

Measuring the impact of Italian corporate training programs. The relevance of socio-economic dimension

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Purpose of the paper: The article aims to highlight the effectiveness of the training and development programs, assessed in relation to some control variables, such as information about attendees, company size, geographical location and topics of learning on growth rate of Italian provinces.

Methodology: The Fondimpresa data from 2015 to 2017 and the ISTAT data for the same period were used in order to carry out a descriptive and empirical analysis.

Main Findings: The preliminary results underline a positive effect on welfare of specific regions, but also some differences are captured between the provinces as well as the different types of training courses.

Practical implications: The investment in human capital can contribute to improve business performance and accelerate social and economic growth of specific geographical areas.

Originality/value: The article intends to contribute to bridging the gap in the literature regarding the relationship between corporate training program, economic performance and regional social repercussions. **Type of paper**: Empirical and descriptive.

Keywords: Corporate training; Kirkpatrick's model; Knowledge eco-systems; Socio-economic development

1. Introduction

Human resources have not always been at the center of corporate strategic management, but over time their centrality has become increasingly greater until today they become the fulcrum of competitive advantage. Corporate training can be a valuable tool for cultivating this advantage and surviving in such a competitive environment as the current one (Cifalino and Baraldi, 2009: Robinson and Robinson, 1998; Phillips, 1997; Phillips and Phillips, 2001; Kirkpatrick and Kirkpatrick, 2005).

The national Interprofessional Funds represent an opportunity for the development of professional skills available to companies, through mechanisms for the promotion and facilitation of funded and ongoing corporate training programs.

The training path in Italy has been accelerated by the EU and the national government following the long and persistent period of crisis, with the activation of tools aimed at generating innovation and fighting the crisis itself. Among these, continuing education has enjoyed renewed attention and a new centrality, so much so that it has become the strategic lever capable of contributing to the growth and development of fundamental knowledge ecosystems. In Italy, joining the Interprofessional Funds allows companies to allocate a fixed amount (0.30% of the contributions paid to INPS) for training and therefore for the professional growth of their employees. Employers therefore have the option of transferring this contribution to one of the

Interprofessional Funds and INPS will finance the training activities of the workers of companies that have joined spontaneously.

Among the Interprofessional Funds, Fondimpresa constitutes a wealth of ten-year experience that represents a unicum in the panorama of policies, due to the coexistence in the governance of the employers and workers, as well as for adherence to the realities of the territory. This coexistence has made it possible, over the years, to produce Notices and to allocate loans adhering to the changing reality.

This paper, starting from the data provided by Fondimpresa relating to the training activities carried out in the 2015–2017-time frame, appropriately processed, intends to provide a contribution to the literature on the role that corporate training programs have in economic and social development, to regional and provincial level.

The effectiveness of business training, in fact, as highlighted in the literature (Brinkerhoff, 1989; Bratton and Gold, 2003; Holgado-Tello et al., 2006; Kirkpatrick and Kirkpatrick, 2008, Philips, 2003; Diamantidis and Chatzoglou, 2012), is based on the following constructs:

- Reactions (the opinion of the beneficiaries of the activity about the entire project or a part of it. The goal is to measure the satisfaction, appreciation and engagement of the staff involved).
- Learning (the knowledge passed on to the participants, the skills developed and which attitudes have been changed).
- Usefulness (the changes in work behavior attributable to the transfer of skills acquired through training, including in some cases even a cost-benefit assessment).

The goal of the paper is to extend the assessment, including an additional level of analysis, which considers the economic and social variables in the context in which companies operate. This broadening of perspective appears appropriate in consideration of the purpose with which the Interprofessional Funds are born and operate: to improve the level of competition of business community through learning and training processes, making the country system more competitive.

The paper is structured as follows. Section 2 describes the findings of previous studies and highlights the shortcomings of the existing literature. Section 3 discusses the research design and data sets. Sections 4 and 5 present the methodology and analyze the results, Section 6 reports some concluding remarks and Section 7 highlights limitations of the study.

2. Literature Review

The training evaluation systems are mainly based on the hierarchical model developed by Donald Kirkpatrick (Kirkpatrick, 1976, 1994), adopted on a large scale in Italy in the 1990s and event today it is widely utilized due to its simplicity and practicality. It is a model with four outputs, which represent the levels on which the training acts (Figure 1).



Figure 1: Kirkpatrick's model

The first level, "reaction", helps to improve the quality of the training process (Kirkpatrick, 1959), valuating its effectiveness. It also offers a system of participation to train individuals, who are called upon to provide feedback on the activity and therefore to judge the lessons and training sessions. The second level, "learning", the most popular level used (Bersin, 2003), allows to obtain information on the effectiveness of the methodologies adopted and to verify knowledge, skills, attitudes, confidence, and commitment from a conceptual point of view. The third level is "behavior at work", which concerns the effective use of the skills acquired in the workplace (Kirkpatrick, 1960a). As in the previous level, also in this case there is a pre-training assessment and a subsequent one. The fourth level is given by the "final results", in other words by the impact on the organization, in terms of business performance (Werner & DeSimone, 2005; Kirkpatrick, 1960b; Kirkpatrick, 1998; Phillips, 1996).

Kirkpatrick's model has undergone some reinterpretations over time (Kirkpatrick & Kirkpatrick, 2005, 2006) and numerous criticisms. Among the limitations of the model, some authors have highlighted a certain fallacy of the causal link between the measure of the "reaction" and the effectiveness of the training process (Alliger and Janak, 1989; Alliger et al., 1997). In some cases, an inverse relationship between effectiveness and satisfaction has even been highlighted, the latter preferred by trainers, thus distorting the objectives of the training itself (Michalski, 2000).

Another imperfection of the model seems to come from the breadth of the variables that should be taken into consideration, not attributable exclusively to the new knowledge acquired and the improved skills (Holton et al., 2000; Mathieu et al., 1992; Bates et al., 2000; Cannon-Bowers et al., 1995; Ford and Kraiger, 1995; Holton et al., 2000; Kontoghiorghes, 2001; Salas and Cannon-Bowers, 2001). Indeed, the actual application of new skills is significantly conditioned by multiple individual and organizational factors.

Bates (2004) found that an excessive focus on "results" can be equally misleading, firstly because a limited training action has little chance of directly influencing company performance and, secondly, because such effects can take relatively long to manifest.

Some authors have expanded the model by adding a fifth level, which evaluates the economic effects of training by calculating the difference between costs and benefits (Philips, 2003; Alam et al. 2008). However, the limit deriving from estimating the ROI of activities that generate intangible benefits should not be overlooked (Rowe, 1994).

Kirkpatrick's model presents a further limitation, due to the fact that it focuses only on what happens after training (Bushnell, 1990; Reio et al. 2017). Many alternative models have also included inputs of the process into the evaluation, such as the competence of the trainer, the material available and the planning. Still others have further widened the angle of observation, also introducing the analysis or context, which refer to the identified need and the conditions for achieving the training objectives (6. Dick & Carey, 1996; Warr, Bird, and Rackham, 1970).

In summary, despite the numerous criticisms, Kirkpatrick's model remains among the most widespread nationally and internationally, albeit with some interesting modifications based on specific needs.

However, in the hypothesis in which it is desired to analyze not a single training action but the effectiveness of various Interprofessional Funds, in several reference years, such as those subject to observation of this research, it seems appropriate to extend the outputs of the process. Adult learning, precisely for the purpose of the system with which it is promoted by the Interprofessional Funds, must be related to national policies and socio-economic indicators. The effects of thousands of hours of training, the development of skills and their impact on the competitiveness of companies and the context in which they operate must be enriched with further perspectives, in order to assess their impact on the territory. Consequently, this work aims to propose a further level of evaluation to provide a more effective model for measuring the creation of value generated by training on the whole reference system.

3. Data and Variables of Interests

To analyse whether the training process produce significant improvements in the living conditions, we used the Fondimpresa data. The data include info related to the training of employees distributed in 110 provinces and 21 Regions. Though anonymized, the dataset contains important evidence about firms' characteristics, including the economic sectors in which the firms operate (according ATECO 2002) and the size. Also, the

educational level, age, employment contract, hours in training and subject of training are included in the data. The period covered goes from 2015 to 2017. Given that the data do not follow the same firms and individuals during the time, in order to give the panel structure to the data we perform an analysis at regional level, so we will observe 21 Regions for 3 years for a total of 63 observations.

To estimate the impact of training process on living conditions, we need to consider a proxy indicator for that performance. We use ISTAT data from 2015 to 2017 (at region al level). Measuring this performance can be traced to two different measures¹:

- 1. The first measure takes into account the performance considering the percentage of households for with the situation respect to the previous year is improved, unchanged and worsened.
- 2. The second one takes into account the performance considering the percentage of households for with the situation respect to the last 12 months is good, tolerable and poor.

More specifically, the dependent variables selected as outcomes consist of "Aspects of daily life", as summarized in Table 1. Since the data also includes information on the companies and employees involved in the training process, in the analysis we consider the percentage of employees-at regional level, that participate to the training, we also discriminate according the type of training (Table 2).

As additional independent variables in the analysis, a number of covariates were selected from the information included in the database to describe the employee's characteristics (education, gender, employment contract, training hours, sector of activity, size, per capita income) as detailed in Table 2.

Tables 3 and 4 contains the descriptive statistics for both the depended and the independent variables.

Term	Variable	Sources
Improved	Evaluation of Living conditions respect to the last year	ISTAT (2015-2017)
Unchanged	Evaluation of Living conditions respect to the last year	ISTAT (2015-2017)
Worsened	Evaluation of Living conditions respect to the last year	ISTAT (2015-2017)
Good	Evaluation of Living conditions respect to the last 12 months	ISTAT (2015-2017)
Tolerable	Evaluation of Living conditions respect to the last 12 months	ISTAT (2015-2017)
Poor	Evaluation of Living conditions respect to the last 12 months	ISTAT (2015-2017)

Table. 1 – Dependent Variables- Percentage of Households at Regional Level

Table. 2 – Independent Variable- Percentage at Regional Level- Based on participants to the training process

Term	Variables	Sources	
Education	Percentage with Master Degree	FONDIMPRESA (2015-2017)	

¹ See ISTAT website: http://dati.istat.it- (Aspects of daily life - Families: Opinion on the economic situation - Region and type of municipality - Households for evaluation of the economic situation compared to the previous year and compared to the last 12 months).

More specify: "Multipurpose on families: aspects of daily life - general part: The "Aspects of daily life" sample survey is part of an integrated system of social surveys - the Multipurpose Surveys on families - and detects fundamental information relating to the daily life of individuals and of families. (...) The information collected makes it possible to know the habits of citizens and the problems they face every day. Thematic areas on different social aspects follow one another in the questionnaires, allowing to understand how individuals live and how satisfied they are with their conditions, the economic situation, the area in which they live, the functioning of public utility services that should contribute to improving quality of life. School, work, family and relationship life, free time, political and social participation, health, lifestyles, access to services are investigated in a perspective in which objectivity of behavior and subjectivity of expectations, motivations, judgments contribute to define social information. The survey is one of those included in the National Statistical Program, which collects all the statistical surveys necessary for the country". http://siqual.istat.it/SIQual/visualizza.do?id=0058000&refresh=true&language=IT.

Males	Percentage of males	FONDIMPRESA (2015-2017)
Permanent job	Percentage with Permanent Job	FONDIMPRESA (2015-2017)
Training hours	Percentage of hours in training	FONDIMPRESA (2015-2017)
Finance	Training in Finance	FONDIMPRESA (2015-2017)
Management	Training in Management	FONDIMPRESA (2015-2017)
Computer	Training in Informatics	FONDIMPRESA (2015-2017)
	Training in Foreign languages	FONDIMPRESA (2015-2017)
Foreign Languages		
Marketing	Training in Marketing	FONDIMPRESA (2015-2017)
	Training in production techniques	FONDIMPRESA (2015-2017)
Production techniques		
Per capita Income	Log of Per capita Income= Income/population	ISTAT (2015-2017)

Table.3– Descriptive Statistics-Dependent Variables						
Variables	OBS	MEAN	STAND DEV	MIN	MAX	
Improved	63	5.847368	1.796634	2.5	10.9	
Unchanged	63	56.49825	4.68472	46.1	67.8	
Worsened	63	28.66491	3.751499	22	37.1	
Good	63	.9929825	.4956452	0	2.3	
Tolerable	63	56.41404	6.395909	42.6	65.8	
Poor	63	36.10702	4.989126	27.5	46.9	

Table.4– Descriptive Statistics-Independent Variables

Variables	OBS	Mean Stand DEV MIN Max
Education	63	.2074419 .0521041 .1017544 .359375
Males	63	.6353353 .0607062 .522293 .8074713
Permanent job	63	.8625054 .0401489 .7275032 .9298246
Training hours	63	20.30709 2.890093 12.52856 31.00637
Finance	63	.0118136 .009028 0 .0362869
Management	63	.1950612 .0856703 .0757212 .5447155
Computer	63	.1417097 .073761 .0234742 .4437579
Foreign Languages	63	.0755451 .0403244 0 .1896552

Marketing	63	.0806239 .0408307	.0035088	.2392473
Production techniques	63	.2170988 .1078191	.0185654	.4297206
Per capita Income	63	-4.22998 1.083813	-5.672967	-1.408783

4. Methodology

Due to the need of controlling for unobserved heterogeneity, this paper examines the effects of Training on Living Conditions indicators by employing both fixed-effects (FE) estimation techniques. As noted above, the indicators of performance (i.e., the dependent variables) include the Variables related to the evaluation of living condition (See Table 1 for more details). Based on this information, the following equations can be estimated:

$$Y_{it} = f \sum_{J=1}^{N} Training_{it} + oZ_{it} + \mu_i + \partial_t + E_{it}$$
(1)

Where:

- Y_{it} is a dependent variable for region i at time t, separately indicating each indicator used as proxies for living condition;

- Training_{it} is a variable indicating the percentage of employees involved in the N training subjects considered;

- Z_{it} is a vector of controls variables such Education, Males, Training hours, Permanent Job, Size, Sector of activity, Per capita Income;

- μ_i represents unobserved heterogeneity due to regional-level differences;

 $-\partial_t$ represents the time fixed effects;

- E_{it} is an error term assumed to be independently and identically distributed with a mean of zero and a variance of θ^2 .

5. Empirical Findings and Discussion

Since the year of its foundation, Fondimpresa has activated continuous training processes that have involved entrepreneurial realities belonging to different productive sectors of the national economic landscape. Despite the particular predilection for Manufacturing, the Fund has demonstrated the ability to penetrate central sectors of the Italian economic system, such as Construction, Real Estate, Commerce. At the same time, the Fund was able to attract companies from equally important economic sectors based on the evolution of the country's growth and development scenarios.

The study analyzed data from 2015 to 2017, considering 20 hours of training (on average per year), on 180.000 employees (on average per year) of 13.000 enterprises (on average per year) operating in 28 sectors, spread over 21 regions. The training activities under investigation were planned on the basis of the recognition of the specific training needs identified.

	Evaluation of Living conditions respect to the last year			Evaluation of Livi the last 12 months	ng conditions res	tions respect to	
VARIABLES	Improved	Unchanged	Worsened	Good	Tolerable	Poor	
Education	0.991	20.72	-33.31**	5.900***	27.37**	-20.88*	
	(4.678)	(16.28)	(14.60)	-1897	(12.44)	(11.49)	
Males	3.596	43.43***	-34.09***	-3.702	43.31**	-35.13*	
	(5.390)	(12.09)	(9.916)	(2.385)	(16.85)	(17.78)	

Table 4: Training and Living Conditions - Fixed Effects Estimation

Permanent job	8.358	27.91	25.53	6.234**	25.10	8.841
	(5.388)	(18.02)	(15.60)	(2.599)	(14.59)	(17.21)
Training hours	0.112	0.178	0.0734	0.123***	0.121	0.0181
	(0.191)	(0.357)	(0.336)	(0.0403)	(0.340)	(0.296)
Finance	0.493	19.11	-20.02	12.14*	3849	-12.15
	(14.78)	(63.86)	(48.67)	(6.890)	(42.86)	(42.34)
Management	2.728*	17.37**	-14.97***	-1.313	5.362	-4.641
	-1376	-6824	-4745	(0.944)	(5.304)	(5.048)
Computer Skills	9.542***	21.48**	-17.56*	2.102*	24.84*	-21.38
	(2.985)	(7.956)	(9.484)	(1.068)	(11.91)	(14.27)
Foreign languages	2.471	27.37	-35.49*	2994	37.13*	-36.78**
	(8.323)	(24.43)	(17.10)	(2.434)	(20.48)	(15.41)
Marketing	9.461*	-23.89	-2774	5.584**	-13.84	-5.691
	(5.088)	(16.62)	(13.73)	(2.204)	(12.20)	(13.22)
Production techniques	8.428**	20.45**	-15.12**	2.164***	4.746	-5.475
	(3.281)	(7.414)	(6.628)	(0.719)	(6.477)	(6.181)
Per capita Income	1.975	44.68***	-31.90***	0.963	3.013	-11.05
	(3.134)	-9517	(10.06)	-1941	(18.15)	(18.15)
Constant	21.45	229.8***	-89.09*	44.35	22.13	110.2
	(15.23)	(45.53)	(45.18)	(90.02)	(80.30)	(77.11)
Observations	63	63	63	63	63	63
R square	0.624	0.803	0.810	0.497	0.509	0.381
Number of Regions	21	21	21	21	21	21
Method	FE	FE	FE	FE	FE	FE

Notes: The treatment variables are the number of employees (at regional level in percentage) involved in the training. The other independent variables are Education, Males, permanent job, Training Hours, Per capita Income. In addition, we control also for size and the economic sector of activities². Time and region fixed effects are also added. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Going to the results, as to the variables of interest, an increasing in the Finance training improves the number of households (HH in what follows) for which the Evaluation of Living conditions respect to the last 12 months is good. As to the Management the effects is positive and significant on the percentage of HH that considerer the Evaluation of Living conditions respect to the last year improved and unchanged, otherwise the effect is negative, at very high significance level on the percentage for which is worsened. As to the Computer Skill the results are consistent with the expectation, the coefficient, for the most significant, allows us to suggest that an increasing in the training in this subject has a positive effect on living conditions, such as in Production Techniques. As to the Marketing the coefficient is positive and significant both on increasing in the percentage of HH that considerer their living condition improved and good. The Foreign Languages decreases the percentage of HH for which the life is worsened and poor at significant level.

As to the control variables the higher is the percentage of employees with master degree, the better are the living conditions. In addition, the higher is the percentage of males involved in the training process, the better are the outcomes of interest. The permanent job and the training hours affect positively and significantly only in one case our outcomes of interest ("good"), otherwise in positive but not significant. The Per-capita income effect is positive but not always significant, this result is not surprising since the outcome indicators contained several dimensions and this variable is important as control.

² The results related to the size and sector of activity are available upon request.

6. Conclusions

The objective of the study was to investigate the impact of the funded training plans on socio-economic wellbeing level of our country system. If the training falls on dozens of regions, hundreds of provinces, thousands of companies and employees, the four (or five, in the expanded version) dimensions of the Kirkpatrick model do not appear completely exhaustive. In fact, not investigating the effectiveness of a single company training module, but the success that complex national training plans have generated on the well-being and competitiveness of provincial and regional areas, it appears necessary to add further broader and wideranging dimensions.

The data obtained show a positive relationship between the number of hours of training provided and the improvement in the perception of living conditions, compared to the previous months or the previous year. Above all, the provision of company training hours on production, managerial, marketing and IT issues had a positive effect on the quality-of-life meters used. Instead, training focused on foreign languages has shown a perception of worsening on some aspects of daily life. Furthermore, the perception of well-being seems to improve with the increase in the level of culture and education of the interviewees; nevertheless, the conclusion that can be deduced from the correlation with the variable gender seems less clear.

However, the criticisms raised by the literature towards the higher levels of the Kirkpatrick pyramid derive from the impossibility of attributing a stringent causal link between training and change in organizational behavior or even company performance (Buganza et al. 2013). In the event that, as in this article, we intend to suggest a further level of repercussions of training on the socio-economic context, it is evident that these criticisms become even more acceptable. For this reason, our work intends to stimulate two concluding reflections.

The first is to propose a synthetic indicator more consistent with the study of knowledge systems, avoiding focusing exclusively on a single dimension of the Kirkpatrick model. The transition from the analysis of the effectiveness of a single corporate training action to the success of real ecosystems of knowledge requires the identification of an appropriately weighted aggregate that does not disregard the analysis of socio-economic effects.

The second consideration, which, like the previous one, may be developed in future research, intends to emphasize the importance of further expanding the observed variables, overcoming the logic of the mere "business point of view". As the Systemic View evaluation suggests, the evaluation of the effectiveness of knowledge creation eco-systems must include other actors involved in the training process (Barile et al., 2016). In this regard, it is considered appropriate to start from this study to implement an evaluation model that includes the various systems involved, ranging from trainers to training institutions, from public funding bodies to companies not directly benefiting from it.

7. Limits

The study has some limitations. In the first place, having only had the availability of anonymous data prevented specific correlations regarding both the companies included in the plans and the workers involved in the training; the effects of the training plans were studied on national base, but not directly on the employees who benefited from the training. In addition, the three-year period of observation could be extended to obtain a better analysis. The effects of training on the economic context were studied in relation to the following year, although we know that the fallout could have very different latency times. Finally, the limited number of companies per province prevented greater detail, capable of providing an additional level of geographical analysis.

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