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The Individual Determinants of the Attitudes of University Students towards the Functional Quality of Educational Services – Using the Example of Bachelor Level Students of the Warsaw School of Economics[1]

ABSTRACT

This study aimed to develop a method of identifying the association between the individual traits of the students' functioning at university and their attitudes towards the functional quality of the educational services provided by university. Within the study, a comprehensive description of the individual traits of student functioning (based on NEOAC model of personality), as well as a comprehensive description of the functional quality features of educational services as perceived by students has been developed. In order to analyse the association between individual traits and functional quality perception, cluster analysis and discriminant analysis were employed. The method for identifying the association between students' individual traits and their attitudes towards the functional quality of educational services has been developed and verified. As a result of the questionnaire surveys covering bachelor level students, 25 dimensions of functional quality of educational services' perception and 5 dimensions of students' individual traits of functioning at university

have been identified. Based on these individual traits, three individual types of students' functioning at university have been indicated and named as: "stable engaged", "nervous engaged" and "not engaged". The detailed relationships between individual traits, types and functional quality perception have been described.

Keywords: service quality perception, functional quality, customer attitudes, individual traits, individual determinants, Five Factor Model, NEOAC, educational services, principal component analysis, factor analysis, cluster analysis, discriminant analysis

Introduction

In management practice, the analysis of the determinants of customer attitudes towards service quality seems to be based on the characteristics of the relationship between the customer and the organization;[2] for example, products owned by the customer. But on the other hand, one may believe that these characteristics are not able to fully explain customer attitudes. There could be other meaningful determinants, the individual traits of the customer for example. Thus, it seems that developing a methodology for researching the relationships between the traits of individual customers and their attitudes towards service quality can support organizations in adapting their services to customer expectations.

Results that link the traits of individual customers to their attitudes towards an organization can be found in the existing literature. Among the attitudinal constructs not particularly related to service quality; such as an organization's image, trust, the customer's propensity to leave, or reactions to problematic situations; there is evidence of their association with customers' personality dimensions and with specific individual traits such as attachment styles, impulsiveness, egocentrism, locus of control, the need for cognition, and the belief in a just world.[3] Attitudes towards service quality

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[2] For example, see the report related to the Polish market: *Kurs na zmiany. Doświadczenia klienta w relacjach z bankami*, Deloitte 2012, p. 29.

[3] See: M. Mende, R.N. Bolton, M.J. Bitner, *Decoding Customer-Firm Relationships: How Attachment Styles Help Explain Customers' Preferences for Closeness, Repurchase Intentions, and Changes in Relationship Breadth*, "Journal of Marketing Research", February 2013, vol. L, pp. 128, 131, 135 (attachment styles); P. Sharma, R. Marshall, P.A. Reday, W. Na, *Complainers Versus Non-Complainers: a Multi-National Investigation of Individual and Situational Influences on Customer Complaint Behavior*, "Journal of Marketing Management", February 2010, vol. 26, nos. 1–2, pp. 164, 166, 172 (impulsiveness); K.P. Corfman, D.R. Lehmann, *The Importance of Others' Welfare in Evaluating Bargaining Outcomes*, "Journal of Customer Research", June 1993, vol. 20, p. 133 (egocentrism); J.-H. Huang, C.C. Chang, *The Role of Personality Traits in Online Consumer Complaint Behavior and Service Recovery Expectations*, "Social Behavior and

also show a proven relationship to personality dimensions and specific individual traits, such as the level of happiness, the need for evaluation, and emergent nature.[4] Lastly, there is evidence linking the students' functioning at university[5] (including: student attitudes towards the quality of service provided by the university) with their individual traits (personality dimensions and specific traits, and the approach to learning or evaluative concern perfectionism).[6]

The key problem presented in this research is the individual determinants of customer attitudes towards service quality, that is, determinants related to a customer's individual traits. The meaning of this type of determination seems to be related to the organization's comprehensive influence over the customer: influence extending beyond the relationship of just receiving products or services. This is clearly pointed to, for example, the idea of "Marketing 3.0", where companies treat customers as human beings that have "minds, hearts and spirits".[7] This kind of influence should expand "customer satisfaction" to "customer happiness", which could be described from the psychological perspective as psychological well-being.[8] Assuming that the organization engages the customer more deeply, one may expect that the role of personality in forming customer attitudes towards service quality should be more

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Personality" 2008, vol. 36, no. 9, pp. 1225, 1227 (locus of control); M. Sicilia, S. Ruiz, N. Reynolds, *Attitude Formation Online. How the Consumer's Need for Cognition Affects the Relationship between Attitude towards the Website and Attitude towards the Brand*, "International Journal of Market Research" 2006, vol. 48, issue 2, pp. 142, 148 (need for cognition); K. White, R. MacDonnell, J.H. Ellard, *Belief in a Just World: Consumer Intentions and Behaviors Toward Ethical Products*, "Journal of Marketing", January 2012, vol. 76, p. 108 (belief in a just world).

[4] See: K. Hellen, M. Saaksjarvi, *Happiness as a Predictor of Service Quality and Commitment for Utilitarian and Hedonic Services*, "Psychology & Marketing", September 2011, vol. 28, no. 9, pp. 940–942, 944 (level of happiness); H. Hansen, J.A. Sand, *Antecedents to Customer Satisfaction with Financial Services: The Moderating Effects of the Need to Evaluate*, "Journal of Financial Services Marketing" 2008, vol. 13, no. 3, pp. 238, 241 (need of evaluation); D.L. Hoffman, P.K. Kopalle, T.P. Novak, *The "Right" Consumers for Better Concepts: Identifying Consumers High in Emergent Nature to Develop New Product Concepts*, "Journal of Marketing Research", October 2010, vol. XLVII, pp. 855, 861 (emergent nature).

[5] In this paper, the term "university" will refer to all kinds of higher education institutions.

[6] See: C.L. Patrick, *Student Evaluations of Teaching: Effects of the Big Five Personality Traits, Grades and the Validity Hypothesis*, "Assessment & Evaluation in Higher Education", March 2011, vol. 36, no. 2, p. 245 (personality dimensions); C. Lawless, J.T.E. Richardson, *Approaches to Studying and Perceptions of Academic Quality in Distance Education*, "Higher Education" 2002, no. 44, pp. 262, 264, 276, 279 (approach to learning); K.K. Blankstein, D.M. Dunkley, *Evaluative Concerns and Personal Standards Perfectionism: Self-Esteem as a Mediator and Moderator of Relations with Personal and Academic Needs and Estimated GPA*, "Current Psychology" 2008, no. 27, pp. 32, 38–39, 45–46, 51 (evaluative concern perfectionism).

[7] Ph. Kotler, Hermewan Kartajaya, Iwan Setiawan, *Marketing 3.0*, John Wiley and Sons, Hoboken, New Jersey 2010, p. 4.

[8] See: C.D. Ryff, B. Singer, *From Social Structure to Biology*, in: *Handbook of Positive Psychology*, eds. Ch.R. Snyder, Sh.J. Lopez, Oxford University Press, New York 2002, pp. 542–543.

meaningful. There is evidence of a relationship between well-being and personality traits,[9] as well as for the customer's attitude towards quality.[10]

It was decided to narrow the scope of consideration and the research in the following ways. Firstly, the study focused on the educational services provided by the university where the students are considered the university's customers.[11] The reason for this is that the process of studying is long and involving, and seems to create particularly good conditions for the attitudes of developing students towards the quality of educational services. It has to be considered that students are comprehensively influenced by their studies; for example, by defining his or her professional and social role and by forming knowledge, skills and personality.[12] Thus, university seems to extend its influence over students far beyond just the level of direct cooperation in providing a service. This kind of influence, as mentioned above, can enhance the role of individual determinants in attitudes towards service quality. The decision to treat students as customers of the university is due to the fact that students are the direct recipients of educational services (in contrast to graduates). Moreover, students are readily available respondents, especially in terms of class-room surveys, which ensure an appropriate level of focus on the complex matters mentioned in the questionnaire.

Secondly, it was decided to limit the scope of the quality features to functional quality, which refers to the way the service is delivered (in contrast to quality features related to the core subject of the service, constituting the technical quality).[13] Defining the subject of educational services as the process of acquiring knowledge, skills and personality development, one has to consider the functional quality of this service as being all of its features, apart from the aspects related to teaching. The focus on functional quality in this study is justified by the fact that students, as individuals still in the process of studying, do not have the appropriate set of information that allows them to evaluate the quality of teaching. Consequently, it seems difficult to expect

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[9] See, for example, P.N. Lopes, P. Salovey, R. Straus, *Emotional Intelligence, Personality, and the Perceived Quality of Social Relationships,* "Personality and Individual Differences" 2003, no. 35, pp. 647, 650; K.M. DeNeve, *Happy as an Extraverted Clam? The Role of Personality in Subjective Well-Being,* "Current Directions in Psychological Science", October 1999, vol. 8, no. 5, pp. 143, 144.

[10] A. Ganglmair-Wooliscroft, R. Lawson, *Subjective Wellbeing and its Influence on Consumer Sentiment Towards Marketing: A New Zealand Example,* "Journal of Happiness Studies" 2012, no. 13, pp. 151, 154, 161.

[11] See detailed characteristics of educational service customer groups in: A. Quinn, G. Lemay, P. Larsen, D.M. Johnson, *Service Quality in Higher Education,* "Total Quality Management", February 2009, vol. 20, no. 2, p. 141.

[12] S. Doroszewicz, *Metoda pomiaru jakości kształcenia w szkolnictwie wyższym,* in: *Jakość w badaniach i dydaktyce szkół wyższych,* eds. S. Doroszewicz, A. Kobylińska, Oficyna Wydawnicza SGH, Warszawa 2007, p. 475.

[13] Ch. Gronroos, *A Service Quality Model and its Marketing Implications,* "European Journal of Marketing" 1984, vol. 18, issue 4, p. 36.

that there exist well-developed students' attitudes towards the content of the courses in which they are currently participating.

Thirdly, research tools for measuring the individual traits of students have been based on one of the models of personality: the Five-Factor Model (also called NEOAC or the "Big Five").[14] This model aims to comprehensively describe human behaviour, in contrast to certain other concepts, which, however, might seem to be interesting in terms of the possible relationships between the attitudes towards service quality (e.g., styles of dealing with stress). Moreover, there are a number of studies based on the NEOAC model in contexts adequate for this study, that is, among university students.

It seems that the topic of the individual determination of attitudes towards service quality is rather marginally represented in the literature. A good illustration for this is the widely used concept of quality gaps by Parasuraman et al. In this model, the customer's individual determination is represented in only one term: "personal needs"[15] (of course, customers' needs, despite their individual nature, are not equal to individual traits). In general, the aim of this study is to explore the following two topics:

1. A comprehensive description of the customers' individual traits in terms of customer functioning in the context of cooperation with the organization. The number of concepts underlines the meaningful role of situational determinants for the manifestation of individual traits.[16] Thus, in this study, it was decided to focus on the traits of customer functioning that are related to the environment in which the service is provided. In the case of university students, this environment would be a university and studying.

2. A comprehensive description of the functional quality features of educational services. The dimensional structure of the perception of service quality that was indicated empirically, allows for a detailed analysis of the association between students' individual traits and the attitudes toward the particular dimensions describing the educational services.

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[14] See a detailed description of the NEOAC model in: P.T. Costa, R.R. McCrae, *Four Ways Five Factors Are Basic*, "Personality and Individual Differences" 1992, vol. 13, no. 6, p. 654. The personality dimensions according to NEAOC are: neuroticism (N), extraversion (E), openness to experience (O), agreeableness (A) and conscientiousness (C).

[15] A. Parasuraman, L.L. Berry, V.A. Zeithaml, *Perceived Service Quality as a Customer-Based Performance Measure: An Empirical Examination of Organizational Barriers Using an Extended Service Model*, "Human Resources Management" 1991, pp. 337–338.

[16] See, for example: D.P. McAdams, *What Do We Know When We Know a Person?*, "Journal of Personality" 1995, vol. 63, no. 3, p. 376; D. Cervone, *The Architecture of Personality*, "Psychological Review" 2004, vol. 111, no. 1, pp. 189, 192.

Research activities conducted within this study were aimed at identifying the connection between individual traits and attitudes towards functional quality, using the example of students of the Warsaw School of Economics (WSE) – one of the leading Polish higher education institutions in the area of economics – and the educational services provided by this institution. In particularly, the goals were as follows:

1. the identification of the dimensional structure of the functional quality perception of educational services,
2. the identification of the association between students' individual traits (in terms of functioning at university) and students' attitudes towards the functional quality of the educational services provided by the university,
3. an analysis of the possibility of utilizing the results of the goal (no. 2 above) in the quality management of educational services of the university.

It should be underlined that the aim of this research was to develop and verify a new method of assessing the association between individual student traits and their attitudes towards the functional quality of educational services provided by university. Simultaneously, one should note that the dimensional structure of students' individual traits, in terms of functioning at university, and the dimensional structure of the perception of educational services' functional quality could depend on the particular university (i.e., its characteristics in terms of student population and the educational services provided). Thus, it might not be justifiable to establish general conclusions regarding the whole higher education sector.

Based on previously published results on customer attitudes, quality perception, and educational services, the main hypothesis has been phrased as follows: there is a statistically significant relationship between students' individual traits, in terms of functioning at university, and students' attitudes towards the functional quality of the educational services provided by the university. Moreover, the following auxiliary hypotheses have been developed:

H1. The dimensional structure of students' individual traits, in terms of student functioning at university, is different from the NEOAC model of personality. It seems that the substantial role played by the situational context in the manifestation of individual traits, indicated by the psychological concepts mentioned above, could lead to different models. It may mean that, by applying the detailed characterization of NEOAC dimensions to the measurement of students' individual traits, in the context of studying, one would obtain a dimensional structure consisting of situation-specific traits that could differ from NEOAC. It is worth underlining that this approach should not be considered as being opposed to the NEOAC model. On the contrary, the idea is to apply NEOAC as a model describing human functioning in general (i.e. regardless of the specific situational context)

as a starting point in order to build a situation-specific model for traits related to studying at university.

H2. Various types of students exist in terms of their individual traits in the context of functioning at university. An indication of this assumption could be the existence of the various types of human personality in the NEOAC model.[17] One can reason that if personality types exist when no situational context is considered, this phenomenon would extend to the level of situation-related traits.

H3. The association between students' individual traits, in terms of student functioning at university, and student evaluations of the inherent features of functional quality of educational services is:

– negative in the case of individual traits related to – neuroticism and openness to experience (according to NEAOC).

– positive in the case of individual traits related to – extraversion, agreeableness and conscientiousness (according to NEAOC).

The first lead in this hypothesis is the characteristics of the NEOAC dimensions,[18] according to which neuroticism is connected with negative emotions, while openness to experience is connected with a propensity for independent thinking, which could negatively affect students' evaluation of the educational services' functional quality. On the other hand, extraversion covers a propensity to react with positive emotions, agreeableness includes the trait of compliance, and conscientiousness is connected with a belief in the possibility of dealing with a problem. The above traits seem to positively affect the evaluation of quality. Additional cues for the hypothesis emerge from research on attitude determination,[19] service quality perception,[20] and

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[17] See the characteristics of personality types in: J.B. Asendorpf, P. Borkenau, F. Ostendorf, M.A.G. van Aken, *Carving Personality Description and its Joints: Confirmation of Three Replicable Personality Prototypes for Both Children and Adults*, "European Journal of Personality" 2001, vol. 15, pp. 182–185.

[18] See: P.T. Costa, RR. McCra, op.cit., p. 654; B. Zawadzki, J. Strelau, P. Szczepaniak, M. Śliwińska, *Inwentarz Osobowości NEO-FFI Paula T. Costy Jr., Roberta R. McCrae*, Pracownia Testów Psychologicznych PTP, Warszawa 2010 (for Polish adaptation of the measurement tool).

[19] See: T.A. Mooradian, J.M. Olver, *Neuroticism, Affect and Post-purchase Processes*, "Advances in Consumer Research" 1994, vol. 21, pp. 597–598 (role of neuroticism); M. Judeh, *Selected Personality Traits and Intent to Leave: A Field Study in Insurance Corporation*, "International Business Research", May 2012, vol. 5, no. 5, pp. 90–91 (role of extraversion and conscientiousness); A. Khare, A. Khare, Sh. Singh, *Role of Consumer Personality in Determining Preference for Online Banking in India*, "Journal of Database Marketing & Customer Strategy Management" 2010, vol. 17, pp. 175, 179–180, 181–183 (role of conscientiousness).

[20] See: Y.H. Chang, H.H. Li, C.M. Wu, P.C. Wang, *The Influence of Personality Traits on Nurses' Job Satisfaction in Taiwan*, "International Nursing Review" 2010, no. 57, p. 481 (role of neuroticism); H.H. Tan, M.D. Foo, M.H. Kwek, *The Effects of Customer Personality Traits on the Display of Positive Emotions*, "Academy of Management Journal" 2004, vol. 47, no. 2, pp. 288, 291 (role of neuroticism and agreeableness); I.U. Haq, M.I. Ramay, M.A.U. Rehman, F.A. Jam, *Big Five Personality and Perceived*

especially on students' perception of educational services quality.[21] It needs to be mentioned that empirical results also exist where openness to experience is positively connected with customer evaluations.[22]

H4. Students' attitudes towards the features of the functional quality of educational services are differentiated according to the field of study. This hypothesis has been developed based on empirical results showing a connection between students' personality traits and the field of study chosen by the student,[23] and the results of the relationships between personality, customer attitudes and quality perception (as mentioned in the H3 commentary).

1. Research Method

The research was based on a sampling of WSE students. The purposive samples were used at the questionnaire development stage, and the samples from students attending lectures were used when the final questionnaires were already in place. It was decided to focus on the bachelor level students in their third year of studies because this group of students was considered to have the greatest experience in receiving educational services from the WSE. Earlier studies conducted using WSE students in their first year of study indicated that attitudes toward certain functional quality features were less available among these students, such as student scientific circles and career support, resulting in less frequent answers.[24]

The subject of the research covers the following areas:

1. Student attitudes towards the functional quality of the educational services provided by the university. This topic refers directly to H4 (the relationship between the perception of the functional quality of educational services and the field of studies).

Customer Relationship Management, "Research Journal of International Studies", August 2010, issue 15, p. 42 (role of neuroticism, extraversion, agreeableness and conscientiousness).

[21] C.L. Patrick, op.cit., p. 245 (role of agreeableness).

[22] See: A. Khare, A. Khare, Sh. Singh, op.cit., pp. 175, 179–180, 181–183; I.U. Haq, M.I. Ramay, M.A.U. Rehman, F.A. Jam, op.cit., p. 42.

[23] See: J. Lounsbury, R. Smith, J. Levy, F. Leong, L. Gibson, *Personality Characteristics of Business Majors as Defined by Big Five and Narrow Personality Traits*, "Journal of Education for Business", March/April 2009, pp. 202–203; Ch.D. Pringle, Ph.B. DuBose, MD. Yankey, *Personality Characteristics and Choice of Academic Major: Are Traditional Stereotypes Obsolete?*, "College Student Journal", March 2010, vol. 44, issue 1, pp. 131–142.

[24] W. Trzebiński, *Spostrzeganie jakości funkcjonalnej usługi edukacyjnej dostarczanej studentom na uczelni (na podstawie badań studentów I roku Szkoły Głównej Handlowej w Warszawie)*, Studia i Prace Kolegium Zarządzania i Finansów, Zeszyt Naukowy 2013, no. 125, pp. 85–86.

2. Students' individual traits, in terms of student functioning at university, and the students' individual types related to these traits. This is relevant to H1 (the differences between this model and NEOAC) and H2 (the possibility of defining students' individual types in terms of functioning at university).

3. The association between students' individual traits and types, in terms of functioning at university, and students' attitudes towards the functional quality of educational services. This topic is key for the main hypothesis and H3.

This research has been conducted according to the following procedure:

Stage 1. The primary list of functional quality features of the educational services provided by the university. Taking into consideration the information gathered from students (purposive samples) and the concepts related to psychological well-being,[25] a set of detailed features related to the functional quality of educational services has been identified.

Stage 2. The dimensional structure of functional quality perception has been investigated using a survey questionnaire based on the primary list developed in the previous stage. The aim was to reduce the number of quality features analysed in further stages of the research. These dimensions are considered the inherent features of the educational services' functional domain that are involved in quality perception.

Stage 3. The declared importance of the inherent features of functional quality that are related to the dimensions identified in the previous stage. In the survey questionnaire, students were asked to rank the features according to the level of importance to themselves.[26] The subset of features with the highest importance was indicated.

Stage 4. A questionnaire to measure students' individual traits in terms of student functioning at university, was developed using items on the questionnaire that were based on the characteristics of NEOAC dimensions, taking into consideration their adaption to the situational context of studying at university. The NEO-FFI questionnaire was used supplementary to measure personality traits according to the NEOAC model.

Stage 5. The association between students' individual traits, in terms of functioning at university, and student attitudes towards the functional service quality was assessed using a questionnaire study that simultaneously measured students'[27] evaluation of

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[25] The intention was to consider the functional quality features of educational service that might influence student well-being.

[26] This approach was based on perception of educational quality research by Doroszewicz, see: S. Doroszewicz, *Metodyka badań jakości kształcenia w szkolnictwie wyższym*, in: *Metodyka i badania jakości kształcenia w szkolnictwie wyższym w Polsce,* ed. S. Doroszewicz, Warszawa 2011, pp. 157–158.

[27] During this stage of the sampling the aim was to collect a relevant number of observations for the three main fields of study at the WSE: (1) Finance and Accounting, (2) Management and (3) Quantitative Methods in Economics and Information Systems.

the service (using the set of features identified in stage 3) and students' individual traits (using the items on the questionnaire based on the results of stage 4).[28]

Factor analysis, cluster analysis (k-means) and discriminant analysis were used to analyse the research data. To use the above methods, it was assumed that the survey measurements coming from the ordinal scales used in the questionnaires could represent the interval nature of the students' evaluations.[29] In addition it was assumed that the normal distribution of these evaluations was required in order to apply the ANOVA and linear correlation significance tests used in the supplementary analysis.

2. Results and Analysis

Fieldwork.

Fieldwork was conducted in the years 2011–2012. In stage 1., snowball sampling was used. The questionnaire surveys in stages 2–5 were conducted between October 2011 and May 2012 for a total of 33 lectures. The questionnaires were filled out anonymously by students in the classrooms.

Dimensional Characteristics of the Perception of Educational Services' Quality

The questionnaire used in stage 2. consisted of 93 items in the form of statements describing attitudes towards the educational services provided by the WSE in terms of detailed features from a primary list. The 7-point Likert scale was applied, and anchored with the labels: "I fully disagree" and "I fully agree". There were n = 146 properly completed questionnaires collected. Factor analysis, using the principal components method, was conducted on the evaluations related to the questionnaire items (KMO equals 0.565; Bartlett's sphericity test statistically significant, p = 0.000). There were 25 principal components identified with an eigenvalue above 1 (Kaiser's criterion).[30] Varimax rotation with Kaiser's normalization was also applied. Based on the analysis of factor loadings (a threshold of 0.500 was applied) and the interpretation

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[28] As in stage 4, the NEO-FFI questionnaire was used supplementarily.

[29] See the discussion on treating ordinal scales as interval scales, and on performing arithmetical operations on results obtained from ordinal scales in: D. Hand, H. Mannila, P. Smyth, "Principles of Data Mining" 2001, MIT Press, Cambridge, Massachusetts, London, pp. 26–30.

[30] If not otherwise mentioned, calculations have been conducted using SPSS, license no. 1187.

of the item's content meaning, one can characterize the following dimensions for the perception of the functional quality of educational services:

- The support provided by student organizations and the functioning of student scientific circles – the available selection of organizations and circles, their accessibility, the availability of related information, as well as their ability to support student growth and students' interpersonal relationships;
- The ease of choosing optional subjects within the "Virtual Dean's Office" application – clarity of registration rules, accessibility to information about these, support provided by the "Virtual Dean's Office" during registration, and the ease of choosing subjects that are aligned with students' planned paths of study;
- The possibility of students' influencing the functioning of the university, including the appropriate use of course evaluations given by students;
- Supporting students in planning their careers by giving advice and providing attractive job offers;
- Scholarship support for students – the accessibility of information about the granting of scholarships, ease of applying for scholarships, the justification of opinions related to scholarships provided by the student government;
- The student government as a source of complete information on current events at the university – ease of finding information on the student government's website and the range of this information;
- Appropriate accessibility to exam results – accessibility to exam results information and its timeliness;
- Student support provided by employees of Dean's Office – courtesy and effective help from employees of the Dean's Office, adequate hours of access;
- Student support provided by library employees – the courtesy and helpfulness of library employees;
- Ease of searching for items in the library – the methods of searching for scientific information and books in the reading room;
- Waiting time at the Dean's Office – including queue management;
- Clear rules about passing exams;
- The ease of getting from class to class – cloakroom service, ease of locating university buildings;
- The availability of reliable information concerning optional subjects;
- The functioning of photocopy points within the university's buildings – the way services are provided and their opening hours;
- The reliability of university IT applications provided for students – including the Virtual Dean's Office application;

- The accessibility of eating places within the university's buildings – the opening hours and locations;
- The organization of language courses – the methods of assigning students to the various groups, the opportunities for student integration;
- The accessibility of information on the university's website;
- The conditions for student integration in eating places at the university;
- The support provided via the students' web forum;
- The reliability of the exam results' registration system.

The items on the questionnaire used in stage 3. correspond to above functional quality dimensions.[31] There have been n = 64 properly completed questionnaires collected. Based on student declarations about the features of functional quality, importance coefficients have been assigned to each feature based on the sum of the inverted ranks of this feature as declared by the students. Based on a Pareto-type analysis, the 15 features with the highest importance were identified (Table 1). Thus, the features listed in this table should be considered to be the dimensions of the functional quality of educational services that are highly important to students (based on their declarations).

Table 1. Dimensions of the Perception of Functional Quality of Educational Services as Qualified in Stage 5 (Descending Order According to Importance Coefficient)

Functional quality feature (questionnaire item)	Importance coefficient (normalized; summing up to 1 for all items in the questionnaire)
In my opinion, passing courses at the WSE is conducted according to clear rules.	0.14
My exam results are made available to me in an appropriate way.	0.11
Choosing optional subjects in the "Virtual Dean's Office" is easy for me.	0.10
The university supports me in planning my career.	0.10
I believe that language groups support student integration.	0.08
I believe that I receive appropriate support from the employees of the Dean's Office.	0.05
In my opinion the university website makes available the information I need.	0.05
I believe that the "Virtual Dean's Office" application is working faultlessly.	0.05
Student organizations and student scientific circles operating at university are useful for me.	0.05
The student internet forum helps me solve my problems.	0.04
I believe that searching for the items I need in the WSE library is easy for me.	0.03

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[31] In the case of the principal components with items having no coherent interpretation, the item with the highest factor loading was considered.

Functional quality feature (questionnaire item)	Importance coefficient (normalized; summing up to 1 for all items in the questionnaire)
In my opinion, the university is supporting my sense of pride in being a WSE student.	0.03
I think the electronic system for registering exam results is infallible.	0.03
The university gives me the possibility of scholarship support.	0.03
The functioning of photocopy points in university buildings is appropriate to me.	0.03
Total:	**0.93**

Source: own elaboration.

The Dimensional Characteristics of Students' Individual Traits, in Terms of Student Functioning at University – the Individual Model of Student Functioning at University

The questionnaire consisting of 30 items that was developed in stage 4., was used in stage 5. in order to investigate students' individual traits in terms of student functioning at university. The 7-points Likert scale was applied. There were n = 214 properly completed questionnaires collected. Due to the low reliability of items related to agreeableness (according to NEOAC), that is Cronbach's alpha = 0.441, it was decided to remove these items from the analysis. In order to investigate an individual model of students' functioning at university, factor analysis, by the centroid method of factor extraction, was conducted.[32] There were five factors obtained with an eigenvalue above 1.[33] Varimax rotation with Kaiser's normalization was applied. Factors were considered as representing the dimensions for the student's individual traits of functioning at university. These dimensions will hereinafter be referred to as the "individual model of the students' functioning at university". Based on the factor loadings of the items (a threshold of 0.300 was applied), the dimensions' characteristics can be described as follows:

1. sociability (I_1) – related to items corresponding to extraversion (according to NEOAC) and is manifested by a propensity to talk to other people at university,

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[32] The principal component method has also been used, leading to a dimensional structure similar to the one obtained using the centroid method.

[33] The factor analysis presented in this chapter was conducted in STATISTICA. The calculations in STATISTICA presented in this article have been made using the license no. JGVP3078798502AR-D.

having a lot of friends at university, and a particular preference for being in a good mood at university;

2. neuroticism at university[34] (I_2) – covers all items corresponding to neuroticism according to the NEOAC model and is manifested by a propensity to be worried about various situations at university, feeling despondent and helpless during tough moments at university, a propensity to act under negative emotions at university, and to feel anger towards other people and be confused in their presence;

3. prudential diligence (I_3) – dominated by items corresponding to conscientiousness (according to NEOAC), and including also the item corresponding to an openness to experience; this dimension is manifested by working hard and striving for the best possible results in activities undertaken at university, while on the other hand, having a propensity for detailed consideration of any decision made at university and engaging the imagination in the performance of tasks related to studying;

4. visionary leadership (I_4) – covers the items corresponding to conscientiousness and extraversion (according to NEOAC); manifesting "leadership" by a willingness to lead a group of people at university when there is occasion to do so; being "visionary" is manifested by being convinced about the goals and direction of activities undertaken at university, as well as a belief in the success of those activities, and in a propensity to make brave decisions;

5. curiosity about the world and people (I_5) – consisting of items corresponding to an openness to experience and extraversion (according to NEOAC); manifested by treating studies as an occasion in which to fulfil a curiosity about the world, collecting new experiences and discovering new things; a strong focus on people, manifested in a propensity to observe people at university and an interest in events involving other people.

To investigate the relationship between the dimensional structures of students' individual traits of functioning at university and NEOAC, the linear correlations between the dimensions of these two models (NEOAC dimensions were measured using the NEO-FFI questionnaire) were analysed. It is interesting that curiosity about the world (I_5), the dimension dominated by related items to an openness to experience, correlates with the equivalent NEOAC dimension at a relatively low level ($r = 0.197$). It seems this could be connected with the possibility of stimulating behaviours related to personal growth and new experiences within group activities at university, which would involve extroversive traits (this NEOAC dimension

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[34] It should be mentioned that "neuroticism at university" means the dimension of the individual model of student functioning at university, whereas "neuroticism" in this paper refers to one of the NEOAC dimensions of personality.

correlated with curiosity at the higher level of $r = 0.432$). Regarding the characteristics of the individual model of the students' functioning at university, it is apparent that no dimension, apart from neuroticism at university, fully corresponded to any one of the NEOAC dimension. The above supports H1, which supposes the structures of these two models are different. Thus, one may conclude that the situational context in university does, visibly, modify the form of student functioning.

Individual Types of Student Functioning at University

In order to identify the individual types of student functioning at university, cluster analysis was conducted on the set of variables calculated as an average of the items assigned to that dimension, for each dimension of the individual model of the students' functioning at university. The k-means method was also applied, where the number of clusters was established as $k = 3$, in order to allow a sufficient number of observations for each of the most frequent fields of study at the WSE. The averages for each dimension in the final cluster centres are displayed in Figure 1. Based on the differences in dimension averages between the clusters,[35] the following cluster characteristics (considered as a representation of individual types of student functioning at university) are proposed (see Figure 1):

1. Cluster no. 1 (T_1) – "engaged stable" – with the highest level of I_4 (visionary leadership) and the lowest level of I_2 (neuroticism at university).
2. Cluster no. 2 (T_2) – "engaged nervous" – with the highest level of I_2 (neuroticism at university) and I_3 (prudential diligence).
3. Cluster no. 3 (T_3) – "not engaged" – with the lowest level of I_1 (sociability), I_3 (prudential diligence), I_4 (visionary leadership) and I_5 (curiosity about the world and people).

The results mentioned above seem to support H2, according to which there exists separate and internally coherent types of student functioning at university.

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[35] A significance threshold at a level of $\alpha = 0.05$ was used in the analysis.

Figure 1. The Characteristics of the Final Cluster Centres Obtained by the K-Means Method (k = 3), Based on the Averages for Items Related to the Dimensions of the Individual Model of the Students' Functioning at University (Averages Presented in 7-Point Scale)
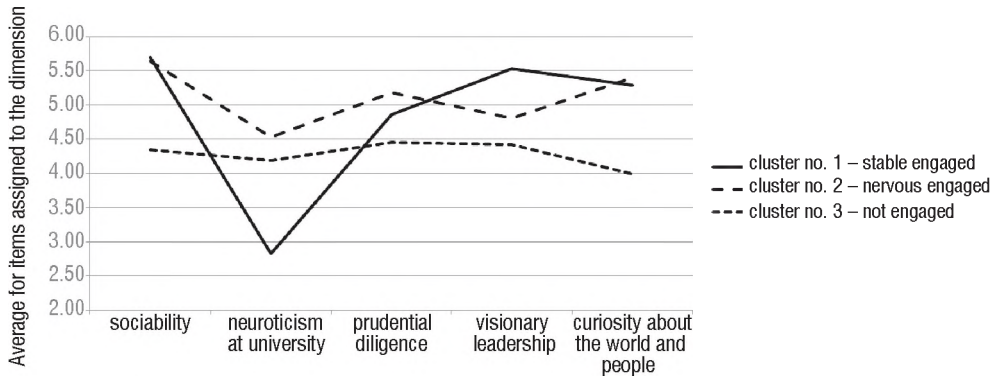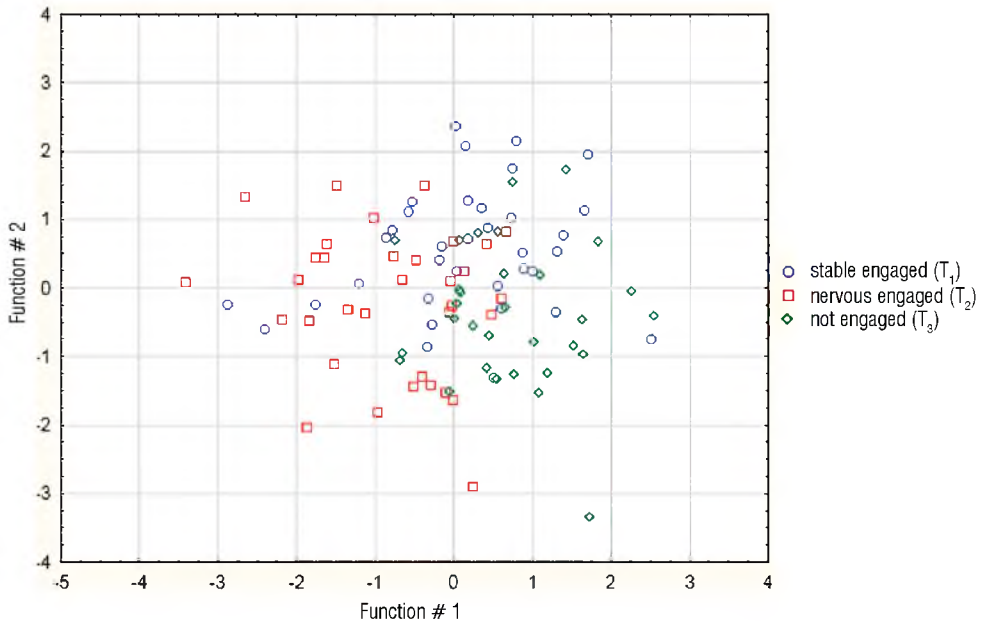

Source: own elaboration.

Association Between Functional Quality Evaluation and Student's Individual Traits in Terms of Functioning at University

Student evaluations of functional quality features (corresponding to the dimensions of quality perception that have a high importance for students, identified in stage 3.) were measured in stage 5. A graphic scale in the form of a line was used, anchored by the descriptions of extreme states (semantic differential). To investigate the differentiation in the evaluation of functional quality features by students' individual types, discriminant analysis was used (calculations were made in STATISTICA – lic. JGVP3078798502AR-D). The evaluation of functional quality features played the role of predictors, while the individual types (T_k) were the groups being discriminated. One predictor with a statistically significant contribution to the model was identified: the evaluation of the feature "clarity of rules for passing courses". The first discriminant function showed a statistically significant Wilks Λ, unlike the second discriminant function (so it was not interpreted). With its values in the groups gravity centres, the first discriminant function indicates the not engaged type (T_3), differentiating it from nervous engaged type (T_2) (see Figure 2).

The evaluation of the clarity of course passing rules showed a statistically significant positive, standardized coefficient for the first discriminant function. Thus, this variable could be interpreted as a predictor of the not engaged type, T_3 (contrary

to the nervous engaged type, T_2). It was observed that the nervous engaged type shows the lowest evaluation of overall functional quality (which was calculated based on the evaluation of features weighted by the features' declared importance, as measured in stage 3.).

Figure 2. Discriminant Functions' Values for Particular Observations.
        Horizontal Axis – Values of Function No. 1;
        Vertical Axis – Values of Function No. 2

Source: own elaboration.

The results of the supplementary analyses complement enabled the validation of H3, which proposed particular directions of association between certain students' individual traits in terms of student functioning at university, and student attitudes toward the functional quality of educational services. The linear correlation coefficients between these sets of variables are presented in the Table 2.

Table 2. Linear Correlations Between the Evaluations of the Functional Quality of Features (q_i), Overall Functional Quality Evaluation (Q) and the Intensity of Students' Individual Model of Functioning at University Dimensions (I_j)

Codes for functional quality features:

1 possibility of scholarship support for students
2 infallibility of the electronic system for registering exam results
3 support in career planning
4 supporting students' pride in being a WSE student
5 infallibility of the functioning of the Virtual Dean's Office
6 accessibility of information on the university's website
7 ease of searching for items in the WSE library
8 utility of student organizations and student scientific circles operating at the university

9 support by the employees of the Dean's Office
10 usefulness of students' internet forum in solving issues
11 clarity of rules for passing courses
12 ease of choosing optional courses in the Virtual Dean's Office application
13 functioning of photocopy points within the WSE campus
14 opportunities for student integration at language classes
15 method of making exam results available to students

Dimensions for students' individual model of functioning at university (I_i)		EVALUATION OF FUNCTIONAL QUALITY FEATURES (q_i)															Q
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
sociability (I_1)	r	-.070	-.147	**.197***	**.203***	-.151	-.115	-.106	**.352****	.026	-.052	-.124	.107	.055	.041	-.015	.032
	p	.483	.135	.044	.039	.124	.243	.281	.000	.791	.600	.208	.278	.581	.676	.882	.748
	N	104	105	105	104	105	105	105	105	105	105	105	105	104	105	105	102
neuroticism (I_2)	r	-.170	-.039	**-.192***	-.143	.009	-.130	-.064	.010	-.179	-.015	-.184	**-.210***	**-.223***	**-.203***	**-.240***	**-.297****
	p	.084	.693	.049	.145	.923	.186	.514	.921	.068	.883	.061	.031	.023	.038	.014	.002
	N	104	105	105	105	105	105	105	105	105	105	105	104	105	105	105	103
prudential diligence (I_3)	r	.026	.125	-.060	-.097	.149	.023	.032	.018	**-.343****	.129	-.141	.085	-.016	.072	-.131	-.044
	p	.792	.205	.547	.330	.130	.814	.747	.855	.000	.191	.153	.390	.876	.468	.184	.665
	N	103	104	104	103	104	104	104	104	104	104	104	104	103	104	104	101
visionary leadership (I_4)	r	.057	-.053	.077	.144	.058	.013	.125	.103	.138	-.030	.035	**.199***	.164	.091	-.035	.156
	p	.565	.590	.433	.144	.552	.897	.203	.292	.158	.760	.720	.040	.095	.351	.721	.114
	N	105	106	106	105	106	106	106	106	106	106	106	106	105	106	106	103
curiosity about the world and people (I_5)	r	.073	-.073	.174	**.273****	-.069	-.016	-.078	**.238***	.131	.110	-.165	.080	-.047	.038	**-.232***	.025
	p	.458	.460	.075	.005	.480	.871	.426	.014	.182	.261	.090	.413	.637	.700	.017	.799
	N	105	106	106	105	106	106	106	106	106	106	106	106	105	106	106	103

r – Pearson's correlation coefficient; p – significance p-value; N – number of observations
* r is significant at the level of 0.05 (two-tailed)
** r is significant at the level of 0.01 (two-tailed)
Source: own elaboration.

In line with H3, the negative correlations between neuroticism at university (I_2) and the evaluations of the five functional quality features have been observed,[36] with no positive correlations. The positive relationship between extraversion related traits and the functional quality evaluations proposed by H3, also seems to be supported, as sociability (I_1) showed positive correlations with three features and no negative correlations were found.[37] The role of openness to experience, for which the negative relationship with functional quality evaluations was proposed by H3, was found to be ambiguous, as curiosity about the world and people shows a positive correlation with one quality feature[38] and negative correlations with two features.[39] The positive relationship between agreeableness and functional quality evaluation predicted by H3, is not supported by the research results because – as was mentioned above – the agreeableness related items that were measured in a university context (stage 4.) do not reach the required levels of reliability. In other words, students have not provided any coherent self-description that is related to university context behaviours typical for agreeableness. Consequently, traits related to agreeableness are not included in the dimensions of the individual model of the students' functioning at university. The part of H3 proposing a positive association between conscientiousness related traits and functional quality evaluation was not supported, as the prudential diligence, I_3 (with a prevalence of traits corresponding to conscientiousness) showed a negative correlation with the evaluation of one feature[40] and no positive correlations.

It seems that the resultant empirical validation of H3 indicates the complex nature of individual determination in attitudes towards quality. It has been shown that the cues (based on theoretical models and previous empirical findings) that had led to H3, are not relevant in all cases. In particular, one may conclude that the impact of openness to experience and conscientiousness in the functional quality evaluations is dependent on the specificity of the service and its detailed aspects being the subject of evaluation. Considering the above, it seems that H3 has been partially supported.

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[36] These features are: "support in career planning", "ease of choosing optional courses in the Virtual Dean's Office", "the functioning of photocopy point at the WSE campus", "opportunities for student integration at language classes", "method of making exam results available to students".

[37] These features are: "support in career planning", "supporting students' pride in being a WSE student", "the utility of student organizations and student scientific circles operating at the university".

[38] This feature is: "method of making exam results available to students".

[39] These features are: "taking care of students' pride in being a WSE student", "the utility of student organizations and student scientific circles operating at the university".

[40] This feature is: "support by employees of the Dean's Office".

Association Between the Field of Study and the Functional Quality Evaluation of Educational Services

Neither discriminant analysis nor ANOVA have provided any evidence for association between the field of study and functional quality evaluation. Nevertheless, LSD tests showed a statistically significant difference in the evaluation of the feature "method of making exam results available to students", which is higher for Quantitative Methods in Economics and Information Systems *vs*. Finance and Accounting. Based on these results one could consider H4 to be partially supported. It seems that the field of study role in the determination of functional quality evaluation is far smaller than it was proven to be for individual traits. One may suppose this effect could indicate the minor role of expectations that are peculiarly attached to field of study, compared to individual determination.

Association Between Field of Study and Individual Types of the Students' Functioning at University

To investigate the relationship between field of study and individual student types, an χ^2 test was conducted for these variables, but no statistically significant evidence was found. ANOVA for dimensions of the individual model of the students' functioning at university (as dependent variables) and field of study (as the classification factor) also did not shown any significant differentiation; but ANOVA for NEOAC dimensions (measured by the NEO-FFI questionnaire) showed a statistically significant differentiation for extraversion. LSD tests confirmed the highest intensity of extraversion for Management students. This result is coherent with previous empirical findings for business major students.[41] On the other hand, a lack of visible association at the level of the individual model of the students' functioning at university and individual student types, in terms of functioning at university, could indicate that the relationship between field of study and individual traits relates rather to the general "nature" of the student (as described by NEOAC) than his or her adaption to the university environment (which may be reflected in university functioning related traits). One may propose that rather the general personality traits impact the field of studies, with the minor role having the opposite impact (if the field of

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[41] J. Lounsbury, R. Smith, J. Levy, F. Leong, L. Gibson, op.cit., pp. 202–203; Ch.D. Pringle, Ph. B. DuBose, M.D. Yankey, op.cit., pp. 131–142.

study affected students' individual traits, they should be found also at the level of the students' functioning at university).

Conclusions

The research results presented in this article seem to partially close the gap in the literature by indicating individual determinants of the functional quality perception of educational services within a comprehensive individual model of the students' functioning at university and a comprehensive model of functional quality perception. In particular, it can be stated that, in the case of the service provided by the Warsaw School of Economics at bachelor level:

1. The functional quality perception of educational services by students, constitutes a dimensional structure that consists of 25 dimensions.
2. The individual traits of the students' functioning at university have a dimensional structure as well; the characteristics of this structure (the individual model of the students' functioning at university) is different to the personality structure proposed by NEOAC. Apart from neuroticism, no NEOAC personality dimension is directly transmitted to a situational context of studying. Moreover, agreeableness could not be identified due to students' poor level of recognition of the related traits within the environment of studying. This differentiation seems to confirm the major role of the situational context (here: studying at university) in the manifestation of individual traits.
3. Individual types of the students' functioning at university can be identified based on the individual model of the students' functioning at university, which has been indicated – in the case of this study – as: "stable engaged", "nervous engaged" and "not engaged".
4. An association occurs between students' individual traits or types of functioning at university and student attitudes towards the functional quality of educational services. Thus, the main hypothesis of this paper has been supported. Functional quality evaluation is at the lowest level for the nervous engaged type and is negatively correlated with the neuroticism at university dimension. This seems to confirm the role of neuroticism in quality perception, however, it is worth mentioning that no evidence for this role has been found in the earlier study of the personality determinants of course and lecturer evaluation done by Australian university students.[42] This could lead to conclusion that neuroticism related

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[42] C.L. Patrick, op.cit., p. 245.

traits play a rather marginal role in the perception of the substantive aspects of educational services (i.e. technical quality) as teaching, while the role of neuroticism is visible for functional quality perception.

5. There exists an association between the field of study and the intensity of extraversion (according to NEOAC). Students in Management show the highest level of extraversion (compared to the other most frequent fields of study at the WSE as: Quantitative Methods in Economics and Information Systems, Finance and Accounting). This finding is coherent with the personality characteristics of business major students known from the earlier studies.

The above should lead to the general conclusion that the research approach for assessing the association between students' individual traits and their attitudes towards the functional quality of educational services provided by the university, as described in this paper, has been verified and can be applied to other universities.

Proposed Direction of Further Research

The findings obtained in this study should lead to further research on following topics:

– investigating the possibilities for applying the research approach presented in this paper to other universities;

– development and validation of casual models linking the individual model of the students' functioning at university with students' attitudes towards the functional quality of educational services;

– analysing the mechanisms that explain the individual determination of quality perception described in this paper;

– quantitative assessment of individual traits' contribution to service quality perception (compared to other determinants).

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