marketing.

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Contribution/ Originality

This study contributes to the existing literature on students' choice criteria of higher educational institutions. While most studies employ descriptive statistics using frequency and mean analysis, this study uses the factor analysis approach (Principle Component Analysis) of statistical methods which is a reduction scheme of many independent variables into groups through their loadings.

1. INTRODUCTION

In Malaysia, there are 351 private colleges and 65 private universities and 30 private university colleges registered with the Ministry of Education and the Malaysian Quality Accreditation in 2014. These private universities offer many programmes that are both internally designed and have also collaborated with external educational institutions. All these institutions face stiff competition for the enrolment of students. It is in this context that a case study of the factors of students' selection in this college is undertaken. As one of the private colleges in Malaysia, The Twintech International University College of Technology (TIUCT) was founded in 1994 in Setapak, Kuala Lumpur to fulfill the nation's needs and TIUCT has to respond to the national aspirations of

making Malaysia a developed nation by the year 2020. TIUCT plays an important role in providing the human capital required. As a private business organisation, the college's success is achieved if it has an advantage over other institutions (Ackerman, 2008). Consequently, the college administration needs to implement strategic planning to gain the competitive edge in the local and global market trends.

Strategic planning is not only a tool for the future but also a requirement for survival. Institutions must design programmes and schedules that will best meet the needs of the market segments. University presidents and trustees should have strategic plans each year for each academic department and programme. This is the value in strategic planning in order to bring about a new positioning for the institution. Firms need to play on their strengths and situate themselves through a process of designing an image as stated by in Maringe (2003). Being a service business, the educational institution has to establish the "product quality" or "brand" to gain the competitive advantage mentioned earlier.

1.1. Statement of Problem

The student enrolment for all semesters in TIUCT must be sufficient for it to remain competitive. TIUCT has to sell its 'product' which is its educational services and attract enough customers to remain competitive. The marketing strategy should be done with the aim of getting more students enrolled into TIUCT. However, in the past for the period up to 2008, the pattern of enrolment has not been consistent. As such, TIUCT has to ensure that the services offered are attractive enough to invite enrolment to the college. Knowledge about the customers' needs is therefore imperative for a strategic marketing plan, thus a survey of customer's or student's needs is necessary.

The purpose of the research is to determine the factors that students use for selecting the college to further their studies. The factors are made up of the, social, economic, physical, institutional and environmental, academic, marketing and administrative aspects. The choice of these aspects is gathered based on the literature review (Hossler, 2004; Faridah and Nooraini, 2006; Bonema, 2008; Morris and Rutt, 2009; Gildersleeve, 2010).

This research attempts to answer questions regarding the factors affecting their choice of college. It also attempts to find out the most important factor regarding their choice of a college.

1.2. Significance of the Study

This research is interested in addressing the various audiences in the college of TIUCT. They include the higher management, the marketing department, the academic staff, the administrative staff, and the current and prospective student population.

2. LITERATURE REVIEW

According to Hossler, the choice process has gone through several stages of development, during the last half of the 20th century. This process involves the student and family characteristics, institutional admissions policies and practices, and public policies which have influenced` the manner and timing of students' college-choice decisions. In the 21st century, a study done by Cummings, Hayek, Kinzie and Jacob in 2000 cited in Hossler (2004) found that factors affecting students' choice are multifarious. Various aspects of the institutions, personal characteristics and economic circumstances influence students' decisions as outlined below.

2.1. Economic Influence

According to Faridah and Nooraini (2006) and Morris and Rutt (2009) cost and financial aid are important considerations for students choice of college. In Malaysia, many students from the rural areas of low economic status need places to study and their rights cannot be denied, in spite of the fact that their academic achievement is of less than excellent. A study taken by Grodsky and Riegle-Crumb (2010) have discovered that students from the low income class look for basic educational opportunity in higher education.

2.2. Social Influence

Social contexts for e.g. schooling, family must be taken into consideration by counsellors to help them in understanding pre-college contexts (Gildersleeve, 2010; Payne, 2010). However, these studies do not delve into the extent of their influence on their children.

2.3. Physical Influence

The key factor of students' college selection besides accommodation and place is the facilities offered by a college (Maringe, 2003). Rohaizat (2004) as cited in Faridah and Nooraini (2006) confirmed input like the 'physical evidence' is important in "stimulating need recognition" of college selection among students in higher education.

2.4. Academic Influence

As stated by Bonema (2008) one of the selection criteria of students is the college's employability aspects especially its long-term earning potential. Astin (1994) as cited in Hossler (2004) reported that good academic reputation is the first factor chosen by most students. Cutting-edge technology and widespread use of educational programmes in technology has high published ranking to offer future recruitment of students in this era of high education Astin (1994) as cited in Hossler (2004). Patton (2005) and Bonema (2008) indicated that important items are partnerships, and guardian of effective contracts with other employers.

For the teaching and learning process, students stressed the important role of lecturers in the university (Rohaizat 2004) as cited in Faridah and Nooraini (2006) a knowledgeable faculty is also liked by students. According to Astin (1994) as cited in Hossler (2004); Morris and Rutt (2009) good academic reputation is the first factor of influence.

2.5. Marketing Influence

Promotion of a college to the public (i.e. advertising and publicity) is also a key constituent element in enrolment (Maringe, 2003). 50.8% of students agreed on the importance of promotion in a study done by Faridah and Nooraini (2006) of private college students in Malaysia.

In this research, the factors are based on these social, economic, physical, educational, institutional and administrative influences of choice. Moreover, these influences constitute the variables to be explored in this study. It is very conducive for a statistical analysis of a quantitative design. A factor analysis approach to its methodology is used for this exploratory study. All the items used in this study are taken from various research studies in the literature as described above. The items are easily identified and understood by the respondents to enable the achievement of validity and reliability.

3. METHOD

The sample consists of 130 students from the Twintech International University College of Technology, In Kuala Lumpur, Malaysia. The students were randomly selected from all the faculties in the college and from the first year to the final year students to represent the population of the college. There were both local and international students from China and Africa. There were 70 males and 60 females.

This research used the principal component analysis which is a data reduction scheme. It is designed to summarize the observed data with as little loss of information as possible. The analysis should retain only those dimensions with loadings above .60 in absolute value. With the small sample, the minimum number of variables retained was two if the magnitude of the loadings exceeded more than .60 to enable the study to explore the underlying dimensions of students' choices.

3.1. Instrument

This study uses a questionnaire using 51 items which were found after a comprehensive literature review of the studies done on students' college choice. It covered all aspects such as the physical, economic, academic and institutional aspects of students' choice of a college or higher educational institution. The items were explored in many studies. Some of the studies were done locally (Rohaizat 2004) as cited in Faridah and Nooraini (2006) and some were on from other countries like United Kingdom, United States (Hossler, 2004) and Australia. Some were in the past but there are also some which are current, so the items chosen are current in nature as well as popular through the years.

3.2. Analysis

As this is an explorative study of factors that students choose to enter a college or a higher educational institution, the researcher specifically used the principal component analysis method. A correlation matrix of inter-variables was produced. Then the factor loadings were estimated to meet the suggested .60 and above criteria. To increase the interpretability of the dimensions, the factors were subjected to direct oblimin rotation. This is done to get the simplest structure of factors. The Kaiser- Guttman criterion for important factors, (i.e. eigenvalue > 1.0), Catell's scree test, significance test on factor loadings aid in the reduction process and the retainment of important factors. The factors are screened for its interpretability so as to retain those factors which are interpretable. Cronbach alpha is applied to estimate the internal consistency of the factors

4. RESULTS

The results are shown using descriptive and inferential statistics. The degree of inter-correlation among the variables allowed for the use of principal component analysis; Bartlett Sphericity Test was statistically significant, $\chi^2(1225)=5992.1$, $p < .001$. To obtain factor solution the analysis used the maximum likelihood procedure followed by the oblimin method of axis rotation.

The results showed that there are 9 latent variables measured by the data. The correlation matrix (see appendix) produces a good fit solution of 9 factors, with a 76 percent of the total variance. This indicates that the 9 underlying dimensions explain more than 70 percent of the variance among the 51 variables. The variance of the first factor, the largest eigenvalue was 49.9 and the other subsequent values are 6.69, 3.78, 3.30, 2.88, 2.75, 2.42, 2.20 and 2.06 respectively. All estimated factor loadings were of practical significance at $p < 0.01$.

There was contamination or noise to the solution. Item four was excluded. This item is "the availability of students' activities outside of classroom e.g. clubs and societies". This item is a summarized version of the other items regarding co-curriculum, thus it is not required to be repeated. The final solution shows a six factor solution accounting for 69% of the total variance. A qualitative approach was finally applied to the underlying dimensions which are done to assess their interpretability. Six factors were found to be interpretable which forms the factor structure of this study. Table 1 is a summary of the factors and their loadings.

Table 1 shows that the first factor has factor loadings from 17 independent variables. The variables are those pertaining to the academic, environment and administration of the college. When interpreted these represents the institutional factor. The highest loading is for the quality of lecturers teaching (.959). This is followed by reputation of programs (.935).

Table-1. Factor One Loadings

Item	Loading
Availability of financial loan	.679
Availability of public transportation	.752
Safety of college environment	.763
Reputation of college	.604
Ability to get job after graduation	.840
Ability of seniors to get job	.872
Reputation of programs	.935
Easiness of previous students in finding jobs after graduating from this college	.872
Lecturers' qualification	.816
Lecturers' ability to communicate	.790
Lecturers' availability to meet for consultation	.846
Good standard of teaching	.959
Suitable assessment criteria (e.g. CGPA)	.758
Availability of technical and industrial training in final years	.808
Helpful admission staff	.886
Fast and hassle free registration	.666
Approachable and informed academic staff	.919
Advisors accessible and informed	.836
Clear and up to date communication	.666

Table-2. Factor Two loadings

Item	Loading
Availability of a wide range of resources in the library	.703
Availability of up-to-date computer laboratories	.701
Availability of well-equipped studio	.725
Well-stocked book store	.866

Table 2 shows the second factor loadings are (.703 library, .703 computer laboratories; .725 architect studio; .866 convenience store) from 4 independent variables. These represent the physical facilities afforded by the college. The highest loading is for a well-stocked book store.

Table-3. Factor Three loadings

Item	Loading
Advertisement in the electronic media (e.g. internet)	.805
Advertisement in the newspaper and television	.971
Open day's promotion	.819

Table 3 is about the third factor loadings (.805 and .971 advertisement, .819 promotion) from 3 independent variables and represent the efforts towards promotion by the college. Advertisement in the newspaper has the highest loading (.971) and comparatively high also in this study.

Table-4. Factor Four Loadings

Item	Loading
Cost of accommodation	.589
Cost of transportation	.776
Cost of living (food and health)	.684

Table 4 lists the fourth factor loadings of 3 independent variables. It explains about cost of living factor important to students, the most important being the transportation costs.

Table-5. Factor Five Loadings

Item	Loading
Opportunity for students' participation in sports	.604
Opportunity to be involved in social activities (e.g. charity activities, community services)	.848
Availability of religious activities (e.g. religious seminars)	.795

Table 5 depicts the fifth factor loadings which are .604, .848 for sports and socialization opportunities and .795 for religious activities, from 3 independent variables. This is the evidence of the importance of the co-curricular activities desired by students.

Table-6. Factor Six Loading

Item	Loading
Friends' recommendations	.825
Recommendation from previous students	.775

Table 6 are the 2 independent variables of the sixth factor loadings, peer influence being the most important to these students.

The six (6) factors were the results of the solution achieved after the 51 items of the questionnaire were processed using the Principal Component Analysis (P.C.A.). These factors show the underlying factors contributing to the students' choice criteria. The information provided input for this college's marketing and strategic management. All the six (6) factors discovered do not differ very much from other studies as students choices are influenced by institutional, physical, co-curriculum, living economies, promotional and peer factors. Of all the items about 35% items were loaded onto the institutional factor. This leaves the remaining 65% of the items to be distributed among the other five factors. After examining the scree plot the study shows that there is only one factor of great importance which is the factor known as the 'Institution'.

Table-7. Table of Cronbach Alpha for each factor

Factor	Cronbach Alpha
Institutional	0.975
Physical Facilities	0.925
Promotional activities	0.902
Living cost	0.868
Co-curriculum	0.816
Peer influence	0.71

Table 7 shows the reliability of the research instrument. As for the reliability, Cronbach Alpha was used (standard should be .70 or more) for the six (6) factors to measure internal consistency. Their indices or Cronbach Alpha were 0.9 for the institutional factor, the physical facilities factor, the promotion factor, 0.8 for the living cost factor, the co-curriculum factor and 0.7 for the peer influence factor. In general, the instrument has good reliability standards.

5. CONCLUSION

This study was conducted as a case study to find the underlying dimensions to students' selection of a college. The responses were gathered from the students of the Twintech International University College of Technology, Malaysia. In this study it is clearly manifested that the "institutional" factor is the main underlying factor that determines greatly students' choices because it shows that the "institutional" factor has a high loading of variables. The definition of institution is its character or what the institution inherited all through the years. This finding confirms the importance of the "character" of the institution and many marketing researches have emphasized this,

that the quality” of a product is synonymous to an institutional image and standing. In business terms, this refers to its “brand”. In this study the ‘brand’ is shown by the quality of teaching which has the highest loading, thus showing its extreme importance for the students of this college. The study confirmed that the “brand” incorporated includes also the quality of programs of the college. Thus, to be competitive, the positioning of the firm depends on its brand of product. The knowledge will be useful for the college for its strategic planning to gain a competitive edge against other colleges. Promotion of the brand is a priority to achieve this competitive advantage as proven by this study. It is thus imperative to implement this (promotional activities) in its management strategy. This knowledge is discovered through the Principal Component Analysis or P.C.A. Future studies may be done further using the Confirmatory Factor Analysis to produce a good model of students’ college choice because the process is built to confirm the factors rather than the Principal Component Analysis (P.C.A.) which is more exploratory in nature.

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REFERENCES

- Ackerman, R., 2008. A business marketing strategy applied to student retention: A higher education initiative. *Journal of College Student Retention: Research Theory and Practice*, 9(3): 307-336.
- Bonema, 2008. Information and source preferences of a student market in higher education. *International Journal of Educational Management*, 22(4): 314-327.
- Faridah, H.H. and M.S. Nooraini, 2006. Students’ need recognition for higher education at private colleges in Malaysia: An exploratory perspective, *University Teknologi Mara*.
- Gildersleeve, R.E., 2010. Access between and beyond borders. *Journal of College Admission*, 206: 3-10.
- Grodsky, E. and C. Rieggle-Crumb, 2010. Those who choose and those who don't: Social background and college orientation. *Annals of the American Academy of Political and Social Science*. Thousand Oaks, 627: 14-35.
- Hossler, 2004. Fifty years of college choice: Social, political and institutional influences on the decision-making process. *Lumina Foundation for Education New Agenda Series*, 5(3): 3-48.
- Maringe, F., 2003. University and course choice: Implications for positioning. *Recruitment and Marketing*.
- Morris, M. and S. Rutt, 2009. Department for innovation, universities & skills (DIUS) Report 2008-2009.
- Patton, M., 2005. Advancing technological education; keeping America competitive. *American Association of Community Colleges*.
- Payne, B.R., 2010. A study of the relationship between parental involvement and mental health of college students. Unpublished Dissertation Auburn University: 172.

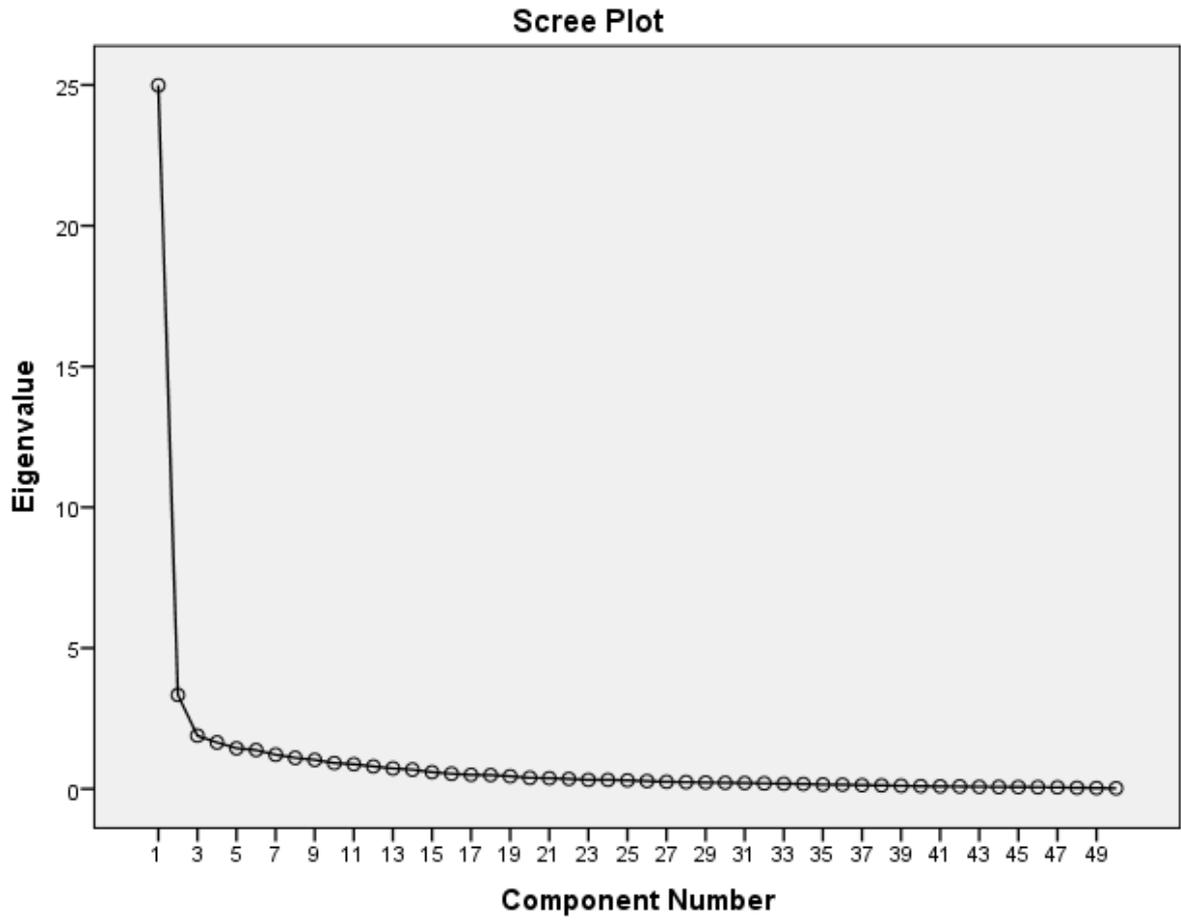
BIBLIOGRAPHY

- Adams, A., 2009. College Choice + Enrolment Management = Enrolment Choice, *College & University*, 84(4): 42-49.
- College Selection Process, 2009. Factors to consider. Available from www.vsac.org [Accessed 22, November, 2010].
- Cresswell, J.W., 2005. Educational research. New Jersey: Pearson Prentice Hall.
- Das, S., 2010. Educational attainment: A comparative analysis of Asians vs. traditional minorities, Unpublished Dissertation, Clark University: 155.
- Goble Lisbeth, J., 2010. College choice and college success: The role of individuals, institutions and policy. Dissertation North Western University. pp: 199.
- Hoxby, C.M., 2009. The changing selectivity of American colleges. *Journal of Economic Perspectives*, 23(4): 95-118.
- Huda, A.-Y., 2009. They know nothing about university - neither of them went!: The effect of parents' level of education on their involvement in their daughters. *Higher Education Choices Compare*, 39(6): 783-798.

- Jiyun, K., D.L. Stephen and M.P. Brian, 2009. Exploring the effects of student expectations about financial aid on postsecondary choice: A focus on income and racial/ethnic differences. *Research in Higher Education*, 50(8): 741-774.
- Luie, S.M., 2010. College choice and documented Chinese immigrant community college students in Massachusetts, Unpublished Dissertation, Boston College: 196.
- McPherson, M.S. and M.O. Schapiro, 2010. Does student aid affect college enrollment? New evidence on a persistent controversy. Available from www.jstor.org/pss/2006804 [Accessed 27th October 2010].
- Morgan, 2003. Product positioning and prospector strategy: An analysis of strategic patterns from the resource-based perspective. *European Journal of Marketing*, 37(10): 1409 – 1439.
- Niu, 2008. College selectivity and the Texas top 10% law. *Economics of Education Review*, 25(3): 259-272.
- Petruzzellis, L. and S. Romanazzi, 2010. Educational value: How students choose university; evidence from an Italian university. *The International Journal of Educational Management*. Bradford, 24(2): 139-158.
- Shaw, E.J., 2009. Describing students involved in the search phase of the college choice process: A cluster analysis study. *Journal of Advanced Academics*, 20(4): 662-700.
- Shaw, E.J., J.L. Kobrin, S.F. Packman and A.E. Schmidt, 2009. Describing students involved in the search phase of the college choice process: A cluster analysis study. *Journal of Advanced Academics*. Waco, 20(4): 662-641.
- Shouping, H., 2010. Scholarship awards, college choice, and student engagement in college activities: A study of high-achieving low-income students of color. *Journal of College Student Development*, 51(2): 150-161.
- Simões, C. and A.M. Soares, 2010. Applying to higher education: Information sources and choice factors. *Studies in Higher Education*, 35(4): 371-389.
- Simon, L.A. and C. Ning-Kuang, 2010. Demographic factors influencing selection of an ideal graduate institution: A literature review with recommendations for implementation. *College Student Journal*, 44(1): 84-96.
- Simonsohn, U., 2010. Whether to go to college. *Economic Journal*, 120(543): 270-280.
- Thacker, L., 2008. Pulling rank: A plan to help students with college choice in an age of ranking. *New England Journal of Higher Education*, 22(4): 15-16.
- Varga, J., 2006. The role of labour market expectations and admission probabilities in students application decisions on higher education: The case of hungary. *Education Economics*, 14(3): 309-327.
- Walke, T.J., 2010. Choosing to succeed: An exploration of the relationship between college choice and freshman retention, Unpublished Dissertation, The College of William and Mary: 115.

APPENDIX

APPENDIX-1.



APPENDIX-2.

Pattern Matrix^a

	Component							
	1	2	3	4	5	6	7	8
aq1	.368	.098	.042	-.209	.434	.081	.043	.137
aq2	-.112	.232	-.062	-.177	.110	.825	.051	.182
aq3	.192	-.207	.025	.228	.094	.775	.172	.148
aq5	-.407	.329	.250	.032	.604	.125	.273	.078
aq6	.046	.081	-.087	-.042	.848	-.015	.293	.076
aq7	-.044	-.195	.141	.162	.795	.130	-.063	.160
aq8	.387	.195	-.039	.474	-.317	-.008	.068	.087
aq9	.679	.022	-.081	.222	-.054	.038	.129	.008
aq10	.161	.347	.020	.487	-.131	.119	.196	-.057
aq11	.077	.088	-.284	.234	.198	.180	.709	-.132
aq12	.323	.077	.017	.589	-.057	-.043	-.033	.074
aq13	.097	-.012	.004	.776	.105	.014	.113	-.025
aq14	.260	-.116	.159	.684	.071	-.003	.137	-.070
aq15	.281	.537	-.112	.081	.084	.082	.028	-.027
aq16	.270	.703	-.095	.116	-.098	.132	.016	-.038
aq17	.273	.701	-.033	.062	-.105	.121	.016	-.035
aq18	.354	.431	.002	-.005	.048	-.134	.369	.001
aq19	.268	.725	-.206	-.130	.079	-.138	.204	-.011
aq20	-.210	.543	.269	.288	.124	-.121	.162	.029
aq21	.153	.866	.026	-.108	-.008	-.029	.075	-.036
aq22	-.192	.529	.161	.323	.104	.119	.037	-.053
aq23	.141	-.018	.127	-.125	-.102	.036	.179	-.196
aq24	.473	.089	-.104	.320	.173	-.115	-.039	-.128
aq25	.752	-.029	-.163	.106	.184	.042	-.196	-.118
aq26	.763	.012	-.153	.183	.139	-.028	-.043	-.066
aq27	.506	.415	-.204	.056	.143	-.086	-.237	-.095
aq28	.324	.406	.187	.015	.061	-.054	-.261	-.062
aq29	.499	.402	.110	-.071	-.037	.020	-.218	-.024
aq30	.604	.144	.226	-.026	-.017	.062	-.112	.044
aq31	.271	-.099	-.002	-.042	.222	.214	-.177	.935
aq32	.840	-.011	-.058	.117	-.032	-.042	.039	.029

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