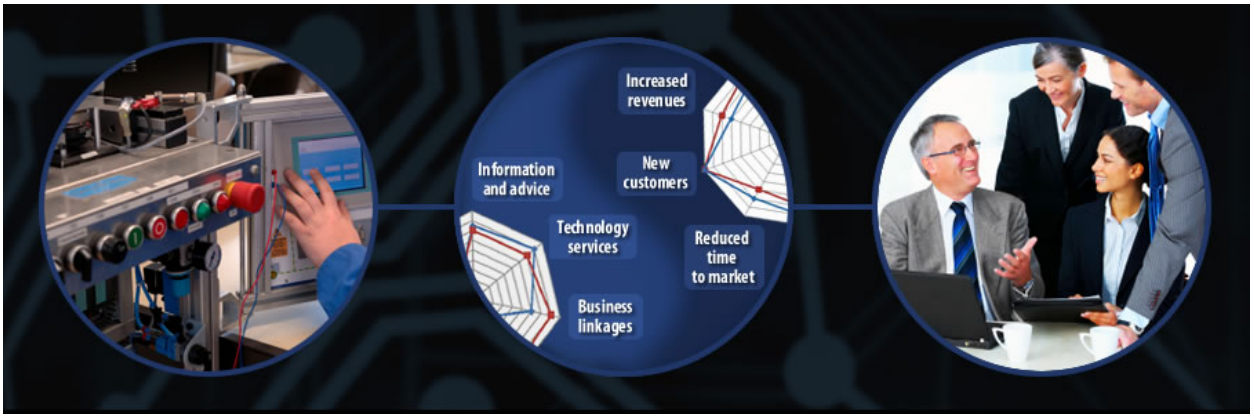


# A Comprehensive Analysis of the Impact of the Global Access Program (GAP) on Finnish Companies Supported by Tekes 2004-2011

**Provided by**
**The Evidence Network**
**www.theevidencenetwork.com**

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Measuring Innovation Impact

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**The Evidence Network (TEN) has conducted a comprehensive analysis of the impact of the Global Access Program (GAP) on Finnish companies supported by Tekes. The three parts of this analysis are:**

**Part 1. A Comparison of the 2010 and 2012 Cohorts: In 2010, TEN assessed the impact of GAP projects undertaken between 2004 and 2009. And in 2012, TEN assessed the impact of GAP projects undertaken in 2010 and 2011. In Part 1 of this document, we compare the impact of the 2010 and 2012 cohorts.**

**Part 2. An Examination of the Relationships between the Importance of GAP Offerings, and Immediate and Intermediate Impact: This analysis, provided in Part 2 of this report, describes how GAP is achieving impact on Finnish companies. We regress measures of company attributes, importance of offerings, and immediate impact against a measure of intermediate impact, to determine the most significant predictors of GAP impact on company performance.**

**Part 3. An Analysis of Total Economic Impact: In Part 3 of this document we estimate the total contribution to Finnish GDP and employment of all GAP projects supported by Tekes.**

**Some conclusions stand out:**

1. **On impact trends: Overall, the impact of GAP is improving over time. GAP's impact on the 2012 cohort was generally greater than its impact on the 2010 cohort, both in terms of immediate impact on company resources and capabilities (improvement on seven of eight measures), and in terms of intermediate impact on company performance (especially in terms of new international customers).**
2. **On the predictors of GAP's impact: Our analysis of the predictors of the impact of GAP on the performance of participating companies shows that the best predictors of GAP impact on improved company performance are GAP impact on improved company resources and capabilities, particularly strategic impacts.**
3. **On the total economic impact of GAP: Using a very conservative and reliable methodology based on primary impact data, we show that GAP has contributed a total of approximately €20.5 million to Finnish GDP and 143 jobs.**

# Table of Contents

## Executive Summary

The Evidence Network (TEN) has conducted a comprehensive analysis of the impact of the Global Access Program (GAP) on Finnish companies supported by Tekes. The three parts of this analysis are:

Part 1. A Comparison of the 2010 and 2012 Cohorts: In 2010, TEN assessed the impact of GAP projects undertaken between 2004 and 2009. And in 2012, TEN assessed the impact of GAP projects undertaken in 2010 and 2011. In Part 1 of this document, we compare the impact of the 2010 and 2012 cohorts.

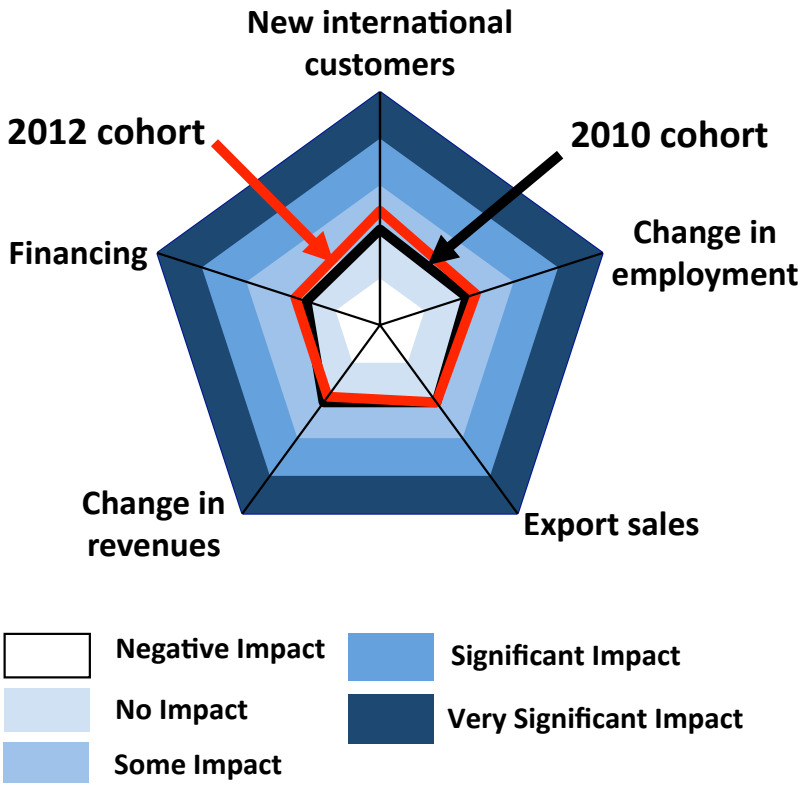
Part 2. An Examination of the Relationships between the Importance of GAP Offerings, and Immediate and Intermediate Impact: This analysis, provided in Part 2 of this report, describes how GAP is achieving impact on Finnish companies. We regress measures of company attributes, importance of offerings, and immediate impact against a measure of intermediate impact, to determine the most significant predictors of GAP impact on company performance.

Part 3. An Analysis of Total Economic Impact: In Part 3 of this document we estimate the total contribution to Finnish GDP and employment of all GAP projects supported by Tekes.

Our findings present multifaceted evidence of the impact of the Global Access Program on Finnish companies and improvement in its impact over time. GAP is helping participating companies succeed in the global market by helping them in many ways, including by helping them attract new international customers. This assistance results in impacts on company performance, including impacts on revenues, exports, and employment, and substantial contributions to Finnish GDP (€20.5 million) and employment (143 jobs). The following summarizes the three parts of this report.

1. ***On impact trends:***

   Overall, the impact of GAP is improving over time. GAP's impact on the 2012 cohort was generally greater than its impact on the 2010 cohort, both in terms of immediate impact on company resources and capabilities (where there was improvement on seven of eight immediate impact factors), and in terms of intermediate impact on company performance (especially in terms of new international customers). As shown in the diagram below, GAP's impact on the 2012 cohort was greater than its impact on the 2010 cohort in terms of impact on New international customers, Change in employment, Export sales, and Financing received.




Comparison of Average Intermediate Impact (All measures): 2010 and 2012 Cohorts

2. ***On the predictors of GAP's impact:***

Our analysis of the predictors of the impact of GAP on the performance of participating companies shows that GAP's impact on company resources and capabilities is the best predictor of GAP's impact on company performance. This finding is consistent with the theory described by The Evidence Network's logic model (please see Appendix A), that innovation intermediaries impact company performance by impacting their resources and capabilities. Our regression model shows that both strategic and expansion related immediate impacts are significantly associated with longer-term impacts on company performance, although this relationship is stronger for strategic impacts. Among control variables, only company growth rate is a significant predictor of impact on company performance.

3. ***On the total economic impact of GAP:***

Our findings show that GAP contributed a total of approximately €20.5 million to Finnish GDP and 143 jobs. As the total cost of GAP for the eight years (2004-2011) was approximately €1.2 million, the net impact is approximately €19.3 million and the benefit-cost ratio is approximately 17.1.

# Introduction

The Evidence Network (TEN) has conducted a comprehensive analysis of the impact of the Global Access Program (GAP) on Finnish companies supported by Tekes. The three parts of this analysis are:

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All three parts of this analysis are supported by TEN's impact assessment methodology which is described in Appendix A. Appendix B provides a description of the 2010 and 2012 surveys, Appendix C provides examples of our survey question formats, and Appendix provides background information on TEN principals.

# Part 1: A Comparison of the 2010 and 2012 Cohorts

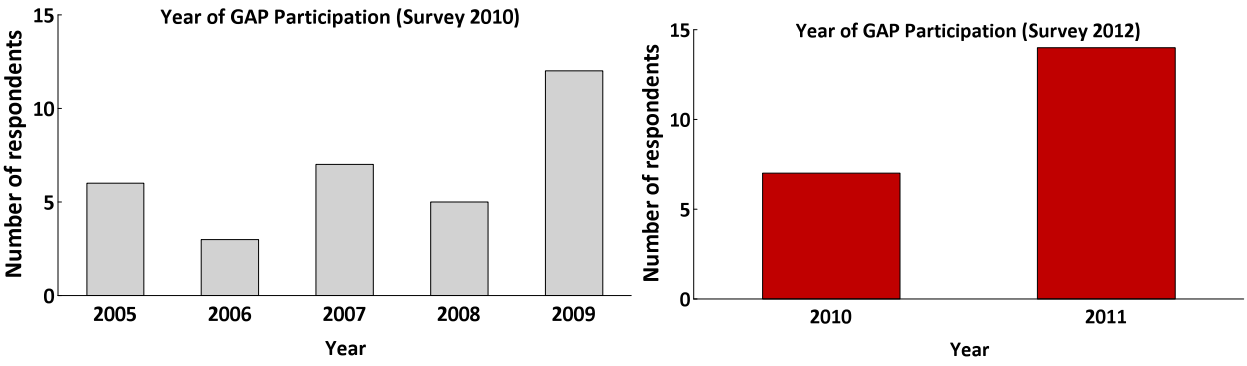
## *Introduction*

This first part presents a detailed comparison of the responses by companies to the 2010 and 2012 surveys. It documents responses with respect to company attributes, performance, the value of GAP, the importance of service offerings, immediate impacts, and intermediate impacts for each cohort (2010 and 2012). Each section in this part provides an overview of the findings, followed by charts presenting the company responses for each cohort.

The 2010 survey covered companies that participated in GAP between 2004 and 2009, with a total of 33 responses. The 2012 survey covered companies that participated in either 2010 or 2011; there are 21 companies in this cohort.

Overall, the responses presented in this comparison of the two cohorts indicate that the impact of GAP on companies was higher on companies reporting in 2012 than on companies reporting in 2010. This is true both in terms of GAP's immediate impact on company resources and capabilities, and in terms of GAP's intermediate impact on company performance. The 2012 cohort also reports a higher perception of value relative to cost, and a greater likelihood of having recommended the program to other companies.

**What year did your company participate in GAP?**
**2010: n=33**
**2012: n=21**

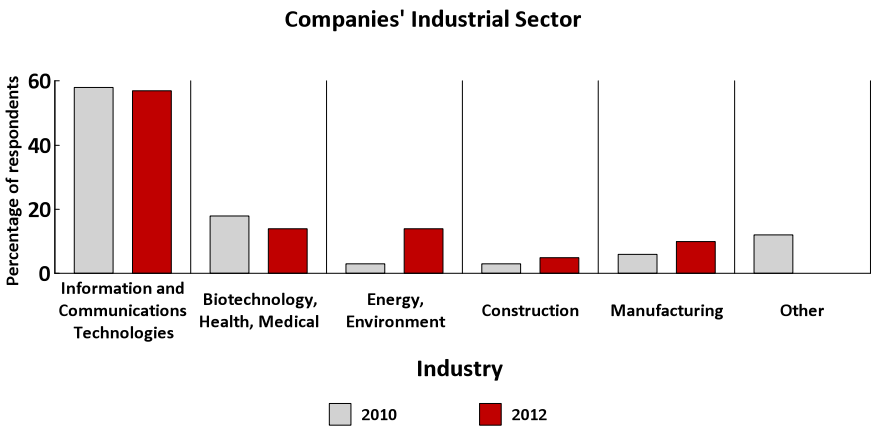


## *Comparison of Client Companies*

We begin by comparing the two cohorts in terms of industrial sector, annual revenues, number of employees, and company age.

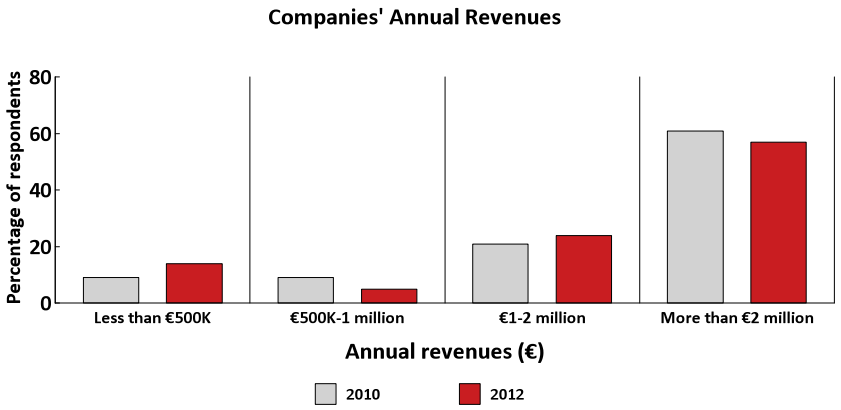
- GAP drew client companies from a broad range of sectors, with a consistent emphasis on Information and communication technologies, representing 58% and 57% of clients in the 2010 and 2012 cohorts, respectively. Other sectors include Biotechnology, health and medical (18% and 14%), Energy and environment (3% and 14%), Manufacturing (6% and 10%), and Construction (3% and 5%). In 2010, GAP also drew 12% of its client companies from a self-identified 'other' sector.
- 61% of companies' annual revenues in the 2010 cohort were more than €2 million versus 57% in the 2012 cohort. In the 2012 cohort, GAP drew 14% of its clients from companies with annual revenues less than €500k, an increase from 9% in the 2010 cohort.
- The two cohorts are similar in terms of number of employees. Other than a 7% increase in the number of companies with more than 100 employees, the remaining categories saw less than a 5% change from 2010 to 2012.
- The greatest difference in the age of companies between the 2010 and 2012 cohorts are the number of client companies five years of age or less. In the 2010 cohort, only 18% of client companies were between one and five years of age; in 2012 that number increased to 42%.

Figures comparing the two cohorts follow, each accompanied by the corresponding survey question and the number of respondents (n).

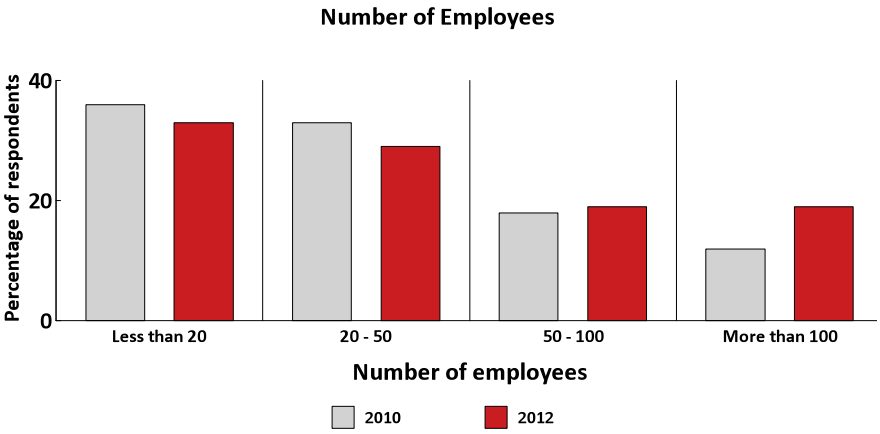



**To what industrial sector does your company belong?**
**2010: n=33**
**2012: n=21**

**Note: No companies indicated Forestry, pulp and paper as their industrial sector.**




**What are your company's annual revenues?**
**2010: n=33**
**2012: n=21**




**How many people does your company employ?**
**2010: n=33**
**2012: n=21**


**When was your company founded?**
**2010: n=33**
**2012: n=19**

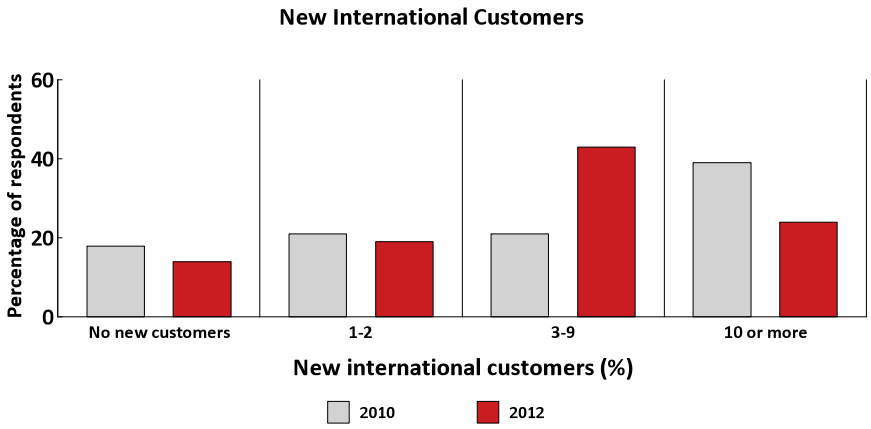
## *Comparison of Company Performance*

This section provides information on the performance of the surveyed companies. The measures include: New international customers, Change in employment, Change in annual revenues, Export sales revenues, and Financing received.

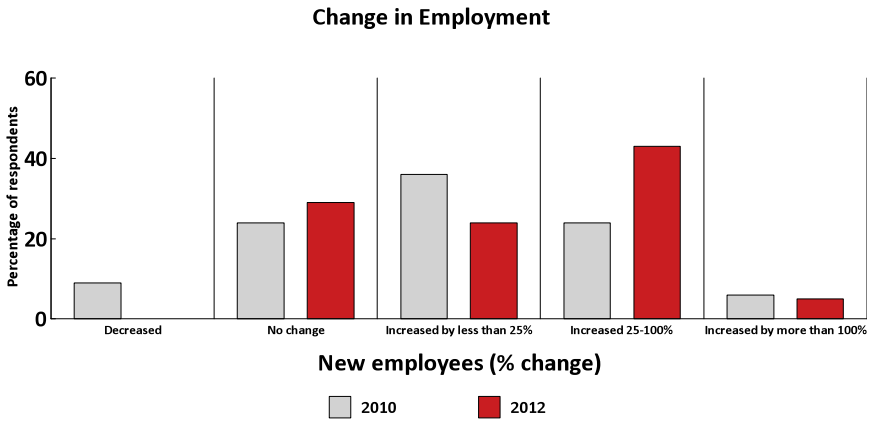
Important differences between the 2010 and 2012 cohorts are:

- In 2010, 60% of companies reported having acquired more than three international customers since their participation in GAP. In 2012 that number rose to 67%. However, there was a decrease in the percentage of companies reporting having acquired more than 10 new international customers (39% in 2010 vs. 24% in 2012).
- No companies reported a decrease in employment in 2012 since their project with GAP. The percentage of companies reporting an increase of 25% or more increased from 2010 to 2012 (30% vs. 48%).
- Most companies have experienced increases in revenues since their project with GAP. The percentage of companies reporting increases of greater than 50% rose from 30% in 2010 to 47% in 2012.
- 57% of companies reported export sales of €1 million or greater in both 2010 and 2012.
- More companies report having received financing since their participation in GAP in 2012 than in 2010. The percentage of companies receiving financing of €1 million or greater rose from 18% to 24%.

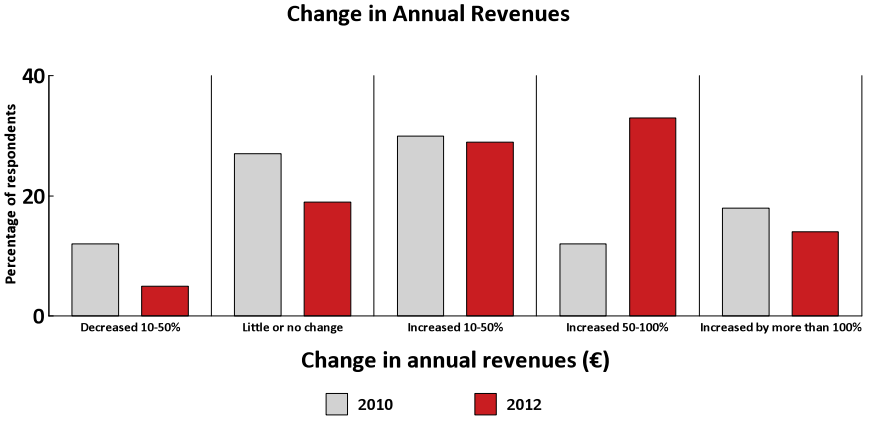
Figures comparing the two cohorts follow, each accompanied by the corresponding survey question and the number of respondents (n).



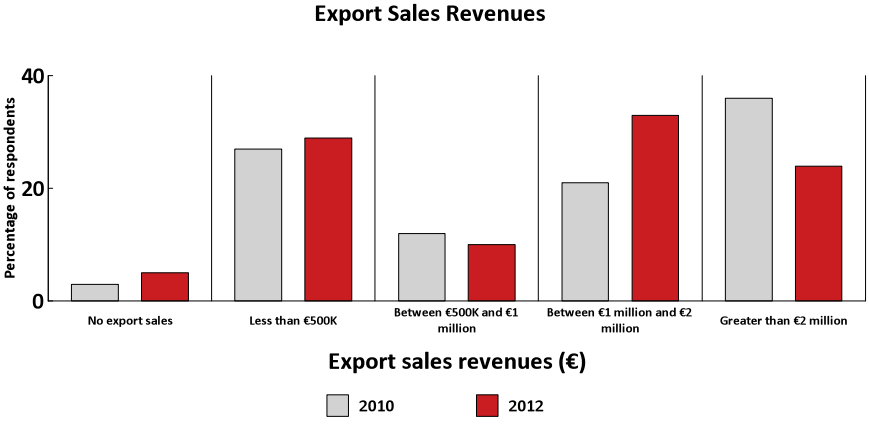

**How many new international customers has your company acquired since its participation in GAP?**
**2010: n=33**
**2012: n=21**



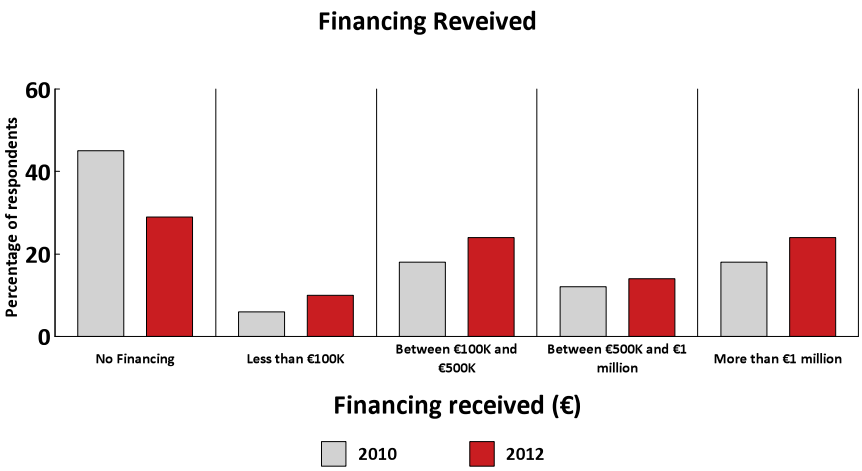

**To what degree has employment at your company changed since its participation in GAP?**
**2010: n=33**
**2012: n=21**




**By how much have your company's annual revenues changed since its participation in GAP?**
**2010: n=33**
**2012: n=21**




**What are your company's total export sales revenues?**
**2010: n=33**
**2012: n=21**



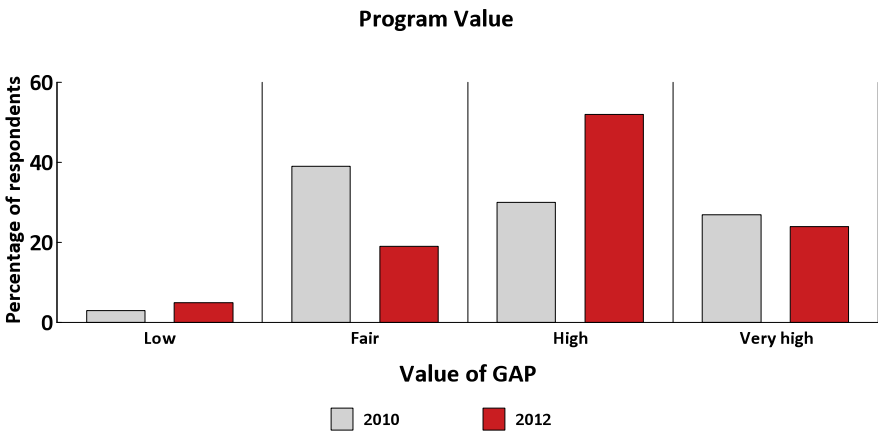

**How much financing has your company received, from either private or public sources, since its participation in GAP?**
**2010: n=33**
**2012: n=21**

## *Value of GAP*

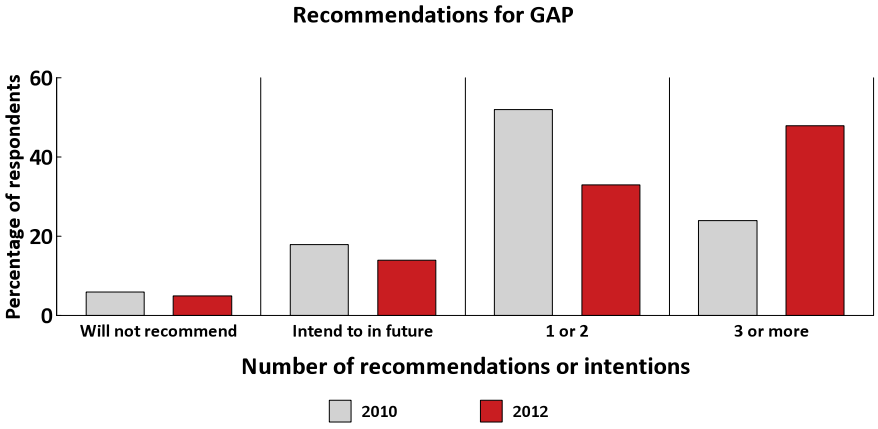
All companies that completed the survey were asked about the value of the GAP program relative to its cost, as well as their willingness to recommend the GAP program to other companies.

The following diagram shows that overall, 65% of all the companies found value relative to cost to be high or very high. Only 4% of all companies found the value of GAP to be low. There is a notable increase in the percentage of companies assessing the value of GAP as 'high' or 'very high' between 2010 and 2012, from 57% to 76%.

Companies were also asked whether they had recommended GAP to others. Responses were consistently high between the two surveys. In 2010 94% of companies, and in 2012 95% of companies had recommended or planned to recommend the GAP to others. In 2012, a higher percentage of companies (48% vs. 24%) reported having recommended GAP to three or more other companies.




**What was the value of GAP relative to its costs?**
**2010: n=33**
**2012: n=21**



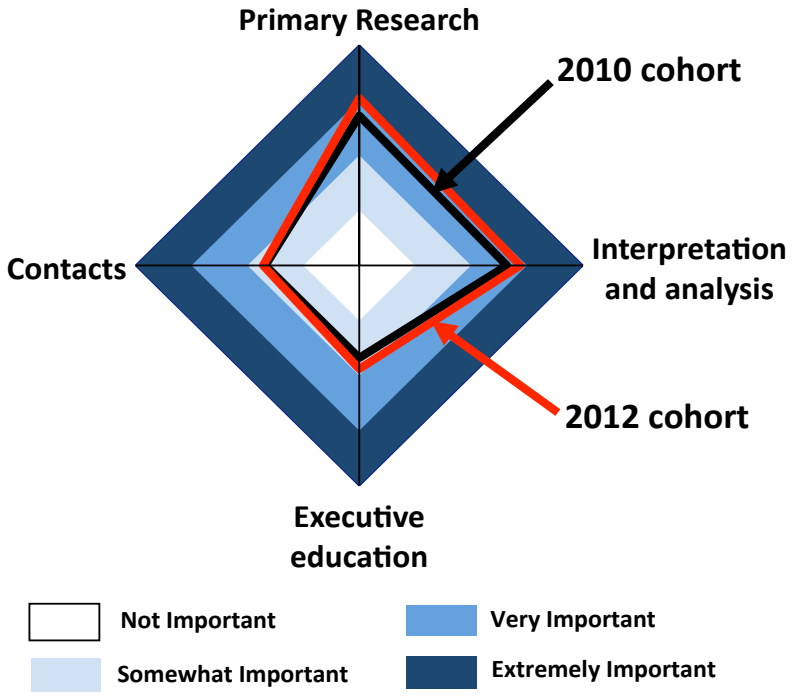

**To how many other companies have you recommended the GAP?**
**2010: n=33**
**2012: n=21**

### *Comparison of Importance of Offerings*

The following table shows the key service offerings of GAP.

| GAP Offerings |
|---|
| • Primary research (100+ interviews)<br>• Interpretation and analysis of research findings<br>• Executive education<br>• Business and consultancy contacts |

The figure below compares the average importance of GAP offerings by cohort.




Comparison of the Average Importance of Offerings: 2010 and 2012 Cohorts

We tested for significant differences between the cohorts. The 2012 cohort reported higher average importance scores with regard to all service offerings and the overall average, but those differences were not statistically significant.

### *Detailed Importance of Offerings Results*

The average importance reported on each dimension in the previous section is calculated using the weights shown in the table below.

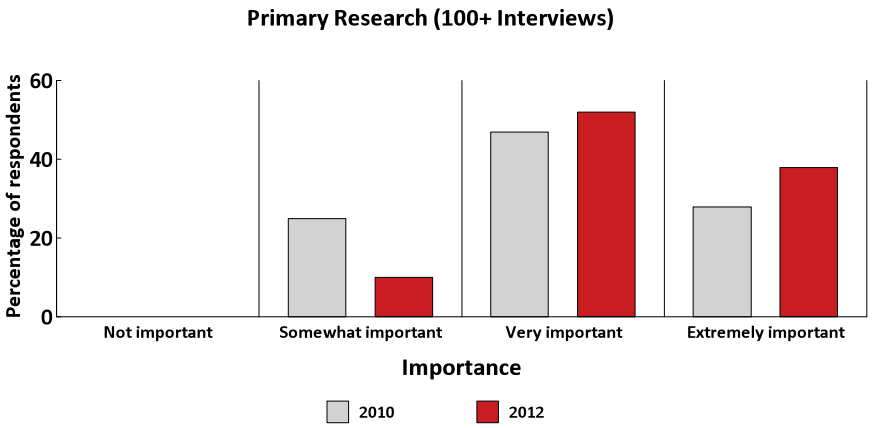
| Importance of Offering | Weights |
|---|---|
| Not important | 0 |
| Somewhat important | 3.33 |
| Very important | 6.67 |
| Extremely important | 10 |

Analysis of the information presented in these figures shows that GAP offerings are 'very important' or 'extremely important' for:

- 81% of companies when the offering is Primary research (75% in 2010 and 90% in 2012).
- 85% of companies when the offering is Interpretation and analysis of research findings (80% in 2010 and 90% in 2012).
- 39% of companies when the offering is Executive education (34% in 2010 and 45% in 2012).
- 35% of companies when the offering is Business or consultancy contacts in both 2010 and 2012.

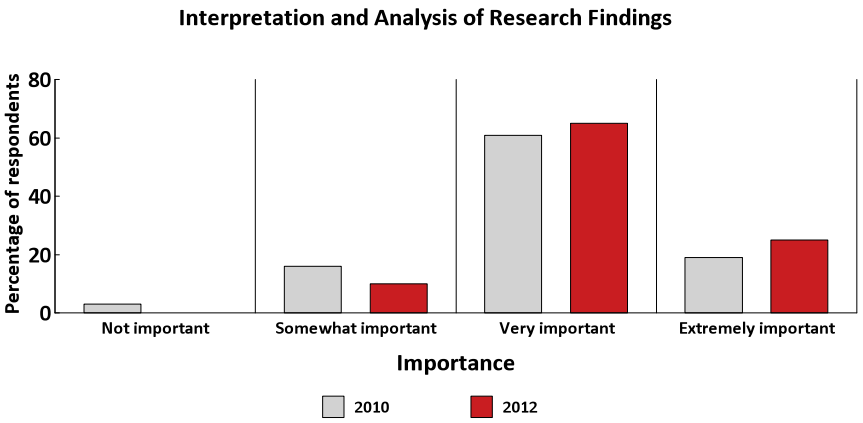
We tested for significant differences among offerings and found that the average importance for Primary research and Interpretation and analysis of research findings measures were significantly higher than Executive education and Business and consultancy contacts measures (significant at the 99% confidence level).

The frequency distributions below compare the responses of the 2010 and 2012 cohorts, and give the corresponding survey questions, number of responses, and average importance scores. Details on our standardized question format are provided in Appendix B.

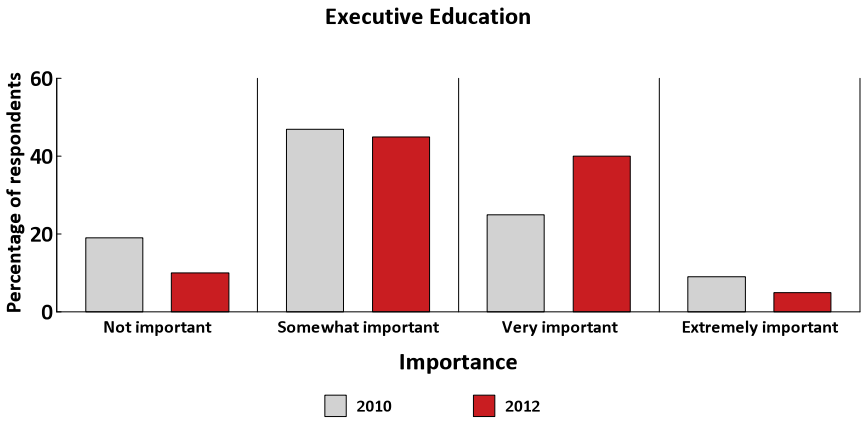



**Please assess the importance of each of the following GAP offerings:**

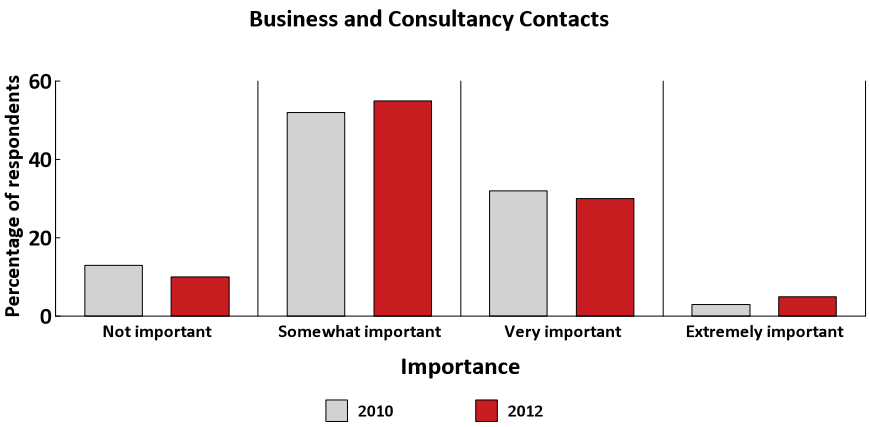
**Primary research (100+ interviews)**
**2010: n=32; Average=6.8**
**2012: n=21; Average=7.6**




**Interpretation and analysis of research findings**
**2010: n=31; Average=6.6**
**2012: n=20; Average=7.2**




**Executive education**
**2010: n=32; Average=4.2**
**2012: n=20; Average=4.7**



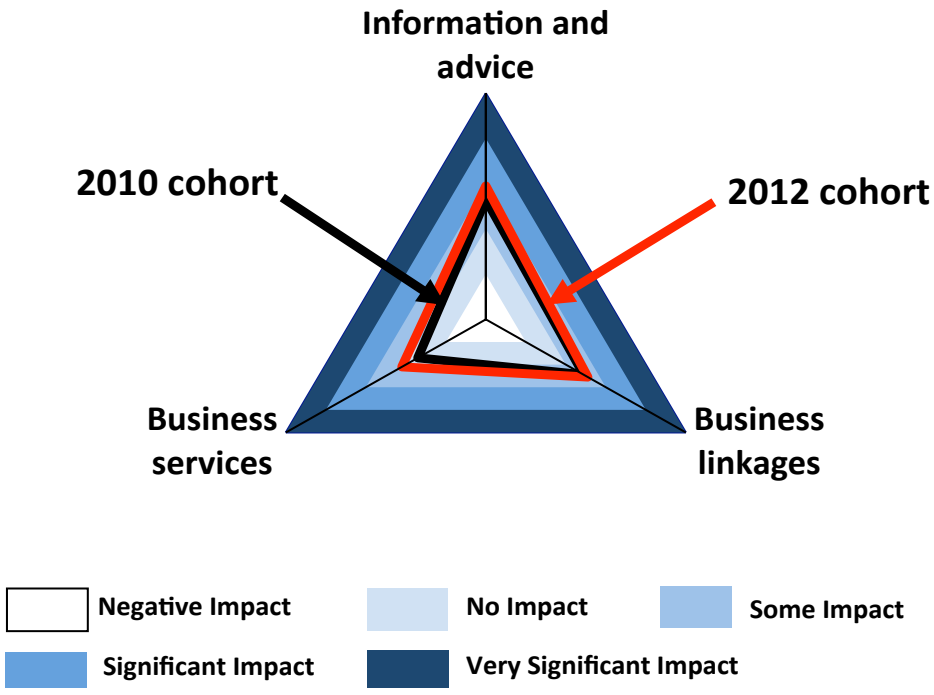

**Business and consultancy contacts**
**2010: n=31; Average=4.2**
**2012: n=20; Average=4.3**

### *Comparison of Immediate Impact*

The utility in using TEN's logic model for innovation intermediaries is that it provides broad dimensions to guide the selection of measures for impact assessment. These dimensions are listed in the logic model diagram in Appendix A.

The following table shows the three immediate impact dimensions that were selected from TEN's logic model to assess the impact of the GAP on the resources and capabilities of client companies, and the figure below compares the average impact of each cohort. GAP achieves impact across all dimensions from the low end of the 'significant impact' range to the low end of the 'some impact range'.

| Selected Immediate Impact Dimensions |
|---|
| • Knowledge, information and advice<br>• Business linkages<br>• Business services |




Comparison of Average Immediate Impact: 2010 and 2012 Cohorts

We tested for significant differences between the cohorts. The 2012 cohort reported significantly higher immediate impact scores on the Information and advice dimension and on all three dimensions combined (significant at the 95% confidence level). The remaining differences were not significant.

### *Detailed Immediate Impact Results*

The mapping between immediate impact dimensions and immediate impact measures is shown in the table below. Details on our standardized question format are provided in Appendix B.

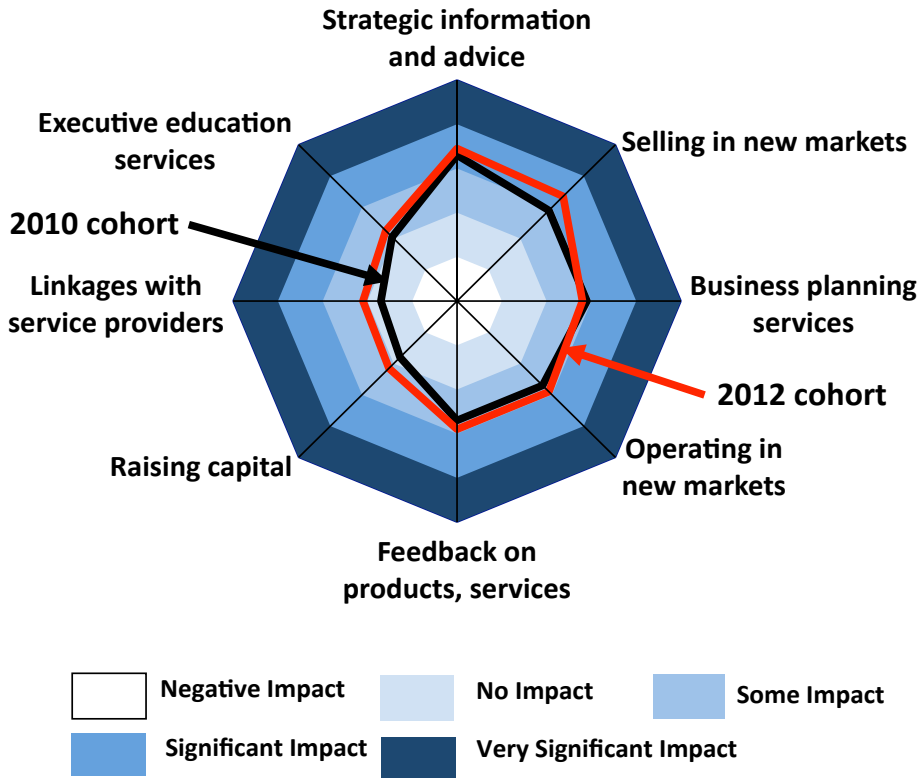
Mapping of Immediate Impact Measures to Immediate Impact Dimensions

| Immediate Impact Dimensions | Immediate Impact Measure(s) |
|---|---|
| Information and advice | • Strategic business information or advice<br>• Feedback on products or services<br>• Selling into new markets<br>• Operating in new markets<br>• Raising capital |
| Business linkages | • Facilitation of linkages with service providers |
| Business services | • Business planning services<br>• Executive education services |

Immediate impact is measured on a scale of 0 to 10 using the weights shown in the table below.

| Immediate Impact Responses | Weights |
|---|---|
| Negative impact | 0 |
| No impact | 2.5 |
| Some impact | 5.0 |
| Significant impact | 7.5 |
| Very significant impact | 10 |
| Not applicable | n/a |

The figure below compares the average immediate impact responses for all eight immediate impact measures for the 2010 and 2012 cohorts. Reading clockwise, the average immediate impacts range from 'significant impact' for the Strategic business information or advice, and Selling in new markets measures to the bottom of the 'some impact' range for the Executive education.




Comparison of Average Immediate Impact (All measures): 2010 and 2012 Cohorts

Using the weighted averages, we tested for significant differences between the cohorts. Overall, the 2012 cohort reported significantly higher immediate impact scores (significant at the 95% confidence level), although there are no statistical differences on any one of the measures.

We now compare the unweighted responses regarding immediate impact measures. Using the number of companies that reported 'significant' or 'very significant' immediate impact, the following four measures ranked highest in 2010 and 2012, although the order among them changed. Of note is the significant improvement in the impact of 'Information or advice on selling in new markets'.

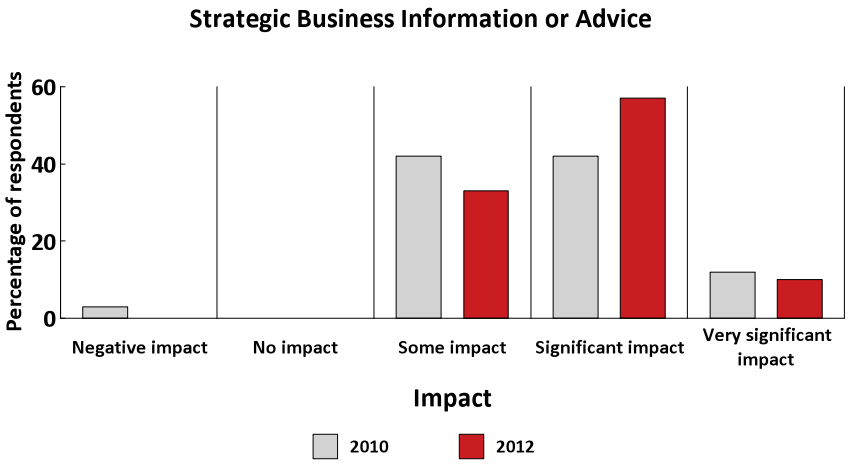
2010

- Strategic business information or advice (64% of respondents)
- Business planning services (39% of respondents)
- Information or advice on selling in new markets (33% of respondents)
- Information or advice on operating in new markets (30% of respondents)

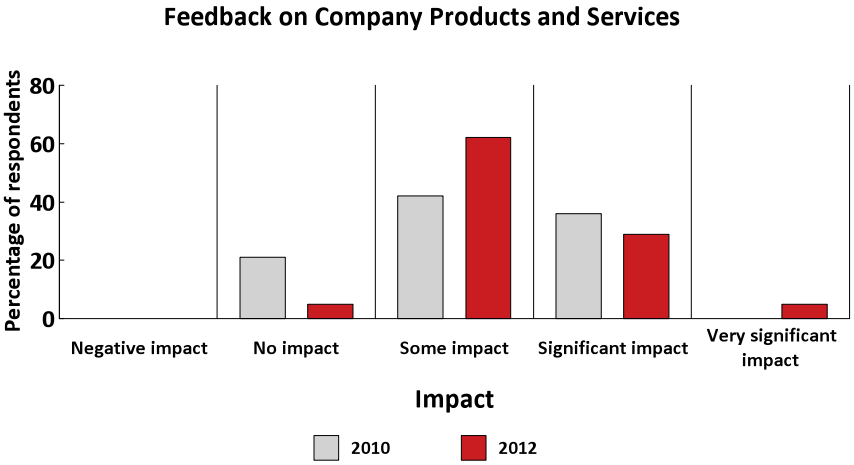
2012

- Strategic business information or advice (67% of respondents)
- Information or advice on selling in new markets (62% of respondents)
- Information or advice on operating in new markets (34% of respondents)
- Business planning services (28% of respondents)

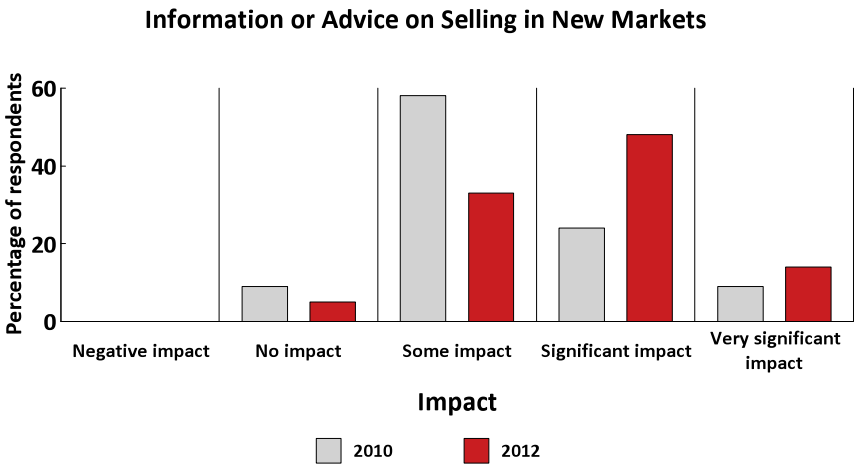
The frequency distributions below compare the immediate impact responses of the two cohorts for all eight immediate impact measures, and show the corresponding survey questions, number of responses, and average immediate impact scores (out of 10).



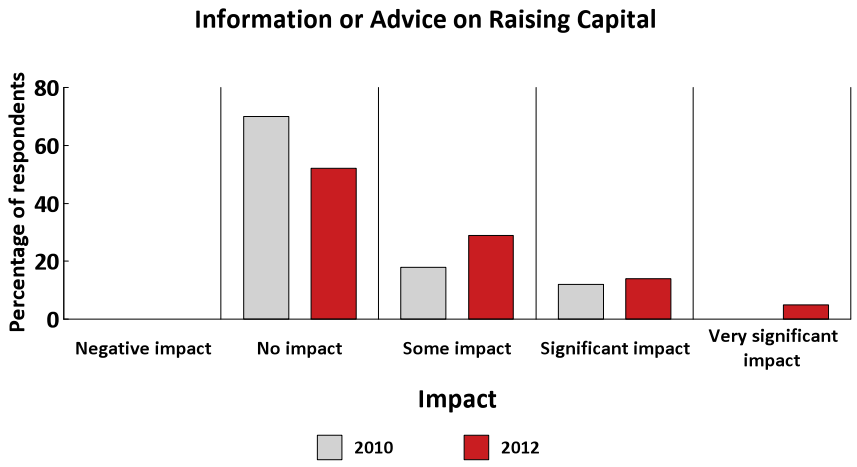

**To what degree did strategic business information or advice provided by GAP impact your company?**
**2010: n=33; Average=6.6**
**2012: n=21; Average=6.9**



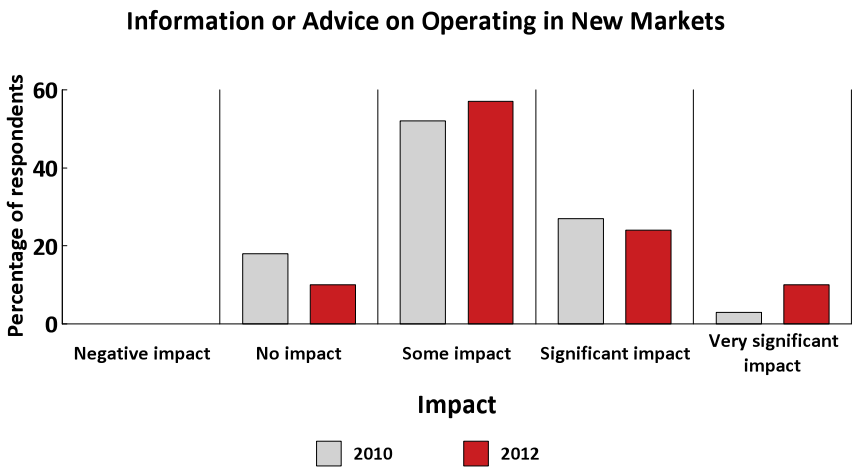

**To what degree did feedback on your company's products or services provide by GAP impact your company?**
**2010: n=33; Average=5.4**
**2012: n=21; Average=5.8**



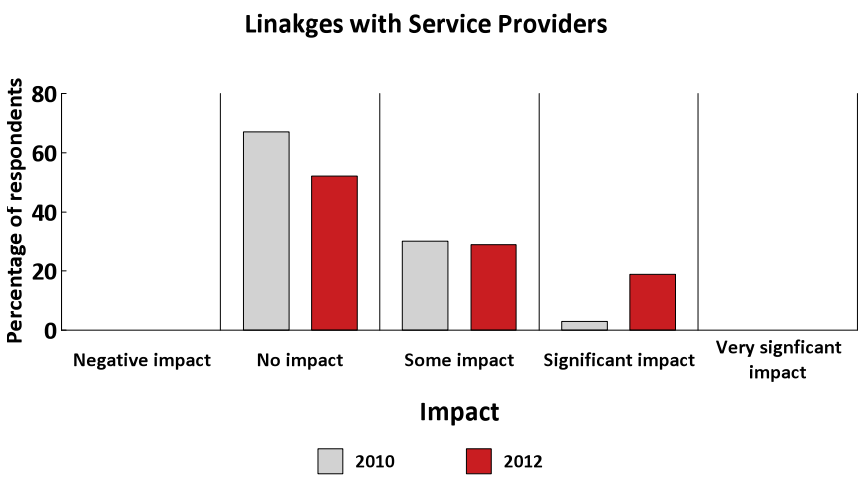

**To what degree did information or advice on selling into new markets provided by GAP impact your company?**
**2010: n=33; Average=5.8**
**2012: n=21; Average=6.8**



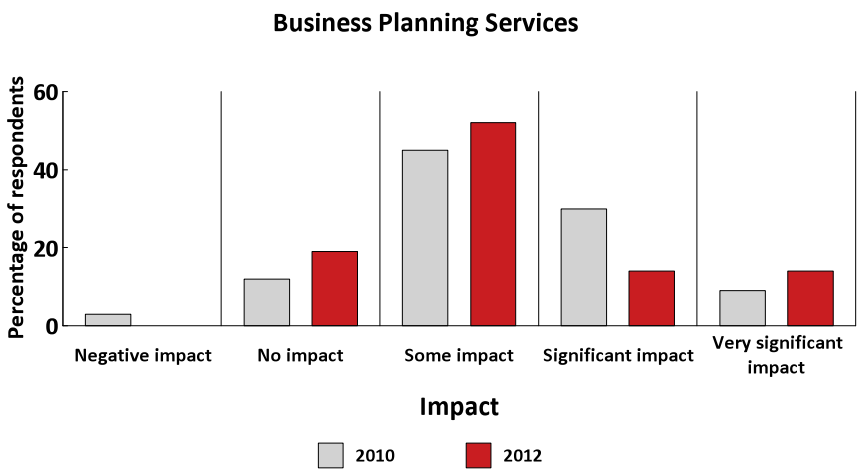

**To what degree did information or advice on raising capital provided by GAP impact your company?**
**2010: n=33; Average=3.6**
**2012: n=21; Average=4.3**



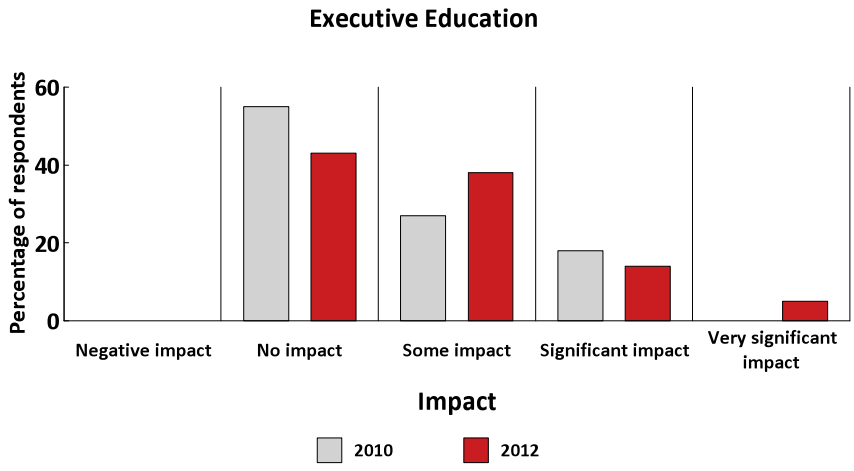

**To what degree did information or advice on operating in new markets provided by GAP impact your company?**
**2010: n=33; Average=5.4**
**2012: n=21; Average=5.8**




**To what degree did linkages with service providers facilitated by GAP impact your company?**
**2010: n=33; Average=3.4**
**2012: n=21; Average=4.2**




**To what degree did the business planning services provided or facilitated by GAP impact your company?**
**2010: n=33; Average=5.8**
**2012: n=21; Average=5.6**



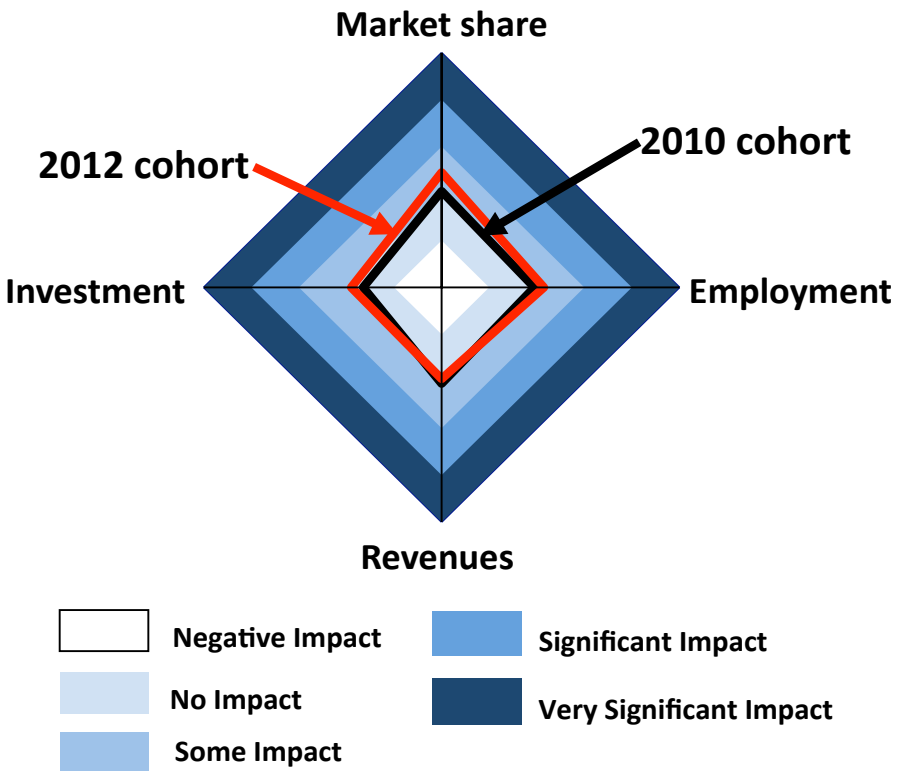

**To what degree did executive education services provided by GAP impact your company?**
**2010: n=33; Average=4.1**
**2012: n=21; Average=5.2**

### *Comparison of Intermediate Impact*

The following table shows the four intermediate impact dimensions that were selected from TEN's logic model to assess GAP's impact on company performance.

| Selected Intermediate Impact Dimensions | |
|---|---|
| • Market share | • Revenues |
| • Employment | • Investment |

The figure below compares the average impact of GAP on the 2010 and 2012 cohorts. GAP's impact on the performance of the 2012 cohort companies is equal to or better than the impact on the performance of the 2010 cohort companies on three of four dimensions: Market share, Employment, and Investment.




Comparison of Average Intermediate Impact: 2010 and 2012 Cohorts

We tested for significant differences between the cohorts. While the 2012 cohort reported higher immediate impact on all dimensions except for Revenues, none of these differences were statistically significant.

### *Detailed Intermediate Impact Results*

The impact reported on each intermediate impact dimension in the previous section is the average of one or more intermediate impact measures. The mapping between intermediate impact dimensions and intermediate impact measures is shown in the following table.

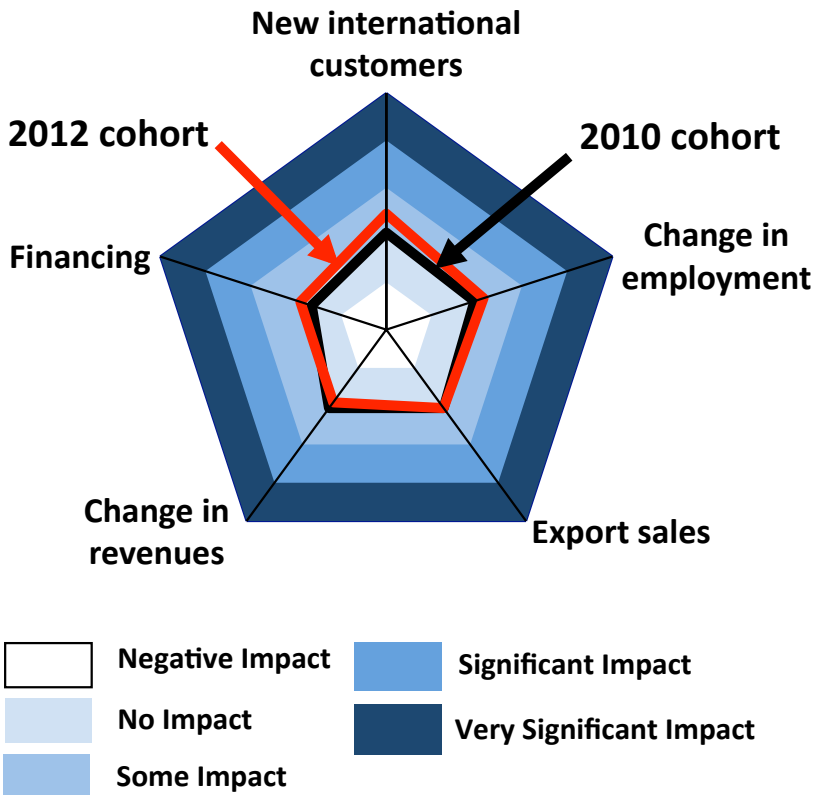
Mapping of Intermediate Impact Measures to Intermediate Impact Dimensions

| Intermediate Impact Dimensions | Intermediate Impact Measure(s) |
|---|---|
| Market share | • Impact on acquiring new international customers |
| Employment | • Impact on change in employment |
| Revenues | • Impact on change in revenues<br>• Impact on export sales revenues |
| Investment | • Impact on financing received |

Impact is measured on a scale of 0 to 10 using the weights shown in the table below.

| Intermediate Impact Responses | Weights |
|---|---|
| Negative impact | 0 |
| No impact | 2.5 |
| Some impact | 5.0 |
| Significant impact | 7.5 |
| Very significant impact | 10 |

The figure below compares average intermediate impact responses for the 2010 and 2012 cohorts for all five intermediate impact measures.




Comparison of Average Intermediate Impact (All measures): 2010 and 2012 Cohorts

Testing for significant differences between the cohorts showed that the differences in the weighted average scores are not statistically significant. When we use the unweighted responses and identify the percentage of companies reporting 'some' impact or greater on each measure, there is a difference between the cohorts in the ranking of intermediate impact measures. It is also noteworthy that for all measures, the number of respondents reporting 'some' or higher impact increased (see the list that follows). This increase is particularly pronounced with regard to New international customers.

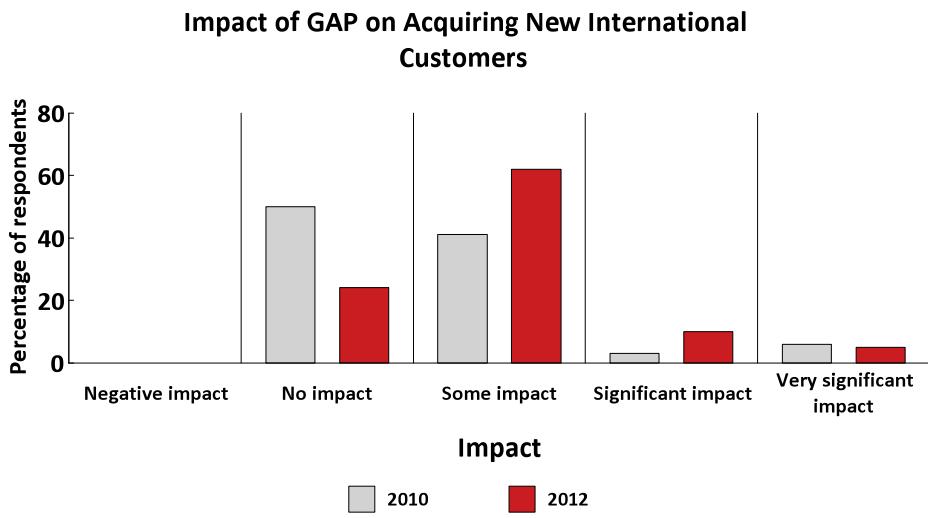
2010

- Export sales (51% of respondents)
- New international customers (50% of respondents)
- Change in employment (45% of respondents)
- Change in annual revenues (45% of respondents)
- Financing (21% of respondents)

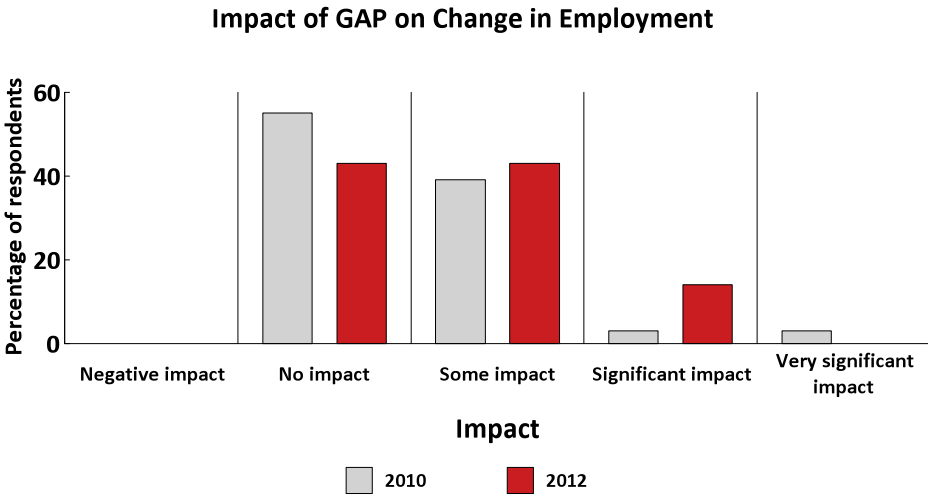
2012

- New international customers (77% of respondents)
- Change in employment (57% of respondents)
- Export sales (57% of respondents)
- Change in annual revenues (48% of respondents)
- Financing (38% of respondents)

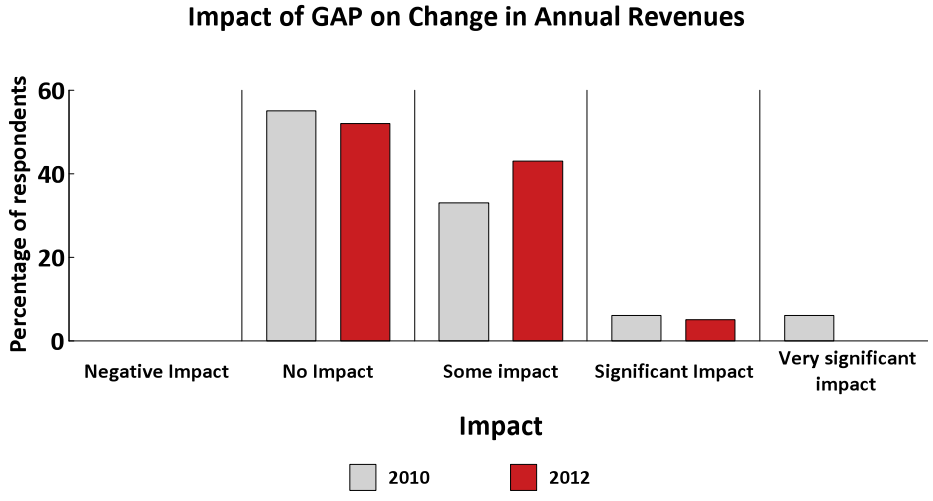
The following compares the results for each intermediate impact question, and give the number of respondents, and average score for each measure (out of 10). Details on question format are provided in Appendix B.



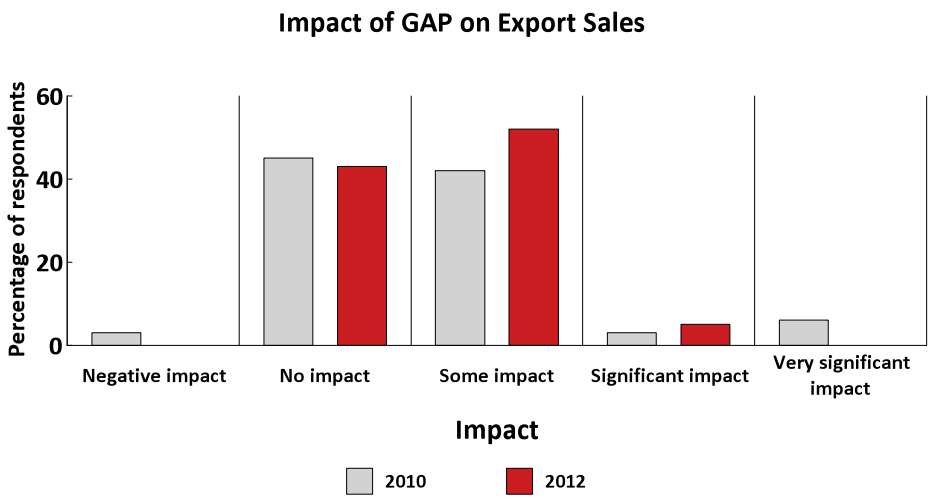

**To what degree has GAP impacted the number of new international customers since its participation in GAP?**
**2010: n=32; Average=4.1**
**2012: n=21; Average=4.9**



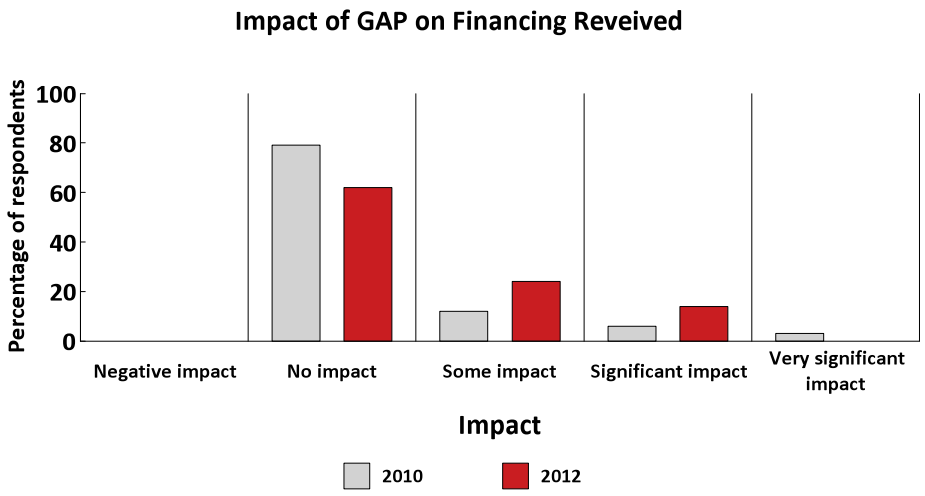

**In qualitative terms, to what degree has GAP impacted change in employment at your company since its participation in GAP?**
**2010: n=33; Average=3.9**
**2012: n=21; Average=4.3**




**In qualitative terms, to what degree has GAP impacted your company's change in annual revenues?**
**2010: n=33; Average=4.1**
**2012: n=21; Average=3.8**




**To what degree has GAP impacted your company's total export sales revenues since its participation in GAP?**
**2010: n=33; Average=4.1**
**2012: n=21; Average=4.1**




**To what degree has GAP impacted your company's financing received since its participation in GAP?**
**2010: n=33; Average=3.3**
**2012: n=21; Average=3.8**

## Part 2: Relationships Between the Importance of GAP Offerings, Immediate Impact, and Intermediate Impact

### *Introduction*

The foregoing has described the differences between the two cohorts in terms of the degree to which GAP has had an impact on the companies that it serves. In this section we consider the question of *how* GAP has achieved that impact. To do so, we conduct statistical examinations of the relationships between GAP's intermediate impact on the performance of companies in the market, and predictors of that intermediate impact. We consider three kinds of predictors: company attributes that we include as control variables, the importance of GAP service offerings, and the degree of immediate impact.

We combined the responses to the survey completed in 2010, covering companies that received services from the GAP program between 2004 and 2009 (33 responses) with the responses to the 2012 survey, covering companies participating in 2010 and 2011 (21 responses) to obtain a combined sample of 54 companies.

Consistent with our logic model, we find that GAP's intermediate impact on company performance is significantly predicted by the importance of its service offerings, and its immediate impact on company resources and capabilities. In the following we describe our measures, provide descriptive statistics, and show the results of linear regressions against intermediate impact.

### *Measures – Company Attributes*

We control for four company attributes that may impact companies' assessment of the impact of GAP on their performance in the market (intermediate impact):

- Age: Indicates the company's age in years at the time of participation and has an average value of 10.7 years (all companies formed prior to 1980 were considered to be formed in 1980).
- Size: Respondents were asked to indicate the number of employees on a four point scale, and the amount of annual revenues on a five point scale. Using the middle point of the response categories (e.g. 10 for 0-20 employees; .25 for €0-€0.5 million in annual revenues), the responses to these questions were multiplied to get an indicator of the company size. The resulting measure of size ranged from a minimum of 2.5 (less than 20 employees and less than €500K in revenues) to a maximum of 1125 (more than 100 employees and more than €2 million in revenues). The average value was 273.45.
- Industrial sector: Respondent companies are grouped into three sectors, represented by two dummy variables. There were 31 companies operating in the Information and communications technology industry (ICT), nine companies that identified Biotechnology, health or medical industry (Health) as their industry, with the remaining 14 companies operate in 'other' industrial sectors.

- Growth: Companies that are growing may be inclined to be more generous in their assessment of intermediary impact than companies that are not growing. Respondents were asked to indicate the change in employment since their engagement with GAP on a five point scale that ranged from a low of 'Decreased employment' to a high of 'increased by more than 100%', and to indicate the change in revenues since their engagement with GAP on a seven point scale that ranged from a low of 'Decreased by more than 100%' to a high of 'increased by more than 100%'. Responses to these questions were multiplied to get an indicator of company growth that ranged from a low of 3 to a high of 35. The average value was 16.4.

In addition to controlling for these company characteristics, we also control for the time at which companies were surveyed, that is, whether they participated in the survey in 2010 (cohort 0) or in 2012 (cohort 1).

### *Measures: Importance of Offerings and Impact*

Factor analysis was used to consolidate measures of the importance of GAP offerings and impact. As shown in the table below, the four measures of importance of GAP service offerings were reduced to two factors (Research, and Advice and education); the eight measures of immediate impact were reduced to two Immediate impact factors (Strategy and Expansion), and the five measures of Intermediate impact were reduced to a single Intermediate impact factor. All composite factors are reliable as indicated by the Cronbach alphas.

Factor Analysis

| Type of Measures | Measures | Factors |
|---|---|---|
| Importance of service offerings | • Primary research | Importance 1: Research (Cronbach's Alpha = n/a) |
| | • Interpretation and analysis<br>• Executive education<br>• Business and consultancy contacts | Importance 2: Advice and education (Cronbach's Alpha = 0.88) |
| Immediate impact | • Strategic information and advice<br>• Feedback on products, services<br>• Business planning services<br>• Service provider linkages | Immediate impact 1: Strategy (Cronbach's Alpha= .85) |
| | • Selling in new markets<br>• Raising capital<br>• Operating in new markets<br>• Executive education | Immediate impact 2: Expansion (Cronbach's Alpha= .83) |

| | | |
|---|---|---|
| Intermediate impact | • Change in revenues<br>• Change in employment<br>• New international customers<br>• Export sales<br>• Financing | Intermediate impact<br>(Cronbach's Alpha = .89) |

### *Descriptive Statistics*

The following table provides, for each variable, correlations with other variables, the number of observations (N), its mean, standard deviation, minimum value and maximum value. We find that:

- Older companies tend to be larger (significant at the 95% confidence level).
- Companies in the Health, medical and biotechnology sector were younger than other companies (significant at the 95% confidence level).
- Similarly, younger companies tend to grow faster (significant at the 99% confidence level).
- The cohorts (2010 or 2012) are not significantly correlated with any of the company characteristics, service offerings, or impacts.
- Both immediate impact factors are correlated with the importance of Advice and education service offerings (significant at the 95% confidence level or higher).
- Intermediate impacts are positively correlated with the growth of the company, as well as all offerings and immediate impact factors (significant at the 90% confidence level or higher).

Descriptive Statistics and Correlations

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Age | | | | | | | | | | | |
| 2. Size | .31* | | | | | | | | | | |
| 3. ICT | .11 | -.01 | | | | | | | | | |
| 4. Health | -.29* | -.04 | -.52** | | | | | | | | |
| 5. Growth | -.46** | -.01 | .00 | -.04 | | | | | | | |
| 6. Cohort | -.08 | .16 | .00 | -.05 | .15 | | | | | | |
| Offerings: | | | | | | | | | | | |
| 7. Research | .02 | .15 | -.10 | .16 | -.19 | -.05 | | | | | |
| 8. Advice and Education | -.15 | .05 | -.14 | .16 | .17 | .23 | .00 | | | | |
| Immediate Impacts: | | | | | | | | | | | |
| 9. Strategy | .23 | .22 | -.07 | .11 | -.11 | .07 | .34* | .18 | | | |
| 10. Expansion | .00 | .05 | -.06 | .04 | -.02 | .22 | .49** | .11 | .00 | | |
| 11. Intermediate impacts | -.13 | .12 | -.11 | .04 | .42** | .16 | .26[t] | .37** | .34* | .27[t] | |
| N | 52 | 54 | 54 | 54 | 54 | 54 | 50 | 50 | 54 | 54 | 53 |
| Mean | 10.7 | 273.5 | .6 | .2 | 16.4 | .4 | 0 | 0 | 0 | 0 | 0 |
| Standard deviation | 7.8 | 384.3 | .5 | .4 | 8.3 | .5 | 1 | 1 | 1 | 1 | 1 |
| Minimum | 1 | 2.5 | 0 | 0 | 3 | 0 | -2.4 | -2.3 | -2.9 | -2.1 | -1.3 |
| Maximum | 31 | 1125 | 1 | 1 | 35 | 1 | 2.4 | 1.3 | 2.2 | 3.0 | 3.8 |

Levels of significance for two-tailed tests: [t] = p< 0.1, * = p < .05, ** = p < .01

## *Model Results*

As indicated by TEN's logic model for innovation intermediaries, our theory is that intermediate impact is predicted by immediate impact. Linear regression was used to test for a significant relationship between immediate impact and intermediate impact where our measures are the composite impact measures created by the factor analysis shown above.

Models 1, 2, and 3 presented below regress intermediate impact against control variables, offerings, and immediate impacts.

Model 1, which includes only the company attribute and cohort control variables, explains a small amount (10%) of the variance in the dependent variable, Intermediate impact. Most control variables are not significantly related to Intermediate impact, with the exception of company growth, as anticipated above.

Model 2, which includes the factors relating to the importance of GAP service offerings, is an improvement over Model 1 (significant at the 99% confidence level); it explains 28% of the variance in the dependent variable. Both factors measuring the importance of GAP offerings – Research, and Advice and education – are significant (significant at the 95% confidence level or higher), indicating that companies that consider GAP offerings to be important are more likely to report an impact of GAP on their performance.

Model 3, which includes the immediate impact factors, is a significant improvement over Models 1 and 2 (significant at the 95% confidence level) and explains 36% of the variance in the dependent variable. Model 3 shows that both immediate impact factors are significant predictors of Intermediate impacts (significant at the 90% confidence level or higher). But the significance of the offerings factors has diminished, and one is no longer significant. This finding, of the significance of the immediate impact factors, is consistent with the theory supporting The Evidence Network's logic model. Immediate impacts are direct predictors of intermediate impact, while offerings are only indirect predictors.

## *Conclusion*

Overall, the regression model shows that both strategic- and expansion-related immediate impacts are significantly associated with longer-term impacts on company performance. This relationship is stronger for strategic impacts, as compared to impacts related to company expansion. These findings show that it is by impacting company resources and capabilities that GAP is able to achieve impact on company performance in the market.

Linear Regression on Intermediate Impact

| | Model 1<br>Control Variables | Model 2<br>Offerings | Model 3<br>Immediate Impact |
|---|---|---|---|
| Constant | -1.02 | -1.10[t] | -0.91[t] |
| Age | .06 | .11 | .02 |
| Size | .09 | .02 | .02 |
| ICT | -.11 | -.07 | -.01 |
| Health | -.01 | -.08 | -.07 |
| Growth | .44* | .48** | .43** |
| Cohort | .12 | .08 | .01 |
| Research | | .36** | .12 |
| Advice and education | | .29* | .22[t] |
| Strategy | | | .31* |
| Expansion | | | .27[t] |
| Model Characteristics | | | |
| N | 48 | 48 | 48 |
| ΔF | 1.91 | 6.16** | 3.40* |
| Adjusted R square | .10 | .28 | .36 |

Levels of significance for two-tailed tests: [t] = p< 0.1, * = p < .05, ** = p < .01

## Part 3: An Analysis of Total Economic Impact

### *Introduction*

Governments and other stakeholders want to know if their investments in innovation are yielding the hoped for economic and social returns. In many cases the returns of greatest interest are contributions to Gross Domestic Product (GDP) and high quality sustainable jobs. However, in most cases it is difficult to get evidence of the impact of a particular investment on GDP and jobs, because the impact of a particular investment is likely to be small and therefore difficult to detect in the available data. The Global Access Program is a case in point: between 2004 and 2011 Tekes invested a total of €1.2 million in GAP. Given only secondary data on Finnish company revenues and employment, it would be extremely difficult to tease out the impact of GAP.

As a consequence of the difficulties associated with using secondary data, analysts have employed alternative approaches. Some have abandoned the attempt to analyze the impact of a program, and have instead reported on the total economic footprint of a program, that is, the total revenues and total employment of the companies served by the program. But there is little value is this metric, as the companies involved may have had the same revenues and employment had they not participated in the program. Another approach is to estimate the likely impact of an investment using data on the size of the investment and the findings of past studies on the impact of similar investments. But the merit of this approach is compromised by the fact that it assumes that high performing investments will have the same impact as low performing investments.

The present analysis of the economic impact of Global Access Program on Finnish GDP and employment benefits from primary data on the impact of the program on the companies served. This allows us to determine the changes in company revenues and employment that are attributable to GAP. Eighty-nine companies participated in GAP between 2004 and 2011. Of these, 54 companies responded to our impact assessment surveys in which we asked about the impact of the program on company revenues and employment. Given this data we are able to report highly reliable estimates of the impact of the program on the companies, as judged by the company CEOs.

*Our findings show that to date, the Global Access Program has contributed a total of approximately €20.5 million to Finnish GDP, and 143 jobs.*

Our findings show that the Global Access Program contributed a total of approximately €20.5 million to Finnish GDP and 143 jobs. Later in this section of the report we explain how we derived these estimates and the alternative estimates cited below. As the total cost of GAP for the eight years was approximately €1.2 million, the net impact is approximately €19.3 million and the benefit-cost ratio is approximately 17.1. Each job created as a consequence of GAP is associated with a cost of €8,400 (€1.2 million / 143.2 jobs) which compares favorably with estimates of $23,000 and $39,000 to create a job in the US (Auerback & Gorodnichenko, 2012).

These are extremely conservative estimates for four reasons. First, they assume no impact on companies that did not respond to the survey. If we had assumed that the impact for non-respondents was the average of the impact for respondents, then the total impact on revenues would have been approximately €33.8 million, and the total contribution to jobs would have approximately 231 jobs.

Second, approximately half of the responding companies participated in GAP only one year prior to completing the survey. Econometric assessments of impact on revenues and employment that employ multi-year data show that impact increases over time, with second year impacts being approximately twice first year impacts, third year impacts being approximately three times first year impacts, and fourth year impacts being approximately four times first year impacts (Business Development Bank of Canada, 2009). If we had forecasted future impacts (over Years 2, 3, and 4) based on reported impacts, then the total forecast impact on revenues would have been on the order of €145 million.

Third, we did not account for the time value of money. Impacts reported in 2010 would have been slightly higher if reported in 2012 Euros. But only slightly, as interest rates are currently low (European Central Bank, 2012). Finally, many analysts use multipliers to account for spillover effects on the firms in other industries and the effects of increased downstream purchases. And in some cases they also include program expenditures as a contribution to GDP. But economists differ on the use of multipliers (Economist, 2009) and recent research shows that multipliers vary according to many factors, including the business cycle (Auerback & Gorodnichenko, 2012). Furthermore, the use of multipliers makes it harder for nonspecialists to interpret analyses of impact. For these reasons, we report only direct impact.

In the next subsection we present a brief overview of The Evidence Network's approach for estimating total economic impact, and in the subsection that follows we present the step-by-step calculation of the economic impact of the Tekes investment in the Global Access Program. We then present the results of our calculation of the total economic impact of GAP, the results of alternative calculations, and our estimate of the cost of GAP.

### *The Evidence Network's Approach for Estimating Total Economic Impact*

The Evidence Network's approach for estimating total economic impact leverages the knowledge of those best able to judge the impact of an innovation intervention on their company: the company's CEO, or, in the case of a large company, the manager responsible for the unit in question. Company executives have knowledge of the nature of the intervention, and the degree to which it affected company performance. And they are able to distinguish between effects on company performance caused by the intervention, and those caused by other factors, either internal or external.

Some may question the degree to which a company executive is able or willing to make an unbiased assessment of impact. Some fear that executives will overstate the impact of an intervention with a view to ensuring continued funding for the intervention, while others fear that executives will understate the impact of an intervention to avoid sharing credit for success. TEN takes three steps to address these concerns. First we refrain from asking general questions such as "to what degree did program X impact your company"? Instead we ask specific questions such as "to what degree did program X impact the change in your company's annual revenues"? Research shows that specific concrete questions elicit less biased responses than general interpretative questions. Second, we prepare the respondent for the task of judging impact on performance by preceding the impact questions with questions regarding change in performance. So the question on the impact on change in company revenues is preceded by a question that asks about the difference between this year's and last year's annual revenues. Again, research shows that focusing the respondent's mind on the issue reduces bias. Finally, we minimize retrospective bias by conducting our surveys soon after the intervention, in some cases less than a year later.

As shown in the first equation below, our estimate of the total impact on GDP is the sum of the impact on the revenues of each participating company that responds to our survey. The impact on the revenues of each responding company is the product of annual revenues, percentage change in annual revenues, and the impact of GAP on change in annual revenues. Similarly, as shown in the second equation below, our estimate of the total impact on employment is the sum of the impact on the employment of each participating company, and the impact on responding company employment is the product of the number of employees, the percentage change in employment, and the impact of GAP on change in employment. We estimate net impact on GDP by subtracting the costs of the intervention from the total impact on revenues, and the benefit-cost ratio by dividing total impact on revenues by total costs.

| | | | | | | |
|---|---|---|---|---|---|---|
| Total impact on GDP | = | $\sum$ (Annual revenues | * | Change in annual revenues | * | Impact on) change in annual revenues |
| Total impact on employment | = | $\sum$ (Number of employees | * | Change in employment | * | Impact on) change in employment |

## *Estimating the Total Economic Impact of GAP*

*Data Collection*

We conducted two surveys of the firms that participated in GAP. In 2010, we surveyed the firms that participated between 2004 and 2009, and in 2012 we survey the firms that participated in 2010 and 2011. The table below shows, for each cohort, the number of participants, the number of successful survey solicitations (emails), and the number of responses. The number of solicitations is less than the number of participants because in some cases the companies were acquired or closed, and in some cases the CEO had been replaced.

| Year | # Participants | # Emails | # Responses |
|---|---|---|---|
| 2004 | 6 | 4 | 0 |
| 2005 | 11 | 10 | 6 |
| 2006 | 9 | 6 | 3 |
| 2007 | 8 | 7 | 7 |
| 2008 | 11 | 11 | 5 |
| 2009 | 15 | 15 | 12 |
| 2010 | 14 | 14 | 7 |
| 2011 | 15 | 15 | 14 |
| Total | 89 | 82 | 54 |

*Data Coding*

We asked survey respondents about their annual revenues, change in annual revenues, and the impact of GAP on changes in annual revenues. Similarly, we asked them about employment levels, change in employment levels, and impact on change in employment levels (please see Appendix C for example questions). The table below shows the response range of each question, the value we assign to each range (usually the midpoint of the range), and the number of respondents (observations) associated with each value.

Two adjustments were necessary to establish a correspondence between the 2010 data and the 2012 data because three of the survey questions were not exactly the same. In 2010 the maximum annual revenues response was > €2 million, whereas in 2012 the maximum response was > €5 million. We assumed that four of the companies responding to the 2010 survey had revenues greater than €5 million on the basis that they each employed more than 100 people.

| Variable | Response Ranges | Value | # Observations |
|---|---|---|---|
| Annual revenues | < €500K | €250K | 6 |
| | €500K-1 million | €750K | 4 |
| | €1-2 million | €1.5 million | 12 |
| | €2-5 million | €3.5 million | 18 |
| | > €5 million | €7.5 million | 14 |
| Change in annual revenues | Decreased > 100% | -1.5 | 0 |
| | Decreased 50-100% | -.75 | 0 |
| | Decreased 10-50% | -.30 | 5 |
| | Little change | 0 | 13 |
| | Increased 10-50% | .30 | 16 |
| | Increased 50-100% | .75 | 11 |
| | Increased > 100% | 1.5 | 9 |
| Impact on change in annual revenues | Negative impact | -.15 | 0 |
| | No impact | 0 | 29 |
| | Some impact | .15 | 20 |
| | Significant impact | .375 | 3 |
| | Very significant impact | .75 | 2 |
| Number of employees | <20 | 10 | 19 |
| | 20-50 | 35 | 17 |
| | 50-100 | 75 | 10 |
| | >100 | 150 | 8 |
| Change in employment | Decreased | -.125 | 3 |
| | No change | 0 | 14 |
| | Increased < 25% | .125 | 17 |
| | Increased 25-100% | .625 | 17 |
| | Increased > 100% | 1.5 | 3 |
| Impact on change in employment | Negative impact | -.15 | 0 |
| | No impact | 0 | 27 |
| | Some impact | .15 | 22 |
| | Significant impact | .375 | 4 |
| | Very significant impact | .75 | 1 |

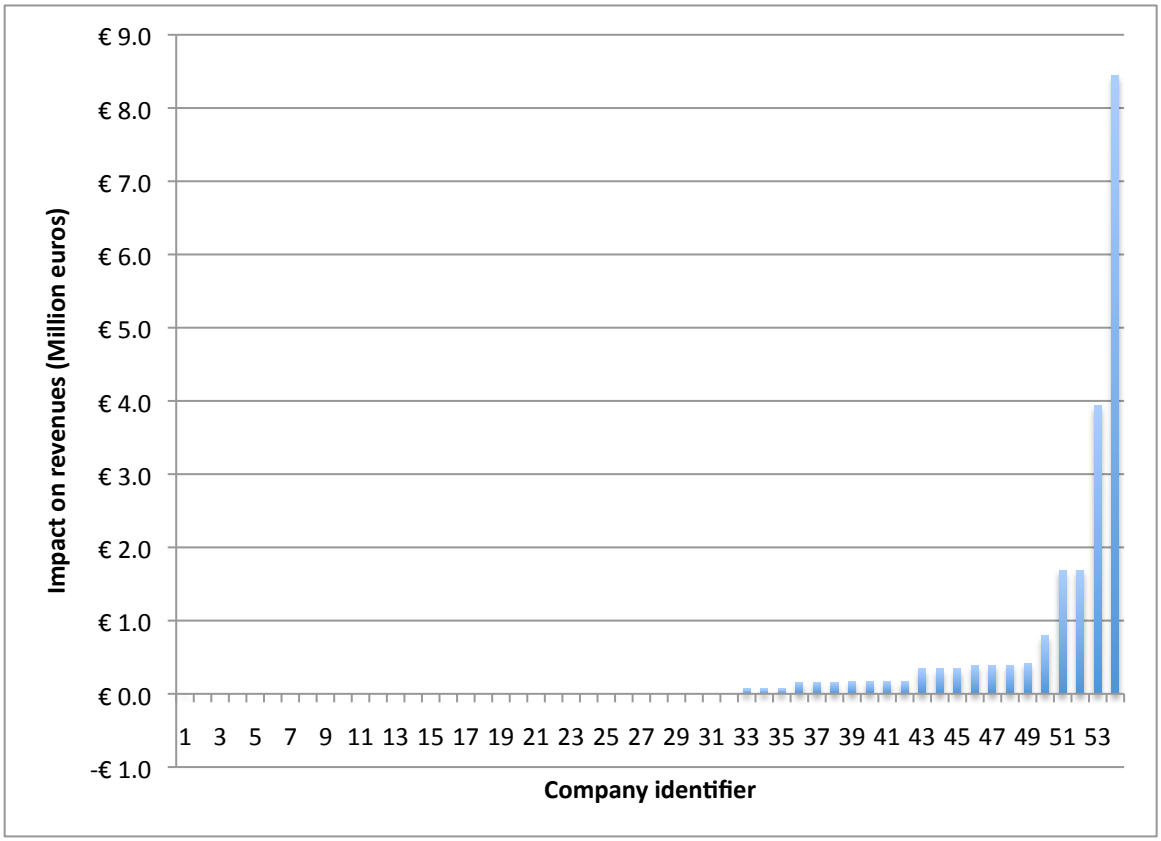
The second adjustment was required to convert 2010 qualitative responses to the questions on the impact of GAP, to quantitative responses. We were able to make this conversion because in 2012 we asked both qualitative and quantitative versions of the question and so were able to establish a correspondence between the two versions of the questions.

The qualitative impact question asked respondents to rate the impact attributable to GAP as being: negative, none, some, significant, or very significant. And the quantitative impact question asked respondents to rate the impact attributable to GAP as being: negative, less than 5%, between 5% and 25%, between 25% and 50%, and between 50% and 100%. In examining the responses to the qualitative and quantitative impact on revenues questions we found that all of the respondents that judged the impact to be 'significant' indicated that GAP was responsible for 25-50% of the change in revenues. 56% of the respondents that judged the impact to be 'some' indicated that GAP was responsible for 5-25% of the change in revenues; 11% indicated that GAP was responsible for 25-50% of the change in revenues; and 33% indicated that GAP was responsible for less than 5% of the change in revenues. Finally, all of the respondents that judged the impact to be 'none' indicated that GAP was responsible for less than 5% of the change in revenues. The standardized T value of the correlation between the qualitative and quantitative impact of revenues scales is 5.3, significant at the 99.9% level. Similarly, the standardized T value of the correlation between the qualitative and quantitative impact of employment scales is 6.1, significant at the 99.9% level. On the basis of these correspondences we recoded the qualitative responses as quantitative responses. Very significant was recoded to 50 to 100%, significant to 25 to 50%, some to 5 to 25%, none to 5 to -5%, and negative to -5 to -25%.

### *Total Economic Impact of the GAP*

As stated above, our estimate of the total impact on GDP is the sum of the impact on the revenues of each participating company that responds to our survey. The impact on the revenues of each responding company is shown in the figure below, it is the product of annual revenues, change in annual revenues, and the impact of GAP on change in annual revenues.

The total impact on revenues reported by all 54 companies surveyed is €20.5 million. Twenty-three of the 54 companies surveyed report a positive impact on revenues; four companies report an impact that exceeds €1.2 million, the total cost of the GAP program. The mean impact is €0.38 million, the median impact is zero, the minimum impact €-0.01 million, and the maximum impact is €8.44 million. The mean impact on the 23 companies that report a positive impact is €890,000. As the vast majority of firms that participate in GAP operate domestically, we assumed a multiplier of 1.0 which implies that changes in revenues that are attributed to GAP are roughly equal to contributions to Finnish GDP.

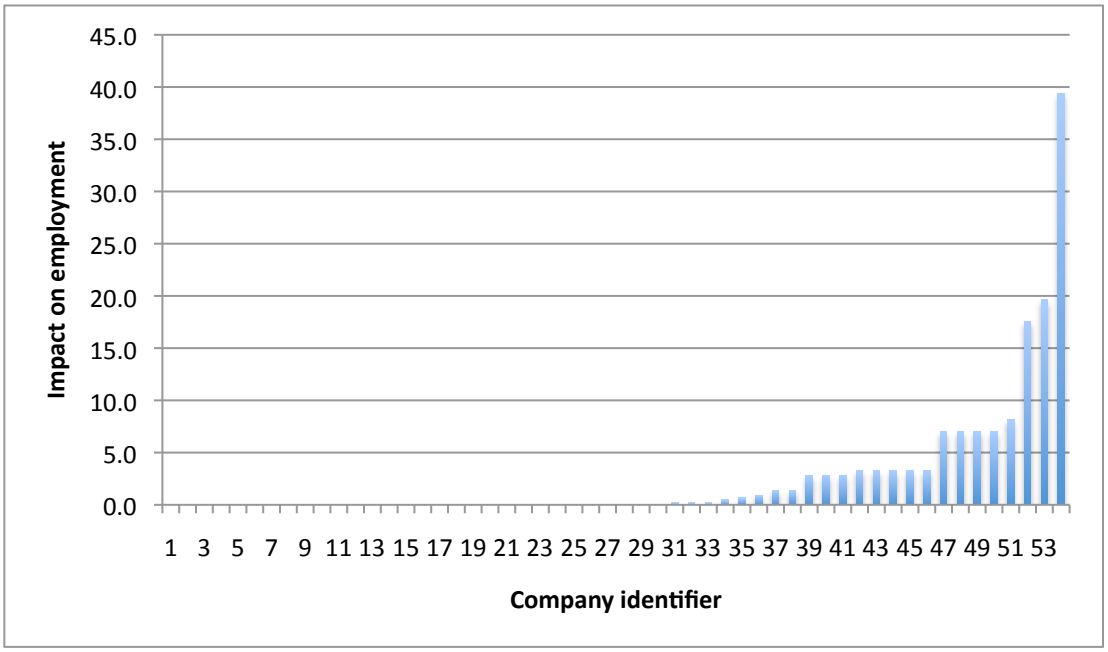



Impact on Revenues

Similarly, as stated above, our estimate of the total impact on employment is the sum of the impact on the employment of each participating company. The impact on the employment levels of each responding company is shown in the figure below, and is the product of the number of employees, the change in employment, and the impact of GAP on change in employment.

Twenty-four of the 54 companies surveyed report a positive impact on employment. The total impact on employment reported by these companies is 143.2 jobs. The mean impact is 2.6 jobs, the median impact is zero jobs, the minimum impact zero jobs, and the maximum impact is 39.4 jobs. The mean impact on the 24 companies that report positive impact is 6.0 jobs.

Considering both impact on revenues and impact on employment, 27 of 54 companies (50%) report a positive impact on either revenues or employment, or on both revenues and employment. Companies that didn't experience an impact on revenues or employment levels may have experienced impacts on other dimensions such as new customers or export sales. The fact that companies may experience impacts on a range of dimensions explains why 65% of survey respondents judge the value of GAP to be high or very high while only 4% judge it to be low.




### *Alternative Estimates of Total Economic Impact of GAP*

Our estimate of the total economic impact of GAP is extremely conservative as a consequence of our methodology. In this section we relax our assumptions and report the corresponding changes in our estimates of impact.

We begin by changing our approach to dealing with nonrespondents. Instead of assuming the impact on nonrespondents to be zero, we assume the impact on nonrespondents to be the average of the impact on respondents. This increases our estimate of impact on revenues to €33.8 million (€0.38 million mean impact on revenues per participant * 89 participants), and our estimate of the total impact on employment to 231.4 jobs (2.6 mean impact on employment per participant * 89 participants).

Second, we change our approach to dealing with downstream impacts. Instead of assuming these impacts to be zero, we assume second year impacts are approximately twice first year impacts, third year impacts are approximately three times first year impacts, and fourth year impacts are approximately four times first year impacts, consistent with the findings of an econometric study with extremely reliable data (Business Development Bank of Canada, 2009). Using this approach, companies that report zero first year impacts are assumed to experience zero impacts in all subsequent years.

We assume that all surveyed companies are reporting first year impacts. This is a reasonable assumption because for 48% of responding companies, less than a year had elapsed between the time they concluded GAP and the time they completed the survey, and for 68% of the remaining companies, less than two years had elapsed. Taking this approach, and using a 20% discount factor to account for the high level of uncertainty associated with the forecasts, we find that while the actual Year 1 impact on revenues is €20.5 million, the forecast Year 2, 3, and 4 impacts are €34.2 million, €42.7 million, and €47.4 million, respectively. This yields an estimate of total forecast impact on revenues, over the four years following the participation of companies in GAP, of approximately €145 million.

The above has shown how different assumptions affect the estimate of total economic impact. Our €20.5 million estimate of the total economic impact of GAP relies on few assumptions and can be directly traced to the reports of company executives of the impact of GAP on their company revenues and employment.

### *Cost of GAP*

Over the past eight years (2004 - 2011) GAP has cost Tekes an average of €145,500 per year, for a total estimated cost of approximately €1.2 million. These cost estimates are based on estimates of program and administrative expenses as described below. This estimate of total cost allows us to compute a benefit-cost ratio of 17.1.

1. *Program expenses.* Eighty-nine companies have participated in GAP between 2004 and 2011 inclusive, for an average of 11.1 participating companies per year. The total cost of participation for each company is €15,000 of which Tekes pays 65% and the company 35%. As shown in the table below, the average annual cost of supporting the participation of companies in GAP is €108,469 (€15,000 * 65% * 11.1) for a total cost over the eight years of €867,750 (€108,469 * 8).

2. *Administrative expenses.* Within Tekes, GAP is supported by 20% of the time of an advisor, and has an annual budget for promotional and evaluation activities. The salary of the advisor is estimated at €60,000 per year and the annual budget is estimated at €25,000. Both these estimates are conservative as they represent the maximum levels of these expenditures over the eight years. As shown in the table below, the average annual cost of administrative expenses is €37,000, for a total cost over the eight years of €296,000 (€37,000 * 8).

| Nature of Cost | Average Annual Cost | Total Cost |
|---|---|---|
| 65% of €15,000 fee for each participating company (11.1 companies participating in average year) | €108,469 | €867,750 |
| Staff (20% of one person, €60,000 max salary) | €12,000 | €96,000 |
| Budget (Max €25,000) | €25,000 | €200,000 |
| Total | €145,469 | €1,163,750 |

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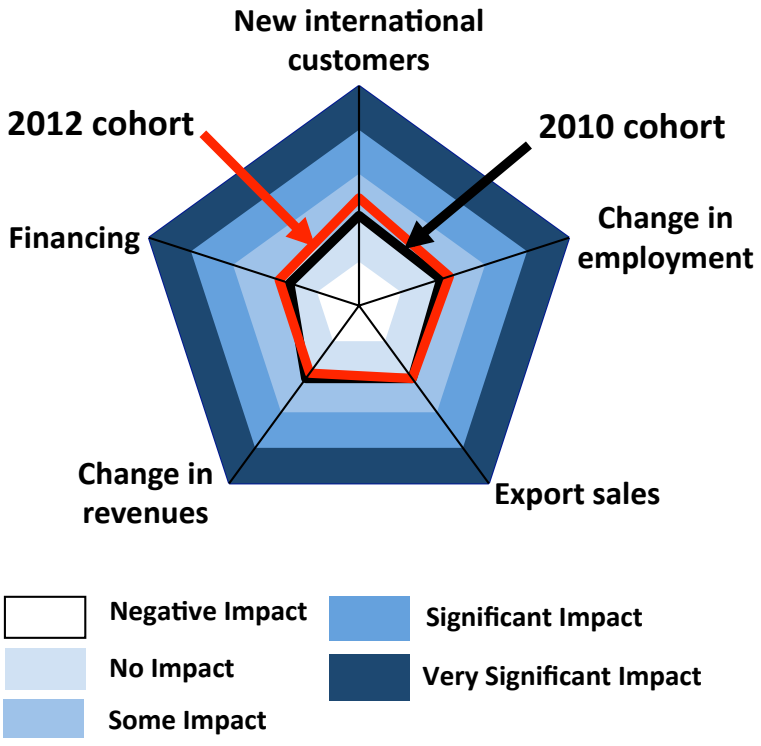
## Conclusions

Our findings present multifaceted evidence of the impact of the Global Access Program on Finnish companies and improvement in its impact over time. GAP is helping participating companies succeed in the global market by helping them in many ways, including by helping them attract new international customers. This assistance results in impacts on company performance, including impacts on revenues, exports, and employment, and substantial contributions to Finnish GDP (€20.5 million) and employment (143 jobs). The following summarizes the three parts of this report.

1. ***On impact trends:***

   Overall, the impact of GAP is improving over time. GAP's impact on the 2012 cohort was generally greater than its impact on the 2010 cohort, both in terms of immediate impact on company resources and capabilities (where there was improvement on seven of eight immediate impact factors), and in terms of intermediate impact on company performance (especially in terms of new international customers). As shown in the diagram below, GAP's impact on the 2012 cohort was greater than its impact on the 2010 cohort in terms of impact on New international customers, Change in employment, Export sales, and Financing received.




Comparison of Average Intermediate Impact (All measures): 2010 and 2012 Cohorts

2. ***On the predictors of GAP's impact:***

   Our analysis of the predictors of the impact of GAP on the performance of participating companies shows that GAP's impact on company resources and capabilities is the best predictor of GAP's impact on company performance. This finding is consistent with the theory described by The Evidence Network's logic model (please see Appendix A), that innovation intermediaries impact company performance by impacting their resources and capabilities. Our regression model shows that both strategic and expansion related immediate impacts are significantly associated with longer-term impacts on company performance, although this relationship is stronger for strategic impacts, as compared to impacts related to company expansion. Among control variables, only company growth rate is a significant predictor of impact on company performance.

3. ***On the total economic impact of GAP:***

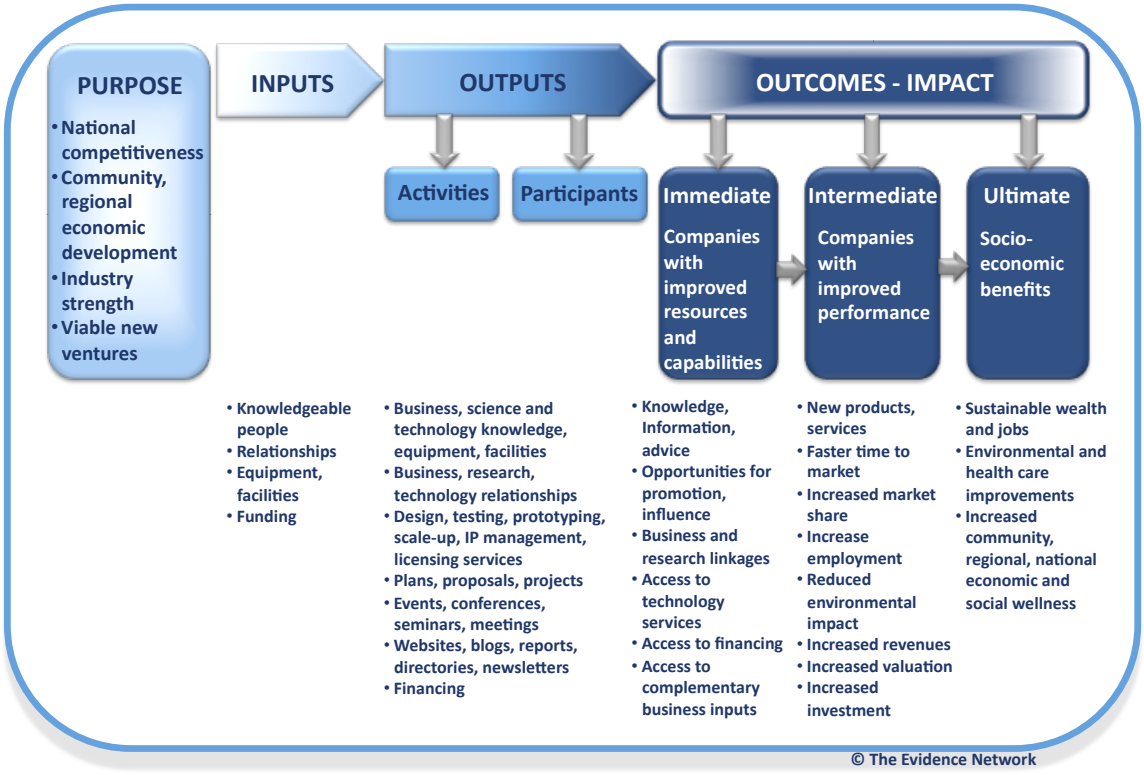
   Our findings show that GAP contributed a total of approximately €20.5 million to Finnish GDP and 143 jobs. As the total cost of GAP for the eight years (2004-2011) was approximately €1.2 million, the net impact is approximately €19.3 million and the benefit-cost ratio is approximately 17.1.

## Appendix A: TEN's Impact Assessment Methodology

TEN's approach to measuring innovation impact is based on the premise that innovation intermediaries can be described as an overarching class of organizations whose members share common goals. Despite their diversity, innovation intermediaries, ranging from small economic development organizations to large and sophisticated research institutes, seek to make their member or client companies more innovative, in the interests of facilitating increases in their viability, profitability, or other manifestations of their success.

The logic model shown below illustrates how innovation intermediaries work to fulfill their missions, and how TEN measures their impact. As shown at the top-left of the diagram, innovation intermediaries express their purpose in terms of national competitiveness, regional economic development, industry strength, or viable new ventures, and conduct activities to achieve immediate and intermediate impacts on the companies that are their members or clients, and long-term impacts in the form of socio-economic benefits. The immediate impacts of innovation intermediaries are improvements in the resources or capabilities of client or member companies, intermediate impacts are improvements in the performance of client or member companies, and long-term impacts affect communities, industries, economies, societies, and the environment.

**TEN's Innovation Intermediary Logic Model**



Working backwards, from right to left, the logic model shows *how* different types of impact are achieved. The achievement of long-term impact depends on the achievement of intermediate impact, which in turn depends on the achievement of immediate impact. So, for example, an innovation intermediary that seeks to create economic growth in a region (its purpose and desired long-term impact) does so by facilitating improvements in the performance of local companies (its desired intermediate impact), either by facilitating company growth or the creation of new ventures, or by attracting new companies to the region. It facilitates company growth and the creation of new ventures by facilitating improvements in the resources and capabilities of local companies (its desired immediate impact). The fundamental logic is that innovation intermediaries achieve their desired intermediate and long-term impacts by affecting the resources and capabilities of the companies with which they work.

TEN measures the importance of intermediary service offerings, and the immediate and intermediate impacts of innovation intermediaries.

By measuring immediate impact TEN provides intermediary managers, boards of directors, and funders with timely feedback on the suitability and effectiveness of intermediary services. Note that we measure immediate impact by asking about the *impact* of intermediary services on specific company resources and capabilities, not by asking about *satisfaction* with intermediary services, as a customer satisfaction survey would do. While clients may be satisfied with an intermediary's networking event, the event may or may not have had an impact on their ability to find, for example, new suppliers.

By measuring intermediate impact, TEN provides management, investors, and other stakeholders with evidence of the effect of intermediary services on company performance in terms of new product and services, employment, or revenues, etc. Measuring intermediate impact is important because it corresponds to the missions of intermediaries and provides the hard evidence of results that stakeholders seek. But company performance depends on a number of factors and so to assess intermediate impact we consider both the change in company performance and the degree to which the change is attributable to the intermediary. For example, to determine the impact of a research institute on the revenues of client companies, we ask about both changes in revenues and the degree to which those changes are attributable to the services of the research institute.

Innovation intermediaries hope to have long-term impacts that correspond to their missions. But the measurement of long-term impact is difficult because changes in the economy, the environment, or society are brought about by the collective actions of many players. So it is difficult to attribute such changes to the activities of a single organization. But as long-term impact is facilitated by the achievement of intermediate impact, evidence of intermediate impact is suggestive of possible long-term effects.

TEN's logic model expresses the expectation that outputs create immediate impacts and that immediate impacts on company resources and capabilities will lead to subsequent impacts on company performance, an expectation that holds across all types of innovation intermediaries. Details of how innovation intermediaries achieve their desired impact are shown in the lower part of the diagram. The activities in which innovation intermediaries engage are supported by knowledge-based and tangible inputs, and they lead to a wide range of outputs such as knowledge, relationships, events, publications, prototypes, equipment, and facilities. The outputs are expected to lead, in turn, to the immediate, intermediate, and long-term impacts described above.

Statistical examinations of the relationships between outputs, immediate impact, and intermediate impacts make it possible to assess which outputs and immediate impacts are significantly related to the impact of the intermediary on companies' performance in the market.

TEN measures the importance of outputs, and immediate and intermediate impacts using a customized survey instrument. Our impact assessment surveys are short and easy for member or client companies to complete. Assessments can focus on a single organization, can compare actual to targeted performance, or can compare the performance of multiple units, divisions or organizations.

# Appendix B: Descriptions of Samples

## *2010 Cohort*

The following table provides information on the relationship between the number of invitations sent to potential respondent companies and the number of companies that actually responded to the survey.

| Survey Response Profile of GAP Clients | |
|---|---|
| Number of Invitations sent to GAP clients | 53 |
| Number of e-mail reminders | 2 |
| Number of GAP clients that entered the survey website | 34 |
| Number of clients that completed the survey | 33 |
| Response Rate | 62% |

To increase the response rate, all non-respondents were either telephoned or sent a personalized email reminder during the final week of the survey.

Respondents to the survey took, on average, 7.5 minutes to complete the questionnaire. This average does not include 5-outliers who evidently interrupted their response taking between 17.5 minutes and 220 hours to complete the survey.

## *2012 Cohort*

The following table provides information on the relationship between the number of invitations that were sent to potential respondent companies, and the number of respondents.

| Survey Response Profile of GAP Clients | |
|---|---|
| Number of invitations sent to GAP clients | 29 |
| Number of email reminders | 1 |
| Telephone reminders to non-respondents by GAP | 11 |
| Number of GAP clients that entered the survey website | 21 |
| Number of GAP clients that provided survey responses | 21 |
| Response Rate | 72% |

Nineteen of the respondents took less than 12 minutes to complete the survey, having an average time-to-complete of 6.5 minutes. From the distribution with time-to-complete, it is evident that two of respondents were distracted, taking 21 minutes and 43 minutes, respectively, to complete the survey.

## Appendix C: Examples of Questions

Examples of questions used by The Evidence Network to elicit importance of service offerings, immediate and intermediate impact are shown below.

### *Importance of Offerings*

This example pertains to the assessment of the 'Importance of the GAP offerings' measure.

*Please assess the importance of each of the following GAP offerings.*

| | Not important | Somewhat important | Very important | Extremely important |
|---|---|---|---|---|
| Primary research (100+ interviews) | ☐ | ☐ | ☐ | ☐ |
| Interpretation and analysis of research findings | ☐ | ☐ | ☐ | ☐ |
| Executive education | ☐ | ☐ | ☐ | ☐ |
| Business and consultancy contacts | ☐ | ☐ | ☐ | ☐ |

### *Immediate Impact*

This example pertains to the 'Information or Advice' measure.

It provides the question, example of the service referred to, and the scales that were used to elicit immediate impact, together with a brief phrase explaining each selection. The examples and explanatory phrases are particularly important to ensure respondents provide actual impact responses related to the service being described and that all respondents have the same understanding of the scale.

> *To what degree did strategic information or advice provided by GAP impact your company?*
>
> *Examples of strategic information or advice include information or advice related to the acceleration, adoption, postponement, or abandonment of corporate strategies such as those related to expansion of the scale of operations; diversification into new product lines, industrial or geographic markets; consolidation of scale, product lines, markets or operations; outsourcing; or the alignment of strategy and operations.*
>
> *Please choose one of the following responses:*

- *Very significant impact, the information or advice had a very significant impact on our company*
- *Significant impact, the information or advice had a significant impact on our company*
- *Some impact, the information or advice had some impact on our company*
- *No impact, the information or advice had no impact on our company*
- *Negative impact, the information or advice had a negative impact on our company*

### *Intermediate Impact*

This example below pertains to the 'Financing' measure.

Intermediate impact is assessed using a question pair. The first question elicits information on company performance.

The second question elicits attribution of impact. In the second question, each impact response has an explanatory phrase to ensure other interpretations, perceptions and opinions related to the impact responses are minimized.

Company Performance

*How much financing has your company received, from either private or public sources, since its participation in GAP?*

1. *€1 million or more*
2. *Between €500K and €1 million*
3. *Between €100K and €500K*
4. *Less than €100K*
5. *We have not received financing since our participation in GAP*

Question 2: Impact Attribution

*To what degree has GAP impacted your company's financing received since its participation in GAP?*

*Please choose one of the following responses:*

- *Very significant impact, without GAP we would have received much less financing*
- *Significant impact, without GAP we would have received somewhat less financing*
- *Some impact, without GAP we would have received marginally less financing*
- *No impact, GAP had no impact on our company's ability to attract financing*
- *Negative impact, GAP made it harder for our company to attract financing*

## Appendix D: The Evidence Network Principals

**Brian Barge, President & CEO, The Evidence Network**
Brian Barge is co-founder, President and CEO of The Evidence Network. Brian brings significant executive experience and practical knowledge of innovation intermediaries to the company. He has served as President & CEO of three leading innovation intermediaries in Canada: CMC Microsystems (2000-2007), the Ottawa Economic Development Corporation (1996-2000), and the Alberta Research Council (1991-1996). Brian began his career as a scientist with the ARC and focused on linking scientific and technological developments to commercial practice, often in a global context. Over his 35-year career in research management and economic development, Brian has forged numerous innovative initiatives among universities, industries and governments that have stimulated the formation and growth of countless technology-intensive companies. He has served on the Board of Directors of over 15 innovation-enabling organizations. Brian has degrees in physics (BA, University of Saskatchewan) and meteorology (McGill, MSc & PhD).

**Margaret Dalziel, VP Research, The Evidence Network**
Margaret Dalziel is co-founder and VP Research of The Evidence Network, and an Associate Professor of the Telfer School of Management at the University of Ottawa. Margaret conducts research in innovation and entrepreneurship and has published or presented over 60 articles, including over 25 articles related to innovation intermediaries. Margaret has 15 years experience in technology development and research management prior to becoming an academic and has degrees in computer science (BSc, McGill), and business (MBA, McGill; PhD, UQAM).