

**BUSINESS
FINLAND**

PROGRAMMES FOR EDUCATION AND GAMING

EVALUATION OF SKENE,
LEARNING SOLUTIONS,
FUTURE LEARNING FINLAND
AND EDUCATION EXPORT
FINLAND PROGRAMMES

EVALUATION REPORT

Raisa Venäläinen, Pamela Kato, Jason Della Rocca,
Kristiina Lähde

REPORT 3/2019



The authors:

Raisa Venäläinen (Appraisal Consulting RV Ky)

Pamela Kato (P.M. Kato Consulting Ltd)

Jason Della Rocca (Quebec Ltd)

Kristiina Lähde (Saliens Oy)

Copyright Business Finland 2019. All rights reserved.

This publication includes materials protected under copyright law, the copyright for which is held by Business Finland or a third party.

The materials appearing in publications may not be used for commercial purposes. The contents of publications are the opinion of the writers and do not represent the official position of Business Finland. Business Finland bears no responsibility for any possible damages arising from their use. The original source must be mentioned when quoting from the materials.

ISBN 978-952-457-650-5

ISSN 1797-7347

Cover photo: AdobeStock

Graphic design: Maria Singh

Page layout: DTPage Oy

MAIN CONTENTS

Foreword	4
Summary	5
Evaluation criteria and evaluation questions	8
Evaluation of Future Learning Finland and Education Export Finland	9
Evaluation of Learning Solutions	42
Evaluation of Skene – Games refueled	83

FOREWORD

At around 2010, due to consistent high performance in Pisa-ratings, Finland had a remarkable international reputation regarding learning results. Furthermore, at that time Finland had a promising game industry sector in state of confusion due to game changing powers of digital distribution. To turn well performing education into well performing business, Tekes launched a programme on learning solutions and Finpro a programme promoting education export, meanwhile the Skene programme of Tekes invested into the gaming industry. These programmes provided funding and helped to build up business, practices, expertise, networks and platforms for collaboration.

In 2018, Tekes and Finpro merged forming the current Business Finland. In this context, four programmes of former Tekes and Finpro were evaluated. Learning Solutions (Oppimisratkaisut, 2011–2015) was a partnership program aimed at developing new learning solutions, with a particular emphasis on pursuing opportunities for international business and education exports. Piloting of new solutions including products, services and new ways of working with end-users was pivotal, and international markets were an important target. Future Learning Finland (2011–2015) and Education Export Finland (2015–2016) were programmes

aiming to increase education export and helping to build a competitive national education business cluster. Skene programme (2012–2015) was to professionalize the promising Finnish game industry and enable greater economic impact for the sector.

The objective of this evaluation was to produce a review of results, impacts and relevance of the evaluated programmes and to produce forward-looking recommendations for further development.

As a result, the evaluation produced solid findings and forward-looking recommendations for future. Some key findings and recommendations from this evaluation were that long-term support to education export deserves to be continued while Skene programme was already a remarkable success both regarding implementation and results.

This impact study was carried out by Appraisal Consulting as the lead consultancy. Tekes wishes to thank the evaluators for their thorough and systematic approach and expresses its gratitude to steering group and all the others that have contributed to the evaluation.

Helsinki, June 2019

Business Finland

SUMMARY

This is an evaluation report of four programmes of former Tekes and Finpro, currently Business Finland, implemented in 2011–2016. The evaluated programmes are “Skene”, “Learning Solutions”, “Future Learning Finland” and “Education Export Finland”. All these programmes were aiming to increase exports and of which education related programmes made the substantial part.

Learning solutions -programme (2011–2015). The goal of the Learning Solutions program was to create new commercial solutions for export to international markets. In order to achieve this, the programme supported projects, and value-added networks where products were tested in real situations, for example in schools, under the supervision of leading pedagogical researchers from universities. The actors of the program were companies, research groups, schools and educational institutions, and other organizations. Ten Networks and a total number of 137 project outside the networks were funded. The total volume of LS projects was 38,8 M€, of which 20,9 M€ came from Tekes.

“Future Learning Finland” (2011–2015) aimed to establish a national education business cluster to build Finnish education export brand and to promote education export in international markets. This programme was followed up by the **Education Export**, which was im-

plemented during 2015–2016. Both programmes were led and coordinated by Finpro. The programmes provided to their members training on international marketing and internationalization and organized opportunities to make contacts with potential clients. They also provided support to product development and particularly to the development of joint offers and proposals. The total funding for the programmes was 2,2 M€, of which 1,4 ME came from Ministry of Economic Affairs and Employment of Finland.

Skene programme (2012–2015) aimed at professionalizing the Finnish game industry and enabling greater economic impact for the sector. Tekes funded 105 game company projects, and nine (9) academic research projects funded during 2012–2015. The total amount of Tekes funds deployed under the umbrella of the Skene programme was 33.3 M€. In addition to Tekes funding, the applicants invested own matching funding with 33.2 M€.

This evaluation aimed to produce a forward-looking analysis of the results, relevance, efficiency, effectiveness and impacts of the programmes. It assessed to what extent the programmes have succeeded in achieving their objectives, their relevance in meeting the needs and priorities of the users and ecosystem development,

and their impacts. The evaluation utilized different methods, including desk review, analysis of taxation data, on-line survey, interviews and focus discussions. The evaluation questions are presented at the end of this foreword.

KEY FINDINGS AND CONCLUSIONS

The programmes were **relevant**. The education sector programmes (Learning solutions, Future Learning Finland and Education Export Finland) aimed to contribute to the Government's plan to increase education export, spelled out in the Government Decision in Principle in, which set a strategic target for Finland to become "one of the world's leading education-based economies resting on the quality of the education system". The target was set to increase education export to 350 M€ by the end of 2018. With regards to the game industry, the need for a program to accelerate the Finnish game cluster, providing the funding needed alongside a push towards a business-first mindset was very high, and therefore, Skene was very relevant to the Finnish game industry, and was for the most part able to respond to their needs.

The education export related programmes **achieved their immediate objectives** to a large extent. The Future Learning Finland started a new era for education sector in Finland. It was first time ever to bring together organisations, such as Higher Education Institutions

and companies, interested and engaged in education extent. This programme as well as Education Export promoted networking and internationalisation of their members, as well as visibility of education export in the international markets.

The evaluation found some evidence that the Learning Solutions programme has contributed to the development of a few learning solutions and that it has also contributed to the development of products for national and international markets. It also resulted in new ways of working and multidisciplinary expertise.

With regards to the economic impacts, the participants of Future Learning Finland and Education Export Finland have as a group experienced some 35 percent growth in revenue 2011–2016, driven by few larger companies. Companies engaged in Learning Solutions programme, especially smaller companies, showed increased export activity over time, as well as growth in revenue and jobs. A significant number of companies went from no export activity to engaging in export activity over time with a significantly higher proportion of companies had positive export activity over the years compared to the proportion of companies with negative or zero activity, although it is unknown if the exports directly related to the Learning Solutions programme. With regards to education export by Higher Education Institutions, data on student fees (sales based on tuition fees for students from outside the EU / EEA countries) is not yet available, because the year 2017 was the first year for tuition fees. However, estimates, a total of 2.7 M€ were accrued to higher education institutions by inter-

national students in 2016. However, the contribution of FLF and EEF is not possible to verify.

The growth of the game sector during the timeframe of the Skene programme is undeniable. To the extent that the goal of Skene was to professionalize the sector and enable it to have a greater economic impact, there is no question that Skene far surpassed its objectives, creating hundreds upon hundreds of new jobs and billions in increased turnover.

During the timeframe of Skene, funding applications were up dramatically, there was a flurry of new game studio startups, the industry headcount more than doubled, turnover was up more than 10 ten times. The economic impact targets of Skene had been far exceeded with more consistent success stories, fueled by a business-first mindset from the game entrepreneurs. In this respect, the Skene programme had a significant impact on the goal of Finland becoming the number one player in the gaming industry in Europe. Considering that the unofficial target for Skene was to hit one billion euros in turnover by 2020, the objective was achieved just past the first year of the programme.

There was limited cooperation and sharing of experiences between the programmes. More strategic planning would have been needed to generate complementarity between the education export programmes. With regards to Skene, the game industry is a different business than

serious games related to, learning, education and game business. It runs a different business model for different clients with different needs and different goals. If Finnish serious game studios were to make great learning games, that would probably make for a very successful “education export” given the nature of digital games. It would likely require a dedicated program for that to happen.

Detailed findings, conclusions and recommendations are provided in the individual reports. A common nominator for all programmes was that the aims of the programme were vaguely specified making it difficult to assess success. Also, systematic planning and reporting would be needed to ensure effective monitoring and evaluation of projects. Having clear results statements and monitoring frameworks help to use monitoring as a management and learning tool, and also promotes accountability. More tailored approaches would have been needed to meet the diverse needs of the actors. Also, having programme coordinator already deeply embedded in the sector, would help managing the programmes effectively.

Supporting gamification and education export are well in line with the current strategy of Business Finland. However, appropriate funding instruments would be needed to finance education export and strengthening the public and private partnership.

EVALUATION CRITERIA AND EVALUATION QUESTIONS

1 RELEVANCE

EQ 1

How relevant have the programmes been? How well did the programmes and their services meet the needs of participants?

2 EFFECTIVENESS

EQ 2

Achievement of programme objectives

How well have the objectives set for the programmes been achieved? What concrete results each of the programmes have created?

Changing practices

How successful have the programmes been in changing practices of operation within programme target groups, especially regarding practices related to co-creation and end-user involvement, demand-driven innovation, collaborations, partnership formation, value creation and combined actions for exports.

Programme support

Which services have worked well / been outstanding and which have not? Reasons, why they have been successful? What have been the mechanisms of impact of these services? Have the results of public and private research projects been taken into use by the end user? (Refers to Skene and LS only)

Synergies and collaboration

How well did the programmes support each other? Were the synergies fully identified and utilized?

3 EFFICIENCY

EQ 3

Programme Management

What significant challenges were identified regarding programme administration and how well were those challenges solved?

4 IMPACTS

EQ 4

What impacts the programmes have had? What were the economic impacts of the programmes on turnover, jobs, export and acquired investments of the participating companies? What wouldn't have happened without the programmes?

OTHER

EQ 5

Was it enough to have Tekes and Finpro programmes in the area?

EQ 6

How well the evaluated programmes are in line with the current strategy and the current programme design concept of Business Finland?

EVALUATION OF FUTURE LEARNING FINLAND AND EDUCATION EXPORT FINLAND

TABLE OF CONTENTS

Acronyms and abbreviations	10
1 Education export	11
1.1 Future Learning Finland 2011–2015	12
1.2 Education Export Finland 2015–2016	13
1.3 Funding	15
2 Evaluation approach and methodology	16
3 Findings	18
3.1 Relevance	18
3.2 Effectiveness	19
3.3 Efficiency	29
3.4 Impacts	30
3.5 Benchmarking with other education export countries	34
4 Conclusions	37
5 Recommendations	39
Documents consulted	40

ACRONYMS AND ABBREVIATIONS

BF	Business Finland
CBR	Country Brand Report
DAAD	German Academic Exchange Service
ENZ	Education New Zealand
EEF	Education Export Finland
FLF	Future Learning Finland
FNAE	Finnish National Agency of Education
GOVET	Central Office for International Cooperation in Vocational Education and Training
HEI	Higher Education Institute
HEI ICI	Higher Education Institutions Institutional Cooperation Instrument
IEFE	International Exhibition and Forum for Education held in Saudi-Arabia
LS	Learning Solutions -program
MEAE	Ministry of Economic Affairs and Employment of Finland
MFA	Ministry for Foreign Affairs
MOEC	Ministry of Education and Culture
MOF	Ministry of Finance
PISA	The Programme for International Student Assessment
SC	Steering Committee
SME	Small and Medium Size companies

1 EDUCATION EXPORT

Thanks to Finland's high-level results in the international student assessment (PISA) during 2000's, the Finnish school system (K-12) is considered as an example of good quality education. This, together with good performance in other competitions and rankings such as international vocational Euro and World Skills, has triggered hundreds of delegations of policymakers and education specialists to come to Finland every year to learn from its experience.

The Country Brand delegation¹ appointed by the Minister for Foreign Affairs in 2008 defined education as a key element of Finnish identity and as the main achievement of Finland's society. The country brand report '*Mission for Finland: How Finland is going to solve the world's most wicked problems*' claimed Finnish education "without doubt among the best in the world" and that Finland has a "particular opportunity to create top-level educational products in addition to comprehensive schools and to become a major power in learning" (CBR, 2010).

As a response to these desires, the Government of Finland made a decision that education should become a new export product. The Government Decision in Prin-

ciple (April 24, 2010) set a strategic target for Finland to become "one of the world's leading education-based economies resting on the quality of the education system". The target was set for the proportion of education export to grown significantly in overall exports by 2015 and for the turnover of education export to increase to 350 M€ by the end of 2018. An Action Program for Education Export (2013) and the Road Map of Education Exports (2016) were published by the Ministry of Education and Culture (MOEC).

Education export is defined in the Finnish Education Export Strategy (MOEC 2012) as "*all business based on education, training or knowledge transfer, from which a foreign actor pays for a product or service*". Means for the implementation of the education export strategy consists of improving networking, productization, quality, marketing development, forming an educational export cluster and activating the higher education institutes as exporters. According to the strategy, successful export of Finnish educational know-how will be built on the following principles.

¹ The Minister for Foreign Affairs appointed a delegation to develop Finland's country brand in September 2008. The work culminated in a country brand report published at the end of 2010 called "Mission for Finland – How Finland will demonstrate its strengths by solving the world's most wicked problems".

BOX 1. PRINCIPLES OF EDUCATION EXPORT

- Education is one of the future export clusters.
- Successful export of education skills is based on a strong education system and its continuous development. Support for education export is primarily allocated to activities carried out in co-operation between Finnish operators, with the aim of providing versatile solutions to customers instead of individual products or services.
- The primary targets of Finnish education export are defined by sub-sector and geographically, relevant information is obtained through market research.
- The support to possible exporters of Finnish education will be operational support above all, but also co-financing.
- Finnish operators in the education export field must strengthen and step up their quality assurance.
- A cluster approach will specifically look for and identify new business opportunities, not only to bring operators together.
- Higher education institutions as engines of educational exportation. and they will be encouraged to be active and assume a major role as education export operators.

Ministry of Education and Culture, Decision in Principle 2010.

1.1 FUTURE LEARNING FINLAND 2011–2015

The Government set up a national education export programme “Future Learning Finland” (FLF) to establish a competitive national education business cluster. The programme was set up to support the achievement of the Government’s objective of increasing education’s share of Finland’s total export. To achieve this, the FLF aimed to identify new markets and market opportunities to Finnish players. More specifically, the objective was to

- 1.** Build a competitive national education business cluster and network,
- 2.** Build up the international brand image and recognition of Finnish education export and
- 3.** Identify and open new markets and market opportunities to Finnish players.

Future learning Finland operated during years 2011–2015. The FLF was led and coordinated by Finpro, which is an expert service organization helping Finnish companies to internationalize, acquire more foreign investments in Finland and increase the flow of foreign tourists to Finland². In 2018 Finpro and Tekes merged to form Business Finland (BF). Future Learning Finland (FLF) was powered by three Finnish ministries: Ministry of Education and Culture (MOEC), Ministry of Economic Affairs and Employment (MEAE) and Ministry for Foreign Affairs (MFA).

² <https://www.businessfinland.fi/suomalaisille-asiakkaille/tietoa-meista/finpro-on-nyt-business-finland/>

Future Learning Finland established a cluster or network of actors engaged in education export. It provided to its members training on international marketing and internationalization and organized opportunities to make contacts with potential clients. One of the objectives was also to promote the Finnish education brand and education export in the international target markets. The FLF also provided support to product development and particularly to the development of joint offers and proposals.

Future Learning Finland was implemented in three phases: *preparation phase* (2010-2011), *launching phase* (2011-2012) and *implementation phase* (2012-2014). During the preparation phase, the FLF membership eligibility criteria was developed, in accordance with the principles of the education export strategy (see box 1 above). The plan for the *launching phase* was to support the development of sub-cluster specific integrated, joint services and products, again, in line with the principles of the education export strategy. Sub-clusters were established for the following themes: a) Teacher training; b) Research-based education; c) Learning environments; d) Competence based -training (related to working life) and e) ICT in learning. A consultant was hired to conduct growth strategy workshops. During the *implementation phase*, support to members was provided e.g. in writing joint proposals.

The FLF programme operated for four years. In 2015, a decision was made to replace it with a new programme called “Education Export Finland” (EEF) which had similar objectives. EEF was also managed by Finpro.

1.2 EDUCATION EXPORT FINLAND 2015–2016

The Education Export Finland (EEF) was implemented only for one year in 2015–2016 before a decision was made to transfer the education export growth programme to the Finnish National Agency of Education. EEF had a specific target to get 70 members, to increase the headcount of the member companies by 5%, the revenue of its members by 15 % and to contribute to 20 % increase in the overall education export³.

EEF provided similar services than its predecessor FLF, including marketing material production, training and networking events, participation in ministerial delegation missions, and communication about sales leads to its members. EEF growth program modified the sub-clusters set up by FLF, and the new sub-clusters were: a) Early Childhood Education and Care (K12); b) Vocational education and training; c) Corporate Training; d) Higher education; e) Environments and infrastructure; and f) Development and Consultancy. It also served as an umbrella for a market-specific project in the Gulf area.

The FLF and EEF aimed to contribute to the increased education export goals, set by the MOEC. FLF focused on establishment of an education export cluster and development of an education export brand for Finland, whereas the focus of EEF, in turn, was more on marketing and

³ Finding decision dated 3.9.2015.

increasing export (EEF Final report 2016). While the FLF did not have specific measurable targets, EEF had targets and indicators to track its performance. The intended impact of the EEF was increase in revenue by 15 %, increase education export by 20% and increase jobs by 5 %, by 2016. However, reliable baseline for those indicators did not exist. The internal logic of the FLF and EEF illustrated in the Results Chain (Figure 1) below.

The work of Education Export Finland growth programme was followed by the Education Finland -programme, which is managed by the Finnish National Agency for Education (FNAE).

FIGURE 1. Results Chain of Future Learning Finland and Education Export Finland.



BENEFICIARIES AND TARGET COUNTRIES

The members of the FLF and EEF programmes were education institutions and companies which had a product, service or concept suitable for education export, and which had international activities or intent to internationalize. Prior acceptance as a member, the organization's or company's preparedness to act internationally and its commitment to developing internationalization of its activities was assessed using the criteria developed by FLF. Target countries of education export were defined in the funding applications as follows (Table 1).

TABLE 1. Target countries of Future Learning Finland and Education Export Finland.

YEAR	TARGET COUNTRIES
2011–2012	India/ Brazil, Vietnam, Argentina, Indonesia, Uganda Morocco
2012–2013	China, Russia, South-Korea, Saudi Arabia, India, Brazil, South Africa, United Arab Emirates (UAE), Germany, Afghanistan
2013–2014	Saudi-Arabia, China, Russia, Thailand, United Arab Emirates (UAE)
2014–2015	Saudi-Arabia, China, Russia
2015–2016 (EEF)	Vietnam, Thailand, India

Source: FLF and EEF Annual Reports 2011–2016

PROGRAMME MANAGEMENT

FLF and EEF were managed by a team of 3–4 Finpro staff members. The FLF programme Steering Group (SC) consisted of representatives of Finpro, Ministry of Economic Affairs and Employment of Finland (MEAE), Ministry of Education and Culture (MOEC) and Ministry for Foreign Affairs (MFA). In 2012, representatives from member companies and Higher Education Institutions (HEIs) joined the SC. The manager of the Learning Solutions -programme of Tekes joined the SC in 2013.

The composition of the EEF Steering Committee was different: it consisted a representative from each sub-cluster Early Childhood Education and Care (K12); Vocational Education and Training; Corporate Training; Higher education; Environments and infrastructure; and Development and Consultancy) plus a few external partners.

1.3 FUNDING

Future Learning Finland and Education Export Finland were financed by the Ministry of Economic Affairs and Employment of Finland on annual basis. The state share of FLF was 50–70 % of the total budget (2012–2014). In addition, the FLF collected membership fees ranging from 2 500 € to 10 000 € based on the size of the member organization. The membership of the EEF growth program, in turn, was free of charge, but the members signed an agreement to provide information on turnover, education exports, personnel and about countries where training export sales have been made. The current Education Finland -programme managed by the Finnish National Agency of Education (FNAE), has introduced membership fees are again introduced, based on the development status of the company⁴. Financing of FLF and EEF is presented below in table 2.

TABLE 2. FLF and EEF financing.

YEAR	TOTAL BUDGET €	STATE	MEMBERSHIP FEES
1.7. 2010–30.6.2011	478 201	478 201	
1.7. 2012–30.6. 2013	465 340	132 347 (25 %)	295 295
1.7. 2013–30.6. 2014	417 977	127 436 (30%)	290 541
1.7.2014 –30.6. 2015	364 368	201 407 (55%)	Not available
1.9. 2015–31.12. 2016 (EEF)	503 771	490 000 (97%)	-
Total	2 229 657	1 429 391 (64%)	

Source: FLF and EEF Annual Reports 2011–2016

⁴ The membership fee of the current Education Finland -programme is divided in three categories, based on the developmental stage: a) companies, which do not have sales yet (200 €); b) companies with a growth plan and revenue ≤ 500 000 € (600 €); and c) experienced companies with revenue ≥ 500 000 € (1 200 €). <https://www.oph.fi/koulutusvienti/jasenyy>

2 EVALUATION APPROACH AND METHODOLOGY

This evaluation is an Ex-post Evaluation of the “Future Learning Finland” and “Education Export Finland” -programmes. The evaluation was conducted two years after the later programme “Education Export Finland” was phased out in 2016. This evaluation presents an analysis of the results, relevance, efficiency, effectiveness and impacts of the programme. This was a forward-facing analysis with a focus on implications of the results for future programmes similar in content and scope for Business Finland.

A mixed method approach was used. Quantitative and qualitative data were gathered, synthesized, and analysed from different sources, including programme reports and other relevant documentation, exports data, a structured online survey, and semi-structured interviews with BF staff, FLF and EEF members, steering group members and other stakeholders.

The purpose of this evaluation is to provide evidence-based information regarding the extent to which Future Learning Finland” and “Education Export Finland” were effective in meeting stated project outcomes, efficiently carried out, had impacts on company financial operations (i.e. turnover, jobs, export). Factors

contributing to success and possible challenges and lessons learned will be addressed including an analysis of services provided to support network activities and programme management.

This evaluation was conducted between November 2018 and March 2019. In accordance with the Terms of Reference prepared by the Business Finland, the evaluation looked at the FLF and EEF programmes through the following criteria: relevance, effectiveness, impact, and efficiency. In addition, the evaluation searched for possible synergies between the FLF and EEF and the Skene and Learning Solutions -programme managed by Tekes. The evaluator constructed a Result Framework (Table 3, in section 4.2.) based on information available in the programme documents.

DATA COLLECTION

Desk Review: A literature review covered material provided by the BF and other relevant material (reports, studies). Statistics on trade and the value of the industry’s exports of the FLF and EEF members were analyzed using data obtained from the BF data-base.

Survey: An online survey was sent to 48 FLF member organisations based on the contact lists provided by Finpro (24 companies and 22 education institutions). A total number 24 responses were received from 10 companies and 10 education institutions, representing 44 % response rate.

Interviews: A total number of 35 EEF members were interviewed (28 companies and seven education institutions). Companies on the contact list provided by BF were contacted by email and then interviews were conducted with companies who were available after a follow-up email and phone call. Out of the members, 12 members (3 education institutes, 9 companies) were also members of FLF so the interview covered both phases. In addition, four staff members of Business Finland engaged in FLF or EEF management, four Steering Committee members and three stakeholders were interviewed. The structure of

the interview was aligned with the on-line survey structure. A total number of 44 persons were interviewed.

Data analysis: This data from different data sources and informants from different categories was triangulated in order to offer an ‘enhanced confidence’ in the emerging findings.

Limitations:

- Accurate data on education export does not exist. Education export is not presented as own headings e.g. in the customs statistics. Data before 2013 and/or after 2016 and financial data on education export from the education institutions is not available in the BF database, similarly to the data on tuition fees for students from outside the EU / ETA which have only been collected since autumn 2017.
- FLF did not have a proper monitoring framework, but EEF had identified indicators and related targets for its operations. While the overall objective of FLF remained the same over the implementation period, there was slight variation on the results statements and focus in the annual plans which were the basis for funding.
- Response rates to surveys and interview requests were relatively low.
- Because the purpose of the FLF and EEF was to promote the image of Finnish education and look for markets, the achievement of this objective would have required consultation with the target countries and potential clients to get their view on the achievement of this objective.

TABLE 3. Data collection.

FUTURE LEARNING FINLAND		
	NUMBER OF RESPONSES	COVERAGE
Companies	10	42 %
Education Institutions	10	45 %
Total respondents survey	20	22/48
EDUCATION EXPORT FINLAND		
	NUMBER	
Companies	28	36 %
Education Institutions	7	33 %
Interviews		
Business Finland staff	4	
Steering Committee members	4	
Other stakeholders	3	
Total number of interviews	46	

3 FINDINGS

3.1 RELEVANCE

EQ 1: How relevant have the programmes been? How well did the programmes and their services meet the needs of participants?

When the FLF was established, there were only few companies engaged in education export. Some consultancy companies had gained experience in development co-operation projects. Higher Education Institutes (HEI) had gained international experience by implementing e.g. Erasmus programmes financed by EU and projects financed by the Ministry for Foreign Affairs⁵. However, an interest was there: There were 70 organisations present in the FLF kick-off meeting in 2010.

The ecosystem for education export was only emerging and there was not much to sell. This was acknowledged already in the education export strategy which indicated that “Despite significant international interest in the Finnish education system, no ready-made products exist, or none have at least been identified yet”

(MOEC 2010). Also, at that time, it was not possible for the HEIs to sell degree programmes for students from outside the EU/EEA. In short, “Finnish education had a good brand and there was a demand for Finnish education products and practices globally, but at the time FLF was established there was there was hardly any clear educational product that could feed this demand. (Niemi et al., 2012, p. 19).

The FLF and EEF supported the implementation of the Government’s education export strategy. Also, the Strategy for the Internationalization of Higher Education Institutions in Finland 2009–2015 (MOEC 2009) includes directions for enhancing education export, and it emphasizes marketing and productization of education services. The establishment of FLF and EEF programmes was also in line with the goals of the Team Finland strategy 2014 of enhancing economic relations of Finland, internationalization of Finnish companies, and strengthening the Finnish brands. Engaging different ministries (MEAE, MOEC, MFA) was also in line with the Team Finland principles.

⁵ North-South-South Programme (NSS) and the Higher Education Institutions Institutional Cooperation Instrument (HEI ICI) financed by the Ministry for Foreign Affairs.

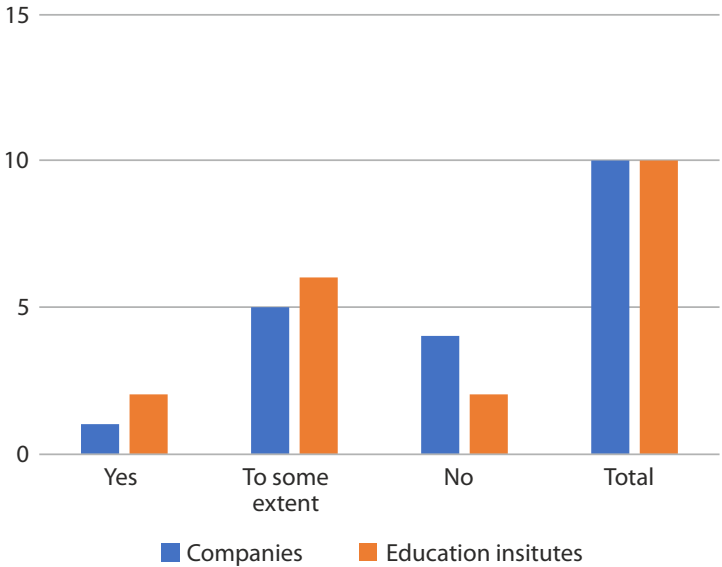
Feasibility study, situation analysis or capacity assessment were not conducted to track the level of business and internationalization skills or the needs of the members. However, the needs for capacity development were evident as shown for instance in a study (Saarinen 2010) which found that the majority of the Hämeenlinna University of Applied Sciences (HAMK) staff had been contacted by international actors, but only half (51,4 %) of them considered having sufficient knowledge about education export and international markets.

The results of the evaluation survey conducted in the end of 2018, show that the FLF network responded to the needs of its members to some extent. The survey respondents, however, considered that a “twin-track

approach” would have been useful as it could have addressed the diverse needs, interests, expectations and capacities of the companies and Higher Education Institutions. Also, the interviewees were of the same opinion.

The Future Learning Finland started a new era for education sector in Finland. It was first time ever to bring together Higher Education Institutions and companies, interested and engaged in education export. There was a need for the education export programme, but more strategic approach would have been needed, with a situation and needs analysis so that the diverse needs and expectations of the members could have been effectively met.

FIGURE 2. Did the FLF meet your needs?



3.2 EFFECTIVENESS

EQ 2 How well have the objectives set for the programmes been achieved? What concrete results each of the programmes have created?

For FLF and EEF, targets were set on annual basis. The EEF had a monitoring framework, with specific targets and indicators. However, it remained unclear on what basis the relatively ambitious targets for a one-year programme had been set and how they would be measured in the absence of baselines. The FLF, in turn, did not have specific targets and indicators. The main result areas and indicators for FLF and EEF are presented in the Table 4.

TABLE 4. Results and monitoring indicators of FLF and EEF.

RESULT				
	<i>Overall Objective/ Impact</i>	<i>Baseline</i>	<i>Target 2016</i>	<i>2017</i>
	Increase in revenue	Not available	15%	Not available
	Increase education export	260M€ (2014)	20%	310M€
	Increase jobs	Not available	5%	Not available
	Outputs			
<i>1</i>	<i>Build a competitive national education export business cluster and network.</i>	<i>Baseline</i>		<i>Reference</i>
1.1.	Number of members in network (EEF)	41 (FLF, 2014)	70	FLF did not specify target value.
1.2.	Perceptions/ satisfaction of members (EEF indicator) on network operations.	Not available	Not available	
1.3.	Number of joint proposals.	0	Not available	FLF indicator, no target value.
<i>2</i>	<i>Build up the international brand image and recognition of Finnish education export.</i>	<i>Baseline</i>		
2.1.	Media hits (EEF)		20	Specific objective of FLF and EEF
<i>3</i>	<i>Identify and open new markets and market opportunities to Finnish players.</i>	<i>Baseline</i>		
3.1.	Market analysis and leads produced.	Not available	Not available	
3.2.	Leads/contacts/ Contracts/ sales made.	Not available	Not available	
3.2.	Number of inquiries and requests for proposals from target countries.	Not available	Not available	

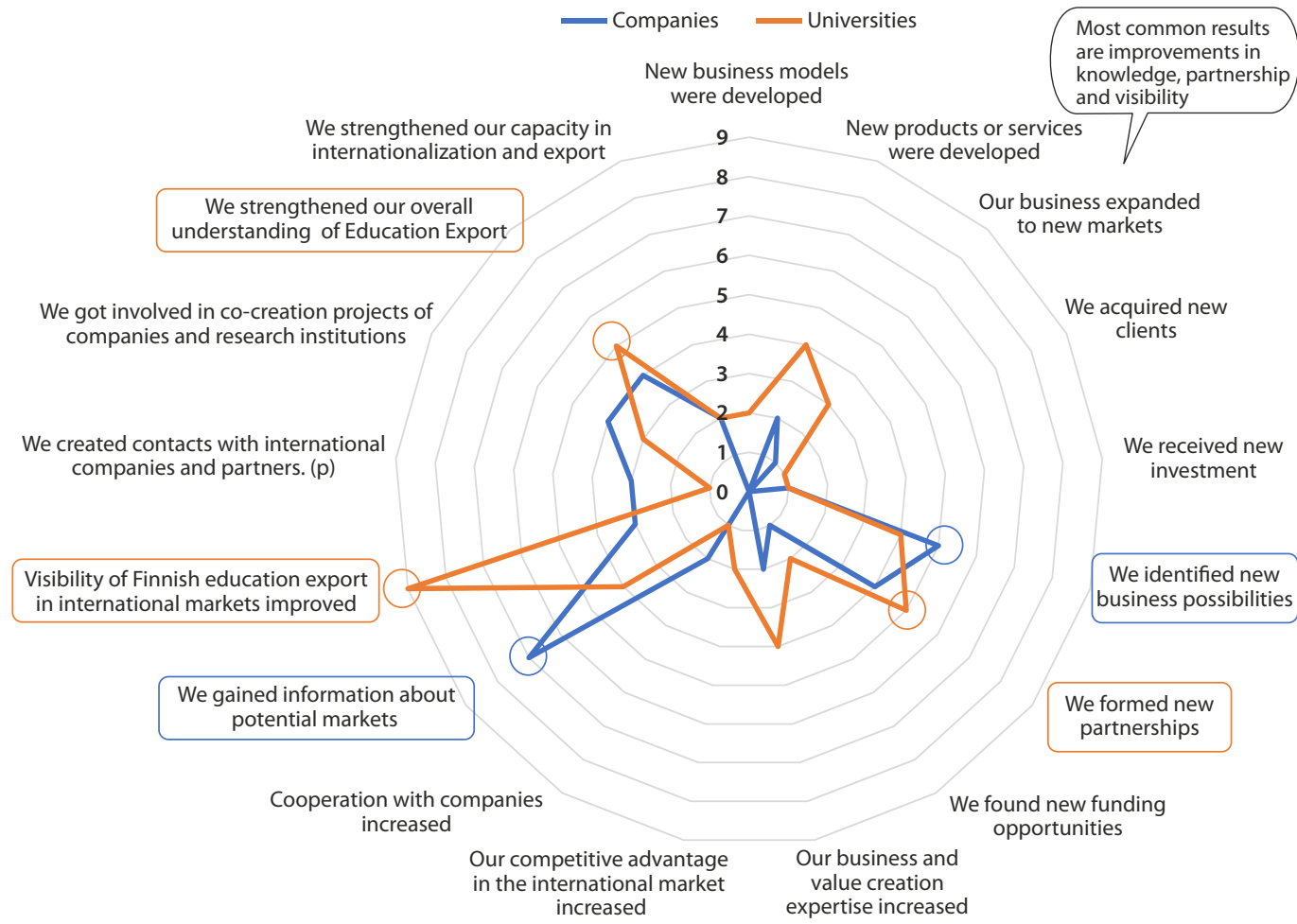
The FLF and EEF did not collect data on all indicators, and only anecdotal information for some indicators (e.g. for indicators related to Result 3) was available in the reports. Below, we present the findings of this evaluation.

3.2.1 ACHIEVEMENT OF PROGRAMME OBJECTIVES

According to the evaluation survey respondents (N = 12 education institutes, 10 companies), the

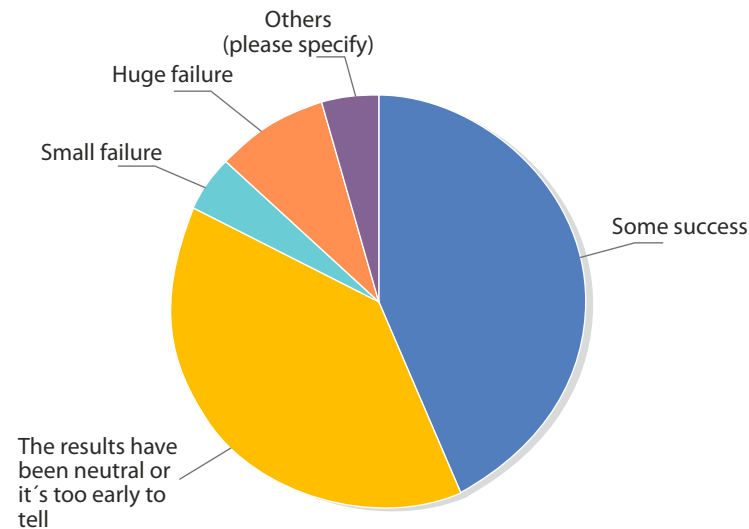
- Visibility of Finnish education export has increased. Higher education institutions scored this higher than companies.
- Overall understanding on education understanding was increased. Higher education institutions scored a little higher compared to companies.
- Half of the respondents considered that the programmes have strengthened their overall understanding of education export, and supported them in identification of potential markets.
- Higher education institutes considered that the programmes have supported them in the development of new products and in establishment of new partnerships. The Box 2 is an example of such partnership.
- Less success was achieved in development of new business models, in capacity development and in increasing the participants' competitive advantage in international markets.

FIGURE 3. Results of participating in Future Learning Finland and/or Education Export Finland.



Overall, some 43 % of the evaluation survey respondents considered that the FLF has been successful and nearly same proportion of respondents considered that the results have been neutral. There were also opinions that the FLF has been a failure. Similar findings were obtained through interviews. The FLF suffered from limited strategic planning while EEF was considered more target oriented and strategic.

FIGURE 4. Success of Future Learning Finland.



In sum, the FLF and later EEF, made Finnish education export visible internationally, but better orientation and preparation of Finnish education concepts would have been needed. Assessment of the impacts of the

programme would require investigating the perceptions of the international customers on how they see Finnish education and Finnish education export overall and how FLF and EEF organized activities have contributed to these images.

3.2.2 BUILDING A NATIONAL EDUCATION EXPORT BUSINESS CLUSTER AND NETWORK

Education export cluster. The purpose of the FLF was to establish a cluster or network of education export actors. This objective was achieved. During the first operational year, the number of members was 64 (31 companies and 33 education institutes), but it reduced towards the end of FLF implementation period, till 41. EEF, in turn, had a specific target of 70 members by 2016. This target was achieved.

TABLE 5. Number of FLF and EEF members.

YEAR	MEMBERS TOTAL	COMPANIES	OTHERS
Future Learning Finland			
2010–2011	preparation phase		
2011–2012	64	31	33
2012–2013	67	32	35
2013–2014	64	36	28
2014–2015	41	21	20
Education Export			
2015–2016	98	73	25

Source: FLF and EEF Annual Reports 2010–2015

One reason for dropping out from the network was the high membership fees (2 500–10 000 €) which, according to the opinion of informants, did not correspond with the services provided. On the other hand, younger and smaller companies, whose membership fee was lower, pointed out that being a member of a Government powered network promoted their credibility in the negotiation tables, and thus brought value for money. Some education institutes considered that participation in the FLF and EEF did not bring much added value because they do business on their own. The members established their own association, which however, didn't become very active.

Because of this feedback, the FLF Steering Committee commissioned in 2012 an expert team to carry out a situation analysis and to make recommendations for the next steps. This team, composed of the FLF member representatives, concluded that after a promising start, the operations of the FLF were “frozen” and the results were limited. The reasons for this have been, for example, the financial structure of the programme (annual state funding, membership fees), limited ability of the members to influence the activities, the diversity of members' needs and their own passivity, and the fluctuation of FLF staff (Koulutusvientiselvitys 2012). The survey recommended to replace FLF with a new education export organization which would focus on upstream marketing and supporting the business development of companies and education institutes. A new funding model was proposed following the system of New Zealand, based on a joint funding by ministries. In line with these recommendations the process to establish a new programme “Education Export Finland” started.

Building up the brand image and visibility of education export. One of the goals, particularly of FLF was to promote the brand and visibility of Finnish education export. In order to achieve this, several activities were carried out: FLF was present in several international education fairs and events for instance in Saudi Arabia, Russia, United Emirates, Romania, and Germany. Promotional materials were produced. The FLF and EEF organized opportunities for their members to attend ministerial trade promotion trips and meetings with education delegations coming to Finland. A consultant was hired to promote Finnish education in the Gulf region. Also, several activities took place in Finland.

Visibility was enhanced in the international events and education export fairs by grouping cluster members under one Team Finland and Finnish Education brand in the international education fairs. However, the informants considered that the participating organisations were not able to provide a comprehensive picture neither about Finnish education nor Finnish education export. Instead, they promoted their organization or products rather than Finnish education quality. A comprehensive package of Finnish education export was not available. One interviewee told that a potential client was surprised that a separate contract with several companies would have been needed to get the set of services of interest. Some interviewees questioned to what extent the missions actually contributed to the Finnish education brand, which already exists and to what extent the delegations were able to present concrete solutions and packages based on Finnish strengths and experience.

Thus, as a conclusion, more preparation for these events and missions overall would have been needed.

Finnish Embassies and Ambassadors have an important role in promoting education export. Examples were given e.g. from Tunisia, where a seminar on Finnish education organized by the Embassy led to shortlisting of a Finnish company for international bidding on an education sector reform programme. In Brazil, the Embassy had a crucial role in connecting HEIs with potential clients. This has led to long term cooperation in the VET sector as elaborated in Box 2. In Saudi Arabia, the Embassy played an important role in launching Finland as the core theme for the of the International Exhibition and Forum for Education (IEFE) 2013 conference. Being a central theme of an international exhibition is a major achievement and contribution to the FLF objective of “Building up the international brand image and recognition of Finnish education export. “

Joint proposals. In accordance with the Education Export strategy the FLF and EEF tried to support the development of “activities carried out in co-operation between Finnish operators, with the aim of providing versatile solutions to customers instead of individual products or services”. One interviewee said that the members were encouraged even “with too much pushing” to develop joint proposals and concepts. However, this did not work as expected because the “members were still too much focused on their own products rather than comprehensive education export packages which would serve multiple needs of the clients in the international market” (Schatz 2015). Many respondents also considered that there was competition between the members and the time was not yet ready for collaborative work. This was also observed in the survey of El Cheikh (2015) indicating that an obstacle to Finnish education export was that the industry hardly had any cooperation and that the organizations worked very independently.

BOX 2. INTERNATIONAL EXHIBITION AND FORUM FOR EDUCATION

IEFE, International Exhibition and Forum for Education, is the largest international exhibition and expert forum in the Gulf area. In 2013, Finnish education was the central theme of the fair. As a joint effort of Future Learning Finland, the Ministry of Education and Culture and the Embassy of Finland in Saudi Arabia, a delegation of 70 people from Finland and experts representing Finland’s top experts participated in the fair. During the week of events, Saudi Arabia’s main media reported on Finland and Finnish education operators. At the beginning of the event week, EduCluster Finland, a member company of Future Learning Finland, published a cooperation agreement with King Wad Jeddah of King Abdulaziz University. In addition, commercial cooperation agreements with local players were signed by Domus Concept Finland and 10monkeys.com.

Regional education export clusters already existed. For instance, FinnWayLearning is a consortium formed by the City of Turku and several education institutions in the region, working together to offer their expertise and services in many different areas, including learning and pedagogy solutions, and linking education with working life. Also, Educluster Finland had formed clusters. Finland University Ltd. was formed in 2013 as a joint cluster of universities. The Nordic Institute of Dental Education is a joint company of University of Turku and Planmeca Ltd., specialized in education exports. The Adult Education Center, and the University of Tampere and University of Applied Science (TAMK) had already started to sell their services and programmes to China. All clusters, however were not members of the FLF or EEF and it is difficult to verify to what extent the FLF and EEF programmes contributed to the establishment of these clusters, if at all.

On a positive note, some joint proposals and clusters have emerged after the EEF. EEF members have established “integrated companies”, which can provide full packages tailored to the client’s needs. Although establishment of these companies is not a direct result of the EEF, according to the company representatives, it is safe to conclude that the existence and work is attributed to the participation in the EEF.

An example of a successful joint programme is teacher in-service training package for Tatweer in Saudi-Arabia. FLF facilitated coordination meetings where the programme was developed. Also, one company reported that participation in a cluster coordinated by a bigger company led to testing products in one larger project in

the Gulf area. Cooperation of two Universities of Applied Science was mentioned as a successful result of participating in a same mission, organized by FLF. During the mission the universities made a decision to develop a joint proposal, which led to longer term cooperation with broader impact than originally anticipated. It is presented in the Box 3 below.

BOX 3. **VOCATIONAL EDUCATION IN BRAZIL**

As a result of a delegation mission to Brazil organized by the FLF in collaboration with the Finnish Embassy of Brazil, the Universities of Applied Science of Hämeenlinna (HAMK) with University of Applied Science of Tampere (TAMK) developed a joint proposal “VET Teachers for the Future Programme”. A cadre of Vocational Education and Training (VET) and higher education teachers were trained in Finland. After this training, a new programme “Finnish Teacher Training Diploma” for training of teacher trainers was developed, and the trainees of this programme were selected from the alumni of the “VET Teachers for the Future Programme”. They will train new VET teachers in Brazil. This venture benefited from the previous experience of the HAMK in VET sector in Brazil and from the support of the Finnish embassy in Brazil.

Opening international markets. The FLF and EEF provided market analyses to their members. Also, accord-

ing to the programme reports, they shared a number of business leads and calls for proposals to their members. For instance, the EEF reported of introducing more than 400 potential clients and sharing of 30 sales leads to its members. However, no proper monitoring system was in place and therefore, information about the sales resulted from these leads was not available.

There were mixed opinions about the usefulness of market analyses. New, emerging companies considered them useful because they helped to get an overview about the target country and cultural issues. However, these analyses were considered too general, not providing in-depth understanding about the potentials of the markets and about the key players. The market analyses also failed to link the market information with the Finnish education export realities. This was regularly mentioned as one of the core limitations of FLF and EEF. The leads were not necessarily targeted to the right companies. Targeting them properly would have required better understanding of the education sector in Finland and operations of the members.

Interviewees pointed out the need to address cultural issues in the market analyses, because education is a sensitive sector, based on values and cultures. For instance, while in Finland the teacher profession is valued, in many countries it may be the last option of professional choices. In Finland, teachers also have high level of autonomy, while in many countries where Finnish education is exported to, the education system is based on strong hierarchy. Furthermore, very few countries conceptualize curriculum as it is done in Finland. Also,

parents' expectations differ. Like one interviewee said "parents are not interested in child-centered pedagogies, they are ready to pay for anything which takes their child one step closer to further studies in the University".

PROGRAMME SERVICES

In order to achieve the objectives, the FLF and EEF organised several activities (also referred to as services). Services offered were the following:

- 1.** Internationalization Services (Market analyses, country briefings etc.)
- 2.** Promotion trips (participation in education fairs and ministerial delegations, etc.)
- 3.** Networking events (Seminars, etc.)
- 4.** Communication (Web Pages/Internet, Brochures)
- 5.** Business Development Support (Coaching, etc.)

Participation in the ministerial trade promotion missions was considered beneficial. They opened an opportunity to meet with decision makers in the target countries and they promoted the credibility of the organisations. Although sales were not reported as a result of these missions, some examples of further negotiations with a client were mentioned in the interviews. The informants considered that missions which focused education only were more beneficial than missions addressing variety sectors.

Individual coaching was considered beneficial. For instance, companies mentioned that the initial assessment against the membership eligibility criteria was

useful. The criteria assessed included company's competence and readiness to produce quality business, international business and international communication skills. Interestingly, as one respondent pointed out, the membership criteria did not include any criteria referring to quality although the education export relies on the quality of Finnish education. "Being a member of this education export network does not respond to a question: what have you done for the quality education in Finland to deserve this membership?"

The FLF organized trainings e.g., on business model development, pitching, and communication. Also, the network events (trainings, network meetings, delegation missions, trade missions, participation in education fairs) were an opportunity to exchange of experiences and create partnerships. Participation in the events indirectly contributed to the product development as one company reported that it helped them to understand how to redesign their product to better meet the needs of the international market. One company, in turn, reported that after attending the network activities and international events, a decision was made that education export is not the priority for the company and the focus will be on the domestic markets.

The informants suggested that tailored trainings targeted to different types of member organisations would have been beneficial, because same training may not serve startups, HEIs and larger companies. Instead of general level trainings, topics such as international tendering processes and legal frameworks were proposed. The informants also expected and needed more support

in making deals, proposal development, business model development, benchmark studies, strategic business development coaching, in pricing and financial models, and actual leads instead of "edutours". With regards to enhancing the cultural understanding and business culture, local people could have been used. Two companies would have needed support to develop their services to be more suitable for educational export. A comment was also made that the services should have been made equally available to all members.

The Gulf Region has been one of the focus markets throughout the programmes. The opening of this market was already done by Finnish companies and good contacts with authorities existed. In 2015, the EEF launched a Gulf Growth Program, aiming to bring about significant growth in Finnish education exports to Saudi Arabia and the United Arab Emirates.

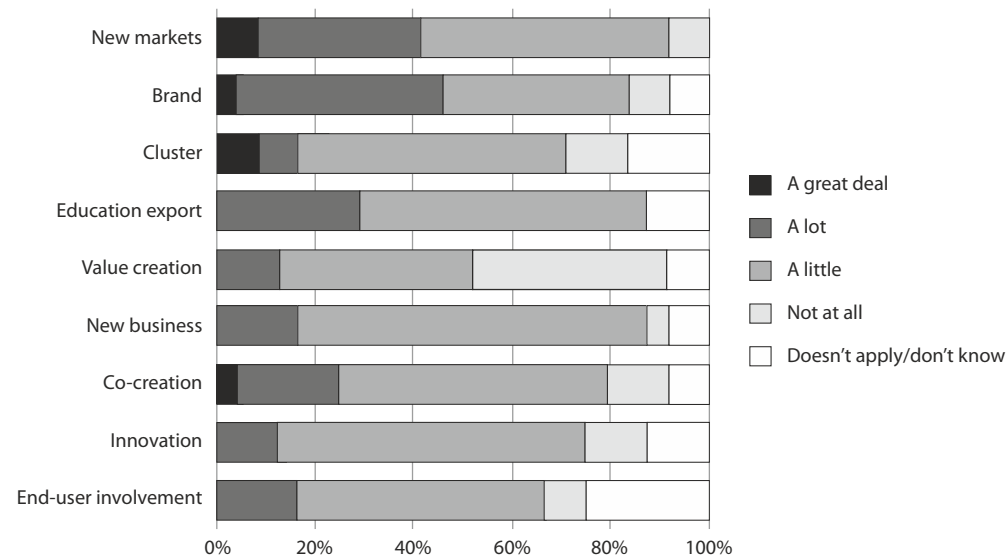
MEMBER SATISFACTION

Both FLF and EEF assessed membership satisfaction. The FLF reported about such survey in 2013 and an EEF monitoring survey was conducted in 2016. According to the results of EEF, the members were moderately satisfied with the programme (in the membership survey the members rated their satisfaction to 2,91 (score 1-5 highly satisfied). The education institutes were slightly less satisfied (2,78) than companies (2,95). Similarly, the companies and institutes considered that the EEF programme has only moderately helped them in speeding up their internationalization. The FLF member satisfac-

tion survey produced similar results, but the response rate was relatively low.

Interviews gave harsher assessment. Most interviewees with few exceptions criticized the quality of work of the network. This may be because the expectations were different and the mandate of FLF and EEF was not clear. The respondents of the online survey considered that the FLF programme has been successful in generating the education export brand, in promoting education export and identification of new markets, but as indicated above, the opinions of the functionality of the cluster itself varied. Suggestions were made to diversify the services based on the needs of the companies and not necessarily by sub-clusters.

FIGURE 5. How successful has the FLF programme been?
Answers from evaluation survey.



In sum, the FLF has achieved its goal of establishing an education export cluster and in promoting visibility of education export in selected target countries. The programmes have promoted understanding on education export and international markets among their members. The extent to which the FLL and EEF have contributed to the Finnish education brand is difficult to assess as it would require consultation with the international clients. It is also noted that while some relevant indicators were presented in the plans, data was not systematically collected, thus leading insufficient monitoring and verification of achievements. The most commonly reported results are presented in the box below.

BOX 4. OUTPUTS OF FLF AND EEF

- The FLF brought together key players in the Finnish education export field (companies and education institutes) for the first time ever.
- Education export industry was born.
- Development of a Finnish school concept started.
- The GULF-programme was initiated.
- Initial steps for joint business models were taken.
- More information about the potential markets.
- Developed products were re-developed (and may be sold later)
- Co-operation with UAS institutions has increased and turn to strategic level.
- The work initiated more focused approach to key staff competence development and business projects.

3.3 EFFICIENCY

EQ 3 What significant challenges were identified regarding programme administration and how well were those challenges solved?

Several changes influenced the performance of the FLF programme. For instance, it at least seven staff changes took place during programme implementation. These changes, together with the lack of long-term strategic plan led to inefficiencies in planning and implementation, as well as in reporting. Some level of credibility-challenges were also reported. The members became cautious in informing the FLF staff about their operations as in some cases the information became public and common good for the network. The informants also noted that in a business area where there is horizontal mobility from one company to another the “non-compete clause” should be looked at.

The SC members consider that their role in policy guidance and overseeing the programme implementation was limited. The SC didn't have a Terms of Reference which would have defined its role and mandate and Finpro managed the programme relatively independently. The SC members also had different interests and entry

points: The MOEC had ownership as the programme was implementing its Education Export strategy. The MEAE, provided funds and had its interest in financial impacts. The MFA had its interest on how the programme could promote Finnish education internationally and the MFA's network of Embassies served as contact points to global markets. However, these resources were not used efficiently for the programme guidance and implementation.

One of the challenges of the programme was that the programme management had limited knowledge and understanding of the education system in Finland and education sector development needs overall. In order to be able to market the products the programme management would have benefitted more from direct contacts with the members.

The evaluator interviewed LS and Skene actors and learned that complementarity of these three programmes was very limited, or did not take place at all. This was also pointed out by the Steering Committee of the LS programme which called for closer cooperation between LS and FLF to enhance effective commercialization of the tested pilots (17.10.2014). The LS programme manager was included in the FLF Steering Committee as late as in spring 2013.

3.4 IMPACTS

EQ 4 What were the economic impacts of the programmes on turnover, jobs, export and acquired investments of the participating companies? (EQ 4) What wouldn't have happened without the programmes?

3.4.1 ECONOMIC IMPACT

Accurate data on education export do not exist. The customs statistics do not segregate education export from the overall export trade. Therefore, in this evaluation, various data sources were used to assess the economic impacts of FLF and EEF. *Firstly*, the evaluation analyzed the financial data provided by the Business Finland. *Secondly*, the data of an Education Finland -membership survey 2017 was used. *Thirdly*, with regards to HEIs and student fees, the evaluation used the survey of "Experiences of tuition fees 2017–2018"⁶ commissioned by the Ministry of Education and Culture in 2018. Data from the year 2017/18 is appropriate to assess the impacts of the programmes, as many informants and also Business Finland have pointed out that it may take 3–5 years to make revenue from service trade and "quick wins" hardly exist.

It is also notable that the EEF survey data as well as Education Finland data contains only export of their member organisations. These figures show an increase from 260 M€ in 2014 to 310 M€ in 2017. The share of different subsectors is shown in Table 6 below.

TABLE 6. Education Export 2017.⁷

SECTOR	REVENUE	SHARE %
University	8,2	2,65
University of Applied Sciences	4.1	1,32
Vocational training	1,7	0,55
Training targeted to employment market (private)	6.5	2,10
Early Childhood education	0,76	0,25
General education, Finnish school concept	11,3	3,14
ICT	3,7	1,19
Training and consultation	1,8	0,58
Publication and learning contents	268	86,45
Learning environments	4	1,29
Educational tours	0,84	0,27
Total	310 M€	100

⁶ Kokemuksia lukuvuosimaksujen käyttöönotosta lukuvuonna 2017–2018 – seuranta- ja arviointiryhmän väliraportti. <https://minedu.fi/documents/1410845/6303486/Kokemuksia+lukuvuosimaksujen+k%C3%A4ytt%C3%B6notosta.+Seuranta-+ja+arviointiryhm%C3%A4n+v%C3%A4liraportti>

⁷ https://www.oph.fi/koulutusvienti/103/0/koulutusviennin_arvo_jo_310_miljoonaa

FIGURE 6. Stacked revenue of all the FLF and EEF companies 2011–2017.

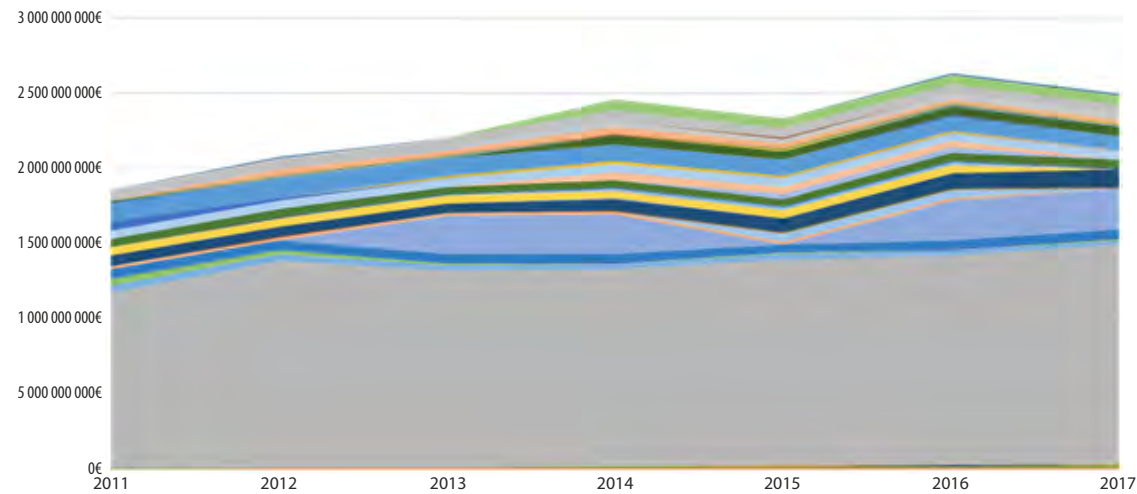
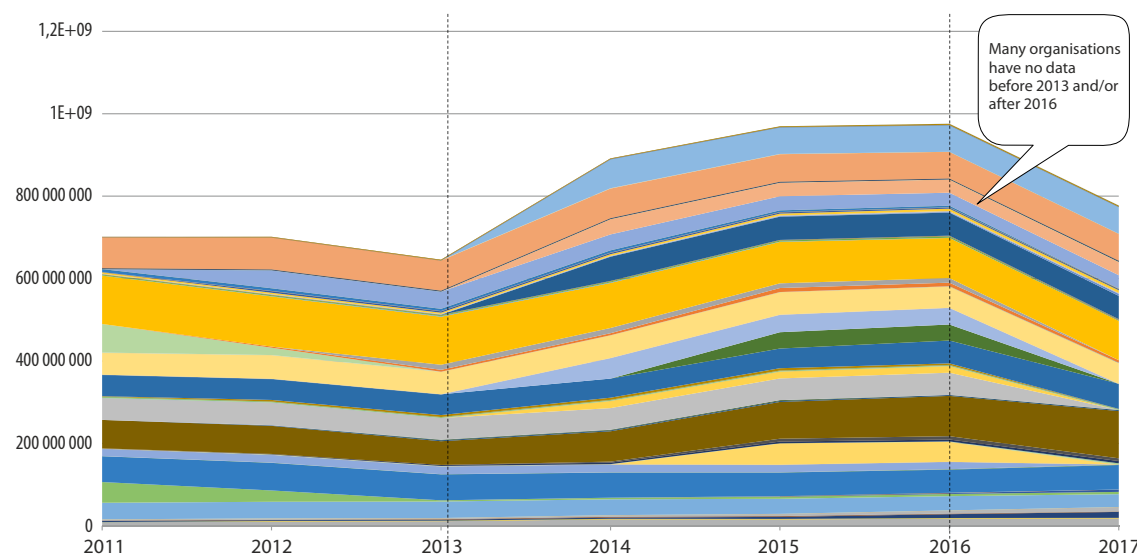


FIGURE 7. Stacked revenue of all but 2 largest FLF and EEF companies 2011–2017.

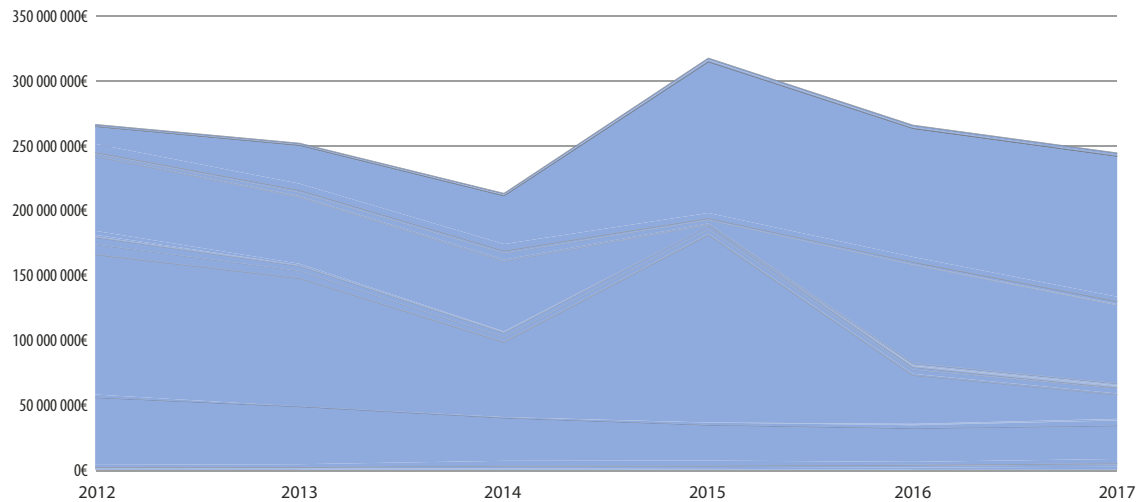


The analysis of the financial data received from Business Finland indicates that FLF and EEF participants have as a group experienced some 35 percent growth in revenue 2011–2017. When the largest two companies are removed from the FLF and EEF company data, the remaining companies show some 35 % growth in revenue as well between 2012–2016.

The EEF Completion report presents the data collected in a member survey in February 2016 with 69 % response rate. The results suggest that EEF has helped smaller companies to grow. The reasons could be that the joint projects and partnership became active.

With regards to education export by Higher Education Institutions, national level data from student fees (sales based on tuition fees for students from outside the EU / EEA countries) is not yet available, because the year 2017 was the first year for tuition fees. However, some estimates are presented in the study "Experiences of tuition fees 2017–2018"⁸ commissioned by the Ministry of Education and Culture in 2018. According to the estimates of higher education institutions, a total of 2.7 M€ were accrued to higher education institutions by international students in 2016. The sum has been deducted from the scholarships paid by universities, but not, for example administrative costs. (Kokemuksia lukuvuosimaksujen käyttöönotosta 2018).

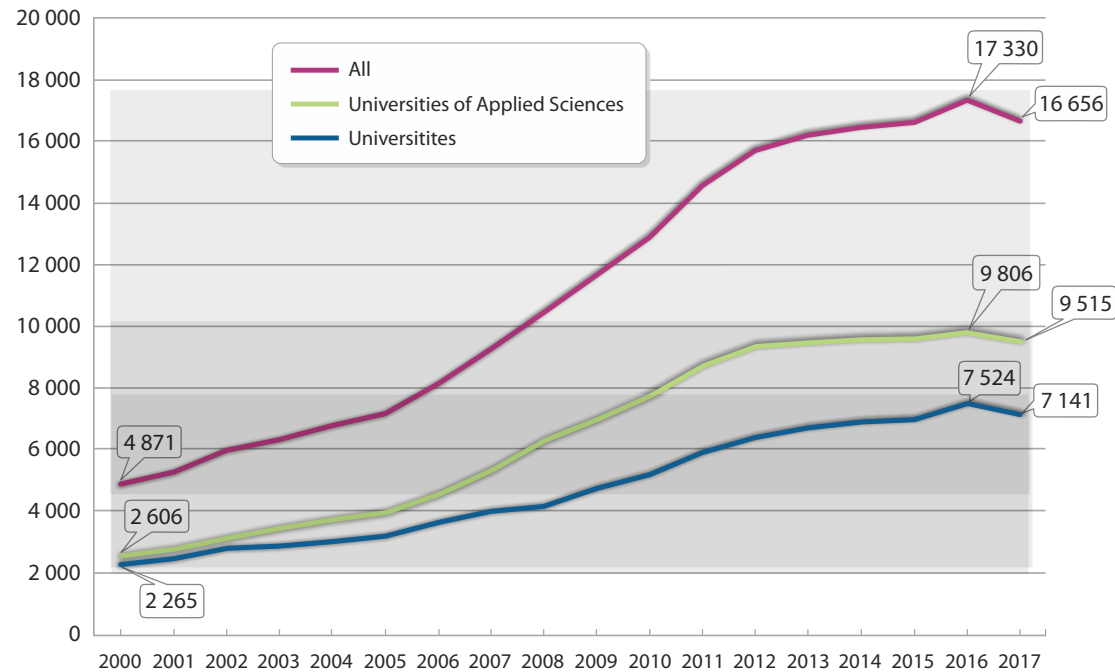
⁸ Kokemuksia lukuvuosimaksujen käyttöönotosta lukuvuonna 2017–2018 – seuranta- ja arviointiryhmän väliraportti. <https://minedu.fi/documents/1410845/6303486/Kokemuksia+lukuvuosimaksujen+k%C3%A4ytt%C3%B6%C3%B6notosta.+Seuranta-+ja+arviointi%C3%B6ryhm%C3%A4n+v%C3%A4liraportti>

FIGURE 8. Export figures of FLF and EEF companies 2012–2017.**TABLE 7.** Results of the Education Export Finland.

MEMBER ORGANIZATION	TURNOVER GROWTH 2015-2016	EXPORT GROWTH 2015-2016	STAFF GROWTH 2015-2016
Companies with turnover less than 100 000 in 2016 (19)	299%	781 %	126%
Companies with turnover 100 000 € – 10 M€ (27 responses)	16%	10%	12%
Companies with turnover > 10 M€ in 2016 (2 responses)	4%	0%	-1%
Public institutions (18 responses)	-4 %	-2 %	-4%

The study found that there were great differences between universities. At its highest, returns were announced 550 000 euros for the accredited university. The amount of the tuition fee varies from 2,100 to 18,000 euro depending on the university and the level of the degree. According to this survey, in 2000, the number of foreign students was nearly 4,900 and by 2016 the number had already more than tripled, to more than 17,300 students. The introduction of tuition fees reduced the number of students coming from outside the EU / EEA area but in contrast, the number of new foreign students from EU / EEA countries increased compared to previous years. In 2016, more than 83% of all new foreign students came from outside the EU / EEA area, and in 2017 the proportion of new students outside the EU / EEA area was just under 72%.

Many HEIs use commercial actors such as agents, consultants or marketing portals in their international student recruitment. Some HEIs have also created or are part of separate cooperation structures, such as Finland University, EduCluster and Eduexcellence, for the implementation of education exports. The HEIs also reported using traditional education fairs for recruitment, but clearly moderately. Of the new foreign students reported by universities, 1,372 were required to pay a tuition fee 37% of all new foreign students were liable to pay.

FIGURE 9. Foreign students in Finland.

Some informants consider that selling degrees could grow as a subsector for education export, but it would require multisectoral collaboration with immigration and other stakeholders. Some informants, in turn, considered that Finland has no role to play in the global market which is dominated by English-speaking service provision, although quality of education in Finland is highly valued. A reference for successful model was made to Denmark.

REVENUE

It is difficult to define to what extent the FLF and EEF programmes have contributed to the revenue and growth, because majority of companies engaged in education export were new companies and still small in terms of revenue. In 2010, 19 % of FLF members had a revenue less than 100 000 € and up to 2017 the situation has not significantly changed. As indicated earlier in this report, there are two member companies (publishing houses), which make up most of the net sales of education exports: over 260 M€.

JOB CREATION

The interviews and survey, as well as the Education Finland data from 2017 show that there has been increase in jobs during the evaluation period. The HEIs, for instance reported that at the time FLF was established in 2010, most universities didn't have a staff assigned for international work, but now many universities have a unit or have established companies for international activities and education export. The companies told that they work with practitioners, many of them working on part time basis or on short term. However, the Education Finland survey estimates the education export has created 150 new jobs.

OTHER IMPACTS

One of the purposes of FLF and EEF was to facilitate creation of joint proposals and comprehensive approaches as it is difficult for the companies alone to compete in the global markets and joint approaches would bring in the unique Finnish added value. During the FLF and EEF implementation period, some joint proposals were developed. The interviews also show that development continued after these programmes and some of the members have established or are part of broader consortium. The interviewees told that the participation in the FLF and EEF paved the way to this.

Also, other impacts were reported. For instance, in the evaluation survey (n=24),

- six respondents claimed that their business has grown;
- two respondents claimed that partnerships with the clients have become more strategic;
- one education institute claimed that the participation has boosted them to focus to their own key staff competence development and own business projects more thoroughly;
- two companies reported that they have developed or re-designed new services;
- members also reported that the FLF has supported their internationalization: contacts have led to educational visits to Finland and that they have been invited to give presentations about Finnish education to other countries.

It can be concluded that the FLF and EEF didn't have a significant direct impact on the overall education export or revenue of its members. Some smaller companies may have increased their revenue in the international markets either through individual sales or as part of a larger consortium. There are still challenges in providing accurate volumes for education export as the available data does not cover sales outside the network, neither the services of individual consultancies e.g., for multi-lateral organisations or foreign agencies.

3.5 BENCHMARKING WITH OTHER EDUCATION EXPORT COUNTRIES

The evaluation conducted a desk review on education export to benchmark some good practices. The Finpro's Review on Education Export (Tuomi 2016) and internet search were used as main resource of information.

Higher education is the main subsector of education export. For instance, Education New Zealand (ENZ), which is commonly mentioned as a model country for Finnish education export, reports total sector exports of NZ\$5.1 billion (US\$3.5 billion) for 2017, of which majority was attributed to spending by onshore students visiting New Zealand with another NZ\$.3 billion tied to education goods and services delivered abroad. In New Zealand, universities account for the largest share of total exports (27.6%). The other sectors are English lan-

guage training (15%), institutes of technology (13.1%), and schools (16.9%).

A common nominator for the successful education export is sound strategic guidance and ownership. New Zealand has formally launched an international education strategy to guide the sector's development through 2030. The strategy aims for a significant increase in the economic impact of the sector, but also places the emphasis on the quality of New Zealand education and the satisfaction of visiting students. Quality over quantity is the central message, and the strategy does not include international student enrolment targets – instead stating measurable goals for international student satisfaction. Otherwise, the most commonly used indicators tracking education export are number of international students and estimates on finances they bring in the country.

A variety of services are provided to education export actors. These services include capacity building, market analysis, training of education export agents, supporting local actors and offshore-services as well as support to strategic planning. For instance, the German Academic Exchange Service (DAAD) offers more than 100 seminars to German universities with an aim at the professionalization of internationalization and supports the German universities and their employees in the respective internationalization process.

Most of the countries have local level presence. For instance, the Netherlands has a network of 11 local Education Support Offices to market higher education. The Netherlands engages alumni as “Study in Holland Ambassadors”. Education New Zealand organization has

local presence in 18 countries (including regional counterparts). The German DAAD has 15 regional offices in Germany's major partner countries, five German Centres for Research and Innovation and 57 Information Centres on all continents, 447 lectureships at selected higher education institutions abroad and 160 associations of DAAD alumni around the world. The importance of local presence was also recognized in a study of Swedish Education Export (Chamber of Commerce 2017) which concluded that in order for Swedish education export to proceed, export of education services should become an integral part of services promoted by the Swedish diplomatic mission. The Ministry of Education and Culture and the Ministry for Foreign Affairs in Finland are working together to increase the visibility of Finnish competence. The first ambassadors of Finnish education and research, or Team Finland Knowledge experts, have been appointed to Buenos Aires, Beijing, Singapore and Washington.

Vocational education is a new, emerging sector for education export. For instance, the Federal Government in Germany aims to strengthen Germany's international cooperation in Vocational Education and Training (VET). Therefore, a strategy paper for one-stop international cooperation was adopted by the German Federal Government in 2013. A Central Office for International Cooperation in Vocational Education and Training (GOVET) was established in order to support the Federal Government in the implementation of the Strategy. GOVET's objective is to strengthen coherence of German international cooperation in VET.

The New Zealand operating model was mentioned as a model for Finnish Education Export. It is characterized by its strategic approach to the whole education system. Strategies are operationalized through road maps, and progress is monitored systematically and systematically. The metrics and the monitoring of the reality have been implemented systematically. The export of education has been strongly integrated into other export activities of the country and its importance is seen as the success of the whole national economy from the perspective.

In Scandinavia, Denmark is very active in marketing of education export. The country started to impose tuition fees in 2006–2007 academic year for non-EU/EEA citizens. The number of foreign students came down fast and then increased when Denmark allowed to apply for financial support for foreign students. Also, Denmark established a joint project on education and research between the eight Danish universities. Its overall aim is to promote and strengthen collaboration between Danish and Chinese learning environments and increase mobility of students and researches between Denmark and China. This programme offers seven different master's degree programmes in the fields of trade and natural sciences. The programmes are free of charges for EU citizens which are students of some Danish HEI, but there are tuition fees for Chinese students. Students get two-degree certificates after graduation, Danish and Chinese. Study language is English. (Sino-Danish Centre for Education and Research 2015.)

SCHOOLS ABROAD

Germany schools abroad provide a pathway to further studies in Germany. There are currently 140 German schools offering education to German standards in 72 different countries. Pupils there can obtain German or international qualifications, or qualifications specific to the country. These schools fall into two distinct categories: German-speaking schools and bilingual schools. In the German-speaking schools, pupils are taught solely in German. In the bilingual schools' lessons are taught in German, but also in the language of the country or in English. Besides German children who live abroad with their parents, the schools are also open to children of other nationalities. Of the more than 82,000 pupils who attend these schools, some 73 per cent are not German citizens and are learning German from beginner level as a foreign language.

German Schools Abroad offer a variety of school-leaving qualifications. Besides the classic German "Abitur", they have the alternative of taking the international Abitur (DIAP), the International Baccalaureate (IB) or the Bilingual International Baccalaureate (BIB). The German Abitur is a qualification which is acknowledged worldwide. It is on a par with all national and international secondary school-leaving certificates and entitles holders to study at a university in Germany or anywhere in the world.⁹

⁹ <https://www.make-it-in-germany.com/en/study-training/german-schools-abroad/schools/>

4 CONCLUSIONS

The FLF achieved its objective of establishment of an education sector cluster with considerable good number of members. The cluster activities enhanced the internationalization of its members. Presence of the clusters in the international education events enhanced this visibility of Finnish education export. However, more could have been achieved if these missions were better prepared and a joint strategy used. Now the participants didn't have a common narrative of Finnish education to share and they ended up to market their own organisations and products, thus creating a fragmented image of the sector. While the FLF and EEF promoted visibility of Finnish education export the extent they contributed to the Finnish education export brand remains unclear.

The Future Learning Finland was the first platform ever, bringing together Finnish actors engaged and interested in education export. However, some informants considered that the programme may have started too early because the ecosystem and legislation was not ready, and overall, there was not much to sell.

The education export industry has grown some 35% during the evaluation period achieving its target of 350

M€ by 2018. It is, however, difficult to verify the contribution of FLF and EEF to this growth because many sales were already under negotiation prior companies joined the network and only some anecdotal cases of actual sales as a result of participating in FLF and EEF activities were reported by the informants. Major proportion of education export is dominated by few companies (publishing houses) whose sales cover more than 85 % of education export. Furthermore, it is to be noted that these financial figures cover the FLF/EEF members only and accurate figures of the education export sector are not available. It can be assumed that all exports are not captured by the current tracking systems, leaving out e.g. revenue generated by regional clusters and individual consultancies.

For a small country like Finland, which enjoys of its good education sector reputation, it is essential to develop service packages which mirror the Finnish strengths and added value. To achieve this, the FLF and EEF initiated the development of joint proposals and establishment of clusters which would sell concepts rather than single products. Some joint proposals were developed during the programme implementation and establish-

ment of integrated joint companies after the programme periods has continued.

A more strategic and results-oriented approach would have been needed based on a thorough situation analysis of the needs, capacities and expectations of various actors. The programmes lacked proper plans and monitoring frameworks which could be used to track the performance and achievements. Although funding was provided on annual basis, longer term strategic plan would have been needed with clearly spelled objectives.

One of the limiting factors for the education export is the financing structure. The public service providers such as HEIs are not eligible to apply public funding for export promotion and on the other hand, companies told that appropriate financing instruments to support engagement in emerging developing markets do not exist. This is contradicting with the current Development Cooperation policy (MFA 2016), which calls for private public partnership and linking education export with development cooperation work. The challenges and bottlenecks need to be identified and appropriate measures developed to address and solve them.

The programme suffered from high staff turnover affecting the performance of the programme and achievement of its results. In such situation the role of the Steering Committee would have been crucial. The programme management would have benefitted from education expertise and closer links with education system in Finland. Also, coordination with the Tekes funded Learning Solutions -programme could have provided research-based evidence for the product development and marketing.

Finally, education cannot be exported like a “paper machine” as it is based on a wider set of values, norms, and practices influencing teaching and learning. The Finnish education model can be modified and transferred to international audience and setting, but the core of Finnish education needs to be clearly defined. It is essential to analyse what were the “secrets” for the good performance in the international studies and then build the export on those. One of the reasons for Finnish reputation in the international markets is general education teacher education (K-12) provided by Universities.

5 RECOMMENDATIONS

The relevant ministries should ensure that the Government of Finland **continues supporting** education export. A long-term strategy is needed. Funding opportunities and instruments should be expanded to cover co-creation and developing markets, but in a strategic and well-coordinated manner.

The relevant ministries should ensure that a proper **monitoring system** is established for education export and that education export is disaggregated from the customs records as an industry or sector. Clear instructions on what is counted as education export should be developed and disseminated in order to get robust follow-up information.

Education export should **focus on the strengths of the Finnish education system**. Teacher pre-service training is claimed to be the reason behind the PISA success. This general education teacher training is delivered by the Education Faculties by the Universities, which so far have not been very active in education export. One of the suggestions of this evaluation is to explore what incentives are needed and what structural issues should be solved for the Universities to get involved in education export.

The education export programmes should be **well resourced and coordinated by experts** who have experience both in the Finnish education system and in business development as well as broad understanding of the global education sector development and markets. Similarly, consultants and experts placed in the target countries must have a sound understanding of the Finnish education system and its strengths so that they are able to tell the Finnish story.

Business Finland should ensure that each programme has a **robust monitoring system** in place. This would enable learning and using monitoring information as a management and decision-making tool.

Situation **analyses** both in Finland and in the target countries should be conducted, with links to the Finnish education system. Programme planning should engage needs analyses.

DOCUMENTS CONSULTED

- Auvinen Ari-Matti. (2008). RAPORTTI suomalaisen koulujärjestelmäosaamisen viennin edistämisestä Persianlahden yhteistyömaihin. Human Capital Investment Oy.
- CBR Country Brand Report. (2010). Mission for Finland. Final Report of the Country Brand Delegation. Retrieved from <http://team.finland.fi/public/default.aspx?nodeid=46802&contentlan=2&culture=en-US>
- Education Export Finland, Gulf alueen kasvuohjelma. (2017). Loppuraportti. Finpro TEM/493/05.01.07/2017.
- Education Finland koulutusviennin kasvuohjelman jäsenkyselyn tulokset. (2018). Education Finland.
- Future Learning Finland. (2015). Loppuraportti. Finpro.
- Jansson M., Haapalahti R., Koivunen K., Rovamo A., Virtanen U., and Walker K. (no date). Nykytila- analyysi ammatillisen koulutusviennin nykytilasta. Ammatillisen koulutuksen viennin edistämisen hanke.
- Juntunen Timo. (2009). Selvitys suomalaisen koulutusosaamisen viennistä. Ajatuksia viennin edistämisestä perustuen ”Future Learning Finland” – verkoston kokemuksiin. <https://docplayer.fi/3242727-Selvitys-suomalaisen-koulutusosaamisen-viennista.html>
- Kokemuksia lukuvuosimaksujen käyttöönotosta lukuvuonna 2017–2018. (2018). Seuranta- ja arviointiryhmän väliraportti.
- Koulutusvientiselvitys. (2012). FCG Finnish Consulting Group – FCG Koulutus ja Konsultointi Oy, Haaga-Helia Global Education OY:n and EduClusterFinland OY.
- Opetus- ja kulttuuriministeriö. (2016). Koulutusviennin tiekartta 2016–2019. Opetus- ja kulttuuriministeriön julkaisuja 9:2016.
- Miettinen Helena. (2015). AMKEN koulutusvientiselvityksen tuloksia. Ammattiosaamisen kehittämissyhdystys ry.
- Ministry of Education and Culture. (2009). Internationalization of Higher Education Institutions in Finland 2009–2015.
- Ministry of Education and Culture. (2010). Finnish education export strategy: Summary of the strategic lines and measures. Publications of the Ministry of Education and Culture 2010:12. Retrieved from <http://www.minedu.fi/export/sites/default/OPM/Julkaisut/2010/liitteet/okm12.pdf?lang=en>
- Ministry of Education and Culture. (2016). An Action Program for Education Export and the Road Map of Education Exports-
- Niemi, H., Toom, A., & Kallioniemi, A. (Eds.). (2012). Miracle of education. The principles and practices of teaching and learning in Finnish schools. Rotterdam: Sense.
- Opetushallitus. (2017). Tilastoja ulkomaalaisista tutkinto-opiskelijoista suomen korkeakouluissa 2017.
- Opetus- ja kulttuuriministeriö. (2013). Suomi kansainvälisille koulutusmarkkinoille. Publications of the Ministry of Education and Culture 2013. Retrieved from <http://www.minedu.fi/OPM/Julkaisut/2013/koulutusvienti.html?lang=en>

- Opetus- ja kulttuuriministeriö. (2010). Kiinnostuksesta kysynnäksi ja tuotteiksi – Suomen koulutusviennin strategiset linjaukset Valtioneuvoston periaatepäätös Opetus- ja kulttuuriministeriön julkaisuja 2010:11.
- Sahlberg, P. (2011). Finnish lessons. What can the world learn from educational change in Finland? New York, NY: Teachers College Press, Columbia University.
- Salminen V. et al. (2016). Team Finland -kasvuohjelmien arviointi. Valtioneuvoston selvitys- ja tutkimustoiminnan julkaisusarja 40/2016.
- Schatz, M. (2015). Towards One of the Leading Education Based Economies? Investigating Aims, Strategies and Practices of Finland's Education Export Landscape. *Journal of Studies in International Education*, 19(4), 327–340
- Schatz, M., Popovic, A., & Dervin, F. (2015). From Pisa to National Branding: Exploring Finnish Education®. *Discourse: Studies in the Cultural Politics of Education*. Online first: DOI: [10.1080/01596306.2015.1066311](https://doi.org/10.1080/01596306.2015.1066311), July 2015
- Schatz, M. (2016). Engines without Fuel? Empirical Findings on Finnish Higher Education Institutions as Education Exporters. *Policy Futures in Education*, 14(3), 392-408.
- Tuomi Lauri. (2016) Koulutusvientiselvitys (2016) Maailman parhaiden koulutusvientimaiden toiminnan tarkastelu. Fountain Park Oy.
- Tuomi Lauri. (no date). Uusi toimintamalli koulutusviennin edistämiseen. Profitmakers Oy.
- Utveckla Svensk utbildningsexport. (2017). En rapport om Sveriges förutsättningar att exportera utbildningstjänster, Rapport 2017:8. Stockholms Handelskammare.
- Walid El Cheikh. (2015). Productising Finnish Education for Export: The Barriers and Enablers of Internationalisation. A Multiple Case Study: Fifteen Members of Future Learning Finland. Aalto University. School of Business. Department of Management Studies.

EVALUATION OF LEARNING SOLUTIONS

TABLE OF CONTENTS

Acronyms and abbreviations	43
1 Learning Solutions -programme	44
1.1 Approach and activities of Learning Solutions	45
1.2 Funding	49
2 Evaluation approach and methodology	52
3 Findings	54
3.1 Relevance	54
3.2 Effectiveness	56
3.3 Efficiency	67
3.4 Impact	68
4 Conclusions	76
5 Recommendations	79
Documents consulted	81

ACRONYMS & ABBREVIATIONS

BF	Business Finland
EEF	Education Export Finland
FLF	Future Learning Finland
FNAE	Finnish National Agency of Education
IPR	Intellectual Property Rights
LS	Learning Solutions -program
MEAE	Ministry of Economic Affairs and Employment of Finland
MFA	Ministry for Foreign Affairs
MOEC	Ministry of Education and Culture
MOF	Ministry of Finance
NGO	Non-Governmental Organization
PISA	The Programme for International Student Assessment
SC	Steering Committee
SME	Small and Medium Size companies

1 LEARNING SOLUTIONS -PROGRAMME

The Learning Solutions (LS) was a partnership program aimed at developing new learning solutions that are nationally important to identified needs and challenges, with a particular emphasis on pursuing opportunities for international business and education exports. The programme aimed to support co-operation and projects to innovate and test new learning products and services, to promote new ways of working and to create new know-how and comprehensive solutions. Municipalities and schools were involved in piloting and as end-users. The LS Programme was implemented from 2011 to 2015 by Tekes, which merged with Finpro to create Business Finland in 2018. The actors of the program were learning solutions companies, research groups, schools and educational institutions, and other organizations (e.g. teacher training institutes) participating in development work and piloting. The LS Programme was a joint effort at Ministry of Economic Affairs and Employment (MEAE), Ministry of Finance (MOF) and Ministry of Education and Culture (MOEC) with representatives in the LS Steering Group.

The goal of the Learning Solutions programme was to create new commercial solutions to domestic mar-

kets and for export to international markets. In order to achieve this, it aimed to support value network projects, where product protocols were tested in real situations (i.e., Living Labs), for example in schools, under the supervision of leading pedagogical researchers from universities. The aim was to give pupils and teachers an active role in innovation. The total volume of research projects was EUR 13.1 million, of which Tekes accounted for EUR 8.7 million. The participation of municipalities was about EUR 0.45 million, of which Tekes covered about half. International research collaboration also supported the development of expertise on basic principles of localization of learning solutions for export. Research cooperation was carried out, for instance with the United States, South Korea, Singapore, China, the United Arab Emirates, Spain and Chile. In addition to Value Network Projects, single participant projects and other consortium projects were funded (see next section for detail).

The results chain (Figure 1) presents the objectives and key activities of the Learning Solutions programme. This Results Chain is based on LS documentation.

FIGURE 1. Learning Solutions Results Chain.



1.1 APPROACH AND ACTIVITIES OF LEARNING SOLUTIONS

New solutions: The LS Programme supported piloting of new solutions; especially those combining pedagogics with technology, content, and work procedures; with a focus on involving end-users with best practices to ultimately create solutions for export to international markets.

Value networks: The approach of the LS Programme

was Value Added Networks (“Networks” hereafter) to support cooperation among companies (SMEs and large-scale enterprises), research organizations (especially Universities and Universities of Applied Sciences), and Living Labs (Cities/Municipalities/Schools) to promote active engagement with end users and a deeper understanding of their needs to meet domestic and international demands. This cooperation was further expected to create new business opportunities (especially ex-

ports), further scientific knowledge, and promote education outcomes across the lifespan. The LS Networks by definition were to be led and coordinated by a research

organisation in partnership with Companies and Living Lab(s)¹⁰, but LS funded also networks led by companies. See list of networks (Table 1).

TABLE 1. Value Added Networks and Members.

NAME OF NETWORK	TYPE OF ORGANISATION	NAMES OF ORGANIZATIONS
SYSTECH	University	University of Jyväskylä University of Heisinki Centria University of Applied Sciences Ltd. HAMK University of Applied Sciences Ltd.
	Company	Oy 10monkeys.com Ltd Otava Folk School Cooperative (Otavan Opiston Osuuskunta) Cesim Oy Citynomadi Oy Otava Publishing Company Advant Games Oy Ltd Cloubi Oy Moido Games Oy Edita Publishing Oy Alkuvoima East Finland Oy
	NGO	TIEKE Finnish Information Society Development
E-Learning Network Institute	University	TAMK University of Applied Science Ltd. Haaga-Helia University of Applied Science Ltd Uniarts (Taideyliopisto)
	Company	M&J Realizer Oy Mikrolinna Oy Promentor Solutions Oy Rockway Oy
	City/Municipality	City of Espoo City of Helsinki City of Kokkola City of Tampere City of Lohja

¹⁰ Silvennoinen (2012). Presentation: "Tekes – the Finnish Funding Agency for Technology and Innovation." DM 970770, Copyright-Tekes.

...TABLE 1.

NAME OF NETWORK	TYPE OF ORGANISATION	NAMES OF ORGANIZATIONS
LEAD: Learning Design -	University	Aalto University Foundation University of Tampere
	Company	CBTec Oy Digital Lessons Finland Oy Helsingin Messut Oy Mindpolis Group Oy Gemilo Oy
	City/Municipality	City of Hämeenlinna
Active Learning Spaces	University	University of Oulu University of Tampere
	Company	Context Learning Finland Oy Offcode Oy Sähkötaso Esitystekniikka Oy Genestia Group Oy
	City/Municipality	City of Tampere
FINNABLE 2020	University	University of Helsinki TTY-Foundation
	Company	Leikkien Group Oy Wikistudia Oy Rovio Entertainment Oyj Fronter Oy Wikistudia Oy
MediPro	University	University of Lapland
	Company	Airbus Defence and Space Oy Beaconsim Oy
Smart Classroom	University	University of Turku
	Company	Rediteq Oy Anders Innovations Oy

...TABLE 1.

NAME OF NETWORK	TYPE OF ORGANISATION	NAMES OF ORGANIZATIONS
FLF Aviation Training	Company	Finnish Aviation Academy Lrd, (Suomen Ilmailuopisto Oy) MPS Prewrite Oy Finnair Flight Academy Oy Patria Pilot Training Oy
IDEA	Company	Datadrivers Oy RingRoad International Oy Driveco Oy
Open Badge Factory	Company	Oy Raisoft LTD Discendum Oy Ilona IT Oy
	NGO	Civis Study Centre (Opintotoiminnan Keskusliitto ry)

Funding for Non-Network Individual and Consortium Projects: Individual projects and consortium projects lacking features of LS Networks were also funded. These projects could be run by businesses, research groups and educational providers that had the potential to develop the most promising solutions that promoted international business operations. LS Programme funding for individual projects outside of LS Networks was originally intended only for companies that already had potential for internationalization¹¹. A total of 56 projects outside networks was funded with 44 (79%) of these funding decisions going to companies.

Projects were selected through calls for proposals launched by Tekes. Announcements were also made

through a series of seminars over three months that broadcasted the call for proposals for value added networks. Information about Learning Solutions was also available on the programme website and LinkedIn page. A total number of 200 companies and universities were targeted and 60% of those targeted applied for funding. As a Tekes programme of “public research networked with companies”, LS Network Projects coordinated by research organizations were required to incorporate third parties (companies) who had the potential to utilise project’s results and who demonstrated their interest and commitment to the project.

This commitment could be demonstrated through the company’s cooperation during the preparation of the

¹¹ Personal conversation with Pekka Ollikainen, Business Finland, November 20, 2019; and email correspondence with Teppo Tuomikoski, Senior Adviser, Business Finland, January 2019.

project proposal, participation and interactions with the project's steering group, co-funding provided to the project by third parties, other contribution essential to the execution of the project, and the scope of the companies' parallel development projects. In addition to this formal Network process, companies could also apply to Tekes' ongoing open call for company proposals and receive LS funding if their proposal met the aims and criteria of the LS Programme.

Activities and services: In order to achieve the objectives, the LS Programme organised several activities (also referred to as Services). Some of these activities were supposed to be conducted with Future Learning Finland (FLF) -programme managed by Finpro. Services purportedly offered were the following:

- 1.** Internationalization Services (Market Surveys, Signal Sessions, Visits, Fairs, etc.)
- 2.** Vision and Anticipation (Roadmap Work, Technology Reviews, Surveys, etc.)
- 3.** Networking Events (Seminars, Project Preparation Sessions, etc.)
- 4.** Communication (Web Pages/Internet, Brochures, Newsletter, other information.)
- 5.** Sharing Results (Result Materials, Presentation of Results, etc.)
- 6.** Business Development Support (Coaching, Business Program, Finance, etc.)

1.2 FUNDING

The LS Programme aimed to make 100 to 200 project funding decisions between 2011 and 2015. This goal was met. From 2011 to 2015, a total of 140 individual LS project funding decisions were made.

Out of these 140 LS Project funding decisions, Companies received a majority of the project funding decisions followed by Universities, Cities/Municipalities (Living Labs) and other organization types. (Note: Although the Cities/Municipalities received LS support through other mechanisms, our data showed that 6 Cities/Municipalities received small amounts of funding ranging from 7,000 to 58,000 € in 12 project funding decisions.) The total volume of LS projects was 38,8 M€, of which 20,9 M€ came from Tekes.

Multiple funding decisions could be made for the same organization for different projects or for continuation of support for the same project. The total number of unique organizations participating in the LS Programme was 97 with companies representing the majority. The total approved costs of the LS Value Added Network Projects was 25,533,513 €, of which 13,473,248 € was funded by Tekes. Total approved costs for Non-Network/Individual LS Projects was 13,298,881 € of which Tekes funded 7,403,161 €.

TABLE 2. Tekes Funding and number of Projects Awarded to Organisations in and out of Networks.

TEKES FUNDING AWARDS (OF PROJECTS)	COMPANIES	UNIVERSITIES / RESEARCH ORGANIZATIONS	CITIES / MUNICIPALITIES	NGOS	OTHER	TOTAL
IN Network	6,521,748 € (51)	6,562,810 € (19)	202,690 € (12)	186,000 € (2)	N/A (0)	13,473,248 € (85)
OUT of Network	5,137,661 € (44)	2,116,500 € (10)	N/A (0)	30,000 € (1)	119,000 € (1)	7,403,161 € (56)
TOTAL LS Projects	11,659,409 € (95)	8,679,310 € (29)	202,690 € (12)	216,000 € (3)	119,000 € (1)	20,212,009 € (140)
of All Unique Organizations Awarded LS Projects	75	13	6	2	1	97

Ten (10) Networks were funded compared to 15 Networks originally targeted. Four (40%) of the ten LS Networks brought together one or more companies, research organizations and City/Municipalities as Living Labs under the coordination of a research organization. Three networks (30%) only involved research and company organizations with no municipalities or schools or Living Labs as partners. Finally, three (30%) of the LS Networks did not include a research organization as a partner or coordinator. See Table 1 for a list of the Networks and members.

A total of 56 (41%) of the 137 LS funding decisions went for individual LS projects outside of Networks. Out of these 56 non-network projects, 10 were run by research organisations, 1 by NGO, and 1 other public

company while 44 non-Network projects were run by Companies. It should be noted that even though these individual projects were not official LS Network projects, some of them involved collaborative efforts. Three funding decisions supported collaborative work of three universities to develop an international research network to study a digital learning approach. Two funding decisions supported collaborative work between a university and a public organization to assess user requirements for distributing digital learning.

Table 2 provides detail on the breakdown of Tekes funding and number of project awards by organization type and involvement in a Network. Table 3 below summarizes the aims, outcomes and whether or not the aim was fully met.

A typical funded company was a young growth-oriented company that utilized digital technologies. More than half of the companies were under six years old at the time of funding approval. The companies involved in the program invested themselves 12.8 million euros in their

innovation projects, and in addition, Tekes funded companies' innovation projects with 11.6 million euros. 48% (5.6 million) of the funding provided by Tekes to companies was granted to micro-sized companies employing less than ten (10) people.

2 EVALUATION APPROACH AND METHODOLOGY

This evaluation was an Ex-post Evaluation of the Learning Solutions (LS) Programme. The evaluation was conducted three years after the programme was phased out in 2015 by an external team of consultants. This evaluation presents an analysis of the results, relevance, efficiency, effectiveness and impacts of the programme. This was a forward-facing analysis with a focus on implications of the results for future programmes similar in content and scope for Business Finland. A mixed method approach was used to evaluate the success of the LS Programme. Quantitative and qualitative data were gathered, synthesized, and analysed from different sources, including end of project monitoring data submitted by the actors to Tekes (now BF), exports data, a structured online survey of LS beneficiaries, secondary analyses of historical LS Programme reports (Mid-Term and 2015 Summary Reports), and individual semi-structured interviews with BF staff, members of the LS Steering Group, and Programme beneficiaries, especially LS Research and Company projects.

The purpose of this evaluation is to provide evidence-based information regarding the extent to which

“Learning Solutions” was relevant for beneficiaries and stakeholders, effective in meeting stated project outcomes, efficiently carried out, had intended and unintended positive impacts on company financial operations/health (i.e. turnover, jobs, export and acquired investments of the participating companies) and changing practices within Programme target groups (i.e. co-creation and end-user involvement, demand-driven innovation, collaborations, partnership formation, value creation and combined actions for exports). As a forward-looking evaluation, factors contributing to success and possible challenges and lessons learned will be addressed including an analysis of services provided to support network activities and mechanisms of impact.

Major limitation for the evaluation was low response rates. The time between the LS Programme and the evaluation may influence the accuracy and availability of memories. Also, the LS programme did not produce a completion report, thus there was no data on actual programme level achievements.

This evaluation was conducted between November 2018 and March 2019. Table 3 provides details on the methods, sources and types of data, and participants

that formed the basis for the analyses and results of this evaluation.

TABLE 3. Mixed Methods Research Design.

APPROACH	TYPE OF DATA	DATES OF DATA COLLECTION / ORIGINAL REPORTS	SAMPLE, PARTICIPANTS (N)	SOURCE OF DATA / INTERVIEWER
LS Project Information	Quantitative	2011 to 2015	LS Projects (n=140)	Tekes/BF Team
Financial Reports	Quantitative	2011 to 2017	Companies (n=74)	Export Data collected by BF Team
Online Survey	Quantitative and Qualitative	12/2018 to 01/2019	Companies (n=16) Researchers (n=4) City/Municipality (n=1)	Evaluation team
Mid-Term Report-Survey	Quantitative and Qualitative	2013	Companies (n=26) Researchers (n=17) Steering Group (n=7) Other (n=6)	Tekes/BF Team
2015 Summary Report-Survey	Quantitative and Qualitative	2015	Company Projects (n=115) Research Projects (n=22) Steering Group (?)	Tekes/BF Team
Individual Semi-Structured Interviews	Qualitative	11/2018 to 01/2019	Value Network Companies (n=5) Researchers (n=2)	Evaluation team
Key Informant Interviews	Qualitative	11/2018 to 01/2019	LS Steering Group (n=2)	Evaluation team
Steering Group Meeting Minutes	Qualitative	2013	LS Steering Group (n=?)	LS Steering Group

3 FINDINGS

In this chapter the main findings of the evaluation are presented in relation to the evaluation questions.

3.1 RELEVANCE

EQ 1: How relevant have the programmes been? How well did the programmes and their services meet the needs of participants?

The Learning Solutions programme was intended to support the implementation of Government's goal of promoting education export, spelled out in the Government Decision in Principle (2010) which set a strategic target for education to become a new export product. "Finland will be one of the world's leading education-based economies resting on the quality of the education system and by 2015 the proportion of education and knowledge exports will have grown significantly in overall exports."

The LS Programme aimed to develop products and new ways of work, with an overall aim of promoting exports of program products and services to leverage Finland's positive reputation for education and innovation abroad, in accordance with the TEKES mission.

The LS Programme was carried out from 2011 to 2015 to leverage and build on Finland's reputation for quality education and innovation. Around the time that Learning Solutions was conceived and carried out in 2011, Finland's education system was noted for its consistent attainment of scores at the very top tier for reading, math and science in the Programme for International Student Assessment (PISA)¹² for almost a decade. In addition to education, Finland also enjoyed a positive reputation for innovation and technology ranking among the top 10 countries globally with high income economies¹³.

The structure and activities of the LS Programme were consistent with the context of policy priorities of Finland at the time. The LS Programme aimed to support improved quality of education and equity of access to ed-

¹² OECD (2010), OECD Economic Surveys: Finland 2010, OECD Publishing.

¹³ Dutta, Soumitra, et al. "The Global Innovation Index 2018: Energizing the World with Innovation." Global Innovation Index 2018 (2018).

education consistent with Finland's Ministry of Education and Culture (MOEC) policy goals. Promoting education export was one of the strategic goals of the Government of Finland and in 2010 the MOEC developed an Education Export strategy, which outlined the priorities and targets.

The LS Programme also supported the innovation policy agendas of the Ministry of Education and Culture and the Finnish National Agency for Education¹⁴ that called for advancing public-private collaboration between companies and schools to develop solutions that met both domestic and international market needs. The Ministry of Employment and the Economy¹⁵ had user-driven innovation policy frameworks that called for involving end-users more closely in the development and testing of product and service solutions. LS Programme partnerships with schools and municipalities as Living Labs provided a means to support this policy. Overall, the LS Programme was highly relevant in providing concrete support and incentives for these policies, especially through the LS Value Networks. It also served the goals of Team Finland in bringing together the Ministries of Education and Culture, Employment and the Economy, and Foreign Affairs, along with representatives from companies and research organizations.

In terms of the LS Programme beneficiaries, the programme met the needs of research organizations to

directly engage with companies, develop commercialisation skills, and increase scientific knowledge about innovative learning solutions in partnership with companies. The LS Programme also made partnerships with other research organizations internationally. The National Science Foundation in the US co-funded 10 universities from the US and Finland for joint research projects and research seminars in Finland and the US. The "Systemic Learning solutions" - Network led by the University of Jyväskylä consists of researchers, developers and educators in seven participant countries. However, the interviews of companies which were members of the networks show that needs assessments were not conducted, and selection of company members was not always guided by a clear strategic plan or a joint network objective. It was also noted in follow-up interviews with representatives of companies and research organizations that program objectives (e.g., export activity, cooperation with research on piloting) were difficult for the very young companies struggling to make their first product in an already difficult market.

In conclusion, the LS Programme was highly relevant and aligned with the plans of the Government of Finland for promoting education export (MOEC 2010) although this aim was very ambitious and perhaps unrealistic, as education export was in its initial stage and considered even "non-existent" by one interviewee. However,

¹⁴ Prime Minister's Office (2007) Government Programme of Prime Minister Matti Vanhanen's second Cabinet, Government statement to Parliament, 19 April 2007, Helsinki, Finland.

¹⁵ Publications 48/2010. Helsinki: Finnish Ministry of Employment and the Economy. Education and training 2010.

the concept of value networks, which would provide evidence-base for the products developed was not fully realized. When formal research (Universities) organizations were involved the networks, the structure of the networks (partnerships with other organisations) and supported activities appeared to meet their needs and support their research goals. However, the value networks did not appear to fully meet the needs of the participating companies based on their reports in interviews and surveys (and even reports of research organisations, concerns about companies as well).

3.2 EFFECTIVENESS

EQ 2: How well have the objectives set for the programmes been achieved? What concrete results each of the programmes have created?

To evaluate the effectiveness of the LS Programme in achieving its objectives, we first review evidence that it achieved short and long-term strategic goals set for 2015 and 2020 as shown in Figure 1 (note this evaluation is being conducted prior to 2020). We then examine a 2015 Summary Report on the LS Company and Research projects' success in meeting project goals. We also report on patent applications as indicators of innovation and publications/theses as indicators of research productivity in 2015.

ACHIEVEMENT OF PROGRAMME OBJECTIVES

As shown in the Results Chain (Figure 1) the LS Programme objectives were related to development of modalities and new ways of working, with an overall aim of developing new products, services and complete solutions for Finland and international markets. The achievement of the strategic goals of 2015 and indications about achievement of targets set to 2020 are analysed below.

As shown in Table 4 below, the strategic goals for 2015 have been partially met. With regards to the strategic goals for 2020, the evaluation found some evidence that the LS Programme has contributed to the development of a few learning solutions and that it has also contributed to the development of products for national and international markets. One example is presented in the Box on the next page.

The Learning Solutions Programme funded a total of 140 individual projects, which for the most part were successfully completed and met their intended goals. According to the end of project monitoring data (TEKES 2015), 95% of company projects met project goals with 16% (n=18/115) reaching project goals better than planned, 39% (n=45/115) reached their goals as planned, and another 38% (n=44/115) reaching project goals but slower than planned. A small number of (5%, n=6/115) LS Company projects achieved most project goals but fell below expectations on one or two outcomes due to customer- or product-related problems with sales,

TABLE 4. Summary of Achievement of Strategic Goals for 2015 and 2020 from Results Chain.

STRATEGIC GOALS 2015	RESULTS
1. The program, together with partners and stakeholders, selects the themes and funding targets for value network projects based on nationally identified needs	Met
2. The services and funding of the program support networked / network projects aimed at transnational business operations and individual business projects, working closely with Finpro's training cluster program	Partially met
3. The value network projects of the program include the development of work organizations, the development of comprehensive solutions and piloting	Partially met
4. Networks include companies, research groups and public sector organizations in various fields	Partially met
STRATEGIC GOALS 2020	
1. A few nationally important broad learning solutions in national and international cooperation	Partially met
2. New products, services and complete solutions for Finland and international markets	Partially met
3. New ways of working	Met
4. New multidisciplinary expertise	Met

BOX. MEDI-PRO: A LEARNING SOLUTIONS NETWORK CASE STUDY OF BEACONSIM OY

The TETRA emergency communication service was already being used by emergency service organizations in Finland. However, hospitals were using it the least. A major goal of the Medi-Pro Value Added Network for the companies was to figure out what needed to be done to increase the use of the TETRA communication network in hospitals.

The University of Lapland coordinated and managed the MediPro LS Value Added Network with two LS company partners, Cassidian Finland Oy (now Airbus Defense and Space Oy), and Beaconsim Oy. Lapland University collaborated on research with the companies and piloted their solutions in hospitals comparing “new” and “experienced” users of TETRA on simulation and face-to-face training modes to investigate differences in their perceptions, use, and knowledge outcomes. MediPro allowed Beaconsim to collaborate with researchers for the first time to gain deep research knowledge about their users.

All Medipro deliverables in the LS projects were completed on time resulting in improved products, expertise, knowhow, an expanded business network, and multiple research publications. After the LS Programme, Beaconsim's Radio and Dispatch Simulations for learning, and classroom simulators were further developed for market distribution. To date, these products have been taken up by 25% of Finland's hospitals and are ready for international export.

FIGURE 2. Achievement of Project Goals by Companies (2015 end of project monitoring data).

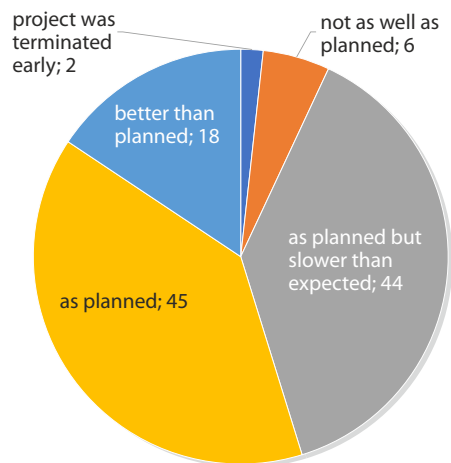
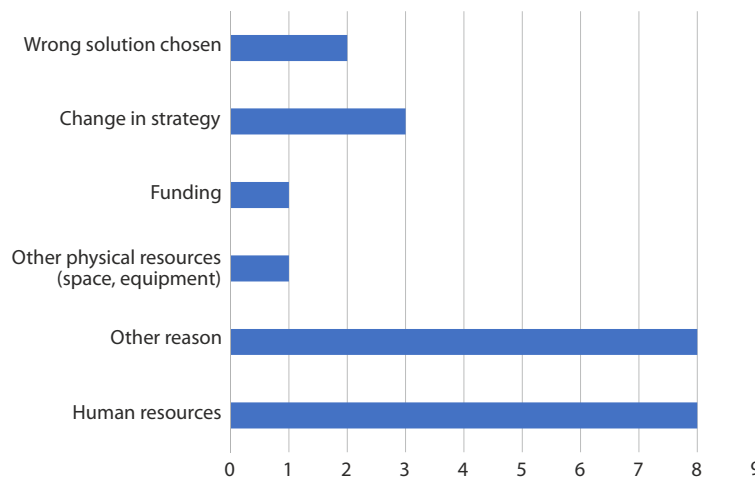


FIGURE 3. Reasons for Partial or Complete Failure or Termination for LS Company projects.



costing (costed more than expected), or problems with research partner deliverables. Only 1.7% (n=2/115) of company projects were terminated early. One was due to financial difficulties and another project was “suspended” due to a third party IPR violation claim (that later proved to be unfounded). Figure 2 summarizes the LS Company’s assessment of how their achievement of their project goals.

Even though 95% of the company projects reported meeting their goals, some challenges were still reported: 18% (n=21/115) of all company projects reported that “Project failed partly, completely, or was terminated early” in the 2015 project monitoring questionnaire. Most popular reasons were “Human resources (either in terms of availability of staff and capacity)” and “other reason”, both chosen by 40% (n=8/21) of those responding to this question. Figure 3 is a summary of reasons given (respondents could select more than one response).

Research projects (n=22) faced fewer challenges in meeting project goals compared to LS Company projects (see tables 4 and 5). In the assessments of the research project by the LS Steering Group, 91% of LS Research Projects met expectations (n=20/22) and 9% (n=2/22) exceeded expectations. In their own replies in the end of project monitoring data, all of the LS Research Projects reported reaching their goals. Only 27% (6/22) progressed slower than expected, compared to 40% of the LS Company Projects.

FIGURE 4. Achievement of Project Expectations by LS Research Organizations as assessed by Tekes project steering group.

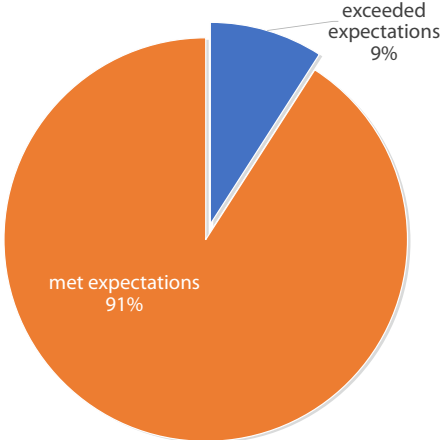
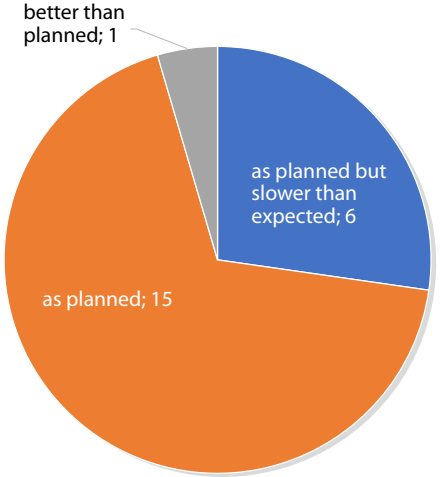


FIGURE 5. LS Research Organizations’ Self-Assessment of How Well Project Goals Were Reached.



Overall, both companies and research organizations met their project goals, but companies faced more challenges. It is not surprising that LS Research projects struggled comparatively less than the LS Company Projects. Research organizations were larger and more established with more resources than most of the smaller early stage tech companies in the LS Programme. In addition, research project objectives may have been inherently more specific and attainable compared to the high risk, innovative solutions proposed by companies. Also, the fact that the Networks were led and coordinated by research organizations may have given them a slight advantage in setting overall Network goals to accommodate their timeframes and deliverables, rather than those of the company partners. Interviews and surveys confirmed that some companies felt challenged to adjust their product development timelines and expectations to fit those of the researchers.

In the project monitoring reports submitted to Tekes in 2015, of the 115 LS Company projects, 21 (18%) reported an application for at least 1 or more patents or IPR with more than **49 patents or other Intellectual Property Rights applied for in total**. It is difficult to evaluate the impact of this activity but it does provide preliminary evidence for the creation of innovation. Evaluation surveys did not reach enough participants to determine the extent of further applications after 2015.

By the end of the project in 2015, all 22 LS Research Projects reported at least one publication related to their project(s) with 50% reporting 10 or publications. Taken together, **more than 161 peer-reviewed articles or**

books across all 22 LS Research Projects were published by 2015. The LS Programme also supported 59% of LS Research Projects (n=13/22) produced one or more academic theses (e.g., Master's or Ph.D.) related to the LS project with 39 theses completed in all. The number of publications and theses produced is impressive. It is highly likely that more publications and research related to LS projects have been pursued and published since 2015. Unfortunately, poor response rate in the evaluation surveys and interviews makes it impossible to determine the extent to which these research results have been furthered and taken into use (e.g., number of citations, transfer to technology etc.). Survey results and interviews with a small sample of LS Researchers certainly suggest LS research efforts have continued.

Given the low number of companies available for follow-up, it is difficult to fully assess the extent of the concrete outputs from the LS Programme in terms of applications for IPR, research publications, etc. since 2015.

CHANGING PRACTICES

The evaluation explored how successful the programmes have been in changing practices of operation within programme target groups, especially regarding practices related to co-creation and end-user involvement, demand-driven innovation, collaborations, partnership formation, value creation and combined actions for exports, and what was the role, formation and changes of various networks, collaboration platforms and practices of operation in supporting the programme performance

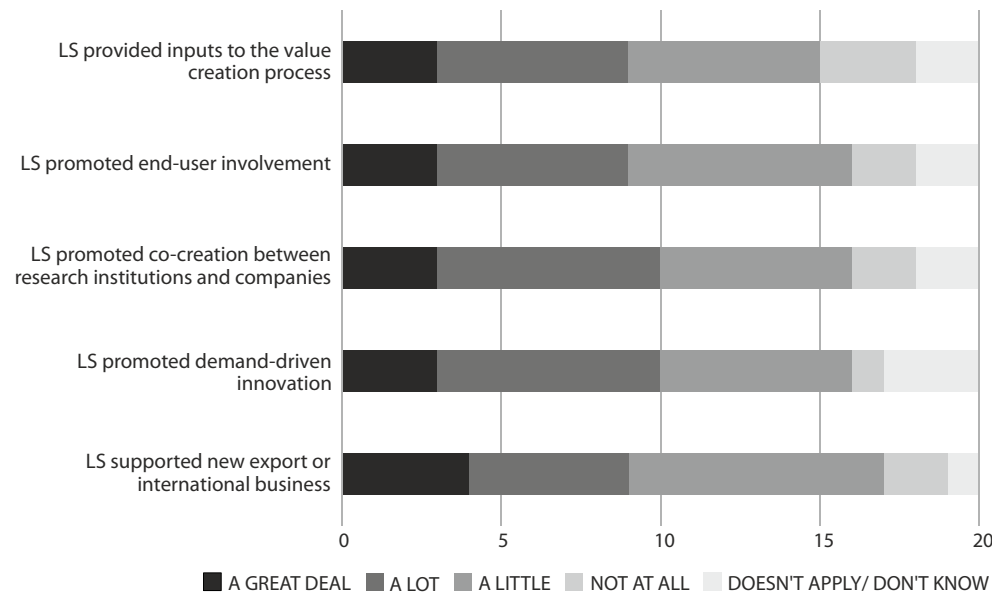
and achievement of the results.

The results of the survey and interviews suggest that the LS Programme had an impact on changing practices of operation within most target groups. The follow-up survey indicated that about half of those responding felt that the LS Programme supported these practices “a lot” or a “great deal”: end user involvement, demand driven innovation, collaboration/new partnerships, value creation and combined actions for exports. About a third of the respondents felt the LS Programme changed these practices “a little.” See Figure 6.

The LS Value Added Network approach was expected to support user-driven innovation in learning and education, cross-sector collaborations and joint ventures, and break market barriers by exporting learning solutions. Some experiments in the “Living Labs” took place but not always as expected. For instance, it was reported by one company that their expectation that the research partner researching the impact of their product did not take place as expected. Another company reported being satisfied with the research link although they mentioned that engaging research made the business and product development very slow.

Interviews and comments in surveys revealed that the structure of the LS Programme provided opportunities for most LS projects, especially those in LS Networks, to experience a range of changing practices of operations. Some challenges to changing practices were also noted. Roles were not always clear in collaborative efforts. One LS Researcher said it was unclear if “researchers were supposed to work for companies or companies were sup-

FIGURE 6. Rating of Learning Solutions Changing Practices.



posed to work for researchers.” The structure of the Networks suggested companies the companies should work for researchers, but some researchers wondered if they should be “working for” the companies.

The Network did not always result in frequent or productive co-creation processes leading participants to come up with creative solutions. In one case, a Network research coordinator addressed a concern over lack of interactions between companies and researchers through a “researcher in residence” program. In this informal programme, companies agreed to welcome a researcher,

usually PhD students, to have a desk at their company for a month. The researchers typically provided usability expert reviews and input on design processes. The program was reported to have increased engagement and learning for both partners. In another Network, researchers organized workshops, public discussions and reflections on their work in LS Projects. However, they were not sure if the enterprises put that knowledge into practice.

There were examples of cooperation and success in cooperative pilot work between schools with companies. There was also evidence from interviews that not all companies engaged with schools as living labs for piloting. One network coordinator reported that none of the companies experimented with the schools and thought this was because companies did not see an advantage in working with schools.

Cooperation between researchers and schools was more active. According to an interview survey conducted by Vanhanen -Nuutinen (2012)¹⁶ the schools that participated in the LS experiments changed their practices and benefited from their involvement. Schools were encouraged to use technology in teaching and to learn about new products and businesses. Experiments also laid the foundations for purchasing decisions, as many schools were just starting to acquire smart tablets and wondering what would be appropriate for the pupils’ tools. Vanhanen-Nuutinen also reports that even though schools participated by providing an experimental environment, some felt that they were given opportunities for input

¹⁶ Vanhanen-Nuutinen Liisa (2012) Kokeiluympäristöt ja -käytännöt Tekesin Oppimiskokoukset –ohjelman arvoverkko-hankkeissa. Selvitys. 02.11.2012

at the design stage nor afterwards. They also noted that results of the research were not routinely shared with them. Other schools that did provide feedback were uncertain about the importance of their feedback and were unclear how it was utilized in further product development. The teachers involved were reported to have said that they did not have their own funding or separate working hours for the experiments, but they carried out the experiments using their own resources. The survey found that the following were characteristics of successful network cooperation with schools:

- Researchers appreciated the school as an equal player in the experiment
- The design of the experiment took into account school development activities, teacher skills and the age of the pupils
- The experiment was suitable for the ongoing development of the school and the work community of the school was involved as much as possible in the experiment
- The experiment was "right" fit for school activities
- The School had flexible and agile IT support for experimentation
- The School acted as an independent partner in its value network with its own funding for the development of work organizations
- Involvement of a "mediator" familiar with the school realities who was also engaged in the research

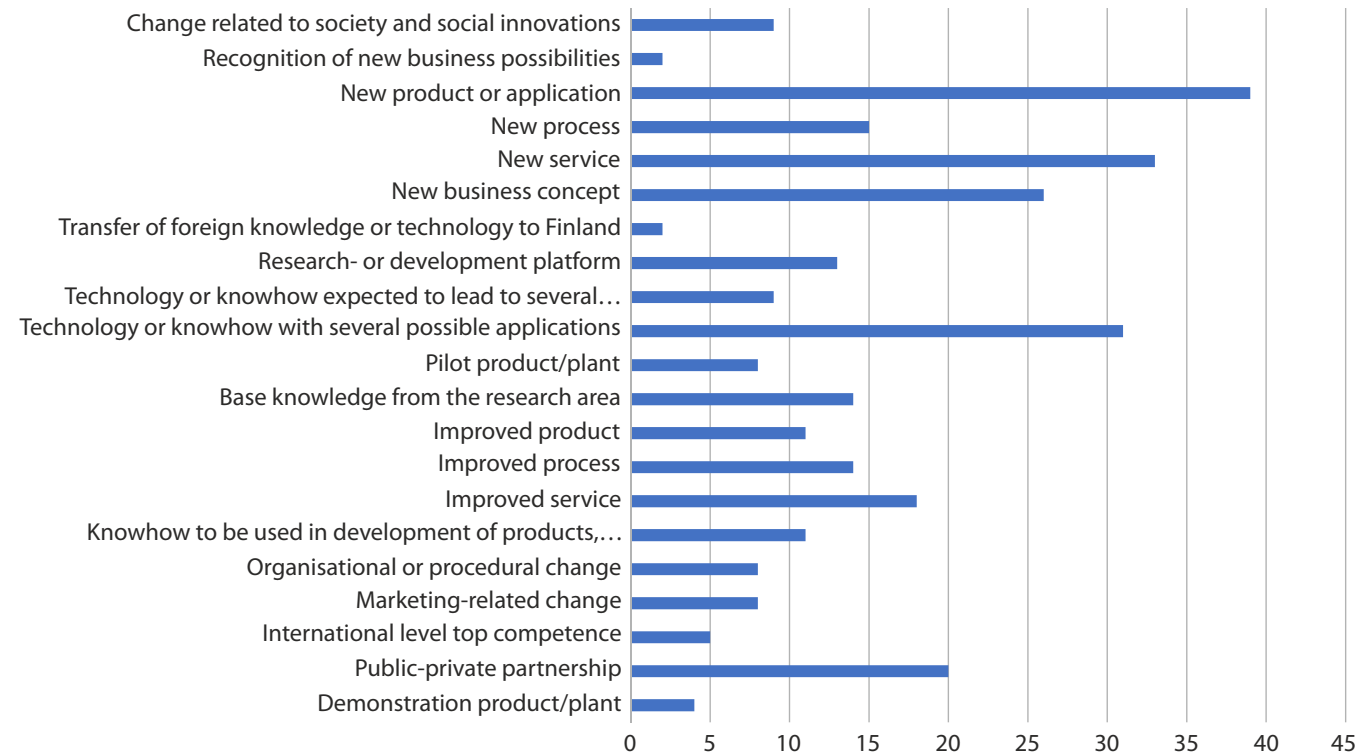
There were mixed reports of continued public/private partnerships after the LS project closed. Several compa-

nies reported partnerships with research organizations that continued and broadened in follow-up interviews and the survey. More than one research organization interviewed reported losing contact with their LS partners. LS Company and Research projects (n=137) reported in the end of the project monitoring data a range of other "outcomes" that suggest the LS program created value through "new ways of working" and "new multidisciplinary expertise". As shown in Figure 7,

- About 31 organizations (23%) reported gaining "technology or knowhow with several applications".
- About 26 (19%) organizations reported coming up with a "new business concept".
- New public-private partnerships were reported by 20 (15%) of projects.

The other "outcomes" were endorsed by less than 15% of projects included 12 "outcomes". These outcomes included new ways of working such as 1) improvements in processes, services, and knowhow regarding development of products and technology; 2) changes in marketing practices, organizational processes, societal or social innovations; and "new multidisciplinary expertise" such as 3) development of basic knowledge of research, international competence. The items endorsed least by respondents were "recognition of new business possibilities" and "Transfer of foreign knowledge or technology to Finland." These items suggest that LS did not have a strong impact on creating new business opportunities or benefiting from international cooperation, at least not during the programme.

FIGURE 7. “Results of the project” reported in the end-of project Monitoring Data.



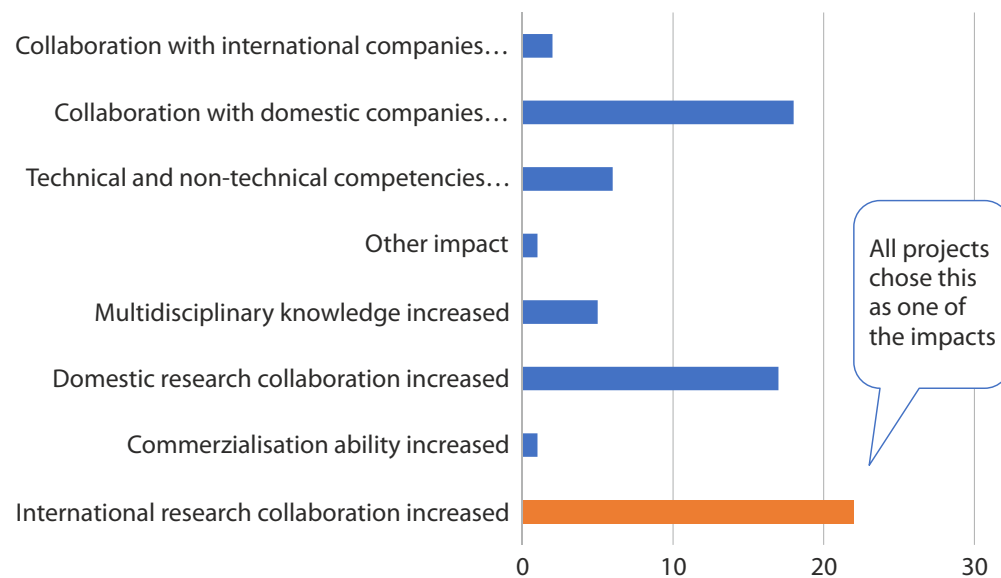
Cooperation between various actors in the form of value networks was an integral part of the Learning Solutions programme. There was anecdotal evidence of successful work partnerships in the TEKES end of project monitoring reports from 2015 and from individual interviews with LS Network Companies. On the other hand, an interview with one network leader at a University suggested that collaborative work arrangements with companies were formed on an ad hoc basis. Also, while there was

evidence that some network projects focused on comprehensive solutions (e.g., one of the actors was a comprehensive consulting service to help “digitalize” schools offering IT support ranging from selection of devices to in-depth teacher training), not all of them could be considered comprehensive. For example, in one network the design approach was intended to be broadly applicable and therefore comprehensive, but the learning solution prototypes developed had diverse applications. Finally,

it is not clear from the data sources we have, exactly how many projects focused on a piloting their solutions and services. A content analysis of the project end monitoring data (TEKES) mentioned pilot study activities (i.e. “pilot”) in only 53 of the 115 projects (46%).

One of the 2015 strategic goals included collaboration with Finpro Future Learning Finland -programme (FLF, see figure 1). The concept of value networks providing evidence-base for the products to be marketed through FLF activities and networks did not realize. There was no strategic plan for cooperation and complementarity and coordination between the programmes was limited.

FIGURE 8. “What was the impact of the project for the applicant?”
Research organisations.



Only one Network Project (that was not led by a research organization) and few companies were members of the FLF. There were some efforts to strengthen the coordination at management level when the LS Programme manager was engaged in the Steering Committee of the FLF in 2013, but it is not clear what the practical result of this was. Also, the LS Networked projects were supposed to support transnational BUSINESS operations, however, more transnational RESEARCH partnerships with other research organizations were supported in the Networks. In fact, there is very little evidence for cooperative partnerships with any transnational BUSINESS operations. Also, there was no indication that any of the transnational RESEARCH partnerships were with Business Schools or academic experts in business operations which would have supported this strategic goal.

In the end of project monitoring data, the answers of the research organisations to the question “What has been the impact of the project for the applicant?” leaned heavily towards collaboration: increase in international and domestic research collaboration as well as in collaboration with domestic companies where the most popular answers.

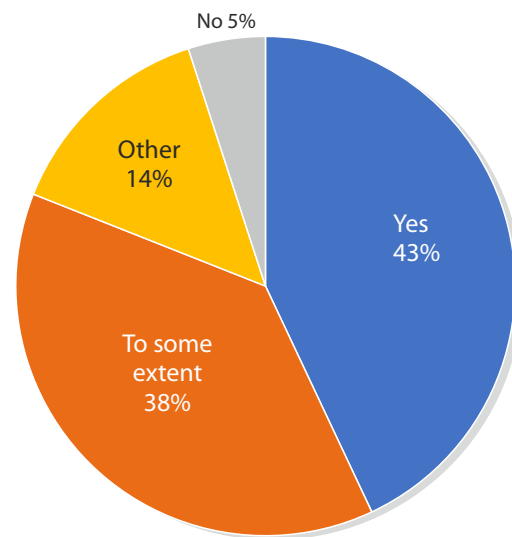
The formation of the networks as carried out had a role in facilitating achievement of some results, especially those of collaboration and provision of resources to develop relevant products and services. Because not all aspects of the programme were realised in terms of formation of networks with appropriate partners, support from FLF, etc., it is difficult to know how much results would have been impacted if they were.

PROGRAMME SERVICES

The evaluation explored which services have worked well and which have not and reasons, why they have been successful. What has been the impact of these services?

The Evaluation Follow-Up Survey completed in 2019 revealed that most respondents found services to of use to some extent at least (see Figure 9). When asked about specific services, networking services and promotion of public and private sector collaboration were reviewed the highest of the LS services offered. The lower ratings of other services suggest there is room for improvement (see Figure 10).

FIGURE 9. Responses in the evaluation follow-up survey regarding the usefulness of LS Services.

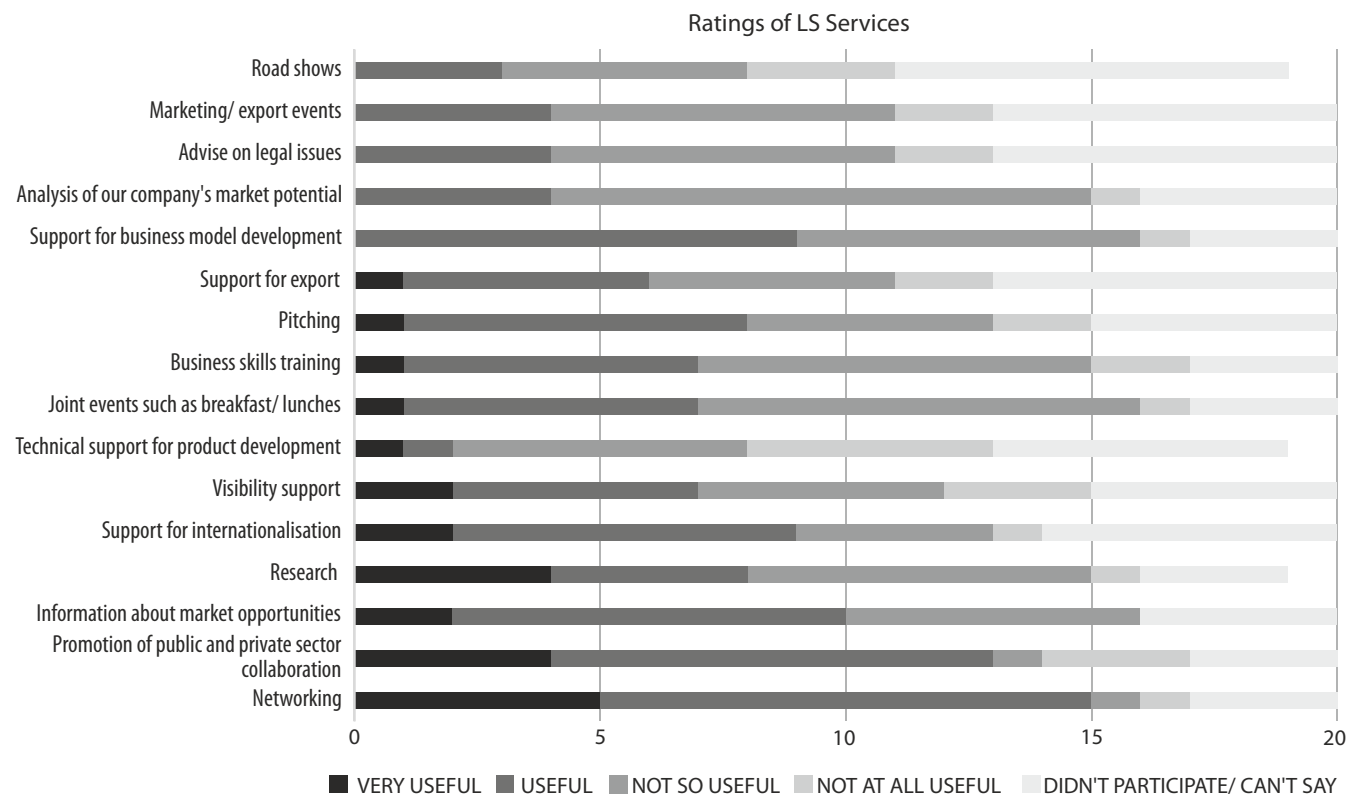


When asked about the usefulness of specific services, respondents in the Follow-up Survey gave their highest ratings to “Networking Services”. It had the highest proportion of respondents giving it the highest rating of “very useful”, but this was only 25% of respondents. “Promotion of public and private sector collaboration” was rated as “useful” or “very useful” by 65% of respondents.

Services for “analyses of our company’s market potential” and “Technical support for product development” received the lowest ratings with 60% and 58% of respondents rating them as “not so useful” or “not at all useful” respectively. The service rated highest for non-participation was “Road Shows” with 42% of respondents indicating they “didn’t participate/can’t say”. Three services were rated next highest for non-participation at 35%. These services were “Advice on Legal Issues”, “Marketing Export Events” and “Support for Export.” See Figure 10 below for a list of services and their ratings.

Mechanisms of failure for the services were suggested in the free responses in surveys and in interviews. A few beneficiaries commented that they were not aware of all the services. Other mechanisms of failure for the services related to the content and form of delivery of the services themselves. Several respondents commented that the business training offered was not “deep” enough to meet needs. For example, a full day training workshop would have provided more useful training than a one hour talk on a topic. Some services could have been offered more often.

FIGURE 10. Rating of Learning Solutions services (Evaluation survey 2018).



Networking events were mentioned as useful and some suggested that they should be more frequent and offer more sharing of results between projects (not just in Networks). The STEERING GROUP saw problems with companies “knowing what to do” as a company. For example, some seemed to lack basic knowledge and skills around as capacity building and understanding business

models. LS Research Project respondents also suggested that there was a need for more services to support development of LS Companies’ business skills (e.g., marketing, pitching, best practices). One LS Research project respondent commented, “The program does not support SME business growth and internationalization enough”. Another researcher said, “In the program, I think there

is too much emphasis on research in universities. The emphasis should be on funding to support corporate product development so that the project can produce finished products.”

Taken together, these results show some positive feedback on services overall, especially networking and supporting collaboration between public and private organizations. The results also suggest efforts to increase awareness of services through different dissemination efforts might be helpful. Also, efforts to more adequately assess the needs of beneficiaries, especially companies, before offering services might increase their perceived importance and uptake.

Overall, the LS Programme was very ambitious in its goals reaching some but not all outcomes as an indication of its efficacy. The programme was structured to meet nationally identified needs in cooperation with partners and stakeholders. It also resulted in new ways of working and multidisciplinary expertise among most participants in the programme. It was less effective in supporting export as a goal in collaboration with the Finpro training cluster programme, work organizations focusing on piloting comprehensive solutions, or in structuring networks with a balance of public and private partnerships. There were a few examples of broad learning solutions developed for export but not all companies benefitted from international cooperation, compared to research organizations that appeared to have benefited from more formal international partnership efforts.

SYNERGIES AND COLLABORATION

A few examples of cooperation with the Future Learning Programme (FLF), managed by Finpro, were found and there was scant evidence that LS beneficiaries had high awareness of or use of the FLF programme as originally planned. There was no systematic coordination and cooperation between those programmes which would have been needed to create synergy benefits. There was also very little evidence for information sharing and coordination with SKENE which was focusing on games and gamification. Although that programme had different focus and objectives, the evaluator met respondents who considered that it could have been helpful to keep in touch with what is going on with commercial games development.

3.3 EFFICIENCY

EQ 3: What significant challenges were identified regarding programme administration and how well were those challenges solved?

There were positive comments on administration of the funding process. One beneficiary said, “A flexible and quick way of doing business, from application to contract and settlement. The program is timely and good.”

However, respondents in surveys and interviews also commented on some inefficiencies in administering the program. For instance, the application process was sometimes unclear. This led one beneficiary to comment that “from the point of view of a small business, the creation of a value network project is unfortunately too time consuming and expensive.” Another said, “Tekes staff have differing views on what Tekes expects from an organization that is seeking funding. This is very confusing and makes it difficult to apply for funding.” Others commented that the criteria for evaluation changed during their application preparation process, which resulted in the need for extensive revisions to some applications. For example, the concept of engaging companies was not introduced in the original programme announcement. Researchers reported that Tekes selected the companies without input from the research coordinators. All this led to inefficiencies in the application process. It may have also led to some observed inefficiencies during the programme, such as lack of company engagement in research, lack of research project timeline fit with company processes, and some questions about the “fit” of some companies in terms of the overarching theme of some Networks.

As has been mentioned elsewhere, the focus on exports was considered by many respondents to have been too ambitious of a goal, especially for younger companies. Some Network actors were not oriented to export at all. This challenge was addressed by the Steering Committee in 2013 with a shift in focus to include domestic as well as international distribution/export of learning

solutions. The other administration challenges related to clarity of communications, consistency of requirements, and selection of partners, may best be addressed in improved processes in future Programmes.

3.4 IMPACT

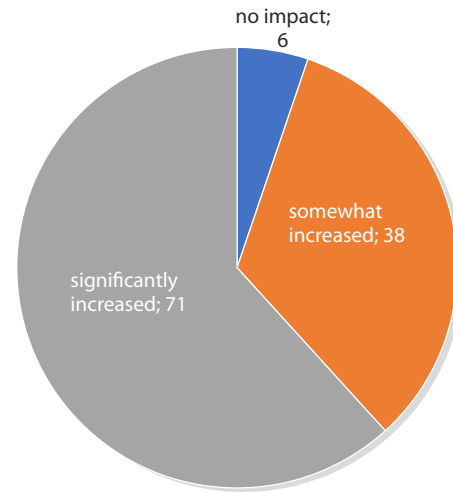
EQ 4: What were the economic impacts of the programmes on turnover, jobs, export and acquired investments of the participating companies?

In the end of project reports the companies assessed the potential impact of their LS project to their market position. The evaluation analysed the follow-up data submitted to TEKES in the end of the project implementation and compared it with the data collected through the survey and interviews

According to the end of project reports submitted to TEKES in 2015, the LS project had an overall positive impact on outcomes of learning and competitiveness among LS Company project respondents. Most (62%, n=71/115) reported a significant increase in learning and competitiveness with 33% (n=38/115) reporting somewhat of an increase in learning and competitiveness. Only 5% (n=6/115) reported no impact on learning and competitiveness. See Figure 11.

The LS project had an overall positive impact on learning and competitiveness among Research Project respondents as well. Most (59%, n=13 of 22) research

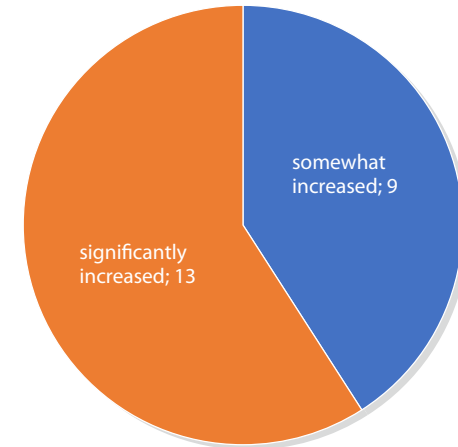
FIGURE 11. Impact on LS Company Project Learning and Competitiveness.



projects reported that LS significantly increased their learning and competitiveness. The remainder of LS Research projects (41%, n=9 of 22) reported that the LS Programme had somewhat increased their learning and competitiveness. See Figure 12.

One noted disadvantage of the structure of the LS Programme funding was shared by one company in an interview. When they did "work for hire" through a contract with a University, the University put their name on their product and sold and/or exported it. There was no evidence in credits for the product that their product was successfully exported. Export data only showed that they sold services to a domestic university. When the company wanted to apply for a program that supported companies with experience exporting, they did not qualify.

FIGURE 12. Impact on LS Research Project Learning and Competitiveness.



Future efforts to promote exports of learning solutions should explore solutions to this problem.

There were a few examples of nationally important broad learning solutions that resulted from the LS Programme. One company that had an individual project outside a network also produced a successful learning solution that was in use domestically and internationally with six figure contracts negotiated by the end of the project. Another project focused on an online learning institute developed products and exported services to shipowners.

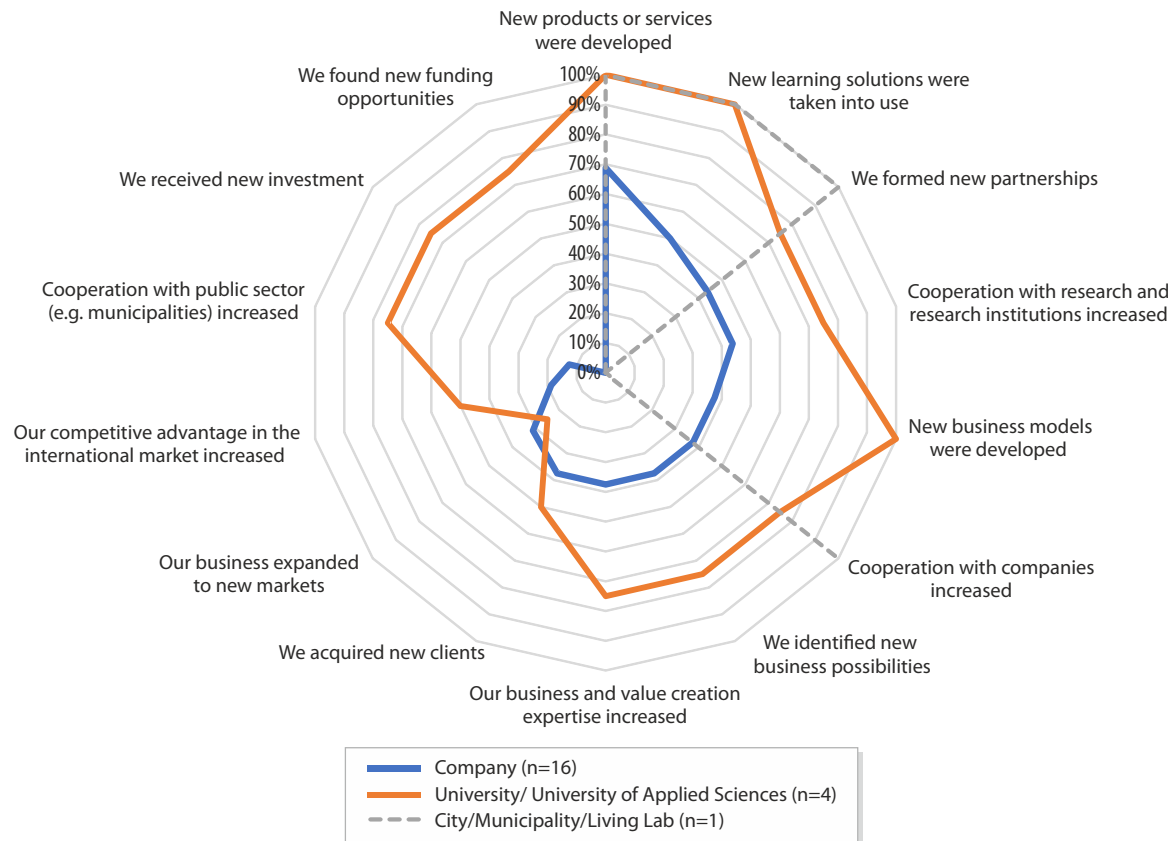
The evaluator had a difficult time making contact with LS beneficiaries for follow-up the use of research, thus, it is difficult to provide an accurate, up-to-date picture of end-user implementation. The interviews, however, indicated that while there is some evidence that the re-

sults of the research projects have been taken into use by the end user, the research processes were considered to be too slow compared to the business cycle.

The 2015 end of project monitoring data of the LS Programme suggests that these goals were already being met by many LS projects. When all LS project beneficiaries (n=137) were asked to indicate the spe-

cific immediate outputs their project, “new product or application” and “new service” received the most endorsements with about 38 and 34 organizations endorsing these responses in that order. Keeping in mind that there were 95 company projects represented by 75 unique companies (the other Research, Municipality and other organizations and projects would not necessarily be expected to produce a new product or service), this suggests that at least half of the companies were able to deliver a solution.

FIGURE 13. Impact on Learning Solutions Company project on learning and Competitiveness.



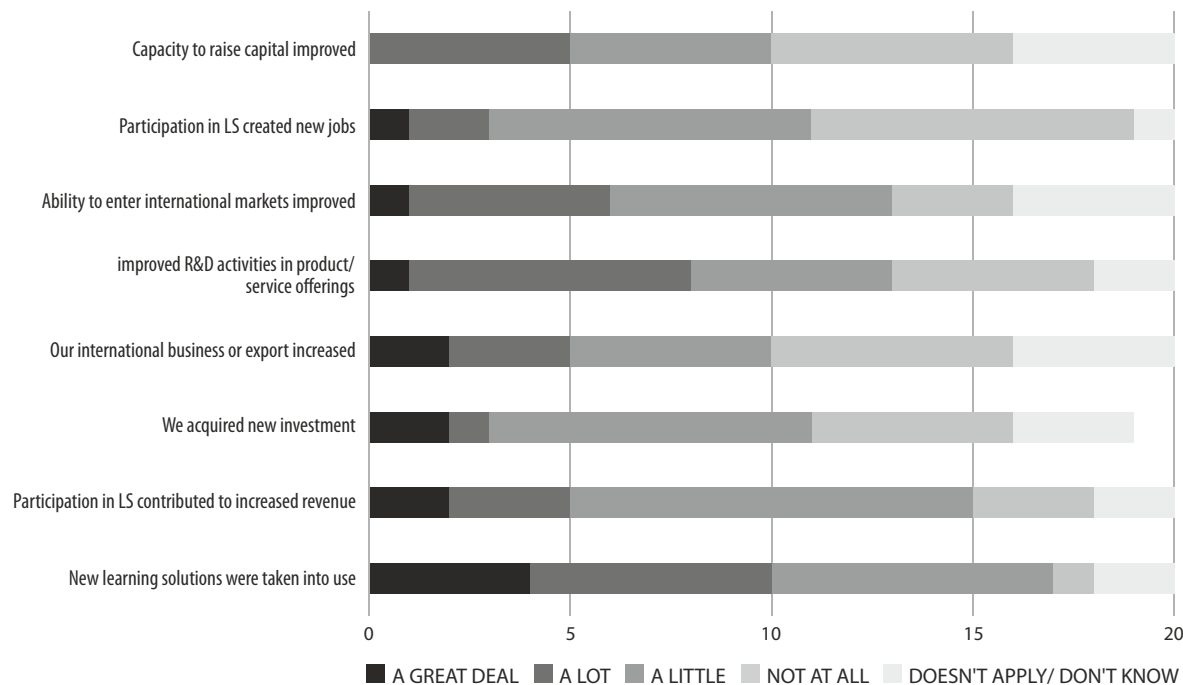
In the end of project monitoring reports submitted to TEKES, virtually all respondents (company and research projects) (n=137) also indicated that their work on the LS project would continue in some form (e.g., commercialization, applying for more funds to continue). Taken together, this provides further evidence that research and commercial activity was stimulated by the LS Programme. This was validated in the survey/ interviews.

The online survey and semi-structured interviews conducted in this evaluation provide additional evidence that the project achievements have been maintained. When the former LS Company and Research project beneficiaries were asked if the results of their LS project were furthered since 2015, 70% said “yes” (n=14/20). About 46% (n=5/11) of the developments described by subset of respondents mentioned further work on the LS products and services.

The above provides some evidence for the impact of the LS Programme on ultimate strategic goals. It is based on a small sample but it is consistent with findings from interviews.

In the evaluation follow-up survey, none of the companies indicated in the question on specific results that they had received new investment or found new funding opportunities (see figure 13), but the universities had been more successful. This is mainly anecdotal evidence due to small number of respondents (16 companies, 4 universities). When rating the impacts of LS Programme on company or organisation in the survey, there was some contribution to capacity to raise capital and to acquiring new investment.

FIGURE 14. Rating of Impact of Learning Solutions programme.



ECONOMIC IMPACT

This section presents a quantitative analysis of the economic impacts for LS Companies in terms of their annual revenue, exports and jobs. Information for 74 of all 75 LS Companies was available. Financial information on each LS Company was gathered by Business Finland during and after the LS Programme (2011 to 2017)¹⁷.

As can be seen in the Table 5, most companies were small in terms of their income and number of staff. Most of the companies were also young with 59% (n=44/74) having been founded less than 6 years before the inception of the LS Programme. This is consistent with Tekes' interest in offer risk funding for research and innovation projects for young (6 years) companies to support all aspects of business development¹⁸.

An examination of company financial performance revealed wide variation between average and median statistics each year (see Figure in Annex). This was due to outlying figures for a few larger companies. We therefore examined financial performance with and without the outliers to get a better summarize the performance of the smaller (and younger) companies that were more representative of the sample as a whole.

¹⁷ Several start-up companies were created as a result of the LS project (e.g., Playvation from Promentor Solution; LifeLearn Platform and Screen.io from LEAD; and Tuttle and EdVisto from FINNABLE). The economic impacts reviewed do not include the performance of spin-off companies related to the Programme.

¹⁸ Silvennoinen (2012). Presentation: "Tekes – the Finnish Funding Agency for Technology and Innovation." DM 970770, Copyright-Tekes.

TABLE 5. Learning solutions Company Descriptions (n=74) from Financial Data at Project Start.

VARIABLE	CATEGORY	FREQUENCY	PERCENT
Company size			
	medium	1	1%
	large midcap	2	3%
	large 250-499	3	4%
	large > 300 M€	4	5%
	small	17	23%
	micro	47	64%
of Staff			
	other	2	3%
	250-499 employees	2	3%
	50-249 employees	4	5%
	1-49 employees	66	89%
Years as a Company			
	> 6 years in 2011	30	41%
	< 6 years in 2011	44	59%

REVENUE

The differences between average and median yearly revenue figures for companies suggested that a few outliers were influencing the results. An examination of individual company revenue showed that the high averages were driven by 4 companies with high yearly revenue

(between 50M € and 275M €) in comparison to the other LS Companies. These companies were driving the apparent average increase in income for all LS Companies with projects over time. As can be seen in the figure 15 below, these four companies overall showed stable or increasing income during and after the LS Programme.

A closer examination of annual company revenue for companies with revenue less than 50M (n=71) or with revenue less than 2M € (n=50) did not show any clear patterns. We further examined cumulative revenue each year for these companies. Taken together, there was an overall pattern of slight increases in cumulative revenue over time with some instability after project conclusion in 2016 and 2017. However, cumulative revenue for these companies was still higher overall after the LS Programme than during the inception year of 2011. (See Figures in Annex).

In sum, revenue was highly variable for companies, especially for larger companies that had revenues in excess of 50M € in 2011. Their involvement in the LS Programme was clearly not harmful to their revenue and the four companies showed stability or growth during and after the program. Revenue for smaller companies was also highly variable but their cumulative revenue from 2011 to 2017 showed signs of increase that by 2017 was slightly higher than revenue in 2011 at programme inception.

FIGURE 15. Annual Revenue for all Learning Solutions companies (n=74).

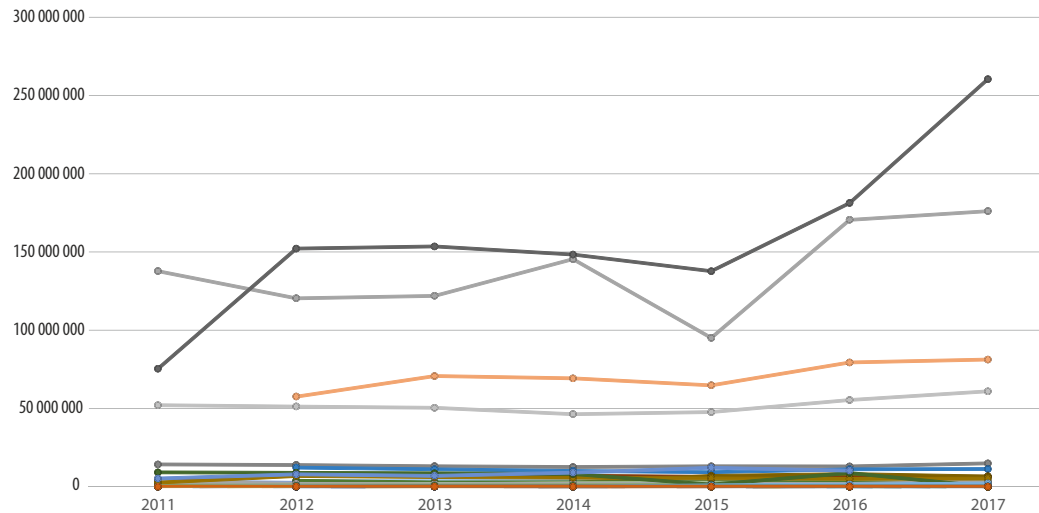
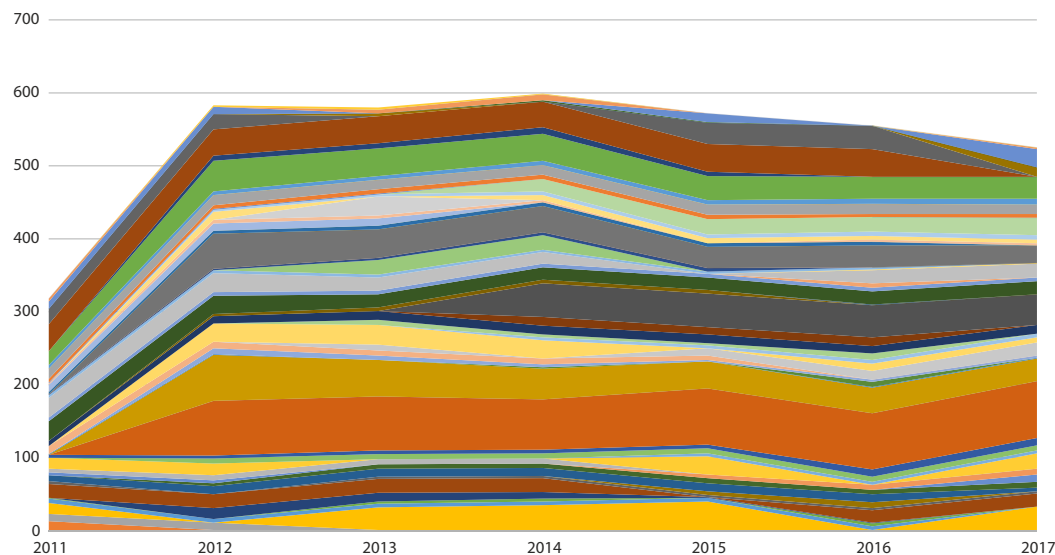


FIGURE 16. Cumulative Jobs in Learning Solutions Company Subset (4 largest removed, n=70).

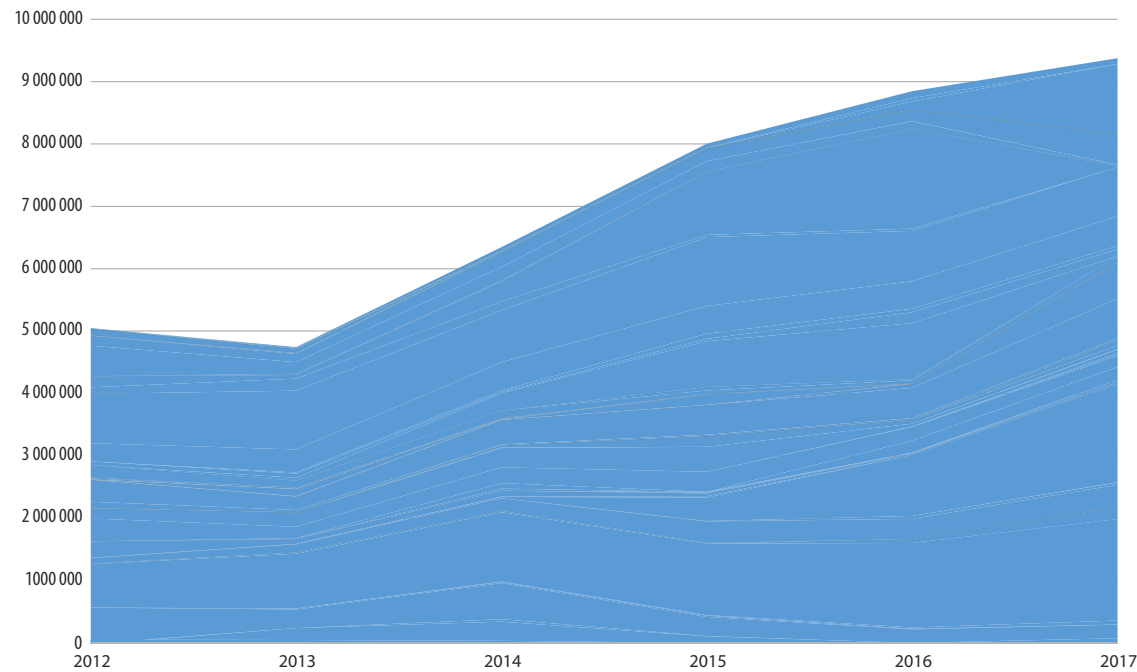


JOB CREATION

The differences between average and median yearly figures for jobs at LS Companies were also driven by (same as above) 4 companies with large numbers of employees. We therefore examined the numbers of jobs reported for each company from 2011 to 2017 for all individual companies and cumulative number of jobs, without the 4 companies with the highest numbers of employees, and for 28 companies who employed fewer than 10 staff in 2011 (Figure 17). There was no clear pattern to job creation for the individual companies and even the larger companies showed wide variability from year to year. The cumulative number of jobs each year for companies excluding the larger companies (n=70) and for companies with fewer than 10 employees in 2011 showed a pattern of increasing number of employees during the project decreasing to varying degrees from 2015 to 2017 but still with a higher cumulative number of jobs than at Programme start in 2011.

In summary, there was volatility in number of jobs at LS Companies from year to year, even among the largest companies. An examination of yearly cumulative jobs provides some suggestive evidence that the LS Programme may have played a role in creating more jobs overall in the sector even after the programme ended.

FIGURE 17. Cumulative Exports of Learning Solutions companies (n=70, 4 largest removed).



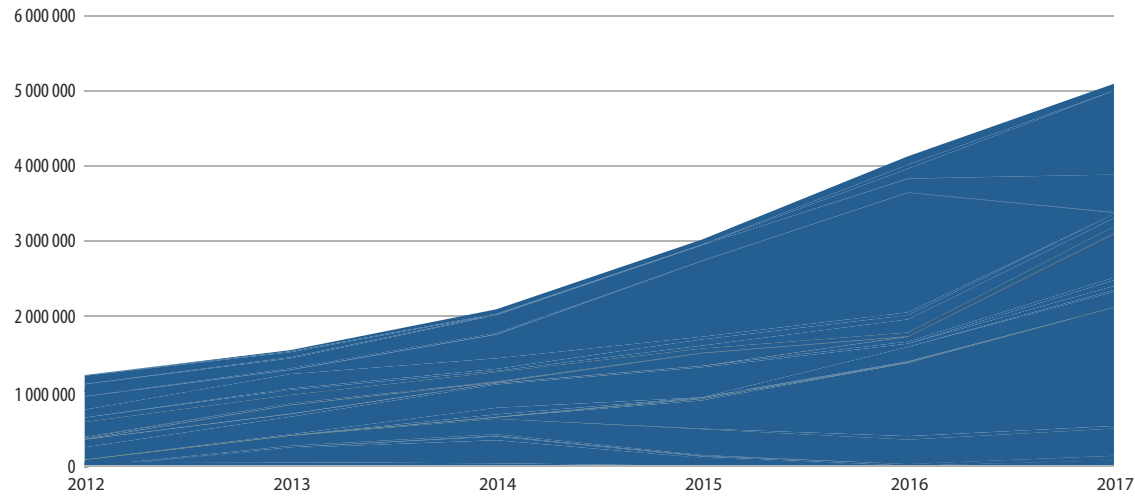
EXPORTS

Export activity was also highly volatile year to year for individual LS Companies and the same four companies were outliers. We examined export data from Business Finland from 2012 to 2017 (information on exports was not collected by BF in 2011). There were two companies driving high average exports with outlying data showing impressive growth in exports over time. There were also two large companies that started out with high export

activity that decreased dramatically from 2012 to 2017. An examination of export activity for companies without these four outliers (n=70) and for companies with less than 2M € in export activity (n=63) revealed a pattern of increasing export activity in both cases. When we examined the cumulative exports of these companies (without the largest outliers and with less than 2M € exports in 2011), there was a clearer and more marked pattern of increasing yearly cumulative export activity from 2012 to 2017. While there is no control group for this phenomenon, the findings suggest that the LS Programme was particularly helpful in promoting exports for smaller companies.

Interestingly, these findings from financial data regarding export activity are NOT consistent with feedback from beneficiaries drawn from surveys and interviews with LS Company and Research participants. There were frequent reports that the LS Programme did not support or impact export activity and that setting export as a goal for smaller companies was unreasonable given their pressing needs to develop a product and survive as a company. Also, a content analysis of the final reports summarizing project results, showed that the following words and variants as indicators of export activities: “international”, “global”, and “export were only mentioned in 48% of project summaries (n=55/115). Also, only 5% of the final project summaries from 2015 specifically stated that their LS solution was actively being exported (with at least a contract to purchase the products having been signed). These results should be interpreted with caution as the export activity reported by the compa-

FIGURE 18. Cumulative exports – Learning Solutions Companies with 200 000 € exports in 2011 (n=63).



panies was not necessarily related to the LS Programme. It could have been related to other solutions they company was exporting.

In sum, even though companies in the LS Programme may have struggled with export as a goal and it is unclear if their exports were directly related to the LS Programme, they contributed as a whole to export activity over time and were more likely to become engaged in export activity over time.

Overall, there is evidence that the LS Programme had an impact on economic indicators and other outcomes. The LS Programme was particularly impactful for smaller companies for whom revenue through the programme allowed them to build their business, maintain income, engage in collaborations with public partners, and develop innovative products and services for the education sector.

4 CONCLUSIONS

The LS Programme was highly relevant for policy. It was intended to implement the Government's policies to increase education export and to address domestic issues. From the LS actors' point of view this was an ambitious goal. The LS Programme worked with relevant stakeholders to structure a programme that met policy, funder (Tekes), and to reach pre-defined short and long-term strategic goals. Some challenges were faced in forming and funding Networks but the programme in its basic form was carried out from 2011 to 2015 as planned.

The value-added network was not fully materialised in the LS Programme. The LS programme aimed at introducing a new working modality where companies cooperate with research institutions and end-users in order to test new products for the national and international markets. This approach was not fully materialised. All criteria (e.g., number of networks, organization makeup of partners and coordinators) for the value networks were not fully met in the LS Programme and the concept of value network was not realised fully. The concept and approach of value-added networks as well as criteria would have needed more clarification and follow-up. However,

the approach and modality is considered feasible and such interventions should continue.

Cooperation within LS Network and other programmes such as Future Learning Finland was limited.

The LS services offered did not formally support sharing of results between Network members on a regular basis. Several respondents to surveys would have liked networking activities to focus more on active sharing about activities and results between networks. Cooperation between FLF and LS Programmes would have been useful in order to get tested products to the domestic and international markets. However, at the time when these programmes were implemented the education export industry was only emerging. A strategic plan based on a thorough situation analysis would have been needed to establish a platform for synergy benefits.

Export was perceived to be an unrealistic goal and was changed during the programme to reflect that.

LS Surveys and interviews with research and company programme beneficiaries and members of the steering group suggested that the aim to export learning solutions might have been inappropriate and unrealistic. Company and Research beneficiaries as well as the

Steering Committee shared the perception that the LS Programme focused too much on export activity as a goal with a modification of this goal to focus more on domestic sales as a goal midway through the LS Programme. Comments suggested that innovative learning solutions had not even been validated domestically so they could not leverage the positive reputation of Finland's domestic education capabilities for export. Notes from a Steering Group meeting reflected this in meeting comments such as "not all Finnish education companies are able to operate globally". The LS Programme focus on exports thus changed in 2013 from education export to include domestic sales as well. More intensive contacts with the FLF network would have been usefully to get a better understanding about global markets and export requirements. Despite these perception, LS Companies', especially smaller companies, showed impressive growth in cumulative export activity over time.

LS Companies, especially smaller companies, showed increased export activity over time, a major Programme goal, as well as growth in revenue and jobs. Despite concerns about export as a Programme goal and the change in the Programme focus from export to domestic distribution, the financial data for LS Companies ultimately showed a positive impact on their export activity during and after the LS Programme. There was a clear increase in export activity, especially for small companies, beginning in the first full year of the programme continuing to two years after the programme ended. A significant number of companies went from no export activity to engaging in export activity over time with a significant-

ly higher proportion of companies had positive export activity over the years compared to the proportion of companies with negative or zero activity. Although it is unknown if the exports were of products and services directly related to the LS Programme, in the least, it can be said the LS Programme did not have a detrimental effect on the growth of LS Company export activities.

The LS Programme was highly beneficial overall for researchers. Researchers played key leadership roles in the LS Programme. They were heavily involved in planning the Programme, leading submission of proposals for the Networks, and coordinating the Network activities. A majority of LS Research projects easily reached or surpassed their project goals, reported an impressive number of research outputs, increased their international (and domestic) collaborations with research partners, were able to conduct research in direct partnership with companies for the first time, and expected to continue related research in the future. A few spin-off companies came out of LS Research projects as well.

The LS Programme did not adequately meet the needs of companies, especially smaller, younger companies. Despite the fact that company outputs (increased revenue, staff, export activities) and activities (new ways of working) were a key focus of the LS Programme; the planning, decision-making, implementation and/or monitoring processes (steering group representation) appeared to involve representatives of research organizations more than companies. This may be why companies frequently reported that the project timelines and deliverables, as well and programme

services, were not suited to their needs. Companies expressed more dissatisfaction with the requirements of the LS Programme and more company projects struggled to meet project goals than research projects. Some LS Companies and even research partners, suggested that basic needs of smaller, young companies to develop a product as quickly and efficiently were not met. Several beneficiaries remarked that the LS Programme was a better “fit” for more established companies who had the time (and existing products or services) to think about export strategies.

The LS Programme provided a means, especially for smaller companies, to establish their organization and support their growth. Funding from public or private sources for small companies pursuing high risk innovative products with no clear path to commercialization is extremely rare and difficult to obtain. Support from Tekes was a clear benefit for these companies starting out. These companies with their products and services that contributed to the economy and society would not have been possible without the contributions and support of Tekes.

Involvement of municipality/schools as Living Labs was innovative but planned activities did not always take place as planned. The Programme administration promoted efficient use of resources for companies by supporting municipalities as partners in the LS Programme. However, the evaluation findings suggest

that the role of municipalities as Living Labs was limited and there were also cases where the planned activities didn’t take place. There was only medium to low awareness, use and perceived importance regarding most services (except Networking) offered in the LS Programme. This was a consistent finding in reports, surveys and interviews and applied to most services except for Networking.

The LS Programme had inadequate monitoring and reporting systems. For example, the result statement “a few nationally important broad learning solutions in national and international cooperation” is not specific enough. How many solutions are sufficient? What is meant by “broad”? Also, some thought should be given to set goals that are more easily tested/falsifiable. For example, one could assume that any company engaging in cross-sector collaborative partnership for the first time has reached the goal of engaging in “new ways of working” without being particularly adept at the collaboration. Also, if a researcher received training in how to pitch a business to investors or a company listened to a research talk for the first time, each may have gained “new multidisciplinary expertise” without much depth to the expertise. Tracking the achievements of the overall LS programme, was challenging as LS Programme did not produce an end-of programme report and feasible monitoring data was not available.

5 RECOMMENDATIONS

The results of this evaluation suggest some areas where the needs of companies could be addressed better. Value Added Networks - programmes should be structured so that companies, rather than research organizations, play a greater leadership role. If the goal is to increase business and export, companies should be more engaged in the planning, design, and even coordination of Network activities. They might need more incentives to collaborate with researchers as the benefits were not always clear for the uninitiated. Furthermore, more support for stronger communication processes with regular face-to-face meetings and personnel exchanges were recommended in interviews with LS beneficiaries to promote trust, information exchange, and long-term relationships. These suggestions are consistent with published best practices for successful research-industry partnerships. These practices include engaging visionary managers skilled in working across functional and organizational boundaries, and requirements for company accountability to implement research results¹⁹.

Service offerings should be more strategic and results-oriented. This can be done by building on existing strengths, increasing awareness of service offerings, exploring cooperation synergies with similar programmes, focusing more on strategic results-oriented planning, reducing barriers to participation, delivering services based on a needs assessment of beneficiaries, and collecting information about services systematically to enhance later evaluation. Networking opportunities consistently ranked highest in use and importance as a service and should be continued and expanded. Expansion should include more networking events with other members of Value-Added Networks as requested by several respondents in surveys and interviews. Also, future iterations of similar programmes could explore cooperation and services with other similar programmes to explore synergies.

An attempt should be made to find more effective ways to increase awareness of services for LS beneficiaries and to tailoring the services based on the needs. Ser-

¹⁹ Greitzer, E. M., Pertuze, J. A., Calder, E. S., & Lucas, W. A. (2010). Best practices for industry-university collaboration. MIT Sloan Management Review, 51(4), 83.

vices should also be more accessible to beneficiaries to increase participation and the location of services should be offered so that beneficiaries in different areas of the country can more easily participate. Also, a survey of needs for services before and even mid-way through a programme might help ensure that services offered are more efficiently meeting the needs of the recipients. Finally, it would be helpful if programme managers could collect information related to the services that are offered (e.g., content and format of services, attendance) during the programme that would be relevant for evaluation. Defining clear objectives would also allow for a more systematic evaluation of the services offered.

Future programs should continue to set clearly defined goals. Setting ambitious goals for start-ups lead to greater success than more realistic goals²⁰. On the other hand, it is also known that pressure to reach goals perceived as unreasonably high can create negative working environments that place entrepreneurs at risk for burnout and failure in the long run^{21, 22}. It is thus

recommended that while future programs continue to set ambitious goals, they should consider some modifications of goals (e.g., longer timelines for delivery) and provision of additional basic supportive services that better meet the needs of smaller, younger companies in particular. Programme appraisals could ensure that programme goals are set up in way so that they are measurable with data that could be accessed years after the project has closed.

Proper monitoring and reporting systems should be applied. Because of the difficulty in contacting beneficiaries for follow-up evaluations, a few measures could be taken that would allow for long term evaluation without direct contact with beneficiaries in the future.

First, applications for IPR protection of results related to funded programmes could be required to explicitly acknowledge their government sources of funding. The Bay-Dole Act is legislation in the US that deals with IP arising from federally funded projects and includes requirements to acknowledge federal sources of funds when applying for patents²³. The European Commis-

²⁰ Hermans, J. H., Vanderstraeten, J. V., Van Witteloostuijn, A., Dejardin, M., Ramdani, D., & Stam, E. 2015. Ambitious Entrepreneurship: A Review of Growth Aspirations, Intentions, and Expectations. In J. Katz & A. C. Corbett (Eds.), *Advances in Entrepreneurship, Firm Emergence and Growth*: 127–160. Bingley, UK: Emerald Group Publishing Ltd. <http://dx.doi.org/10.1108/S1074-754020150000017011>

²¹ Downes, P. E., Kristof-Brown, A. L., Judge, T. A., & Darnold, T. C. (2017). Motivational mechanisms of self-concordance theory: Goal-specific efficacy and person-organization fit. *Journal of Business and Psychology*, 32(2), 197-215.

²² Carsrud, A., Brännback, M., Elfving, J., & Brandt, K. (2017). Motivations: The entrepreneurial mind and behavior. In *Revisiting the Entrepreneurial Mind* (pp. 185-209). Springer, Cham.

²³ United States General Accounting Office GAO Report to Congressional Committees, TECHNOLOGY. TRANSFER: Administration of the Bayh-Dole Act by Research Universities, May 1998. www.gao.gov/archive/1998/rc98126.pdf

sion Horizon 2020 program has a similar reporting requirement for their funding of innovations²⁴. Similarly, all research publications arising from projects can be required to acknowledge government support as well. This is also a standard in the US and Europe²⁵. System-

atic inclusion of the names of Business Finland programme with unique identifiers will make it easier for evaluators to locate tangible commercial and research products and better evaluate the long-term impact of Programmes.

²⁴ See https://ec.europa.eu/research/participants/docs/h2020-funding-guide/grants/grant-management/acknowledge-funding_en.htm

²⁵ For the NIH in the US (<https://grants.nih.gov/grants/acknow.htm>),
For H2020 in Europe (https://ec.europa.eu/research/participants/docs/h2020-funding-guide/grants/grant-management/acknowledge-funding_en.htm)

DOCUMENTS CONSULTED

- Carsrud, A., Brännback, M., Elfving, J., & Brandt, K. (2017). Motivations: The entrepreneurial mind and behavior. In *Revisiting the Entrepreneurial Mind* (pp. 185-209). Springer, Cham.
- Downes, P. E., Kristof-Brown, A. L., Judge, T. A., & Darnold, T. C. (2017). Motivational mechanisms of self-concordance theory: Goal-specific efficacy and person-organization fit. *Journal of Business and Psychology*, 32(2), 197-215.
- Dutta, Soumitra, et al. "The Global Innovation Index 2018: Energizing the World with Innovation." *Global Innovation Index 2018* (2018).
- Greitzer, E. M., Pertuze, J. A., Calder, E. S., & Lucas, W. A. (2010). Best practices for industry-university collaboration. *MIT Sloan Management Review*, 51(4), 83.
- Hermans, J. H., Vanderstraeten, J. V, Van Witteloostuijn, A., Dejardin, M., Ramdani, D., & Stam, E. (2015). Ambitious Entrepreneurship: A Review of Growth Aspirations, Intentions, and Expectations. In J. Katz & A. C. Corbett (Eds.), *Advances in Entrepreneurship, Firm Emergence and Growth*: 127–160. Bingley, UK: Emerald Group Publishing Ltd.
<http://dx.doi.org/10.1108/S1074-754020150000017011>
- Ministry of Employment and the Economy (2010). *Education and training Publications 48/2010*. Helsinki.
- OECD (2010), *OECD Economic Surveys: Finland 2010*, OECD Publishing.
- Prime Minister's Office (2007) *Government Programme of Prime Minister Matti Vanhanen's second Cabinet*, Government statement to Parliament, 19 April 2007, Helsinki, Finland.
- Silvennoinen (2012). Presentation: "Tekes – the Finnish Funding Agency for Technology and Innovation." DM 970770, Copyright-Tekes
- Liisa Vanhanen-Nuutinen (2012) *Kokeiluympäristöt ja -käytännöt Tekesin Oppimisratkaisut –ohjelman arvoverkkohankkeissa*. Selvitys. 02.11.2012

EVALUATION OF SKENE – GAMES REFUELED

TABLE OF CONTENTS

Acronyms and abbreviations	84
Definitions	85
1 Skene – Programme description	86
1.1 Approach and activities of Skene	89
1.2 Funding	90
2 Evaluation approach and methodology	92
3 Findings	94
3.1 Relevance.....	94
3.2 Effectiveness	95
3.3 Efficiency.....	100
3.4 Impacts	101
4 Lessons learned	104
5 Conclusions	105
6 Recommendations	107
Documents consulted	109

ACRONYMS & ABBREVIATIONS

BF	Business Finland
FLF	Future Learning Finland
IP	Intellectual Property
LS	Learning Solutions -program
NIY	Nuori Innovatiivinen Yritys – Young Innovative Company
MEAE	Ministry of Economic Affairs and Employment of Finland
SC	Steering Committee
SME	Small and Medium Size companies
VC	Venture Capitalist
Vigo	Entrepreneur led business accelerator

DEFINITIONS

Demoscene	The demoscene is an international computer art subculture focused on producing demos: self-contained, sometimes extremely small, computer programs that produce audio-visual presentations. The purpose of a demo is to show off programming, visual art, and musical skills.
Fenix	Fenix was a Tekes Interactive Information Technology Program that ran from 2003–2007. During its operation, Tekes funded a total of 185 enterprise and research projects in mobile technology, new information retrieval and management methods, game technology, speech, language and user interface technologies, and hybrid media. Tekes deployed a total of 47 M€ in funding. Unofficially, games fell under the Fenix program as Tekes increased the push to financing and export services of internationally successful gaming companies.
Verso	Verso was a Tekes Vertical Software Solutions Technology Program that ran from 2006 to 2010. The goal of Verso was to promote the growth of Finnish software companies, internationalization and product development. Original industries targeted were financial services, trading, construction industry and telecommunications technology. Later, the game industry was added as a target group. Tekes deployed over 60 M€ in funding to 220 projects, out of which 10% were research projects.

1 SKENE – PROGRAMME DESCRIPTION

Game industry has been the fastest growing branch of the entertainment industry. In 2011, the industry was globally worth approximately USD 65 billion and it showed a strong upward trend, especially because of mobile gaming. By preparing a programme focusing on value networks in game development, Tekes aimed to strengthen the Finnish game industry's position at the global top by creating an internationally significant game and entertainment cluster in Finland.

Skene was the first programme that Tekes implemented to focus exclusively on the video game sector. In addition to the attention that game companies got in the prior Fenix and Verso programmes (refer to Definitions section above), some of the factors defining the Finnish game sector that lead to a dedicated programme's creation were:

- Well-structured and organized sector with strong communication among stakeholders (i.e., industry, academia, government)
- High technological and content expertise
- Excellent price-to-quality ratio
- Ability to innovate, with creation of in-house intellectual property

- Strong history in the emerging mobile game segment (partly due to Nokia's presence)

That said, in an interview with the programme management, it was discovered that it wasn't until Tekes leadership visited the Rovio offices in 2011 that they were fully convinced (and inspired) that a game-focused programme was warranted. Unofficially, the goal was to hit a billion euro turnover by 2020.

The clear motivation from the outset of Skene was to professionalize the Finnish game industry and enable greater economic impact for the sector from the existing base. The primary target being the emergence of world class companies, by enhancing business and game design know-how. Thus, the focus of Skene was not just at the company level, but also had a focus on cluster development and the value-network.

The programme documentation defined the expected impact (approximate 10 year time horizon) as follows:

- Finnish gaming companies have adopted the value network thinking and work closely as part of the international game industry ecosystem.

- The economic value and importance of the gaming industry is increasing.
- Transferring innovative knowledge and skills in the field of gaming to other industries.

More specifically, Skene addressed four result areas and aimed at producing the following outcomes:

Outcome 1: The gaming industry has adopted an industrial production approach through which Finnish game companies systematically produce success stories instead of occasional success stories. Finnish gaming companies master the global challenges of gaming business in a comprehensive way: business expertise, distribution, marketing, brand management and specialization in the field.

Outcome 2: Finnish companies form effective product development value networks with game developers, software industry and entertainment industry. The networks around the core players are in the key role.

Outcome 3: Gaming solutions and know-how are utilized in other industries. Examples of this include learning and welfare services (gamification, gameful / playful design, game layer, serious gaming), transportation and logistics, and involvement of users in the use of services and the development of products and services through various simulations and 3D models. The expertise of other industries can also be utilized in game development.

Outcome 4: The service offering specializing in the field of entertainment is expanding and developing. Such services include IPR and contract law, brand management, digital marketing.

Further, the programme plan identified the following outcome indicators to track the achievement of the results:

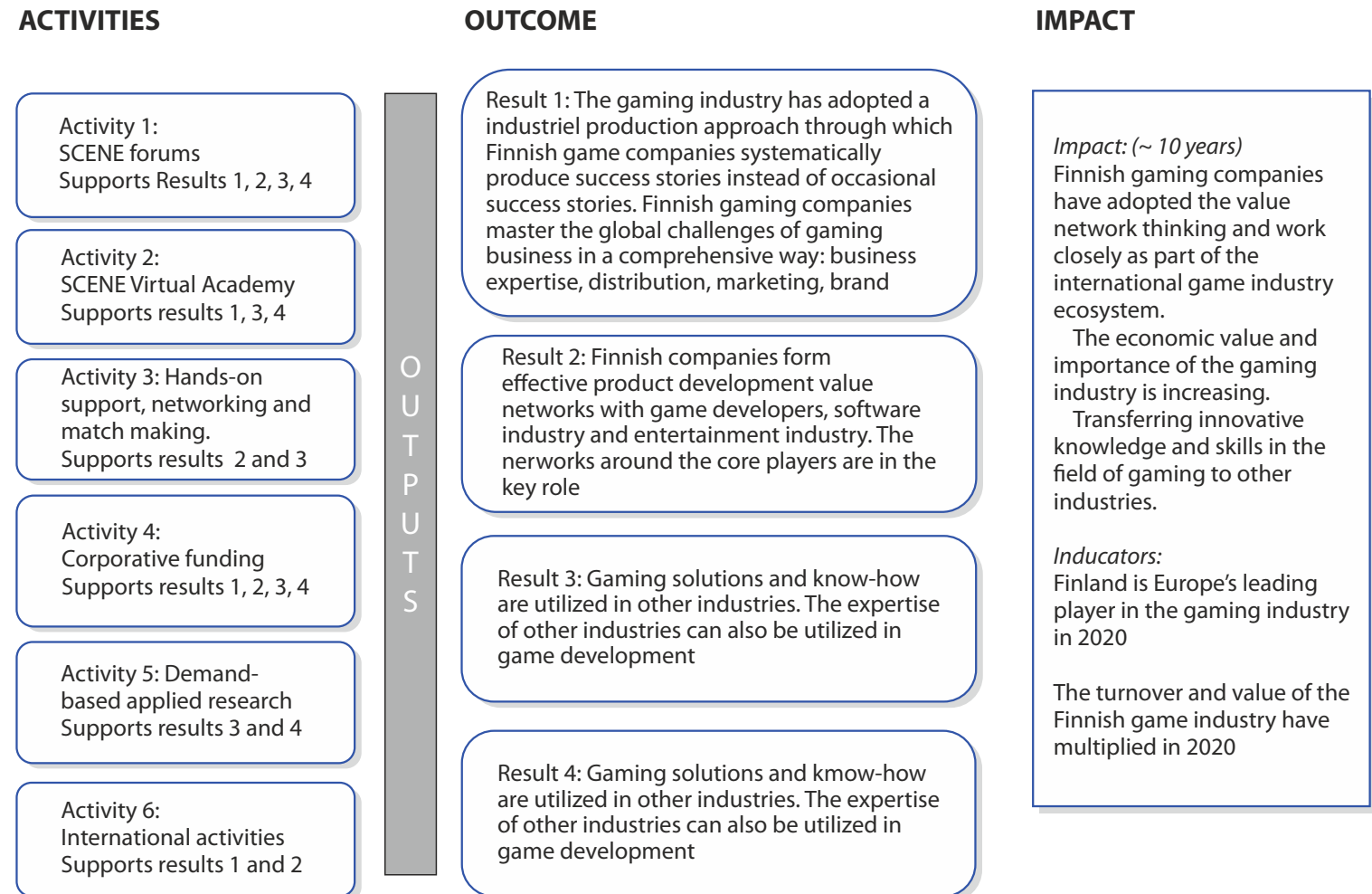
1. Businesses' own assessment of the success of projects and improvement of business processes in the context of final reports and training sessions. Growth in net sales. Number of new NIY and Vigo companies.
2. Number of value network projects created, number of enterprises in projects. Number of new partners in projects. Number of companies in different phases of life cycle, growth.
3. Enterprise contribution to funding research, co-operation. Participation by non-gaming companies in their own projects.
4. The number of service companies specializing in the field and turnover.

Ultimately, the following high-level indicators were listed:

- Finland is Europe's leading player in the gaming industry in 2020
- The turnover and value of the Finnish game industry have multiplied in 2020

The results of the Skene programme are illustrated in the Results Chain below (Figure 1).

FIGURE 1. Results Chain of Skene.



1.1 APPROACH AND ACTIVITIES OF SKENE

Skene targeted small (and even micro) game companies with a series of services. The programme served both companies and research organisations, emphasizing the needs of SMEs with an initial target group of about 200 game companies in Finland and 10 research organisations relevant to the games sector, according to NeoGames reports. Given the segmentation typically applied to the game industry NeoGames estimated that about 5-10 companies were counted as core businesses, about 35 to 50 potential growth companies (often referred to as “runner ups”), and startup businesses were estimated to be up to 50 companies per year. Skene also included universities to help with game related applied industrial research.

In terms of services, the Skene programme offered the following broad areas to the Finnish game industry:

- 1.** Funding via the Tekes financial instruments
 - Activation events, seminars
- 2.** Hands-on sparring provided by NeoGames and the Tekes advisers
 - Sparring for business development and strategy, applying for funding and pitching publishers
- 3.** National and international networking, events, and training
 - Skene business gatherings
 - Networking trips

- Benchmarking and good practices
 - Market and technology trends
- 4.** Facts, data, and results from top researchers and analysts
 - Activating research projects
 - Knowledge transfer
 - 5.** Visibility and promotion in international arenas

To help ensure that the programme was well suited to the game sector, Tekes put together an inclusive steering committee made up of the following representatives: game developers (5), representatives of universities (3), investors (2), Region/ education representatives (2), Public sector representatives (2) and Tekes staff.

This steering committee was used to gather input and share opinions and feedback, but had no formal decision making or governing powers. The committee was more active during the creation and start of the programme, and then again at the end to debrief and discuss next steps.

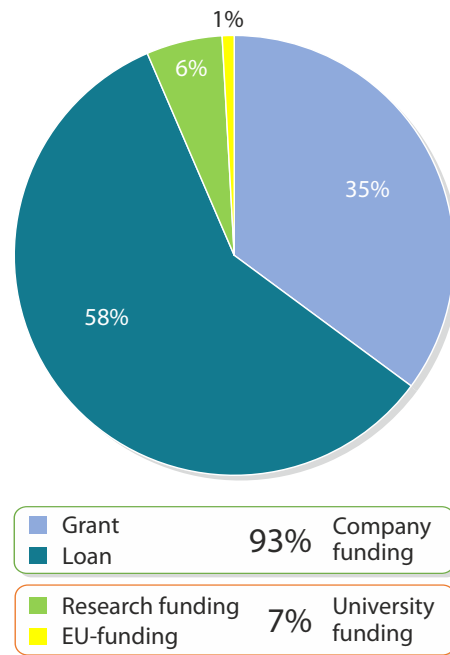
Tekes also made a public tender for an external entity to help coordinate the programme. NeoGames, a long-standing non-profit organization supporting the Finnish game cluster, won the tender and served as the Skene coordinator for the duration of the programme.

In Tekes, the programme was managed by a programme manager, who assembled a group of advisers within Tekes to follow the game industry for the duration of the programme, and become more embedded in the sector.

1.2 FUNDING

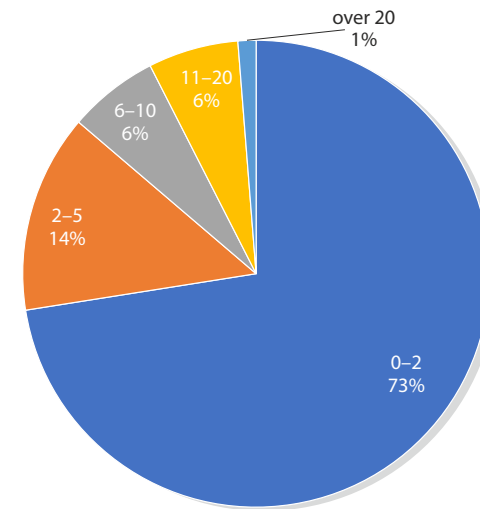
The Skene programme ran from 2012 to 2015. Tekes funded 105 game company projects, with an additional nine (9) academic research projects funded during that time period. The total amount of Tekes funds deployed under the umbrella of the Skene programme was 33.3 M€. Programme documentation noted that the target was to deploy 30 M€ of funding. In addition to Tekes funding, the applicants invested own matching funding with 33.2 M€.

FIGURE 2. Distribution of funds awarded by Skene.



The game projects funded were wide ranging and diverse, and included game engines and development tools, smart watch games, comic-game hybrids and episodic games, just to name a few examples. The funding was spread across companies of different ages, some having just started up and others more longstanding, and with good spread across Finland.

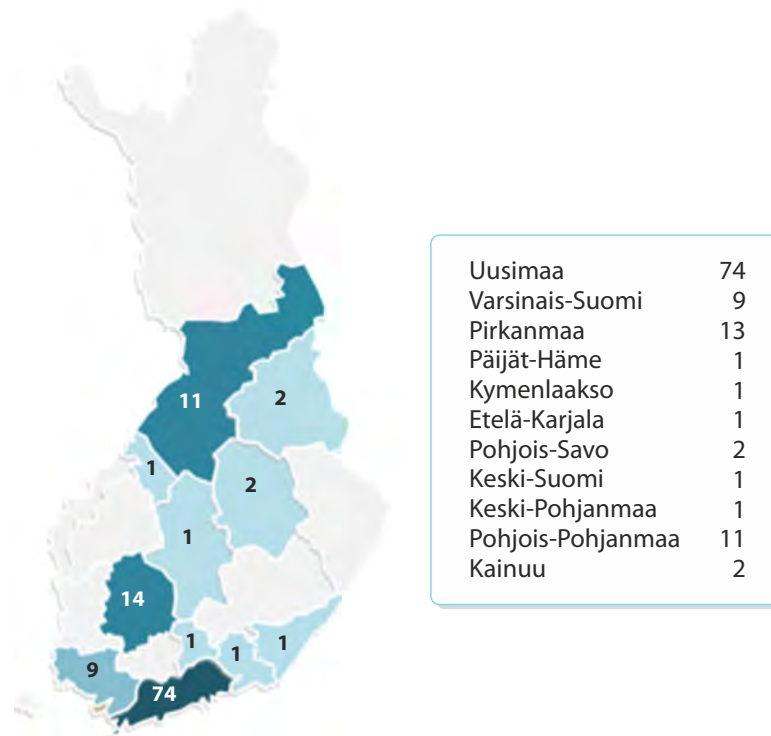
FIGURE 3. Age distribution of game studies receiving funding during Skene.



With regards to the academic research, there were two applications for applied industrial research with the goal to activate domestic researchers to cooperate with studios in the field. The main focus areas were sharing and exploiting research data in companies and practical

projects for the needs of studios. Themes were defined as structures and structural changes, breakthroughs, trends, signals, entertainment consuming business, and gamification.

FIGURE 4. Geographic distribution of game studios receiving funding during Skene.



The academic research projects that were funded are as follows:

1. Free2Play (University of Tampere)
2. GAME STARTER (Oulu University of Applied Sciences)
3. ATHENE+ – Virtual Training, Research, Testing and Tourism Environment (Kajaani University of Applied Sciences and City of Kajaani)
4. Future Tools for Gaming Animations (Aalto University)
5. Enhancing Finnish Games for Health Business (Savonia University of Applied Sciences)
6. Health ProPeli – Development of Finnish Games for Health Business (University of Eastern Finland)
7. Neuroeconomics of Games (University of Tampere and Aalto University)
8. Hook – Sales Psychology for Games (University of Tampere and Southeast Finland University of Applied Sciences)
9. Play for Reward (University of Turku)

In addition to the academic research that was funded, the Virtual Academy was set up during the Skene programme. The Virtual Academy was a network of regional economic development agencies and associations, game studios, and local schools, all with the goal to renew the game industry's educational strategy. Since much of the training for game development is located outside of Helsinki, it was critical to create a network regional development companies, studio and educational institutions relevant to the development of gaming.

2 EVALUATION APPROACH AND METHODOLOGY

This evaluation was an Ex-post Evaluation of the Skene-programme. The evaluation was conducted three years after the programme was phased out in 2015. This evaluation presents an analysis of the results, relevance, efficiency, effectiveness and impacts of the programme. This was a forward-facing analysis with a focus on implications of the results for future programmes similar in content and scope for Business Finland. A mixed method approach was used to evaluate the success of the programme. Quantitative and qualitative data were gathered, synthesized, and analysed from different sources.

The purpose of this evaluation is to provide evidence-based information regarding the extent to which “Skene” was relevant for beneficiaries and stakeholders, effective in meeting stated project outcomes, efficiently carried out, had intended and unintended positive impacts on company financial operations. As a forward-looking evaluation, factors contributing to success and possible challenges and lessons learned will be addressed including an analysis of services provided to support network activities and mechanisms of impact.

To produce a coherent set of findings and lessons learned, a Results Chain (Figure 1) was constructed

based on the programme plan to summarise the internal logic of the programme, including expected outputs, outcomes and impacts they have led in terms of changing practices of operation within programme target groups.

DESK REVIEW

A literature review covered material provided by Business Finland and other relevant material (reports, studies). The purpose of the desk review was to generate an overall understanding about the programme and its achievements and to generate an understanding about the context.

The information provided by the Skene participants in their final reports at the end of the project (2015) was analyzed to provide quantitative and qualitative self-report data on Skene project success.

Further, analyses of company data gathered from publicly available documents was conducted to evaluate company financial performance before (2009–2010), during (2011–2015) and after (2016–2017) the Skene program.

INTERVIEWS

Semi-structured interviews with key contacts were conducted to provide deeper qualitative retrospective reports of the programs to supplement and expand on findings from the other investigative methods. Five different representatives from BF were interviewed, along with two representatives from programme coordinator, NeoGames. An additional four interviews were conducted with Skene participants, as well as a roundtable discussion with three more Skene participants.

ONLINE SURVEY

An online survey was constructed and administered in December 2018 to gather retrospective reports providing quantitative data on program outcomes and impacts from participants in Skene.

The design of the online survey was driven by the overall evaluation questions. The survey was sent to 73 representatives of the Skene funded projects via email. In total, 39 responses were received (response rate 49 %): 35 by game studios, and 4 representing research organisations.

DATA ANALYSIS AND REPORTING

The use of multiple data sources for addressing the evaluation questions provides us the opportunity to triangulate the findings from several sources in order to offer an 'enhanced confidence' in the emerging findings. Data collected from the desk review was complemented through an online survey, in interviews and focus discussions.

LIMITATIONS

The Programme level complete report was not finalized or published. Most documents were available in Finnish only thus limiting the access of native English-speaking evaluator.

The list of contacts was not up-to date, due in part to the frequent position or staffing changes at the studios.

3 FINDINGS

3.1 RELEVANCE

EQ 1: How relevant have the programmes been? How well did the programmes and their services meet the needs of participants?

Several Finnish studios were already showing the growth potential of games: Angry Birds had already surpassed 30 million downloads by the end of November 2010, and SuperCell was already attracting significant foreign investment with their \$12million series A funding round in May 2011.²⁶

As a global industry, the vast majority of sales by Finnish companies are export sales that tap into the billions of dollars of global revenues. As such, the game industry was already the fastest growing sector in the Finnish creative economy. However, around this time, the game industry was starting to shift towards digital distribution and direct-to-consumer models, which highlighted the value of developing innovative intellectual property (IP).

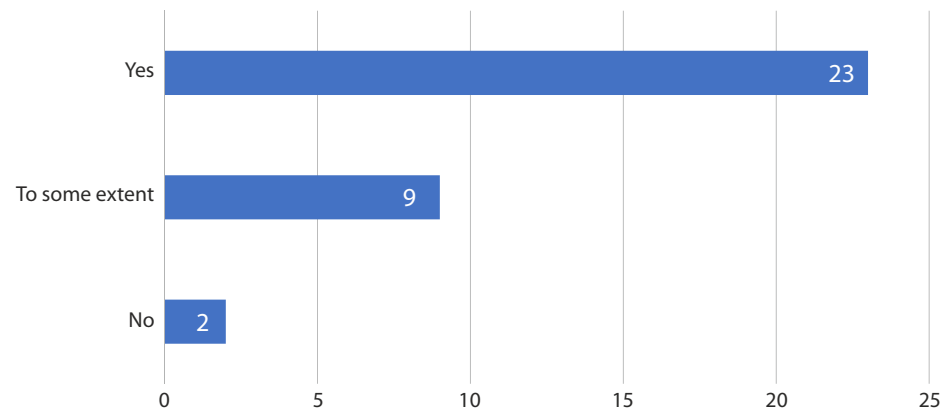
According to the companies interviewed, while many game studios had the technical skills and ability to drive innovation, many lacked the funding and business skills to succeed with these new models of distribution and marketing IP. Compounding the challenge, early stage funding was an extremely scarce resource for game companies across the globe.

As a general indicator of customer satisfaction and loyalty, the Net Promoter Score (NPS) was measured as part of the evaluation survey. Among the game companies surveyed, Business Finland scored an impressive 66.6 (i.e., a NPS score of 50 or higher is considered excellent, 70+ is world class). As an overall barometer, this indicates a great deal of satisfaction in the value of services provided.

More concretely, 67.6% claimed that the Skene programme met their needs.

²⁶ <https://techcrunch.com/2011/05/26/supercell-raises-12m-from-accel-partners-to-power-social-web-games/?guccounter=1>

FIGURE 5. Did the services provided by the Skene programme meet the needs of your organisations?



Specifically, the following services scored the highest degree of usefulness:

- Networking (51%)
- Support to business model development (49%)
- Joint events such as breakfasts and lunches (49%)
- Information about market opportunities (43%)
- Analysis of our market potential (40%)
- Business skills training (34%)
- Marketing / export events (34%)
- Support to internationalization (31%)
- Support to export (31%)

With the following services being considered less useful:

- Pitching (26%)
- Roadshows (23%)
- Research (23%)

- Technical support to product development (20%)
- Advise on legal issues (20%)
- Visibility support (14%)

Despite the above scoring, it is important to note that in almost all cases, the highest score for all services was “Didn’t Participate/Can’t Say”.

In this regard, the need for a program to accelerate the Finnish game cluster, providing the funding needed alongside a push towards a business-first mindset was very high.

3.2 EFFECTIVENESS

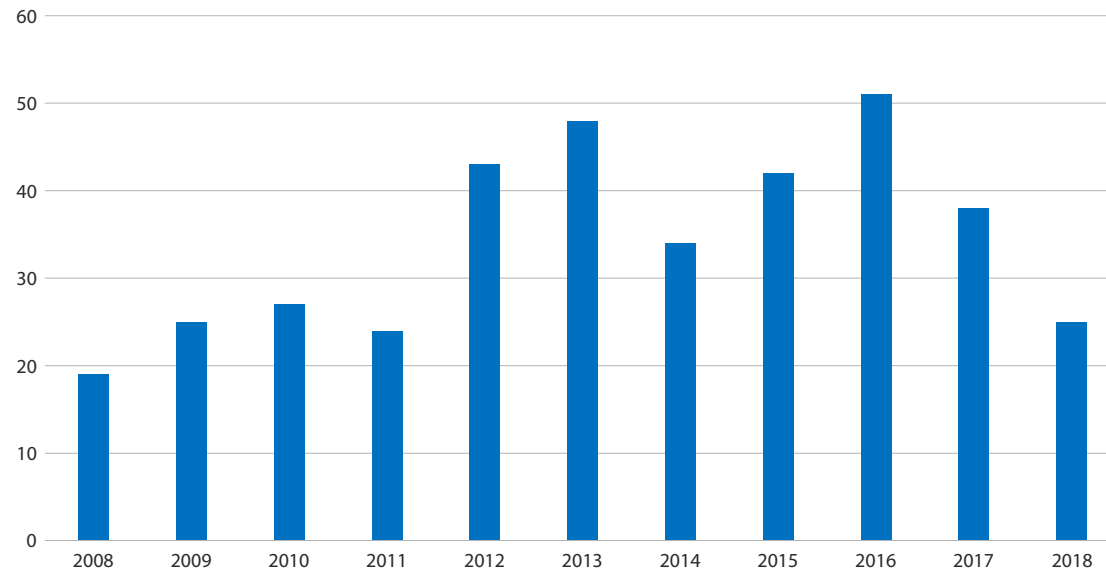
EQ 2: How well have the objectives set for the programmes been achieved? What concrete results each of the programmes have created?

ACHIEVEMENT OF PROGRAM OBJECTIVES

As a result of its efforts and activities, Tekes saw a dramatic increase in funding applications by game companies during the Skene programme. Positive funding decisions for game projects outpaced previous years, and previous more generalized ICT programmes.

The constant sparring by NeoGames and the Tekes advisers ensured that game studios did not see Tekes funding as a reward for hard work, but rather as taxpayers’ investment in the company’s product development

FIGURE 6. Positive funding decisions per year.



activities. This helped push the game industry toward a business-first mindset, requiring a strong business plan in order to win Tekes funding.

The evaluation online survey data shows how Skene evolved the thinking of game companies and pushed them forward, including the following:

- 83% of the respondents claimed that new products or services were developed
- 40% claimed that new business models were developed
- 40% claimed that new partnerships were formed

- 37% claimed their business and value creation expertise increased
- 34% claimed that new business possibilities were identified
- 23% claimed that they received new investment
- 20% claimed that business was expanded to new markets
- 20% claimed that their competitive advantage in international markets increased

That said, less than 6% claimed that cooperation with research institutions increased.

Further, it was clear that Skene served as a stamp of approval in the eye of VCs and private investors. During 2012–15, more than 90% of foreign investments into game studios were targeted at participants in the programme. From the survey, 49% of game companies agreed “a great deal”, “a lot”, or “a little” that Skene enabled them to acquire new investments. Further, the Tekes funding afforded companies more time to explore, experiment and make progress on their products, with 71% agreeing “a great deal”, “a lot”, or “a little” that Skene improved their capacity to raise capital.

In the evaluation survey, the majority of companies reported that the results of their Tekes funded projects went forward, with over 77% citing that new products and services were developed as a result.

Further, the overwhelming majority of companies (77%) claimed in the survey that their Tekes funded projects have led to “some” or a “huge” amount of success.

FIGURE 7. Did the results created by Skene funded project go forward?

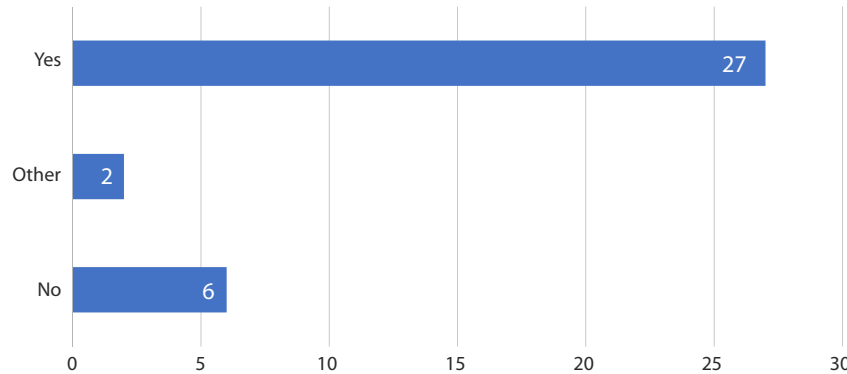
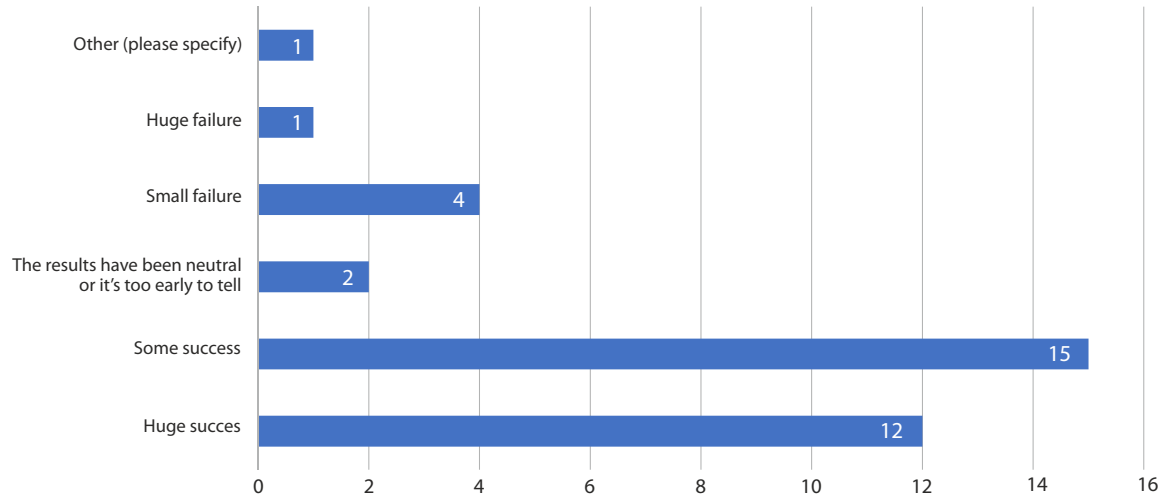


FIGURE 8. To what extent has your Skene project been successful?



As extra color, here are some selected quotes from the online survey:

“Company has developed further both: technical and operational capabilities. The success of the game is the result of this ongoing development work. Company has reached strong position especially by developing deep understanding and technical tools in areas of game design, game analytics and performance marketing.”

“We released the planned 2 products of which one is still available in market and a clear category leader. The project also enabled us to build and improve the important fundamentals (continuous integration, user account management, etc.) which naturally have been ever since developed further.”

“We continued our transformation from a software service company to product company and Tekes was involved in each step towards our first successful product.”

“We have published two games in which the technology developed during Skene in 2017. We are also continuing to use developed technologies and further refining those in the current ongoing projects.”

“Since the project we have successfully continued to develop mobile games, and as a result we’ve achieved a much better positioning for our company.”

In particular, 77% of companies agreed “a lot” or “a great deal” that they were able to utilize improved R&D activities in their product/service offerings. Here are some relevant quotes from the online survey:

“...the funding helped us to be more ambitious on our R&D program.”

“We were able to complete our product and tools created to support new product development.”

“We launched multiple projects and our technology got a lot better.”

“We were able to successfully launch new functionalities to our SaaS platform.”

With regards to the academic research projects, 100% of the universities claimed that the results created by the project went forward. The various events and forums (e.g., the All Skene Game Academic at Mindtrek activities) provided a chance for the universities to share and disseminate their results.

Of note, a 31% score for “support to export” may seem low, but it is important to recall that the game industry in Finland is nearly 100% export-based by default (i.e., game studios develop for a global audience in mind from the start).

PROGRAMME SERVICES

The programme coordinator, NeoGames, lead business activation efforts across the country. In total, NeoGames estimated that about 250 companies were reached through their activation work. Roughly half of those companies applied for Tekes funding, with overall success rate hovering at 70%.

During the program, two national activation tours were conducted in 2012 and 2014. The activation tours were meant to raise awareness of Tekes’ funding instruments and encourage companies to apply. The cities visited in each year and estimated participant attendance are as follows:

- 2012: Helsinki (220), Turku (40), Tampere (60), Oulu (80), Kajaani (40), Joensuu (30)
- 2014: Turku (35), Tampere (80), Oulu(?), Kajaani (40), Joensuu (25), Kuopio (?), Jyväskylä (25), Kotka (35)

Alongside the regional activation tours, other events were organized during the Skene programme, both in Finland and abroad. The content of the events varied, but the approach always consisted of the following elements:

- Providing information on Skene’s activities and presenting funding opportunities
- Presentation of financial / business case examples
- Sharing information and best practices between companies and Skene
- Actions to improve the capacity of companies

These other events were:

- Tekes/GDC Nordic Breakfast (San Francisco, 2013): focus on VC funding.
- All Skene Game Academic at Mindtrek (Finland, 2013): Opportunity for researchers to share findings.
- Tekes Skene Game Business Event (Finland, 2013): Focus on business model and value network evolutions.
- Tekes Skene Game Business Event (Finland, 2014): Focus on creativity and pitching skills.
- Tekes Skene Final Seminar (Finland, 2015): Focus on sharing results of the Skene programme, and discussing the future of the industry.
- Execs Breakfast (Finland, ongoing): Semi-regularly scheduled gathering of 25 studio executives to share and network.

In addition to all the face-to-face events and activities, NeoGames leveraged their public *Play Finland group on Facebook*²⁷ to quickly share news and updates across the Finnish game ecosystem.

Examples of successful participant companies

PlayRaven

PlayRaven is a boutique game development studio that was founded in January 2013 in Helsinki. It employs an international team of industry veterans with years of experience from famous companies in both mobile and AAA console development. Play-

Raven has released three games to date, all of which have gained top 5 chart positions across the globe. Their mission is to make games that no other studio has ever made before. Since the start of the studio, PlayRaven has taken grants and loans from Tekes. This funding was part of their pitch to investors, and helped in the closing of their initial seed round with London Venture Partners.

To accentuate a great start to the studio, it was announced on November 30th, 2018 that Rovio acquired PlayRaven²⁸. The deal was for all the shares in PlayRaven, and includes the 25 employees.

Small Giant Games

Small Giant Games was founded in early 2013 in Helsinki with the belief that small, talented teams can do extraordinary things. In particular, they were a team with deep multiplayer and free-to-play business experience (e.g., team members had worked on Habbo Hotel). Small Giant Games had received Tekes funding during Skene, for two projects.

To date, Small Giant has only released a single title, Empires & Puzzles, to mobile devices. Over half a million euros in funding was awarded by Tekes to support the development of their tech, tools, and concepts. In the final report, the CEO also claimed that Skene helped direct them towards a more structured development process. Through several rounds

²⁷ <https://www.facebook.com/groups/playfinland/>

²⁸ <https://www.rovio.com/investors/releases-and-publications/rovio-entertainment-corp-rovio-has-acquired-playraven-oy>

of private funding, totaling approx. US\$50 million, the studio sold 80% of its shares to Zynga for US\$560 million²⁹. The deal was announced on December 20th, 2018.

Seriously

Seriously was founded in 2013, with the goal to combine a world class creative team with a mobile first experience to develop brands that can make a difference. They received over 3.5m euros of Tekes funding across four projects during Skene, and have since raised \$28m in private funding. And, as a result they recently announced that revenue grew by 65% to \$69m in 2018.

Remedy

One of the longest standing studios in Finland, Remedy is a pillar of the local community. Remedy's franchises have generated over \$500m of lifetime revenue, having received over 100 "Game of the Year" awards collectively. Founded in 1995, Remedy has leveraged Tekes funding on several occasions, including nearly 2m euros during the Skene programme. Back in 2017 Remedy announced that Italian publisher 505 Games was investing 7.75m euros to publish their latest project, Control. Control was more formally unveiled at expos starting in 2019, and has already been generating tremendous buzz.

Futureplay

Founded in 2015 by a handful of industry veterans, with a focus on mobile "view-to-play" games, Futureplay took advantage of over 800k euros of Tekes funding towards the end of the Skene programme. That quickly resulted in raising an initial \$2.5m private funding round in 2016. Futureplay has since launched five games on mobile. By the end of 2018, Futureplay was reporting that their games had been downloaded 50 million times, with 1 million users actively playing every day.

3.3 EFFICIENCY

EQ 3: What significant challenges were identified regarding programme administration and how well were those challenges solved?

No major difficulties were reported with regards to the programme administration. The total operational budget for the Skene program was 400k euros, with 238k euros being allocated to programme coordination. Of note, many of the companies interviewed commented that the heavy paperwork and bureaucratic reporting requirements were a burden, and distracted them from their production efforts. Further to the bureaucracy, there was

²⁹ <https://investor.zynga.com/news-releases/news-release-details/zynga-enters-agreement-acquire-small-giant-games-creator-hit>

extra effort internally by the Tekes advisers to lobby for game projects to fit within the traditional funding instruments, which normally fund technical R&D projects and not final products. Ensuring the game studios submitted their funding requests following that framework was sub-optimal.

Even without considering the economic impacts in section 4.4, it is important to recall that Tekes funding never represented more than 50% of a project's budget. Thus, the 33.3 M€ of funding by Tekes awarded during Skene, was complemented by 37.5 M€ of matching funds from the companies themselves. And, factoring the 70 M€ of additional VC investments, the Tekes funds served as an efficient leverage for capital.

FIGURE 9. Tekes funding as a percentage of total game turnover per year.



Importantly, due to the rapid growth of the Finnish game industry, the relative share of Tekes support decreased during Skene.

Regarding NeoGames activation efforts, it was estimated that 250 companies were “activated” out of a total estimated industry size of 280 companies by the end of the programme.

3.4 IMPACTS

EQ 4: What were the economic impacts of the programmes on turnover, jobs, export and acquired investments of the participating companies? (EQ 4) What wouldn't have happened without the programmes?

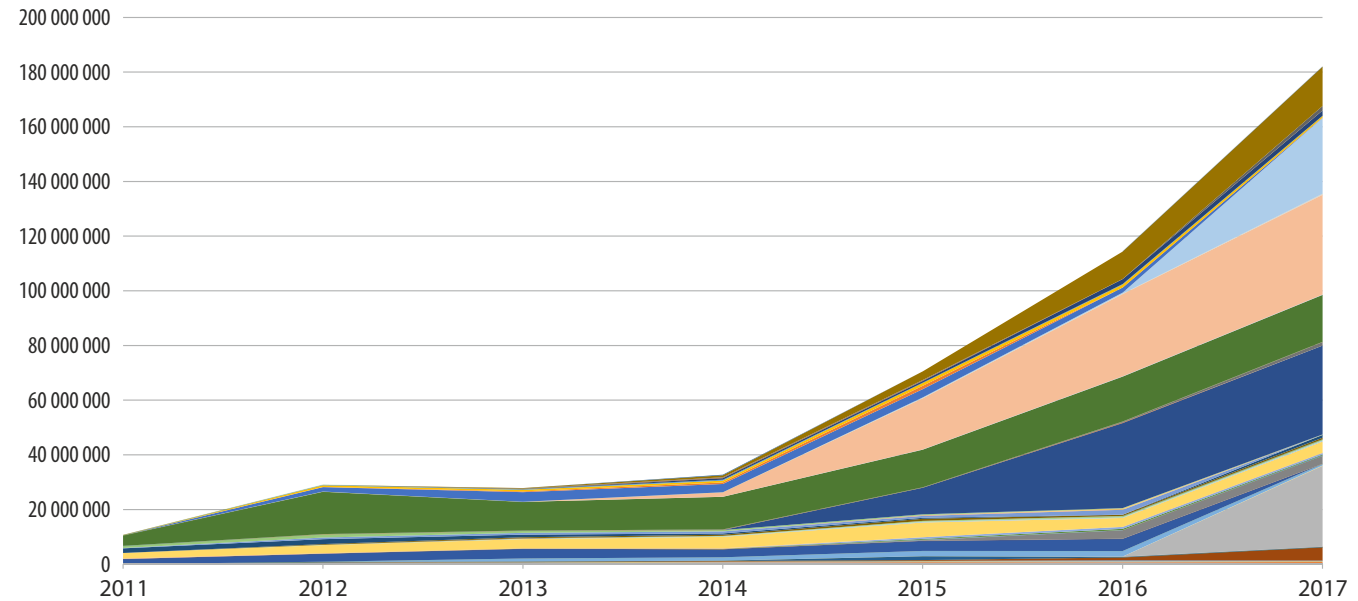
ECONOMIC IMPACT

At the closing of the Skene programme, Tekes claimed that every tax euro invested through public innovation funding had brought the investment back 6 to 24 times as social returns. More specifically, during a period of struggling economic growth, the gaming industry had been one of the few growing export industries. In 2015–2016, the gaming industry represented 25% of Finnish ICT industry production (versus just 2% in 2010).

REVENUE

Overall, the companies benefiting from Skene showed positive growth trends for both headcount and turnover (even when removing Rovio data as an extreme outlier).

FIGURE 10. 2011–2017 turnover of Skene participating companies.



JOB CREATION

In 2011, the year before Skene was implemented, the game industry represented roughly 1250 jobs, and 165 M€ turnover. By 2016, the year after the programme, those figures were up to 2750 jobs and 2500 M€ turnover as reported in NeoGames’ “The Game Industry of Finland 2016” annual report.

Overall, the companies benefiting from Skene showed positive growth trends for both headcount and

turnover (even when removing Rovio data as an extreme outlier).

The number of companies employing more than 50 people had increased by 2016 to 10 studios, and the number of companies making more than one million euros had increased by about 30% since 2014 up to 30 studios. Importantly, it was also during the timeframe of Skene that there was the highest volume ever of new game startups being founded.

FIGURE 11. 2011–2017 headcount of Skene participating companies.

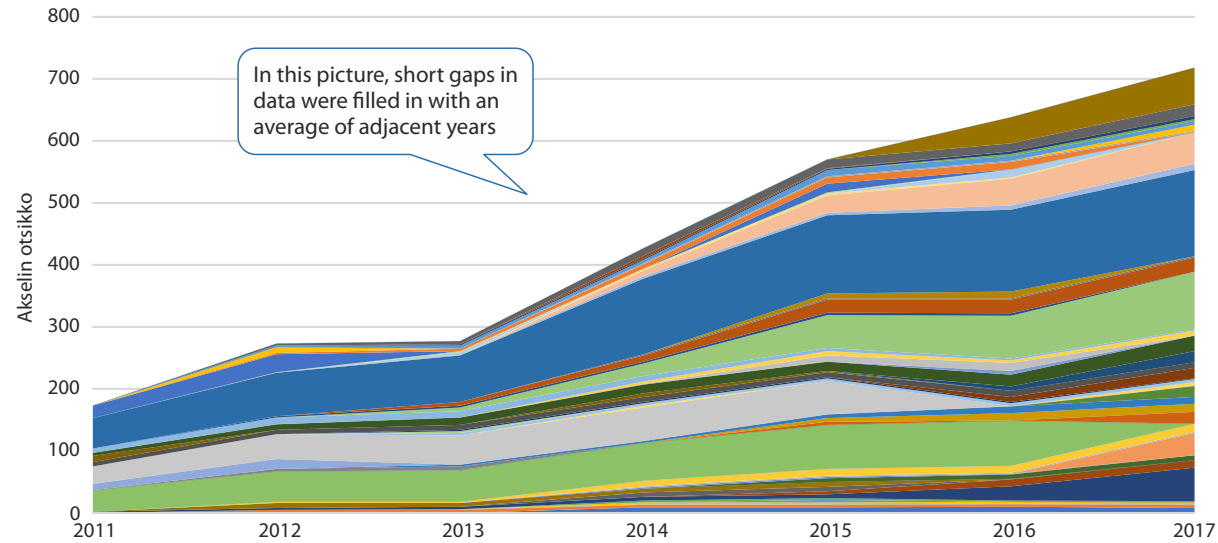
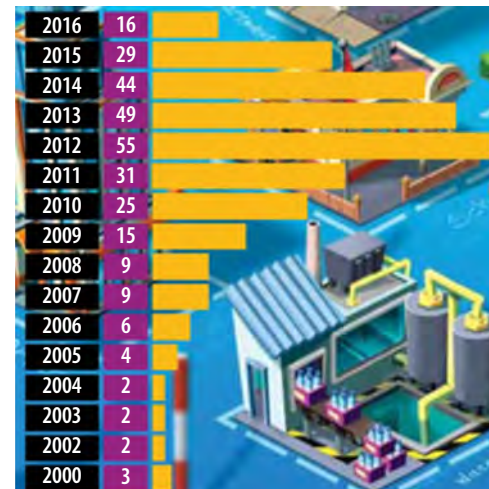


FIGURE 12. Number of new game studio startups in Finland per year.



As noted above, Skene was a strong leverage for attracting VC funding, with nearly 70 M€ of private investment during 2012–15 going to participants in the programme.

In addition to the tremendous economic impact and shift to business-first thinking, several of the value-network programs that were built and supported during Skene are still active today, like the Virtual Academy, the executive breakfast gatherings, and the Play Finland Facebook group, which currently boasts nearly 6000 members.

4 LESSONS LEARNED

A major lesson from Skene is that a **well-timed programme with sector-specific support can have a massive economic impact**. Tekes had been providing various forms of funding to Finnish tech companies for many years (including game studios), but it wasn't until it was wrapped up in a dedicated programme, with specific effort to activate the industry and inspire a new business-first mindset, that there was a major shift in behavior from the game sector.

That said, shifting minds is not actual capacity building. While the actual funding was the most important service offered by Tekes, much of the original vision to build capacity and train business skills didn't happen in any tangible form. Despite the generally positive responses in the evaluation survey, **many of the programme services went under-utilized**. Refer back to section 4.2.4, where the most common response was "Didn't Participate/Can't Say". While we can guess that some of that is due to the general intense nature of game development, and once having earned the funding, developers put their heads down and got to work, there should be a deeper look at the lack of participation.

Additionally, when a programme has such impressive bottom-line impact, it is easy to get swept away

in the most direct path to economic impacts. As such, other elements of the programme (e.g., exploring serious games, or pushing for knowledge/tech transfer with other industries) got de-emphasized or largely ignored. As noted by the programme coordinator, they stayed agile and responded rapidly to what was happening in the market, and were able to adjust as needed to have the biggest impact.

That said, what can be counted as **agility versus missed objectives**? Despite all the economic success of the programme, several of the original objectives were either abandoned or deemphasized as the programme was executed and evolved over time. Without clear **monitoring** of that evolution and **decisions** along the way, it is hard to make the link.

Finally, in recognizing the speed of results, having an external **programme coordinator that is already deeply embedded in the sector, helped to accelerate access and credibility** for Tekes among the companies in the gaming sector. It also helped that Tekes had a dedicated set of advisers that could gain industry specific expertise and take advantage of the relationships/access provided by NeoGames. This kind of effect is easier to create when a programme is focused on a single, well organized, sector.

5 CONCLUSIONS

Considering that the unofficial target for Skene was to hit one billion euros in turnover by 2020, **the objective was achieved just past the first year of the programme.** Ultimately, the tax income totals have hit the hundreds of millions of euros, with SuperCell alone producing nearly one billion euros in taxes in 2016.³⁰

As outlined throughout this report, **funding applications were up dramatically, and there was a flurry of new game studio startups, the industry headcount more than doubled, turnover was up more than 10 times** during the programme. Skene was directly responsible for this increase in funding applications. This was echoed during several interviews. Also, Skene made the Tekes funding instruments more accessible.

Skene-backed studios were receiving millions in **private investment.** And foreign companies were setting up subsidiaries and acquiring studios in Finland, **attracted by** all the **success** (e.g., EA, Ubisoft, Unity).

By all counts, **the economic impact targets of Skene had been far exceeded** with more consistent success stories, fueled by a business-first mindset from the

game entrepreneurs. In this respect, the **Skene programme had a significant impact on the goal of Finland becoming the number one player in the gaming industry in Europe.** And while there are no objective rankings, no one would question that Finland is currently one of the top development centers in the world.

The growth of the game sector during the timeframe of the Skene programme is undeniable. To the extent that the goal of Skene was to professionalize the sector and enable it to have a greater economic impact, **there is no question that Skene far surpassed its objectives,** creating hundreds upon hundreds of new jobs and billions in increased turnover.

Considering that the programme itself was run for a total operational budget of 400k euros to achieve a 10x multiplier on turnover, it was a **cost-effective programme** to execute.

Critically, having Skene as an indicator of business maturity provided a tangible **lever for raising additional capital.** Given the general lack of sources for early stage funding in the game industry, the Tekes funding

³⁰ <http://www.helsinkitimes.fi/finland/finland-news/domestic/15116-supercell-brought-almost-1bn-in-tax-revenue-to-finland-in-2016.html>

was pivotal in enabling Finnish game companies to be more ambitious, and in creating more progress/traction before securing VC funding. The flow of 70 million euros of private funds for the companies participating in Skene is a very positive indicator.

The success and importance of the Finnish game sector is now recognized around the globe, with the business-first mindset specifically appreciated and rewarded, compared to many other regions that are still driven purely on passion alone.

6 RECOMMENDATIONS

Based on the analysis and conclusions, following are recommendations for improving specifically programmes like Skene, and some ideas for Business Finland programmes more broadly.

SINGLE INDUSTRY FOCUS

Having a focus on a single industry/sector allows for a more optimized programme. This focus enables a deeper collaboration with experts in the field, and to partner with an external programme coordinator that is already well connected and has a deep understanding of the industry. This focus also helps create an umbrella effect for consistent branding and accelerated activation.

DEDICATED TEAM WITH INDUSTRY EXPERTISE

Skene validated the approach of engaging an external programme coordinator, critically, with deep expertise, connections, and trust in the game industry. Further, having a consistent set of advisers assigned to the programme allows Tekes to gain domain specific experience, and demonstrate rational funding decisions. Future programmes should aim to create a similar dynamic.

TARGETED PROGRAMME FOR SERIOUS GAMES

If it is deemed that serious/learning/training games and the like are of economic and social value to Finland, then a dedicated programme should be created to foster them. To the point on single industry focus, serious games are a distinct industry, quite separate from “mainstream” entertainment games. While serious games were mentioned as part of the original Skene mandate, they were largely not supported given they had to make the same business case as “normal” games.

CUSTOMIZED FUNDING INSTRUMENTS

Ideally, funding instruments should be customized for the specific sector being supported. Rather than lobbying to fit into existing standard instruments, funds optimized for the game industry can better serve the particular needs and gaps of the sector. Game studios often have needs around content creation, and product development to get to prototype and 1st playable stages... the stages that are often the most critical for securing external funding and/or publishing deals. It was not always obvious or convenient for studios to package

their projects in a way that fit inside the standard Tekes funding instruments. Ultimately, it is the game IP that is the focal point of value and wealth in the game industry, so funding instruments should be optimized around IP creation and development.

AGILITY NEEDS MONITORING

While it is great to have agility and adjust as the programme evolved and the industry dynamics change, there needs to be better monitoring and accountability for the changes that are made along the way. Objectives were dropped (e.g., push for serious games), or not done as deeply as anticipated (e.g., do deep capacity building) as the programme team adjusted and focused on the elements that were creating strong results. But, these adjustments and the process of decision making is not well documented. Monitoring these changes and tweaks should be tracked, in no small part to ensure a proper assessment of the programme.

PROPER CAPACITY BUILDING

In the initial documents for launching Skene, there was a thorough outline for building deeper capacity among game professionals for all the business and marketing topics to enable consistent commercial success. However, the programme ultimately focused on networking and knowledge sharing, and did not implement more hardcore training. While those opportunities to network

and share inspired many studios to level up with a business-first mindset (and of course, the Tekes advisers were digging deep on business plans), motivation and inspiration is not the same thing as actual training and capacity building.

ALWAYS FILL THE STARTUP PIPELINE

Nearly 70% of funding under Skene went to startups. As noted in section 4.4.1, Finland saw the largest number of game startups during the timeframe of Skene. But, the pace of new game startups has slowed down dramatically since the end of Skene, making it critical that similar activation efforts continue. These efforts should not go exclusively to the rock stars that are growing, but rather maintaining a continuous pipeline of studios at all levels.

STRATEGY BEYOND FUNDING

First and foremost, Tekes was an R&D funding agency. With the setup of Skene, they did well to broaden the mandate of the programme, and leverage the motivation of receiving funding to push to professionalize the sector and drive the sector to create more robust value networks. Now that the game industry is such a critical sector to the Finnish economy, there should be a much broader strategy to support and grow the sector. And, that strategy needs to come from a larger consortium of government, associations, regional support agencies, and academic institutions.

DOCUMENTS CONSULTED

- Järvelä S., Salminen M., Kivikangas J.M. and Ravaja N. (2014) Neuroeconomics of Games Tekes project 1611/31/2014 report, v1.0. Aalto University.
- Neogames (2010) Suomen pelitoimialan strategia 2010-2015. Visio 2020.
- Neogames (2014) The Game Industry of Finland. Report 2014. Neogames.
- Neogames (2015) Digitaalinen tulevaisuus on täällä ja se luo kasvua ja töitä suomeen. Suomen pelialan tavoitteet hallituskaudelle.
- Neogames (2015) Pelitoimialan raportti 2015. Neogames.
- Neogames (2016) The Game Industry of Finland. Report 2014. Neogames.
- Neogames (2017) Finnish Game Industry 2016 Report. Neogames.
- Raivio T., Lunabba J., Rynnänen E., Timonen J., Antikainen M. and Laner S. (2012) Software, mobile solutions and game industry . Evaluation of Tekes software related programmes. Tekes.
- Syrjänen M., Nikula J., Vehviläinen I., and Raivio T. (2007) Tietoyhteiskunnan uudet toimintatavat mahdollisuutena ja haasteena – arviointi. Gaia.
- Tekes (2013) Peliteollisuus kehityspolku. Tekes.
- Tekes (2015) 10 Years of Funding and Networks for the Finnish Game Industry. Tekes in the game. 2004–2014.
- Tuominen M., Vähämäki S., and Rynnänen K. (2010) Vertical Software Solutions 2006–2010 . Loppuraportti.