



Multigroup validation of the service quality, customer satisfaction and performance links in higher education

多组验证高等教育中的服务质量，顾客满意度和绩效的联系

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ABSTRACT

The notion of ‘students as customers’ continues to be prominent, yet is insufficiently explored, especially from the standpoint of various stakeholders. To address this inadequacy, the present study employs a multigroup analysis of the service profit chain (SPC) model in higher education (HE). Its purpose is to examine the complete SPC model regarding stakeholder perceptions in order to inform its validation and implementation. A cross-sectional survey was employed in order to enable multigroup comparison of a comprehensive research model on subsamples of employees and students by means of structural equation modeling (SEM). Results provide support for the proposed SPC model within the sample of vocational colleges. Besides strongly linked constructs (quality–satisfaction–loyalty), some notable weaknesses (cracked ‘satisfaction mirror’) are found. Multigroup analysis also indicates some important differences between employees and students. Implications are provided for strategic service management in HE, which should acknowledge the differences among stakeholder perceptions.

摘要

虽然还没有充分探索，但‘学生作为顾客’的概念持续突出，尤其是从各种利益相关者的角度来看。为了解决这一不足，本研究采用了高等教育中服务利润链（SPC）模型的多组分析。其目的是查验有关利益相关方感知的完整的SPC模型，以告知其验证和实施。为了通过结构模型（SEM）对雇员和学生子样本的综合研究模型进行多组比较，采用了横断面调查。研究结果为高职院校样本中的SPC模型提供了支持。除了紧密联系的结构（质量-满意-忠诚），本研究还发现了一些值得注意的弱点（破裂的‘满意度反映’）。多组分析还显示了员工和学生之间的一些重要差异。本文为高等教育战略服务管理提供了启示，应该承认利益相关者之间的差异。

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Introduction

The higher education (HE) sector continues to face ‘marketization’ challenges. These are due to increased globalization, competitiveness, reforms and fund restrictions, which

results in the imperatives for improved customer focus, service quality and market performance (Helgesen & Nettet, 2007; Hides, Davies, & Jackson, 2004; Ng & Forbes, 2009; Woodall, Hiller, & Resnick, 2014). These challenges apply not only to the university level, but also to (post-)secondary vocational education and training (VET) (Darwin, 2007; Mayer, 2002), which represents the context of this study. There is a growing interest in this type of education (McGrath, 2012), and the need to prevent 'further drifting too far from the world of practice' and to pursue 'harmonic convergence' between academic and vocational education is an important imperative (Grubb & Lazerson, 2005; Powell & Solga, 2010; Young, 1993).

Convergence is also pursued among currently disparate national HE systems and the quality assurance frameworks (Billing, 2004; Dobbins & Knill, 2009). Nevertheless, due to the 'varieties of capitalism' and different transitional paths, the HE and VET systems among EU countries still vary greatly where significant national differences exist (Buchen, 2004; Kapplinger, 2011; Kogan & Unt, 2008; Nilsson, 2007). In this regard, Slovenia, as a typical 'coordinated market economy' and 'state-practical' VET system, represents an interesting context for the empirical study. Slovenia introduced private education initiatives during the transition to a market economy in 1992 (see Muršak, 1997). Since then, the ongoing marketization of adult education has been evident, shaped by market demands and converging EU policies regarding quality assurance (Mikulec & Krašovec, 2016).

In order to respond to the identified challenges and imperatives, education organizations increasingly rely on various quality assurance approaches such as total quality management, quality function deployment, balanced scorecard and EFQM model (Beard, 2009; Hides et al., 2004; Quinn, Lemay, Larsen, & Johnson, 2009), which are well known in more competitive industries such as financial services (Lloréns Montes & Verdú Jover, 2004), restaurants (Chen, 2016), media outlets (Kumru, 2012) and others (Canet-Giner & Balbastre-Benavent, 2011). Lack of attention and empirical research in HE is however obvious in regard to the service profit chain (SPC) model. This widely accepted service management model assumes causal links among concepts of external service quality and customers' satisfaction, internal quality and employees' satisfaction, but also with the warranted consequences, such as loyalty and profitability (Heskett, Sasser, & Schlesinger, 1997). Loyalty in HE, for instance, becomes a concerning issue and strategic theme (DeShields, Kara, & Kaynak, 2005; Helgesen & Nettet, 2007), yet there is a lack of insight on how educational institutions can manage it strategically. Rather, the education sector still seems to struggle with the conceptualization and measurement of particular constructs in the chain, in particular with the services quality (see Abdullah, 2006; Arena, Arnaboldi, & Azzone, 2010; Noaman, Ragab, Madbouly, Khedra, & Fayoumi, 2015; Wright & O'Neill, 2002) and customer satisfaction (Bedggood & Donovan, 2012; Douglas, McClelland, & Davies, 2008; Gruber, Fuß, Voss, & Gläser-Zikuda, 2010).

Moreover, understanding and the notion of the key SPC constructs in the educational context might be questionable. Donaldson and Runciman (1995), for instance, argue that in the education sector service quality is neither clearly understood, nor well managed. In the same manner, the notion of 'student as customer' and market orientation in education is often contested (see Eagle & Brennan, 2007; Motwani & Kumar, 1997). As a result, researchers and management lack insight into how constructs of the SPC model are related and eventually affect warranted outcomes such as student (and employee)

loyalty and market performance. While there are a growing number of studies that examine relationships among two or more constructs of the SPC model in the HE sector (DeShields et al., 2005; Griffith, 2001; Helgesen & Nettet, 2007; Schlesinger, Cervera, & Pérez-Cabañero, 2016; Snipes, Oswald, LaTour, & Armenakis, 2005; Voss, Tsiriktsis, Funk, Yarrow, & Owen, 2005), the lack of examination of a complete SPC model in this sector is evident.

Besides improved insight into loyalty and performance drivers, an additional contribution of the SPC model within the HE sector is expected. Namely, HE undergoes a reorientation from the traditional teacher-and-lecturer centered to student-centered education (Felder & Brent, 1996; Foster & Carboni, 2009; McCabe & O'Connor, 2014). While such a refocus from employees and services toward customers is warranted, it nevertheless implies a less merited 'either-or' logic (i.e. focus on *either* students *or* teachers/lecturers) and as such encounters various impediments and challenges (see Felder & Brent, 1996; Johnson et al., 2009; Phillips, 2005). In this regard, the SPC model is relevant to consider in an educational context, as it informs organization-wide customer orientation and suggests relevant mechanisms for its internal and external alignment. In order to avoid 'the tyranny of trade-off', the SPC model as a key integrative mechanism introduces the 'satisfaction mirror', which presumes reciprocal effects among employees and customers. According to Heskett et al. (1997), the mirroring mechanism works as contagious back and forth transfer of enthusiasm between employees and customers. This causes employee and customer satisfaction to correlate – especially in services with close and frequent interactions. Another relevant construct introduced is 'ownership', which refers to the committed and constructive behaviors of employees and consumers (see Heskett, Sasser, & Wheeler, 2008). Both conceptual mechanisms are relevant, yet need verification in the education sector. The concept of the satisfaction mirror in education was not supported by some studies (Voss et al., 2005). Some studies, in addition, suggest that trade-off (i.e. negative correlation) exists among student and employee satisfaction, due to the organizational culture which is irrespective to student expectations (Griffith, 2001). Ownership initiatives such as the 'service contract' have on the other hand only been proposed (Rowley, 1997), but not empirically examined in the education sector.

Further examination of SPC in the education context is in turn beneficial for the further development of this model. In the future, the advanced design and application of it will require consideration of constructs such as organization commitment (Boukis, Kaminakis, Siampos, & Kostopoulos, 2015; Kim, 2014) and service climate (Hong, Liao, Hu, & Jiang, 2013), but also some additional ones that were previously neglected. These are, for instance, emotional contagion (see Du, Fan, & Feng, 2011; Hennig-Thurau, Groth, Paul, & Gremler, 2006), psychological contract and mental models. Psychological contract as a set of implicit and mutually agreed expectations (Grant, 1999; Sparrow & Marchington, 1998) might namely inform the research regarding the 'implicit SPC contract' among various stakeholders. On the other hand, mental models, which address 'subjective mental constructs and experiences' (Rook, 2013), would inform research regarding further (i.e. cognitive) aspects of the SPC model. Mental models are namely appropriate for analyzing the collective cognitive maps (Christensen & Olson, 2002) and comparison of constructs shared by various groups (Grunert, Trondsen, Campos, & Young, 2010).

In accordance with the identified research gaps, the purpose of this paper is twofold. Firstly, it aims to examine the complete SPC model within the education sector in order

to inform enhancement of (student) loyalty and market performance. Secondly, it aims to empirically analyze (mis)alignment of perceptions regarding the SPC model among groups of customers/students and employees, by means of multigroup analysis. In order to accomplish these two aims, the SPC model and its implications within the education sector are discussed first, followed by a review of findings of previous studies, which illuminate identified research gaps and challenges in greater detail. Based on this, a baseline research model is proposed with corresponding hypotheses, which enables its empirical examination. In the second part, a research design and an empirical study are presented, which involve a survey among several vocational college organizations on subsamples of employees and students. In the third part, study findings are discussed and both managerial and future research implications are suggested.

Literature review and hypotheses development

The SPC model assumes a chain of causal effects between several internally and externally corresponding constructs, namely service quality, satisfaction, loyalty and profitability (Heskett et al., 1997). The key mechanisms, which relate internal and external part of the model, are the satisfaction mirror among employees and customers and the service value equation. One of the important assumptions of the SPC model is that the model is equally applicable for different types of service organizations. From the outset, the model is empirically well supported by case-based studies and correlational analyses, which confirm the expected positive links in the chain (Heskett et al., 1997). Over time, numerous studies that examined the correlations among model constructs and subsequent meta-analyses corroborated postulated links in the model. A recent meta-analysis of Hogreve, Iseke, Derfuss, and Eller (2017), for instance, concluded that all examined links in the model are significant and substantial, although with considerable variations in effect sizes.

Regarding the *internal* part of the model, narrower studies speak in favor of the satisfaction mirror as an interface between the internal and the external parts of the model (Brown & Lam, 2008; Brown & Peterson, 1993; Schneider & Bowen, 1985; Wangenheim, Evanschitzky, & Wunderlich, 2007). Further support for this conclusion (and for the first set of hypotheses; H1–H6), comes from studies that partially examine other links among internal constructs of the SPC model (Edo, Llorens-Monzonís, Moliner-Tena, & Sánchez-García, 2015; Kim, 2014; Myrden & Kelloway, 2015; Yee, Yeung, Cheng & Lee, 2013). These studies examined only parts rather than the entire model – and with good reasons: the validation of the complete model is challenging. The model is complex, difficult for analysis on large samples and prone to disapproval at many points (Silvestro & Cross, 2000). It is thus not surprising that some studies did not confirm expected relationships (Brown & Mitchell, 1993; Silvestro & Cross, 2000).

Because of that, it is particularly interesting to look at the findings and conclusions of the (few) comprehensive studies of the SPC model, such as those of Yee, Yeung, and Cheng (2011), Larivière (2008) and Kamakura, Mittal, Roas, and Mazzon (2002). The findings of Yee et al. (2011), for instance, fully confirm the expected chain of links on a larger sample of high-contact service organizations, which start with employee satisfaction through customer satisfaction and loyalty impact on profitability. The authors found that the optimal model includes the direct link between employees' and consumers' satisfaction as well as

their mediation with constructs of employee loyalty and service quality. The study of Kamakura et al. (2002) also confirmed the expected links between internal and external constructs. It also provides support for the inclusion of behavioral intentions as a mediator between perceived service attributes and behaviors. Another in-depth study (albeit without the internal part of the model) was performed by Larivière (2008). This study also provides support for links between quality, loyalty intentions and longitudinal profitability indicators, where relationships among model constructs were found to be nonlinear and segment-specific.

Relevant meta-analyses also concur with these findings but also further illuminate existing gaps in knowledge regarding the SPC model. For instance, they confirm that employee satisfaction affects their loyalty and productivity (Brown & Peterson, 1993; Hogueve et al., 2017) and customer satisfaction and perceived service quality (Brown & Lam, 2008). Still, there remains a need to examine the further complementary paths in the model since some links, such as employee satisfaction – market performance, remain neglected. This link was supported by many studies (see Harter, Schmidt, & Hayes, 2002), but not tested within the SPC model framework (see Hogueve et al., 2017). Furthermore, most studies of this type refer to different levels of analysis and mostly employ organization-level data, while employee-level is neglected (Snipes et al., 2005). Comprehensive studies thus support the SPC model, yet affirm the need for a close examination of its weak and overlooked links on the employee-level data, as these aspects are neglected, yet might be sector-specific.

Existing studies of the SPC model in the education sector are rather scarce and not fully conclusive. Snipes et al. (2005) and Voss et al. (2005), for instance, found that employee satisfaction is related with the perceived service quality. Trivellas and Santouridis (2014) also found that employee satisfaction is related with the service quality and commitment. Interestingly, education studies rarely examined the satisfaction mirror. Notable exceptions are studies of Voss et al. (2005), who found insignificant relationship among employees' and students' satisfaction and of Griffith (2001), who found negative correlation between the employees' and students' satisfaction. Such weak links are yet another argument for the comprehensive examination of the SPC model in the HE sector. Accordingly, first set of hypotheses is proposed:

H1: Internal services quality has a positive influence on employee satisfaction.

H2: Employee satisfaction has a positive influence on employee loyalty.

H3: Employee satisfaction has a positive influence on service quality.

H4: Employee loyalty has a positive influence on service quality.

H5: Employee satisfaction has a positive influence on student satisfaction.

H6: Employee satisfaction has a positive influence on perceived performance.

As pointed out, some studies do not confirm the satisfaction mirror effect (Griffith, 2001; Voss et al., 2005). Validation of the SPC model therefore requires further verification of the 'cracks' in the satisfaction mirror and examination of possible mediating concepts between the internal and external part of the model. Meta-analysis of Brown and Lam (2008), which compared the strength of direct and indirectly mediated links between

employee and customer satisfaction, for instance, concluded that this relationship is fully mediated by the concept of quality. This is consistent with Yee et al. (2011) and Voss et al. (2005) and suggests that quality serves as a possible 'bypass' when direct satisfaction link among employees and students are weak or dysfunctional. Accordingly, the following hypothesis is proposed, which specifies the mediating role of quality:

H7: The indirect, mediating link between the employees' and students' satisfaction via the quality construct is stronger than the direct 'mirror' link.

Those studies of the SPC model, which were focused on its *external* part, also speak in favor of assumed links. In particular, this applies to the impact of service quality on satisfaction and the impact of satisfaction on loyalty (Gupta & Zeithaml, 2006; Zeithaml, 2000). This conclusion is also supported by several studies that only examined external parts of the SPC model (Hallowel, 1996; Tam, 2004). The relative importance of particular constructs and mediating paths in the chain were subject to extensive discussions and research (see Brown & Lam, 2008; Caruana, 2002; Eggert & Ulaga, 2002). Reichheld, Markey, and Hopton (2000), for instance, advocated loyalty as the superior concept, which helps managers out of the 'satisfaction trap'. In line with this view, satisfaction is a redundant concept because it is sensible for managers to focus only on loyalty, which (admittedly) assures profitability. However, the assumption about the causal relationship among loyalty and profitability also was found to be problematic, especially in the transactional, impulsive and noncontractual contexts (Reinartz & Kumar, 2000). Loyalty, in addition, due to the nature of some products or a lack of interest among consumers, is not always a realistically achievable goal. Consequently, for many organizations satisfaction is still the relevant and worthwhile objective because of positive expected consequences (Oliver, 1999).

Comprehensive studies pertaining to the external part of the SPC therefore support the SPC logic, yet also question some assumptions (e.g. the need for all constructs in the SPC model, causal/functional relationships and universal applicability), indicating the need for further validation of the complete model in different contexts. Existing studies in the education sector also provide support for the external part of SPC model. They namely indicate that service quality impacts student satisfaction (Abu Hasan, Ilias, Abd Rahman, & Abd Razak, 2008; Helgesen & Nettet, 2007; Munteanu, Ceobanu, Bobâlcă, & Anton, 2010; Voss et al., 2005) and that service quality and students satisfaction are related with loyalty (Ali, Zhou, Hussain, Nair, & Ragavan, 2016; Brown & Mazzarol, 2009; Helgesen & Nettet, 2007; Schlesinger et al., 2016). In accordance with these findings second set of hypotheses is proposed:

H8: External services quality has a positive influence on student satisfaction.

H9: Student satisfaction has a positive influence on student loyalty.

H10: Student loyalty has a positive influence on business performance.

On the basis of the proposed hypotheses, a baseline research model is developed, which depicts the expected relationships among examined constructs (Figure 1).

The frontline, boundary spanning role of employees in service organizations is often ambiguous, conflicting and may have a negative impact on satisfaction (Boles & Babin, 1996; Brown & Peterson, 1993; Singh, Goolsby, & Rhoads, 1994). Such misalignments are especially relevant to examine when a trade-off among one part of the SPC model

(internal/employees) and another (external/customers) is possible due to the turnarounds and specifics of organizational culture, like those found in education sector (Foster & Carboni, 2009; Griffith, 2001; McCabe & O'Connor, 2014). On the other hand, several studies, including a meta-analysis by Grinstein (2008), suggest that market orientation can alleviate the potential mismatch between employees and customers and align their interests (Castro, Barroso, Martin, & Sanches del Rio, 2005; Oakley, 2012). Further validation of the SPC therefore warrants a comparison of views on a whole model among subsamples of employees and students. Logic of market orientation and the ownership principle namely suggests that both groups are aligned, yet need to be examined in order to establish whether differences exist between them. Accordingly, the final hypothesis states that:

H11: Significant differences between employees and students exist regarding the links in the examined structural SPC model.

Research design and methodology

In accordance with this paper's purpose, the following research objectives were developed in order to specify and facilitate research design of the empirical study: (1) a comprehensive validation of the complete SPC model on a sample of respondents from private vocational colleges; (2) a detailed examination of the satisfaction mirror and its mediation via the quality construct and (3) a comparison of measurement and structural differences of the SPC model on the subsamples of employees and students.

At the development of research model and construct measures, it was necessary to take into account the specifics of the education sector, in particular, vocational colleges, which represent the research context of the study. Vocational education is typically related to the 'training of the hand' rather than 'education of the mind'. In an attempt to develop a compound definition, Moodie (2002) points out that vocational education is aimed at the development of competences for middle-level occupations (rather than 'higher order' knowledge), and characterized by the shorter duration of programs, practical orientation of curricula, limited range of subjects (mostly in engineering and business), little research and heavy teaching loads for faculty. In addition, conventional (especially public) vocational education is often related with typical failings, such as low pass rates, poorly qualified teachers, inadequate resources and high inefficiency (McGrath, 2012).

As such, the education sector posits certain research limitations and requires caution. The value of education is, for instance, difficult to assess (Woodall et al., 2014), especially during the service process, as it is normally only evident after the education is finished. The long-term contractual relationship might, in addition, importantly affect the loyalty of personnel and students, but also the profitability. The nature of the education setting might thus have an impact on the evaluation of the SPC model. For these reasons, the value construct is omitted from the research model, and profitability is replaced with perceived market performance. The perception of market performance is a more accessible measure of performance than the financial one, and some studies found a positive correlation expected between objective and subjective business performance criteria (Dess & Robinson, 1984).

For the purpose of data collection, the cross-section survey approach was carried out. The research model consists of multi-item manifest measures of latent constructs, what enables examination of the validity of measurement by means of structural

equation modeling (SEM). All examined constructs are measured as latent, perceptive constructs. Model constructs are 'commercial' constructs, so their understanding in the educational context might be questionable. In order to verify the understanding of the constructs and adjust the item's wording to the examined education context, preliminary qualitative study was performed first, during which 10 students and 10 employees were interviewed.

Construct definitions and measures

Measurement scales for constructs are based on established definitions and existing scales, which were adapted to the education context. For all scales, a 5-point Likert-type response scale was used, as in comparable studies (Hallowel, 1996; Kamakura et al., 2002; Yee et al., 2011). Besides, 5-point scale works well in the European context (Prentice, 1998).

Internal service quality is defined as fulfillment of the expectations of (internal) customers, what is consistent with the Zeithaml and Parasuraman (2004). Taking into account the internal quality dimensions proposed by Lau (2000), nine items were generated pertaining to working conditions, equipment, relations with the management, interpersonal relationships and quality of information.

External service quality is (also) defined as fulfillment of the expectations, regarding the key service attributes and dimensions, which are considered to be courtesy, responsiveness, empathy and flexibility. Identified dimensions overlap with those of SERVQUAL (Parasuraman, Zeithaml, & Berry, 1988) and HEDPERF (Abdullah, 2006). Based on them 17 items were formed for measuring perceived service quality.

Student satisfaction is defined as the overall evaluation of the consumption experience (Oliver, 1997) and in our study refers to the organization (vocational college). Such evaluation encompasses both the emotional and cognitive factors and involves various positive and negative feelings and judgments that pertain to choice, attendance, feedback and overall satisfaction with the school, which are measured with five items.

Employee satisfaction is (also) defined as an evaluation of the overall experience with the organization. This is in line with Oliver's (1997) definition, as well as with conceptualization of employee satisfaction proposed by Locke (1976). Employee satisfaction encompasses elements of satisfaction with the work, recognition, feedback and overall satisfaction with the organization and is measured by using five items.

Students loyalty is defined as a combination of attitudes and behavioral intentions toward the organization, which is consistent with the definition of Zeithaml, Berry, and Parasuraman (1996). For this purpose, five items were formed referring to commitment, recommendations and intentions of further study at the college. *Employee loyalty* also is defined as a combination of positive attitudes, commitment, recommendation and intention of further work at the college and was measured by using five items.

Market performance is defined as a subjective (perceived) market performance of the organization, which includes reputation, trust, recognition and relative popularity (the number of graduates in comparison to the competitors). Five items were formed to measure the market performance construct.

Two versions of the final questionnaire were prepared: one for the students and another one for the employees. Both versions were identical in terms of construct measures, only the items' wording was adjusted to correspond with the respondents'

perspective. Before the survey was sent to the respondents, a questionnaire was preliminarily tested on 15 respondents and slightly corrected. After examination of the factorial structure, reliability and validity of measurement (described in the data analysis), the number of the initial construct items was reduced, and only those items were retained, which proved to be valid measures of examined SPC constructs. As a result of validation and purification of the measurement model, the interpretation of second-order factors also was slightly adjusted to better reflect their contents (included items). A final set of the items retained and used in the subsequent SEM analysis is shown in [Table A1](#) (see [Appendix](#)).

Data collection and sample

For data collection purposes, all (20) private vocational colleges in Slovenia served as a sampling frame. Among them, the six largest colleges, accounting for approximately 60% of enrolled students (CEUVIZ-Number of enrolled students, 2017), were invited to participate. While efforts were made in order to include the most representative samples of students and employees, the lack of available data and complex research design precluded probability sampling. As a result, the study employs a nonprobability purposive sample. In the three colleges which agreed to cooperate (and account for 42% of all enrolled students), a link to the e-questionnaire was emailed to 852 students, of whom 162 responded by completing the survey. This represents a 19% response rate. Schools also sent a link to 243 employees, out of whom 126 responded, which represents a 51.8% response rate. The average age of employees was 49.5 years, and the average length of employment at the school was 6.7 years. Gender structure of employees in the sample was balanced (45.2% of both groups, with some missing answers), while among students the proportion of women was slightly higher (64.3%) than men (35.1%). The average age of students was 33.7 years. The total sample ($N = 275$) is, according to the recommendations (Klem, 2000; Kline, 2005), considered suitable for the structural equation analysis.

Data analysis

Data analysis followed the two-step approach suggested by Anderson and Gerbing (1988). First, the measurement model was evaluated using exploratory factorial analysis (EFA) to derive the underlying dimensions of examined constructs. Following from the EFA, confirmatory factor analysis (CFA) and SEM were applied to test the baseline research model ([Figure 1](#)). Because of model complexity, second-order models were examined for factors comprised several dimensions (internal quality, external quality, employee satisfaction, employee loyalty (see [Table 1](#))). Discriminant validity was assessed by investigating correlations between factors. A signal of factor distinctness, as proposed by Ping (2004), is correlation coefficients not exceeding 0.70. In addition, a series of CFA models was examined for all pairs of constructs with correlation coefficients exceeding 0.70, in order to examine the Satorra–Bentler (SB) chi-square differences (taking non-normality of distribution into account) between the standard model and the model with correlations between the pair of constructs constrained to 1. The correction factor, as proposed by Satorra and Bentler (1994), was calculated for this purpose. Convergent validity was

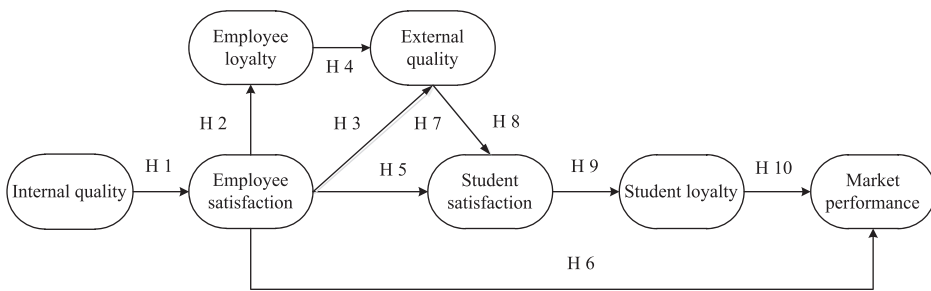


Figure 1. Baseline research model and hypotheses.

Table 1. Goodness of fit indices for measurement models.

Fit indices	Student satisfaction and loyalty	External quality; 2nd order ^a	Market performance ^b	Internal quality, Employee satisfaction and loyalty; 2nd order ^c	Whole model
RMSEA	0.03	0.04	0.04	0.04	0.03
GFI	0.99	0.97	0.99	0.96	0.90
NFI	0.99	0.98	0.99	0.96	0.97
NNFI	0.99	0.99	0.99	0.99	0.99
CFI	0.99	0.99	1	0.99	0.99
IFI	0.99	0.99	1	0.99	0.99
SRMR	0.02	0.04	0.02	0.04	0.04
SB χ^2	11.42; df = 8; p = .18	56.4; df = 31; p = .003	3.953; df = 2; p = .139	124; df = 72; p = .0001	848.6; 573; p < .001

^aExternal quality has three dimensions (accessibility, courtesy and professionalism).

^bCFA for Market performance was first tested assuming four indicators. One indicator was omitted from the analysis to improve fit of the final measurement model.

^cEmployee satisfaction has two dimensions (general satisfaction and feedback information).

indicated by statistically significant loadings of each item on the corresponding factor and good overall fit of the measurement model. Reliability was assessed by Cronbach's α , and composite reliability was calculated. Values of composite reliability of 0.70 and larger were considered to indicate adequate reliability, as proposed by Nunnally (1978). The common method bias was tested using Harman's single factor score approach. The total variance explained by one factor was less than 50% (i.e. 29%) suggesting that common method bias did not affect the presented results. Cases with missing data on composite measures were omitted from the analysis.

Measurement model(s) analysis

The measurement model is complex, with a large number of indicators and constructs, so a partial disaggregation approach was adopted to reduce the number of parameters in the model (Bagozzi & Edwards, 1998). There are several recommendations about the required sample size for SEM. Boomsma (1982) recommends a minimum sample size of 100 or 200, Bentler and Chou (1987) five or 10 observations per estimated parameter, while Nunnally (1978) recommends 10 cases per variable. Adequate sample size also depends on model complexity, and in our case we were dealing with a rather complex model. This issue was addressed by validating several smaller measurement models at a time, for which a partial disaggregation approach was used. CFA was applied on disaggregated smaller models,

while a structural equation model was evaluated using composite measures calculated as averages of indicators per construct or construct dimension. According to Dillon, McDonald, and Iacobucci (2001) and Grapentine (1995), this leads to reduction of measurement error and parsimony. A smaller sample size for such a complex model was therefore considered and taken into account in the course of statistical analysis.

Development of composite scales is widely used when there is a relatively large number of indicators (Baumgartner & Homburg, 1996), which also was the case in this study. For unidimensional constructs, error variance of the single indicator was calculated as (1 minus reliability) times the variance of the indicator (Baumgartner & Homburg, 1996). The statistical analysis took into consideration the non-normality of the measured variables. The goodness of model fit was evaluated using the SB scaled chi-square, which is suitable for evaluating models with non-normal data (Boomsma & Hoogland, 2001; Satorra & Bentler, 2010).

In addition, the comparative fit index (CFI), incremental fit index (IFI), non-normed fit index (NNFI), the root mean square error of approximation (RMSEA) and the standardized root mean square residual (SRMR) were used. Values of 0.95 or and above or 0.90 and above for CFI, NNFI and IFI, and values of 0.08 and below for RMSEA and SRMR indicate a good fit of the model (Hu & Bentler, 1998). Modification indices and standardized residuals were investigated to improve the model fit. The estimation procedure used was a robust maximum likelihood as proposed by Boomsma and Hoogland (2001) for data not following multivariate normal distribution. SPSS 21.0 was used for EFA, and LISREL 8.80 was used for model calibration and hypotheses testing. Hypotheses were tested at $\alpha = 0.05$ level of significance (two-tailed). Several partial measurement models were built to test measurement validity. All indicators loaded significantly on the presupposed factor, and overall fit of the models was good (see Table 1).

A correlation matrix between constructs was examined for correlations above 0.70 that could indicate the threat to discriminant validity. Correlation coefficients above 0.70 existed between construct pairs listed in Table 2. Discriminant validity for these pairs was further examined by comparing corrected SB chi-square for the constrained (correlation between construct dimensions set to 1) and unconstrained models. A statistically significant difference in chi-square existed for all examined construct dimensions pairs. Discriminant validity was therefore supported. Composite reliability was calculated for each construct (see Table A1). All values are above Nunally's 0.70 threshold, indicating good measurement reliability.

Structural model – hypotheses testing

In the second step of the analysis, the structural model was evaluated to assess the hypothesized relationships between constructs. A structural equation model was built on the combined sample and modified by removing nonsignificant structural paths. Afterward, the modified model was tested separately on employees and the students group. The multigroup SEM was employed with the preliminary step of testing the metric invariance of measurement model. The preliminary analysis thus included testing the baseline model on the combined database ($n = 275$). Fit of the model was acceptable (SB $\chi^2 = 79.75$; $df = 31$; $p < .001$; RMSEA = 0.07; NFI = 0.97; NNFI = 0.97; CFI = 0.98; SRMR = 0.06; GFI = 0.92). Standardized path coefficients are shown in Table 3.

Table 2. Discriminant validity for construct dimensions pairs.

Construct pairs	Difference in corrected chi-square	P-value
General satisfaction ↔ Internal Quality	210.01	<.001
Courtesy ↔ Accessibility	306.52	<.001
General satisfaction ↔ Employee loyalty	357.92	<.001
Feedback information ↔ Accessibility	33.07	<.001
Student satisfaction ↔ Accessibility	45.73	<.001
Student satisfaction ↔ Student loyalty	46.07	<.001

Table 3. Results of preliminary analysis: structural model assessment (insignificant *t*-values are italicized).

H	Path	Std. path coef.	t-Value
H1	Internal quality → Employee satisfaction	0.81	9.47
H2	Employee satisfaction → Employee loyalty	0.88	11.24
H3	Employee Satisfaction → External quality	0.71	3.16
H4	Employee loyalty → External quality	0.07	<i>0.32</i>
H5	Employee satisfaction → Student satisfaction	−0.14	<i>−0.79</i>
H6	Employee satisfaction → Market performance	0.53	7.12
H8	External quality → Student Satisfaction	0.99	4.17
H9	Student satisfaction → Student loyalty	0.82	10.41
H10	Student loyalty → Market performance	0.17	2.14

Structural analysis of the research model on the combined database shows that the model fits the data well and that seven out of the nine hypotheses of the baseline model are confirmed. The key modifications in the *resulting model* (Figure 2) were the removal of the link between employee loyalty and external quality (H4) and link between employee and student satisfaction (H5 – satisfaction mirror), which were both insignificant. The Sobel (1982) test was used to examine the indirect effect of employee satisfaction on student satisfaction via external quality. The significant value of the test statistic ($t = 3.71$, $p < .001$) suggests that the indirect link indeed exists. As a direct link between employee satisfaction and student satisfaction is statistically insignificant, after adding an indirect link through external quality to the model, the results indicate a full mediation effect of the external quality variable (see Little, Card, Bovaird, Preacher, & Crandall, 2007). Results thus support the conclusion that employees – students satisfaction is completely mediated by quality and thus provide support for H7. As the prime study's purpose was validation of the proposed SPC model, and the baseline research model included all theoretically examined links, further analysis of the additional possible links or alternative models was not attempted. Further analysis focused on the multigroup comparison of the validated resulting model.

Multigroup analysis

A multigroup SEM was performed to test whether structural differences between the studied groups exist. Prior to the structural multigroup analysis, the invariance of the measurement model was tested. Factor loadings of the measurement model were constrained to be equal in both groups under H0 and unconstrained under H1, while variances, error variances and covariances were allowed to be estimated freely. Instead of the chi-square difference test (Bollen, 1989) used for comparing models under H0 and

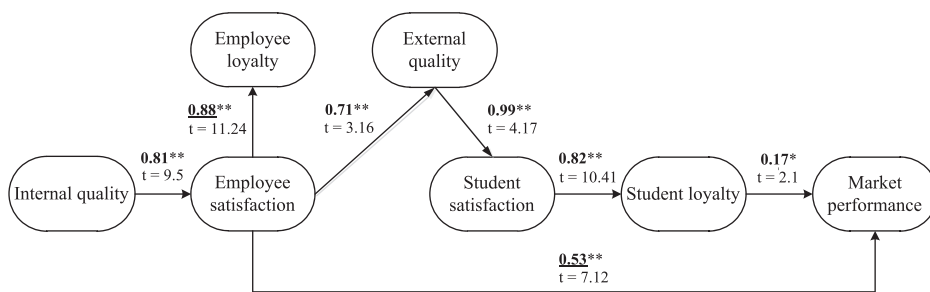


Figure 2. Resulting structural model of SPC on the combined database (significant multigroup differences in path coefficients are underlined).

H1 when data follow a multivariate normal distribution, the scaled difference chi-square test was used as proposed by Satorra and Bentler (1994). This test uses a correction factor and takes the non-normality of data distribution into account. Due to the high complexity of the measurement model, the invariance of two smaller models was tested. The first measurement model included the two second-order factors (external quality and employee satisfaction) and the corrected difference in the chi-square statistic between constrained and unconstrained model was insignificant ($\Delta\chi^2 [18] = 17.37$; $p = .498$). The second measurement model included all first-order factors. After the exclusion of one indicator measuring employee loyalty ('I have the impression that employees readily recommend this school to others'), the corrected difference in the chi-square statistics between the constrained and unconstrained model was insignificant ($\Delta\chi^2 [9] = 15.37$; $p = .081$), supporting the invariance of the measurement model between the studied groups.

Afterwards, composite indicators were calculated and used in the structural model for the comparison of the structural coefficients in the two groups. The unconstrained model, assuming different structural weights, was compared to the constrained model assuming equal structural weights in the student and employee sample. The difference in the chi-square statistics was significant, suggesting that the causal links in the structural model are significantly different ($\Delta\chi^2 [7] = 15.81$; $p = .027$). The results thus provide support for H11. The structural invariance for each individual structural path was tested to identify which of the links were structurally different (Table 4).

Statistically significant differences in the chi-square statistics were found for two out of seven hypothesized structural paths (underlined in Figure 2). They refer to H2 (employee satisfaction – employee loyalty) and H6 (employee satisfaction – market performance).

Discussion and implications

The obtained results support the relevance and applicability of the SPC model in the increasingly converging and marketized HE sector in the EU (Dobbins & Knill, 2009; Mikulec & Krašovec, 2016). In particular, study findings apply to the private vocational education of adults in national contexts with 'coordinated market economies' (Buchen, 2004) and 'state-practical' VET systems (Nilsson, 2007). The proposed research model is considered valid on a combined database and on two subsamples. Findings suggest that the market performance depends on student loyalty (H10) and on employee satisfaction

Table 4. Multigroup analysis.

H	Path	Constrained std. path coefficient	Unconstrained std. path coefficient		$\Delta\chi^2$ ($\Delta df = 1$)	P-value
			Empl.	Students		
H1	Internal quality → Employee satisfaction	0.82	0.89	0.80	0.11	.741
H2	Employee satisfaction → Employee loyalty	0.87	0.66	0.98	12.64	<.001
H3	Employee satisfaction → External quality	0.74	0.84	0.69	1.51	.219
H6	Employee satisfaction → Market performance	0.47	0.67	0.38	4.92	.026
H8	External quality → Customer satisfaction	0.91	0.94	0.88	2.04	.153
H9	Customer satisfaction → Customer loyalty	0.85	0.72	0.91	2.3	.129
H10	Customer loyalty → Market performance	0.23	0.13	0.29	0.51	.476

(H6). Furthermore, student loyalty depends on student satisfaction (H9), which results from external service quality (H8). The chain of effects continues to employee satisfaction (H3) and internal quality (H1). In both parts of the model (i.e. internal and external), the strongest are links in the quality–satisfaction–loyalty constellation. Contrary to the assumptions, some anticipated links are weak (H10: student loyalty – market performance) or even insignificant (H4: employee loyalty – external service quality). This is also true for the satisfaction mirror between employees' and the students' satisfaction (H5), which is insignificant. In this regard, obtained results are more in line with the findings of studies, which put the satisfaction mirror under question (Griffith, 2001; Voss et al., 2005). Results thus indicate weak links in the internal part of the model (H4) and in the external part (H10). In the absence of the effective satisfaction mirror (unsupported H5), the key connecting link of the chain is service quality (supported H3 and H8) which fully mediates the satisfaction mirror (supported H7). Mediation through quality is consistent with the findings of Brown and Lam (2008) and effectively 'stretches' the model in a linear chain (see Figure 2). Employee loyalty, in addition, represents a 'dead end construct', suggesting that employees' loyalty does not affect service quality.

Findings thus indicate that service quality is the critical link between the internal and the external part of the model. On the other hand, it is surprising that, in education, which is characterized by intense interpersonal contacts between employees and students, the satisfaction mirror is not supported. One possible explanation may be methodological, as the satisfaction measure in our study refers to an overall evaluation (of college). It is possible that the satisfaction of employees and students is more strongly linked on the episodic or transactional level (e.g. class). Such interpretation corresponds with the studies, which confirm the satisfaction mirror on the transactional level (Brown & Lam, 2008; Schneider & Bowen, 1985). However, some studies have confirmed the mirror at the level of overall satisfaction as well (Wangenheim et al., 2007).

Besides methodological factors, it is necessary to consider the theoretical aspects of the satisfaction mirror in the education, such as emotional spillover or contagion. Griffith (2001) found no such spillover effect among personnel and students and offer a relevant explanation. He points out the importance of the *organizational culture* of 'knowing what is best for students', irrespective of their expectations. Such culture may induce various processes (e.g. groupthink, enacted environments, reduced boundary spanning and stereotypic thinking), which dissociate employees and students and effectively hinder the emotional contagion. This interpretation corresponds with the notion of schools as organizations where market orientation is potentially contested (Acevedo, 2011; Eagle &

Brennan, 2007; Motwani & Kumar, 1997). In such organizations, various perceptual or cultural factors might therefore hinder the emotional spillover among employees and students and cause cracks in the satisfaction mirror.

Hence, multigroup comparison of a research model on subsamples of employees and students is of particular interest, as established differences might be related with such factors. Indeed, as indicated by the significantly different casual links in the structural model, important differences exist between both groups. In particular, they differently perceive the employee satisfaction – loyalty link (H2) and the employee satisfaction – performance link (H6). Together, these differences provide support for H11. The differences between employees and students are concerning, especially as they also apply to all scale items (except one – see Table A2) which refer to discrete elements of the SPC model. Employees thus evaluate the links and elements of the SPC model differently than the students, which is a possible explanation for the cracked satisfaction mirror and bears important implications.

Managerial implications

Study findings support the key assumption that managerial interventions for improved market performance should start internally, with the employees (Heskett et al., 1997). In our study, the central and critical linking concept proved to be the (external) services quality, which emerges as the focal point of managerial activities in the examined context. This suggests that emphasis on the quality might facilitate more effective boundary spanning and readily acceptable yet market-oriented HRM practices in such organizations. Obtained results on the level of dimensions and specific (manifest) items (Table A2) in addition inform further possible actions regarding specific activities. In this case, they suggest that colleges start improvements of internal quality with the feedback information, working equipment and conditions, while, at the external quality, this applies to the accessibility and courtesy elements. Still, the examined SPC model exhibits some weaknesses found by others (Brown & Mitchell, 1993; Griffith, 2001; Pritchard & Silvestro, 2005; Silvestro & Cross, 2000), which suggests that it cannot be transferred into practice in the generic and unmodified form. Weak links and gaps in the model indicate potential barriers for implementation that also require managerial attention. Such gaps in our study are the cracked satisfaction mirror and the finding that employee loyalty is not perceived to be related with the quality, which both require further managerial attention.

Besides these implications, SPC is a relevant framework for performance evaluation and monitoring, which refers to the outcome aspects of the model. Constructs of the model represent the chain of key performance factors, which are crucial for the effectiveness of business strategy. As such, follow a similar logic, and one might play the same function as established key performance indicators (KPIs) and frameworks, such as the balanced scorecard (Kaplan & Norton, 1996, 2004). As a mean of making customer and market-oriented strategy operative and transparent, educational organizations are thus advised to establish a set of linked KPIs, starting with internal quality and employee satisfaction. Without a credibly linked KPI, management and employees have no justified feedback and experience the lack of the market learning opportunities and market-based incentives. In such organizations, the quality might be perceived as a self-evident imperative, rather than a connecting link between performance factors and various stakeholders.

Establishing KPIs on the basis of the validated SPC model thus represents the potential way out of the vicious 'circle of mediocrity'.

Besides the diagnostic and KPI role, the SPC model also is important for internal communications and organizational culture. Quality in education is often rather narrowly understood and treated as compliance with the teaching standards (teacher qualifications, courses design, etc.), which are controlled by authorized institutions. Such notion of the quality might not correspond with the customers, who typically conceive and evaluate quality in broader terms. In such instances, it is particularly important that management examine and align various stakeholder views on quality. Discussion regarding the issue of 'who knows (better) what customers/students need and expect' is thus highly warranted, both in terms of quality standards and market-oriented organizational culture. Such endeavors should lead to treatment of the employees as internal customers in order that internal and external parts of the SPC model are ultimately aligned by the same logic. Here, managers could build on the intuitive appeal and widespread acceptance of the SPC model, which is important for sense-making in organization. In this respect, the model has an important symbolic and communication role, which is essential at crossing the apparent boundaries among various organizational stakeholders and removal of the cognitive and cultural obstacles for the emotional spillover, such as groupthink and stereotypic thinking (Griffith, 2001). This also could reduce the role of ambiguity, which has a negative impact on employee satisfaction (Boles & Babin, 1996; Brown & Peterson, 1993).

An internal marketing strategy should, in addition, acknowledge identified differences in perceptions regarding the SPC model between employees and customers/students. As suggested by Chun and Davies (2006), in the case of a consensus among stakeholders, a common (alignment) approach is sensible, while with divergent perceptions, a differential (segmented) stakeholder approach is more justified. In the present study, the multigroup analysis revealed some significant differences among employees and customers regarding relationships in the SPC model. These differences favor and further inform an adjusted, stakeholder/segment-specific approach toward promotion and implementation of SPC model within the examined context. Employees namely perceive some relationships in the SPC model (pertaining to H6) to be stronger than students, which suggests that they are better aligned with the logic of the SPC model. Students/customers, on the other hand, are less convinced of the critically important role of employees' for organizational performance. In this manner, multigroup analysis challenges the common assumption that causes the cracked satisfaction mirror are necessarily internal and caused by employees or organizational culture.

Instead, the findings suggest that marketing activities should also aim to change customers' perceptions of internal parts of the SPC model, as this might facilitate restoration of the cracked satisfaction mirror. Only with responsive customers/students, who are assured of the importance of employees and shared (mutual) interests regarding quality (co)assurance, will the satisfaction mirror work effectively in the expected 'back and forth' manner. This implication is well in line with the idea of more accountable and committed 'owners of the business', which pertains to customers as well (Heskett et al., 2008). Likewise, in the education sector, the person-centered approach, which emphasizes the importance of teacher–student relationships and encourages students to take more responsibility for the learning outcomes, is an important implication (Cornelius-White, 2007; McCabe & O'Connor, 2014; McGrath, 2012), which also warrants consideration in other service industries.

Limitations and future research suggestions

The present study does contain limitations. The examined research model does not include any behavioral or objective measures of the examined constructs. Careful interpretation is thus advised, especially in regards to the market performance, which requires objective indicators such as profit. Another important limitation is omission of the value construct from the research model. Value construct is important yet problematic for conceptualization and measurement (Woodall et al., 2014), so this issue was left open in the present study. In order to strengthen the conclusions and implications, further validation is thus warranted by means of additional mediating constructs and behavioral measures. Due to the nature of education context, longitudinal studies are particularly recommendable too.

The study sample also imposes some limitations. A relatively small, nonprobability sample and the low response rate of students (i.e. 19%) does not guarantee randomness and generalizations to population(s) and international contexts. This, for instance, may have resulted in a less representative or biased sample of students being included in the research. In the case that more 'cooperative and responsible' students are overrepresented, it is, for instance, plausible that actual cracks in the satisfaction mirror or multi-group differences at the population level are even larger. In addition, only the traditional form of education is examined, while at many vocational colleges, a substantive share of students is already enrolled in the e-study. This suggests an interesting issue for the future research, namely, how SPC model performs in the e-education context. Future research is also needed to examine additional differences in the education sector, such as those among public and private schools (see Davis, 2006; McGrath, 2012), but also those among diverse national HE and VET systems (Buchen, 2004; Kapplinger, 2011; Kogan & Unt, 2008; Nilsson, 2007). Some issues, such as the potentially contested notion of market orientation and discrepancies between employees and students, might namely depend on these distinctions.

In the future, advanced conceptualization and application of the SPC model thus depend on further evolution toward rigorous theorization and research. While the present study addresses some identified challenges of the SPC model (see Heskett & Sasser, 2010), additional ones await exploration, such as a multigroup examination of various conceptual extensions (e.g. psychological contract, mental models and emotional contagion). In this manner, the somewhat vague metaphors of 'mirroring' and 'ownership' are to be replaced with enhanced theorization and would result in the more substantive managerial implications needed in diverse and less market-oriented service contexts.

Disclosure statement

No potential conflict of interest was reported by the authors.

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Appendix

Table A1. Questionnaire items (student version), loadings and construct reliability.

Construct	Second-order construct dimensions	Items – wording and loading
Employee satisfaction	General satisfaction (Loading: 0.89; Composite reliability: 0.84)	Employees at this school highly enjoy in their work (0.65) Employees are very satisfied to be at this school (0.84) Overall it seems that employees working at this school are very satisfied (0.87) It seems that employees do not look forwards working at this school (R) (0.63)
	Feedback information (Loading: 0.61; Composite reliability: 0.73)	It seems that employees do not get enough information about the results of their work (R) (0.77) It seems that school management does not adequately acknowledge the proposals of employees (R) (0.55) It seems that the information necessary for the work of the employees are not always timely (R) (0.67) It seems that school management does not adequately recognize the importance of employees (R) (0.54)
Internal quality (Composite reliability: 0.83)		Spaces for work at the school are very pleasant (0.77) Employees have available the modern working equipment (0.77) Overall I think that conditions for work on this school are excellent (0.82)
Employee loyalty (Composite reliability: 0.76)		Employees are saying only good things about the school (0.65) It seems that employees are committed to their work in order to contribute to school performance (0.73) I have impression that employees readily recommend this school to others (0.79)
Student satisfaction (Composite reliability: 0.80)		Overall I am very satisfied with this school (0.64) I am not very satisfied with my choice of the school (R) (0.79) I am not very proud to be student of this school (R) (0.61) I regret that I choose this school (R) (0.79)
Student loyalty (Composite reliability: 0.80)		About this school I am saying only good things (0.78) If I would study further I would definitely stay on this school (0.83)

(Continued)

Table A1. Continued.

Construct	Second-order construct dimensions	Items – wording and loading
External quality	Accessibility (Loading: 0.82; Composite reliability: 0.78)	School employees are often not available for students (R) (0.37)
		Information for students are often inaccessible (R) (0.56)
		Information for students are often not timely (R) (0.62)
	Courtesy (Loading: 0.88; Composite reliability: 0.72)	Faculty staff is rarely accessible outside of office hours (R) (0.46)
		Employees does not provide enough support to students when they encounter problems (R) (0.81)
		Employees does not acknowledge enough the students interests (R) (0.76)
Market performance (Composite reliability: 0.76)	Professionalism (Loading: 0.67; Composite reliability: 0.80)	Administrative personnel on the school is very friendly (0.62)
		Employees on this school are always eager to help students (0.87)
		Lecturers are experts in their field (0.80)
		Lecturers establish good relationships with the students (0.84)
		This school enjoys better reputation than competitive schools (0.90)
		This school is less recognized than competitive schools (R) (0.60)
		This school enjoys more trust than competitive schools (0.85)

Table A2. Descriptive statistics (student version) for constructs and scale items.

Construct	Items	Students	Employees
ES/General satisfaction		4.28 (0.70)	4.59 (0.61)
	Employees are very satisfied to be at this school	4.31 (0.79)	4.61 (0.67)
	Employees at this school highly enjoy in their work	4.07 (1.03)	4.61 (0.65)
	Overall it seems that employees working at this school are ...	4.36 (0.81)	4.53 (0.84)
	It seems that employees do not look forwards working ... (R)	4.39 (0.88)	4.63 (0.95)
ES/Feedback information		3.78 (0.95)	3.53 (1.04)
	... management does not adequately acknowledge the proposals (R)	3.73 (1.11)	3.52 (1.38)
	... information necessary for the work of the employees ... (R)	3.81 (1.24)	3.73 (1.46)
	... management does not adequately recognize the employees ... (R)	3.94 (1.20)	3.35 (1.48)
	... employees do not get enough information about the results ... (R)	3.65 (1.18)	3.57 (1.47)
Internal quality		4.28 (0.74)	4.38 (0.65)
	Overall I think that conditions for work on this school are excellent	4.30 (0.83)	4.34 (0.79)
	Employees have available the modern working equipment	4.21 (0.93)	4.32 (0.85)
	Spaces for work at the school are very pleasant	4.32 (0.80)	4.46 (0.67)
Employee loyalty		4.41 (0.73)	4.65 (0.50)
	I have impression that employees readily recommend this school ...	4.41 (0.83)	4.69 (0.66)
	Employees are saying only good things about the school	4.28 (0.90)	4.42 (0.98)
	It seems that employees are committed to their work in order ...	4.53 (0.79)	4.85 (0.38)
Student satisfaction		4.37 (0.91)	4.27 (0.86)
	I am not very satisfied with my choice of the school (R)	4.42 (1.13)	4.13 (1.17)
	Overall I am very satisfied with this school	4.36 (1.15)	4.32 (1.19)
	I am not very proud to be student of this school (R)	4.29 (1.16)	4.24 (1.08)
	I regret that I choose this school (R)	4.43 (1.10)	4.39 (1.00)
Student loyalty		4.44 (0.77)	4.21 (0.77)
	About this school I am saying only good things	4.43 (0.81)	4.02 (0.94)
	If I would study further I would definitely stay on this school	4.46 (0.89)	4.39 (0.77)

(Continued)

Table A2. Continued.

Construct	Items	Students	Employees
EQ/Accessibility		3.89 (0.91)	3.92 (0.82)
	Employees does not provide enough support to students ... (R)	4.22 (1.11)	4.21 (1.16)
	Employees does not acknowledge enough the students interests (R)	1.93 (1.15)	1.89 (1.20)
	Faculty staff is rarely accessible outside of office hours (R)	3.66 (1.20)	3.79 (1.25)
	School employees are often not available for students (R)*	3.80 (1.38)	3.63 (1.44)
	Information for students are often not timely (R)	3.88 (1.40)	3.98 (1.20)
EQ/Courtesy	Information for students are often inaccessible (R)	3.74 (1.39)	3.80 (1.27)
		4.59 (0.75)	4.65 (0.50)
	Administrative personnel on the school is very friendly	4.63 (0.84)	4.73 (0.63)
EQ/Professionalism	Employees on this school are always eager to help students	4.55 (0.83)	4.57 (0.67)
		4.33 (0.81)	4.56 (0.57)
	Lecturers are experts in their field	4.20 (0.95)	4.58 (0.58)
Market performance	Lecturers establish good relationships with the students	4.45 (0.80)	4.56 (0.65)
		3.72 (0.99)	3.93 (0.89)
	This school enjoys better reputation than competitive schools	4.02 (1.09)	4.21 (0.90)
	This school is less recognized than competitive schools (R)	3.40 (1.37)	3.69 (1.27)
	This school enjoys more trust than competitive schools	3.73 (1.11)	3.90 (0.99)

*The only item at which averages for students and employees are NOT significantly different!

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