Assessment of the Impact of the Vratsa Software Community Program Supported by ABF

AMERICA FOR BULGARIA FOUNDATION

Враца Софтуер Общество

2021

Contents

List of Abbreviations and Terms Used in the Report

Abbreviation / Term	Explanation
ABF	America for Bulgaria Foundation
Base= / n=	Number of respondents who answered the given question
DMC	Digital Marketing Course
GMI	Gross Monthly Income
SDC	Software Development Courses
SOL	Standard of Living
VSC	Vratsa Software Community

I.   Executive Summary

The main objective of the evaluation is to assess the impact of the VSC program on the development of the IT industry in Vratsa and its contribution to the IT industry nationwide.

The document is structured in two parts. The first focuses on the program implementation and the second deals with its impact.

<u>Program Implementation</u>: Overall, VSC implemented all planned activities under the ABF-funded project. Each program was implemented except for the Summer IT Academy[1], which failed to attract enough participants in 2018 and did not continue in the following years. The success of each program implementation has varied. Arguably, the most successful program in terms of immediate effect is the signature training program in software development.

With a target of 60 participants annually (180 in three years), VSC trained 187 participants in software development and exceeded its overall target. Approximately 36% of these (68) passed at least two levels of training, sufficient to start a job in the IT sector. Those who successfully graduated all levels (four for JAVA and five for PHP courses) are 41 or 22% of the trainees.

In 2018, VSC launched a new program in digital marketing in response to market demand. The program demonstrates a good graduation rate of 51% with 38 participants completing all modules.

VSC continued to invest in building an IT community and motivating young people to start a career in the field. Code Week, an annual two-day event of free lectures, practical workshops, and coding challenges conducted by established Bulgarian IT professionals, is a great example of this. At the same time, VSC invests in kids and students to ignite their interest in coding. In addition to Rails Girls[2] and Treasure Hunt[3], new programs for youngsters were launched in partnership with other companies. MindHub[4], launched in 2018, is an excellent example of this approach. With the expansion of the partnership with Telerik Academy School (TAS) Program, Vratsa became the town with the highest number of TAS school groups after Sofia — nine.

Photos from Various Vratsa Software Community Events

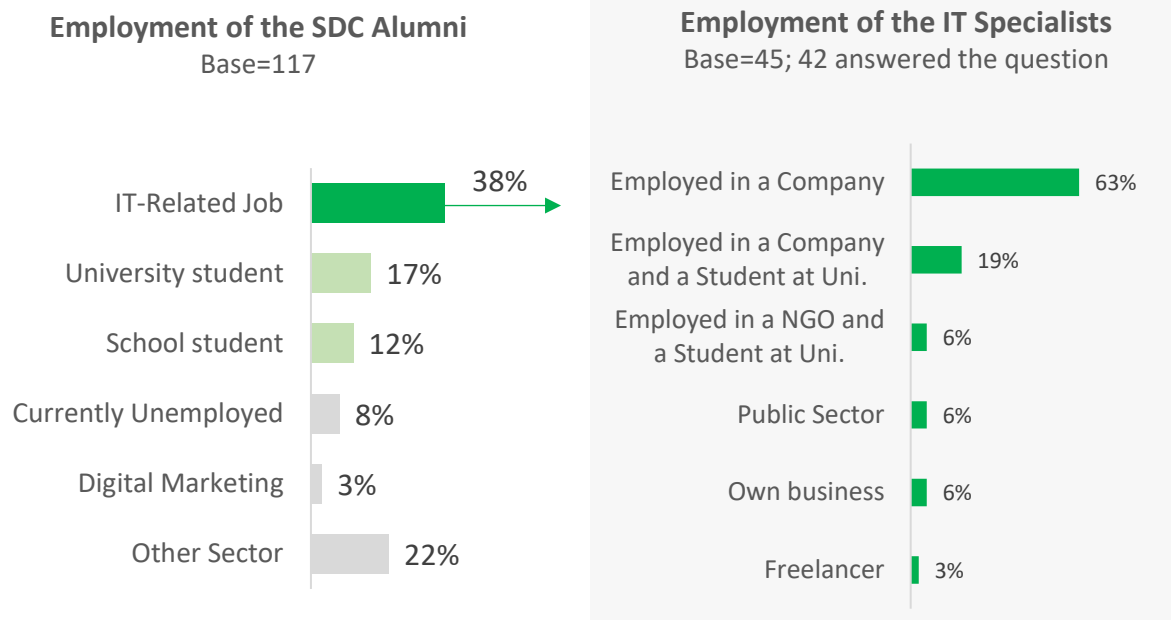[1] The idea behind the Academy was to train young people to create their own tech companies.
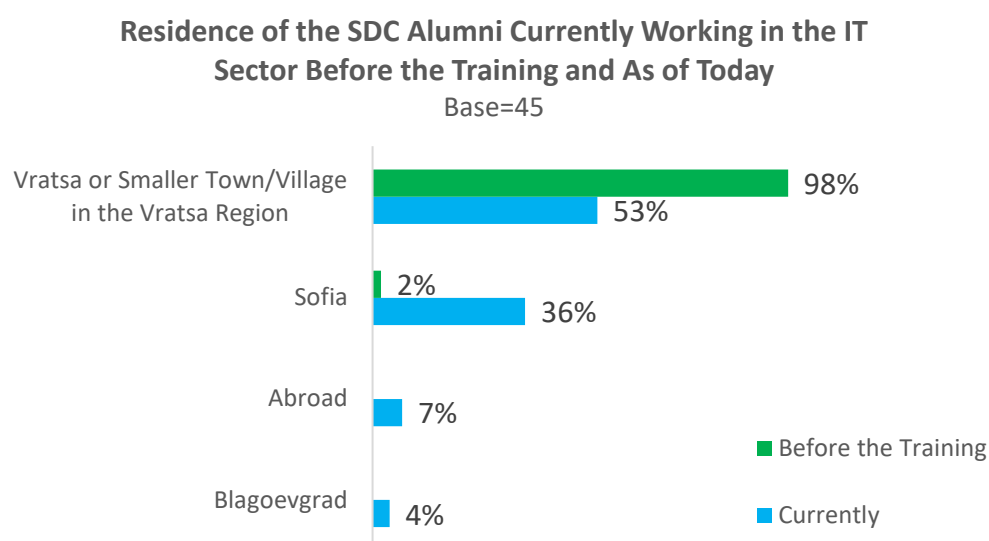[2] A two-day workshop that motivates young girls and women to pursue a career in IT.
[3] An annual event designed to spark the interest of young people and children of Vratsa and give them confidence in solving intellectual challenges and problems.
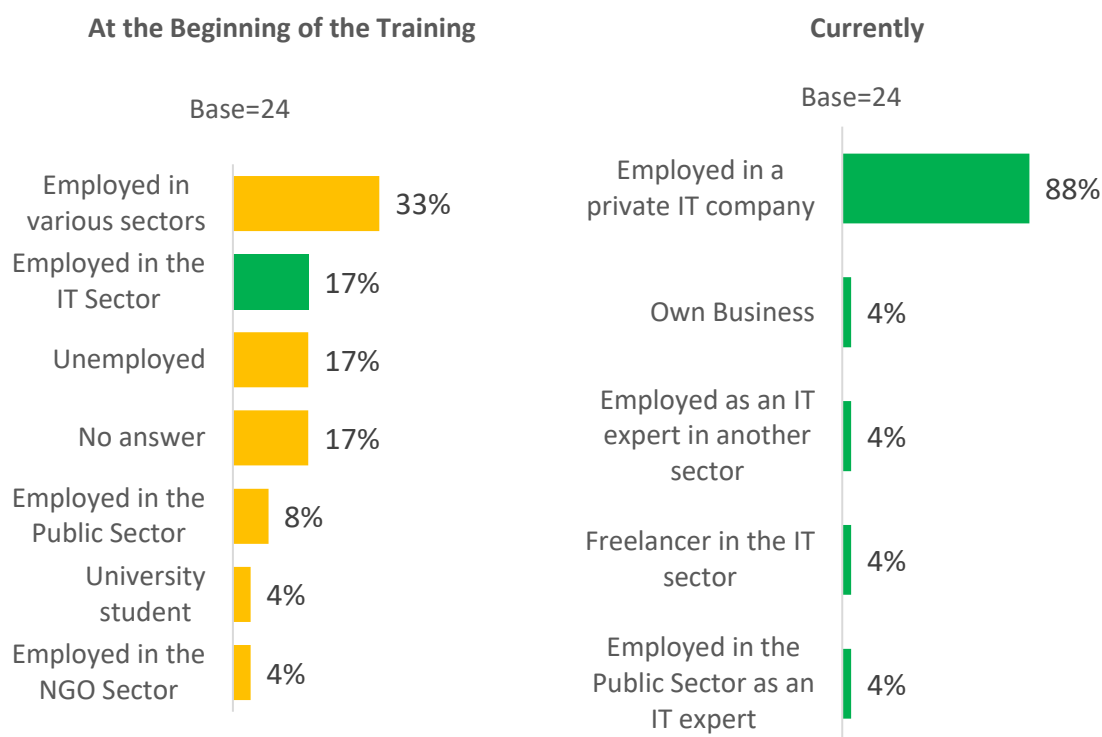[4] Programming courses for children between the ages of 6 and 11.

Impact of the VSC Program: Almost 40% of the surveyed alumni of the Software Development Courses (SDC) currently work in the IT sector. Women account for 31% of this number. Most of the alumni have full-time jobs at private companies. Junior (36%) and Expert level (33%) positions prevail. The charts below illustrate the current employment status of the SDC graduates.

Employment of the SDC Alumni
Base=117

Category	Percentage
IT-Related Job	38%
University student	17%
School student	12%
Currently Unemployed	8%
Digital Marketing	3%
Other Sector	22%

Employment of the IT Specialists
Base=45; 42 answered the question

Category	Percentage
Employed in a Company	63%
Employed in a Company and a Student at Uni.	19%
Employed in a NGO and a Student at Uni.	6%
Public Sector	6%
Own business	6%
Freelancer	3%

Not surprisingly, a significant share (48% or 21 alumni) of those who currently work in the IT sector and used to live in Vratsa left the Vratsa region. Most of them, 76% (or 16 alumni), moved to Sofia. Several alumni emigrated abroad, while one participant moved from Sofia to Vratsa. Nevertheless, half of those employed in the sector (53% or 24 alumni) still work and live in Vratsa.

Residence of the SDC Alumni Currently Working in the IT Sector Before the Training and As of Today
Base=45

Location	Before the Training	Currently
Vratsa or Smaller Town/Village in the Vratsa Region	98%	53%
Sofia	2%	36%
Abroad		7%
Blagoevgrad		4%

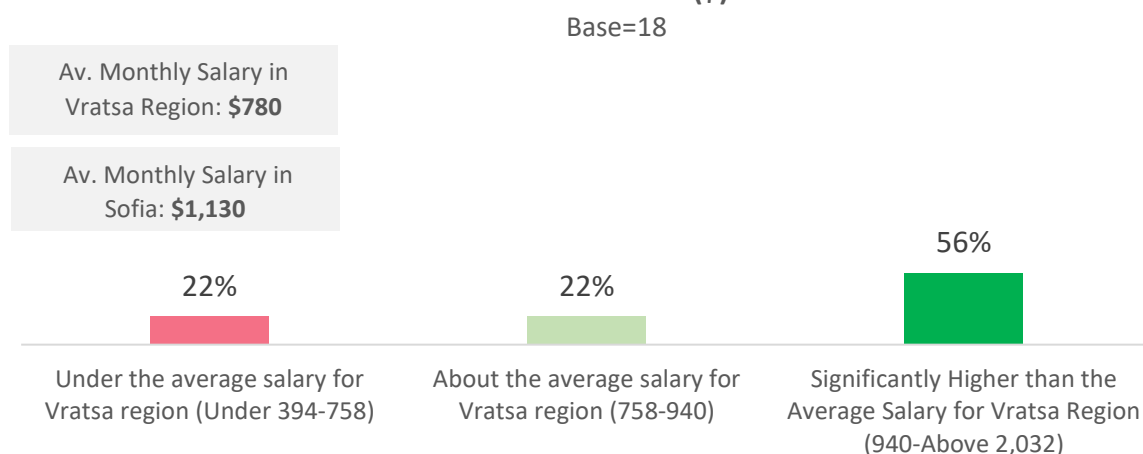- ■ Before the Training
- ■ Currently

Alumni Who Stayed in Vratsa: The professional background and experience of the SDC alumni who found IT jobs and stayed in Vratsa varies from people working in different sectors, including the IT, unemployed, to students. The chart below illustrates the current engagement of the SDC alumni and their occupation at the beginning of their training at VSC.

At the Beginning of the Training

Base=24

Employed in various sectors	33%
Employed in the IT Sector	17%
Unemployed	17%
No answer	17%
Employed in the Public Sector	8%
University student	4%
Employed in the NGO Sector	4%

Currently

Base=24

Employed in a private IT company	88%
Own Business	4%
Employed as an IT expert in another sector	4%
Freelancer in the IT sector	4%
Employed in the Public Sector as an IT expert	4%

More than half of the Vratsa-based SDC alumni (53%) have increased their monthly income immediately after starting a job in the IT sector. For another 20% of the same group, the transition to the IT sector meant lowering of their income in the short term, but an opportunity for a gradual increase in the long run.

At present, 93% of the Vratsa-based alumni receive a higher gross monthly income (GMI) in comparison to their monthly income before the training. Furthermore, more than half (56%) of the SDC alumni in our sample currently employed in IT jobs in Vratsa, receive a significantly higher salary than the average salary for the Vratsa Region.
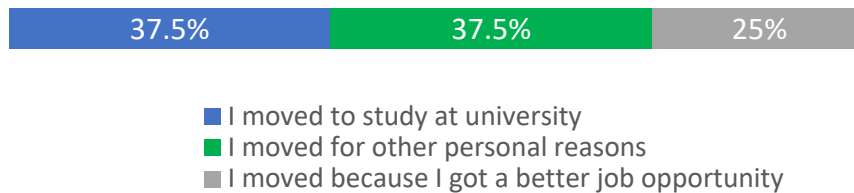
Gross Monthly Income of the VSC Alumni Currently Employed in IT Jobs in Vratsa ($)

Base=18

Av. Monthly Salary in Vratsa Region: **$780**
Av. Monthly Salary in Sofia: **$1,130**

22%	22%	56%
Under the average salary for Vratsa region (Under 394-758)	About the average salary for Vratsa region (758-940)	Significantly Higher than the Average Salary for Vratsa Region (940-Above 2,032)

Alumni Who Moved to Sofia:

Reasons for Moving
Base=16

37.5%	37.5%	25%

■ I moved to study at university
■ I moved for other personal reasons
■ I moved because I got a better job opportunity
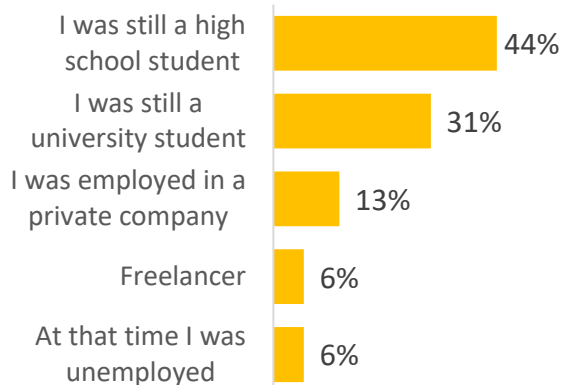
Most of the Sofia-based SDC alumni currently employed in the IT sector, were students at the beginning of their training in VSC (75%). Presently, one third of them are university students, but also employed in private companies (38%). The charts below show the occupation of the Sofia-based alumni before and after the training.
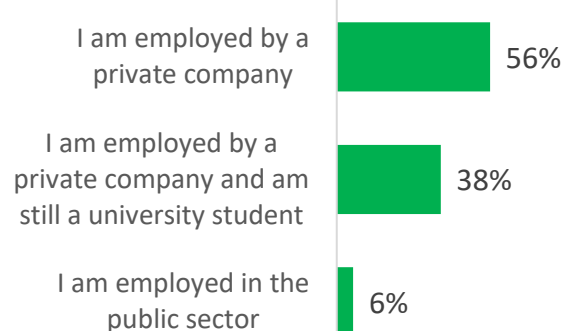
At the Beginning of the Training
Base=16

I was still a high school student	44%
I was still a university student	31%
I was employed in a private company	13%
Freelancer	6%
At that time I was unemployed	6%

Currently
Base=16

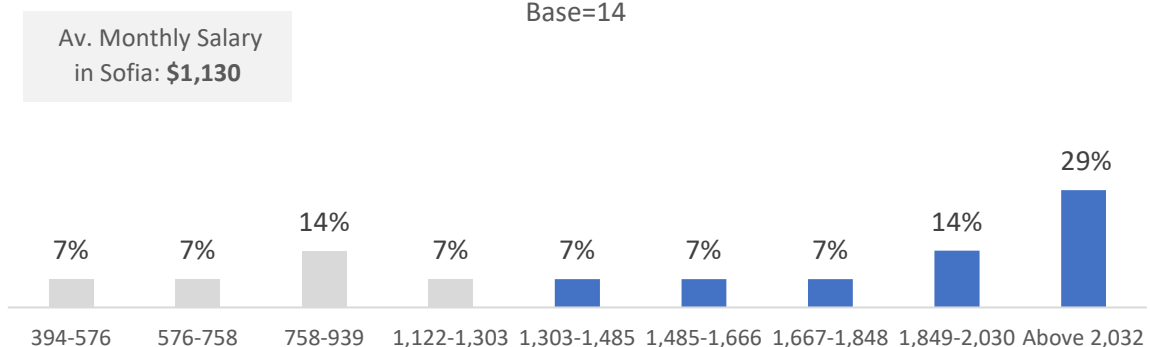|	
I am employed by a private company	56%
I am employed by a private company and am still a university student	38%
I am employed in the public sector	6%

The majority of alumni in IT jobs in Sofia (64%) make above the average GMI of $1,130. The majority of this group actually makes almost double this amount, with GMIs above $2,032.

Gross Monthly Income (GMI) of the SDC Alumni Currently Employed in IT Jobs in Sofia ($)
Base=14

Av. Monthly Salary in Sofia: **$1,130**

394-576	576-758	758-939	1,122-1,303	1,303-1,485	1,485-1,666	1,667-1,848	1,849-2,030	Above 2,032
7%	7%	14%	7%	7%	7%	7%	14%	29%

In the past six years, 342 people participated in the software development courses of VSC. As a result, 50 qualified alumni were able to join the software development industry and the IT sector in general. Based on the survey data, we can assume that at least 24 of them contribute to the growth of the IT industry in Vratsa in particular. The overwhelming majority, 77%, of those who work in the IT sector indicated the SDC was a key factor for the successful start of their career in the field of software engineering. This is what two of the participants shared:

"The Vratsa Software Community course is the best start for a career in this field and can change a person's life even in a city like Vratsa."

A mobile application developer; currently lives and works in Vratsa.

"In summary, I feel lucky to have the opportunity to be part of the students of Vratsa Software Community and I think they are the best thing that could have happened in the city of Vratsa!"
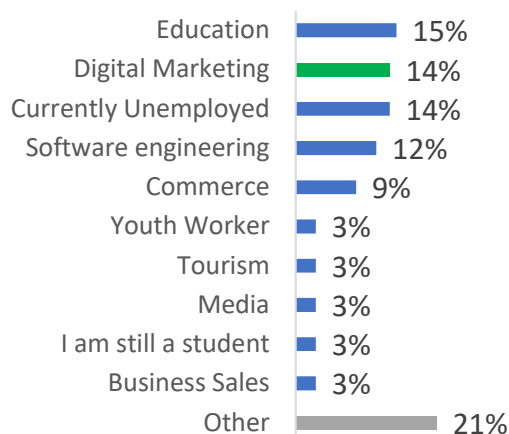
A web application developer. Moved to Sofia to study at a university. Stated that the VSC courses had a key contribution for the successful start of her career in the field of software engineering.

Digital Marketing Course (DMC)

To meet the growing need for expertise in the digital marketing field, VSC started offering a new training course in Digital Marketing in 2018. In three years, a total of 44 participants from three cohorts completed at least level 2 of the three-level course, making them eligible for the current study. The chart below illustrates the current occupation of the digital marketing graduates. Although most of the DMC graduates do not work as digital marketing experts, half of them report using the knowledge and skills acquired from DMC in their current job.

Employment of the DMC Alumni
Base: 35

Education	15%
Digital Marketing	14%
Currently Unemployed	14%
Software engineering	12%
Commerce	9%
Youth Worker	3%
Tourism	3%
Media	3%
I am still a student	3%
Business Sales	3%
Other	21%

The very fact that something like this is done in Vratsa makes me proud! The Digital Marketing course gave me a lot: I met a lot of interesting people, learned basic things about digital marketing and managed to start making successful advertising campaigns for my own business! Thanks to the whole team for the effort and time!

A DMC alumnus. Stated that he applies the knowledge acquired from the training almost every day. Lives in Vratsa.

Conclusions

- Overall, VSC implemented all planned activities under the ABF-funded project except the Summer IT Academy[5], which failed to attract enough participants in 2018 and did not continue in the following years.

- The training of IT specialists, who then find jobs in the Vratsa-based IT companies, continues to be an activity with unique value added for the local economy. Forty-five (45) VSC trainees currently work in the IT sector, 24 of them in Vratsa. While VSC has not achieved its target of 60 VSC alumni working in the IT sector in 2020 (the goal was 45 in Vratsa), the alumni recognize the contribution of the software development courses to the successful start of their careers in software development.

- The majority of the VSC alumni with jobs in the IT sector (53% or 24 alumni) work and live in Vratsa. This proves that VSC manages to some extent to keep VSC graduates in their hometown while earning reasonable income. Most of those who stayed in Vratsa were already adults with various professions at the time of their training at VSC. However, a significant share (48% or 21 alumni) of those who currently work in the IT sector and used to live in Vratsa left the Vratsa region. Most of them were students at the time of their training at VSC. Therefore, if VSC wants to create new IT-specialists for the local companies, the best group to work with is adults with previous professional experience.

- Currently, the VSC alumni working in the IT sector are well-paid employees. 93% of the 24 graduates working in Vratsa receive higher gross monthly income (GMI) compared to their earnings before the VSC training. In addition, 56% receive a significantly higher salary ($940-$2,032 and above) than the average salary in the Vratsa region ($780). Most of the alumni with IT jobs in Sofia (64%) make above the average GMI of $1,130.

- Though in a nascent state, an IT community is already taking shape in Vratsa and the VSC activities are laying its foundation. Many participants are supported by companies in the IT sector and their representatives often participate in VSC initiatives. Hiring VSC alumni as interns or junior experts is a productive way to build the community. The Gnezdoto co-working space further boosts the development of the IT community in Vratsa by helping start-ups and existing small businesses in the IT sector expand their activities and easily collaborate among each other. For the time being, attracting new companies to the city remains an ambitious goal that has not yet been achieved.

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[5] The idea behind the Academy was to train young people to create their own tech companies.

II.   Description of the Program

Grant Title: Vratsa Software Academy
Grantee: Vratsa Software Community (VSC)
Grant Amount: BGN 110,000 (USD 63,000), 62% of the total program cost
Grant Period: Sept 2017 – May 2021, 44 months

The goal of the Vratsa Software Society program is to give the young people of Vratsa the skills that would allow them to work a well-paid job, without having to leave their hometown. The core of the program is the:

> Software Development Courses (SDC) – Two parallel courses each year for nine months – one in PHP and one in Java. The courses were initially offered for free, but a fee was introduced in 2019. Training in Quality Assurance (QA) was under consideration at an earlier point of time but was later substituted for the more popular and trendy Digital Marketing.

In addition, Vratsa Software Community organizes the following initiatives:

- Code Week Vratsa – An annual two-day event of free lectures, practical workshops, and coding challenges conducted by established IT professionals in Bulgaria. More than 12 areas of programming and software development are covered, including Web Design, Video Editing, Robotics 101, Programming 101, and Programming for Kids. Code Week Vratsa popularizes software development as a viable career option for the people of Vratsa and inspires participants to pursue further training and a career in the field.

- Treasure Hunt Vratsa – An annual event designed to spark the interest of young people and children of Vratsa and give them confidence in solving intellectual challenges and problems. The Treasure Hunt is a popular team game that develops problem-solving skills and abilities to work in teams, both relevant to the needs of the labor market in the 21st century. It started for free, but a fee was introduced in 2018.

- Hack Vratsa – An event where programmers, designers, and businesspeople get together for three days every year to work on specific projects and applications in four categories: Web Site and Web App, Mobile App, Desktop App, and Embedded Systems. The event is open for school and university students as well as for people who are already employed.

- Summer IT Academy Pro – a five-week program where technical talent meets entrepreneurial spirit. The academy trains young people to create their own tech companies, thus strengthening the private sector in Vratsa.

- Rails Girls Vratsa – a two-day workshop that motivates young girls and women to pursue a career in IT. The event is part of the international efforts to attract more women in programming.

III.   Evaluation Objectives and Methodology

The main objective of the evaluation is to assess the impact of the VSC program supported by ABF in the past three years on the development of the IT industry in Vratsa and its contribution to supplying it with well-trained specialists nationwide.

Table 1. Evaluation Design Matrix

Evaluation Questions	Data Source
Q1. Has VSC done what they had planned to do and how successful have they been in implementing the program?	Interview with VSC Team Interim Program Reports
Q2. What has been the synergy between VSC training courses, and the remaining initiatives implemented by VSC?	Interview with VSC Team
Q3. How has VSC partnered with Telerik Academy and what has been the impact of this partnership on the development of an IT community in Vratsa, if any?	Interview with VSC Team Interview with Telerik Academy Team
Q4. What has been the role of other companies in the expansion of VSC educational programs?	Interview with VSC Team Interviews with VSC graduates
Q5. How do the VSC trainees assess the program and what are their suggestions for further improvement?	Survey of the participants Interviews with participants Secondary data analysis
Q6. What are the sustainability prospects of VSC?	Interview with VSC Team Interim Program Reports
Q7. What has happened to the graduates from the 9-month course for software developers and to those who took the digital marketing course?	Survey of the VSC Alumni Interviews with participants Interview with VSC Team
Q8. What is the impact on the local business community, if any?	Interview with VSC Team Interim Program Reports

Table 2. Parameters of the Quantitative Survey

Parameters of the Quantitative Alumni Survey	
Period of the Survey	January 11 – February 22, 2021
Data Collection Method	Semi-Structured Questionnaire
Sample Methodology	Comprehensive Study
Number of Alumni Invited to Participate in the Survey	Software Development Courses: 125
	Digital Marketing: 44
Number of Survey Forms Collected	Software Development Courses: 117 (94% response rate)
	Digital Marketing: 35 (80% response rate)

Table 3. Parameters of the Qualitative Survey

Parameters of the Qualitative Alumni Study	
Period of the Survey	March 16 – March 22, 2021
Data Collection Method	In-depth Interviews
Number of Interviews	Software Development Courses: 5
	Digital Marketing: 7

IV.   Key Findings

1. Assessment of VSC Program Implementation

1.1 Professional Courses

The Software Development Courses (SDC) of VSC offer four different levels for the JAVA technologies and five for the training in web development with PHP. It is assumed that graduating level two in each of the languages is sufficient to find a job in software development. There is no doubt that participants who successfully pass all levels are much better prepared for a career in software development. Charts 1 and 2 below illustrate the way the interest in the courses has changed throughout the years (applicants), the quality of the applicants (number of those who start the training after a rigorous selection), and the number of those who graduate with level 2 or level 4/5 respectively.

With a target of 60 participants annually (180 in three years), VSC has done an excellent job. In the first two years, VSC was above its targets. The decline in the third and fourth year is likely attributed to the fees introduced in 2019 (BGN 160 per module and 300 for two modules) and then the impact of the COVID-19 pandemic. Nevertheless, the number of 187 (174 unique) participants trained in software development exceeds the target, even if we do not take into consideration the new cohort that started in 2020 due to savings. It adds another 33 participants.

In summary, 187 participants were trained in software development by VSC with ABF support. Approximately 36% of these (68) passed at least two levels of training. Those who successfully graduated all levels are 41 or 22% of the trainees.

Chart 1: Applicants, Participants and Level 2 Graduates of Software Development Courses
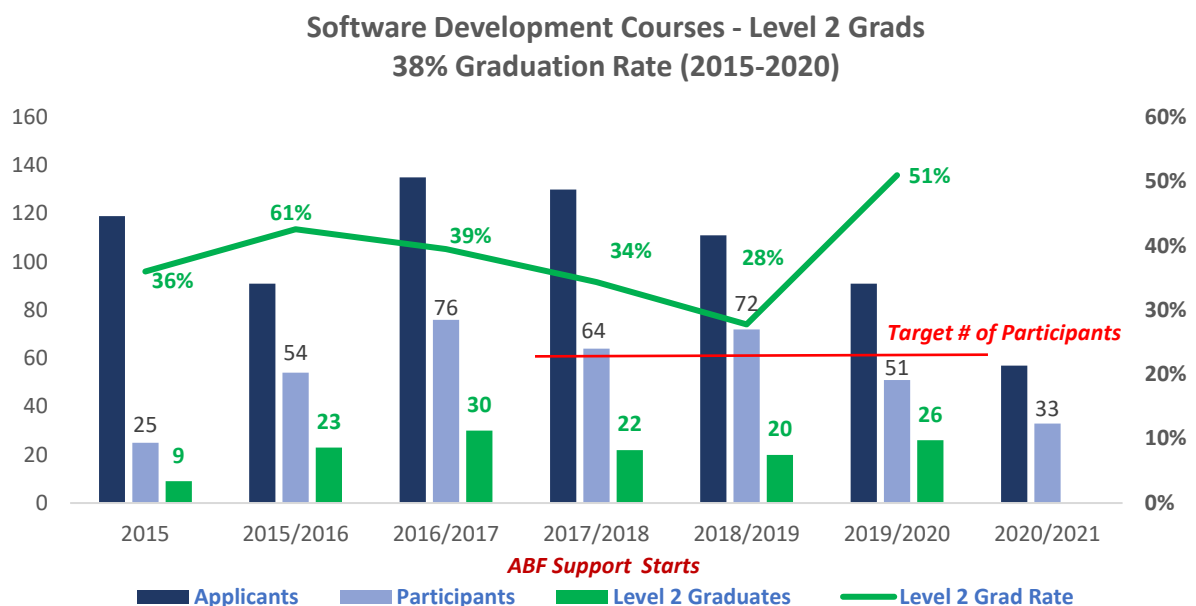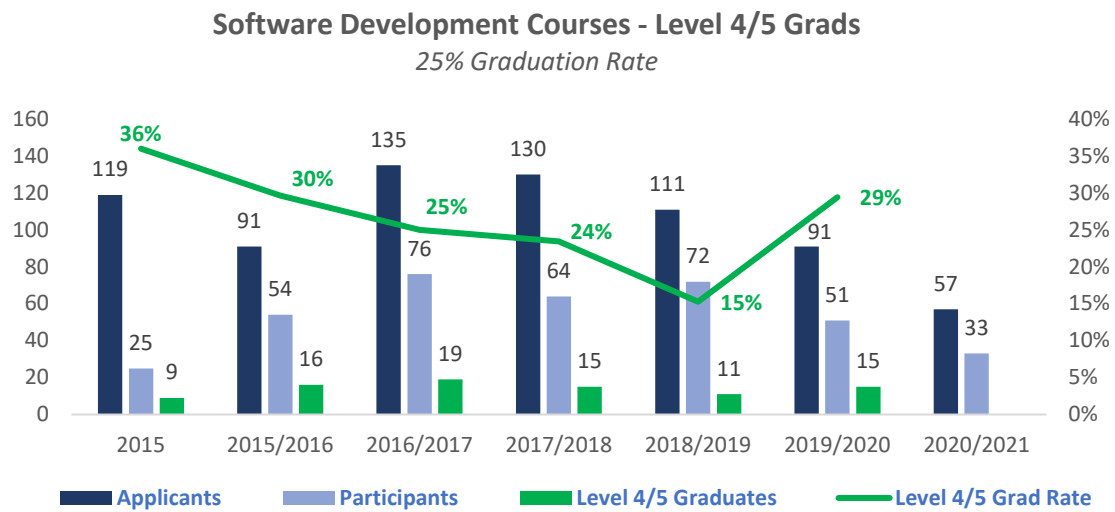
Chart 2: Graduates of Level 4/5 of Software Development Courses

Software Development Courses - Level 4/5 Grads
25% Graduation Rate

Applicants   Participants   Level 4/5 Graduates   Level 4/5 Grad Rate

In 2018, VSC launched a new program in digital marketing. Training is free due to the funding provided by the EEA grants scheme of Iceland, Lichtenstein, and Norway. Chart 3 summarizes the dynamics of these courses.

Chart 3: Applicants, Participants and Graduates of the Digital Marketing Courses (DMC)

Digital Marketing
51% Graduation Rate (2018-2020)

Applicants   Participants   Graduates   Graduation Rate
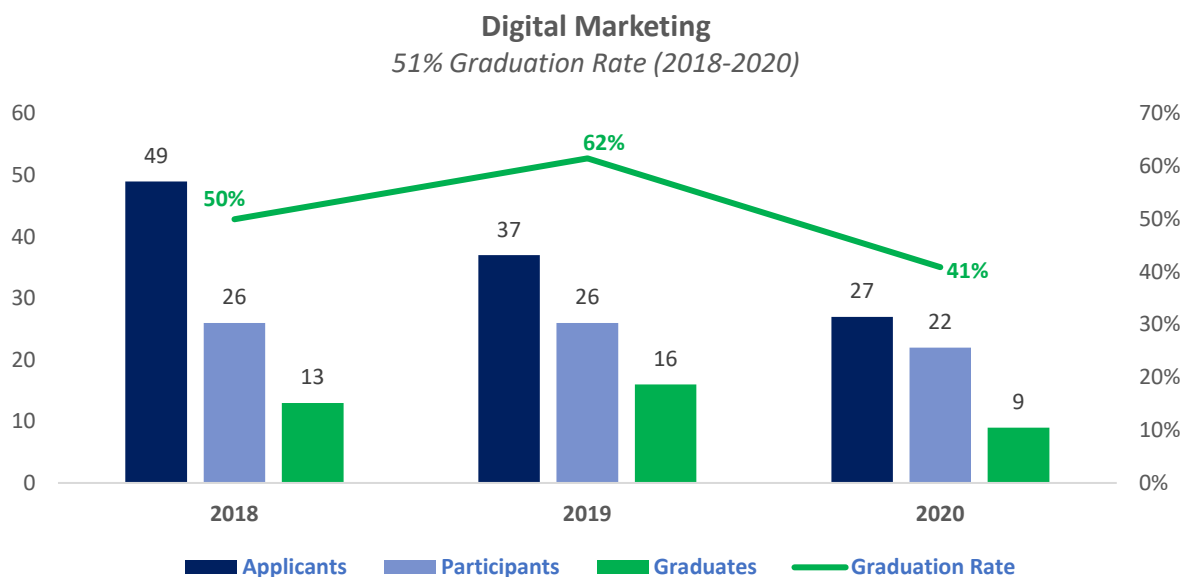
1.2 Events and Activities for Kids and Students

VSC has been paying special attention to publicizing software development as a viable career option for the people of Vratsa and inspiring participants to pursue training and career opportunities in the field. Charts 4, 5, 6, and 7 demonstrate how the various initiatives have evolved.
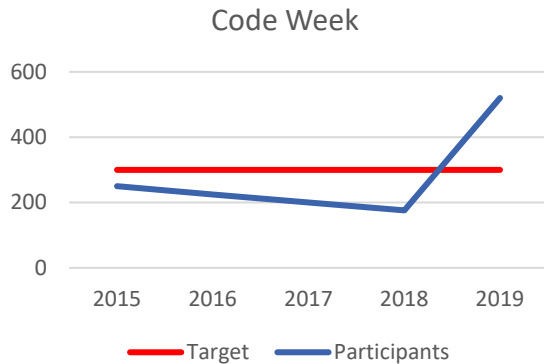
Chart 4: Code Week Participants

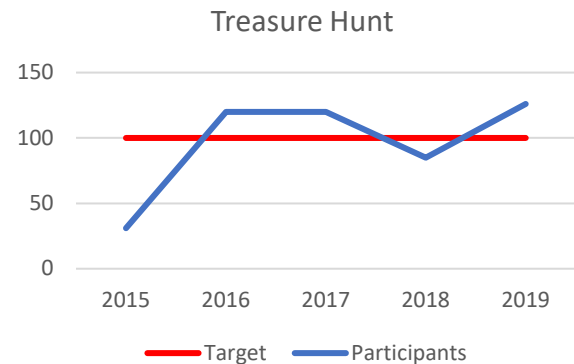*Chart 5: Treasure Hunt Participants*
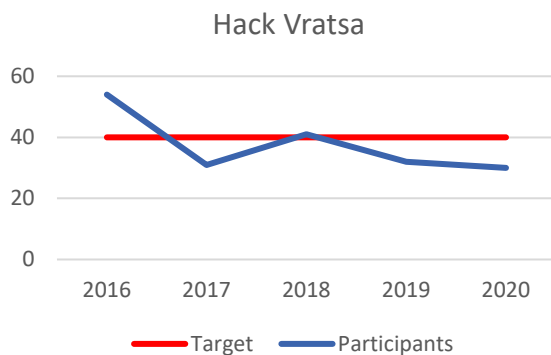

Chart 6: Hack Vratsa Participants

Chart 7: Rails Girls Participants
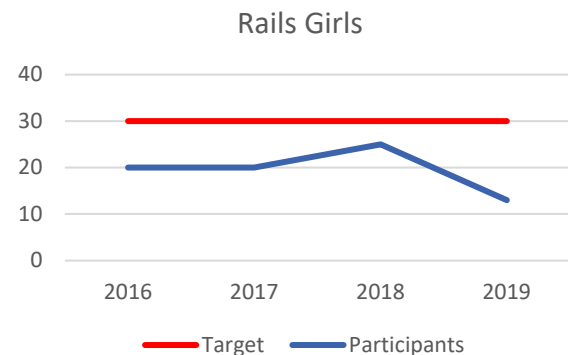
Overall, VSC has done what they planned to do. Each program was implemented except for the Summer IT Academy, which failed to attract enough participants in 2018 and did not continue in the following years. The success of each program implementation has somewhat varied. Arguably, the most successful program is the signature training program in software development.

Code Week struggled in the first two years, but after recognizing the need for a change, attendance skyrocketed. Treasure Hunt showed growth between the two years and was well over the target by the second year, even with a participation fee introduced. Hack Vratsa was initially successfully implemented, surpassing the target, however attendance fell in the next years, consistently below target. Rails Girls struggled to meet the target participants and after some increase in the interest in 2018 the attendance sharply declined in the following year.

1.3 Synergy Among VSC Initiatives

One of the main objectives of VSC is building a software development community in Vratsa. To keep alumni in the town, VSC uses several of them as trainers in the Academy, mentors and/or lectors for the programs with kids and students. VSC graduates, particularly the high school students, are active participants in the annual Hack Vratsa Hackathon, where small teams compete in finding solutions in different areas. The Rails Girls workshops are organized by VSC alumni. In partnership with MindHub, VSC graduates lead the training sessions for the kids. The same approach applies to the partnership with Telerik School Academy where a PHP graduate trains the students in three schools in Vratsa. In 2017, VSC joined the worldwide Coder Dojo initiative to train kids, $3^{rd} – 6^{th}$ grades. VSC alumni who still are students at school, work as mentors to the youngsters.

1.4 The Impact of the Partnership with Telerik Academy

The partnership with Telerik started in 2016 when the Telerik School Academy (TAS) started working with the first two groups in one Vratsa school. Throughout the years, thanks to the publicity that VSC offers to TAS, more schools have been joining the initiative. Since 2018, Vratsa has become the town with the largest number of TAS school groups after Sofia - nine. The collaboration is further boosted by VSC alumni who work as TAS trainers.

While Telerik is just one of the long-term partners of VSC and has its role in developing the IT community in Vratsa, the fact that matters is the broad network of IT companies that are involved in different events and programs organized and managed by VSC. The summer IT Academy, although discontinued in 2019, was a demonstration of excellent partnership with Telus International. The most successful way for building the IT community in Vratsa are the events, such as Code Week and Hack Vratsa that gather a lot of participants, while the presenters and lecturers come from recognized leaders in the IT industry.

1.5 Partnerships with Other Companies

VSC is actively seeking partnerships to expand the variety and outreach of its training programs for kids and school students. The table below summarizes the new initiatives that were launched in the past three years. Some of them are one-time initiatives, but most of them last for years.

Table 4. VSC New Initiatives Launched in the Past Three Years

Partnership	Description	Year
Regional Library Hristo Botev	Introduction to Robotics course for teenagers	2018
MindHub	Computer training for children	Started in 2018, ongoing
Telerik Academy School	Hosting of TAS groups	Started in 2016, ongoing
You and LIDL for a Better Life	Grant for a new design course in the next year	2019
Telus International	IT+ program for young leaders	Started in 2019

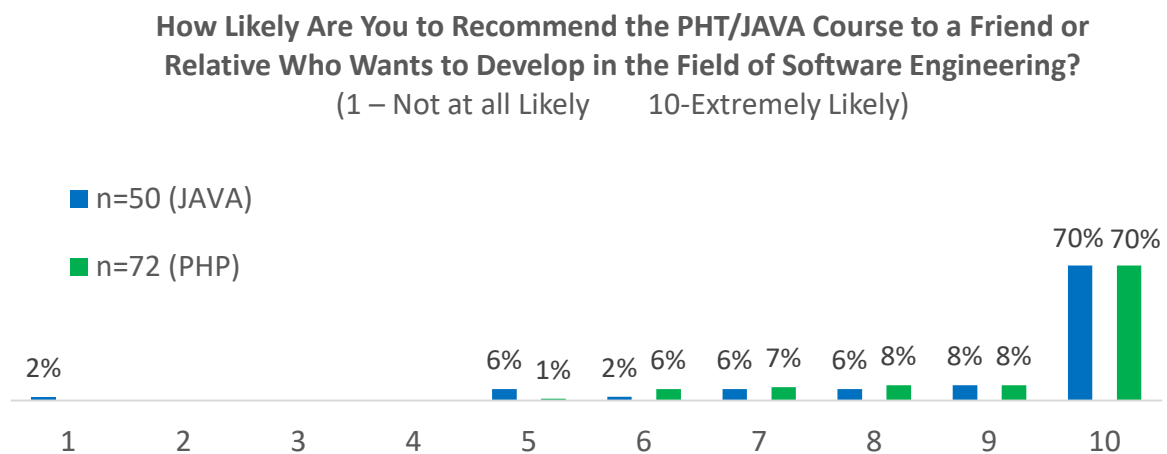## 1.6 Participants Feedback on the VSC Training Courses

Overall, the SDC participants' assessments of the program are positive. The most positive feedback was in terms of the teacher's role and atmosphere of the class. Overwhelmingly, surveyed students felt very supported by teachers, that teachers' explanations were clear, and teachers make them think instead of just memorize. Teachers' spirit in teaching the class was often emphasized. In many cases, it seems like there was a strong student-teacher relationship. The overall atmosphere of the class was successful as well; participants responded that it was a respectful, safe, and interesting environment.

As far as in-class activities, exercises and homework were praised by students, as this helped them get a deeper understanding of material. Several participants suggested adding even more exercises to the curriculum. Overall, participants found the acquired knowledge and skills from the program very useful.

When referring to how likely participants are to recommend the course to a friend, for respondents from the PHP course, with response options from 1-10, all ratings were 5 and above, meaning no participant was unlikely to recommend to a friend.

For respondents from the Java course, 2% of the ratings were '1' and everything else was above 5. The rating of '1' seems to be an anomaly compared to the other favorable reporting. In both PHP and Java, the overwhelming majority of the respondents, 69% and 70% respectively, rated '10', extremely likely to recommend to a friend. This high likelihood to recommend VSC to a friend demonstrates the overall participants' satisfaction with the course.

Chart 8: Net Promoter Score (SDC)

How Likely Are You to Recommend the PHT/JAVA Course to a Friend or Relative Who Wants to Develop in the Field of Software Engineering?
(1 – Not at all Likely   10-Extremely Likely)

■ n=50 (JAVA)

■ n=72 (PHP)

	1	2	3	4	5	6	7	8	9	10
JAVA	2%				6%	2%	6%	6%	8%	70%
PHP					1%	6%	7%	8%	8%	70%

The most common critique was that the class was too intense. This was especially the case of participants who were taking classes when the Covid-19 pandemic began. It became difficult for some participants to balance the class with some of their other responsibilities. In terms of future improvement, some participants suggested making the homework assignments more tailored to their individual needs. Other participants indicated instructors could be more attentive when a student is struggling to understand the material. More time could be spent on

difficult tasks. A few students noted the different levels of initial knowledge among participants, and they could have been put in different groups.

With regard to the Digital Marketing Course, the majority of the respondents, 54%, rated '10', extremely likely to recommend the DMC to a friend. Another 35% were also very positive about the likelihood to recommend the training. This high likelihood to recommend DMC to a friend demonstrates an overall satisfaction with the course by participants (see Chart 9 below).

Chart 9: Net Promoter Score (DMC)

How likely are you to recommend the DMC to a friend or relative who wants to develop in digital marketing?
(1 – Not at all Likely   10-Extremely Likely)
n=35 all DM graduates

89%

2	5	6	8	9	10
3%	3%	6%	26%	9%	54%
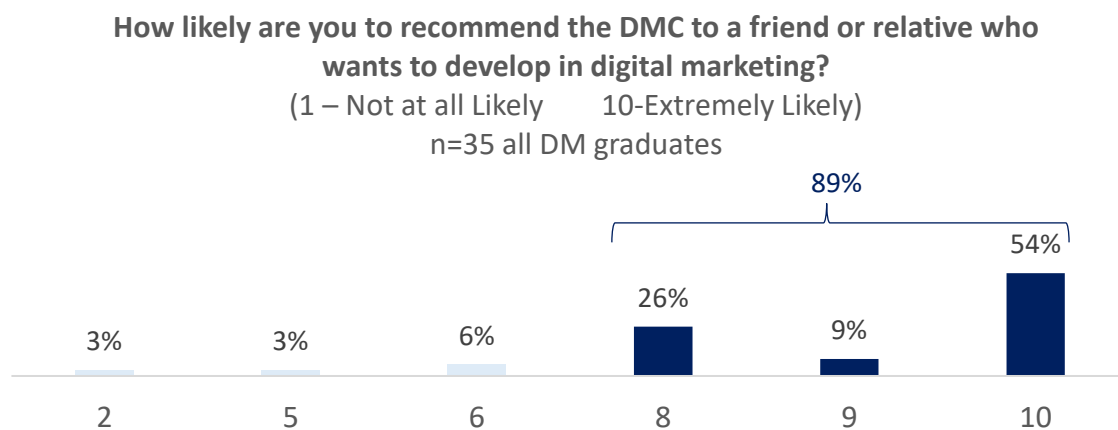
In terms of future improvement, some participants suggested including more content on the social media marketing besides Facebook. Other participants indicated that the curriculum of the training could be extended as there were a lot of topics to cover.

A few alumni suggested that it will be very useful if VSC allocates a budget for real digital marketing campaigns that the trainees would run and manage in real time during the course.

A Digital Marketing Class in Vratsa

2. Professional Development of the VSC Alumni

2.1 Professional Development of the Software Development Courses (SDC) Alumni

Almost 40% of our SDC alumni sample (45 individuals) are currently working in the IT sector. Most of them have full-time jobs with private companies. Although this is below the VSC target of 60 VSC alumni working in the sector in 2020 (goal of 45 in Vratsa alone), 29% of the VSC alumni are still either in high school or university and most of them study or plan to study in an IT-related major, which gives us reason to suggest that many of them will join the IT sector in the coming years.

Chart 10: Employment of the SDC Alumni

Employment of the SDC Alumni
Base: 117

- IT-Related Job — 38%
- University student — 17%
- School student — 12%
- Currently Unemployed — 8%
- Digital Marketing — 3%
- Other Sector — 22%
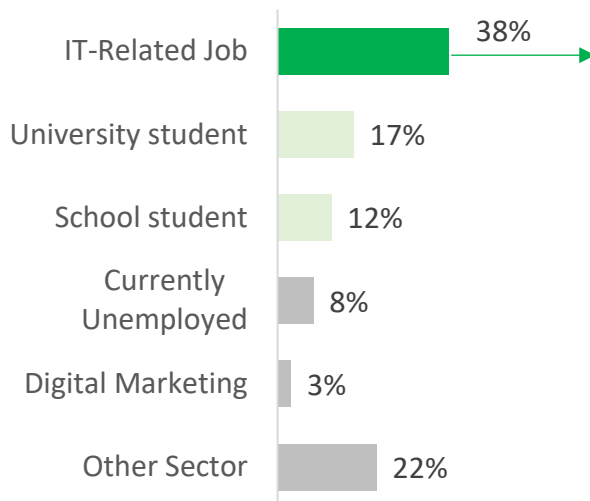
Chart 11: Employment of the IT Specialists

Employment of the IT Specialists
Base: 45; 42 answered the question

- Employed in a Company — 63%
- Employed in a Company and a Student at Uni. — 19%
- Employed in a NGO and a Student at Uni. — 6%
- Public Sector — 6%
- Own business — 6%
- Freelancer — 3%

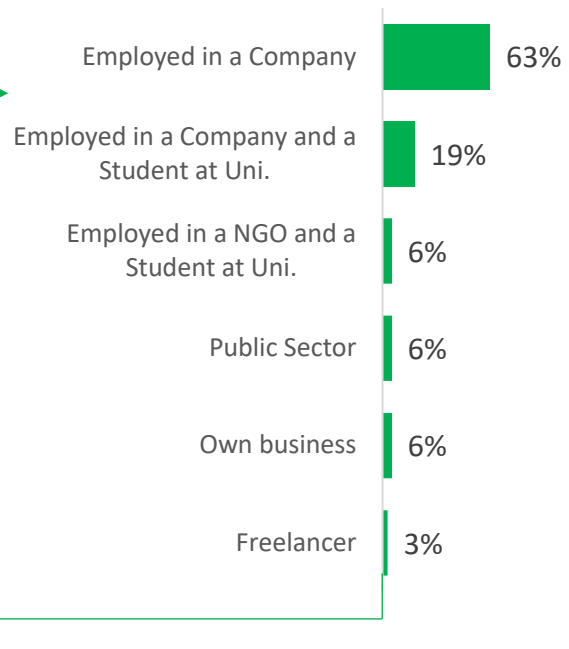*Chart 12: Hourly Employment of the IT Specialists*

Hourly Employment of the IT Specialists
Base: 45; 42 answered the question

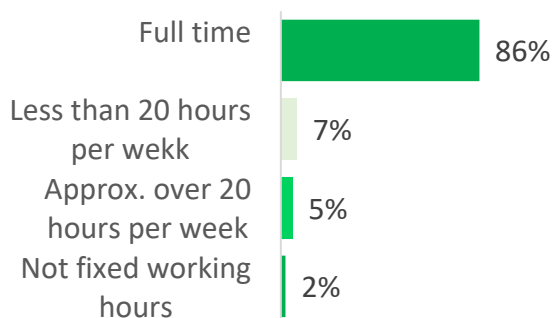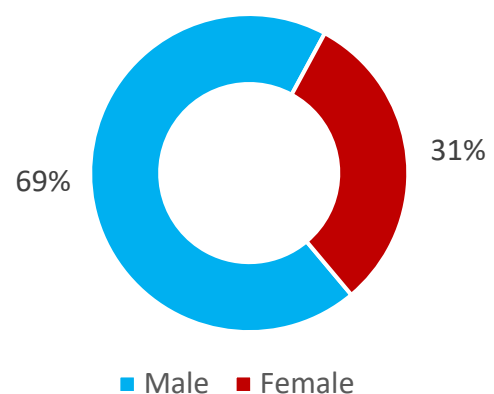- Full time — 86%
- Less than 20 hours per wekk — 7%
- Approx. over 20 hours per week — 5%
- Not fixed working hours — 2%

Chart 13: Gender of the IT Specialists

Gender of the IT Specialists
Base: 45

- 69%
- 31%

■ Male ■ Female

2.2 Profile of the SDC Alumni Who Are Currently Working in the IT Sector

The SDC alumni who work in the IT sector have developed various expertise and occupy positions on different organizational levels. One third are already regular experts, while another 42% are still in the beginning of their IT career (interns or juniors). Several of the alumni hold senior positions (11%). The table below summarizes the position level and the specific expertise of those SDC alumni who currently have IT-related jobs.

Table 5. Position Level and Job Title of the SDC Alumni Currently Employed in the IT Jobs (Base=45; 43 answered the question)

Junior Expert	**36%**
Web application developer	10%
Mobile application developer	8%
Desktop application developer	5%
Software Engineer	5%
Customer Support Software Engineer (Tech Support)	5%
Project Manager	3%
Regular Expert	**33%**
Web application developer	18%
Mobile application developer	5%
Front-end developer	3%
ETL developer	3%
Desktop application developer	3%
Full stack developer	3%
Intern	**8%**
Mobile application developer	5%
Software Quality Engineer (QA)	3%
Senior Expert	**5%**
Front-end developer	3%
Mobile application developer	3%
Associate	**5%**
IT Associate	3%
ETRM Consultant Associate	3%
Head of Department	**3%**
Head of Department	3%
Project Manager	**3%**
Project Manager	3%
Freelancer	**3%**
Web application developer	3%
Owner of an IT company	**3%**
CEO	3%
Multiple Positions	**3%**
Leading a support team, full stack, product ownership	3%
Not Specified	**7%**
System Administrator	5%
Applied Administrator	2%

2.3 Time to Start a Career in the Sector

The VSC Software Development Courses provide an opportunity for a quick career start in the field of software engineering. Half of the SDC alumni who took part in the survey and are currently employed in the IT field have found a job in the sector within one year – year and a half after the start of their training; 24% of those started their career in the field of software engineering while completing their training.

Chart 14: Time to Start an IT Career

When Did You Start Your Career in Software Engineering?
Base= 45; 37 answered the question

Before I started studying at VSC	While I was studying at VSC	1-2 months after VSC	3-5 months after VSC	6-8 months after VSC	9-12 months after VSC	After more than 1 year after VSC
11%	24%	8%	3%	8%	5%	41%
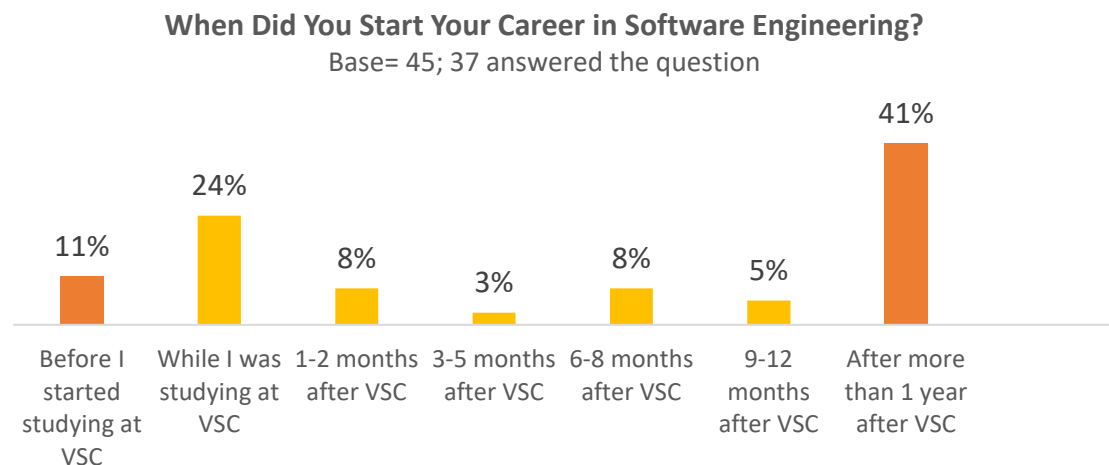
2.4 Residence of the SDC Alumni

Not surprisingly, a significant share (48% or 21 alumni) of those who currently work in the IT sector and used to live in Vratsa left the region. Most of them, 76% (or 16 alumni), moved to Sofia. Several alumni emigrated abroad, while one participant moved from Sofia to Vratsa. Nevertheless, half of those employed in the sector (53% or 24 alumni) still work and live in Vratsa.

Chart 15: Residence of the SDC Alumni

Residence of the SDC Alumni Currently Working in the IT Sector Before the Training and As of Today
Base=45

	Before the Training	Currently
Vratsa or Smaller Town/Village in the Vratsa Region	98%	53%
Sofia	2%	36%
Abroad		7%
Blagoevgrad		4%
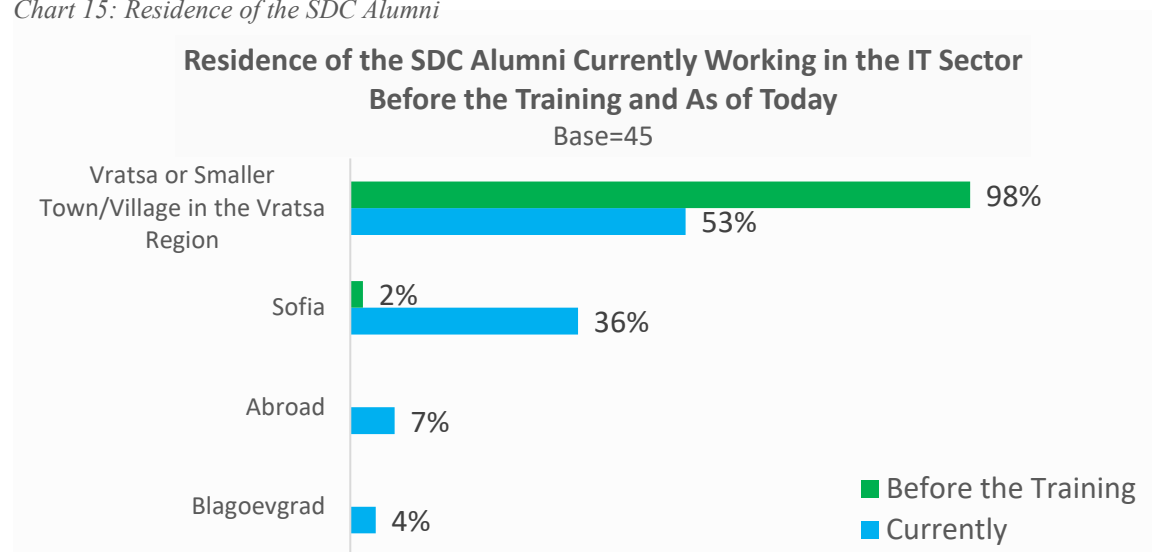
Map 1. Residence of the SDC Alumni Currently Working in the IT Sector as of Today
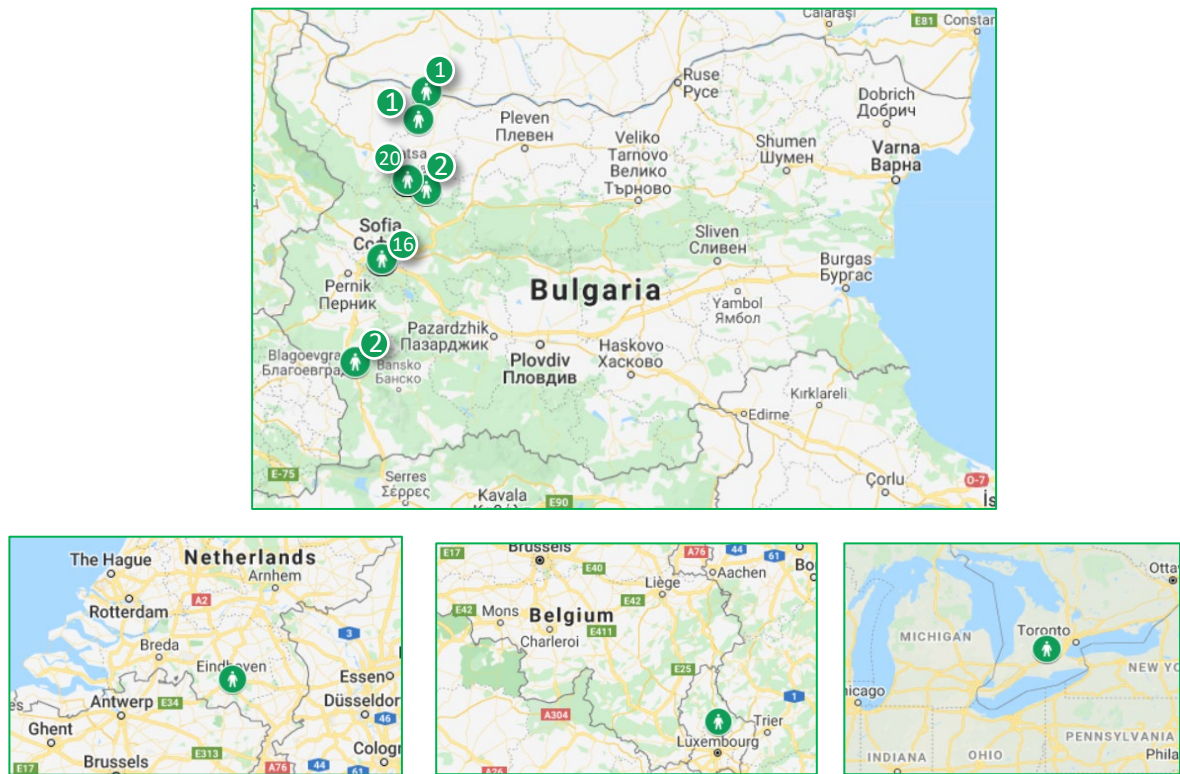
Noteworthy, most of the alumni who left the region were either high school or university students at the time of their training at VSC. Most of them left the Vratsa region either to continue their education at university or for personal reasons.

In contrast, most of the alumni who stayed in Vratsa and currently work in the IT sector were already adults with various professional backgrounds at the time of their training at VSC. Therefore, if VSC wants to create new IT-specialists for the local companies the best group to work with is adults with previous professional experience.

2.5 Contribution of the VSC to the Successful IT Career Start of the SDC Alumni

All SDC alumni who currently work in the IT sector and who answered this question, stated that the SDC course contributed to the successful start of their career in the software engineering and programming field. The overwhelming majority, 77%, indicated the SDC was a key factor. This confirms that VSC is meeting one of its goals to help participants gain the skills required to start a career, and participants recognize SDC's impact on their skills.

Chart 16: Contribution of the VSC to Participants' Careers

To what extent did your overall experience in VSC course contribute to your successful career start in the field of software engineering and programming?
n=35

77%

23%

■ It was a key factor and contributed a lot

■ There is some contribution, but key factors for my successful career start were different

■ There is no contribution, I was already working in the sector when I started the VAS courses

Finally, both the financial aspects and labor demand in the sector allowed respondents to begin these careers. It is likely that VSC contributed to these factors by allowing respondents to utilize their personality traits, supplement their already acquired educational level, and prepare them for a job in an appealing sector.

Quotes from SDC Alumni Currently Employed in the IT Sector[6]

"The Vratsa Software Community course is the best start for a career in this field and can change a person's life even in a city like Vratsa."

An application developer; currently lives and works in Vratsa.

"In summary, I feel lucky to have the opportunity to be part of the students of Vratsa Software Community and I think they are the best thing that could have happened in the city of Vratsa!"

A web application developer. Moved to Sofia to study at university. Stated that the VSC courses had a key contribution for the successful start of her career in the field of software engineering.

"VSC introduced me to the world of software development. This made me look for a career path in this industry and I am grateful that I started on this path and still continue. Without VSC, I probably wouldn't be involved in programming."

A web developer, lives and works in Sofia.

"I am very grateful to VSC for providing this type of "service" to people without age restrictions. They do a great job and if you are motivated you can change your life. This should not stop!"
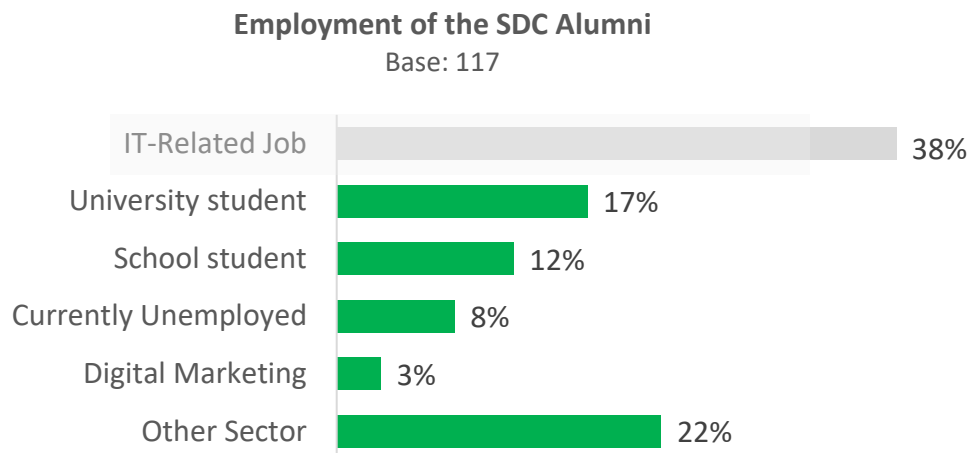
A software engineer. Used to live in Vratsa, then moved to the US for couple of years, currently resides in Sofia.

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[6] All quotes are from the anonymous alumni survey. We reached out to the respondents to ask for their consent to use their quotes in the study report.

2.6 Impact on SDC Alumni Who Currently Are Not Employed in the IT Sector

The occupation of the SDC alumni who are not currently employed in the IT sector is rather diverse. 40% are still students, while other 24% are working in various industries. (See Chart 17 below).

Chart 17: Employment of the SDC Alumni

Employment of the SDC Alumni
Base: 117

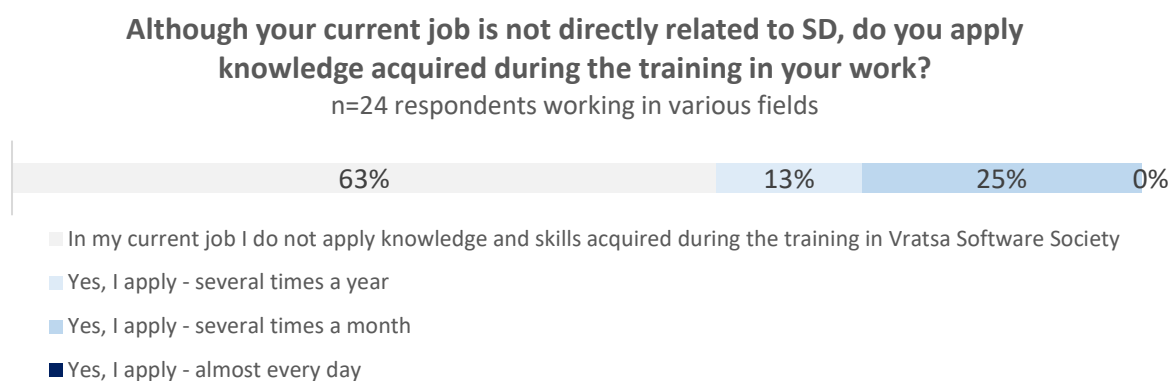| Category	Percentage
IT-Related Job	38%
University student	17%
School student	12%
Currently Unemployed	8%
Digital Marketing	3%
Other Sector	22%

It is encouraging that eight of the SDC alumni who are still high school students (or 57% of all high school students) plan to continue their education in the IT field after graduating while another five (or 35%) are still undecided; one alum (7%) plans to pursue an undergraduate degree in Physics.

The data about the SDC alumni who are still in university is also promising – 90% (or 18 alumni) are in IT-related majors. All this provides evidence to assume that the number of the SDC alumni who find realization in the IT sector will increase in the near future.

The study data suggests that the impact of the Software Development Courses on the alumni who currently work in industries different from the IT is rather limited. Still, over one third of these trainees apply the knowledge acquired during the program in their work (see Chart 18).

Chart 18: Impact on non-IT professionals

Although your current job is not directly related to SD, do you apply knowledge acquired during the training in your work?
n=24 respondents working in various fields

63%	13%	25%	0%

- In my current job I do not apply knowledge and skills acquired during the training in Vratsa Software Society
- Yes, I apply - several times a year
- Yes, I apply - several times a month
- Yes, I apply - almost every day

3. Professional Development of the SDC Alumni Currently Employed in IT Jobs in Vratsa
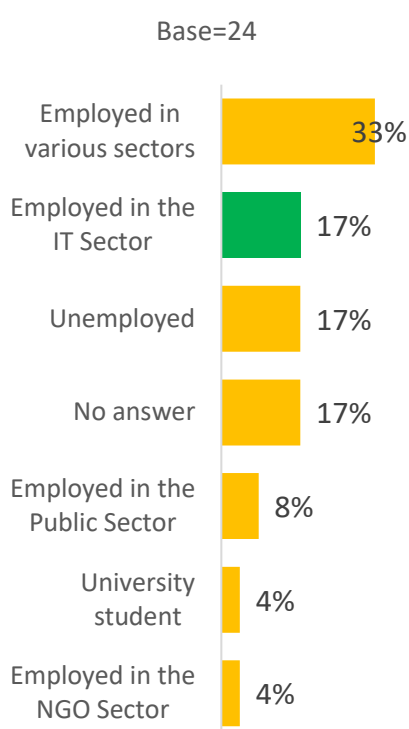
3.1. Previous Work Experience

Most of the SDC alumni who found IT jobs and stayed in Vratsa had previous work experience that had very little to do with their current IT expertise. For example, one of the participants used to be a school janitor at the local school, while another one used to be a shop assistant. Several of the alumni were unemployed at the beginning of their training at VSC.

Chart 19 illustrates the current occupations of the SDC alumni and their employment at the beginning of their training at VSC.

Chart 19: Employment of the Vratsa-based SDC Alumni Who Currently Work in the IT Sector

At the Beginning of the Training

Base=24

- Employed in various sectors — 33%
- Employed in the IT Sector — 17%
- Unemployed — 17%
- No answer — 17%
- Employed in the Public Sector — 8%
- University student — 4%
- Employed in the NGO Sector — 4%

Currently

Base=24

- Employed in a private IT company — 88%
- Own Business — 4%
- Employed as an IT expert in another sector — 4%
- Freelancer in the IT sector — 4%
- Employed in the Public Sector as an IT expert — 4%
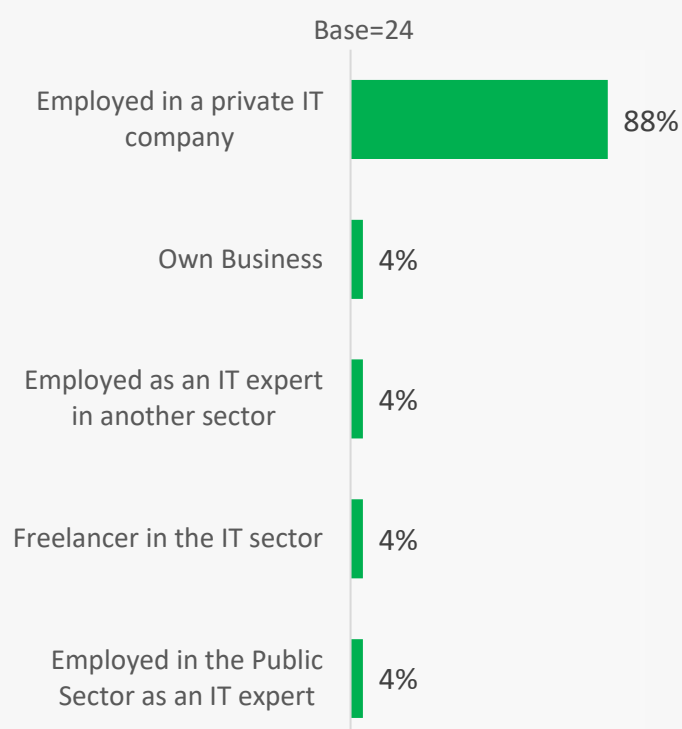
3.2. Gross Monthly Income (GMI)

More than half of the Vratsa-based SDC alumni[7] (53%) have increased their monthly income immediately after starting a job in the IT sector. This was not the case for another 20% of the Vratsa-based SDC alumni. For them, the transition to the IT sector meant a short-term decrease of their income, but an opportunity for a gradual increase in the long run.

Students from the SDC at VSC

Today, 93% of the Vratsa-based alumni[8] receive a higher gross monthly income (GMI) in comparison to their monthly income before going through the SDCs. The GMI for the rest 7% (i.e., one alumna in this data distribution) has not changed significantly, however, he already had a relatively high monthly income before finding a job in the IT sector as junior software engineer.

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[7] In this distribution, 'alumni' (n=15) are SDC alumni who graduated in the period 2015-2020, have provided data for their GMI at the beginning of their education at VSC and as of today, and currently work as IT specialists in the Vratsa region.

[8] In this distribution, 'alumni' (n=15) are SDC alumni who graduated in the period 2015-2019, have provided data for their current income and the income they had at the beginning of their education at VSC, and currently work as IT specialists in the Vratsa region. Alumni who graduated in 2020 and started working as IT specialists are not included in this analysis, as it is too early to draw conclusions about the change in their income as a result of their retraining.

More than half (56%) of the SDC alumni[9] in our sample, currently employed in IT jobs in Vratsa, receive a significantly higher salary than the average salary for the Vratsa Region.

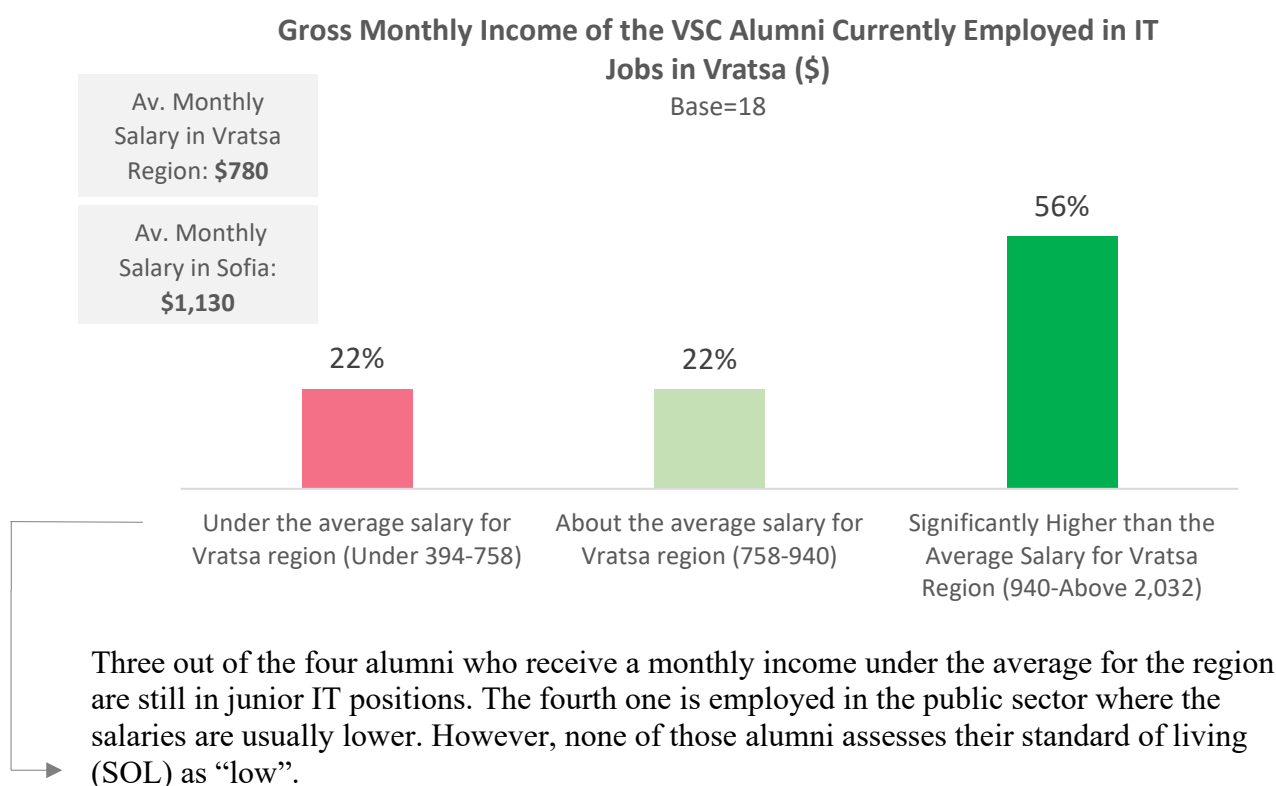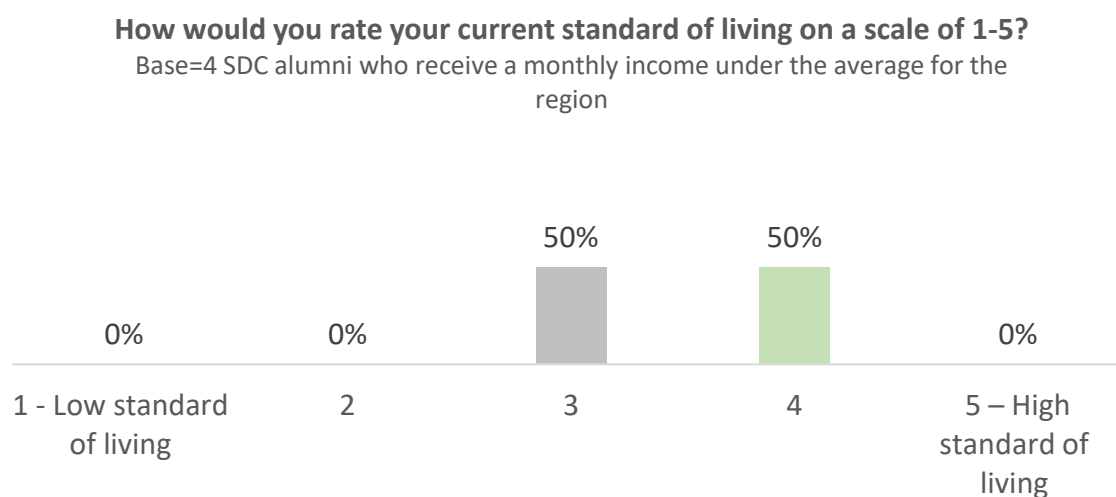*Chart 20: GMI of the VSC Alumni Currently Employed in the IT Jobs in Vratsa*

Gross Monthly Income of the VSC Alumni Currently Employed in IT Jobs in Vratsa ($)
Base=18

| Av. Monthly Salary in Vratsa Region: **$780** |
| Av. Monthly Salary in Sofia: **$1,130** |

| 22% | 22% | 56% |
| Under the average salary for Vratsa region (Under 394-758) | About the average salary for Vratsa region (758-940) | Significantly Higher than the Average Salary for Vratsa Region (940-Above 2,032) |

Three out of the four alumni who receive a monthly income under the average for the region are still in junior IT positions. The fourth one is employed in the public sector where the salaries are usually lower. However, none of those alumni assesses their standard of living (SOL) as "low".

Chart 21: SOL of SDC Alumni Who Receive a Monthly Income Under the Average for the Region

How would you rate your current standard of living on a scale of 1-5?
Base=4 SDC alumni who receive a monthly income under the average for the region

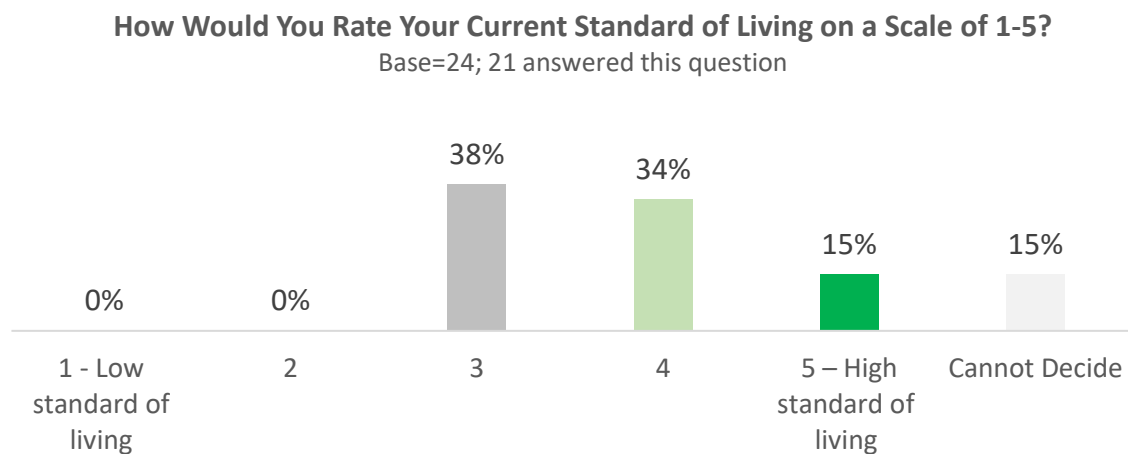| 0% | 0% | 50% | 50% | 0% |
| 1 - Low standard of living | 2 | 3 | 4 | 5 – High standard of living |

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[9] In this distribution, 'alumni' (n=18) are SDC alumni who graduated in the period 2015-2019, have provided data for their current income, and currently work as IT specialists in the Vratsa Region.
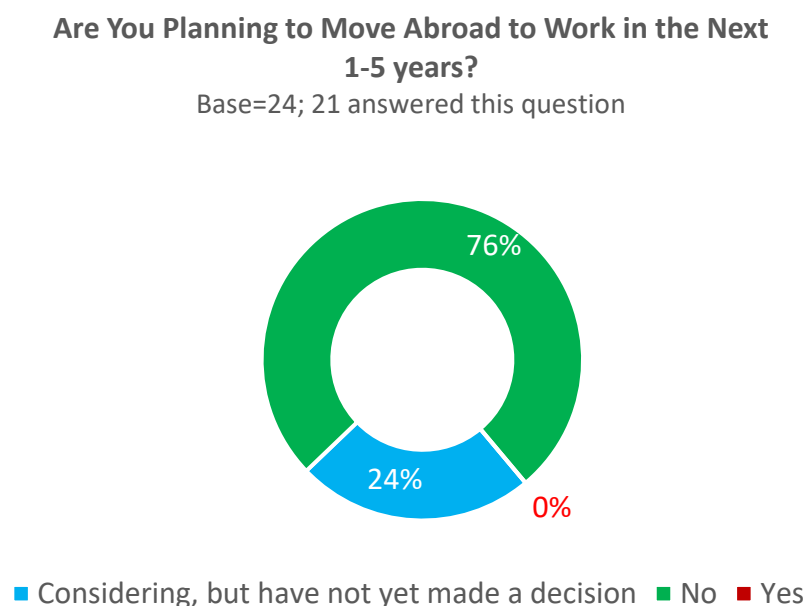
3.3. Standard of Living

When looking at the data for all Vratsa-based alumni with IT jobs, the majority ratings of the standard of living (SOL) are split between 3 and 4, showing that the respondents assess their SOL as 'moderate' or 'high'. No participant rated '1' or '2'. 15% of the respondents could not decide, thus skewing the data slightly.

Chart 22: SOL of SDC Alumni Who Currently Work in the IT Sector in Vratsa

How Would You Rate Your Current Standard of Living on a Scale of 1-5?
Base=24; 21 answered this question

0%	0%	38%	34%	15%	15%
1 - Low standard of living	2	3	4	5 – High standard of living	Cannot Decide

Most of the Vratsa-based alumni employed in the IT sector (76%) plan to stay in Bulgaria. None of the participants have definite plans to move abroad, but 24% are considering such an option. Overall, the data shows that VSC is successful in its goal to keep talent in Bulgaria.
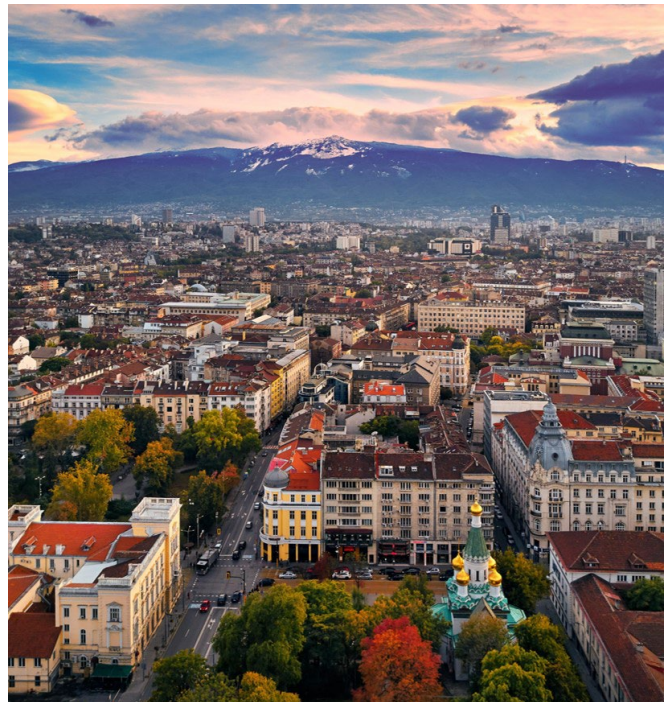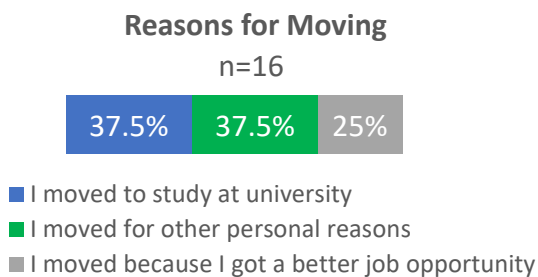
Chart 23: Moving Abroad

Are You Planning to Move Abroad to Work in the Next 1-5 years?
Base=24; 21 answered this question

■ Considering, but have not yet made a decision ■ No ■ Yes

4. Professional Development of the SDC Alumni Currently Employed in IT Jobs in Sofia

Of the respondents that moved to Sofia and currently have IT-related jobs (16 alumni), it was a minority (25%), that moved for better job opportunities. Most respondents moved for educational or personal reasons. This indicates that relocation to Sofia is not directly correlated with a lack of job opportunities in Vratsa.
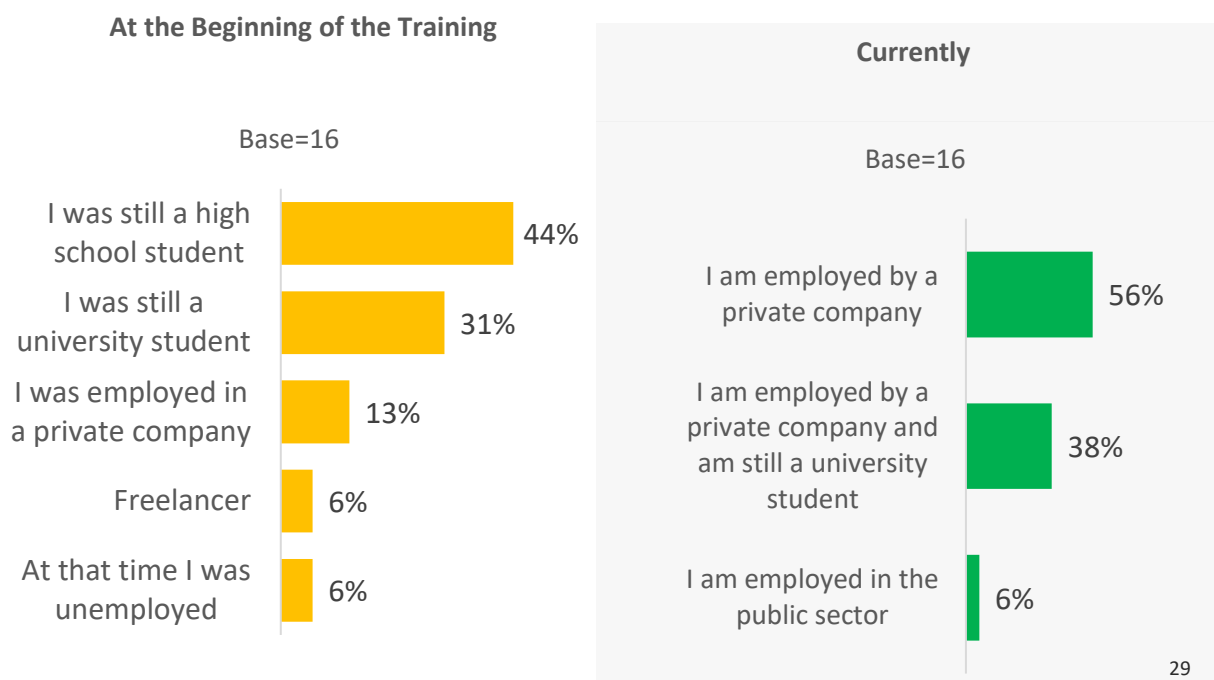
Chart 24: Reasons for Moving

Reasons for Moving
n=16

37.5%	37.5%	25%

■ I moved to study at university
■ I moved for other personal reasons
■ I moved because I got a better job opportunity

Most of the Sofia-based SDC alumni currently employed in the IT sector, were students at the beginning of their training in VSC (75%). Of the non-students, only one was unemployed. Two worked for a private company and one was a freelancer.
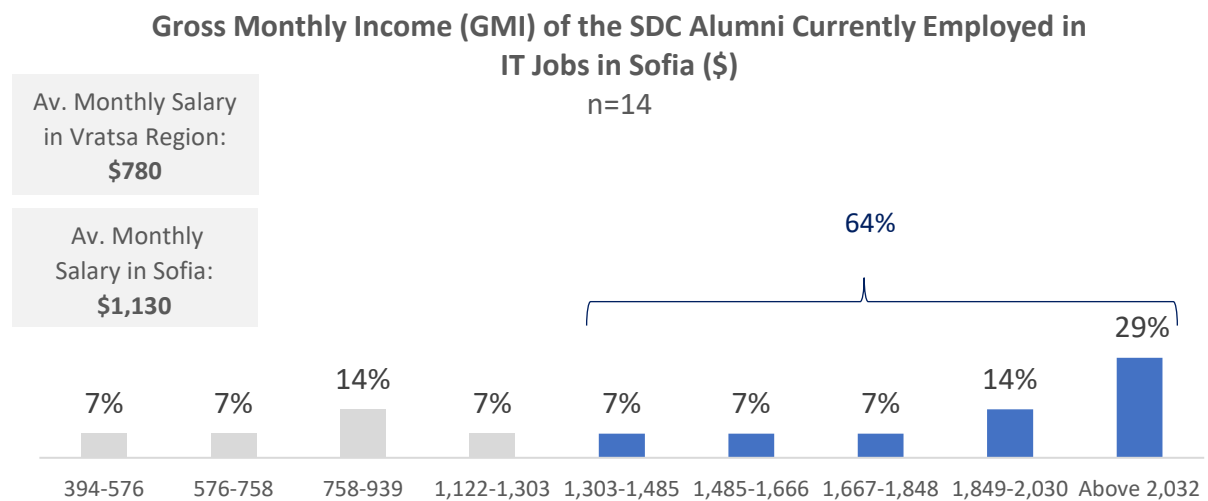
Now, one third of them are university students but also employed in private companies (38%). The rest of the respondents are all employed. The majority are employed by the private sector and one respondent is in the public sector.

Chart 25: Occupancy of the SDC Alumni Currently Employed in IT Jobs in Sofia

At the Beginning of the Training

Base=16

I was still a high school student	44%
I was still a university student	31%
I was employed in a private company	13%
Freelancer	6%
At that time I was unemployed	6%

Currently

Base=16

I am employed by a private company	56%
I am employed by a private company and am still a university student	38%
I am employed in the public sector	6%

Most of the alumni with IT jobs in Sofia (64%) make above the average GMI of $1,130. The majority of this group actually makes almost double this amount, with GMIs above $2,032.
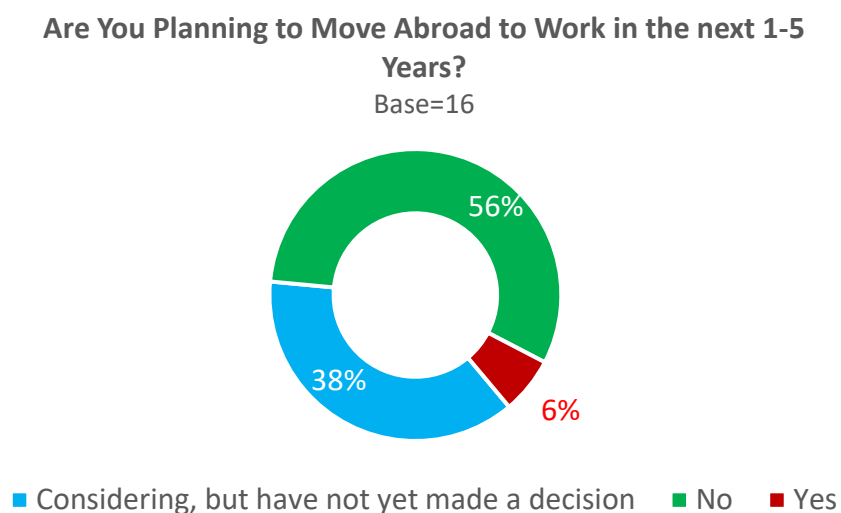
Chart 26: GMI of the SDC Alumni Currently Employed in IT Jobs in Sofia

Gross Monthly Income (GMI) of the SDC Alumni Currently Employed in IT Jobs in Sofia ($)

n=14

| Av. Monthly Salary in Vratsa Region: **$780** |
| Av. Monthly Salary in Sofia: **$1,130** |

394-576	576-758	758-939	1,122-1,303	1,303-1,485	1,485-1,666	1,667-1,848	1,849-2,030	Above 2,032
7%	7%	14%	7%	7%	7%	7%	14%	29%

64%

28% of the alumni make under the average GMI. However, 60% of the alumni in this group are still university students. All alumni in this category are in junior positions, indicating they are at the start of their career in the IT industry and have much room to advance and earn higher salaries. Overall, the Sofia-based SDC alumni seem to be succeeding in their employment in the IT industry and have salaries to provide for a good standard of living.

The majority of the participants plan to stay in Bulgaria, with one participant having concrete plans to move abroad. However, 38% of the respondents are considering moving abroad, a much higher number than the 24% in Vratsa who are thinking about moving abroad .

Chart 27: Moving Abroad

Are You Planning to Move Abroad to Work in the next 1-5 Years?

Base=16

56%

38%

6%

■ Considering, but have not yet made a decision   ■ No   ■ Yes

5. Professional Development of the DMC Alumni

To meet the growing need for expertise in digital marketing field, the Vratsa Software Community started offering a new training course in Digital Marketing in 2018.
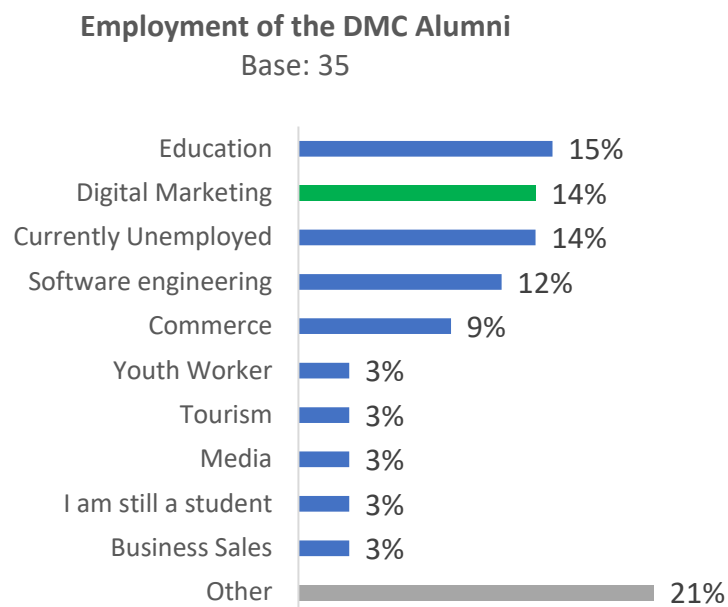
The course is offered to professionals who would like to start a career in the sector, students who would like to gain skills for a job in high demand, professionals from various industries who would like to start using digital marketing tools in their work, and freelancers who would want to develop the digital presence of their businesses.

In the period 2018-2020, a total of 44 participants from three cohorts completed at least level 2 of the three-level course, making them eligible for the current study. All 44 alumni were invited to take part in the current survey and a total of 35 individuals submitted their answers for 80% response rate.
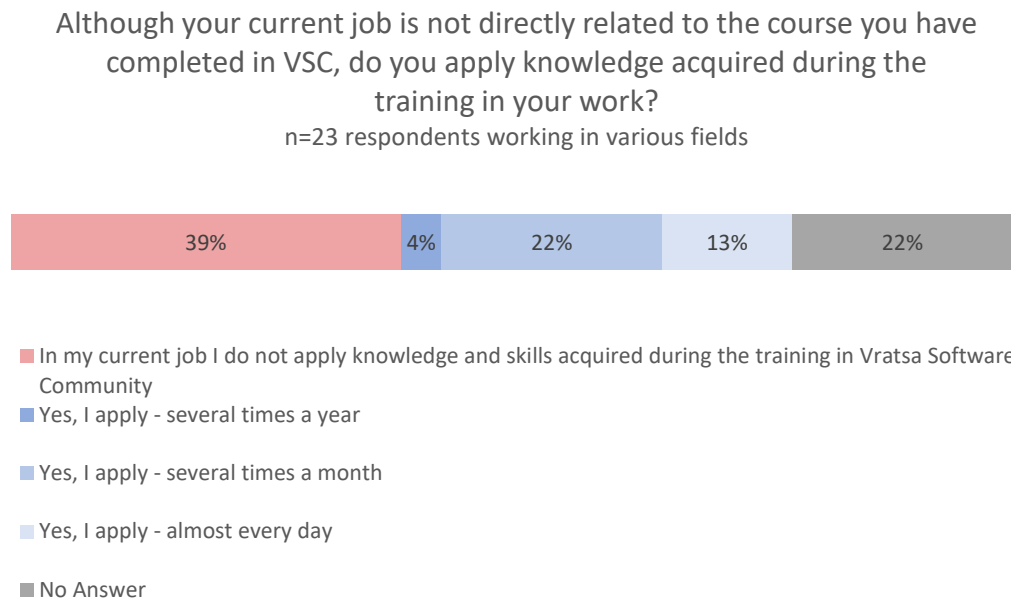
The study data shows that five DMC alumni (or 14% of our DM sample) are currently working as digital marketing experts. The ABF Evaluation team conducted in-depth interviews with all five digital marketing professionals. Three of them started their professional development in this field before the VSC training. All of them work and live in Vratsa. Three of them have full-time jobs, one has a part-time job as he is a last year high-school student, while another respondent is currently on maternity leave. As Chart 28 shows, the rest of the DMC alumni have careers in a different field.

Chart 28: Employment of the DMC Alumni

Employment of the DMC Alumni
Base: 35

Category	Percentage
Education	15%
Digital Marketing	14%
Currently Unemployed	14%
Software engineering	12%
Commerce	9%
Youth Worker	3%
Tourism	3%
Media	3%
I am still a student	3%
Business Sales	3%
Other	21%

Although most of the DMC graduates do not work as digital marketing experts, half of them report using the knowledge and skills acquired from DMC in their current job.

Chart 29: Impact on DMC Alumni

Although your current job is not directly related to the course you have completed in VSC, do you apply knowledge acquired during the training in your work?
n=23 respondents working in various fields

39%	4%	22%	13%	22%

■ In my current job I do not apply knowledge and skills acquired during the training in Vratsa Software Community

■ Yes, I apply - several times a year

■ Yes, I apply - several times a month

■ Yes, I apply - almost every day

■ No Answer

Participants report skills such as networking, targeting customers, and advertising optimization to be some of their transferable skills.
Below are the examples of responses:

Q. If in your current work you apply knowledge and skills acquired during the training in VSC, please indicate the three skills that you apply most often.

- o Optimization of Internet publications, some technical details for better recognition of my products on the network and social networks, structuring my previous Internet knowledge
- o Advertising, finding new customers, Facebook pages and website
- o Recognition of sales opportunities, Customer targeting, Different approach to each customer

In conclusion, although in its relatively early stage of development, the digital marketing course has produced its first results as few DMC alumni are currently employed as digital marketing experts. In addition, a substantial part of the alumni that work in other industries apply the acquired knowledge in their work.

Quotes from DMC Alumni[10]

I am grateful for the opportunity to attend the courses of Vratsa Software (PHP and Digital Marketing). I believe that people who have completed these courses can take advantage of opportunities for a positive career change. Vratsa Software Community provides an opportunity to improve the quality of life.

A CEO of an IT company. Currently lives abroad.

The very fact that something like this is done in Vratsa makes me proud! The Digital Marketing course gave me a lot: I met a lot of interesting people, learned basic things about digital marketing and managed to start making successful advertising campaigns for my own business! Thanks to the whole team for the effort and time!

A DMC alum. Stated that he applies the knowledge acquired from the training almost every day. Lives in Vratsa.

Vratsa Software provides an opportunity to accumulate extensive knowledge that would help develop many digital skills. These skills can be useful in almost any field of employment, regardless of whether after completing your course you will start a job that is closely related to it.

A youth worker, 28, Vratsa. Stated that applies the acquired skills several times a month.

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[10] All quotes are from the anonymous alumni survey. We reached out to the respondents to ask for their consent to use their quotes in the study report.

V. Conclusions

- Overall, VSC implemented all planned activities under the ABF-funded project except the Summer IT Academy, which failed to attract enough participants in 2018 and did not continue in the following years.

- The training of IT specialists, who then find jobs in the Vratsa-based IT companies, continues to be an activity with unique value added for the local economy. Forty-five (45) VSC trainees currently work in the IT sector, 24 of them in Vratsa. While VSC has not achieved its target of 60 VSC alumni working in the IT sector in 2020 (the goal was 45 in Vratsa), the alumni recognize the contribution of the software development courses to the successful start of their careers in software development.

- The majority of the VSC alumni with jobs in the IT sector (53% or 24 alumni) work and live in Vratsa. This proves that VSC manages to some extent to keep VSC graduates in their hometown while earning reasonable income. Most of those who stayed in Vratsa were already adults with various professions at the time of their training at VSC. However, a significant share (48% or 21 alumni) of those who currently work in the IT sector and used to live in Vratsa left the Vratsa region. Most of them were students at the time of their training at VSC. Therefore, if VSC wants to create new IT-specialists for the local companies the best group to work with is adults with previous professional experience.

- Currently, the VSC alumni working in the IT sector are well-paid employees. 93% of the 24 graduates working in Vratsa receive higher gross monthly income (GMI) compared to their earnings before the VSC training. In addition, 56% receive a significantly higher salary ($940-$2,032 and above) than the average salary in the Vratsa region ($780). Most of the alumni with IT jobs in Sofia (64%) make above the average GMI of $1,130.

- Though in a nascent state, an IT community is already taking shape in Vratsa and the VSC activities are laying its foundation. Many participants are supported by companies in the IT sector and their representatives often participate in VSC initiatives. Hiring VSC alumni as interns or junior experts is a productive way to build the community. The Gnezdoto co-working space further boosts the development of the IT community in Vratsa by helping start-ups and existing small businesses in the IT sector expand their activities and easily collaborate among each other. For the time being, attracting new companies to the city remains an ambitious goal that has not yet been achieved.