

INTERNSHIP EFFECTIVENESS EVALUATION BY STUDENTS AND FIRMS: A YEAR OF EXPERIENCE AT THE FACULTY OF ECONOMICS IN MODENA

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Abstract. *Internship programmes organised by the Faculty of Economics at Modena are evaluated through two questionnaires: one for students and another for firms. The data collected over 2009, separately for students and firms, were subsequently matched. The data analyses showed that the internal homogeneity of the item batteries and of their dimensions – semantically derived from the questionnaire items – was satisfactory. The factors obtained through an exploratory factor analysis did not prove to correspond perfectly to these dimensions for students, while they did correspond in the case of firms. The identification of the determinants of effectiveness, measured through the internship evaluation provided by students and firms, was carried out through a logistic regression and a structural equation model.*

Keywords: *Student and firm evaluation of the internship programme, Experiential learning, Internship satisfaction, Training usefulness, Structural Equation Model.*

1. INTRODUCTION

The academia and practitioners of many professions have long recognised the contributions that internship experiences can offer to students, institutions, and organisations (Frederick, 1927; Miller, 1945; Thompson, 1950; CIP, 1952). The first experiences date back to the beginning of the twentieth century in the United States of America. For example, the University of Cincinnati initiated its co-op programme in 1906 (Thiel and Hartley, 1997).

In Italy, internships for university degree programmes are a relatively recent institution. In fact, with the exception of medical schools, the first experiences date back to the nineteen eighties, but only in para-university education programmes, i.e., in Schools Directed to Special Purposes (Decree of the President of the Republic no. 162 of 10 March 1982 in the Official Gazette no. 105 of 17 April 1982

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–Art. 3, 5, 7), requiring two years of study and a compulsory internship programme. In addition, the institution of the University Diploma (see Law no. 341 of 19 November 1990 in the Official Gazette no. 274 of 23 November 1990) provided explicitly for a compulsory internship programme. However, even if these university diplomas required three years of study, they still remained para-university educational programmes. For standard university undergraduate and graduate programmes, internship activities were specified in the Ministerial Decree no. 509 issued on 11 November 1999 (Official Gazette, no. 2 of 4 January 2000, Art. 10, Subsection f) and are now currently part of many degree programmes.

At the Faculty of Economics of the University of Modena and Reggio Emilia, the internship programme is compulsory for all students in order to earn an undergraduate degree. The students carry out their internship programme without compensation. The Business Economics and the Economic Sciences and Society (now Economics and Finance) degree programmes assign 14 ECTS (European Credit Transfer and accumulation System) for internships, while 11 ECTS are assigned by the International Economy and Management programme. Students who are unwilling for justified reasons or unable to find a satisfying internship, also owing to the large number of students requesting an internship programme with respect to the number of available internships offered by firms, complete a thesis project requiring an amount of work equal to that of internship programme. For instance, in 2009, students attending the Economic Sciences and Society degree programme had the possibility of choosing optionally between a project and an internship.

The available data concern student (intern) and firm evaluations of the internship programme of the Faculty of Economics at the University of Modena and Reggio Emilia, collected in 2009 by means of two specific questionnaires routinely utilised by the university to monitor the state of affairs. The questionnaires, which are filled in separately by students and firms, were subsequently matched to pursue the purposes of this study and such matching is rare in the literature. The key item on the student evaluation of the internship programme was the “global evaluation of the internship experience”, which could be considered as a proxy of its effectiveness, just as it is for teaching effectiveness (among many others, Arubay, 1987; Marsh and Roche, 1993). A similar item was available on the firm evaluation of the internship programme, as the “global evaluation of the intern” expressed by firms could be roughly considered as a proxy of internship effectiveness.

The objectives of this empirical study were varied. The first aim concerned the extent of the correlations between the two evaluators (student and firm) for the same items. The second aim concerned an examination of the correspondence between

the concepts derived from a semantic aggregation of the questionnaire items (dimensions) and the factors extracted from an exploratory factor analysis of those items. The latter corroborates the former and helps to summarise all items in fewer figures. The third aim concerned the identification of the determinants of internship effectiveness so as to ascertain the characteristics affecting improvement of the evaluation process.

The structure of the paper is as follows. Section 2 reports the main aspects of the internship programmes. Section 3 illustrates the questionnaires and the main empirical results from data analysis. Section 4 proposes a Structural Equation Model (SEM) for evaluating the effectiveness of the internship. Finally, Section 5 concludes with some comments.

2. BACKGROUND

Initially, the fundamental aspects of the internship experience were clearly stated: “[The] Internship will assist the young man entering the business world to obtain a truer picture of conditions as they actually exist” (Frederick, 1927). In a few decades the framework was well defined (Thompson, 1950; CIP, 1952), outlining a complete sketch of issues, drawbacks, and advantages of the internship for the three actors involved in the relationships deriving from this activity: student, faculty and company. Subsequently, only a few aspects were added and/or improved in the resulting literature, whilst the empirical results increased over time, as did the different approaches, especially in recent years (Knouse and Fontenot, 2008; Narayanan *et al.*, 2010).

Internships provide many benefits for students. Perhaps, the most important advantage is the work experience itself (Divine *et al.*, 2007). In fact, even when the results are not satisfactory, contact with the real world has an intrinsic positive value for students, at least in terms of learning about life and interpersonal relationships in an organisation. The experience may affect the future of interns in many ways and forms: (1) complementing what they have learned in academic courses, (2) providing them with the most useful skills, (3) constituting an advantage when they seek their first or a permanent job, (4) underlining some useful aspects for the choice of a future graduate degree programme, and other additional features referable in some way to those listed (Maskooki *et al.*, 1998; Coco, 2000; Divine *et al.*, 2007; Gupta *et al.*, 2010).

Internships also provide advantages for firms because they offer a source of inexpensive, qualified, and generally highly motivated staff members. Therefore, a careless attitude of a firm towards a trainee, was recognized as unfair by all actors

from the very beginning of this type of training (Thompson, 1950). The firm is subjected to extra responsibilities and invests valuable time involving the trainee in job tasks, but interns are generally cost-free: there is no pay for them and no costs for benefits, such as health insurance or retirement funds. Other advantages encompass (1) the opportunity to evaluate an intern's work from the perspective of employee recruitment, (2) the possibility of filling positions during peak periods of activity without turning to the labour market or when temporary qualified workers are difficult to hire, (3) high performance of trainees who are motivated to satisfy the firm so as to gain experience and a beneficial recommendation for their search for a permanent job, (4) possible synergy arising from contact with the faculty to organise the training programme, and other minor features (Coco, 2000; Divine *et al.*, 2007; Gupta *et al.*, 2010).

A faculty may benefit from (1) enhancing the reputation and the visibility of its degree programmes, (2) providing a laboratory to ascertain the qualification of its product, (3) comparing the performance of its students with that of students of other institutions, (4) receiving input for curricular assessment, (5) learning about the shortcomings of the undergraduates and their lack of technical and social knowledge, (6) improving connections with the labour market and assistance for placement of its graduates or between business professionals and the academic institution, (7) increasing the availability of classroom speakers from the business world, and (8) increasing contacts for possible fund-raising. Furthermore, the contacts made through internships may lead to opportunities for consulting and for teaching activity involving the class or a group of students in an applied project related to some firm activities (Thompson, 1950; Coco, 2000; Divine *et al.*, 2007; Gupta *et al.*, 2010).

The advantages outlined above are generally inferred and are rarely tested empirically, as many of them are not easily verifiable, though often ascertained as subjective feelings of those involved. Only recently has the literature focused attention on the impact of the internship experience on interns. In fact, the internship experience may be and has been theoretically framed according to several points of view implying more or less formalisation to represent the context, the process, and the outcomes. The socialisation approach emphasises the key-concept that persons learn about the expectations of an organised and regulated environment through socialisation. Individual learning may be described from many perspectives: the object relations, psychoanalytic, social learning, functionalist, conflict, and symbolic interaction theories. This complex ramification of theories has made the socialisation approach the most popular (among others, Sapp and Zhang, 2009; Grehan *et al.*, 2011).

The organisational approach sets the internship experience within its empirical context: the firm and the role of the individual within the structure and the team where he/she is working. In traditional mentoring relationships, the characteristics of the corporate tutor and of supervisors in general, can act as a stimulus for the development of skills and behaviours having a positive impact on work careers. The role model theory considers the identification processes by which individuals perceive and perform the tasks and duties of his/her position (among others, Gibson, 2004). This approach takes advantage of learning, situated learning, human resources, and other theories.

The approach used for the analysis of the available data, as this was not an ad hoc survey, follows a sort of pragmatic attitude centred more on the empirical findings than on the underlying theories, more on subjective feelings than on the objective behavioural or functional model, framing the outcomes more in terms of the socialisation approach than the organisational approach. Referring to personnel and knowledge transfer between organisations, the internship experience involves three actors and is a process whose variables are related to output variables. The following hypotheses were formulated to be tested through the data.

- H1: (a) Internship organisation, (b) Firm receptiveness, (c) Internship procedure, and (d) Tutorship are related to the satisfaction of interns.
- H2: Time spent by students in their internship is not related to the satisfaction perceived by interns (Gupta *et al.*, 2010).
- H3: (a) Final high school grade (b) Final undergraduate grade, and (c) Time spent by students to achieve their current degree are not related to the satisfaction perceived by interns.
- H4: (a) The activity of the trainee, (b) Characteristics of the trainee, and (c) Internship organisation are related to a firm's evaluation of interns.
- H5: (a) Time spent by students in their internship, (b) Final high school grade, (c) Final undergraduate grade, and (d) Time spent by students to achieve their current degree are related to a firm's evaluation of interns.

3. DATA AND METHODS

The data were collected in 2009 by the Internship office for all degree programmes of the Faculty of Economics at the University of Modena and Reggio Emilia. In that year, there were a total of 453 internships, but 3 of these were interrupted. The remaining 450 internships were completed with all interns having delivered their completed questionnaire to the Internship office. Instead, only 344 corporate tutors

returned the questionnaire to the Internship office. Each student questionnaire was linked to the corresponding firm's questionnaire with 275 matches, as 69 firms' questionnaires were unmatchable. For each student, the final grade for high school and for the undergraduate programme were recorded to explore the hypothesis concerning the influence of the level of knowledge of students on the evaluation of the internship, this level being measured through their achieved grades. Moreover, the time spent to earn the undergraduate degree was determined for each student and added to his/her record. The firms' questionnaires were not completely independent as it was possible that the same corporate tutor may have filled in more than one questionnaire for more than one student. This is unknown and the firms' questionnaires were considered independent.

The questionnaires contained a battery of thirteen items, allowing students and firms to evaluate some aspects of the internship programme, such as the design, the procedure, and the outcomes. Each item had a set of possible choices based on a mark scale, without any indication of numerical values: Very insufficient, Insufficient, Sufficient, Good, Very good. These latter correspond to the grading system used at previous school levels, involving easy recognition of their meaning by all students. In fact, they could correspond to the set of values {2, 4, 6, 8, 10}, which was used in the evaluation of teaching activity in the past (Lalla *et al.*, 2004), but herein these values will be considered as ordered labels. The items on the student and firm questionnaires are listed in Tab. 1 and Tab. 2, respectively.

On the questionnaire form, the evaluator (student or corporate tutor) expresses an opinion about some dimensions (D) and the aggregation of items by dimension was useful for summarising the evaluation of the internship programme. For the student questionnaire, four dimensions were identified:

- (a) internship organisation (S01-Consistency of duties with the training plan, S02-Adequacy of internship hours with respect to the goals, S03-Usefulness of university preparation, S05-Duties and tasks, S12-Internship usefulness, S13-Global internship evaluation);
- (b) firm receptiveness (S04-Adaptation and interpersonal relations, S06-Firm's organisational structure, S07-Corporate tutor);
- (c) internship procedure (S09-Organisational tutor, S10-Internship activation procedure, S11-Adequacy of information about internship procedures);
- (d) tutorship (S07-Corporate, S08-Scientific, and S09-Organisational tutors).

For the firm questionnaire, three dimensions were identified:

- (a) trainee activity (F04-Adaptation and interpersonal relations, F05-Initiative, F06-Teamwork skills, F10-Ability to work independently, F12-Internship

- usefulness for the firm, F13-Global evaluation of the intern);
- (b) trainee characteristics (F03-Knowledge and technical skills, F07-Commitment and diligence in carrying out the work, F08-Interest in work assignments, F09-Punctuality and precision, F13-Global evaluation of the intern);
- (c) internship organisation (F01-Consistency of duties with the training plan, F02-Adequacy of the internship hours with respect to the goals, F11-Service provided by the internship office, F12-Internship usefulness).

Some items may be involved in more than one dimension. For example, on the student questionnaire, the item relative to the organisational tutor (S09) could concern both the tutorship and the internship procedure, as the same person has a relationship with the student as the tutor, but he/she is also implicitly involved in the internship procedure. Analogously, the item relative to the corporate tutor (S07) contributes to defining both firm receptiveness and the tutorship. The student global evaluation of the internship programme may be incorporated in the definition of all dimensions, but here it has been ascribed only to internship organisation. The same criteria were applied in the definition of the dimensions singled out for firm items.

Table 1: Student questionnaire items with median (Md), mean (Mn) or observed proportion, and standard deviation (SD)

Evaluation items (ordinal: 2, 4, 6, 8, 10)	Md	Mn	SD
S01: Consistency of Duties with the Training Plan	8		
S02: Adequacy of Internship Hours with respect to Goals	8		
S03: Usefulness of University Preparation	8		
S04: Adaptation and Interpersonal Relations	10		
S05: Duties and Tasks	8		
S06: Firm's Organisational Structure	8		
S07: Corporate Tutor	10		
S08: Scientific Tutor	8		
S09: Organisational Tutor	8		
S10: Internship Activation Procedure	8		
S11: Adequacy of Information about Internship Procedures	8		
S12: Internship Usefulness	8		
S13: Global Internship Evaluation	8		
S14: Have you received an employment offer? (yes/no) *	0	0.3	0.2
S16: Time spent learning about the firm and the work setting (%)	20	18.9	11.9
S17: Time spent specifically on actual internship duties (%)	70	67.5	16.8
S18: Time spent on other types of tasks (%)	10	13.6	11.0

* S14 is a filter item; S15 (specification of the type of contract) does not appear here.

The percentage of student questionnaires presenting one or more items with missing values, i.e., item nonresponses, was 10.9% (the maximum was 3 unanswered items in the case of 1 student). The percentage of firm questionnaires presenting one or more items with missing values was 9.1% (the maximum being 3 unanswered items in the case of 3 firms). The replacement of missing values was carried out by the median of dimensions at the individual level. Specifically, for each student or firm, i , the k -th item belonging to a certain dimension with a missing value was replaced with the median of the values for the non-missing items of the same dimension provided by the same student or firm and not by the median of the k -th item for the total sample, as is usual. For example, let $S02(i)$, which is part of the internship organisation dimension, be missing; it is then replaced by the median of $[S01(i), S03(i), S05(i), S12(i), \text{ and } S13(i)]$. Let $S02(i)$ and $S13(i)$ be missing; they are then replaced by the median of $[S01(i), S03(i), S05(i), \text{ and } S12(i)]$. The rationale of this procedure relies on the key actor in the evaluation process, that is, the evaluator. Therefore, the value used in the substitution is anchored to his/her average level of evaluation and not to the median level of the total sample.

Table 2: Firm questionnaire items with median (Md)

Evaluation items (ordinal: 2, 4, 6, 8, 10)	Md
F01: Consistency of duties with the training plan	8
F02: Adequacy of Internship Hours with respect to Goals	8
F03: Knowledge and Technical Skills	10
F04: Adaptation and Interpersonal Relations	10
F05: Initiative	10
F06: Teamwork Skills	10
F07: Commitment and Diligence in Carrying out the Work	10
F08: Interest in Work Assignments	10
F09: Punctuality and Precision	10
F10: Ability to Work Independently	8
F11: Service Provided by the Internship Office	8
F12: Internship Usefulness for the Firm	8
F13: Global Evaluation of the Intern	10

The sample of respondents was made up of 157 women (57.1% of the total), 122 students in International Economy and Marketing (44.4%), 117 students in Business Economics (42.6%), and 18 students in Economic Sciences and Society (6.6%). The remaining 18 respondents (6.6%) were students in graduate programmes: 8 in International Management, 4 in Business Consulting and Management, 3 in Labour Relations, 2 in Public Policies and Territory Evaluation, and only 1 in

Financing Analysis-Consulting-and-Management. A total of 81 (29.5%) students had received an employment offer. On the one hand, only 72 firms confirmed these results and, therefore, there may have been some miscommunication with the firm in the case of 9 students (3.3%). On the other hand, 9 firms (3.3%) declared that they made an employment offer to interns, but the interns did not confirm these declarations. The job offers declared by interns were: a long-term contract for 15 (5.5%), a short-term contract for 21 (7.6%), an apprenticeship for 13 (4.7%), a project collaboration contract for 14 (5.1%), multiple offers for 3 (1.1%), and missing values for 15 (5.5%).

The final high school grades ranged from 60 to 100, in general, but a value of 101 was assigned for a grade equal to 100 with special mention or cum laude. The mean was 82.2 with a standard deviation of 13.1 (min=60, max=101). Analogously, the final undergraduate degree grades ranged from 66 to 110, but a value of 111 was assigned for a final grade equal to 110 with special mention or cum laude. The mean was 95.3 with a standard deviation of 9.4 (min=78, max=111). The time to achieve the degree showed a mean equal to 3.4 years with a standard deviation of 0.9 years (min=3 years, max=9 years).

The student and firm questionnaires have five identical items and two pairs of items that are almost identical (S03 and F03, S11 and F11), but they can be interpreted differently by students and firms. The Goodman and Kruskal's gammas of these seven pairs of items, in Tab. 3, differed significantly from zero, although some values were low (less than 0.5). As expected, the two pairs of items being almost identical showed the lowest gammas. Moreover, looking at their unreported distributions, the firm evaluations were significantly higher than those of students, except for the pairs (S04, F04), (S11, F11), and (S12, F12), as may also be partially deducted from Tab. 1 and 2.

Table 3: Coefficients of correlations between students and firms for similar items

Students Items	S01	S02	S03	S04	S11	S12	S13
Firms Items	F01	F02	F03	F04	F11	F12	F13
Gamma	0.678	0.550	0.236	0.712	0.210	0.356	0.629
P-value	0.000	0.000	0.012	0.000	0.029	0.000	0.000

The student item battery showed a good internal coherence with a Cronbach alpha reliability coefficient equal to 0.861 and this index yielded some interesting values also for the dimensions: internship organisation (0.818), firm receptiveness (0.705), internship procedure (0.631), and tutorship (0.711). The firm item battery provided a Cronbach alpha reliability coefficient equal to 0.893 and the dimension

indices were 0.849 for trainee activity, 0.823 for trainee characteristics, and 0.712 for internship organisation. These figures were satisfactory, given that each dimension contained few items.

An exploratory factor analysis, with a fixed number of factors, was carried out to ascertain if the data supported the proposed dimensions, constructed following a conceptualisation process based on the logical meaning of items with respect to the (labelled) dimensions (Tab. 4). The matrix of Goodman and Kruskal's gammas was the obvious choice to accomplish these analyses. Although it worked for students, it did not work for firms, as it turned out negative definite, presumably because some columns showed high and similar values of gammas. Therefore, the student and firm item batteries were dichotomised as indicated below (§3.1) and tetrachoric correlation coefficient matrices were used, one for students and another for firms, in order to have the same basis for both.

For students, there were four fixed components, the Kaiser-Meyer-Olkin measure of sampling adequacy (Fabbris, 1997) was 0.796, the proportion of explained variance was 76.7% and there were three factors with eigenvalues greater than 1; the eigenvalue of the fourth factor was 0.887. For firms, there were three fixed components, the Kaiser-Meyer-Olkin measure of sampling adequacy was 0.752, the proportion of explained variance was 74.6% and there were two factors with eigenvalues greater than 1; the eigenvalue of the third factor was 0.906.

Table 4: Estimated factor loadings from a four-factor model of student (S) internship data and from a three-factor model of firm (F) internship data

S-Items	S-Fct1	S-Fct2	S-Fct3	S-Fct4	F-Items	F-Fct1	F-Fct2	F-Fct3
S01	0.745	0.242	0.036	0.303	F01	0.131	0.473	0.719
S02	0.375	0.254	0.093	0.717	F02	0.111	0.177	0.809
S03	0.083	0.094	0.307	0.758	F03	0.463	0.405	0.572
S04	0.403	0.584	0.193	-0.236	F04	0.784	0.353	0.118
S05	0.825	0.262	0.180	-0.010	F05	0.814	0.198	0.229
S06	0.620	0.475	-0.044	0.199	F06	0.864	0.222	0.151
S07	0.580	0.695	-0.030	0.047	F07	0.520	0.671	0.310
S08	0.147	0.893	0.144	0.136	F08	0.304	0.735	0.314
S09	0.151	0.801	0.379	0.230	F09	0.194	0.886	0.146
S10	0.052	0.156	0.905	0.147	F10	0.633	0.315	0.358
S11	0.348	0.230	0.731	0.121	F11	0.384	0.197	0.667
S12	0.853	-0.021	0.186	0.188	F12	0.541	0.168	0.616
S13	0.881	0.293	0.135	0.097	F13	0.621	0.602	0.337

Note: The item with factor loading in bold is included in the theoretical definition of the corresponding domain, bold italics denotes that the value does not support inclusion.

The extracted factors for students, $F=\{Fct1, Fct2, Fct3, Fct4\}$, are organised in Tab. 4 so as to match with the previously defined dimensions for students $D=\{(a), (b), (c), (d)\}$. For firms, there were the same two sets (F and D), without Fct4 and (d), respectively. The correspondence between the student factor components and the defined student dimensions, denoted in bold, was not completely satisfactory because firm receptiveness (b) and tutorship (d) seemed to merge into a single factor (S-Fct2), while the last factor (S-Fct4) was logically part of internship organisation (a), corresponding more or less to first component (S-Fct1). On the contrary, the correspondence between the firm factor components and the previously defined firm dimensions was satisfactory.

3.1 LOGIT MODEL

The student's global evaluation of the internship (S13) and the firm's global evaluation of the intern (F13) were assumed as dependent variables because both are proxies for internship effectiveness, from different points of view: the intern and the corporate tutor, who should fill in the firm questionnaire. These variables were the most natural candidates, but some other student and firm items may also perform the same role, such as the internship usefulness. They are expressed through a five-point ordered scale. However, high gratification resulting from the internship experience was observed, as only positive modalities were collected, except for 1.4% of unsatisfied students (Tab. 5). This distribution highlights some mechanisms underlying the response process on an ordinal scale, especially the Likert scale (Albaum, 1997), i.e., leniency and proximity: the tendency to rate something too high or too low and to give similar responses to the items placed close to one another, respectively. The same profile was observed for internship usefulness. Therefore, it is possible to dichotomize the dependent variables between two modalities: "Very good" and "good" or lower, where lower refers to 7.6% of students and 1.1% of firms. Thus the dichotomisation of the dependent variables (S13 and F13) involved the logistic regression model.

Table 5: Frequency and percentage distributions of student and firm global internship evaluations

Actor (Item)	Very Insuff.	Insuff.	Sufficient	Good	Very good	Total
Student (S13)	0	4	17	127	127	275
Percentages (%)	0	1.4	6.2	46.2	46.2	100.0
Firm (F13)	0	0	3	92	180	275
Percentages (%)	0	0	1.1	33.5	65.4	100.0

Let Y be the random variable denoting the dichotomised result of the global internship evaluation: the respondent either chooses “very good” ($Y=1$) or does not ($Y=0$). Let X be the vector of covariates. Let $\pi(x)$ be the probability that $Y=1$ depending on the vector of covariate values x . The logit model is

$$\pi(\mathbf{x}) = \frac{e^{\mathbf{x}'\hat{\mathbf{a}}}}{1 + e^{\mathbf{x}'\hat{\mathbf{a}}}} = \Lambda(\mathbf{x}'\hat{\mathbf{a}}) \quad (1)$$

where $\Lambda(\cdot)$ denotes the logistic cumulative distribution function and the vector of coefficients $\hat{\mathbf{a}}$ describes the effect of the covariates \mathbf{X} on the response $\pi(\mathbf{x})$ (Fabbris, 1997; Greene, 2003).

Two independent models were estimated: one for students and the other for firms, assuming that the student item battery without the dependent variable (S13) did not affect the global student evaluation by firms and, vice versa, the firm item battery without the dependent variable (F13) did not affect the global internship evaluation by students, although they were often correlated with each other. The covariates were distinguished in three sets: the two item batteries – one for students and another for firms – and the supplementary information about students. The selection of covariates was carried out combining aprioristic and statistical considerations. The battery items were all assumed as explanatory variables, that of students for internship evaluation by students (S13) and that of firms for student evaluation by firms (F13), because they concern some aspects of the internship and therefore share some aspects of the effectiveness concept, apart from their p-values. Moreover, the battery items assumed as explanatory variables were dichotomised in the same way.

The other set of covariates constituted the supplementary information about students and were included in both models: the time spent specifically on actual internship duties (S17), receiving/providing an employment offer (1 for yes and 0 for no), gender (1 for women and 0 for men), the binary variables denoting the degree programme attended (Business Economics, Economic Sciences and Society, and graduate programmes), the final high school grade (FHSG), the final undergraduate grade (FUG), and the time spent to achieve their current degree (TSAD). The last three continuous variables (FHSG, FUG, TSAD), together with the time spent on internship duties (S17), were divided by 10 and introduced as polynomials of the second order without the constant term. The terms of the polynomials were left in the model only if the p-values of their coefficients were lower than 0.2, but if both coefficients of the two terms of each polynomial showed a significance level greater than 0.2, then only the linear term was retained in the

model. It is worth noting that the time spent learning about the firm and the work setting (S16) and the time spent on other types of tasks (S18) were excluded from the model because the former is a part of the latter and the sum thereof, plus the time spent specifically on internship duties (S17), is constrained to 100. Moreover, this exclusion gives prominence to the time spent specifically on internship duties (S17), as the three variables are strictly interlinked. Hence, the reference individual for the models was a male student without an employment offer, and attending the International Economy and Marketing degree programme. The parameter estimates, with their standard errors and p-values, are reported in Tab. 6 for students and in Tab. 7 for firms.

For students, the items affecting internship effectiveness positively were consistency of duties with the training plan (S01, $p < 0.046$), adequacy of internship hours with respect to goals (S02, $p < 0.063$), adaptation and interpersonal relation (S04, $p < 0.047$), duties and tasks (S05, $p < 0.000$), firm's organisational structure (S06, $p < 0.002$), and internship usefulness (S12, $p < 0.000$). Among the other covariates, the percentage of time spent on actual internship duties yielded a significant negative coefficient ($p < 0.038$) for the squared term of the polynomial, implying that both short and long internship duration tend to generate negative evaluations of the internship experience. This pattern is roughly common to other studies (D'Abate *et al.*, 2009; Narayanan *et al.*, 2010). The final high school grade showed a negative parabolic effect (linear term with $p < 0.091$ and quadratic term with $p < 0.089$, given by a two-sided test) implying that students with low and high school grades tend to be less satisfied than those with intermediate grades. On the contrary, satisfaction increases when the final undergraduate grade increases (quadratic term with $p < 0.091$ given by a two sided test). Finally, the usefulness of university preparation (S03) proved to have a negative non-significant ($p < 0.352$) coefficient, implying that students evaluating their preparation with high scores tended to evaluate the internship experience with lower scores.

For firms, the items affecting the effectiveness of interns positively were knowledge and technical skills (F03, $p < 0.032$), adaptation and interpersonal relations (F04, $p < 0.043$), initiative (F05, $p < 0.005$), commitment and diligence in carrying out the work assigned (F07, $p < 0.001$), interest in work assignments (F08, $p < 0.001$), ability to work independently (F10, $p < 0.092$), and internship usefulness for the firm (F12, $p < 0.067$). Among the other covariates, the undergraduate students in Business Economics ($p < 0.029$) and in Economic Sciences and Society ($p < 0.031$), respectively with odds ratios equal to 3.0 and 13.0, were evaluated more positively than undergraduates in International Economics and Marketing. The final high school grade had a negative linear term ($p < 0.053$) and a positive squared term

($p < 0.053$), implying that firms tend to assign low scores to students with a high or a low final high school grade and tend to assign high scores to those with intermediate final high school grades.

Table 6: Student (S) logistic model for global internship evaluation

S-Items and other explanatory variables	Coeff.	SE	p-value
S01: Consistency of duties with the training plan	1.068	0.536	0.046
S02: Adequacy of internship hours with respect to goals	0.891	0.480	0.063
S03: Usefulness of university preparation	-0.606	0.651	0.352
S04: Adaptation and interpersonal relations	1.117	0.562	0.047
S05: Duties and tasks	2.080	0.461	0.000
S06: Firm's organisational structure	1.401	0.442	0.002
S07: Corporate tutor	0.547	0.507	0.281
S08: Scientific tutor	-0.156	0.550	0.777
S09: Organisational tutor	0.096	0.532	0.858
S10: Internship activation procedure	-0.175	0.493	0.722
S11: Adequacy of information about internship procedures	0.580	0.480	0.227
S12: Internship usefulness	1.938	0.413	0.000
REO: Receiving an employment offer	0.514	0.446	0.250
[(TSID: Time Spent on actual Internship Duties)/10] ²	-0.023	0.011	0.038
Woman	0.714	0.472	0.130
Business Economics	0.081	0.460	0.860
Economic Sciences and Society	0.983	0.842	0.243
Graduates	0.295	0.844	0.727
FHSG/10: (Final High School Grade)/10	4.452	2.637	0.091
(FHSG/10) ²	-0.273	0.160	0.089
FUG/10: (Final Undergraduate Grade)/10	-8.260	5.143	0.108
(FUG/10) ²	0.448	0.265	0.091
TSAD: Time Spent to Achieve undergraduate Degree	-0.016	0.246	0.949
Constant	16.055	24.169	0.507
Pseudo R ²	0.549		

Table 7: Firm (F) logistic model for global evaluation of the intern

F-Items and other explanatory variables	Coeff.	SE	p-value
F01: Consistency of duties with the training plan	0.867	0.586	0.139
F02: Adequacy of internship hours with respect to goals	0.010	0.574	0.986
F03: Knowledge and technical skills	1.074	0.500	0.032
F04: Adaptation and interpersonal relations	1.005	0.497	0.043
F05: Initiative	1.441	0.512	0.005
F06: Teamwork skills	0.219	0.503	0.663
F07: Commitment and diligence in carrying out the work	1.875	0.586	0.001
F08: Interest in work assignments	1.469	0.468	0.002
F09: Punctuality and precision	0.540	0.516	0.296
F10: Ability to work independently	0.903	0.536	0.092
F11: Service provided by the internship office	-0.541	0.593	0.362
F12: Internship usefulness for the firm	1.034	0.564	0.067
REO: Receiving an employment offer	-0.257	0.495	0.603
TSID/10: (Time Spent on actual Internship Duties)/10	-0.010	0.136	0.942
Women	0.610	0.492	0.215
Business Economics	1.097	0.501	0.029
Economic Sciences and Society	2.562	1.187	0.031
Graduates	0.874	0.964	0.365
FHSG/10: (Final High School Grade)/10	-5.505	2.845	0.053
(FHSG/10) ²	0.336	0.173	0.053
FUG/10: (Final Undergraduate Grade)/10	-0.050	0.354	0.889
TSAD: Time Spent to Achieve undergraduate Degree	0.299	0.304	0.327
Constant	16.357	11.609	0.159
<i>Pseudo R</i> ²	0.576		

4. A STRUCTURAL EQUATION MODEL FOR EFFECTIVENESS

Internship effectiveness was also analysed within a structural equation modelling framework: see the seminal paper by Jöreskog (1970) and the book by Jöreskog and Sörbom (1979). SEMs were conceptualised in two parts, i.e., the measurement model and the structural model. In the measurement model, latent constructs were measured by means of observable indicators, which can be either formative or reflective, depending on the direction of the link between the indicator and the

unobservable variable. Furthermore, observable indicators were either exogenous (x) or endogenous (y), according to whether they measured exogenous (ξ) or endogenous (η) latent constructs. In the structural part of the model, instead, causal relationships among latent variables were detected and structural parameters were estimated.

The proposed model of internship effectiveness analysed the determinants of two endogenous latent variables: global internship evaluation by students and global evaluation of the intern by firms. This involved the assumptions that the indicator ‘global internship evaluation’ (S13) acted as a single formative indicator (y_1) of the latent variable, global internship evaluation by students (η_1), and the indicator ‘global evaluation of the intern’ (F13) was the single formative indicator (y_2) of the latent variable, global evaluation of the intern by firms (η_2). Assuming that y_1 and y_2 were measured with no error, the measurement model of the formative latent variables was $y_1 = \eta_1$ and $y_2 = \eta_2$.

The model construction followed the factors’ conceptualisation proposed in Section 3 and distinguished three factors affecting internship evaluation by students (ξ_1, ξ_2, ξ_3) and three factors affecting intern evaluation by firms (ξ_4, ξ_5, ξ_6). The latent dimensions affecting internship evaluation by students and those affecting intern evaluation by firms were measured through the observable items included in both questionnaires, acting as reflective indicators. Given the proposed items’ theoretical aggregation, the reflective indicators (x) measuring student opinions on different aspects of the internship experience were internship organisation (ξ_1), without ‘global internship evaluation’ (S13) in the measurement, firm receptiveness (ξ_2), and the internship procedure (ξ_3).

The factors affecting global evaluation of the intern by firms (F13) were measured through the x -indicators, as defined in Section 3: trainee activity (ξ_4), without ‘global evaluation of the intern’ (F13), trainee characteristics (ξ_5), and internship organisation (ξ_6).

The measurement model of the reflective exogenous latent variables is

$$\mathbf{x} = \mathbf{\Lambda}\boldsymbol{\xi} + \boldsymbol{\delta}, \quad (2)$$

where $\boldsymbol{\xi}$ indicates the exogenous latent variables, \mathbf{x} is the vector of reflective indicators, which are measured with error $\boldsymbol{\delta}$, and $\mathbf{\Lambda}$ denotes the matrix of lambda coefficients that describe the linear relation between \mathbf{x} and $\boldsymbol{\xi}$.

The latent factors conceptualised at the student level acted as independent latent variables affecting global internship evaluation by students, while the latent variables at the firm level affected global evaluation of the intern by firms. Let γ be the coefficients measuring the causal impact of a ξ on a η . Let ζ be the stochastic

error acting on η . The particular structural model is

$$\begin{aligned}\eta_1 &= \gamma_{11}\xi_1 + \gamma_{12}\xi_2 + \gamma_{13}\xi_3 + \zeta_1 \\ \eta_2 &= \gamma_{24}\xi_4 + \gamma_{25}\xi_5 + \gamma_{26}\xi_6 + \zeta_2.\end{aligned}\quad (3)$$

Finally, the errors ζ_1 and ζ_2 are allowed to be correlated.

The model was estimated using the Robust Maximum Likelihood Estimator method, which corrects for data nonnormality and has been found in the literature to generally perform better than other estimation techniques, such as Weighted Least Squares and Generalized Least Squares in the case of model misspecification and data nonnormality (Olsson *et al.*, 2000). Goodness of fit measures suggested an adequate model fit: comparative fit index [CFI]=0.914, root mean square error of approximation [RMSEA]=0.055 and standardised root mean square residual [SRMR]=0.051 (Hu and Bentler, 1999).

The results of the measurement model of the exogenous latent variables were satisfactory, as the estimated factor loadings λ (not reported here for the sake of brevity) were highly significant. The estimated gamma coefficients are shown in Tab. 8. As latent variables have no measurement unit, standardisation is required in order to give a quantitative interpretation of their coefficients: the completely standardised solution can be read as the standard deviation change in η that follows one unit standard deviation change in ξ .

Global internship evaluation by students was positively and significantly affected by internship organisation ($p < 0.000$) and firm receptiveness ($p < 0.017$): one standard deviation increase in these two factors caused, respectively, a 0.577 and 0.371 standard deviation increase in the global internship evaluation by students (see Tab. 8). Internship procedure, however, did not significantly affect global internship evaluation by students, suggesting that what really counted for students was the actual work experience in the firm. Global evaluation of the intern by firms (Tab. 8) was affected only by the trainee characteristics ($p < 0.000$), with a 0.873 standard deviation increase following one standard deviation increase in the trainee characteristics.

The covariance ψ between the errors ζ_1 and ζ_2 was estimated to be equal to 0.118 (0.087 in standardised terms) and proved to be highly significant ($p < 0.001$), signalling that the two variables reacted similarly to external shocks.

Other model specifications were tested as well. First, the latent dimension ‘‘Tutorship’’ was included in the structural equation model, as conceptualised in Section 3, but the results of the measurement model for this latent variable were not satisfying. This was probably due to the fact that the corporate tutor, the scientific

tutor and the organisational tutor have limited contacts with each other and work independently, therefore they shared very little variance. In light of the findings of the exploratory factor analysis presented above, this result was not surprising. Second, the student characteristics included in the logistic models in Section 3 (gender, type of degree programme, final undergraduate grade, and the time spent to obtain their current degree), as well as the information on time spent on actual internship duties and receiving an employment offer, were included in the structural equation model as acting on η_1 and η_2 . However, no significant result emerged and therefore these links were excluded from the model. Third, a single endogenous factor model on global internship effectiveness was estimated as well. In the conceptualisation of this model, the variable η equalled the sum of S13 and F13 and was affected by the entire set of exogenous latent factors defined at the student and at the firm level. In keeping with the findings from the two-factor model, our estimates suggested that global internship effectiveness was positively and significantly affected by the internship organisation and firm receptiveness, as evaluated by interns, and by the trainee characteristics.

Table 8: Gamma coefficients on global internship evaluation by students

Model and explanatory variable	Coeff.	SE	p-value	Std. Coeff.
(a) Students Internship Evaluation*				
ξ_1 : Internship Organisation	0.677	0.120	0.000	0.577
ξ_2 : Firm Receptiveness	0.874	0.365	0.017	0.371
ξ_3 : Internship Procedure	-0.082	0.143	0.566	-0.052
(b) Firms intern evaluation**				
ξ_4 : Trainee Activity	0.147	0.206	0.475	0.124
ξ_5 : Trainee Characteristics	1.071	0.259	0.000	0.873
ξ_6 : Internship Organisation	-0.220	0.168	0.190	-0.188

Note: * $R^2=0.734$; ** $R^2=0.726$.

5. CONCLUSIONS

Internship effectiveness, measured through the global internship evaluation by students, which was also assumed as an indicator of their own satisfaction, proved to be positively affected mainly by some items in the various dimensions. Specifically, internship organisation worked through the consistency of duties with the training plan, duties and tasks, and internship usefulness. The receptiveness of firms operated through their organisational structure. The internship procedure acted

through the adequacy of information about internship procedures. Hence, the first hypothesis (H1) was only partially satisfied. In fact, the SEM approach showed that only the organisation of the internship and the receptiveness of the firms were significant factors explaining the satisfaction of interns. The second hypothesis (H2) was rejected, as the time spent on actual internship duties yielded a significant negative coefficient for its squared term, whereas Gupta *et al.* (2010) accepted it. The third hypothesis (H3) was not completely confirmed by data, as the final high school grade and the final undergraduate grade were related to internship satisfaction, while the time spent by students to earn their degree was unrelated to satisfaction. Finally, in the SEM, the latent factor tutorship did not prove to be significant, while the corporate tutor, through the receptiveness of the firm revealed its importance in making the internship activity effective. The importance of tutorship by faculty and firms for internship effectiveness has often been ascertained empirically (Narayanan *et al.*, 2010). Therefore, more attention should be paid to the design of the internship programmes in this regard.

The evaluation of interns by firms was affected mainly by some items in the trainee activity and trainee characteristics dimensions. Specifically, trainee activity worked through initiative and ability to work independently, while adaptation and interpersonal relations and internship usefulness for the firm revealed only a borderline significance. Trainee characteristics operated through knowledge and technical skills, commitment and diligence in carrying out the assigned work, and interest in work assignments. Therefore, the fourth hypothesis (H4) was proved only partially, i.e., the effect of internship organisation on the evaluation of students by firms – H4 (c) – was rejected at a 0.05 significance level. The other covariates showed a more complex pattern, but only at the borderline significance level, except for undergraduates in Business Economics and in Economic Sciences and Society, who were evaluated more favourably than others. Therefore, the fifth hypothesis (H5) was rejected. SEM showed that only the characteristics of trainees were significant.

The results illustrated above are also consistent with the outcomes observed in other studies on employment satisfaction. Many authors have shown that – together with salary and job security – one of the main determinants of job satisfaction is the work activity itself, i.e., duties and tasks (among many others, Clark, 2001). Given that the data analysed were collected as part of an ordinary administrative evaluation procedure, further investigations are needed to strengthen the previous findings and to shed light on other aspects of the effectiveness of internship programmes and the satisfaction of students and firms with these programmes.

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