



Economia Aziendale Online

Economia Aziendale Online

**Business and Management Sciences
International Quarterly Review**

**SPECIAL ISSUE
THE MULTIDIMENSIONAL CONTENT OF
ECONOMIA AZIENDALE**

**Exploring Theories and Applications
of Business Economics and Management
[1 of 3]**

Competence-based learning using practice firms: Its assessment from the students' perceptions

Ana Beatriz Hernández-Lara

Daniele Gualdi

Pavia, Aprile 2019
Vol. 10 - N. 1/2019

www.ea2000.it
www.economiaaziendale.it



PaviaUniversityPress

Competence-based learning using practice firms: Its assessment from the students' perceptions

Ana Beatriz
Hernández-Lara¹

Daniele Gualdi²

¹ Associate Professor
Universitat Rovira i Virgili

² Adjunt Professor
Università di Bologna
School of Economics of Forlì

Corresponding Author:

Ana Beatriz Hernández-Lara
Av. Universitat, 1 (43204)
Reus, Spain
Email:
anabeatriz.hernandez@urv.cat

Cite as:

Hernández-Lara, A.B.,
Gualdi, D. (2019).
Competence-based learning
using practice firms: Its
assessment from the
students' perception.
Economia Aziendale Online,
Special Issue, 10(1), 159-172.

Section: *Refereed*

Received: 25 September
2018

Published: 30 April 2019

ABSTRACT

La metodologia didattica della simulazione d'impresa fornisce diversi vantaggi in termini di coinvolgimento e motivazioni degli studenti. Tuttavia, sono richiesti riscontri empirici per dimostrare l'effettivo impatto sui risultati dell'apprendimento. Lo scopo di questo studio è duplice: sia esplorare l'apprendimento basato sulle competenze conseguite dagli studenti iscritti ai corsi di Virtual Enterprise (VE) in ambito universitario, che analizzare l'influenza di queste competenze acquisite sulla valutazione globale data dagli studenti a questa metodologia didattica. I risultati dimostrano che un elevato numero di competenze generiche ha mostrato un miglioramento significativo dopo la partecipazione al corso di VE, e in particolare il miglioramento è più ampio per l'acquisizione di abilità come la capacità di lavorare in un contesto internazionale, la capacità di elaborazioni di base, l'elaborazione e l'analisi di informazioni e dei dati economico finanziari, e il controllo di gestione. I risultati hanno anche evidenziato che capacità di apprendimento e leadership erano le competenze generiche con un impatto significativo sulla valutazione data dagli studenti, mentre il raggiungimento degli obiettivi aziendali e l'attività di consulenza erano le più significative competenze specifiche di gestione aziendale che hanno influenzato la valutazione da parte degli allievi nella valutazione della esperienza svolta nella impresa virtuale.

Practice firms provide several benefits in terms of engagement and motivation of students, but more empirical evidence is claimed for demonstrating their real impact on learning outcomes. The purpose of this study is twofold. On the one hand, to explore the competence-based learning developed by students enrolled in practice firms. On the other, to analyze the influence of these competences on the global assessment given by students to this methodology. The results demonstrate that a high number of generic skills showed a significant improvement after participating in practice firms, being this improvement larger for the acquisition of abilities to work in an international context, elementary computing skills, the processing and analysis of financial information and data, and budget control development. The results also pointed out that learning capacity and leadership were the generic competences with significant impact on the assessment made by students, while the contribution to reach the goals of a company and providing advice were the most significant specific managerial skills influencing the students' assessment of practice firms.

Keywords: Practice firms, competence-based learning, e-learning, students' perceptions, generic skills, specific managerial skill

1 – Introduction

In the last years there has been a high interest in the need of adapting education to cover the needs and requirements of the labor market (Sánchez-Rebull et al., 2011). This adaptation involves numerous aspects that englobe educational objectives, but also processes and methodologies used to reach them (Bianchi and Paganelli, 2017). Among the educational objectives, competences emerge with force due to the changes of labor market itself, which over time demands new, complex and multi-dimensional competences and skills to define and adapt the professional profiles (Man et al., 2002). Future workers need to be competent, and these competences will make them adaptable and flexible to face the fast changes and the strong competitive and unpredictable environment (Antonietti and Tedeschi, 2013). These competences are considered high-level characteristics with long-term effects, which help to perform a more successfully job role, and improve organizational performance (Ettlie, 1997; Hayes and Wheelwright, 1984; Ling, 2000).

These new demands of the educational context are translated into the need of overcoming traditional learning methods, and embracing new ones, based on digital technologies and information and communication technologies (ICT) that force the leap to go beyond a paradigm based on the separation between in-depth knowledge and its use as subsequent work experience (Hernández-Lara and Serradell-López, 2018; Hernández-Lara et al., 2018). According to Visco (2014), there is a need for radical changes in teaching methods and in the structure of training, gaining relevance the idea of new roles for instructors/teachers who now should act as moderators, facilitators and models for the students (Hernández et al., 2010). University students should build competences which include an extensive know-how that adapts their profile to the new demands of the labor market (Celli, 2010). A “push” model is embraced by this new educational paradigm that highlights the need of educational and training methods where the students search and construct their own knowledge, fostered through problem-solving and new digital technologies. According to Jonassen (1994), in order to build this kind of learning environment it is essential to emphasize the construction of knowledge rather than its reproduction, offering learning environments based on the real world and case studies, as opposed to predetermined instructive sequences; this means encouraging an open-source construction of knowledge by working together (Hernández-Lara and Serradell-López, 2018; Hernández-Lara et al., 2018; Tampieri, 2017).

However, despite the relevance of the competence-based learning and the role of digital methodologies in its acquisition and development, the contribution of some of these new learning methodologies is not sufficiently proved, especially in terms of learning outcomes and results (Fitó-Bertran et al., 2015). More empirical evidence is claimed by research in order to go more in depth about the competence profile that specific new learning methodologies are fostering and their real contribution in terms of educational outcomes, with the aim of identifying which teaching methods are the most adequate (Fitó-Bertran et al., 2015).

This study is interested in the assessment of one of this learning methods based on experiential learning and learning by doing facilitated by digital technologies, which is Practice Firms (PF) (Gualdi and Melagranati, 2015). The operational nature of the tasks and functions developed by students while participating in PF explains that their use has been traditionally linked to vocational education and training as well as labor education. Their operational nature constitutes also a reason why other learning methodologies of similar characteristics, like other

types of simulations and games more oriented to develop strategic functions and roles, have attracted more attention in research, being the educational potential of PF mostly unexplored.

The purpose of the paper is to fill this gap through the analysis of the learning process, in terms of competences acquisition by students, when participating in PF. Specifically, we are interested, firstly, in analyzing the students' perspectives on the competences that improve more when comparing their level before and after participating in the PF. And secondly, the competences that explain better the assessment made by students about their participation in the PF.

2 – Theoretical background

2.1 – *The Practice Firm (PF) teaching method*

Virtual enterprises or practice firms (PF) constitute a teaching method which reproduces the actual way of operating of a company regarding its organization, environment, relationships and objectives. PF includes all major corporate departments - such as purchasing, human resources, marketing, finance - where each of the students fulfils a specific task, with a high degree of approximation to the real world. Each student "works" in his or her office with other colleagues and carries out all corporate management transactions, thus enabling the virtual exchange of goods and services as part of a network of other domestic or foreign PF (Gualdi, 2016). In the European-Pen International model, which has been used as a benchmark for this research paper, there are currently more than 7,500 virtual enterprises or practice firms at international level.

According to Borgese (2011), the PF is an experience-based learning method where business is learnt by doing; this allows for greater motivation in students compared to other methods, as well as for the acquisition of more in-depth knowledge and better retaining of what has been learnt compared to students involved in mainstream didactic approaches.

Managing a virtual enterprise, as if it was real, makes it possible to understand its functioning, organization, the existing relationships between the different management areas, and practice a unified way of using the company's IT system, thus fully grasping the logic and aims of the transactions completed. This is a significant step, because it forces students to put into practice all the knowledge they have acquired on the subjects of business administration, applying them to company management, through a method based on learning by doing.

In this way "learning environments" are created, following the constructivist matrix, which Wilson (1996) defined as "places where learners can work and help each other mutually, using a variety of information tools and resources for guided learning or problem-solving activities". The PF constitutes a proactive learning environment, where the element of cooperative learning is a useful procedure for integrating cognitive and professional competences with social skills. As a matter of fact, the students' teams, in order to achieve common objectives, are required to work in a constructive and responsible way towards the decision-making process, establishing a positive interdependence relationship (Tampieri, 2017), dialogue exchange, and collective reflection (Comoglio and Cordoso, 1996).

The learning process for each student is built in close relationship with that of their colleagues, benefiting from resources related to collective intelligence in a dynamic and collaborative way (Trombetta et al., 2013). As part of this innovative virtual setting, the student is asked to interpret situations in the company from different perspectives; this means that

different roles are covered depending on the required performance, which makes the learner aware of the learning process, building knowledge through collaboration processes facilitated by the network (Gualdi and Melagranati, 2015). Entering the simulation lab and leaving the traditional lecture hall allows for “learning by doing”, understanding the company’s operations, applying the previous acquired knowledge, but with the purpose of developing new knowledge at the same time. In this regard, it means moving beyond the “talk and chalk” approach (Veneziani, 2012) and facilitating a new learning method for accounting and business administration subjects. In the lab where the virtual enterprise is set up it is possible to reconstruct a company environment, laying out the working tools in such a way that not only the presence of an enterprise – although virtual – is physically perceivable, but also the actual way of working inside it (Bianchi et al., 2014). In this regard, students are invited to take over all the management tasks of a real company, from its incorporation to corporate management activities, including manufacturing and trade of virtual goods and services, and finally winding up its business. In the course of this experience, students are expected to take into account all of the required legal paperwork, mandatory tax and bookkeeping deadlines, as well as using documents (invoices, bank payment forms, company records), management software and communication procedures which are commonly used in real companies (Gualdi, 2001).

2.2 – Literature review

Literature on PF, to date, has focused on the operation of this model as part of university courses, its didactic structure, and on a comparison between the practical experiences existing at international level in business administration courses especially with regard to accounting education (Tampieri and Gualdi, 2016). Important inputs have also been provided about the use of this approach for distance learning purposes and in virtual environments (Tampieri, 2015), as well as by corporate networking surveys (Tampieri, 2016) which focused on in-house and external relationships of PF with the purpose of optimizing its organization structure. The latter has been the focus of attention for Riebenbauer and Stock (2015), concluding that the traditional form of a virtual company is modelled on the basis of a mentor company, in the sense that an existing enterprise is used as a benchmark for the activities to be completed.

Special attention has been devoted also to the role of the lecturer, instructor or teacher of PF. According to Borgese (2011), teachers of PF courses need to be willing to take one step back and let students do the work under their supervision, giving up the idea of controlling all of their work in the classroom. The interaction in which these lecturers or instructors of PF are involved is much greater compared to the one in mainstream business courses (Schroeder 2001). The role of the lecturer as moderator, planner, consultant, mentor and facilitator in a virtual enterprise has been underlined also by Riebenbauer and Stock (2015). According to Lázaro-Gutierrez (2014), the teaching function of a lecturer is also performed through the coordination and empowering of students, most notably with regard to those who cover leadership positions. The role of lecturers is especially significant and demanding while the virtual enterprise is starting up, when the main goal is to guide and support students with regard to planning and implementing the first management decisions (Gualdi, 2016). During this phase, the lecturer assumes the role of activity coordinator, establishing in coordination with the different PF offices or departments, the goals to be achieved, carefully following the work done by the students and supporting them in the most complex tasks, by suggesting the most suitable operating approaches regarding the completion of the tasks assigned.

With regard to learning, it is worth mentioning in particular the comments of Saint-Yves Durand (2015), about the transfer of knowledge generated in PF. This transfer is defined as “re-contextualising” the knowledge and competences previous acquired, allowing for the development of new knowledge and competences.

These contributions highlighted by previous research are descriptive in nature and help to understand the relevance of PF and their contribution towards active learning in business administration subjects. However, not just descriptive studies but empirical ones are necessary to really understand the contribution that PF exert on achieving the skills recommended as part of the process described by the Bologna Process for university training.

Specifically, there is an important gap in the findings of previous research regarding empirical evidence that shows and measures the achievement of competences and skills by students participating in PF and other similar methodologies. This kind of studies could help to better understand the importance of having proactive teaching side by side with traditional frontal lectures on the same academic subjects, in order to achieve comprehensive training for student, which should not be limited to theoretical knowledge acquisition.

The gaps identified in previous research justify the purpose of this research which consists of analyzing, from the point of view of students, the contribution of PF to the learning process, considering the acquisition of generic and specific managerial competences.

More specifically, we intend to respond to two research questions. Firstly, what are the generic and specific managerial competences that PF work and improve more, from the students' perspective? To respond this question, this study compares their level of acquisition regarding every competence before and after participating in the PF. Secondly, what competences are the ones that better explain the general assessment made by students about PF?

From this perspective, our research is aimed at providing an innovative contribution to literature on PF, understanding the main learning outcomes achieved by students in terms of competence acquisition, using the teaching method under examination; the changes that have occurred in these competences before and after attending these courses through a self-assessment of existing competences and those acquired ex-post as a consequence of participating in the PF; and finally, the contribution of the competences acquired to the students' global assessment of PF as a learning methodology.

3 – Methodology

3.1 – *Sample*

This study was conducted using data of 135 Italian students of two Italian universities during the academic years 2015/2016 and 2016/2017, the University of Bologna (29% of respondent students) and University of Parma (71% of respondent students). All the students were enrolled in their first degree in Business and Economics, specifically in their second or third year. The students from Bologna managed the PF called “Perting srl”, whose core business was ICT. The students from Parma participated in the PF named “Bec soc. coop”., whose core activity was the food and beverage industry.

Bologna and Parma are the only two universities in Italy that have introduced and consolidated over time PF as a learning methodology.

In both universities, the courses that implemented this methodology were named "Simulimpresa" and had a similar structure in terms of setting-up and student involvement. Generally speaking, normally there are no more than 30 students in each group and the number of hours per course ranges between 40 and 50. The PF course is addressed to all students, regardless of the degree specialization they are studying for. Participants in "Simulimpresa" come from marketing, finance, economics and corporate management, business and non-profit organization courses. In this way, students can apply the knowledge that they have acquired during their academic studies to business practice.

3.2 – The questionnaire

The questionnaire used to collect the data was composed by three parts. The first two parts were about competences, and the last part included questions on characteristics and the students' academic profile.

The questions related to competences were elaborated using those included in the Tuning Project, which has been applied by previous research, in both PF studies (Bianchi et al., 2015), as well as with other methodologies based on simulation and experiential learning (Fitó-Bertran et al., 2014; 2015). The questionnaire considers a list of competences, classified into generic and specific managerial ones, described as a dynamic combination of knowledge, understanding, skills and abilities (Bianchi et al., 2015).

The questionnaire included 30 items regarding the generic competences and 21 items for measuring the specific managerial skills. Both parts were distributed among students before and after their participation in the PF, to facilitate afterwards the comparison in the level of acquisition of both kind of competences. All the items in these two parts used a 5-point Likert scale (where 1 means "Strongly disagree" and 5 means "Strongly agree"). The whole list of competences, both generic and specific managerial ones, can be seen in the tables included in this study in the Results section. The last part of the questionnaire, on the characteristics and academic profile of the students, included eight questions: the economic activity of the virtual enterprise in which they were participating, their university, age, gender, their degree, the name of their previous degree in the case they had previous university studies, and their opinion about the education received at university and the employment potential of their degree. Finally, the questionnaire included an item to capture the general assessment of the students to their participation in the PF, also considering a 5-point Likert scale.

4 – Results

All statistical analyses were carried out using RStudio, version 1.0.136 (R Core Team, 2015).

The mean age of the students participating in the PF was 21.7 years old. The sample was balanced in terms of gender, being composed by 71 women (52.59%) and 64 men (47.41%). 84.44% of the sample were just students, not working or looking for a job, and 88.15% of them considered very or quite proper the adequacy of the formation offered by the PF.

Generic Competences	N	Mean before	Mean after	Difference before-after	sd before	sd after	V (Wilcoxon signed-rank test)	P value
1. Capacity for analysis and synthesis	135	3.63	3.84	0.21	0.68	0.70	798	0.004 **
2. Capacity for applying knowledge in practice	135	3.64	3.83	0.19	0.70	0.76	726.5	0.004 **
3. Planning and time management (administration of time)	135	3.70	3.84	0.14	0.89	0.79	1137	0.067 +
4. Basic general knowledge in the field of study	135	3.53	3.80	0.27	0.64	0.69	643	0.000 ***
5. Grounding in basic knowledge of the profession in practice	135	3.25	3.60	0.35	0.73	0.70	567.5	0.000 ***
6. Oral and written communication in your native language	135	4.20	4.18	-0.02	0.82	0.89	1036.5	0.835
7. Knowledge of a foreign language	135	3.10	3.33	0.23	0.83	0.84	550	0.001 **
8. Elementary computing skills	135	3.69	4.07	0.38	1.03	0.87	397.5	0.000 ***
9. Research skills	135	3.64	3.91	0.27	0.83	0.72	752	0.000 ***
10. Capacity to learn	135	4.13	4.25	0.12	0.63	0.62	634	0.056 +
11. Information management skills (ability to obtain and analyze information from different sources)	135	3.62	3.83	0.21	0.69	0.65	503.5	0.003 **
12. Critical and self-critical abilities	135	3.80	3.92	0.12	0.72	0.71	1001	0.128
13. Capacity to adapt to new situations	135	3.96	4.17	0.21	0.82	0.72	1017.5	0.013 *
14. Self-directed learning skills	135	3.58	3.84	0.26	0.70	0.69	652.5	0.000 ***
15. Capacity for generating new ideas (creativity)	135	3.33	3.47	0.14	0.90	0.95	720	0.043 *
16. Problem solving	135	3.69	3.93	0.24	0.73	0.73	739	0.000 ***
17. Decision-making	135	3.54	3.73	0.19	0.79	0.79	1023.5	0.013 *
18. Teamwork	135	4.15	4.32	0.17	0.81	0.75	796.5	0.020 *
19. Interpersonal skills	135	3.64	3.93	0.29	0.77	0.65	360	0.000 ***
20. Leadership	135	3.34	3.53	0.19	0.92	0.90	768	0.006 **
21. Ability to work in an cross-functional team	135	3.62	3.90	0.28	0.74	0.73	629.5	0.0001 ***
22. Ability to communicate with non-experts (in a field or specific topic)	135	3.48	3.60	0.12	0.84	0.87	1053	0.176
23. Appreciation of diversity and multiculturality	135	4.03	3.99	-0.04	0.91	0.81	1303	0.704
24. Ability to work in an international context	135	3.24	3.64	0.40	0.97	0.83	615	0.000 ***

25. Understanding of cultures and customs of other countries	135	3.81	3.84	0.03	0.92	0.86	1079.5	0.694
26. Ability to work autonomously	135	3.88	4.01	0.13	0.77	0.73	735	0.099 +
27. Initiative and entrepreneurial spirit	135	3.55	3.60	0.05	0.83	0.84	996	0.590
28. Ethical commitment	135	3.70	3.87	0.17	0.89	0.85	1305	0.047 *
29. Concern for quality	135	4.05	4.01	-0.04	0.79	0.77	1019.5	0.570
30. Spirit to succeed	135	3.95	3.95	0.00	0.88	0.82	969.5	0.856

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '+' 0.1 '.' 1

Table 1 - Generic competences

Specific Managerial Competences	N	Mean before	Mean after	Difference before-after	sd before	sd after	V (Wilcoxon signed-rank test)	P value
1. Contributing/helping to reach the goals of a company	135	3.84	3.87	0.03	0.68	0.74	1200	0.626
2. Managing a company	135	3.24	3.48	0.24	0.84	0.83	642.5	0.005 *
3. Improving the competitive position of a company	135	3.39	3.59	0.2	0.84	0.82	1004	0.018 *
4. Designing and developing strategies for a company	135	3.30	3.47	0.17	0.86	0.84	1022.5	0.036 *
5. Providing managerial advice	135	3.15	3.31	0.16	0.86	0.88	1260	0.040 *
6. Managing managerial risks	135	3.05	3.27	0.22	0.80	0.87	889.5	0.006 **
7. Adopting different managerial/business roles	135	3.36	3.53	0.17	0.76	0.81	1242	0.031 *
8. Planning management projects	135	3.21	3.52	0.31	0.84	0.87	889	0.000 ***
9. Understanding management concepts	135	3.61	3.73	0.12	0.83	0.80	1264.5	0.134
10. Understanding management theories	135	3.54	3.64	0.1	0.82	0.92	1108	0.220
11. Processing and analysing financial information and data	135	3.01	3.44	0.43	0.98	0.00	932	0.000 ***
12. Understanding the role and functions of different economic agents	135	3.41	3.72	0.31	0.78	0.74	690	0.000 ***

13. Identifying and dealing with relevant economic information sources	135	3.32	3.53	0.21	0.70	0.75	969	0.009 **
14. Integrating ethics in organisational decisions	135	3.50	3.56	0.06	0.83	0.89	1021.5	0.573
15. Being capable of drawing up a financial statement?	130	2.89	3.12	0.23	0.92	1.05	1045.5	0.023 *
16. Being capable of analysing a financial statement?	132	3.00	3.15	0.15	0.88	0.96	1387.5	0.126
17. Being capable of developing budget control?	130	3.03	3.38	0.35	0.97	1.02	891.5	0.001 **
18. Being capable of developing a marketing plan?	135	3.03	3.18	0.15	1.06	1.06	1299.5	0.146
19. Being capable of developing a communication plan on a company?	135	3.21	3.41	0.2	0.92	0.93	1118	0.010 *
20. Being capable to deal with the administration related to human resources?	135	3.29	3.55	0.26	0.95	0.95	1055.5	0.004 **
21. Being capable to deal with the administration related to social security and payment of workers?	135	3.13	3.35	0.22	0.92	1.01	1348.5	0.027 *

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '+' 0.1 '.' 1

Table 2 - Specific managerial competences

Table 1 and 2 show descriptive statistics (mean and standard deviation) of the generic and specific managerial competences, respectively, before and after participating in the PF. In order to compare the level of acquisition of this kind of competences over time, we computed the Wilcoxon signed-rank test, recommended to compare two related, matched samples, or repeated measurements on a single sample to assess whether their mean rank differ in case of the population cannot be assumed to be normally distributed.

Table 1, on generic competences, shows that students valued communication skills in their native language, teamwork, and capacity to learn as the most relevant competences that they have before participating in the PF. The least valued ones were their knowledge of a foreign language, their ability to work in an international context and their basic knowledge of the profession. After taking part in the PF, the most valued generic competences were teamwork, capacity to learn and communication skills in their native language, while the lowest value was given to their knowledge of a foreign language, their capacity for generating new ideas and leadership.

From the comparison made on the generic competences of students before and after their participation in the PF, it can be concluded that all the generic competences that show a significant change indicate an improvement. The highest improvement was obtained in competences related to abilities to work in an international context, elementary computing skills and basic knowledge of the profession.

Table 2 points out the same analyses but conducted on specific managerial skills. Results show that before participating in the PF, students valued more their abilities to contribute to reach the goals of a company, their understanding of management concepts and theories, as well as integrating ethics in organizational decisions. The least valued specific managerial competences were being capable of drawing up and analyzing a financial statement, and processing and analyzing financial information and data. After taking part in the PF, students valued more their abilities to contribute to reach the goals of a company, their understanding of management concepts and theories, as well as the role and functions of different economic agents. On the contrary, their capabilities of drawing up and analyzing financial statement, and of developing marketing plans were the least acquired specific competences after their participation in the PF. Again, it can be concluded that a big amount of specific managerial competences improved after the participation in the PF. The highest improvement was obtained in the specific competences related to process and analyse financial information and data, being capable of developing a budget control, and understanding the role and functions of different economic agents.

Students valued positively this educational experience, giving a mean score of 4.27 over 5 to their global participation in the PF. The mean values of generic competences before and after this experience were 3.672 and 3.851 respectively. The mean values of specific competences before and after participating in the PF were 3.254 and 3.461 respectively. These results indicate that the values of generic competences were higher than the values of specific competences, and in both cases, it can be observed an improvement in the values after participating in the PF in comparison with the values before this participation.

To respond to the second research question, a regression analysis was conducted to analyze which competences influence more the global assessment given by students to their participation in the PF. Table 3 shows the results of this regression analysis. Three models were contemplated. The first one only includes the control variables, being these the demographic variables that define the students profile (specifically, age, gender and appropriateness of the PF). The second model considers controls and generic competences; and the third one, controls and specific managerial competences. In both cases, these competences were referred to the students' evaluation after participating in the PF. In Table 3, only the significant variables of each model were retrieved.

Table 3 points out that the three models were statistically significant, although the one that better explain the data is the second model, which includes control variables and generic skills. Considering the control variables, the level of appropriateness of the PF is the only that influences the general assessment made by students. So, no significant influence was found in the case of gender or age.

Regarding the generic competences, the ones with better explanatory power on the general assessment of the PF were the capacity to learn ($\beta=0.333$, $p<0.05$) and leadership ($\beta=-0.427$, $p<0.001$), with a positive and negative influence respectively. It means that students value high the PF for their contribution to their learning, while penalize the PF for its low contribution to

develop leadership capabilities. Other generic capabilities with significant positive impact on the global assessment given by students to PF were capacity to adapt to new situations ($\beta=0.221$, $p<0.1$), ability to work in cross-functional teams ($\beta=0.261$, $p<0.1$), and concern for quality ($\beta=0.252$, $p<0.1$).

	Model 1		Model 2		Model 3	
	β	Std. Error	β	Std. Error	β	Std. Error
Step 1. Control Variables						
Intercept	3.105	0.643***	0.456	1.008	0.394	0.929
Appropriate (very little)	1.418	0.864	1.560	0.908+	1.384	0.940
Appropriate (very much)	1.354	0.660*	0.727	0.662	1.205	0.700+
Step 2. Main effects: Generic competences						
Capacity to learn			0.333	0.157*		
Capacity to adapt to new situations			0.221	0.132+		
Leadership			-0.427	0.124***		
Ability to work in a cross-functional team			0.261	0.149+		
Concern for quality			0.252	0.147+		
Step 3. Main effects: Specific managerial competences						
Contributing/helping to reach the goals of a company					0.319	0.137*
Providing managerial advice					-0.297	0.131*
Adjusted R2	0.05059		0.2191		0.1562	
F-statistics	2.19*		2.045**		1.864*	

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '+' 0.1 '.' 1

Table 3 - Regression Analysis

With regards to specific managerial competences, only the contribution of the PF to reach the goals of a company and to provide managerial advice were proved to have a significant impact on the global assessment of students to this learning methodology, the first one has a positive effect ($\beta=0.319$, $p<0.05$), and the second one negative ($\beta=-0.297$, $p<0.05$). These results demonstrate that these are the two skills that explain the positive and negative evaluation of students to this learning methodology.

5 – Discussion and conclusions

The general assessment of students to the PF course is extremely positive, which is supported by the improvements achieved in almost all the competences contemplated in this study. Although similar results were obtained in previous research that highlighted the contribution of other experiential teaching methods on students' competences and skills, specifically in generic skills (Fitó-Bertran et al., 2014; 2015), for example using business games, this study makes a relevant contribution and goes a step further, analyzing the competence level before

and after the participation in the learning experience of the PF, and also pointing out which competences influence more in the general assessment made by students towards this learning methodology. The results of this study are crucial to really understand which works and not in PF from the students' perspective. In this sense, considering the generic competences, the students value positively the contribution of the PF to their learning capabilities, which is something described by previous research as placed in the very nature of this learning methodology based in the autonomous learning of students (Gualdi, 2001; 2016). However, other functions, less operative and more strategic, like leadership shows some deficiencies in this learning methodology, in contrasts with the results of previous research for example with regard to business games (Fitó-Bertran et al., 2014; 2015).

Regarding the specific managerial competences, the contribution of PF to reach the goals of a company and to provide managerial advice were proved to have a positive and negative influence respectively on the general assessment made by students. Again, these results recommend to combine this methodology with others where the students could put into practice the most neglected skills and competences that PF do not develop sufficiently.

The self-assessment made by students of the learning results achieved through the PF should be completed by the use of other perspectives, for example the lecturers' or instructors' evaluations. However, interesting values also emerge from this analysis. Firstly, the self-assessment of students enhances their motivation and leads them towards further learning goings (Batini, 2013); secondly, this analysis contributes to know the students' improvement of their competences, measuring how they change using PF and guiding the instructors functions and awareness to get a better assessment of the learning experience; and finally, it contributes to know more about the strengths and weaknesses of this experiential learning method.

REFERENCES

- Antonietti, A. and Tedeschi, G. (2013). Cavalcare le onde dell'innovazione: L'Innovazione come arma competitiva. *Harvard Business Review Supplement*, 12, 6-10
- Batini, F. (2013). Insegnare per competenze, I *Quaderni della ricerca* n. 02, Loescher Editore srl Torino, 31-36
- Bianchi, M., Gualdi, D. and Tampieri, L. (2014). The laboratory for enterprise simulation in Forlì and the performance of Perting Ltd. 2001-2012. In: Bianchi M, Baseska M, Ngo Mai S, Tampieri L, Verges J (ed). *Beyond The Horizon of Tempus Projects. Theory and Practice of Project Management*. Società Editrice Il Ponte Vecchio, Cesena, 235-241
- Bianchi, M., Hernández-Lara, A.B. and Gualdi, D. (2015). The contribution of virtual enterprises to competence-based learning: An assessment from the students' perspective. *Technology, Innovation and Education*, 1 (1), 1-4
- Bianchi, M. and Paganelli, G. (2017). The renewal of business ties and the experimental reproduction of B2B networks. *Economia Aziendale Online*, 8 (4), 227-234
- Borgese, A. (2011), Virtual enterprise: Transforming entrepreneurship education. *Journal of Instructional Pedagogies*, 6, 1-8
- Celli, P.L. (2010). *Generazione Tradita*, Mondadori, Milano
- Comoglio, M. and Cordoso, M.A. (1996). Insegnare ad apprendere in gruppo, LAS, Roma
- Ettlie, J.E. (1997). Integrated design and new product success. *Journal of Operations Management*, 15, 33-55
- Fitó-Bertrán A., Hernández-Lara A.B. and Serradell-López, E. (2014). Comparing student competences in a face-to-face and online business game. *Computers in Human Behavior*, 30, 452-459
- Fitó-Bertrán A., Hernández-Lara A.B. and Serradell-López, E. (2015). The effect of competences on learning results: An educational experience with a business simulator. *Computers in Human Behavior*, 51, 910-914
- Gualdi D. and Melagranati, F. (2015). Metodologie innovative nell'accounting education. La simulazione d'impresa. Indagine sulle motivazioni e aspettative degli studenti universitari di Forlì e Parma. *Quaderni DEM*, 4, 1-25
- Gualdi, D. (2001). *L'Impresa Simulata*, Paramond, Milano
- Gualdi, D. (2016). *Manuale di Simulazione di Impresa*, Società Editrice Il Ponte Vecchio, Cesena
- Hayes, R.H. and Wheelwright, S.C. (1984). *Restoring our Competitive Edge*, John Wiley & Sons, New York, NY
- Hernández, A.B., Gorjup, M.T. and Cascón, R. (2010). The role of the instructor in business games: A comparison of business games and online instruction. *International Journal of Training and Development*, 14, 169-179
- Hernández-Lara, A.B., Perera-Lluna, A. and Serradell-López, E. (2018). Applying learning analytics to students' interaction in business simulation games: The usefulness of learning analytics to know what students really learn. *Computers in Human Behavior* (forthcoming)
- Hernández-Lara, A.B. and Serradell-López, E. (2018). Student interactions in online discussion forums: Their perception on learning with business simulation. *Behaviour & Information Technology*, 37 (4), 419-429
- Jonassen, D.H. (1994). Thinking technology, toward a constructivist design model. *Educational Technology*, 34, 34-37
- Lázaro-Gutierrez, N. (2014). Proyecto ESAU. *Empresa Simulada Aplicada a la Universidad*. The University of the Basque Country, Bilbao
- Ling, X.L. (2000). An analysis of sources of competitiveness and performance of Chinese manufacturers. *International Journal of Operations & Production Management*, 20, 299-315
- Man, T.W.Y., Lau, T. and Chan, K.F. (2002). The competitiveness of small and medium enterprises: A conceptualization with focus on entrepreneurial competencies. *Journal of Business Venturing*, 17, 123-142
- Riebenbauer, E. and Stock, M. (2015). Design is our Success – the Importance of Modelling a Virtual Enterprise. *International Journal for Business Education*, 86th annual international conference

- Saint-Yves-Durand, S. (2015). L'Entreprise d'Entrainement dans un Contexte d'Apprentissage en Science Comptables. Communication, VIe Colloque en pédagogie universitaire, Université du Québec à Rimouski
- Sánchez-Rebull, M.V., Campa-Planas, F. and Hernández-Lara, A.B. (2011). "Dolceta" Educación online para los consumidores: Una descripción del módulo de alfabetización financiera en España. *El Profesional de la Información*, 20 (6), 682-688
- Schroeder, B. (2001). Kingsborough community college virtual enterprises: Case study report. Center for Advanced Study in Education
- Tampieri, L. (2017). The ties interdependence and the experience in project networks for local systems development in Transition Countries. *Economia Aziendale Online*, 8 (1), 45-55
- Tampieri, L. (2016). La Simulazione nei progetti internazionali ed il contributo alla ricerca sulle reti organizzative, in *Manuale di Simulazione di Impresa di Daniele Gualdi*, Società editrice Il Ponte Vecchio, Cesena, 223
- Tampieri, L. (2015). Innovating the Didactical Methodologies Applied in Universities Through Second Life and Practice Firm. *Technology, Innovation and Education*, 1 (3), 1-14
- Trombetta, S., Russo, R. and Chiadò, C. (2013). Piattaforme collaborative come leva di crescita. L'Innovazione come arma competitiva. *Harvard Business Review Supplement*, 12, 24-29
- Veneziani, M. (2012). *L'Accounting Education: Osservazioni Preliminari Sul Caso Italiano*, Franco Angeli, Milano
- Visco, I. (2014). *Investire in Conoscenza*, Il Mulino, Bologna
- Wilson, B.G. (1996). *Constructivist Learning Environments: Case Studies in Instructional Design*, Educational Technology Publications, Englewood Cliffs (NJ)