Evaluation and Impact of Empretec - a Competency-Based Training for Entrepreneurs in Brazil: A Comparison between two Studies

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ABSTRACT

This paper presents the results of two different Brazilian studies on the evaluation and impact of a training for entrepreneurs named Empretec, which is offered by SEBRAE in all Brazilian States, reaching 44000 individuals trained until 2002. Since MSI's pilot study of Empretec in 1986-1988, apparently only two results evaluations were carried out, both in Brazil: the first one by Lopes (1999), which followed closely MSI's pilot study; the second one by Service for Assistance to Micro and Small Businesses (SEBRAE) and Brazilian Quality and Productivity Institute at Paraná (IBQP-PR) in 2002. Lopes developed a longitudinal study with a sample of convenience of 64 entrepreneurs and potential entrepreneurs, focusing the short-term results - 6 to 7 months after the Workshop. The second study employed a large probabilistic sample of 1445 subjects, from 12 different Brazilian States. These subjects were Nascent, New Entrepreneurs and Entrepreneurs with Consolidated Businesses. Both studies have extensive statistical analyses. Despite the differing methodologies, the findings suggest that Empretec impacts positively both on personal and on business levels. Therefore, this paper contributes to adding evidences on the efficacy of entrepreneurial training interventions, being of interest to researchers and also to practitioners.

INTRODUCTION

Poverty and unemployment still are big challenges in this new millenium. On 2003 United Nations Conference on Trade and Development - UNCTAD - gave estimates that 81% of the population of the least developed countries struggled to survive on less than US $ 2 a day. More than a billion people live on US $ 1 a day or less (ILO-2003, pp. 8-13). The scenario of estimated 800 millions of unemployed persons by year 2016 (CEFE, 1998b) poses an enormous challenge for everybody. Thus many attempts have been done trying to accelerate the development of entrepreneurs via training interventions expecting to generate income and/ or employment. For more than 40 years training programs have been promoted with the objective of developing small businesses.

So, there is a pressing need of replicating these EDP’s in a large scale. For this purpose its crucial to have a clear demonstration of their results, and even a cost-benefit analysis (CEFE, 1998b). However, as Harper and Finnegan (1998) state, EDP’s evaluation has been neglected or, in the best and few cases, it is being conducted on an ad hoc basis.

During the 80’s The United States Agency for International Development (USAID) supported an enormous research effort involving two consulting companies: McBer & Company (that was David C. McClelland’s consulting enterprise) and Management Systems International - MSI (located in Washington, DC). The training program that resulted from this research effort had its pilot study in Malawi (1986-1988). After that the training program was offered in Argentina to technological entrepreneurs. Since 1988 Empretec, under the coordination of UNCTAD (UN) and with the partnership of local organizations, was already implemented in 30 countries. It is being offered in Brazil since 1989. From 1993 on, Brazilian Service for Assistance to Micro and Small Businesses - SEBRAE - became the Empretec
Centre and local counterpart of UNCTAD. Brazil is the country with more Empretec trainees - until 2002 44000 individuals were already trained (SEBRAE, 2003).

Since the pilot study in Malawi, apparently only two different studies were carried out to evaluate the results and impact of Empretec, both in Brazil:

- The first one by Lopes (1999) - *Short-Term Results Evaluation of a Behavioral Training Workshop for Entrepreneurs - Empretec*;
- The second study - *Research on Empretec Impact in Brazil* - was conducted on 2002 by SEBRAE and Brazilian Quality and Productivity Institute at Paraná - IBQP-PR.

Lopes developed a longitudinal study with a sample of convenience of entrepreneurs and potential entrepreneurs, focusing the short-term results - 6 to 7 months after the Workshop. The subjects were from the Great São Paulo area. The second study employed a large probabilistic sample of 1445 subjects, from 12 different Brazilian States; only 408 fulfilled data on economic performance of their businesses. The subjects were Nascent, New Entrepreneurs and Consolidated Entrepreneurs Businesses (definitions are in the Methodology and Procedures Section).

Research on Empretec Impact in Brazil partially uses concepts and indicators commom to Global Entrepreneurship Monitor - GEM. In this way, its results could be compared to a large sample of Brazilian Entrepreneurs. The methodology comprised: 2 objective questionnaires and one self-administered questionnaire on Personal Entrepreneurial Competencies (PECs).

Both studies assessed results on two different levels - personal and business - and have developed extensive statistical analyses. Despite the differing methodologies, this paper will be comparing the results obtained, discussing their results, and pointing out to conclusions.

Therefore this paper intends to be contributing with its empirical results to the debate on the competencies trainability - personality traits and skills - that are characteristics of successful entrepreneurs.

**EMPRETEC: A COMPETENCY-BASED TRAINING FOR ENTREPRENEURS**

McClelland’s researches on entrepreneurs, on Achievement Motivation, and the numerous studies conducted by his followers provide support for accepting that entrepreneurs are individuals with high Achievement Motivation. McClelland and his followers designed a behavioral training for strengthening this motivation - Achievement Motivation Training - AMT that "set the tone for much of the entrepreneurship development that has taken place over the last forty years" (Tomecko, 1996). It also marked the conception of Empretec, because MSI found AMT itself or behavioral trainings inspired on it among the worldwide best behavioral entrepreneurial training practices.

Results assessment of AMT pointed out to its efficacy, but it required professionally trained facilitators on especial psychological concepts, limiting the possibilities of its application in large scale. AMT received criticisms of being too subjective because it worked with psychological concepts. These are part of the reasons why USAID undertook a large and state-of-art research project, the one it was already mentioned above.
McBer's work was commended by USA National Science Foundation by the seriousness of its effort to identify entrepreneur’s characteristics in 1983/1984. Its research was based on the application of job competency-analysis. The competencies identified by this methodology are in fact differential competencies (Spencer Jr. and Spencer, 1993, p. 9).

McBer's investigation comprised 2 phases: 1st) the sample of successful and average entrepreneurs were from 3 less developed countries: Equator, Malawi and India; 2nd) it involved only Malawian and Indian entrepreneurs. The final findings, mainly from the Indian sample, indicated that 7 competencies - as measured by the Focused Interview - were statistically significant at .05 level of confidence. They are the following: 1). Sees and Acts on Opportunities; 2) Persistence; 3) Information Seeking; 4) Commitment to Work Contract; 5) Systematic Planning; 6) Self Confidence; 7) Use of Influence Strategies (Mansfield, R.; et al., 1987).

Besides the competencies appointed by McBer's study, MSI (1990) added other 6 competencies based on a review of empirical evidences from 21 research studies on entrepreneurial characteristics: Concern for Quality; Initiative; Independence; Problems Solving; Preference for Moderate Risk Taking; and Goal Setting. The training was tested in Cranfield (U.K.) on 1985, by a group of EDP’s trainers and experts from many countries. After being modified, the pilot program was tested in Malawi, comprising 10 competencies aggregated in 3 clusters: Achievement, Planning, and Power, the same format that is currently used by Empretec (Table 1).

TABLE 1 - Personal Entrepreneurial Competencies (PEC’s)

<table>
<thead>
<tr>
<th>Achievement Cluster</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Opportunity Seeking and Initiative</td>
</tr>
<tr>
<td>2) Persistence</td>
</tr>
<tr>
<td>3) Commitment</td>
</tr>
<tr>
<td>4) Concern for Quality and Efficiency</td>
</tr>
<tr>
<td>5) Risk Taking</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Planning Cluster</th>
</tr>
</thead>
<tbody>
<tr>
<td>6) Goal Setting</td>
</tr>
<tr>
<td>7) Information Seeking</td>
</tr>
<tr>
<td>8) Systematic Planning and Monitoring</td>
</tr>
</tbody>
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<tr>
<th>Power Cluster</th>
</tr>
</thead>
<tbody>
<tr>
<td>9) Persuasion and Networking</td>
</tr>
<tr>
<td>10) Independence and Self-Confidence</td>
</tr>
</tbody>
</table>

METHODOLOGY AND PROCEDURES

Lopes (1999) longitudinal study involves one experimental group with two sets of data: before and after training. Interviews and Questionnaires were utilized for measurement of training results on 2 levels: on the behavioral level and on the business or business project level. Quantitative and qualitative analysis were developed. Sebrae and IBQP-PR (2002) involve one large group and the data was collected on July 2002 when the subjects were asked to inform some data from before and after training. Only quantitative analyses were developed.

Definitions:

Lopes: entrepreneurs are the subjects already in business. Potential entrepreneurs are subjects planning to start-up a business.
SEBRAE / IBQP-PR: Nascent Entrepreneurs are the ones involved with start-up activities, whose companies had less than 3 months, or more than 3 months without having paid salaries/dividends to its owners/ partners; New Entrepreneurs are the ones whose enterprises had 3 to 42 months old and had already compensate its collaborators/ workers; Consolidated Entrepreneurs are the ones whose enterprises had more than 42 months old and which had already distributed profits before 1999.

Sample:
Lopes used a sample of convenience, and subject’s inclusion depended on his/ her participation the Workshops held in the city of São Paulo from 07 to 09/1997 when 85 subjects were contacted, and 80 returned the initial questionnaires. Only entrepreneurs from Great São Paulo area were accepted for the follow-up phase. Short-time in this study meant 6 to 7 months after the training. 64 participants completed the whole procedure: 52 Entrepreneurs, 43 of which with consolidated companies (> 3 years of existence), and 12 Potential Entrepreneurs.

SEBRAE / IBQP-PR - A probabilistic casual simple sample was used. It was stratified and proportional to the number of trainees by geographic regions. Individuals included have undertaken the Workshop in different years, but most of them between 1999 and 2001. For feasibility reasons and also to allow the comparison with Brazilian results on GEM - 2001 study only 12 States were included on the sample.

As Lopes' study focused only one geographic region, and as SEBRAE and IBQP-PR study do not present results from Great São Paulo area separately, for the purpose of this comparison the regional level of analysis will not be contemplated.

Sample size: Total of 1445 subjects being: 591 Entrepreneurs with Consolidated Businesses (40,8%); 584 subjects with Nascent or New Enterprises (40 %); and 270 were Potential Entrepreneurs (19%). One questionnaire demanded economic information on their businesses, thus 408 subjects that fulfilled and returned this questionnaire, from which: 27 were Nascent Entrepreneurs; 65 were New Entrepreneurs, and 316 were Consolidated Entrepreneurs. 87% of the Consolidated enterprises were from the Services sector (Trade and Services).

Field Procedures:  
Lopes  
Base-line data - from the participants’ selection processes to Empretec were obtained their PEC’s profile. At the beginning of the Workshop the participants filled a questionnaire named - Empretec’s Research Project. They were informed they would be contacted by the researcher for a follow-up but they were not informed the time this would happen.
Follow-up Data - an interview comprising: 1) Focused Interview and 2) a Semi-Structured Interview based on questionnaires. They were usually held at trainees business place with an average of 2 to 3 hours. Focused Interview is an instrument with high potential validity, but "Inaccurate scoring is a potential threat to the validity of the test" (Mansfield et al., 1987, p.75). This is why the researcher was Certified on the Focused Interview Technique. From each Focused Interview resulted: each of 10 PEC scores and a PECs Total Score.

Semi-Structured Interview is based on questionnaires translated and adapted from MSI (1990) and Cooley (1991), in 2 versions: one for Entrepreneurs and other for Potential Entrepreneurs. All answers were written.

SEBRAE / IBQP-PR

Subjects sorted out were contacted by phone and invited to participate into the survey. They were gathered in groups at places chosen by SEBRAE. A total of 3 different self-administered questionnaires were employed:
1. related to Entrepreneurial Activity;
2. related to PECs; their scores were compared to results obtained on similar instrument answered at the first day of their Workshops (the subjects were asked to bring this profile with them);
3. business economic information

The subjects fulfilled the questionnaires under the orientation of a site supervisor. It took 2 hours in average. All questionnaires were reviewed by the site supervisor or by the team that coordinated the field survey. Many trainees were allowed to bring the third questionnaire to their companies because it required accounting data of their enterprises. Most of them returned the questionnaires directly to the site supervisor and a few to the State Research Coordinator.

STATISTICAL TREATMENT AND VARIABLES

Statistical Treatment

Lopes Multiple comparisons through the analysis of means and variance and T-paired tests were ran for each PEC. Homogeneity of variance was always tested and corrections of degrees of freedom were introduced when needed. For variables with more than one level F-tests of variance analyses were ran.

SEBRAE/IBQP-PR Indicators of Entrepreneurial activities were calculated and analyzed by demographic variables (gender, income, age, and education attainment), and then compared to Brazilian Entrepreneurs. The variables were regrouped depending the need of analysis and Chi-square tests were used, to indicate existence of statistically significant differences. A parallel survey was done by IBQP-PR - "Evaluation of Enterprises Performance" - tracing a panorama of Brazilian micro and small enterprises performance, with the same indicators employed on Impact of Empretec survey.

Confidence Intervals

Lopes - Confidence intervals were calculated covering 95% of the cases for gross sales variance - and for the variance of employees.

SEBRAE / IBQP-PR - Confidence intervals of 95% were used for the calculation of means (or population proportion) of the variables.
## VARIABLES

### TABLE 2 - Variables

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td><strong>Demographic variables</strong></td>
<td>Age (dichotomized above and below 35 years), gender, and educational attainment</td>
<td>Age, gender, educational attainment, family income, and geographic regions</td>
</tr>
<tr>
<td><strong>Degree of Business Maturity</strong></td>
<td>N.A.</td>
<td>Total Entrepreneurial Activity (TEA) of Nascent, New enterprises and Consolidated enterprises.</td>
</tr>
<tr>
<td><strong>Period of time for measuring economic performance</strong></td>
<td>Economic data compared were: one semester before and one semester after Workshop, for business clearly affected by season, baseline data was gathered from an equivalent period of the previous year. These data was compared to Indicator of Economic Movement (IEM) for São Paulo city; enterprises from Trade sector were compared to an Indicator of the Trade sector.</td>
<td>Economic data compared were from one year before and one year after participation into the Workshop (this year was fixed - 2001); these data were compared to Brazilian Entrepreneurs performance on the same period.</td>
</tr>
<tr>
<td><strong>Gross Sales</strong></td>
<td>Variation on Gross Sales</td>
<td>Variation on Gross Sales</td>
</tr>
<tr>
<td><strong>Number of Employees or Occupied Personnel</strong></td>
<td>Variation on the Number of Employees before and after training: full-time employees and its time equivalents (part-time, intermittent, self-employed; the amount of time worked for the business served to transform in full-time equivalent. If no time indication was provided each was valued as ¼ of full –time employee)</td>
<td>Occupied Personnel was measured by pay-roll and also all taxes on the pay-roll: it comprised formal and informal people engaged into the business, owner, partners, family members, interns and scholarship students</td>
</tr>
<tr>
<td><strong>Other Economic Variables</strong></td>
<td>N.A.</td>
<td>Added Value (AV), Net Result, Ratio AV/ Gross Sales, Productivity</td>
</tr>
<tr>
<td><strong>Personal level - PECs</strong></td>
<td>PECs Scores: each PEC was measured on a scale ranging from 0 to 5. PECs Total Score is the addition of the 10 PECs scores (0 to 50 points).</td>
<td>Average of PECs scores and Total PECs Scores before and after the Workshop. Same scale as used by Lopes.</td>
</tr>
<tr>
<td><strong>From Qualitative Analysis</strong></td>
<td>Entrepreneurial Behavior: Evidences of significant changes introduced in the business; For Potential Entrepreneurs: evidence of start-up or advanced phase of business implementation or significant changes introduced into their jobs.</td>
<td>No Qualitative Analysis</td>
</tr>
</tbody>
</table>

Observation: 5 pairs of partners are in Lopes' sample (trained apart from each other). For business effects: only the first one of each pair was considered. For measuring behavioral effects all of them were included.

### HYPOTHESES:

For Lopes' study they were the following:

1. There will be a significant effect on entrepreneurial behavior on a short-term period after entrepreneurial training - Empretec - detected through increase on subject’s PEC’s scores.
2. PEC’s Total Score variation will be due to increases on a few PEC’s individually considered, particularly Goal Setting and Independence and Self-Confidence.
3. Training effects will be detected on business economic performance at least on gross total sales increases.

For SEBRAE - IBQP- PR the ones more important for this comparison are:

1. The profile of Empretec Entrepreneur is similar to the typical Brazilian entrepreneur.
2. The Empretec Entrepreneur had progressed on his/ her entrepreneurial trajectory (ex. Potential Entrepreneur became an actual entrepreneur).
3. The Empretec trained subjects would have attained better financial performance than non Empretec trained counterparts.
4. *The Empretec trained subjects would outperform the non Empretec trained counterparts regarding production costs and costs with personnel.*

5. *It would have a strong correlation between the Total PEC Score with the economic performance of their enterprises.*

**RESULTS**

**TABLE 3 - Results on Demographic Variables**

<table>
<thead>
<tr>
<th>Demographic Variables</th>
<th>Lopes, 1999</th>
<th>SEBRAE and IBQP-Pr (2002)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>80% were men and 20% women</td>
<td>Predominantly male; women ranging from 28.6% to 34.1%; similar to Brazilian Entrepreneurs</td>
</tr>
<tr>
<td>Educational Attainment</td>
<td>87.5% with College education (completed or incomplete)</td>
<td>84% with College education (complete or incomplete); continuous search for education; much more educated than Brazilian Entrepreneurs</td>
</tr>
<tr>
<td>Age</td>
<td>56% of the participants were 35 years old or more (the entrepreneurs of my sample are a little younger than SEBRAE's)</td>
<td>Older than Brazilian entrepreneurs: 29.5% with age between 25 and 34; all others between 35 and 54; the last class 45 to 54 presented 5 times more Empretec than Brazilian entrepreneurs - 22.9% and 4.2% respectively</td>
</tr>
<tr>
<td>Standard of living or family income</td>
<td>Standard of living after Empretec: Living conditions and income a qualitative measure based on subject's perception: 39% declared it is better; 49% it is the same; 11% it is worse.</td>
<td>Family Income: number of living wages Superior to Brazilian entrepreneurs, before and after the Workshop; among Brazilian Entrepreneurs: 70% with family income inferior to 6 living wages; Empretec Entrepreneurs the initial difference becomes even more expressive after the Workshop: 63.7% were above 12 living wages; 8 out of 10 Empretec were above 9 living wages.</td>
</tr>
</tbody>
</table>

**SEBRAE / IBQP-PR:** Regarding demographic profile they concluded: "the Empretec Entrepreneur has a distinct profile by comparison to their Brazilian counterparts, excepting gender" .... someone a little older ... and with much more years of education and with better income" (p. 16). This negates hypothesis 1. "those data that vary with time (education attainment and income), changed significantly after Empretec participation" (p. 18). Thus hypothesis 3 is supported. The evolution among Empretec of New Enterprises by opportunity showed growth above 10%.

Both samples show that Empretec Entrepreneurs are much more educated, older, and with a much better economic situation than the average Brazilian Entrepreneur. Lopes sample have less female entrepreneurs - 20% - than the sample of Brazilian Entrepreneurs - 28.6% to 34.1%.

Lopes did not have the data on income, but she asked for their standard of living - which comprised wages and living conditions. 40% declared that it became better after the Workshop. It should be stressed that this result was obtained in a shorter period of time than the results obtained by Sebrae / IBQP-PR study, and Brazil also was hit by Asia Crisis, which depressed its Economy on the period researched by Lopes.

- **Description of Businesses**

  Lopes: 56% were micro (0 to 9 employees) and 42% were small businesses (10 to 99 employees), only one business was medium size. Regarding economic sectors: 22 businesses
were in trade, 21 in services and 17 were manufacturers. 82% of them had more than 3 years of existence. Their activities varied much: from the more traditional ones such as food manufacturing, knitting manufacturing, to industry of automation instruments, engineering systems and software services.

SEBRAE / IBQP-PR: 92% enterprises are micro or small. All enterprises together would represent a total of 6000 employees.

As shown, both samples are heavily composed by micro and small ventures - Lopes with 98% and Sebrae/ IBQP-PR with 92%. Lopes sample is predominantly of Consolidated Businesses - 82%, while Sebrae/ IBQP-PR sample had a proportion of 40.8%. But for the purpose of analyzing economic performance, a sub-sample of 408 enterprises completed the specific questionnaire, from which 316 were Consolidated Enterprises. This means 77% of are Consolidated Entrepreneurs, which is very close to 82% of Lopes sample.

It was also noted that on Sebrae/ IBQP-PR Economic Performance analysis the results and percentages of the aggregate of Consolidated Enterprises mirror very closely the results of all enterprises aggregated on the 408 sub-sample. This way is possible to compare economic performance between Lopes and Sebrae's samples.

- Effects of Training on PECs and other behaviors

Lopes (based on Focused Interviews): From the group’s total score variation of + 370 points, 5 PEC’s were responsible for 86% of increase: PEC6 - Goal Setting - 34%; PEC8 - Systematic Planning and Monitoring - 19%; PEC7 - Information Seeking - 12%; PEC9 - Persuasion and Networking - 11%; and PEC4 - Concern for Quality and Efficiency - 10%. This give support do Hypothesis 2. It can be observed in Table 4 that the variation of PECs Total Score was highly significant:

<table>
<thead>
<tr>
<th>Variation</th>
<th>Significance level</th>
<th>Limits of Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>t-Student</td>
<td>P</td>
</tr>
<tr>
<td>5.734</td>
<td>6.522</td>
<td>0.000</td>
</tr>
<tr>
<td>4.012</td>
<td>7.456</td>
<td></td>
</tr>
</tbody>
</table>

Paired t- tests for each PEC were reported. Given standard errors it can be considered that for PEC1 - Opportunity Seeking and Initiative, PEC3 - Commitment and PEC10 - Independence and Self Confidence the means did not vary. PEC1 did not show significance for the total group, but it seems that subjects with businesses reinforced it significantly.

Lopes found that mean variations of 6 PECs were significant at the level of p < 0.001. They are: PEC2 - Persistence, PEC4 - Concern for Quality and Efficiency, PEC6 - Goal Setting, PEC7 - Information Seeking, PEC8 - Systematic Planning and Monitoring and PEC9 - Persuasion and Networking.

The results for PEC2 - Persistence - could not be supported on Lopes study because of a variation of criteria: a few of the selection interviewer's exchanged one operationalization of PEC2 for one of PEC3 - Commitment, and vice-versa (this inversion does not affect the total score). But the findings for the other five PECs and also for the PEC Total Score are supported (hypothesis 1)
The results indicate the positive effect of training especially on the competencies which were the lowest scores before training: this is the cases of PEC8 - Systematic Planning and Monitoring and PEC4 - Concern for Quality and Efficiency. PEC6 - Goal Setting was also found to be significantly strengthened among entrepreneurs who after training assessed their businesses as very successful.

Qualitatively the findings point out that PEC’s 6 - Goal Setting, PEC 8 - Systematic Planning and Monitoring and PEC 7 - Information Seeking were the most used by the subjects after training, even among those who had not previously chosen these PEC’s as the focus of their development effort after Empretec.

Contrary to what was expected PEC10 - Independence and Self-Confidence did not show an increase; maybe this is due to the fact that this competency already was the strongest point of the group before training. However it was noticed that subjects who perceived great differences in their behaviors after training were the ones who reinforced it most.

Regarding demographic variables Lopes results were the following:
- no significant differences were found in PECs increases when compared to gender and education;
- age - only for PEC1 - Opportunity Seeking and Initiative - the finding was significant for younger subjects (35 or less). However, qualitative analysis did suggest that even for some individuals above 50 years Empretec served as a turning point: it triggered profound changes in Self-Concept and Self-Confidence.

SEBRAE / IBQP-PR (based on self-administered questionnaires) No significant PECs variation was found. PEC 1 - Opportunity Seeking and Initiative - and PEC 10 - Independence and Self Confidence showed practically the same mean. One PEC showed an expressive increase of 18%: PEC4 - Concern for Quality and Efficiency. All others have shown increases that varied from 8,5% to 12%. It was also noted a less dispersed pattern of PECs profile after the training, showing a tendency to the mean. They concluded that: "taking part on Empretec impacts on Personal Entrepreneurial Competencies, even though this influence is not so determinant. In fact, the PECs average are already high". (p. 20)

On this comparison, even though Sebrae/IBQP-PR study did not find significant PEC variation, the comparison between the results on both studies show some similarities:
- PEC 1 - Opportunity Seeking and Initiative and PEC 10 - Independence and Self Confidence showed practically no variation before and after training;
- PEC 4 - Concern for Quality and Efficiency increased on both samples (10% for Lopes and 18% for Sebrae)
- Range of increase - Lopes and Sebrae/IBQP-PR show compatible increases on some PECs, on the range of 8,5 to 12%.

The exception are the increases on PEC 6 - Goal Setting with + 34%, and PEC 8 - Systematic Planning and Monitoring with + 19% on Lopes study.

One can argue that: Lopes evaluated the results on a short-time period, where possibly Empretec impact would be stronger than the results found by Sebrae/IBQP-PR, where impact probably was more diluted, because of longer time range - their subjects were trained between the years 1994 and 2002, with majority between 1999 and 2001.
There is also the issue of the instruments used to assess PECs variation: maybe one reason why Sebrae/IBQP-PR did not find significant results on PECs resides on having employed a self-administered questionnaire. This type of instrument usually has lower validity because it can not prevent faking and social desirability effects, that can be circumvented by standardized tests, or Focused Interview, which was the technique used by Lopes.

On the other hand, Focused Interview validity depends on the accuracy of scoring. This only could be assured by adequate training. In this case the researcher received this training and is Certified on the application of this technique. On plus, the follow-up interviews were taped, making possible for her to review the scoring.

Being cautious not to overstate the findings, and even taking into consideration the difference in instruments, it seems though that Empretec could have a certain impact on PECs.

**Risk Perception:**

**SEBRAE / IBQP-PR** - It was noted that Empretec impacts positively in all categories:

- Nascent Entrepreneurs: 41% stated that the Workshop helped to dissipate fear of failure; 38% felt more confident regarding the risks involved in his/her entrepreneurial activity; 18% of this group reported that became concerned with risks unknown before the Workshop.
- Practically the same percentage express the risk perception For New Entrepreneurs.

"It is interesting to observe the tranquilizing effect of Empretec Workshop on all categories, mainly with Consolidated Entrepreneurs, 54% of them declared to feel more at ease with the risks proper to his/her activity". (Sebrae/ IBQP-PR 2002, p. 21)

**Impact on the way Entrepreneurs were doing things and Areas on which EMPRETEC has contributed most**

Lopes Qualitative analysis also showed that 50% of the trained perceived great differences in their behaviors during the follow-up period. Only 3 persons denied differences. Evidences were found that some persons broadened their consciousness, vision, improved their self-concept and self-confidence

Empretec Entrepreneurs were very active in their businesses after training: more than 2/3 of them have introduced changes in the way of running business, new products and services, have changed propaganda or marketing, and have developed new important businesses relationships.

SEBRAE / IBQP-PR 47% of all Entrepreneurs, 54% of the Potential entrepreneurs and 58% of the Consolidated entrepreneurs declared they redirected what they were doing after participating into the Workshop.

Sebrae/ IBQP-PR concluded that Empretec seems to give to the trainees an impetus/an impulse, so they show more initiative, feel more secure, more confident and capable to introduce changes and redirect the way they were doing business. "One is allowed to point out to the existence of a strong correlation between the assurance to venture and the participation into Empretec" (p. 22). Empretec has contributed especially "on global
strategic planning, on marketing and client relations, on setting and updating goals, planning and projects, and also on the improvement of products and services quality” (p. 22)

Thus, impacts of Empretec seems to extrapolate what can be captured by PECs variation: it has a tranquilizing and reassuring effect, that helps dissipating fear of failure, making Empretec Entrepreneurs more at ease with their entrepreneurial activities and risks. An expressive percentage of Empretec Entrepreneurs recognize a "boosting" effect: it gives more impulse, more motivation to introduce changes, even to redirect the way things have been done. Therefore, after Workshop the Entrepreneurs seem more active, capable, and with an improved self-concept. Some Entrepreneurs have implemented profound alterations in their businesses after the training.

Thus, Empretec training seems to have an impact even at a more profound level - traits level, which usually offers more resistance to change.

- Effects of training on business performance

Lopes: The means of total gross sales and number of employees were a little higher after training, but not statistically significant. Confidence intervals of 95% were calculated for gross sales variance and also for the variance of employees (Table 5).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Before</th>
<th></th>
<th>After</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>(Standard Error)</td>
<td>Mean</td>
<td>(Standard Error)</td>
</tr>
<tr>
<td>Gross Sales (Reais)</td>
<td>384,862</td>
<td>(77,199)</td>
<td>402,766</td>
<td>(76,964)</td>
</tr>
<tr>
<td>Number of Employees</td>
<td>17.37</td>
<td>(4.59)</td>
<td>17.82</td>
<td>(4.10)</td>
</tr>
</tbody>
</table>

Lopes also used the same type of transformation employed by MSI (1990) and Cooley (1991): the median value of variation on gross sales served to dichotomize this variable and also for number of employees. This transformation allowed for comparisons between gross sales, number of employees and PECs Total Score Mean. The results obtained were also non-significant being p = 0.34 for sales and p = 0.491 for employees.

Given the impact of Asian Crisis in October 97 in Brazil, Lopes anticipated the possibility of not finding significant differences on business performance. Thus, to analyze entrepreneurs’ businesses performance comparisons with economic indicator for São Paulo City in the same period were done. The more complete and representative series of indicators available was called Indicator of Economic Movement (IEM) and it is: “a weighed average of five variables that indicate the economic activity in each region” (SEBRAE-SP/FIPE,03/98). The basis of comparison is 1995 = 100. For the follow-up period - August/97 through March/998 the consolidated numbers for São Paulo City showed a decline of 8.62%. It was also considered the decline of - 7.43% of Trade in Great São Paulo area (data from Trade Federation of São Paulo State, 1999).

For this comparison it was necessary organizing a table containing percentage of gross sale variation, period in which sales was measured, and economic sector: 29 entrepreneurs out of 47 (62%) increased their sales: 16 from these enterprises were mostly or exclusively on trade activities. Other 3 entrepreneurs (6%) maintained gross sales level. These results seem
to suggest that training could have reinforced competencies needed to deal with, survive and even grow in adverse situations.

SEBRAE / IBQP-PR - Their economic performance findings were:

**Total Added Value** - it represents the wealth that was effectively generated by the productivity process all 408 business - was R$ 243 million ( = US $ 84 876 000)

**Productivity:** R$ 42 mil (US$ 14 670) which was superior to the mean of R$ 17 mil (US$ 5938) from Brazilian Entrepreneurs.

**Cost of creation of job post:** R$ 4800,00 (US$ 1677) which is much less than the investment needed to create an industrial job post.

**Gross Sales:** From the total of 408 enterprises owned by Empretec trained entrepreneurs: gross sales increased 25%. 71% reported increase on gross sales, and only 17% reported a decrease.

**Occupied Personnel:** 253 Empretec Entrepreneurs (62%) informed about occupied personnel. From these 157 enterprises (48%) reported a mean increase of 48%; 33 enterprises (13%) informed a mean decrease of 31%; for the rest - 65 companies (25%) - number of personnel was stable. Calculating the mean increase for the total of these companies (253) it reached an expressive 29%.

**Salaries of Occupied Personnel:** 250 entrepreneurs (61% out of 408) informed on this item. 145 enterprises (58%) reported a mean increase of 23%, while 82 companies reported a mean decrease of 33%. Considering the total of those 250 companies practically the payroll remained stable (increase of 3%). But the main reason for this result could be attributed to expressive increase of 29% of occupied personnel on these enterprises.

**Productivity:** 254 entrepreneurs reported on this item. From those 135 enterprises (53%) reported an increase of 28%; 99 enterprises reported a decrease of 23%. Considering the total of those 254 companies practically the productivity remained stable (a decrease of 3%)

**Added Value (AV):** AV increased for 69% - 280 enterprises; for other 19% - 78 companies -it was reported a decrease of 11% of AV. For the total of 408 companies the AV increased 20% in average.

**Overall Results:** 50% - 203 companies - reported an increase on the results of 66% in average; 91 companies - 22% - reported a decrease of 41%; 33 reported stable results. For the total of 408 companies results increased 36% in average.

Sebrae/IBQP-PR considers that it is not possible to state about the representation and stratification by business categories (nascent, new or consolidated) of the sub-sample of the 408 enterprises from which economic performance data were obtained and analyzed. As the influence of external factors was not controlled, care should be taken to conclude on direct correlations between entrepreneurial performance before and after training Empretec. But, in comparison to Brazilian Entrepreneurs performance it was noticed that Empretec Entrepreneurs were differentiated: their micro and small businesses tended to have a performance superior to the Brazilian mean.

The data reported are from different years and expressed in monetary units - Real. Inflation effects were not discounted. This way, some results for those 408 companies are quite expressive - increases of: 25% on gross sales, 20% on Added Value, and 36% on overall results. To the criticism one could make that inflation effects were not discounted on the results Sebrae/IPQP-PR, what could be argued is that inflation was much lower than used to be before 1994, because of the stabilization of Brazilian Economy. But, it is true that discounting inflation would have given more credibility to these expressive numbers.
It is also known that on this segment of micro and small businesses accurate accounting numbers is usually not the rule, and one could question the reliability of the data informed by Entrepreneurs on both studies. It could be argued that the pure fact that on Sebrae/IPQP-PR study, from 1445 subjects only 408 completed this part of the research, and not all 408 completed all items, could give some assurance that the data informed would be the more accurate. Otherwise, it seems they would have given up reporting them. As for Lopes study, what could be said is that the entrepreneurs were assured regarding the confidentiality of treatment of the data, and they seem to be informing the best data available for themselves. Some informed the best approximated value, a few had this information on electronic datasheet.

From this comparison, it is noticed that the economic evolution is particularly more visible on Sebrae/IPQP-PR study, given the fact that on Lopes research, the results were particularly affected by declining economy. But, even being cautious (Sebrae/IPQP-PR, 2002, p. 29), it could be concluded that: Empretec Entrepreneurs were evolving positively as business men - Gross Sales, Added Value, ratio AV/ Sales and overall results increased expressively (hypothesis 2);
- Empretec Entrepreneurs reached a better performance than Brazilian Entrepreneurs. Their productivity was superior to the average productivity of Services Sector (hypothesis 4);
- Empretec Entrepreneurs were increasing job posts - 29% of increase, although this increase did not impact on productivity, which remained practically stable;
- AV/ Sales for 408 Empretec Entrepreneurs - where 87% are from Commerce or Services showed - an increase of 76%; proxy numbers were: for the Industry - + 45%, and for Commerce - +25%.

Given this word of caution, it seems that Empretec training represents an important inflexion point on the lives of most of subjects trained. Even taking into consideration that its public in quite differentiated from the start, it is hard to negate the positive evolution on important indicators of entrepreneurial activity.

- **Effects with Potential Entrepreneurs:**
  - **Lopes**: 4 out of 12 potential entrepreneurs have started-up or were in advanced stages of implementing their businesses; 5 others were still employees, 3 of which showed evidences of more active behavior.
  - **SEBRAE / IBQP-PR**: Before training 25% of Nascent and New Entrepreneurs held paid positions in organizations, and this percentage decreased to 18% after the Workshop, representing a substantial decrease of 31%. Another data revealed that 28% of trainees that were employees became partners or owners of formal ventures after the Workshop.

Therefore, potential entrepreneurs also seems to profit from Empretec Workshop: some evolve from employees to implementing their business ideas, starting-up their ventures, or becoming partners of formal enterprises.

**CONCLUSIONS AND IMPLICATIONS**

Lopes found statistically significant increase on 5 PEC scores and on PEC Total Score (< 0.001), giving support to hypothesis 1 of her study: behavioral training of short duration - Empretec - provoked an increase on the general level of entrepreneurial competencies. PECs
strongly reinforced were Goal Setting which is related to Achievement Motivation, and Systematic Planning and Monitoring which is a cognitive skill related to thinking and problem solving. Hypothesis 2 was also supported: it predicted that a substantial part of the variance would be caused by only a few PECs, one of that was Goal Setting. Other 3 PEC’s that did increase significantly were: Concern for Quality and Efficiency, Information Seeking and Persuasion and Networking; the first two are behavioral expressions of Achievement Motivation and the later is an expression of Power Motivation.

Although Independence and Self Confidence did not show any sensible increase on both studies, other items and qualitative analysis suggests that improves on Self Concept and Self Confidence happened.

Sebrae/IBQP-PR study did not find statistically significant variation on the competencies, maybe because of the instrument used - a self-administered questionnaire, and the period of time was longer, when the impact of the training could have been weaker. But, answers to items on other questionnaire revealed that Empretec Workshop seemed to have an impact on the attitudes of subjects: Empretec Entrepreneurs feels more secure regarding their business activity and their business vocation. This effect is also captured on the qualitative analysis on Lopes study.

As the instruments used by both studies are different, it still seems that other studies will be needed to dispel doubts, and help on reach to firmer conclusions on the effect of training on the competencies..

Regarding economic performance of entrepreneurs’ businesses, for Lopes study these results were not statistically significant; however their actual performance - 62% had increased gross sales contrasting to declining economic indicators - seems to suggest the effect of training on business level. This effect is corroborated by SEBRAE/IBQP-PR findings. On their comparison of Empretec Entrepreneurs with average performance of Brazilian services sector (excluding Finance and Communications) the numbers were: Brazil - for the period 1996 - 2000 the Added Value increased 8%, while for Empretec Entrepreneurs it increased 20%; for the same period Brazilian productivity remained stable - US 4540, which is inferior to US $ 5938 obtained by Empretec Entrepreneurs; in relation to occupied personnel, Brazil showed an increase of 8,5%, while for Empretec Entrepreneurs it reached an expressive 29%.

This study was very successful because their findings gave support to most of its hypotheses: it showed strong correlations between being trained and positive changes on subjects socio-economic profiles; it was found increases on individual and family incomes, Added Value by their businesses, and an expressive percentage of job posts were created.

So, it could be stated that Empretec Workshop seems quite successful because its trainees in a short period of time succeed to increase their own incomes, improve their businesses, create jobs, and opportunities for themselves, their families and others.

It is as if Empretec training would have helped to reinforce competencies important to survival and growth even under unfavorable conditions. Although both studies did not have a control group to scientifically disentangle the influences of maturation and changes of economic infrastructure, the comparison of results from the 2 samples with global economic
indicators and also with Brazilian Entrepreneurs (GEM study) served as if it were an enormous control group.

The results of these studies provide some support to the possibility of developing/strengthening entrepreneurial behavior, accelerating a process that otherwise could happen at a more slow and erratic pace, and this is especially important for less developed economies.

On the other hand, given the fact that Empretec Entrepreneurs have a differentiated profile from the start - better education, better economic conditions, and older - than their Brazilian Entrepreneurs counterparts, it should be interesting to have a comparison between Empretec trained Entrepreneurs and another group of non Empretec trained, but with similar demographic profile.

We agreed that entrepreneurial performance can not be reduced to a few variables, and that influence of external factors could not be excluded. So, attempting to establish a direct link between strengthening of some PECs and some performance variables still is a very simple and poor model; it should be improved because business performance seems to be a product of much more complex variables that could intervene and moderate the impact that the entrepreneur could have.

Given the accelerated tendencies affecting the job market we suggest that future studies on training results improve the criteria of number of employees / persons occupied so it could capture in a more precise way the number, length of time, and income earned by the persons involved with the businesses.

Future samples of entrepreneurs should focus on the entrepreneurs who are the sole responsible for business results - it means, he/she would be the only proprietor or the partner which has all the power to run the business. Other suggestion for future samples is to reduce the heterogeneity of the subjects: either Consolidated Entrepreneurs or Potential Entrepreneurs.

Another suggestion is to focus the sample on one economic sector because this would facilitate controlling the exogenous variables of economic variations on training effects. This would allow for more valid comparisons with indicators specific of the sector, in the absence of control groups.

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