



American University of Armenia

Հայաստանի Ամերիկյան Համալսարան

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What's next for TUMO?

*Մենակ տաղանդը ի՞նչ անի: Հարկավոր են բարեհաջող պայմաններ...
Հովհաննես Թումանյան, 4/12/1902*

*"What can the talent do alone? Fortunate conditions are needed."
Hovhannes Tumanyan, Armenian poet, December 4, 1902*

On March 8 of 2017 Marie Lou Papazian, the Managing Director of TUMO Center for Creative Technologies, was staring at the Mount Ararat's snowy and mesmerizing slopes: perfect view from the TUMO office windows! She was waiting for Pegor Papazian, the CEO of TUMO to discuss their plans for expansion of TUMO.

TUMO Center for Creative Technologies has opened its doors to the young and ambitious students in 2011 with the generous funding from Sam and Sylva Simonians. During these six productive years, the center managed to welcome up to 8,000 students from all over Armenia, completely free of charge. Today, however, TUMO is facing a dilemma: what to do next?

TUMO: Center for Creative Technologies

Company description

TUMO is a place where thousands of teens from 12 to 18 attend after school to learn technology and arts. TUMO offers a range of courses in four focus areas of animation, web-design, filmmaking and game development. Learning is independent, delivered through a platform allowing students to create their personal learning plan, and is assisted by 'coaches'. Outside the four focus areas but adjacent to those, students attend workshops, led by workshop leaders who are industry pros from all around the world. TUMO is an experimental place where the idea is not to give classes, but to make students feel comfortable and build a very strong foundation for their future careers.

This case is written by MBA students at the American University of Armenia: Anna Marutyan, Mane Tatosyan, Lilit Mkrtychyan, Astghik Hakhinyan and Grigor Zakaryan, under supervision of Prof. Sergey Tantushyan. The case is developed solely as the basis for class discussion. Cases are not intended to serve as endorsements, sources of primary data, or illustration of effective or ineffective management. Copyright © 2017 Sergey Tantushyan.

In 2011 the first center was opened in Yerevan in Tumanyan Park named after one of the beloved Armenian children's books author Hovhannes Tumanyan. The park is known as Tumo park (*short from Tumanyan*), which inspired the founders, Sam and Sylva Simonians, to call the center that name. The willingness to help the younger generation of Armenians to be on the top of the IT trends was founders' inspiration to fully fund education at TUMO.

Year by year the number of TUMO centers increases. With the support of Central Bank of Armenia in 2013, it opened its second branch in Dilijan. In the partnership with AGBU, they added two more centers in Gyumri and Stepanakert.

History of TUMO

It was winter of 2005. Marie Lou and Pegor Papazian had just moved to Yerevan, where Pegor was starting as the Head of Project Development at the US Agency for International Development. Across the river from their new home, they could see an unusually large office building, apparently at the final stages of construction, rising up at the edge of one of the city's few public parks. They wondered what it could be.

A year later, Sam Simonian, a successful technology entrepreneur from Dallas, Texas, and, as it turned out, the owner of the mysterious building, contacted Marie Lou. Sam wrote to Marie Lou that he had decided to devote the first floor of his Yerevan building to technology education, possibly through a free-of-charge internet café for young people, and that he was looking for someone to run the project.

In the days following the arrival of that email, Marie Lou and Pegor put down on paper an idea they had been discussing a new approach to technology-driven education that would be game-like and highly engaging, but with ambitious learning targets. Pegor's background in computer science and artificial intelligence influenced the design of the program's personal learning plan that would automatically adapt to each learner's preferences and evolving skills.

Sam and his wife Sylva immediately recognized the idea as an articulation of their own vision of hands-on, 21st-century education with an engineering mindset. They asked Marie Lou and Pegor to fly out to Dallas to discuss and develop the concept. Over the course of a weekend spent in Sam and Sylva's home, the four of them created a program that grew in ambition and scope, taking up not one but two floors of Sam's building and becoming the foundation of what is now the TUMO Center for Creative Technologies.

TUMO's organizational culture

TUMO's organizational culture puts a premium on flexibility and adaptability. Top managers are assigned responsibilities for new projects and take the lead in addressing emerging challenges and opportunities on the special basis. The organization is relatively flat, with everyone having access to the

management team, and relatively large number of staff members interacting regularly with the CEO, based not only on their responsibilities in the organizational structure but also on their involvement in priority initiatives, regardless of their position in the staff hierarchy.

There is an emphasis on keeping the staff lean. There are very few assistant positions, administrative or otherwise – the CEO does not currently have one. The organization is very mission-driven, especially in its current growth stage. Maintaining a culture of customer service towards students is a priority, and managers often take the initiative to work outside regular hours and on weekends when circumstances require it.

Product line

Students started their adventure by exploring focus areas. The focus areas are animation, filmmaking, game development and web design. TUMO members from the beginning of their path are motivated to get informed about all four core concentrations. Day by day, they are participating in challenging projects and starting to work on one of the areas.

After several weeks they have already created their personal learning path. They have an individual plan, which is prepared with the help of TUMO coaches and workshop trainers from Armenia and abroad. TUMO students have a chance to choose any of workshops. In addition to main areas, TUMO syllabus covers a range of different technical, artistic and professional skills that are important for all students. They offer also the education in graphic design, 3D modeling, programming, online literacy, robotics, music, drawing, writing, and photography.

There are workshops for beginners and advanced students. The learning process in TUMO is full of spontaneous events that are both internal and open for external audience. The aim of these events is to stimulate and inspire a student to work better as well as to attract new students. The permanent and regular workshops are organized by TUMO's staff and led by local and international professionals. The workshop leaders travel through all four centers in Yerevan, Dilijan, Gyumri and Stepanakert, giving the opportunity to any of the students to participate the same workshop. The final projects of each student are attached to their personal portfolios. After completing every workshop and related final project students gain a new skill, which can be used in future learning path.

Learning labs are special programs, which are complementary for TUMO's core programs. The average number of learning lab is 120 with the equal distribution for each four focus areas. There are many past leading lab professionals engaged in TUMO's learning activities like NASA engineer Richard Ohanian, world-renowned photographer Scout Tufankjian, and Disney director Arnab Chaudhuri.

The hard work of students who participate in learning labs brought international attention towards TUMO. Such case can be concept designs for the Aurora Prize for Awakening Humanity.

TUMO has its own summer school, which is the best way to meet international students and setup connections for the future networking.

Learning and teaching in TUMO

There are two types of instructors in TUMO. The first ones are TUMO staff members who teach regular workshops. The second group is people who are invited on a short-term basis to teach in special labs. They are leaders in the particular sphere and add unique taste in education area in TUMO.

The TUMO pedagogical model is based on a close observation and respect for how young people tend to learn, acquire know-how and perfect their skills when they are doing those things on their own initiative, rather than when they are conforming to a prescribed educational system. It is also shaped by a focus on using technology and automation to deliver learning experiences efficiently and with maximum adaptability to the learner's preferences, learning style, and pace.

The way teenagers learn when engaged in playing games and the amount of effort and concentration they expend in playing multiplayer role-playing games, in particular, was an important inspiration. Yet this was not about creating educational games, which tend to be ineffective or very narrowly specialized, but rather about gamification – using game mechanics and other aspects of game design to inform the design of TUMO's learning systems.

The TUMO team wanted to avoid a condescending or trivializing approach to using digital technology and specially games for learning.

The reason TUMO's program was designed from a youth-centric perspective was not only because TUMO's target learners were teenagers. It was also due to the founding team's realization that the way young people like to learn today is actually a preview of how learning, in general, will need to happen in the near future in order to be effective. The often-maligned short attention span of teenagers was a positive influence on the design process, and resulted in "bite-sizing" many of the learning modules and peppering them with frequent steps and opportunities for feedback. At the same time, the circumstances under which those same teens are capable of sustained concentration and effort over long periods of time when trying to acquire the assets required to level up in a game, for example, guided the design of workshops, learner-led projects and the creation of TUMO's teen startups.

TUMO's model of physical presence in a common space during learning, and the use of coaches rather than instructors for much of the learning process also motivated both by young people's attraction to social interaction and by TUMO's emphasis on efficiency. In the case of the coaching model, this was based on the traditional technical support systems of software companies, where the software is designed to be self-explanatory largely. When assistance is required, it is mainly provided by support teams whose members know the software intimately and can help with troubleshooting but are not themselves senior technicians. The emphasis TUMO places on independent learning are also motivated

by the fact that a familiarity with what it takes to learn on one's own will serve teens very well throughout their carries, given the constantly evolving state of disciplines and tools.

The Business Model

TUMO aims to be financially self-sustaining while making its program accessible to all teenagers. In Yerevan and in the rest of Armenia, it is completely free of charge because that is the only effective way to ensure that young people from poor families are not left out. The Yerevan center occupies the first two floors of a six-story building. Most of the other four floors are rented out to technology companies. That rental income now fully subsidized its operations and all its central functions such as updating content and software, communications, back office, etc.

In smaller cities outside Yerevan, TUMO partners with organizations willing to cover its annual operating costs as well as the cost of establishing a center, while the Simonian Educational Foundation, TUMO's parent non-profit, provides all its intellectual property and operates the centers at cost. Each of the additional locations TUMO has initiated outside Yerevan was chosen primarily because a partner organization came forward and offered to fund its establishment and operations.

In order to make this model work, TUMO achieves significant cost efficiencies across its centers by circulating workshop leaders among them. While a small local staff works full time at each center, the most specialized instructors spend the majority of their time at the Yerevan headquarters where they are fully utilized, and one month out of the year in one or more of the centers outside Yerevan when they are needed to lead a workshop there. Since salary costs are the largest budget line item in the TUMO program, the cost of each workshop leader is charged to the respective centers only for the months they are actually leading workshops there, optimizing the cost allocated to each center.

In addition to its permanent staff of workshop leaders, TUMO also recruits over 100 top professionals per year from around the world to run learning labs for several weeks for small groups of the most motivated and high-achieving students. Costs are also kept low in this case. Given that these are highly paid professionals with western-level salaries, TUMO asks them to volunteer their time and only covers their air fare and lodging.

Funding at TUMO

The initial investment was by Simonian family close to 60 million US dollars in building and maintaining the building in which TUMO is located, funding the development of the program, and covering budget deficits during the first five years of operation until enough of the building's upper floors were rented to achieve self-sustainability.

The Yerevan headquarters now covers its own operating costs and the cost of all central functions almost exclusively (close to 90%) through its income from renting out office space for technology

companies in the upper floors of its building. The occasional donations and grants received are used for special projects and learning labs that are additional to the core program.

Operating costs in centers in the rest of Armenia are covered by a single major donor (such as the Armenian General Benevolent Union or the Central Bank of Armenia) for each center.

Running the Yerevan headquarters currently requires an annual budget of to USD 2,000,000, covered mostly by rental income from the building. Contributions from partner organizations, which are allocated to running the three current centers outside Armenia, add up to approximately USD 450,000 per year.

On average students spend a 2-3 year at TUMO to complete what is considered a core program. Currently, 10,000 students attend TUMO across the four centers, with an annual budget of USD 2,450,000. However, since most headquarter functions are fixed costs, the actual marginal cost of adding one more student is approximately USD 15 per student per month or USD 450 for the average of 2.5 years typically required to complete the core program.

Competition

Local competitors

Armenian code academy provides lectures in the most required IT professions, such as Android, JavaScript, python, iOS, etc. In comparison with TUMO the applicant needs to pass the exam and meet for a short and informal interview, and only after positive result, you can start your education. The duration of the courses is 4 months. Moreover, the classes are paid. The cost of the training is different, starting from 35.000 AMD to 60.000 AMD. However, they organize real competitive projects for students and the best ones will receive a 100% discount on the tuition. In addition, they have a free internship program in cooperation with Bet Construct for JavaScript developers. The student needs only programming basis, analytical skills, and bachelor degrees in computer science.

Armenian-Indian Center for Excellence in Information and Communication Technologies is a joint project of the Governments of Armenia and India. The Center delivers both short-term and long-term courses designed to fit a wide variety of audiences. The Project key objectives are to deliver IT-related training, training of trainers, exchange programs, and promotion of joint R&D projects. Besides the training activities, the Center can also carry out R&D activities, which provides necessary software tools.

The innovative solutions technology center is a joint center by IBM, the Government of Armenia, Enterprise Incubator Foundation, and USAID. The main goal of the Center is to develop and strengthen the educational capabilities of Armenian higher educational institutions in IT/High-Tech, to enhance their research potential in the educational context, as well as creating a favorable environment for the formation of sustainable businesses.

International Competitors

USA

In the USA, there are many centers for children development. Some of them are concentrated on technology and science development and there are plenty of art schools and development centers. From this list more prominent is The Museum of Science of Boston, The Museum of Science and Industry of Chicago and California Science Center. These centers are the biggest ones in the world.

Russia

Russia also has a good reputation in developing science and technology areas as the part of their educational system. Some of the well-known schools throughout the Russia are The Moscow Planetarium, Moscow Masterslavl City of Craftsmen, and Moscow Experimentarium.

First, one is concentrated in space learning while Moscow Masterslavl is heavily concentrating on developing a new model of Russia with nowadays technologies. Moscow Experimentarium School is more interactive and uses rules of physics and chemistry to demonstrate experiments and the way it is connected with rising technological era.

Europe

Data science and technology era did not pass by Europe without leaving its footprint. There are some countries, which have already huge engagement with the technological trends, particularly the UK, Finland, and The Netherlands.

Glasgow Science Center is located in UK and is one of the most known scientific educational centers, which aims to increase the quality of science and technology learning.

Heureka science Center in Finland features both indoor and outdoor interactive exhibitions with exhibits that enable visitors to independently test different concepts and ideas. There is also a digital planetarium with 135 seats.

The other one is Steve Jobs School in The Netherlands. The school is designed in a way to motivate children to be more creative. There are no permanent teachers, just coaches for their junior years and another coach for senior years. There are no fixed school hours.

Asia

In Asia, there are many countries, which pay much attention to the development of children in advanced science. Konya Science Center is Turkey's first large interactive institution dedicated to informal learning about science and technology. Exhibition design includes the following galleries: Basic Science, New Technology, Earth, and Bio systems, Space, Health, Konya History and Culture, Early Learners and an Outside Exhibition.

Kuwait Scientific Center, which provides a unique perspective and increases the knowledge of children about the technology and science.

One of the largest educational centers in Asia is The Children Museum of Jordan. It offers over 150 indoor and outdoor permanent exhibits and educational facilities. In addition to the main activity as a museum, the staff offers consultancy and syllabus development for interactive programs that enhance the learning experience in sciences, literacy, arts, culture, civic competence and tinkering.

Singapore Science Center is specialized in the promotion of scientific and technological education for the public through the help of the exhibitions. Each exhibition covers a wide range of topics related to science, technology, and mathematics.

The Art School after Virsaladze was established in 1955 in Tbilisi, Georgia. The school is concentrated on art and the main objective is to educate creative and bright individuals. Besides compulsory subjects, there are special courses of further education, for example, photography, videography, the history of cinematography and theater, rhetorical art, applied art, metal work, wood carving, embroidery and gobelin tapestry.

The Peepal Grove School is located in South India. It stresses on critical thinking and an approach in every area they explore. It provides an environment for students to explore and expand their potential in a natural way. In Peepal Grove School, they appreciate diversity and encourage children who have creative thinking. The learning approach is process-oriented, where learning takes place through hands-on understanding.

Product line expansion

Wider age range: TUMO can expand their products by adding activities for younger audience like kids from six to eleven years old. Also, make an opportunity for teenagers to continue their education at TUMO after 18. They may make this program paid and offer scholarship for those students who demonstrate excellent progress during younger years.

Single time visit and experimental sessions: TUMO can arrange sessions for those who want to have fun and attend experimental classes or science theatres, which will be held by students. These shows will be entertaining for a range of ages and can reveal secrets of science.

Larger variety of activities: Besides its classical paths, TUMO can add new ones, like sports, languages etc. In addition, there can be book clubs and journalism club, which will be responsible for example, TUMO newspaper issued monthly.

Virtual reality education: This option will be rather costly, but this will be first augmented reality education system in Armenia and will interest a wide range of students and even their parents.

Expand locally

The competition in Armenia is not severe and this can be very good stimuli for TUMO to continue its expansion throughout the Armenia. There are many regions full of ambitious teenagers ready to spend time on learning new and fascinating things which will help them in their future life and, if attracted at most, in future career to gain solid knowledge from the field of science that are often usable in this technological century.

There are opportunities to open new TUMO Centers in Goris, Syunik Region, Vanadzor, Lori Region, Vayk, Vayots Dzor Region. However, what should TUMO choose exactly?

Expand Internationally

The wave of changes makes all countries to be engaged in emerging technological era. Everywhere this field is heavily competitive but at the same time marginally profitable. Therefore, here is the question: should TUMO climb the higher mountain (Russia, USA, and Europe). Because this is not an unrealistic deal for the organization to do. There is a need of 500.000USD investments, which can be financed with some existing ways. Finally, the financial model can be changed and the fee of 17\$ per month will cover the expenses. Again, is it worth to do so?

Looking Forward

When Pegor entered to Marie Lou's office, she was still looking at Ararat. There are several choices for the company: Expand locally, Expand globally, or expand their product line.

"Should we climb the higher mount of the two, Masis, or the smaller one, Sis?" Marie Lou turned to Pegor.

The choice was the tough one.

Exhibit 1: TUMO

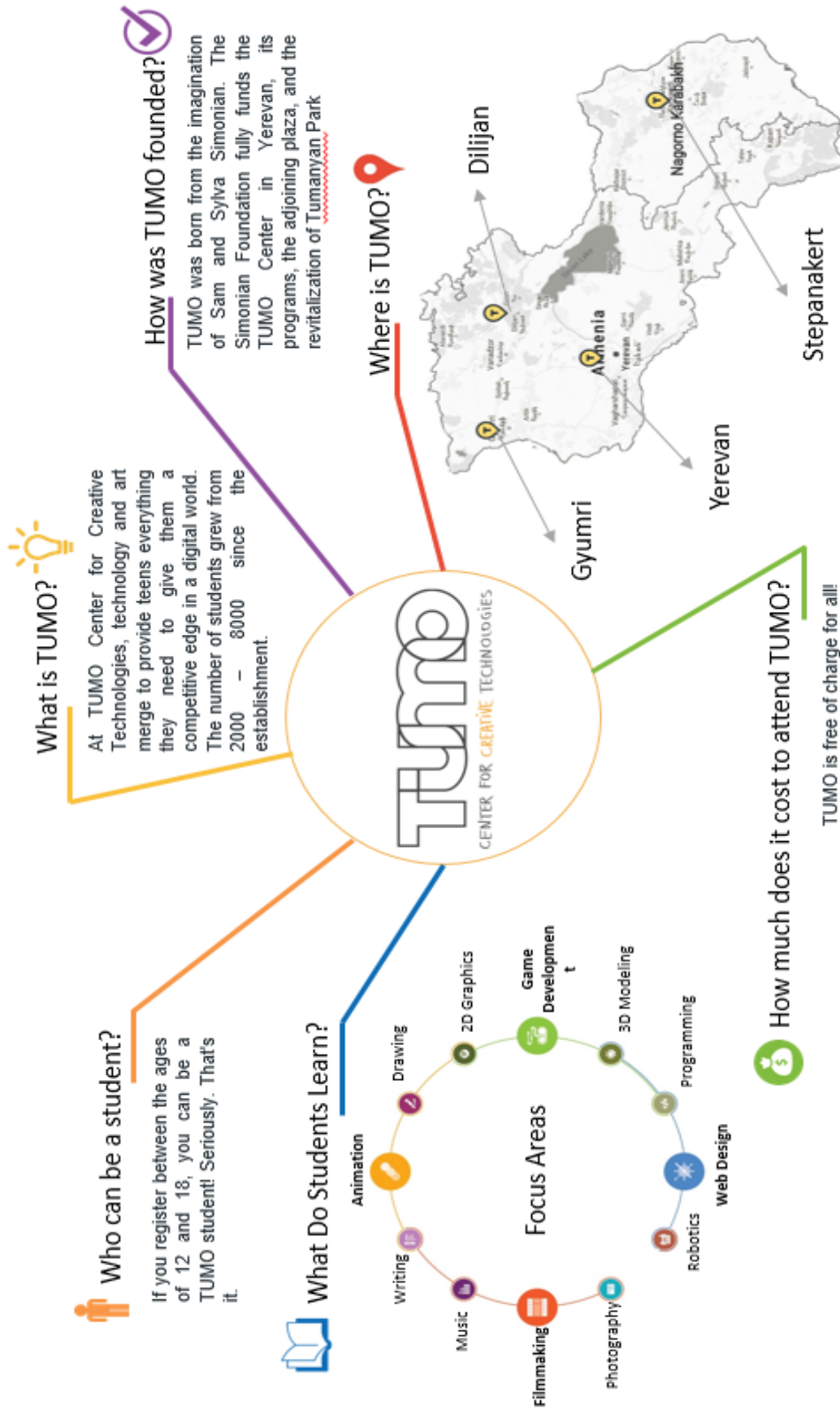


Exhibit 2: Map of Competitors

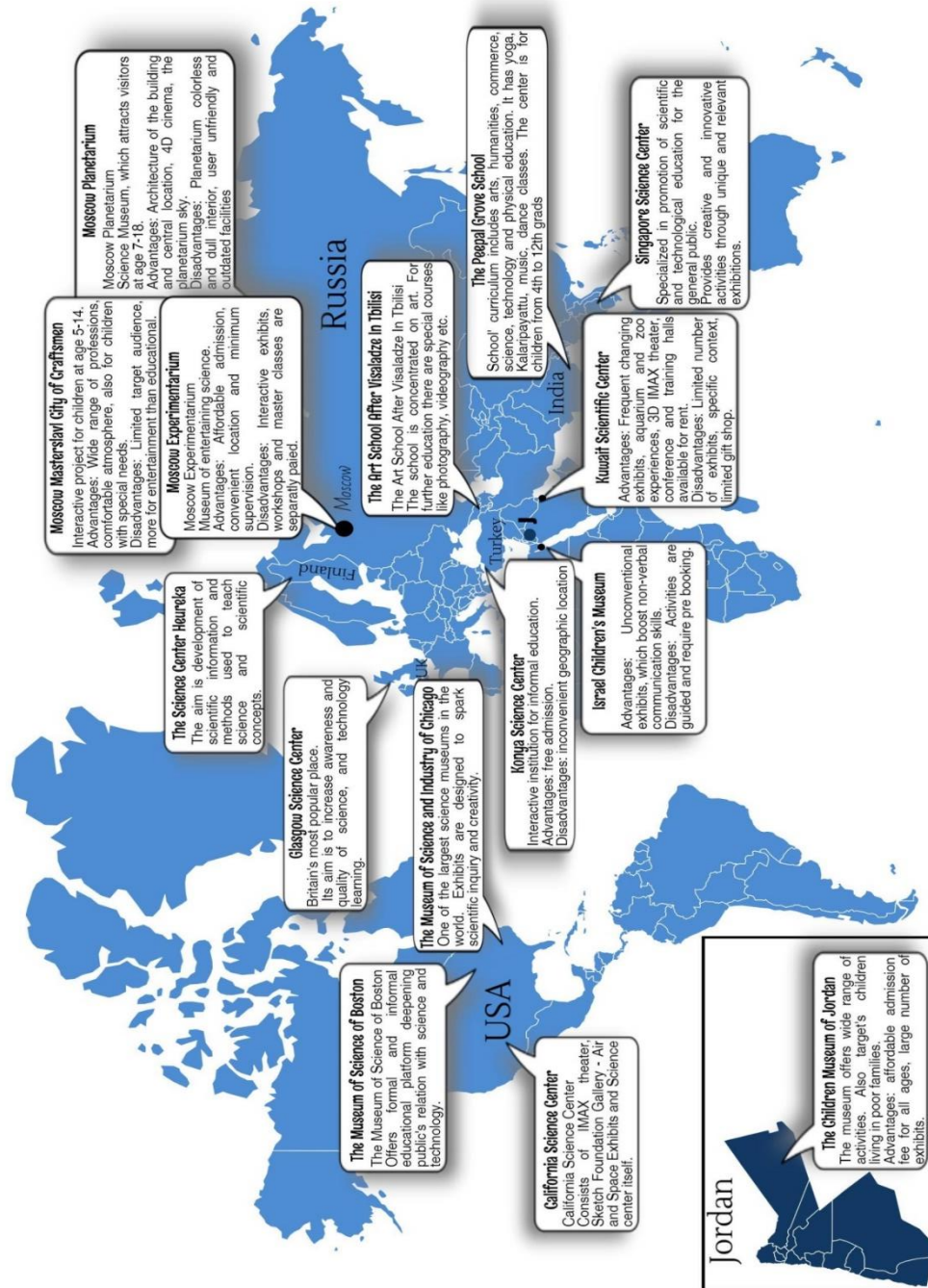
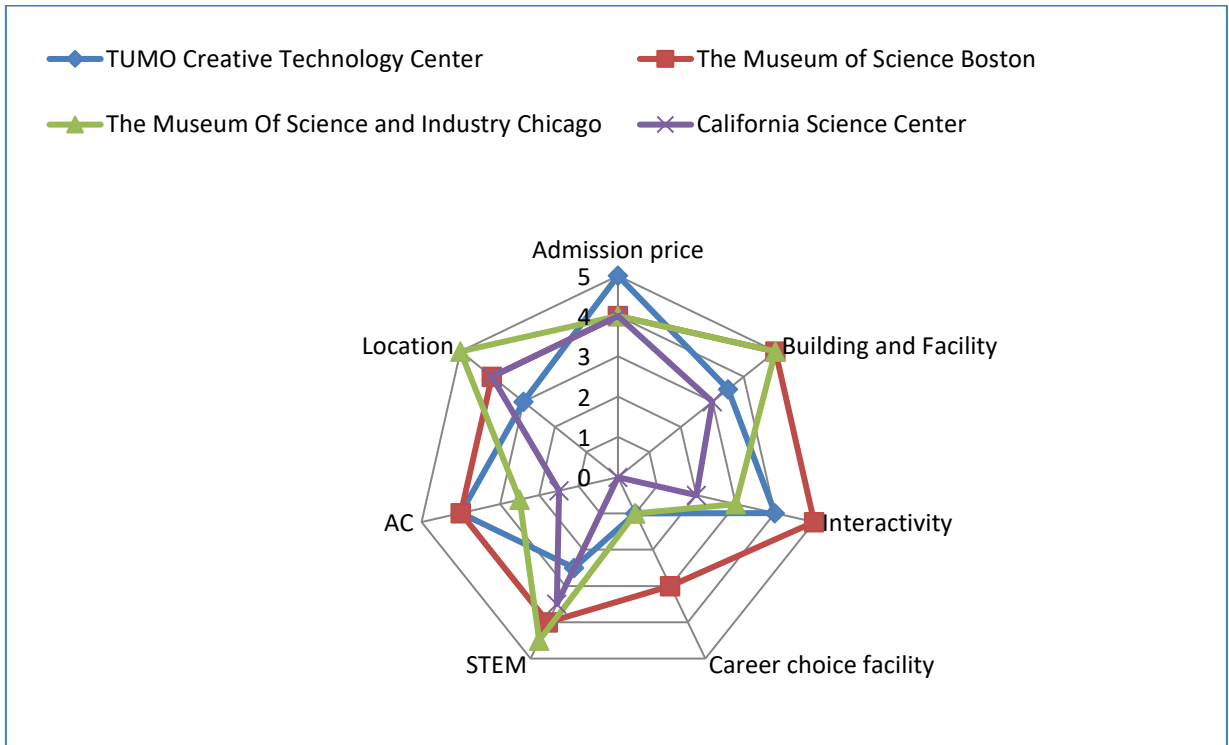


Exhibit 3: Benchmarking of TUMO with USA



STEM is Science, Technology, Engineering and Mathematics

AC is Art, Communication

Exhibit 4: Benchmarking of TUMO with Russia

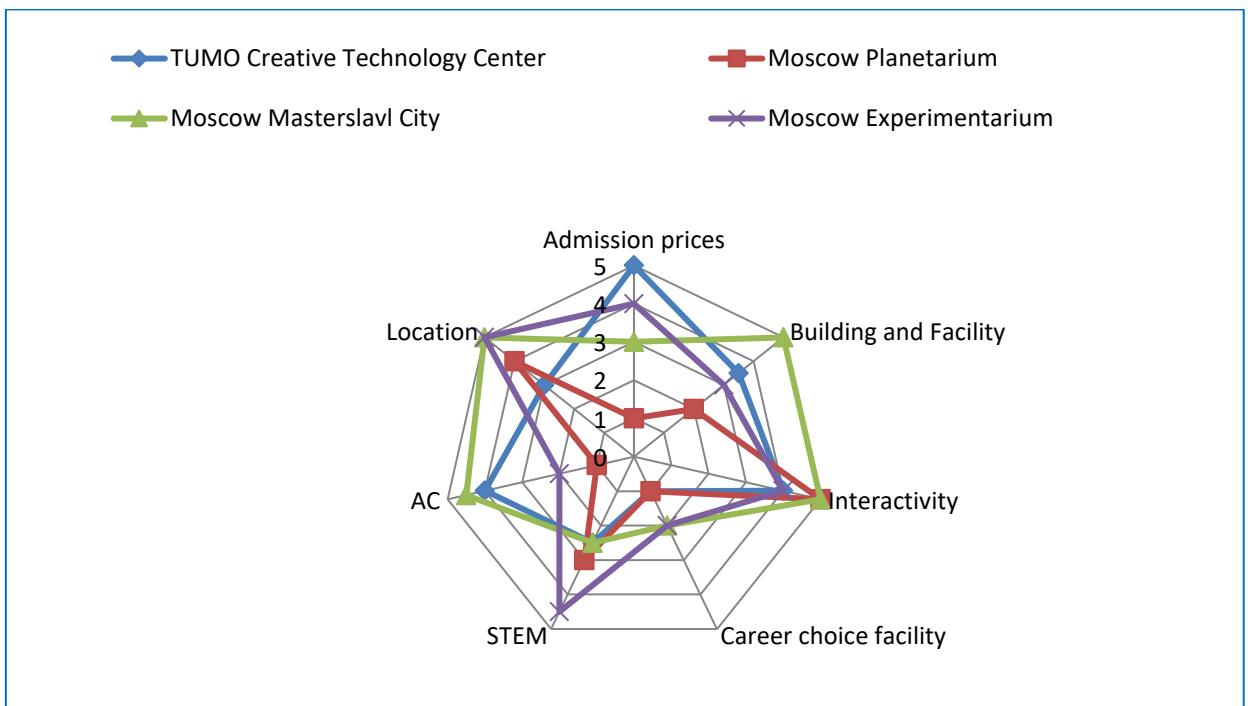


Exhibit 5: Benchmarking of TUMO with Europe

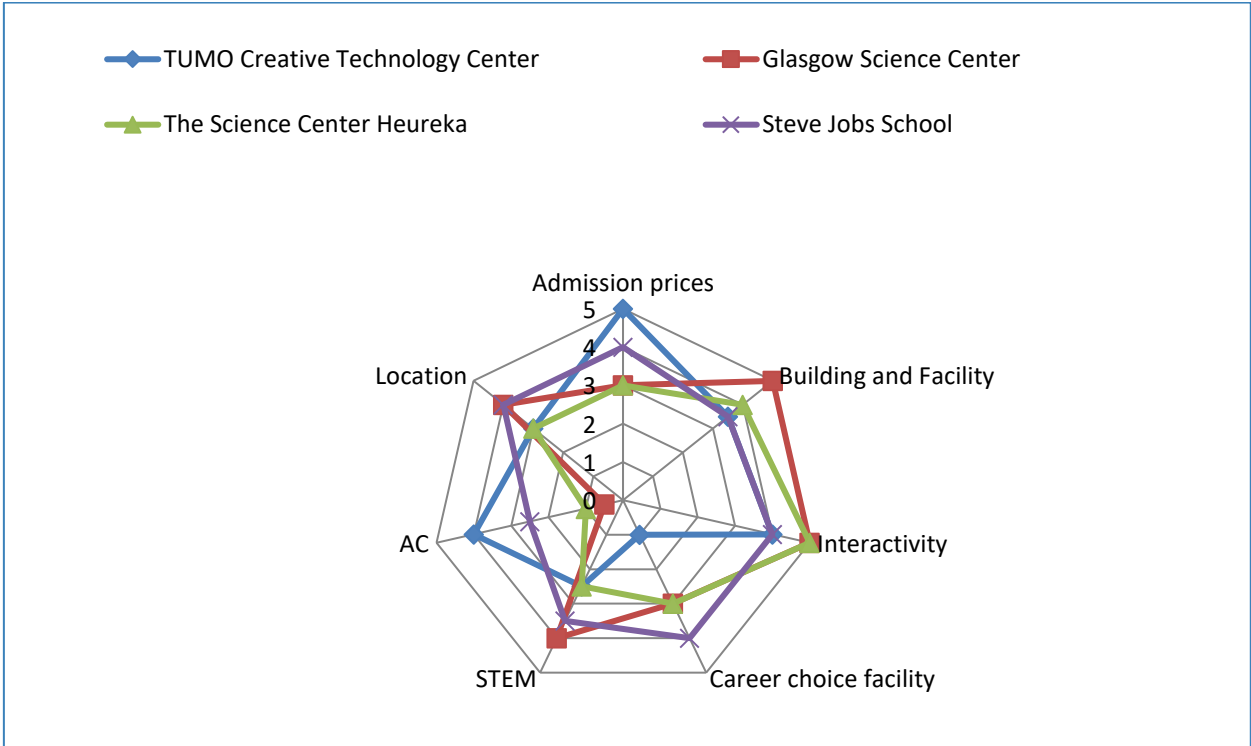


Exhibit 6: Benchmarking of TUMO with Asia

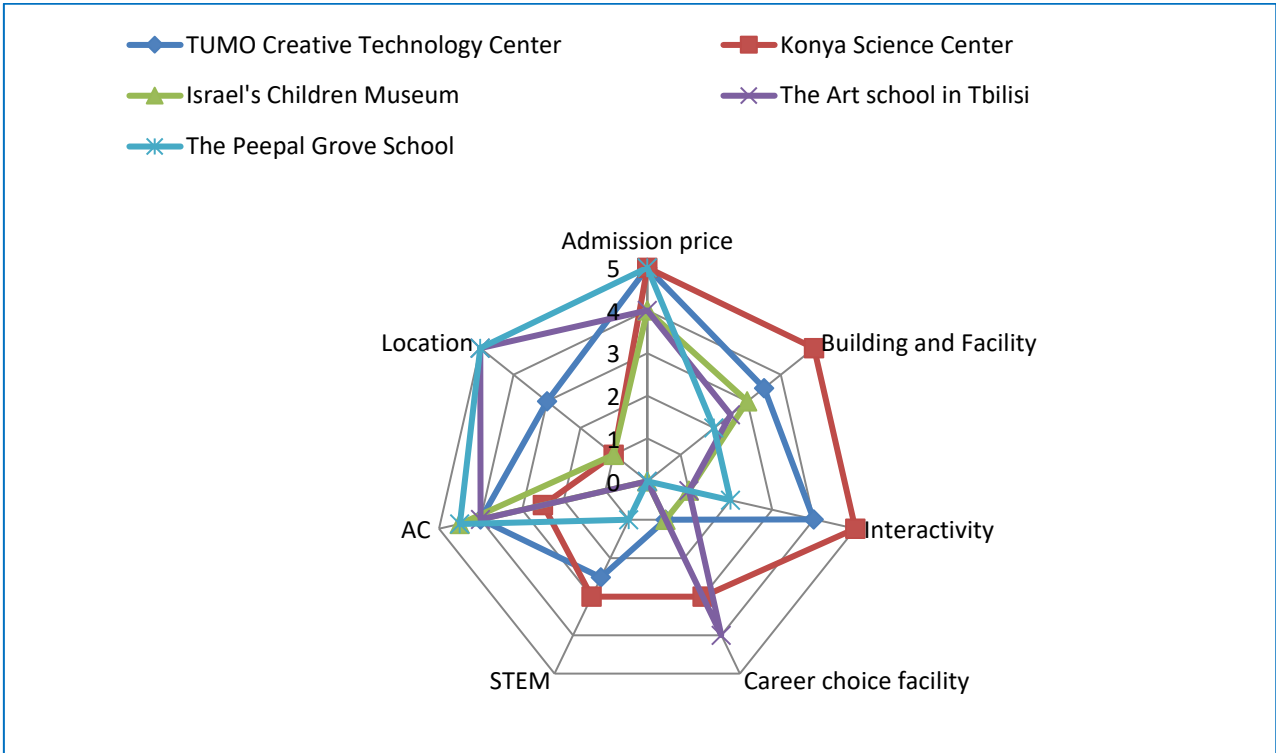


Exhibit 7: Big Mac Index

Big Mac Index

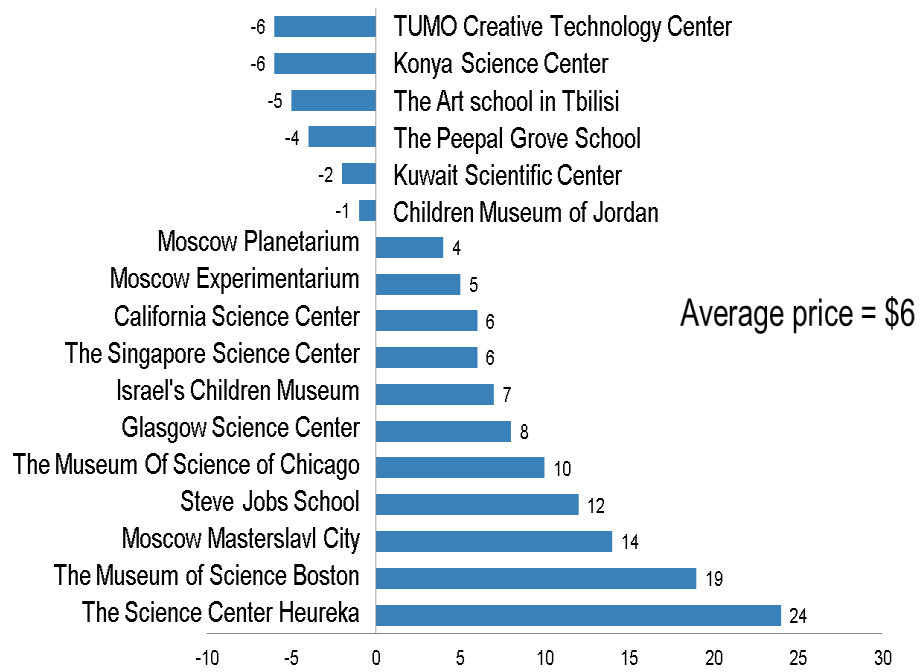


Exhibit 8: Financial Feasibility Analysis

	Unit measure	AMD	Total (in USD)	Total (in AMD)
Land(sq.m)	4,000	-		-
Building (sq.m)	3,000	-		-
Interior renovation (sq.m)	3,000	-		-
Furnishing				1,757,500
Chairs	150	7,250	2,242.27	1,087,500
Tables	40	16,750	1,381.44	670,000
Electronics	160	418,000	89,896.91	43,600,000
Computers	100	388,000	80,000.00	38,800,000
Other electronics	60	30,000	3,711.34	1,800,000
Kitchen equipment		3,000,000	6,185.57	3,000,000
Conference hall and Meeting rooms		2,480,000	5,340.21	2,590,000
Furnishing		1,200,000	2,474.23	1,200,000
Monitor and other technical		1,200,000	2,371.13	1,150,000
White boards	3	80,000	494.85	240,000
Administrative offices		6,200,000	15,876.29	7,700,000
Furnishing		950,000	1,958.76	950,000
Computers	7	250,000	3,608.25	1,750,000
IT software	1	5,000,000	10,309.28	5,000,000
Total			114,737.11	55,647,500
	Unit measure	Salary in AMD	Total in USD	AMD Total
CEO	1	1,250,000	2,577.32	1,250,000
CEO Assistant	1	650,000	1,340.21	650,000
<i>HR</i>	1	400,000	824.74	400,000
Financial director	1	500,000	1,030.93	500,000
Accountant	1	350,000	721.65	350,000
Maintanace Manager	1	300,000	618.56	300,000
Front Office Manager	1	300,000	618.56	300,000
Sales & Marketing Manager	1	300,000	618.56	300,000
IT professional	1	450,000	927.84	450,000
Technicians	2	250,000	1,030.93	500,000
Coaches	3	280,000	1,731.96	840,000
Gurus	3	280,000	1,731.96	840,000
Inhouse Professors	3	320,000	1,979.38	960,000
Invited Professors	2	600,000	2,474.23	1,200,000
Cleaning staff	4	200,000	1,649.48	800,000
Total	26	6,430,000	19,876.29	9,640,000
Yearly total			238,515.46	115,680,000
Business registration fee			2,097.71	1,017,391
Designate a Lebanese lawyer	1		2,079.89	1,008,745
Deposit the capital in a bank			-	-
Register at the Company Registry			-	-
Notify the Ministry of Finance of commer	1		-	-
Register at the National Social Security	1		-	-
File internal labor regulations (règlement	1		-	-
Register for VAT	1		-	-
Obtain a company seal			17.83	8,646
Utility Costs(Electricity, Gas, Water)		2,280,412	4,701.88	2,280,412
Internet(10Mb/s)		31,525	65.00	31,525
Total			4,766.88	2,311,937
Yearly Total			57,202.56	27,743,244
TOTAL Costs			412,552.86	200,088,135

Exhibit 9: Financial Feasibility Analysis

Number of estimated students estimated	12,331.00
	in USD
Monthly fee	3.00
Total revenue	36,993.00
Total yearly revenue	443,916.00
Total yearly costs	412,552.86
EBITDA	31,363.14
Depreciation/Amortization	22,222.68
EBIT	9,140.46
Tax	1,371.07
Net Income	7,769.39

Exhibit 10: Biography of Sam Simonian, Marie Lou and Pegor Papazian

Sam Simonian is a self-made technology entrepreneur. He grew up in a modest household in the Armenian sector of Beirut and later moved to Texas where he studied engineering at the University of Texas at Arlington. After graduating, he joined a team of engineers designing telecommunications equipment for the defense industry, but soon decided to branch out and found a startup, INET, which became wildly successful. In 1994, Sam was named entrepreneur of the year by Inc. magazine, Ernst & Young, and Merrill Lynch. After selling INET and starting another telecommunications company, Epygi, Sam began investing in Armenia with the goal of creating high value jobs and raising the level of engineering capability there. The Simonians then created the US-based Sam and Sylva Simonian Foundation and its Armenian counterpart the Simonian Educational Foundation to implement their flagship project, the TUMO Center for Creative Technologies. Marie Lou and Pegor Papazian were both born and raised in Beirut where they were classmates since kindergarten. They later became high school sweethearts and eventually married. Marie Lou studied civil engineering at the Université Saint Joseph and Pegor studied architecture at the American University of Beirut. When they graduated from university, they moved to New York together where they worked and also earned graduate degrees – Marie Lou in construction management from the Stevens Institute and Pegor in Computer Science at MIT where he studies at the AI Lab. They later moved to Barcelona, where Marie Lou developed an online educational program that became the precursor to the TUMO Center for Creative Technologies. In 2005, after having returned to the US, where Marie Lou earned a graduate degree in education from the Columbia Teachers College, the couple moved to Armenia. Marie Lou is now the CEO of TUMO and Pegor divides his time between his duties as TUMO board member and as founder and CEO of a local technology startup.