Satisfaction with Knowledge and Competencies:
A Multi-Country Study of Employers and Business Graduates

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Abstract: Problem statement: This study critically discusses findings from a research project involving four European countries. The project had two main aims. The first was to develop a systematic procedure for assessing the balance between knowledge and competencies acquired in higher, further and vocational education and the specific needs of the labor market. The second aim was to develop and test a set of meta-level quality indicators aimed at evaluating the linkages between education and employment. The project was designed to address the lack of employer input concerning the requirements of business graduates for successful workplace performance and the need for more specific industry-driven feedback to guide administrative heads at universities and personnel at quality assurance agencies in curriculum development and revision. **Approach:** The project was distinctive in that it combined different partners from higher education, vocational training, industry and quality assurance. Project partners designed and implemented an innovative approach, based on literature review, qualitative interviews and surveys in the four countries, in order to identify and confirm key knowledge and competency requirements. This study presents this step-by-step approach, as well as survey findings from a sample of 900 business graduates and employers. In addition, it introduces two Partial Least Squares (PLS) path models for predicting satisfaction with work performance and satisfaction with business education. **Results:** Survey findings revealed that employers were not very confident regarding business graduates' abilities in key knowledge areas and in key generic competencies. In subsequent analysis, these graduate abilities were tested and identified as important predictors of employers' satisfaction with graduates' work performance. **Conclusion:** The industry-driven approach introduced in this study can serve as a guide to assist different types of educational institutions to better align study programs with changing labor market requirements. Recommendations for curriculum improvement are discussed.

Key words: Quality indicators, knowledge and competencies, satisfaction, graduates

INTRODUCTION

The main objective of this study is to report critical findings from a two-year European Union–funded research project on the topic of "Quality in Higher Education". The project, entitled MISLEM, was funded by the European Commission and included nine partners from four European countries: Austria, the UK, Slovenia and Romania. One of the most significant findings from this project was that employers and

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recent business graduates agree on the importance of developing key competencies (for example, communication, the ability to see the bigger picture and critical/analytical skills) during undergraduate study programs. The acquisition of such key competencies enables business graduates to make a successful transition into their chosen careers (Azevedo *et al.*, 2007; Gomezelj and Azevedo, 2008).

In addition, this study will introduce two Partial Least Squares (PLS) path models (variance-based structural equation models) developed out of a critical analysis of the project findings. These models suggest that employers' perceptions of business graduates' abilities in business knowledge and in business competencies constitute important predictors of employers' satisfaction with graduates' work performance. They also suggest that graduates' perceptions of the value of business knowledge and of business competencies are significant predictors of their satisfaction with business education. In light of increasing public demands to demonstrate the impact of Higher Education in society, the proposed empirical models should assist Higher Education Institutions, policy-makers in Education and Quality Assurance Agencies to provide evidence of the link between graduates' abilities in key learning outcomes and actual job performance, as well as to describe how the perceived value of critical learning outcomes can significantly affect graduate satisfaction ratings of specific study programs. The study concludes by discussing implications of the project findings for education, employment and public policy.

MISLEM: Objectives and rationale: The MISLEM project partners represented a diverse group of organizations from Austria (Higher Education partner, Vocational Training partner, Industry partner and Quality Assurance Agency partner), England (Higher Education partner, Further Education partner, Industry partner), Slovenia (Higher Education partner) and Romania (Higher Education partner).

The project was designed to address two pivotal objectives. The first of these was the development of a step-by-step procedure for assessing the match between skills and competencies incorporated within business education and those required by the labor market. The second objective aimed to refine and test meta-level quality indicators (focused on labor market linkages) for assessing quality in Universities, Universities of Applied Sciences and Vocational Training Institutions (Azevedo, 2007).

The project's primary aim was to propose a systematic approach for quality assessment that will assist educational institutions and educational Quality Assurance

Agencies in identifying the degree to which they are responding to the needs of the labor market. In order to achieve this aim, the project involved the development and implementation of six distinctive stages:

- The conceptualization and definition of learning outcomes for business or business-related study programs, in terms of general and specific skills and competencies
- The design and development of questionnaires for assessing the match between skills and competencies developed in business education and those needed in the workplace
- The administration of questionnaires to recent business graduates and employers
- Analysis and interpretation of results
- Aggregation of data to generate meta-level quality indicators
- The creation of a feedback system to allow critical evidence to be incorporated in the form of curriculum improvement

The project's second aim was to operationalize and test four meta-level quality indicators, two of which captured aggregate information concerning the percentage of recent business graduates and employers who believed that skills and competencies acquired during undergraduate-level business education are relevant and useful in the workplace. The other two indicators measured graduates' abilities in applying core business knowledge and competencies, as well as the perceived gap between what was learned within business and management undergraduate programs and what is needed in the workplace.

The literature review suggested that in Higher Education, Further Education and Vocational Training Institutions there is an increasing focus on quality of learning outcomes (Warn and Tranter, 2001). Moreover, previous studies and projects have shown that it is possible to develop a common set of competencies using data from different countries (Moskal *et al.*, 2008). A notable gap in knowledge was identified in the literature review; namely, that there is a lack of assessment tools addressing so-called labor market linkages-measurement tools that systematically incorporate critical input from employers with respect to the degree to which each educational institution and study program is responding to existing labor market needs (for further discussion see Gonzales and Wagenaar, 2003; Seyfried, 2003; Thompson, 2004).

It was anticipated that the MISLEM results would serve the needs of two main target groups: policy-makers in Education and Quality Assurance Agencies. Regarding the first group, the project aimed to deliver

specific information to direct policy in a particular field of study (business and business-related study programs). The purpose of this was to complement existing labor market studies identifying skills gaps, which tend to relate to a macro or country-level and generally address educational qualifications as opposed to learning outcomes (Borghans *et al*., 2001). With regards to Quality Assurance Agencies, the project aimed to offer detailed advice on how to improve curriculum development so as to better align it with changing labor market demands. In addressing this issue, the purpose of the project was to provide useful insight regarding the ways educational institutions may respond to labor market requirements, thereby addressing an important aspect of quality that has not been fully developed (Hirsh, 2000).

The project also focused upon the degree to which undergraduate business education is perceived to meet the needs of both employers and graduates by preparing students for the workplace, considering the recent academic discussions regarding business schools' lack of relevance (Pfeffer and Fong, 2002; Rubin and Dierdorff, 2009). Indeed, pressure from employers with regards to the expectation that undergraduate-level education should reflect labor market requirements has pushed the issue of labor market linkage to the forefront of recent debates about quality in higher education (Clinebell and Clinebell, 2008).

MATERIALS AND METHODS

MISLEM: Project methodology: The methodological design was divided into three main phases: exploratory, descriptive and critical/analytical. The first phase comprised ground work and included a critical literature review and exploratory qualitative interviews with employers and recent business graduates who had completed their study programs at partner institutions. The second phase involved the designing and administration of a questionnaire across each of the four countries. The questionnaire was administered to recent business graduates (those who had completed their studies in the previous five years) and to employers who were directly supervising recent business graduates. The third phase involved a critical analysis and interpretation of the study findings.

Within this Materials and Methods' discussion , the authors will address issues related to phases 1 and 2. Phase 3 will be reviewed under the Results' discussion.

Literature reviews and exploratory qualitative interviews: In addition to comprehensive literature reviews of the structure of higher education and vocational training systems in each country, a detailed review of different approaches to measuring quality in higher education was conducted. While an extensive summary of these literature reviews is beyond the scope of this study, it is important to highlight some key issues that were uncovered.

Firstly, there exists a significant debate regarding how quality should be defined and measured within the context of Higher Education institutions. Some encompassing definitions include Harvey and Green (1993) five interrelated concepts of quality (quality as exceptional, as perfection [or consistency], as fitness for purpose, as value for money and as transformative) and Garvin (1984) five approaches to quality (transcendental, product-oriented, customer-oriented, manufacturing-oriented and value-for-money) (Kemenade *et al*., 2008). Considering the goals of the MISLEM project, one of the key studies on the topic of quality in higher education is Warn and Tranter (2001) investigation of quality of outcomes achieved, which was considered an important dimension of quality in higher education. The study findings indicated that while the development of generic competencies was in general not considered a significant factor in graduates' overall self-assessment of the quality of their degrees, it was nonetheless perceived as an important factor in the preparation for their future work as military officers (the fitness-for-purpose aspect of quality).

Secondly, there are a number of different tools and methods to assess and evaluate quality in higher education, including approaches focusing upon minimum standards, rankings / performance indicators, learning impacts and continual improvement (Finnie and Usher, 2005). The minimum standards approach (most popular among OECD countries) typically involves a four-stage model of visits by independent agencies, self-evaluations (self-audit), visits by experts (including Quality Assurance Agencies) and a published report. This is most frequently employed at the program or departmental level. Due to its strong internal focus, the minimum standards approach has received significant criticism and a demand for alternative approaches that promote increased transparency and accountability (Finnie and Usher, 2005). Throughout the 1980s and 1990s, the shift towards an ethos of new public management meant that many institutions adopted an approach based upon performance measures and rankings. Whilst the minimum standards approach focused mainly on inputs, the shift towards the use of performance measurement as a quality audit tool resulted in an emphasis on outputs and outcomes. However, this approach was soon recognized as unreliable; thus a more pedagogically focused approach developed, whereby

the learning process was subjected to evaluation in the form of the Learning Impacts approach (Finnie and Usher, 2005). This third approach, which was paralleled by moves towards continual improvement, brought about a major paradigm shift across the European Higher Education Sector (Moskal *et al*., 2008). Whilst all of these quality management approaches have, on occasion, been employed simultaneously by different educational institutions, recent quality assessment efforts in many OECD countries have strongly emphasized the need to develop and implement learning outcome measures (Thompson, 2004).

In congruence with this growing emphasis on achieved outcomes, the MISLEM project focused on identifying critical learning outcomes of Higher Education, Further Education and Vocational Training, such as knowledge and competencies, with special attention to the issue of fitness for purpose with regard to entry and early stage performance in the workplace (Warn and Tranter, 2001). Project partners also adopted the notion of quality as precursor of satisfaction, which is in line with, for example, the cognitive-affect causal order by (Oliver, 1996) or the appraisal-response-coping sequence proposed by (Lazarus, 1994), two explanations of the relationship between customer satisfaction and service quality. Several empirical studies, including research on service evaluation models (Brady *et al*., 2005), have also demonstrated that satisfaction is superordinate to service quality (Anderson *et al*., 1994; Anderson and Sullivan, 1993; Brady *et al*., 2005; Gotlieb *et al*., 1994; Ravald and Gronroos, 1996; Tam, 2004).

In addition to a critical analysis of the quality literature, a detailed review of the concept of business competencies was conducted. This review revealed that that there are many different definitions of business competence, from those that highlight the idea of Knowledge, Skills And Abilities (KSAs), to others that capture personality characteristics such as motives, beliefs and values for further discussion see (Baartman *et al*., 2007; Berge *et al*., 2002). Nonetheless, there seems to be a consensus that the term competence encompasses the notion of key skills whilst, at the same time, being broader than such skills.

Following the literature review, project partners adapted from the literature the following definition of competence, which was later included in the final study questionnaires: "Competencies represent a dynamic combination of knowledge, understanding, skills and abilities" adapted from (Baartman *et al*., 2007; Belasen and Rufer, 2007; Berge *et al*., 2002; Gillard and Price, 2005; Nabi, 2003; Palmer *et al*., 2004; Summers and Summers, 1997).

While experts in different fields (including sociology, education, philosophy, psychology and economics) have tried to appropriately define the idea of competence, Raelin (2007) suggests the psychological roots of the term competence are rooted in Bandura (1986) social learning theory with the concept of self-efficacy, defined by Bandura (1977) as a "belief in one's capabilities to organize and execute the courses of action required to produce given attainments" (1977, p. 3), being particularly relevant. Tracing the development of the competence concept within psychology, Eraut (1994) identified three different phases: first, within behaviorist psychology, the focus was placed on providing detailed specifications of competent behavior via task analysis; next, more general approaches were aimed at identifying overarching qualities that could be linked to job performance; and finally, within the cognitive psychology tradition, an effort was made to clearly distinguish competence from performance.

Within business research, Berman and Ritchie (2006) take a work-focused perspective, pointing out that a competence-based approach has been widely adopted within industry, particularly in areas such as employee recruitment and selection, training and development, performance measurement and compensation and strategic planning. Studies of business education have also examined the link between competence development and quality of study programs, as well as the relationship between competence development and work performance (Waldman and Korbar, 2004; Warn and Tranter, 2001).

Following the literature reviews, thirty-nine in-depth semi-structured interviews were conducted with employers and recent business graduates in Austria, the UK, Slovenia and Romania. After preliminary content analysis of the interview transcripts, project partners identified key emergent themes that were used as a basis for future questionnaire development. It is noteworthy that both groups interviewed agreed that business education should combine theory and practice and that the acquisition of business knowledge alone was not considered sufficient to prepare students for their future careers. Employers and business graduates expected a "well-rounded education," which should include discipline-specific knowledge skills (such as accounting, finance, marketing and human resources); generic 'softer' skills (for example, verbal and written communication); work-related skills (often acquired during a period of work placement or internship); meta-level skills (including problem-solving skills and the ability to see the bigger picture) and other, less tangible, skills (such as teamwork and time management).

In sum, project partners were able to draw important preliminary conclusions from a critical analysis of the literature reviews and qualitative interviews. Firstly, it was concluded that business knowledge and competencies should be viewed together as the key learning outcomes for business study programs. Secondly, the emergent study findings suggested that some competencies are considered more important than others. It was subsequently decided that for the second phase of the project a cluster of eight key business competencies should be investigated by means of study questionnaires. Thirdly, it was evidently important to assess the experiences, knowledge and competencies gained by business students during work-placements or internships, or while participating in extra-curricular activities such as voluntary work.

Survey design and administration: Two questionnaires were developed, one for employers and one for recent business graduates. The questionnaires were designed to assess the importance of business knowledge and business competencies in the workplace. Business knowledge questions addressed five main functional areas: Accounting, Finance, Human Resources, Marketing and Production/Operations. Additionally, associated discipline-specific knowledge was included within the questionnaires, with questions focusing on Strategy, Economics, Law, Psychology and Languages. Further questions encapsulated less tangible business competencies articulated during the first phase of the project. These included competencies in Influencing and Persuading, Teamwork and Relationship Building, Critical and Analytical Thinking, Self and Time Management, Leadership, the Ability to See the Bigger Picture, Presentation Skills and Communication Skills. It should be noted that in addition to encapsulating the findings of the first phase of the project, the articulation of the business competencies was partially guided by the project's industry partners. Additional empirical support for the idea of clustering the competencies can be found in a number of research studies e.g., (Rubin and Dierdorff, 2009; Warn and Tranter, 2001).

Within the questionnaires, the business knowledge and competence questions were developed and articulated in such a way as to provide empirical evidence regarding the meta-level quality indicators. For example, regarding the issue of whether business knowledge and business competencies were actually being used in the workplace (indicator #1), two questions were developed: (1) To what extent do you agree that the following business knowledge areas are useful for the performance of your current job

activities? (2) To what extent do you agree that the following competencies are useful when considering what is required to perform your current job activities? Similar questions for the other three meta-level quality indicators were created to assess the following: how relevant the business knowledge and business competencies were perceived to be for future career development (indicator #2); how competent or capable business graduates were perceived to be in the different knowledge and competence areas (indicator #3); the size of the perceived gap between what business graduates learn in their study programs and what is required of them in employment (indicator #4). All answers were provided in a 1-7 Likert-type scale, ranging from strongly disagree to strongly agree. Questions for employers were worded in a manner similar to those for graduates. At the beginning of the questionnaire, employers were asked to answer the survey according to one employee of their choice (a recent business graduate) who was working under their direct supervision.

The questionnaire development process was an unusually long, albeit very rich, cross-cultural learning experience. There were many interesting discussions and feedback loops amongst project partners, resulting in final questionnaires that incorporated the diverse perspectives of all partners. The questionnaires were written in English and later translated into three additional languages. Each was then pre-tested in the different countries. Following the pre-test results, the questionnaires were significantly revised.

The final study versions were successfully administered at universities and vocational training institutions in Austria, England, Slovenia and Romania. Approximately 8,000 questionnaires (2,000 per country) were sent out by mail, together with a covering letter explaining the purpose of the study and encouraging either business graduates and/or employers to respond. The final amount of usable completed questionnaires was 900 (596 recent business graduates and 304 employers). The average response rate was 11%.

RESULTS

MISLEM: Summary of survey findings:
Sample size and characteristics: The composition of the sample in each country is summarized in the following paragraphs (Table 1). Regarding business graduates, approximately 82% of respondents came from Higher Education: Universities and Universities of Applied Sciences (Fachhochschulen or FHs). Eighteen percent of respondents came from Vocational Training and Further Education

Institutions (described in Table 1 as VETs). A large majority of employers (90%) answered the questionnaires according to one particular business graduate from Higher Education, while only 10% of them chose to evaluate one business graduate from a Vocational Training or Further Education Institution.

Statistical comparisons within these two data sets (t-tests comparing business graduates from Higher Education and business graduates from Vocational Training and Further Education Institutions; t-tests comparing employers' perceptions of Higher Education business graduates versus employers' assessment of Vocational Training and Further Education business graduates) revealed no major differences between these groups. It was therefore possible to combine them for subsequent analysis.

Concerning the sample characteristics, the final business graduate sample was aged between 21, 30 years of age (66% of the total). 57% were female. Business graduates came from a few different educational institutions in each country and were currently working in a variety of industries (including manufacturing, business-related activities, public administration and defence). The employer sample was notably older (55% aged between 36, 50 years of age) and mostly male (58%). Employers also worked in a wide range of industries (including manufacturing, business-related activities, wholesale and retail trade).

Key findings I: Satisfaction, employers versus graduates, country differences: The evidence from key satisfaction data showed that both graduates and employers were generally satisfied with business education. Among the graduates, about 73% of respondents were either very satisfied, satisfied or somewhat satisfied with their business education; 77.5% were either very satisfied, satisfied or somewhat satisfied with their acquired business knowledge.

Table 1: Sample size and composition per country

COUNTRY/ Groups	Graduates (N = 596)	Employers (N = 304)
Romania	n = 102 80 Univ., 12 FHs, 10 VETs	n = 97 86 Univ., 10 FHs, no VETs
Austria	n = 106 48 Univ., 37 FHs, 21 VETs	n = 56 29 Univ., 23 FHs, 4 VETs
England	n = 178 146 Univ., 32 VETs	n = 60 51 Univ., 9 VETs
Slovenia	n = 210 64 Univ., 100 FHs, 46 VETs	n = 91 40 Univ., 34 FHs, 17 VETs

Note: FHs = Universities of Applied Sciences; Univ. = Universities and VETs = Vocational Training and Further Education Institutions

Among the employers, figures were even more positive: 78% were either very satisfied, satisfied or somewhat satisfied with graduates' level of acquired business knowledge; and 87.6% were either very satisfied, satisfied or somewhat satisfied with graduate employees' work performance (as employer models in this study will demonstrate, employers' ratings of work performance can be at least partially attributed to graduates' abilities in learning outcomes).

Although the satisfaction data offers 'good news' for business and management undergraduate or vocational training and further education, these study findings should be interpreted with caution, considering that close examination of graduates' self-ratings of capability in business knowledge and especially in business competencies, as well as employers' assessment of graduates' capability in these two learning outcomes, further revealed a much less favorable picture (see following discussion of meta-level indicators).

Key data comparisons were made in order to investigate how employers' answers differed from graduates'; particularly in relation to critical questions addressing the meta-level indicators. In general, it can be argued that employers seemed both less positive (especially regarding the capability questions) and more discriminating in their responses, particularly in their evaluations across business knowledge and business competencies.

In addition, country-specific data comparisons were performed (Kruskal Wallis ANOVA tests). While the majority of tests comparing mean rankings indicated country differences with statistical significance, it was determined that the size of such differences was low.

Nonetheless, in the development of new PLS models for predicting satisfaction with business education (from the graduate data) and for predicting satisfaction with work performance (from the employer data), project partners decided to develop separate models for each country. This was considered more appropriate at early stages of theoretical development (especially considering the statistical significance of country comparisons). In light of this decision, it was possible to investigate whether there were significant differences in the predictors and path coefficients in each country (please see discussion below under "Beyond MISLEM: Theoretical Development and Predictions").

Key findings II: Meta-level indicators: The meta-level indicators were derived from the aggregation of the answers for each business knowledge area. Results

for each of the four meta-level indicators are discussed in the next paragraphs. Indicators #1 and #2 are very similar for graduates and for employers, with perhaps only one noticeable difference: employers rate business competencies as clearly more valuable than do graduates (Table 2). Nonetheless, when it comes to the issue of capability (indicator #3), there is a stronger difference in the ratings of these two groups: fewer employers than graduates either strongly agree or agree that graduate employees are capable in business knowledge and in business competencies. Furthermore, it is noteworthy that both groups rate business competencies as more valuable for the performance of graduates' current jobs and more relevant for future career development than business knowledge (Azevedo *et al*., 2007; Gomezelj and Azevedo, 2008).

Findings from meta-level indicators clearly suggest that business education should emphasize both business knowledge and business competencies-for example, by providing comprehensive examinations in key business knowledge areas and by clearly articulating within the curriculum an integrated, comprehensive path towards the development of business competencies (Andrews and Higson, 2007).

Beyond MISLEM: Theoretical development and predictions: In order to develop models for explaining and predicting satisfaction with business education and satisfaction with work performance, the authors selected a variance-based (components-based) approach, PLS path modeling. PLS path modeling assumes that "all the measured variance is useful variance to be explained" (Chin *et al*., 1996) and employs an iterative algorithm for estimating the latent variables (estimated as exact linear combinations of the observed variables), indicator weights and structural path coefficients (for a more detailed discussion, see Fornell and Bookstein, 1982; Lohmoeller, 1989).

It has been noted in the business literature that one of the advantages of PLS path modeling is that it does not involve distributional assumptions regarding the population or scales of measurement; it is therefore especially suitable for exploratory models, initial theoretical development and/or when the emphasis is placed on prediction (Chin *et al*., 1996). Additionally, the PLS approach avoids two serious problems of covariance-based approaches: improper or inadmissible solutions and factor indeterminacy (as already mentioned, component/factor scores for each latent variable can be derived from the exact linear combination of the observed variables). PLS path modeling is also considered more suitable for small samples, with common rules of thumb suggesting minimum sample sizes that can be 5-10 times the largest number of structural paths which are directed at any particular construct in the model (Chin *et al*., 1996; Fornell and Bookstein, 1982). Finally, the approach has also been recommended for models including formative indicators or for complex models that include many latent variables (Diamantopoulos and Siguaw, 2006; Diamantopoulos and Winklhofer, 2001; Henseler and Ringle, 2009).

Even though PLS path modeling is considered quite robust regarding a number of issues (e.g., skewness or multicollinearity of the indicators, mis-specification of the structural model), it also has some disadvantages (Haenlein and Kaplan, 2004). The most important problem reported in the business and statistics literature is the issue of consistency at large, in that "the path coefficients estimated through PLS path modeling converge on the parameters of the latent variable model [only] as both the sample size and the number of indicators of each latent variable model become infinite" (McDonald, 1996; as cited in Haenlein and Kaplan, 2004). Consequently, the PLS approach tends to underestimate the structural coefficients and overestimate the indicator loadings (Lohmoeller, 1989).

Employers' models: Explaining and predicting satisfaction with work performance: All the models presented in this study were developed with the Smart PLS software (Ringle *et al*., 2005). Regarding the sample of employers, a number of different models were tested in order identify the most important variables explaining and predicting satisfaction with work performance. As previously mentioned, to explore potential differences the models were tested separately for each country.

Table 2: Meta-level indicators for business knowledge and competencies (% of respondents who either agree or strongly agree)

	Graduates: Business knowledge	Graduates: Business competencies	Employers: Business knowledge	Employers: Business competencies
Indicator #1 (Valuable)	41.56	70.50	41.32	78.09
Indicator #2 (Relevant)	48.72	82.11	51.16	82.15
Indicator #3 (Capable)	54.83	63.40	38.63	53.03
Indicator #4(gap)	15.05	20.69	18.94	17.00

Table 3: Loadings and path coefficients for employers' models

Indicator loadings and path coefficients:	Austria: Employers	England: Employers	Slovenia: Employers	Romania Employers
Measurement model				
Business Knowledge- capable (BK Capable)				
.bkcap1	0.780*	0.793*	0.675*	0.867*
.bkcap2	0.584*	0.573*	0.743*	0.847*
.bkcap3	0.612*	0.762*	0.707*	0.836*
.bkcap4	0.576*	0.896*	0.813*	0.870*
.bkcap5	0.557*	0.504*	0.653*	0.593*
Competencies-capable (COM Capable)				
.com1cap	0.838*	0.862*	0.834*	0.794*
.com2cap	0.823*	0.843*	0.762*	0.810*
.com3cap	0.916*	0.862*	0.833*	0.807*
.com4cap	0.771*	0.792*	0.796*	0.768*
.com5cap	0.552*	0.873*	0.825*	0.761*
.com6cap	0.831*	0.869*	0.801*	0.803*
.com7cap	0.635*	0.747*	0.545*	0.841*
.com8cap	0.737*	0.802*	0.756*	0.873*
Satisfaction				
With work performance (SATPERF)				
.satperf1	0.914*	0.897*	0.920*	0.924*
.satperf2	0.895*	0.918*	0.899*	0.832*
Structural Model				
.BK capable onto SATPERF	0.277	0.101	0.188**	0.615*
.COM capable onto SATPERF	0.246**	0.630*	0.624*	0.056
R-squares	0.189	0.468	0.591	0.417

*Statistically significant at 0.05; **nearly significant, **Note:** Employers' models have the following indicators: bkcap1-bkcap5 (capable in Accounting, Human Resources, Marketing, Finance and Production/Operations); com1cap-com8cap (capable in Influencing and Persuading, Teamwork and Relationship Building, Critical/Analytical Thinking, Self and Time Management, Leadership, Ability to see Bigger Picture, Presentation and Communication); satperf1-satperf2 (satisfaction with quality of employee's work performance; satisfaction with employee's job performance).

The final models for each country, showing all indicator loadings and structural path coefficients, are presented together in Table 3. Furthermore, the Austrian case is included in Fig. 1 in order to enable readers to conceptualize what the models look like.

The employers' models for each country introduce two main independent variables explaining and predicting employers' ratings of satisfaction with business graduates' work performance: Business knowledge capable (employers' ratings of graduates' abilities in five business knowledge disciplines) and Competencies capable (employers' ratings of graduates' abilities in eight business-focused competencies) (Fig. 1 and Table 3). The business knowledge disciplines were intended to measure how capable employers consider business graduates to be in Accounting, Human Resources, Marketing, Finance and Production/ Operations. The business competencies aimed to measure how capable employers believe business graduates to be in Influencing and Persuading, Teamwork and Relationship Building, Critical/Analytical Thinking, Self and Time Management, Leadership, the Ability to See the Bigger Picture, Presentation Skills and Communication Skills.

The study suggests that, according to the employers surveyed, the most important factors

explaining and predicting satisfaction with business graduates' work performance are the graduates' abilities in business knowledge and in business competencies. Such abilities may therefore be viewed as important factors in promoting understanding of the real impact of business education in the workplace.

Nonetheless, there are significant differences across the four European countries analyzed in our study. In the Austrian case, for example, the contribution of business knowledge and business competencies seem more or less balanced (by looking at the size of the two structural path coefficients), even though the path coefficients were not found to be statistically significant in the Austrian model. In the case of England and Slovenia, graduates' abilities in different business competencies form clearly the most important factor explaining and predicting work performance (structural path coefficients for both countries are large and significant: 0.630 for England and 0.624 for Slovenia). Finally, in the case of Romania, interestingly, the opposite scenario is presented: Graduates' abilities in the different business knowledge disciplines form the only important and significant factor in explaining and predicting employers' satisfaction with graduates work performance (structural path coefficient is large and significant: 0.615).

To further substantiate these country differences, several t-tests were performed, comparing the structural path coefficients (betas) with each other, two at a time (Keil *et al.*, 2000). Results from these t-tests showed that 7 out of 12 comparisons were significant (or 58% of the comparisons), which seems to indicate that there are indeed some country differences in how graduates' abilities in business knowledge and competencies can help explain and predict graduates' performance in the workplace.

The four employers' models were evaluated according to suggested criteria. For measurement models, four critical aspects were considered: individual item reliability, construct reliability,

convergent validity and discriminant validity (Cano, 2003). To sum up the evidence for the four measurement models, it was possible to conclude that all four models were considered appropriate, regarding individual item reliability (all factor loadings are above the minimum threshold of 0.5); construct reliability (all composite reliabilities are above the recommended threshold of 0.7); convergent validity (with one exception, the Average Variance Extracted (AVE) is above the recommended threshold of 0.5 for all models); and discriminant validity (in all cases, the square root of AVEs is higher than the correlations between constructs) (Table 3-5).
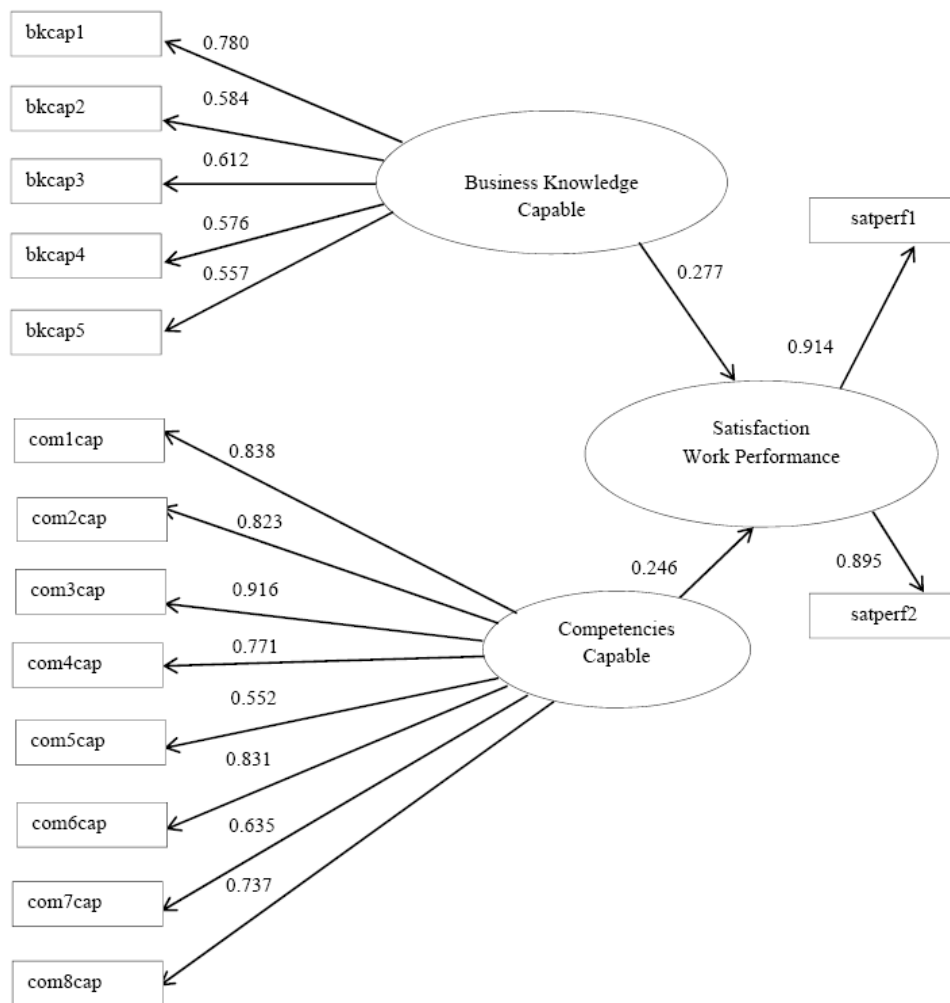

Fig. 1: Employers' model for Austria. Employers' models have the following indicators: bkcap1-bkcap5 (capable in Accounting, Human Resources, Marketing, Finance and Production/Operations); com1cap-com8cap (capable in Influencing and Persuading, Teamwork and Relationship Building, Critical/Analytical Thinking, Self and Time Management, Leadership, Ability to see Bigger Picture, Presentation and Communication); satperf1- satperf2 (satisfaction with quality of employee's work performance; satisfaction with employee's job performance)

Table 4: Construct reliability and convergent validity for employers' models

	Austria	England	Slovenia	Romania
Composite reliability				
Business Knowledge Capable (BK capable)	0.761	0.838	0.842	0.903
Competencies Capable (COM capable)	0.919	0.947	0.921	0.937
Satisfaction with Work Performance (SATPERF)	0.900	0.903	0.905	0.871
AVE*				
Business Knowledge Capable (BK capable)	0.393	0.518	0.518	0.655
Competencies Capable (COM capable)	0.594	0.692	0.599	0.652
Satisfaction with Work Performance (SATPERF)	0.818	0.823	0.826	0.772

Note: AVE = Average Variance Extracted

Table 5: Discriminant validity for employers' models

	BK capable	COM capable	SATPERF
Austria:			
Business Knowledge Capable (BK capable)	(0.627)		
Competencies Capable (COM capable)	0.375	(0.771)	
Satisfaction with Work Performance (SATPERF)	0.370	0.351	(0.905)
England:			
Business Knowledge Capable (BK capable)	(0.720)		
Competencies Capable (COM capable)	0.477	(0.832)	
Satisfaction with Work Performance (SATPERF)	0.401	0.678	(0.907)
Slovenia:			
Business Knowledge Capable (BK capable)	(0.720)		
Competencies Capable (COM capable)	0.714	(0.774)	
Satisfaction with Work Performance (SATPERF)	0.633	0.758	(0.909)
Romania:			
Business Knowledge Capable (BK capable)	(0.809)		
Competencies Capable (COM capable)	0.516	(0.808)	
Satisfaction with Work Performance (SATPERF)	0.644	0.373	(0.879)

Note: Diagonal elements (values in parenthesis) are the square root of AVE (i.e., variance shared between the constructs and their measures), while off-diagonal elements are the correlations between constructs. For adequate discriminant validity, diagonal elements should be larger than off-diagonal elements.

Therefore with only one exception (the AVE of Business Knowledge Capable, in the Austrian model, which indicated relatively high measurement error), all the measures were above the recommended thresholds (Acedo and Casillas, 2007; Fornell and Larcker, 1981; Julien and Ramangalahy, 2003; Nunally, 1967). Regarding the evaluation of structural models, two critical aspects were examined, taking account of recommendations by (Marcoulides, 1998): the size of R-square (amount of explained variance) and the statistical significance of all the structural path coefficients. The R-square for the employers' models ranged from 0.189 (Austrian sample) to 0.591 (Slovenian sample) (Table 3). R-square is at a moderate level in three out of the four models, thus indicating a good amount of explained variance in the dependent construct Satisfaction with Work Performance. Following this, the statistical significance of the path coefficients in the structural model was examined (t-values were obtained with the help of a bootstrapping procedure of 300 subsamples) e.g., (Efron and Tibshirani, 1993; Henseler *et al*., 2009; Vinzi *et al*., 2010). The structural path coefficients that were either significant or near significant were highlighted in Table 3. Since the models proposed are new, the authors did not try to delete non-significant paths. Instead, a comparison of structural paths was undertaken, which determined that there were significant differences across the four different countries (as explained in earlier paragraphs). This was considered more meaningful at the early stages of theoretical development.

In short, in considering the evaluation criteria for measurement as well as structural components, the newly proposed employers' models were considered adequate.

Graduates' models: Explaining and predicting satisfaction with business education: With respect to the graduate sample, a number of different models were also tested in order to identify the most important variables explaining and predicting satisfaction with business education. Again, in order to allow potential differences between each country to be explored, models were tested separately for each country in the study.

The final models for each country, all indicator loadings and structural path coefficients are discussed in the following paragraphs (Table 6). As in the employers' models, the Austrian case is shown in Fig. 2 in order that readers may conceptualize what the models look like.

The graduates' models show that there are two main independent variables that explain and predict satisfaction with business education, according to recent business graduates: Business knowledge valuable (graduates' ratings of the value of five business knowledge disciplines for the performance of their jobs) and Competencies valuable (graduates' ratings of the value of eight business-focused competencies for the performance of their jobs). These variables describe graduates' ratings of how valuable or useful the five business knowledge disciplines (Accounting, Human Resources, Marketing, Finance and Production/Operations) and eight business-focused competencies (Influencing and Persuading, Teamwork and Relationship Building, Critical/Analytical Thinking, Self and Time Management, Leadership, the Ability to See the Bigger Picture, Presentation Skills and Communication Skills) are perceived to be for the performance of graduates' current job activities .

In other words, according to graduates' perspectives, their Satisfaction with Business Education (dependent variable in the model, measured by the two indicators depicting overall satisfaction with business programs and satisfaction with acquired business knowledge), can at least be partially attributed to how valuable these two critical learning outcomes are perceived to be in assisting graduates perform well in their jobs. Looking at the structural coefficients across the four countries, we can see a balanced and small contribution with regards to the two variables assessing the value of business knowledge and business competencies. Results from t-tests (beta comparisons) further confirmed that there seemed to be no major differences across the four countries regarding the level of contribution of these variables (only 1 out of 12 t-tests was statistically significant).

The four graduates' models were also evaluated according to suggested criteria from PLS literature. Specifically, the measurement models were examined with respect to individual item reliability, construct reliability and convergent and discriminant validity, whilst the structural models were assessed by the size of their R-squares (amount of explained variance) and the statistical significance of the structural paths e.g., (Acedo and Florin, 2006; Marcoulides, 1998).

To sum up the evidence from the measurement models, all four models were considered adequate regarding individual item reliability (most factor loadings were above the minimum 0.5 threshold, although a few were slightly below it), construct reliability (all composite reliabilities are above the recommended threshold of 0.7) and discriminant validity (in all cases, the square root of AVE is higher than the correlations between constructs, as recommended) (Table 6-8). Concerning item reliability, it is worth mentioning that only two factor loadings (path coefficients for the indicator bkval2 in the UK model and for the indicator bkval3 in the Austrian model) were in the low range of 0.3, which may suggest the need for item revision in future empirical studies, although these items had better factor loadings in the other country models. For the purpose of the current models, these two indicators with small loadings were not considered problematic since they have small weight and thus little effect on the latent variables.

Regarding convergent validity, the evidence is somewhat mixed (while in half of the cases the AVE is above the recommended threshold of 0.5, in the other half this is not the case, thus suggesting that the amount of unexplained variance in some constructs remains large (Table 7). Future research is needed in order to examine what additional indicators can be developed for the constructs addressing the value of business knowledge (Business Knowledge-valuable) and the value of business competencies (Competencies-valuable). For example, new indicators can be developed to address other important, business-related knowledge areas (e.g., economics, psychology, law).

Regarding the structural model, the size of R-square for each country indicates that a small to moderate percentage of variance is explained (between approximately 8% in the UK model and 33% in the Romanian (Table 6). The relatively small R-square sizes seem to suggest that future research should incorporate other important independent variables in explaining satisfaction with business education (for example, reputation of the institution, faculty expertise and professional experience, satisfaction with existing infrastructure). Concerning the next evaluation criterion, all the structural paths were found significant, with one exception; the path from Competencies-valuable to Satisfaction with Business Education in the UK model (t-values were also obtained with a bootstrapping procedure of 300 subsamples; see Marcoulides, 1998).

Table 6: Loadings and path coefficients for graduates' models

Indicator loadings and path coefficients	Austria: Graduates	England: Graduates	Slovenia: Graduates	Romania: Graduates
Measurement model				
Business Knowledge- valuable (BK valuable)				
.bkval1	0.763*	0.778*	0.670*	0.815*
.bkval2	0.661*	0.366**	0.681*	0.670*
.bkval3	0.399**	0.412*	0.737*	0.724*
.bkval4	0.809*	0.820*	0.774*	0.738*
.bkval5	0.543*	0.614*	0.665*	0.772*
Competencies-valuable (COM valuable)				
.com1val	0.760*	0.456*	0.766*	0.650*
.com2val	0.842*	0.538*	0.616*	0.488*
.com3val	0.884*	0.576*	0.709*	0.610*
.com4val	0.860*	0.800*	0.607*	0.428*
.com5val	0.741*	0.678*	0.764*	0.698*
.com6val	0.886*	0.737*	0.696*	0.638*
.com7val	0.731*	0.529*	0.704*	0.764*
.com8val	0.920*	0.589*	0.626*	0.482*
Satisfaction with Business Education (SATPROG)				
.satbk	0.939*	0.724*	0.858*	0.865*
.satprog	0.709*	0.891*	0.914*	0.890*
Structural model				
.BK valuable onto SATPROG	0.217*	0.172*	0.233*	0.419*
.COM valuable onto SATPROG	0.236*	0.164	0.256*	0.238*
R-squares	0.132	0.079	0.191	0.334

*Statistically significant at 0.05; **nearly significant **Note:** Graduates' models have the following indicators: bkval1-bkval5 (valuable knowledge areas Accounting, Human Resources, Marketing, Finance and Production/Operations); com1val-com8val (valuable competencies Influencing and Persuading, Teamwork and Relationship Building, Critical/Analytical Thinking, Self and Time Management, Leadership, Ability to See Bigger Picture, Presentation and Communication); satbk and satprog (satisfaction with acquired business knowledge; satisfaction with business education)

Table 7: Construct reliability and convergent validity for graduates' models

	Austria	England	Slovenia	Romania
Composite reliability				
Business Knowledge Valuable (BK valuable)	0.778	0.746	0.832	0.862
Competencies Valuable (COM valuable)	0.947	0.826	0.877	0.817
Satisfaction with Business Education (SATPROG)	0.815	0.793	0.880	0.870
AVE*				
Business Knowledge Valuable (BK valuable)	0.425	0.391	0.499	0.556
Competencies Valuable (COM valuable)	0.691	0.380	0.474	0.366
Satisfaction with Business Education (SATPROG)	0.692	0.659	0.786	0.770

Note: AVE = Average Variance Extracted

Overall, the evidence from the PLS evaluation criteria provides good support for all of the graduates' and employers' models. Nonetheless, these models are new and therefore should be considered exploratory in nature. Additional studies are needed, not only to address some of the issues already mentioned in this discussion but also to test whether the models can be duplicated in other educational contexts and in different countries.
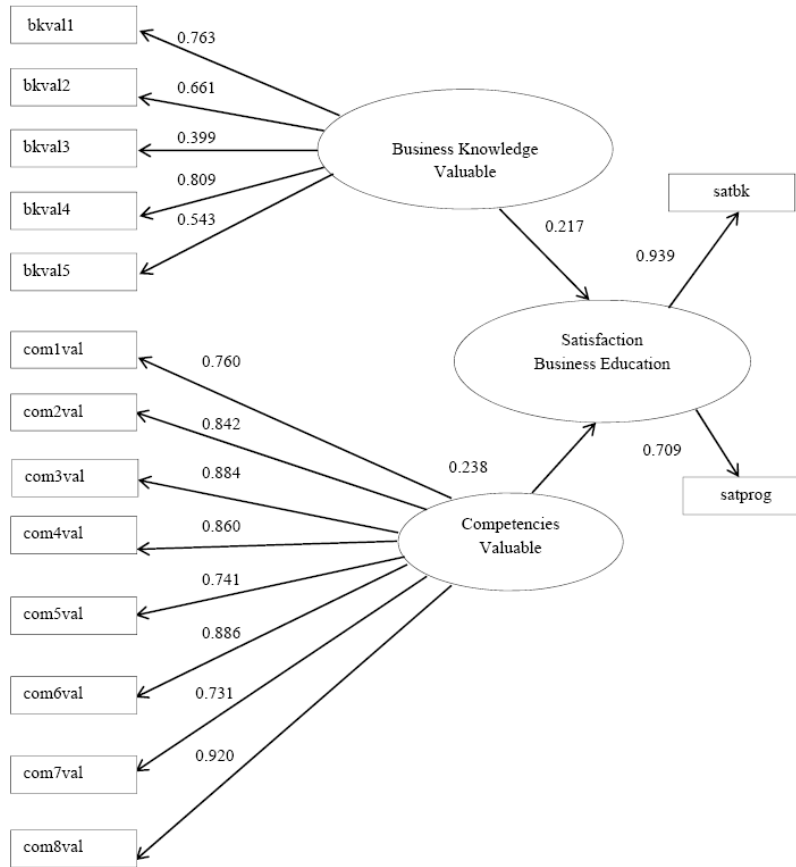
Fig. 2: Graduates' model for Austria. Graduates' models have the following indicators: bkval1-bkval5 (valuable knowledge areas Accounting, Human Resources, Marketing, Finance and Production/Operations); com1val-com8val (valuable competencies Influencing and Persuading, Teamwork and Relationship Building, Critical/Analytical Thinking, Self and Time Management, Leadership, Ability to see Bigger Picture, Presentation and Communication); satbk and satprog (satisfaction with acquired business knowledge; satisfaction with business education)

Table 8: Discriminant validity for graduates' models

	BK valuable	COM valuable	SATPROG
Austria			
Business Knowledge Valuable (BK valuable)	(0.652)		
Competencies Valuable (COM valuable)	0.270	(0.831)	
Satisfaction with Business Education (SATPROG)	0.282	0.297	(0.832)
England			
Business Knowledge Valuable (BK valuable)	(0.626)		
Competencies Valuable (COM valuable)	0.402	(0.617)	
Satisfaction with Business Education (SATPROG)	0.238	0.234	(0.812)
Slovenia			
Business Knowledge Valuable (BK valuable)	(0.707)		
Competencies Valuable (COM valuable)	0.578	(0.689)	
Satisfaction with Business Education (SATPROG)	0.382	0.393	(0.886)
Romania			
Business Knowledge Valuable (BK valuable)	(0.745)		
Competencies Valuable (COM valuable)	0.514	(0.605)	
Satisfaction with Business Education (SATPROG)	0.541	0.453	(0.878)

Note: Diagonal elements (values in parenthesis) are the square root of AVE (i.e., variance shared between the constructs and their measures), while off-diagonal elements are the correlations between constructs. For adequate Discriminant validity, diagonal elements should be larger than off-diagonal elements

DISCUSSION

Findings from the multi-country research project described in this study revealed the importance of developing within business study programs two critical learning outcomes: key business knowledge (knowledge related to discipline specific areas) and key business competencies (generic skills). According to evidence provided by the meta-level indicators, these key business knowledge areas and key business competencies were perceived as valuable (indicator #1) and relevant for future career development (indicator #2) by both employers and recent business graduates in all the four countries examined. Notably, the development of business competencies was perceived by both groups as being more important than the acquisition of business knowledge (Table 2).

In light of these results and considering that graduates and employers showed much less confidence in graduates' abilities in business knowledge and in business competencies (indicator #3), Higher Education, Further Education and Vocational Training Institutions need to consider adopting pedagogical approaches that strengthen students' business knowledge and, more importantly, better promote the development of critical business competencies. Regarding business knowledge, Higher Education, Further Education and Vocational Training Institutions need to be encouraged to specify the key knowledge areas within each study program in addition to further identifying the core concepts and learning outcomes within each major discipline (for example, finance). The adoption of these critical steps will lead to the development of an integrated framework of concepts and tools, which may serve as a guide to faculty members designing specific courses within the program and to internal as well as external quality assurance review teams. In addition, as previously mentioned, the inclusion of final comprehensive examinations covering key business knowledge areas may also help reinforce graduates' knowledge.

Concerning the business competencies (Andrews and Higson, 2007) have proposed the development of an articulated path within the curriculum, which specifies different assessment criteria for each level of competence development (primary, secondary, advanced). To illustrate, regarding the competence Communication Skills, it is suggested assessment criteria should progress from seeking evidence of the adoption of a detailed and clear level of writing (primary level), to the demonstration of a much more

critical style of writing (secondary level) and finally, to the expectation of the "adoption of a critical and analytical writing style showing depth of thought and wide understanding of subject matter" (advanced level) (Andrews and Higson, 2007).

Additional recommendations can also be made for policy-makers in Education. They should encourage greater involvement of employers in the quality assurance process of educational institutions (both by extending employer involvement to quality review teams and also by seeking regular employer feedback through surveys and/or qualitative methods). Policy-makers in Education can also promote the use of a model that combines key business knowledge and key business competencies, as a way of harmonizing curricula at the European level (Andrews and Higson, 2007; Azevedo, 2007). Engagement in European-level discussions may foster a greater level of understanding regarding what types of learning outcomes can be used in different scientific fields amongst policy-makers. As previously mentioned, other transnational projects have already demonstrated that it is possible to arrive at a common set of knowledge and competencies applicable to study programs in different countries. The output-oriented criteria proposed in this study, based on the idea of learning outcomes, can therefore be adapted to different fields of study, such as engineering, history or economics.

CONCLUSION

In conclusion, given the exploratory nature of the PLS models developed in this study, the authors would like to suggest that future research studies should seek to test and refine these models, in order to see how well they can operate in different contexts, whether the measurement process can be improved and whether additional variables should be included in these models. Considering the growing public demands to demonstrate the impact of Higher Education in society, empirical models that explicitly show the link between graduates' abilities in key learning outcomes and actual performance in the workplace should bring significant benefit to policy-makers in Education and Quality Assurance Agencies. In addition, empirical studies describing the instrumental value of Higher Education (how valuable critical learning outcomes are perceived to be for actual work performance) and its potential impact on graduate satisfaction ratings should encourage Higher Education, Further Education and Vocational Training institutions to strengthen their efforts to align their study programs with changing labor market requirements.

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