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Structural Equation Modelling of the Life-Long Learning Intentions in Croatia

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Background/Purpose: Formal postgraduate education is an important component of lifelong learning, yet evidence remains limited on why graduates decide to return to their alma mater for advanced study. This study examines postgraduate enrolment intentions among 307 graduates of economics and business programmes from four Croatian faculties. Drawing on an adapted expectation-confirmation framework, it tests whether perceived importance of higher education and perceived institutional quality shape satisfaction with previous study and whether satisfaction predicts intention to return for postgraduate education.
Methods: We conducted a cross-sectional survey of graduates who completed their studies and had not yet enrolled in postgraduate specialist or doctoral programmes. We evaluated the measurement model using confirmatory factor analysis and tested the hypothesised relationships using structural equation modelling. We included parental education and perceived availability of time and financial resources as control variables.
Results: Confirmatory factor analysis supported the reliability and validity of the four-construct measurement model. All four hypothesised relationships were positive and statistically significant: perceived importance of higher education was associated with institutional quality and satisfaction, institutional quality was strongly associated with satisfaction, and satisfaction was associated with postgraduate enrolment intention. Perceived time availability was the only significant control variable.
Conclusions: The findings extend post-experience satisfaction research to formal lifelong-learning decisions made after graduation. They show that institutional quality and accumulated satisfaction can shape graduates' willingness to return to their alma mater, while time availability affects whether such willingness is feasible. The study contributes theoretically by linking retrospective institutional evaluation and expectation fulfilment to later lifelong-learning intentions, and practically by highlighting alumni satisfaction, institutional quality, and flexible, work-compatible programme design as key levers of postgraduate demand.

Keywords: Postgraduate education, Enrolment intention, Expectation-confirmation theory, Student satisfaction, Institutional quality, Structural equation modelling, Croatia

1 Introduction

Lifelong learning has moved from a general educational ideal to an operational necessity for economies facing demographic ageing, technological change, skill obsolescence, and global competition. In higher education, this development is especially relevant because universities and faculties increasingly operate not only as providers of initial degrees, but also as institutions to which graduates may return for advanced, specialised and doctoral-level learning. Formal lifelong learning in higher education is therefore not limited to short courses or informal professional development. It also includes structured postgraduate programmes that lead to recognised qualifications and that require substantial time, financial and motivational commitment from potential students. Recent systems-oriented research likewise emphasises that higher education institutions must adapt their educational role to simultane-

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ous technological, economic and societal transformations (Pejić Bach et al., 2024). Evidence from business economics education further shows that student competency profiles can change across cohorts, requiring programmes to update content and delivery rather than assume homogeneous digital preparedness (Suša Vugec, 2025).

The Croatian context is particularly relevant to this issue. Postgraduate specialist and doctoral programmes represent formal lifelong learning pathways for graduates who already hold a university degree. Faculties of economics and business provide a useful empirical setting because their graduates enter a labour market in which managerial, analytical and digital competences require continual renewal. Nevertheless, graduates who have entered employment cannot be assumed to intend to return automatically to their alma mater. Their decisions are likely to reflect both their accumulated evaluation of the former institution and the practical feasibility of combining postgraduate study with current responsibilities.

Prior research on postgraduate programme choice has emphasised professional advancement, specialised knowledge, programme attributes and personal development (Ho et al., 2012; Meginnis & Campbell, 2017; Saiti et al., 2017). Higher education institutions have limited influence over some personal motives, but they directly shape teaching quality, administrative support, infrastructure and the wider student experience. This creates a need for models that connect graduates' evaluations of institutional performance with satisfaction and subsequent educational intentions. Expectation-confirmation theory offers an appropriate post-experience logic because it links evaluations of prior performance and satisfaction with continuance or repeat-choice intentions (Oliver, 1980; Bhattacherjee, 2001).

In the present setting, returning to postgraduate education is more demanding than the routine continuation of an existing service. It is a new educational commitment made after graduation and often after entry into the labour market. The decision may nevertheless draw on the same cumulative evaluation process: graduates who valued higher education, perceived their institution as high quality and were satisfied with their former study experience may be more willing to return to the same institution for a postgraduate specialist or doctoral programme.

The purpose of this paper is to test a structural equation model of graduates' postgraduate enrolment intentions. The study makes three contributions. First, it applies the post-experience logic of expectation-confirmation theory to institutional return for formal postgraduate education. Second, it distinguishes the broader perceived importance of higher education from perceived institutional quality and examines how both are associated with satisfaction. Third, it separates the central theoretical relationships from practical and background factors by controlling for parental education and perceived availability of time and financial resources.

2 Literature review

2.1 Lifelong learning and formal postgraduate education

The concepts of lifelong learning and lifelong education are often used interchangeably, but the distinction matters analytically. Lifelong learning is the broader concept: it refers to learning activities throughout life, across formal, non-formal and informal contexts, and it includes personal development, employability, active citizenship and social inclusion (Aspin & Chapman, 2000; Hager, 2011; Vekić, 2015). Lifelong education is more institutionally structured and refers to organised educational experiences offered by schools, universities, employers or other organisations (Billett, 2018). Formal postgraduate programmes fall into the latter category because they are organised, regulated, and qualification-oriented.

Higher education institutions increasingly need to treat graduates as potential future participants in formal lifelong education. This shift changes the relationship between the institution and the student. The student is not only a one-time recipient of a degree programme but also a potential long-term learner whose future enrolment decisions may depend on prior educational experience. In this sense, satisfaction with prior study becomes a strategic variable. It reflects the cumulative assessment of the quality of teaching, administrative services, infrastructure, and support, the relevance of content, and the extent to which study goals and expectations were fulfilled.

Studies of postgraduate programme choice indicate that students are motivated by professional advancement, skill development, reputation and programme attributes (Ho et al., 2012; Meginnis & Campbell, 2017; Saiti et al., 2017). However, the evidence also implies that institutions can influence enrolment demand by shaping perceived quality and satisfaction. If the previous study experience is favourable, graduates may perceive the alma mater as a credible and attractive provider of further formal education. If the experience is weak, even strong labour-market incentives may not be sufficient to induce a return to the same institution. In the Croatian context, graduate employability has also been associated with human, cultural, and social capital, as well as high-impact experiences acquired during study (Tecilazić, 2024). Sector-specific evidence among employed health professionals further indicates demand for better-organised and tailored management education aligned with technological and organisational change (Ivković et al., 2025).

2.2 Expectation-confirmation theory in higher education

Expectation-confirmation theory explains satisfaction as the outcome of comparing prior expectations with perceived performance (Oliver, 1977, 1980). In consumer and service research, satisfaction is a central antecedent of repeat choice, loyalty and continuance (Churchill & Surprenant, 1982; Anderson & Sullivan, 1993). Bhattacherjee (2001) transferred this logic to information-system continuance and showed that satisfaction based on prior experience is a principal determinant of continued-use intention. The same post-experience mechanism is relevant to higher education because graduates retain an accumulated evaluation of the institution after completing their original programme.

Higher education research has consistently connected perceived institutional performance with student satisfaction. Perceived quality, image and value contribute to satisfaction and loyalty (Alves & Raposo, 2007), while perceived university reputation and faculty competence shape satisfaction with the university experience (Elsharnouby, 2015). Service-quality research further shows that students evaluate institutions across multiple dimensions, including administration, infrastructure, teaching, and broader support services (Nadiri et al., 2009; Teeroovengadum et al., 2016; El Alfy & Abukari, 2020). These evaluations can remain relevant after graduation because the prospective postgraduate student already knows the alma mater.

The present study adapts rather than reproduces the full classical expectation-confirmation model. It does not measure confirmation or disconfirmation as separate constructs. Instead, perceived importance of higher education represents a broader value-based orientation, perceived institutional quality captures graduates' assessment of institutional performance, satisfaction summarises the fulfilment of expectations, aspirations and needs, and postgraduate enrolment intention captures willingness to return for a specialist or doctoral programme. The model therefore focuses on the post-experience sequence from educational values and institutional evaluation to satisfaction and future intention.

2.3 Hypothesis development

Satisfaction represents a cumulative evaluation of whether the former study experience met graduates' expectations and supported their goals. In the continuance literature, favourable satisfaction increases the likelihood of repeated or continued engagement (Oliver, 1980; Bhattacherjee, 2001). In higher education, satisfaction has been associated with loyalty, participation and future enrolment-related behaviour (Alves & Raposo, 2007; Elsharnouby, 2015; Reio & Crim, 2013). Graduates who were satisfied with their previous study should therefore be more willing to consider returning to their alma mater for postgraduate education. Accordingly, H1 proposes a positive association between satisfaction and postgraduate enrolment intention.

Perceived importance of higher education reflects the value graduates attribute to higher education for employment, personal development and professionally relevant knowledge. These value beliefs may shape the frame through which graduates evaluate the institution and the completed programme. Graduates who view higher education as consequential are likely to pay closer attention to institutional provision and interpret a successful study experience as personally meaningful. The model therefore proposes that the perceived importance of higher education is positively associated with perceived institutional quality (H2) and satisfaction with previous study (H3).

Perceived institutional quality concerns the institution's performance in areas students experience directly, including administrative support, physical and virtual infrastructure, teaching, extracurricular services, and competence development. Previous research identifies quality-related evaluations as important antecedents of student satisfaction (Alves & Raposo, 2007; Nadiri et al., 2009; Elsharnouby, 2015). When graduates evaluate these dimensions positively, their overall retrospective satisfaction should also be higher. H4 therefore proposes a positive association between perceived institutional quality and satisfaction with previous study.

3 Research question and hypothesis development

The study examines the relationships among graduates' general evaluation of higher education, their assessment of the institution where they previously studied, their satisfaction with that experience, and their intention to return to the same institution for postgraduate education. The analysis is guided by the following research question:

- RQ: To what extent are the perceived importance of higher education, perceived institutional quality and satisfaction with previous study associated with graduates' intentions to enrol in postgraduate education at their alma mater?

The proposed model draws on the post-experience logic of expectation-confirmation theory. In its original formulation, satisfaction results from comparing prior expectations with experienced performance and subsequently shapes attitudes and future behavioural intentions (Oliver, 1977, 1980). Bhattacherjee (2001) extended this reasoning to continuance decisions and demonstrated that satisfaction with prior experience is a central predictor of the intention to continue using a service. In the present context, postgraduate enrolment is not the uninterrupted

continuation of the original study programme. It is a new and resource-intensive decision made after graduation. Nevertheless, graduates' willingness to return to their alma mater may still depend on the accumulated evaluation of their previous educational experience.

3.1 Satisfaction with previous study and postgraduate enrolment intention

Satisfaction with previous study represents graduates' overall assessment of whether their educational experience fulfilled their expectations, aspirations, goals and needs. Expectation-confirmation research positions satisfaction as a direct antecedent of future behavioural intentions because a favourable prior experience reduces uncertainty and strengthens confidence in the same provider (Oliver, 1980; Bhattacherjee, 2001). Graduates satisfied with their former institution have direct knowledge of its teaching, administration, resources, and organisational practices. Their postgraduate enrolment decision is therefore likely to be informed by experience rather than by promotional information alone.

Higher education research similarly identifies satisfaction as an important relational outcome. Alves and Raposo (2007) found that student satisfaction contributed to loyalty towards the institution, while Elsharnouby (2015) showed that satisfaction with the university experience supported subsequent participation and citizenship behaviours. Reio and Crim (2013) further linked student satisfaction to enrolment intention in an educational setting. Although these outcomes differ from returning after graduation, they consistently indicate that satisfaction increases students' willingness to maintain or renew their relationship with an educational provider. Returning to an alma mater for a specialist or doctoral programme represents a particularly consequential form of renewed institutional engagement. A graduate who believes that the previous institution fulfilled important educational goals should be more willing to consider it a credible provider of advanced education. Conversely, dissatisfaction with the original programme may discourage institutional return even when the graduate remains interested in postgraduate education generally. The following hypothesis is therefore proposed:

- *H1: Satisfaction with previous study is positively associated with postgraduate enrolment intention at the alma mater.*

3.2 Perceived importance of higher education and perceived institutional quality

Perceived importance of higher education captures the extent to which graduates regard it as valuable for employment, personal development, and acquiring professionally relevant knowledge and skills. This construct is not equivalent to the expectations or confirmation constructs in the classical expectation-confirmation model. Instead, it represents a broader value-based orientation that may shape how graduates interpret and evaluate their educational experience. Students do not evaluate institutional quality independently of the goals and benefits they consider important. Research on student expectations indicates that students define educational quality in relation to the outcomes they seek from higher education. Voss et al. (2007), for example, found that students' expectations of teaching quality were connected with desired vocational and educational benefits. Students expected lecturers to be knowledgeable, approachable, and able to provide an educational experience that prepared them for examinations and professional work. Likewise, research on students' perceptions of quality indicates that expectations about teaching, learning, and academic relationships shape how quality is understood and assessed.

Graduates who place greater importance on employment preparation, personal development, and competence acquisition are therefore likely to evaluate the institution more closely on its ability to deliver those outcomes. Administrative support, infrastructure, teaching commitment, extracurricular services, and competence development may be perceived as more valuable when higher education itself plays an important role in the graduate's personal and professional development. Previous studies have not commonly tested the precise path from the perceived importance of higher education to perceived institutional quality. The present hypothesis should therefore be understood as a contextual extension of research showing that students' desired outcomes and expectations provide an interpretative frame for institutional-quality judgements. On this basis, the following relationship is proposed:

- *H2: Perceived importance of higher education is positively associated with perceived quality of the higher education institution.*

3.3 Perceived importance of higher education and satisfaction with previous study

The perceived importance of higher education may also be directly associated with satisfaction. Satisfaction is not determined solely by objectively observable institutional characteristics. It also reflects whether the experience delivered outcomes that the individual regarded as personally meaningful. According to expectation-confirmation reasoning, experienced performance produces satisfaction when it meets or exceeds relevant cognitive standards and desired outcomes (Oliver, 1977, 1980). Research on student satisfaction supports including value-re-

lated evaluations in this process. Alves and Raposo (2007) found that perceived value was a principal antecedent of satisfaction in higher education, alongside institutional image and perceived quality. This suggests that students' satisfaction depends not only on institutional performance but also on whether they perceive the educational experience as worthwhile.

Studies of postgraduate programme choice further demonstrate that individuals pursue advanced education because they associate it with career development, specialist knowledge, professional advancement and personal fulfilment (Ho et al., 2012; Saiti et al., 2017). These motives indicate that the value attributed to higher education is multidimensional. Graduates who consider higher education important for achieving these outcomes may derive greater satisfaction when they perceive their previous programme as having contributed to them. In the present study, perceived importance is measured through the value of higher education for employment, personal development and business-related knowledge and skills. Satisfaction reflects the extent to which the former institution fulfilled expectations, aspirations, goals and needs. A positive association is therefore expected because graduates who perceive higher education as consequential and who recognise its contribution to valued outcomes are more likely to evaluate their completed study experience favourably. Accordingly:

- *H3: Perceived importance of higher education is positively associated with satisfaction with previous study.*

3.4 Perceived institutional quality and satisfaction with previous study

Perceived institutional quality concerns graduates' evaluations of the institution's administrative support, physical and virtual infrastructure, teaching, extracurricular services and contribution to broader competence development. These dimensions correspond to the main areas through which students directly experience a higher education institution's performance. The relationship between service quality and student satisfaction is well established in higher education research. Alves and Raposo (2007) identified perceived quality as an antecedent of satisfaction and loyalty. Nadiri et al. (2009) similarly linked students' assessments of higher education service quality to satisfaction-related outcomes. Elsharnouby (2015) found that perceived university reputation and faculty competence were key determinants of satisfaction with the university experience. His findings also showed that satisfaction transmitted the effects of institutional evaluations to subsequent student behaviour.

Research on measuring higher education quality further emphasises its multidimensional nature. The HESQUAL framework, developed by Teeroovengadum et al. (2016), distinguishes among administrative quality, the physical environment, the educational process, support facilities, and transformational quality. Research on postgraduate students also indicates that the educational and administrative service dimensions matter in their overall quality evaluations (El Alfy & Abukari, 2020). In addition, evidence from Croatian higher education shows that students distinguish several dimensions when assessing institutional service quality. These findings imply that satisfaction represents an overall response to multiple institutional encounters rather than an evaluation of teaching alone. Graduates who recall responsive administration, suitable infrastructure, committed teachers, accessible support services and meaningful competence development should report greater retrospective satisfaction. The following hypothesis is therefore proposed:

- H4: Perceived quality of the higher education institution is positively associated with satisfaction with previous study.



Figure 1: Conceptual research model
Source: Authors' work.

3.5 Proposed research model

Taken together, the hypotheses specify a sequence in which the perceived importance of higher education is associated with graduates' evaluation of institutional quality and their satisfaction with previous study. Perceived institutional quality is additionally associated with satisfaction, while satisfaction represents the most proximal theoretical antecedent of postgraduate enrolment intention. Parental education and perceived availability of time and financial resources are included as control variables because they may account for background and situational differences in graduates' ability to undertake postgraduate study.

The proposed model translates the theoretical arguments developed above into an empirically testable structure. The following section describes the research design, sampling procedure, measurement instrument and statistical approach used to examine the hypothesised relationships among perceived importance of higher education, perceived institutional quality, satisfaction with previous study and postgraduate enrolment intention.

4 Methodology

4.1 Sample and data collection

A cross-sectional survey was conducted among graduates of university-level economics and business economics programmes at four major Croatian faculties located in Osijek, Rijeka, Split and Zagreb. Eligible respondents had graduated between 2015 and 2021 and had not enrolled in or completed a postgraduate specialist or doctoral programme at the time of data collection. This criterion ensured that enrolment in postgraduate education represented a prospective educational decision.

Because a complete sampling frame of eligible graduates was unavailable due to institutional data-protection restrictions, we recruited respondents using a non-probability targeted snowball sampling procedure. We identified initial respondents who met the eligibility criteria primarily through LinkedIn and encouraged them to forward the questionnaire to eligible peers, following the approach described by Dusek et al. (2015). During data collection, we monitored the distribution of respondents across the four faculties to approximate the known faculty-level distribution of graduates. Nevertheless, because participants were not selected probabilistically, the sample should not be regarded as statistically representative of all Croatian economics and business economics graduates.

We collected data in November and December 2021. The initial dataset contained 419 responses. After eligibility screening and data cleaning, 307 complete, eligible responses were retained for the structural equation modelling analysis. Respondents were excluded if they had graduated from an institution other than one of the four selected faculties, had graduated before 2015, had already enrolled in or completed a postgraduate specialist or doctoral programme, or did not provide sufficient information to establish eligibility. Because the number of individuals who received or viewed the survey invitation was unknown, we could not calculate a conventional response rate.

The analytical sample was broadly distributed across the four faculties, with slightly more than half of the respondents graduating from the Zagreb faculty. Most respondents had completed their studies between 2018 and 2021, indicating that the sample predominantly comprised relatively recent graduates. More than four-fifths of the respondents were employed at the time of the survey, although approximately one quarter were considering changing jobs. The majority reported a grade average between 3.6 and 4.5. Overall, the sample reflects graduates with relatively recent study experience and substantial labour-market participation, which is relevant when examining their intentions to return to formal postgraduate education.

4.2 Research instrument

The questionnaire comprised four reflective latent constructs measured by 15 items. The operationalisation combined previously published measurement scales with context-specific items developed for this study. Perceived institutional quality was measured with five items adapted from the Higher Education Service Quality model (HESQUAL) developed by Teeroovengadum et al. (2016). The items captured graduates' evaluations of administrative support, physical and virtual infrastructure, teaching, extracurricular facilities and services, and the development of broader competencies. Satisfaction with the previous study was assessed with four items adapted from Elsharnouby (2015), covering overall satisfaction and the extent to which the institution fulfilled respondents' expectations, aspirations, goals and needs.

Perceived importance of higher education and postgraduate enrolment intention were developed specifically for this study within the adapted expectation-confirmation framework. Perceived importance captured the value attributed to higher education in relation to employment, personal development and business-related knowledge and skills. Postgraduate enrolment intention captured respondents' interest in, perceived attractiveness of and intention to enrol in a postgraduate specialist or doctoral programme at their alma mater.

All reflective items were measured on a seven-point Likert scale ranging from 1 (completely disagree) to 7 (completely agree). The questionnaire was administered in Croatian, and the item wording presented in Table 2 was translated into English for reporting purposes. Parental education was dichotomised into below university degree

versus university degree or higher. Perceived time and financial resources were dichotomised into lower availability (responses 1–3) and neutral or higher availability (responses 4–7), following the coding used in the original analysis.

Table 2 presents the final measurement items and their respective sources. The four constructs were specified as reflective and subsequently evaluated through confirmatory factor analysis to assess indicator reliability, internal consistency, convergent validity and discriminant validity. Together with the control variables, the instrument captured graduates' retrospective evaluations of their previous study experience, their broader orientation towards higher education and the situational factors associated with postgraduate enrolment intention.

4.3 Statistical analysis

The statistical analysis followed the two-step structural equation modelling procedure proposed by Anderson and Gerbing (1988), separating measurement model evaluation from estimation of the structural relationships.

First, confirmatory factor analysis was used to evaluate the measurement model comprising perceived importance of higher education, perceived institutional quality, satisfaction with previous study and postgraduate enrolment intention. Overall model fit was assessed using the chi-square statistic, comparative fit index (CFI), Tucker-Lewis's index (TLI), root mean square error of approximation (RMSEA) and standardised root mean square residual (SRMR). Because fit indices evaluate different aspects of model-data correspondence, we interpreted them jointly rather than as rigid pass-or-fail rules (Hu & Bentler, 1999; Marsh et al., 2004; Lai & Green, 2016). We assessed indicator reliability using standardised factor loadings. Internal consistency was examined using Cronbach's alpha and composite reliability, convergent validity using average variance extracted, and discriminant validity using the Fornell-Larcker criterion (Fornell & Larcker, 1981; Hair et al., 2018).

Second, the structural model was estimated to test H1-H4. The model included the hypothesised relationships among perceived importance of higher education, perceived institutional quality, satisfaction with previous study and postgraduate enrolment intention. Father's education, mother's education, perceived availability of time and perceived availability of financial resources were entered as control variables predicting postgraduate enrolment intention. The analysis was conducted in Mplus 8.3 using maximum likelihood estimation (Muthén & Muthén, 1998-2017). We evaluated structural relationships using unstandardised and standardised path coefficients, standard errors, z-values, statistical significance levels, and coefficients of determination.

Table 1: Sample structure

Characteristic	Category	n	%
Faculty of graduation	Osijek	62	20.2
	Rijeka	47	15.3
	Split	41	13.4
	Zagreb	157	51.1
Year of graduation	2015	11	3.6
	2016	34	11.1
	2017	33	10.7
	2018	58	18.9
	2019	50	16.3
	2020	45	14.7
	2021	76	24.8
Employment status	Not employed	51	16.6
	Employed, not seeking a new job	174	56.7
	Employed, planning to seek a new job	82	26.7
Grade average	Up to 3.5	48	15.6
	3.6-4.0	110	35.8
	4.1-4.5	103	33.6
	More than 4.5	46	15.0

Source: Authors' work based on survey data collected in November and December 2021.

Table 2: Research instrument

Latent variable	Code	Item
PIHE/PVVO	PIHE1	Studying at a higher education institution is crucial for obtaining good employment.
	PIHE2	Studying at a higher education institution is important for my personal development.
	PIHE3	Through higher education I acquire knowledge and skills important for business.
PQHEI/PKVU	PQHEI1	Administrative staff were always ready to help and provide relevant information.
	PQHEI2	The faculty provided the infrastructure necessary for studying, both physically and virtually.
	PQHEI3	Teachers were fully committed to students and knowledge transfer.
	PQHEI4	The faculty ensured access to important extracurricular facilities and services.
	PQHEI5	Studying at the faculty developed my extracurricular skills, such as interpersonal skills and critical thinking.
SAT/ZS	SAT1	Overall, I am very satisfied with the services provided by my faculty during my studies.
	SAT2	My alma mater fully met my expectations.
	SAT3	My alma mater helped me fulfil my aspirations and goals.
	SAT4	My alma mater met my needs as a student.
LLI/NCO	LLI1	I am interested in opportunities for education in postgraduate specialist or doctoral study at my alma mater.
	LLI2	The idea of enrolling in a postgraduate specialist or doctoral study at my alma mater is attractive to me.
	LLI3	I intend to enrol in a postgraduate specialist or doctoral study at my alma mater in the future.

Source: Authors' work based on survey data collected in November and December 2021.

5 Results

5.1 Descriptive statistics and reliability

The item-level results reveal a distinction between respondents' general openness to postgraduate education and their readiness to make a concrete enrolment decision. Interest in available postgraduate opportunities (LLI1; M = 4.41) and the perceived attractiveness of returning to the alma mater (LLI2; M = 4.40) were moderately positive, whereas explicit enrolment intention was lower (LLI3; M = 3.64). The comparatively large standard deviations of the three intention items, ranging from 1.934 to 2.136, indicate substantial heterogeneity in graduates' plans for future postgraduate study.

Respondents generally attributed considerable importance to higher education, although evaluations differed across its anticipated benefits. Personal development received the highest rating (PIHE2; M = 5.58), while the belief that higher education is essential for obtaining good employment received the lowest rating within the construct (PIHE1; M = 4.43). The acquisition of professionally relevant knowledge and skills ranked in the middle (PIHE3; M = 4.84), suggesting that respondents associated higher education more strongly with personal development than with employment outcomes.

Evaluations of institutional quality were consistently positive. Physical and virtual infrastructure received the highest assessment (PQHEI2; M = 5.27), followed by the development of broader competencies (PQHEI5; M = 5.14). Administrative support received the lowest assessment within the construct (PQHEI1; M = 4.76), although it remained above the scale midpoint. Satisfaction with previous study was similarly favourable and relatively uniform: item means ranged from 5.01 to 5.30, with smaller standard deviations than those recorded for postgraduate enrolment intention. Overall, respondents evaluated their previous educational experience positively but were more cautious and divided about returning for postgraduate study.

The internal consistency results presented in Table 4 provide preliminary support for the reliability of the measurement scales. Cronbach's alpha was acceptable for perceived importance of higher education (alpha = 0.779), good for perceived institutional quality (alpha = 0.848), and excellent for satisfaction with previous study (alpha = 0.936) and postgraduate enrolment intention (alpha = 0.942). Thus, all four scales exceeded the conventional threshold of 0.70. Cronbach's alpha represents only an initial reliability assessment; the dimensionality, composite reliability and construct validity of the scales were therefore examined subsequently through confirmatory factor analysis.

Table 3: Item-level descriptive statistics

Item	N	Min	Max	Mean	Std. dev.
LLI1	307	1	7	4.41	2.057
LLI2	307	1	7	4.40	2.136
LLI3	307	1	7	3.64	1.934
PIHE1	307	1	7	4.43	1.720
PIHE2	307	1	7	5.58	1.447
PIHE3	307	1	7	4.84	1.629
PQHEI1	307	1	7	4.76	1.687
PQHEI2	307	1	7	5.27	1.498
PQHEI3	307	1	7	4.97	1.522
PQHEI4	307	1	7	4.93	1.571
PQHEI5	307	1	7	5.14	1.510
SAT1	307	1	7	5.27	1.336
SAT2	307	1	7	5.01	1.451
SAT3	307	1	7	5.02	1.488
SAT4	307	1	7	5.30	1.394

Source: Authors' work based on survey data collected in November and December 2021.

Table 4: Internal consistency of latent constructs

Construct	Items	Cronbach alpha
Postgraduate enrolment intention (LLI/NCO)	3	0.942
Perceived importance of higher education (PIHE/PVVO)	3	0.779
Perceived quality of the higher education institution (PQHEI/PKVU)	5	0.848
Satisfaction with previous study (SAT/ZS)	4	0.936

Source: Authors' work based on survey data collected in November and December 2021.

Table 5: Fit indices for the measurement model

Fit index	Value
N	307
Chi-square	203.988
df	84
p-value	< .001
CFI	0.965
TLI	0.956
RMSEA	0.068
SRMR	0.042

Source: Authors' work based on survey data collected in November and December 2021.

Overall, the descriptive statistics and reliability coefficients provide initial support for the adequacy of the four-construct measurement instrument. The next section evaluates the measurement model more rigorously through confirmatory factor analysis, focusing on model fit, factor loadings, composite reliability, convergent validity and discriminant validity.

5.2 Measurement model

Confirmatory factor analysis indicated that the four-construct measurement model satisfactorily represented the data. The chi-square test was statistically significant, χ^2 (84) = 203.988, p < .001, which is common when testing exact fit in samples of this size. The descriptive indices supported the model: CFI = 0.965 and TLI = 0.956 indicated good comparative fit, RMSEA = 0.068 indicated acceptable approximate fit, and SRMR = 0.042 indicated a small average residual discrepancy.

Taken together, the fit indices indicate that the proposed indicators adequately represented the four latent constructs. No post-hoc correlations between indicator errors were introduced solely to improve model fit.

The strongest loadings were observed for LLI1 and LLI2, while the four satisfaction items also loaded consistently on their construct. The latent constructs explained between 37.0% and 89.3% of the variance in their individual indicators. All indicators were retained because their loadings were statistically significant, and their content contributed to the conceptual coverage of the respective constructs.

Table 6: Standardised factor loadings for the measurement model

Item	Standardised loading	p	R-squared
LLI1	0.943	< .001	0.889
LLI2	0.945	< .001	0.893
LLI3	0.871	< .001	0.759
PIHE1	0.683	< .001	0.466
PIHE2	0.731	< .001	0.534
PIHE3	0.795	< .001	0.632
PQHEI1	0.707	< .001	0.500
PQHEI2	0.791	< .001	0.626
PQHEI3	0.788	< .001	0.621
PQHEI4	0.609	< .001	0.370
PQHEI5	0.734	< .001	0.538
SAT1	0.929	< .001	0.863
SAT2	0.909	< .001	0.827
SAT3	0.834	< .001	0.696
SAT4	0.875	< .001	0.765

Source: Authors' work based on survey data collected in November and December 2021.

Table 7: Reliability and convergent validity of the measurement model

Construct	Alpha	CR	AVE	sqrt AVE
PIHE/PVVO	0.779	0.781	0.544	0.738
PQHEI/PKVU	0.848	0.849	0.531	0.729
SAT/ZS	0.936	0.937	0.788	0.887
LLI/NCO	0.942	0.943	0.847	0.920

Source: Authors' calculations based on the standardised factor loadings.

Table 8: Fornell-Larcker matrix for the measurement model

Construct	PIHE	PQHEI	SAT	LLI
PIHE/PVVO	**0.738**			
PQHEI/PKVU	0.547	**0.729**		
SAT/ZS	0.687	0.546	**0.887**	
LLI/NCO	0.490	0.559	0.412	**0.920**

Source: Authors' calculations based on the standardised factor loadings and inter-construct correlations.

All standardised factor loadings were positive and statistically significant at $p < .001$, ranging from 0.609 to 0.945. The intention and satisfaction indicators displayed particularly strong loadings. PQHEI4 had the lowest loading (0.609), but remained above the minimum level commonly retained when the indicator is theoretically relevant. Composite reliability ranged from 0.781 to 0.943 and exceeded 0.70 for every construct. Average variance extracted ranged from 0.531 to 0.847 and exceeded 0.50 in all cases, supporting convergent validity. The square root of AVE for each construct was also greater than its correlations with the remaining constructs. The closest comparison concerned PIHE and SAT ($r = 0.687$), but the corresponding square-root AVE values were 0.738 and 0.887. The results therefore support indicator reliability, internal consistency, convergent validity and discriminant validity, providing an adequate basis for estimating the structural model.

5.3 Structural equation modelling of the expectation-confirmation model

The structural model demonstrated an overall acceptable fit, although the indices did not provide an equally strong assessment across all criteria. The chi-square test was statistically significant, chi-square(142) = 346.896, $p < .001$. CFI = 0.943 and TLI = 0.934 exceeded the conventional 0.90 benchmark, while RMSEA = 0.069 was within the range generally interpreted as acceptable. SRMR = 0.105 was marginally above the frequently used 0.10 guideline and indicates some remaining residual discrepancy. Because fit indices assess model fit from different perspectives and cutoff values should not be applied mechanically, we interpreted the results jointly (Schermelleh-Engel et al., 2003; Marsh et al., 2004; Lai & Green, 2016).

All four hypothesised relationships were positive and statistically significant. Satisfaction with previous study was positively associated with postgraduate enrolment intention ($\beta = 0.285$, $p < .001$), supporting H1. Perceived importance of higher education was positively associated with perceived institutional quality ($\beta = 0.590$, $p < .001$) and satisfaction ($\beta = 0.196$, $p < .001$), supporting H2 and H3. Perceived institutional quality showed the strongest association in the model and was positively associated with satisfaction ($\beta = 0.783$, $p < .001$), supporting H4. These findings support the proposed ordering of the constructs, but the cross-sectional design warrants interpreting the associations as theoretically directed rather than as established causal effects.

Among the control variables, perceived availability of time was positively and significantly associated with postgraduate enrolment intention ($\beta = 0.572$, $p < .001$). Father's education, mother's education and perceived financial resources were not statistically significant. Because the control variables were dichotomised, the unstandardised coefficients represent estimated differences between the coded categories rather than one-point changes on the original scales.

The model explained 34.9% of the variance in perceived institutional quality and 83.1% of the variance in satisfaction with previous study. Satisfaction and the four control variables jointly explained 40.9% of the variance in postgraduate enrolment intention. The particularly high explained variance in satisfaction reflects the strong association between perceived institutional quality and satisfaction. Overall, the structural results supported H1-H4 and identified perceived time availability as the only significant control variable.

6 Discussion

6.1 Summary of findings

The results supported H1-H4. Satisfaction with previous study was positively associated with postgraduate enrolment intention, while perceived institutional quality was the strongest predictor of satisfaction. Perceived importance of higher education was positively associated with both institutional quality and satisfaction. Among the control variables, only perceived time availability was statistically significant.

Table 9: Fit indices for the structural model

Fit index	Value
N	307
Chi-square	346.896
df	142
p-value	< .001
CFI	0.943
TLI	0.934
RMSEA	0.069
SRMR	0.105

Source: Authors' work based on survey data collected in November and December 2021.

Table 10: SEM results for the expectation-confirmation model

Path	B	β	S.E.	z	p	Conclusion
PIHE -> PQHEI	0.593	0.590	0.051	11.598	< .001	Supported (H2)
PIHE -> SAT	0.204	0.196	0.051	3.820	< .001	Supported (H3)
PQHEI -> SAT	0.813	0.783	0.041	19.287	< .001	Supported (H4)
SAT -> LLI	0.428	0.285	0.051	5.599	< .001	Supported (H1)
Father's education -> LLI	-0.027	-0.007	0.049	-0.133	0.887	Not significant
Mother's education -> LLI	0.026	0.006	0.049	0.117	0.918	Not significant
Time resources -> LLI	2.139	0.572	0.043	13.180	< .001	Significant (+)
Financial resources -> LLI	0.011	0.003	0.050	0.057	0.941	Not significant

Source: Authors' work based on survey data collected in November and December 2021. Note: B = unstandardised coefficient; β = standardised coefficient.

Table 11: Coefficients of determination for the expectation-confirmation model

Endogenous construct	R-squared	S.E.	Est./S.E.	p
LLI/NCO	0.409	0.042	9.690	< .001
PQHEI/PKVU	0.349	0.060	5.799	< .001
SAT/ZS	0.831	0.030	28.042	< .001

Source: Authors' work based on survey data collected in November and December 2021.

Table 12: Summary of hypothesis testing

Hypothesis	Relationship	Conclusion
H1	Satisfaction with previous study -> postgraduate enrolment intention	Supported
H2	Perceived importance of higher education -> perceived institutional quality	Supported
H3	Perceived importance of higher education -> satisfaction	Supported
H4	Perceived institutional quality -> satisfaction	Supported
Control	Perceived time resources -> postgraduate enrolment intention	Significant positive effect
Control	Father's education, mother's education and perceived financial resources	No significant effect

Source: Authors' work based on survey data collected in November and December 2021.

6.2 Theoretical contributions

The first theoretical contribution extends post-experience satisfaction logic to graduates' decisions to return to their alma mater. Classical expectation-confirmation research treats satisfaction as an evaluation arising from prior expectations and experienced performance and as an antecedent of repeat choice or continuance (Oliver, 1980; Bhattacherjee, 2001). In this context, continuance is not routine use of the same service. It is a new and resource-intensive decision to enrol in a specialist or doctoral programme after graduation. The positive satisfaction-intention relationship therefore shows that the evaluation of a completed programme can remain relevant beyond graduation and contribute to a later institutional return decision.

The second contribution connects multidimensional institutional quality with a future educational decision through graduates' accumulated satisfaction. Previous higher education research shows that perceived quality, image, value, reputation, and faculty competence contribute to student satisfaction and loyalty (Alves & Raposo, 2007; Nadiri et al., 2009; Elsharnouby, 2015). HESQUAL similarly conceptualises higher education quality through administrative, physical, educational, support and transformational dimensions (Teeroovengadum et al., 2016). The present results extend this evidence by showing that institutional quality is not only associated with satisfaction during enrolment. Through satisfaction, it forms part of the evaluative basis on which graduates later assess whether the alma mater is a credible provider of postgraduate education.

The third contribution is the distinction between the desirability and feasibility of postgraduate study. Perceived importance of higher education captures a broad value orientation and was positively associated with institutional quality and satisfaction. However, explicit enrolment intention remained lower than general interest and attractiveness, and perceived time availability was the only significant control variable. This pattern is consistent with adult-education research that identifies time constraints as a central deterrent to participation (Valentine & Darkenwald, 1990) and conceptualises participation as the outcome of interaction between individual agency and structural opportunities (Rubenson & Desjardins, 2009). Research on the temporal organisation of adult-learning provision likewise shows that participation depends on matching programme formats with adults' available time (Rüter & Martin, 2022). The findings therefore indicate that positive institutional evaluations may increase willingness to return, but willingness must still translate into an educational commitment compatible with work and family obligations. This distinction is also consistent with recent Croatian educational research showing that engagement-related attitudes are intertwined with perceived internal and external barriers, although the specific educational context differs from postgraduate participation (Mikša et al., 2026).

The represented findings extend existing research on lifelong learning and graduate expectations in a more specific way. Prior studies reviewed in this paper have largely examined motives for postgraduate participation, adult-learning barriers, or students' contemporaneous evaluations of service quality and satisfaction. The present study connects these strands by treating the graduate as a post-experience decision maker and by modelling return to the alma mater as a formal lifelong-learning choice. Because satisfaction was operationalised partly through the extent to which the former institution fulfilled respondents' expectations, aspirations, goals and needs, the results show that these retrospective judgements remain relevant after graduation rather than ending with completion of the initial degree. The specific theoretical contribution is therefore the integration of retrospective institutional evaluation with future formal lifelong-learning intention, while the significant role of time availability shows that a positive post-study relationship with the institution must be distinguished from the practical feasibility of re-enrolment.

6.3 Practical implications

The practical contribution follows directly from the distinction between willingness to return and the feasibility of doing so. Rather than treating postgraduate recruitment as a stand-alone marketing task directed at anonymous adult learners, higher education institutions can manage it as a continuation of the graduate-institution relationship. The findings identify two actionable levers: preserve and monitor the quality and satisfaction created during the initial degree and reduce barriers to returning when graduates consider it. Higher education institutions should therefore treat graduate satisfaction as a long-term recruitment asset rather than solely as an internal quality indicator. Satisfaction data collected at the end of a programme should be complemented by alumni follow-up surveys conducted after entry into the labour market. Institutions can use these results to distinguish graduates who are both satisfied and ready to enrol from those who are satisfied but constrained by time. The latter group does not primarily require general promotional messages; it requires credible evidence that postgraduate study can be integrated with employment and family responsibilities.

Institutional quality improvement should focus on the concrete dimensions represented in the model. Administrative units should establish response-time standards for postgraduate enquiries, publish admissions and recognition procedures clearly, and provide a single contact point for prospective students. Programme managers should publish timetables, assessment periods and expected weekly workloads before enrolment. Teaching quality should be

supported through structured supervision, timely feedback and clear links between programme outcomes and advanced professional competencies. Physical and digital infrastructure should enable working students to access learning materials, administrative services and academic support without repeated campus visits.

The strong link between time resources and intention requires direct programme-design responses. Relevant measures include evening or weekend teaching, hybrid participation, asynchronous materials, modular enrolment, predictable examination periods and the possibility of extending the completion period without unnecessary penalties. Flexibility should be communicated concretely. A programme website should specify the number of mandatory campus visits, synchronous sessions, expected study hours and major deadlines, allowing prospective students to assess feasibility before applying. Institutions should also seek employer partnerships that provide protected study time, temporary workload adjustments and alignment between workplace projects and postgraduate assignments.

The absence of a significant financial-resource coefficient should not be interpreted as evidence that tuition is irrelevant for every prospective student. Instead, it indicates that financial availability did not explain additional variance in this sample after including the other predictors. Scholarships, instalment payment and employer co-financing should therefore remain available, but they should be combined with measures addressing time and workload. Recruitment communication should integrate three elements: the value of postgraduate education, verifiable evidence of institutional quality and a realistic explanation of how participation can be managed alongside other obligations.

6.4 Limitations and future research

The study has several limitations. The non-probability snowball sample restricts statistical generalisation beyond the participating graduates. The data are cross-sectional and self-reported, so the structural paths cannot establish temporal causality and may be affected by common-method variance. The sample is limited to economics and business graduates from four Croatian institutions, and the outcome concerns enrolment at the alma mater rather than postgraduate education at any institution. The findings should therefore be interpreted as sample-specific evidence rather than as population estimates for all Croatian economics and business graduates. A probability-based or registry-supported sampling design would provide a stronger basis for external validity. Because predictors and outcomes were measured at the same time, the model cannot directly observe the temporal ordering, and reciprocal relationships among the constructs cannot be ruled out.

The theoretical model also adapts expectation-confirmation theory rather than fully testing its original sequence because expectations and confirmation were not measured as separate constructs. Future research should use longitudinal designs that measure expectations during study, satisfaction at graduation and actual postgraduate enrolment later. Replication across disciplines, institutions and countries would clarify the generalisability of the relationships, while comparative models could distinguish intentions to return to the alma mater from intentions to enrol at competing institutions. Future studies should additionally incorporate motivational and well-being variables relevant to adult learners, as recent evidence among mature higher education students indicates a positive relationship between intrinsic motivation and mental well-being (Qureshi et al., 2024).

7 Conclusion

This study examined the antecedents of graduates' intentions to enrol in postgraduate education at their alma mater. The results support an adapted expectation-confirmation framework in which perceived importance of higher education and perceived institutional quality are associated with satisfaction with previous study, and satisfaction is associated with postgraduate enrolment intention.

Perceived institutional quality emerged as the principal predictor of satisfaction, showing that administration, infrastructure, teaching, support services, and competence development contribute to an evaluation that remains relevant after graduation. Satisfaction, in turn, was positively associated with graduates' willingness to return for a postgraduate specialist or doctoral programme.

Perceived time availability was the only significant control variable. This finding indicates that favourable attitudes and previous experiences may not be sufficient when prospective students cannot reconcile study with current obligations. For institutions, the implication is direct: quality assurance and alumni satisfaction should be combined with transparent, flexible and work-compatible programme design.

Unlike earlier research that examined postgraduate choice motives, service quality, student satisfaction, or adult-learning barriers separately, this study integrates these elements into a post-graduation return model. Its specific theoretical contribution is to show that retrospective institutional quality and satisfaction, including the perceived fulfilment of expectations, aspirations, goals and needs, remain associated with later formal lifelong-learning intentions, while time availability captures a distinct feasibility constraint. Its practical contribution is to show that postgraduate demand can be supported through a combined strategy of maintaining quality during the initial degree, sustaining alumni satisfaction, and designing

transparent, flexible, and work-compatible postgraduate provision. Although the non-probability sample and cross-sectional design require cautious generalisation, the model clarifies why a favourable graduate-institution relationship may be necessary but not sufficient for re-enrolment. Accordingly, interpret the reported SEM coefficients as theoretically directed associations within this sample rather than as causal effects or population-level estimates.

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