

Interview with the manager of the largest and cheapest producer of artificial limbs in the world

Davud Midari: One of the topics of the day in the economics of poverty is "profitable poverty alleviation". The main message of profitable poverty alleviation is marketization for the benefit of the poor. More than 4 billion people have an annual income of less than fifteen hundred dollars. This population is a large market that can be profitable for economic units. Producers in this big market can provide a great service to humanity with two motivations.



Message of profitable poverty alleviation is marketization for the benefit of the poor. More than 4 billion people have an income of less than fifteen hundred dollars a year. This population is a large market that can be profitable for economic units. In other words, if a manufacturer pays attention to this big market, they can do a great service to humanity not only with humanitarian motives but also with the motive of making profit. For the first time, this issue was raised by CK Prahalad in the book (Prahalad, Coimbatore Krishna (2004). The fortune at the bottom of the pyramid: eradicating poverty through profits).

In this book, which was translated into Farsi in 2016, he collected the experience of economic units that realized economic profitability in the big market of the poor. One of the chapters of this book (Wealth at the Base of the Pyramid; written by CK Prahalad, translated by Fazlollah Amini, published by Farda Management, pages 334 to 365) is the experience of a charity organization producing artificial organs. Unlike other chapters of the book, this part of the book introduces the experience of a charity and not an economic enterprise. Understanding the experience of this institution can be instructive for our charities and private institutions.

Jaipur Leg Charity is the largest and cheapest artificial limb manufacturer in the world. This institution, which has been active for more than 50 years, has managed to attract the attention of the world. An interview was conducted with the director of this institution named Devandarraj Mehta in Aban 1401. Mehta is an MIT graduate who was first a senior manager at the Reserve Bank of India, but the course of events led him to establish a charity.

Brief introduction of the institution

Devendra Rajmehta is the founder and director of BMVSS, the world's largest prosthetic leg association. This association is the largest producer of artificial legs and has treated more than two million people with limb defects. Today, BMVSS has 26 centers in India and provides services in 39 countries including Iraq, Afghanistan, Senegal, Rwanda, Syria, Kenya and Lebanon. To improve product quality and provide better artificial limbs, this association has cooperated with prestigious universities such as Harvard, Stanford, and MIT, and has been able to reduce the cost of producing artificial legs from \$10,000 to \$70. In collaboration with Stanford University, the Stanford-Jaipur artificial knee was produced for patients who do not have legs above the knee. The price of this knee is one-fiftieth of similar knees. In 2009, the Times magazine included the Stanford-Jaipur artificial knee among the 50 most influential inventions of mankind.

The United Nations celebrated the 50th anniversary of the Jaipur artificial leg at its headquarters in New York on the 25th of May 2017. Mehta is a graduate of MIT and has served in various positions including Chairman of the Securities and Exchange Board of India. When he was 30 years old, he was in the hospital for 6 months due to an accident, and according to the doctors, he almost lost his leg. From that time, he started trying to create an association. He is fascinated by Persian literature, and for this reason three Persian books have been translated in his institution, including Golestan Saadi, Diwan Asayer of Sarmad Kashani.

Which feature of Jaipur's artificial leg attracted the attention of the world?

The core need of the product. Jaipur artificial leg is made according to the needs of Asian families. I have an Asian culture and you are also from the same culture. Shoes must be used in the common artificial leg, that is, the foot is designed in such a way that there is a permanent shoe at the bottom of the artificial leg. In our culture, we Asians do not enter the house, kitchen, mosque or temple with shoes.

The more important reason is its performance. This foot is easy to use for the consumer. You can easily run and climb stairs with it. It even has the ability to bend and sit and stand. To create this feature, we have given the knee a very high flexibility, in addition, the heel is very flexible. In the legs produced by western companies, the knee is not flexible and does not bend, so the consumer can no longer go to the bathroom. In most villages in India, there is rarely a toilet, so a foot had to be made to be able to be used in a local toilet. In this regard, I will tell you an interesting memory.

As you know, relations between India and Pakistan are not very good. We wanted to set up two branches of the Jaipur Artificial Leg Institute in Pakistan, but they did not give us visas. By chance, we met the Minister of Health of Pakistan through a mutual friend. I asked them, we want to come to Pakistan for charity work, why don't they give us visa? He replied that it will not happen if Pakistanis use American or Japanese prosthetic legs.

I said: You have to wear shoes with artificial feet made by them, so you cannot enter the mosque, besides, it does not have the ability to bow and prostrate. With Jaipur Prosthetic Leg you reassure Pakistanis that their amputation problem does not stop them from praying and becoming Muslims. This argument influenced him and they gave him the visa within seven days. In less than a month, 1,000 prosthetic legs from our two centers in Pakistan were given to the intended people.

The second thing that is very important is the cost. The cost of this leg is 70 dollars, while the American artificial leg costs 10,000 to 12,000 dollars. Another reason for our reputation is shortening the time and frequency of patient visits. In the early models, the patient had to visit many times, but we make and place this leg in just one day or two days. Each person comes once and the leg is installed and they can walk. Also, the institute is able to produce complete artificial leg from thigh to ankle. In this model, people can walk and run easily like you and me.

It is with these advantages that we are in this position today and we are proud that 700,000 people in the world use Jaipur artificial leg. We produce 30,000 artificial feet per year, and the second company in the world after us produces 3,000 feet. We cooperate with the top universities of the world and India in the direction of research and development of artificial legs and achieving superior technology and reducing costs. We have extensive cooperation with the Indian Institute of Technology Bombay. We have close cooperation with MIT and Stanford universities. Next week I'm going to MIT to check out the latest developments on a new project we have with them. In addition, the joints that we produce for \$20 are sold for \$10,000 in America. In other words, our product is 500 times cheaper than the American product. In short, I would like to say that our product is based on two axes: modern technology and accurate assessment of the needs of the target community.

Doctor, tell us about your past and how you entered this industry?

You will be very surprised if I tell you about my past. In the recruitment exam of India, out of 500 thousand participants, only 600 people get a scholarship to continue their higher education and

are employed by the government. I was among 600 people. In 1961, I joined the Indian Administrative Service and worked in a provincial position in Rajasthan. From 1992 to 1995, I became the Executive Vice President of the Central Bank of India and from 1995 to 2002, I became the Chairman of the Securities and Exchange Board of India (SEBI), which was a very important position. Let's go back to when I was in the governor's office. I had a very bad accident on an office trip and the doctor said you were lucky to survive. My leg was broken in five places and I was hospitalized for 6 months. At that time, I was also responsible for the welfare and the poor of the province. I was always thinking that if I were one of the poor, what would I do with these artificial leg expenses?

There is a philosophy in India that was promoted by Mahatma Gandhi and maybe among you: there is goodness in every event. After this incident, the spark of establishing the association was sparked in my mind. Despite the heavy executive responsibility I had, due to the importance of the issue for me, I founded the association in 1968 and never left it. In the beginning, this association was very small, but today it has served more than two million people with disabilities. I never received anything from the forum during this time. In this community, even water is not given to the manager, and I bring my own lunch, I don't expect anything. The work you start for people has a lot of good. Everywhere I look today, help is coming, many people find us and help.

Mr. Doctor, your work is very valuable. Please tell me, how did you reduce the cost of artificial leg production like this?

The 50th anniversary of the artificial leg was celebrated at the United Nations and many people came. One of the representatives of the Islamic country raised the same question you asked me. I told him that the better question is to ask the westerners how they kept the price so high?! Their work is more complicated and difficult than ours! They don't allow our product to enter western countries. Do you know why? Because with our presence, the industry there will face a shock. I promise that our product will beat them in the competition and they will go bankrupt. You see, we use a raw material that is widely used in India and the price is very reasonable; Polymer and polyethylene. Good flexibility, high strength and cheap price are the golden triangle for us. In the West, they use very expensive materials such as carbon and propylene. Meanwhile, we produce feet in one day, but their production process is very time-consuming and long.

Have you studied economics?

Yes, I am a graduate of economics. See, these researchers who do research in closed rooms in institutions are far from reality, very far. They do not understand the facts, the economy and the market. Cost in the market is the first condition. I personally supervise the raw materials. Low cost and good quality has made us global. I did not allow a bit of prejudice to enter this forum; Neither religious nor political nor ethnic. As we speak today, I have branches or associate associations in 39 countries. Right now we are setting up a camp in Syria. I was in Karbala for 10 days and we gave 606 artificial legs.

How did you get this product? How was your development process?

Did you see the cricket bat? They used it to make artificial legs for the poor. Although its weight was 7 kg, people had to use it. We first started with aluminum, but the doctors questioned the aluminum leg, saying that this leg does not fit well, or it is loose or too stable. One day, one of my friends said, why don't you use the sex with which they make irrigation pipes? It is durable and flexible. In addition, when the foot is placed on it, it does not break, but returns. The price is very reasonable due to the presence of many raw materials in the market. Believe me, we thought of making this leg from blue pipe.

How much do people pay?

They give everything to benefactors. In my country, for people who do not have insurance and cannot work when they become disabled and their source of income is lost, the right price means free. Many have zero savings and income, so I had to finance elsewhere. Well, my background and work has been financial. We have made progress in technology and we are reducing the price as much as we can, but I had to innovate in the social field for financing.

Please explain what you mean by social innovation and explain more about it.

In social work, keeping costs low is the main condition for success. Our administrative fee is 3%, while it is 60% for Western charities. This means that in our community \$97 out of \$100 goes to the target market, while in the West \$40 out of every \$100 they spend goes to the target market. This cost reduction is not simple and costs must be reduced with social innovations. In 2003, the Taliban had just left, a charity in America told us that it wanted to donate money for amputations. Well, we went with our team to start helping people who have been amputated. We went to a place where there were several NGOs. When we arrived, they said to wait. After half an hour they allowed us to enter. About 20 security guards accompanied us to the office of the person in charge of our organization. Social work cannot be done with this organization. You have come for the people, leave the access open, what are you afraid of?

Last year, the International Red Cross produced 5,000 artificial legs, and in each country, it did not make more than 400. Can you believe that the cost of producing these five thousand feet was equivalent to all the services we provided to ninety thousand people; From prosthetic legs and wheelchairs to other services! Sheikhi in Abu Dhabi asked me to open a clinic in Pakistan. I am not Muslim. I am a Hindu, but everyone is equal in doing good. Out of my 2 million patients, 500,000 were Muslims.

What projects do you have in the future?

Currently, we are developing an electric prosthetic hand with the Indian University of Technology Management, which is one of the top universities in the world, and MIT University.

What is the target market for artificial hands and artificial legs?

There are about 10 million amputees in India.

How many visitors did you have last year? How many were treated from the first year of establishment until today?

During the 10 months from March 31, 2021 to January 1, 2022, we had seventy six thousand clients who were treated. We could not operate for three months due to Corona. Our difference with the second artificial leg association in the world is very significant. We provide 10 to 15 times more services to them every year. All this has been possible with the support of the society and people of India and the help of people in the world.

How many centers do you have today?

Today, we have 26 centers across India, but the main center is still in Jaipur, where half of the activities are done. Our branches started in Gujarat province in the west and then expanded to Assam in the east, Mumbai, Ahmedabad and Bangalore. In the camps abroad we have a few days camp and we treat a lot of people. Many countries want us to establish a permanent center in their country so that we can always be there. Today, we have a direct presence in 8 countries. We have 3 centers in Manila, Philippines. We have two centers in Nepal and Pakistan, one in Colombia, and we are negotiating to start working in Ethiopia.

In which of these branches is the artificial leg made?

In most of our branches, we have created the possibility of production.

How many employees do you have?

We have 250 permanent employees. Believe me, they work day and night. Elsewhere, each leg takes several days to make. Here, each employee makes an average of 2.5 feet per day. Leg parts like joints are also manufactured in Jaipur and two other centers. No center in the world can get feedback like here. Our strength is that it is one room away from the research and development unit, the production unit and the customer. These joints were developed at Stanford and we took feedback and have been redesigned 7 times so far. One case of complaints in Afghanistan was about leg discomfort when sitting and standing up, especially to use the toilet. We thinned the inseam and near the knee, resulting in both lower cost and greater comfort for the consumer. Are you familiar with the Kaizen philosophy? Constant and gradual improvements until the day you reach a very good product.

What is the management structure of the association? How do you manage there? What are the deputies and their roles?

I myself see 20 to 30 patients daily and between 80 and 100 patients on Mondays, so it is very important to be in the heart of work. It is very important that the manager intervenes in minor matters along with other tasks and is aware of the client's point of view. I am a graduate of MIT University and have always had a hand in management. Based on my social experiences, we reached a structure that has the most confidence and empathy. To elect the members of the board of directors and the manager, elections are held among the members every three years. Many come and go, and energy and thought flow here. We have lawyers and accountants in the board of directors. Accounting and auditing are particularly important here. First, one should be able to manage expenses well, and second, one should be able to check the accounts transparently.

What are your annual expenses?

Our annual cost is 35 crores equivalent to 5 million dollars.

How much of this cost do patients pay?

Zero dollars, we do not charge any amount from patients. Most of the expenses are paid by local and foreign donors. We have helped from two rupees to a million pounds. One day an English lady came and I showed her the environment, she was so impressed that she donated one million pounds. Once a poor man came and donated two rupees. He was very precious to me, because he gave all his possessions. Every year we have 800-900 benefactors who mostly help online and we don't know them. Years before Harvard Business School, they came to Jaipuri to study. The professor told me that your work will not last. I answered that you yourself have done management work for many years and now your business is closed; We will not continue or you? Today, the same university has written an article on the management and economic method of our institution. This association has been in existence for 47 years and you can be sure that with the structure it has found in these years, it will stand for at least another 50 years. The world we live in is a world of mercy. If you work tirelessly for the poor, the world will help you.

There is a poem in Persian: do good and open the Tigris river that God will give you in the desert. Do you know who this poem is from? From Saadi Let me tell you an interesting memory. I went to see Madame Teresa. At that time he was living in a humble house in Calcutta. I waited for 15 minutes for him to come, and I saw a story written on the wall with this theme, but the name of the poet is not there: "I have never lamented the distance of time and I have never been saddened by the rotation of the sky, except when my feet were left bare and I could not afford to wear them." I came to Kufa mosque, I was homesick, I saw someone who had no legs. "Thanks to the blessing, I fulfilled the right and I endured being barefoot." Later I found out that this is from your Saadi. This sentence affected me a lot. It has been my healer throughout my life and increased my patience and endurance.

Now that I am writing a book, I started this book with this sentence of Saadi. Later, when I invited Madame Teresa to Jaipur, I told her: the sentence you wrote on the wall of your house without the poet's name is from Saadi. You are from Iran and let me tell you something interesting. I am also the founder of a literary association. Our association has published 6 books, of which three are Persian books that have been translated and written in Hindi. There is a book by the great poet Mohammad Saeed Sarmad Kashani:

Stay in the Hadith of the Kaaba and don't be late

Don't walk in the alley of Doubt and Gomarhan

Learn the way of knowledge from Satan

Worship him and obey him is impossible

Another book is Akhlaq Mohseni. This book is wonderful. It is written for all nations. You change 10 words and it becomes a Hindu religious book, you change 10 words and it becomes the Bible. I have brought this story in many lectures. One day, I was speaking at the Indian Institute of Management and Technology about the importance and priority of ethics in business, and I told this anecdote of Mohseni's ethics:

Once upon a time, the king had a very wise and faithful minister. The king called the minister the first time, he was praying and he did not hear an answer from the minister, and he called again, this time the minister was saying zikr with the rosary and he did not answer. The third time the minister came to the king. The king said to the minister that I should call you three times to come?

The minister said, "I am God's servant first, and then your servant." I have to serve God first and then I am obedient to you. The king tried to educate and develop such people. He said that people who fear God do not fear anyone and they bring peace to the people and intimidate the enemies.

I know that you have faced many hardships along the way. Have you ever been discouraged? Or give up on your path and give up on it?

Never as long as I live. You see, it is very difficult, especially in the beginning when you have no savings and no money. But I always tried to be hopeful and confident. I promise you that this association will be strong for another 70 years.

What was the hardest time you had?

In the beginning, we had a lot of problems with the doctors we started with. Now we are separated and they have their own centers. Most of the weight of the work is on the technicians, and the doctors' work is supervisory. It is clear that the difficulty of work has become much less and it is not like the beginning. Maybe it was my problem or maybe it was theirs, but it would probably be better if we stayed together. The problem started here when the disagreements became very intense. It was a very big doubt.

What doubt

They tried to say that the project belongs to them. They are still trying to do the same. There were not too many good things that I want to talk about now, because these comments are from my point of view. This will not be an independent and fair comment. It was very difficult not having money, but I have a financial background as I said. I quickly advanced financing plans.

How did you get financing early on? What do you do with the extra money? You have a financial background, how do you use funds? Is the process of manufacturing and then making

sure the artificial leg fits together usually long? How do you collect one or two days of work?

In designing, one should be very careful about the consumption pattern. How often do you change your shoes? Usually 2 or 3 years. The artificial leg should be made in such a way that it will be replaced every 3 or 4 years. We based the materials used in production and the production structure on this basis.

In which sector were the latest developments in your technology?

with MIT in the field of joints. In the context of the hand, I explained to you. In research and development, social focus and social application are important for me. The meaning of social orientation is that people can use it optimally. In terms of price, you can reach a price that will be more welcome. Let's say we made a prosthetic leg that can easily go to Everest and its price is 90,000 dollars. What does it matter to the people? That's why we reach the 70 dollar foot, and in America it costs 10,000 dollars.

How do you control costs? Has your organization become too big and usually costs get out of control in these organizations?

First, all expenses must be signed by the CEO and the financial officer. As a result, we have made the output strict so as not to waste money as much as possible. Second, all our materials are domestic and purchases are made through public tenders. Third, we have tried to make the administrative and support staff costs close to nothing. The administrative cost of NGOs in Afghanistan and Western countries is about 60% of the administrative cost. This is while it is three percent for us. Here, no one even gives water to anyone else, I bring my own lunch.

How do you ensure the quality of raw materials?

We have two fixed suppliers and their packages are all tested. After the test, if any of them were unfavorable. All will be returned. It must have 8 standard raw materials. The inspectors of the association pay close attention to the purchase of raw materials and production.

You are the administrator of the forum and oversee the purchasing to accounting and detail processes. How do you see the future of this community after you?

Look, I have already passed 80 years. I think that a solid structure has been formed in the association during these years, which you will see in the next 50 years, God willing, is durable. During the last 47 years, the secret of our survival and development has been a close relationship with the community and trying to meet their needs.

It is interesting for our audience to know about your daily schedule. Tell me, how are Dr. Mehta's days?

In life, people get addicted to different substances. Some become opium addicts and some become alcohol addicts. What do they use this for? So that they can be happy in their own words. For me, work is a kind of addiction. I wake up at 7:30 every day, even on holidays, and I'm at work until 18:40 or 19:00. This feeling of success and inner satisfaction that comes helps me to be energetic or as they say happy. Although I am old, I go on many business trips. I receive 30-40 emails a day and I answer them all. During the day, I am very close to people and, as I said, I definitely see and talk to clients.

Do you also have academic activities?

Yes, I allocate 2 hours daily for university. The association has published 460 books so far. The great poet Nazir Akbar Abadi says: "A great one used to say, "Why did you come to this world? Did you come empty and without a role and left empty and without a role?" I also constantly ask myself what I came for? What should I tell my grandson? What plan and role have I played during these years? I think that the International Red Cross Institute has been alive for more than 100 years, so why not? Out of 500,000 students, I was one of the 600 who got a scholarship and went to the United States. The head of the Securities and Exchange Organization was standing here when I was there.



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