Report
Internship abroad

FH Südwestfalen
Standort Meschede

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26th August 2012
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1. Introduction

I spent 3 months in Bangalore, India for an internship at ITC Foods Division. When I told people that I would go to India everybody reacted confused or afraid, asking how I could do that. A lot of people have prejudices against the country because they know nothing about it. I got the internship through a family contact and I must say, when I heard it for the first time I felt a bit afraid as well but then I thought it is a very good chance to see something completely different to Germany. And even once if I had the choice between Great Britain and India I decided to go to India. I wanted to live in a country that was a contrast to Germany and I wanted to find out if it was true what people think or say about India like dangerous, poverty, food and so on.

Another point is that India becomes more and more important for the economy. A lot of western companies have facilities there like AEG, Goodrich Lighting Systems, Bosh and so on. India is very attractive for them, because employees are cheap and the knowledge of the educated people is high. I hope that I can use the experience and knowledge later in my job and I can stand apart from competitors with this experience.

2. India

India lies in south Asia, between Pakistan, China and Nepal with the geographic coordinates: 20° 00' N, 77° 00' E and it covers 3,287,590 sq km. It is the seventh largest country in the world with a population of 1,173,108,0181 and the capital is New Dehli with about 13 million people. Other big and famous cities are Mumbai (formerly Bombay) and Kolkata (formerly Calcutta). India is mainly an agricultural country, though it also has a large iron and steel industry and produces every type of manufactured goods. The two main religions are Hinduism (80%) and the Muslim religion (10%) but there are also small numbers of Buddhists, Christians, Sikhs, Parsees and Jains.

1 http://geography.about.com/od/indiamaps/a/indiageography.htm
Another very interesting fact is that there are numerous different languages in India. Hindi and English are India's official languages but it has 17 major languages and 844 different dialects. The result is that lots of people grow up with three languages as a co-intern told me.²

2.1. First impressions

When I arrived at the airport I was really happy that I was picked up and that it was not necessary to go by rickshaw or bus. I arrived in the middle of the night and when you hear often that it is very dangerous by night for a woman to travel alone, it is no wonder that you are a little bit afraid in the first moment. I was lucky that the people where I stayed for the first night, live in a house in a safe area and that everything was very comfortable. I was lucky again when I arrived at the house were I should stay the next three months. It was a clean house with a garden and two terraces and the woman who is the owner of the house looked at me like her own daughter. Her name is Regina and she taught me everything which was important for India like:

- don't drink water outside or only from closed bottles
- don't eat cut fruits
- boil it or peel it
- be careful with spicy food
- don't go out alone during night

These were some simple rules but if you follow them you will not get a problem with your stomach or won't get in trouble.

Furthermore, because she showed me the way to work or to other places and cooked for me, I could get a deep impression of the Indian way of live like food, behaviour, traditions and so on.

All the people I met were very friendly and helpful but I was told that I should not trust everybody. Rich and poor people live close together and there is crime in the town and you see it every day on way to work.

Another fact is that electricity went a few times a day and suddenly it is dark in the office, only PC's are still working, because most of the buildings have a regenerator but this works not for all. In the house where I stayed, the light was still burning but air conditioning did not work during this time. The Government switches off the electricity from time to time. India being a huge country with a big population, the electricity produced is insufficient to fulfil the energy needs of the country. Thus, there is “load shedding” so that the amount of energy used is managed well.

² http://www.chiddingstone.kent.sch.uk/homework/india/general.htm
2.2. Traffic

Before my first ride in India I was told “you must be an artist to drive in Bangaluru”. Most of us heard that the traffic in India is very special but after a short while I recognized what the person meant by these words. The first confusion for me was that they drive on the left side but if it is as crowded as it is in Bangalore there is no chance to get used to it. I asked and there are rules but nobody cares about them and when you see that there are cars, a lot of motorcycles, motor rickshaws, cows, ox-carts and people on the street it is a miracle that not every second an accident happens.

Another point is that it is so loud on the street because everybody honks at every situation. It does not matter if it makes sense or not.

Completely different to Germany is the safety in the traffic. In Germany everybody has to wear a seatbelt or a helmet but in India nobody cares about it. You find 5 people on one scooter or three people and one dog and nobody wears a helmet. They also carry nearly everything on a scooter, small or really big things without securing the charge. After some rides in Bangalore I can only agree with the words of Regina “If you can drive in India, you can drive everywhere”

2.3. Food

There are a lot of negative opinions about the Indian food as well. I must say that it was good. I was a bit careful with meat because you can never be sure how it was stored and sometimes you see fish and meat hanging/laying at 35 degrees outside. But at home it was no problem, the same at the food court at work. So I preferred to ask colleagues or friends if they can recommend a restaurant. Furthermore it is interesting that India not only has different languages in their own country, even the food is different if you compare North and South. In the South they eat a lot of rice and in the Northern regions routi (kind of bread) is more common as can be seen in the figure 5. Another famous dish for the south is Dosa that can be seen...
on figure 4. It is a fermented crepe or pancake made from rice batter and black lentils and it was filled with potatoes and herbs. Dosa was not my favourite dish but the other things I tried were really good. At first I needed some time to get used to the spice but now back in Germany everything taste a bit bland. But all in all the food was really good.

3. Internship

During my internship I worked three months with ITC Foods Division. I worked on a project in the purchasing department that consisted of having to find replacements for the main ingredients sugar, oil and milk.

3.1. Facts about ITC Foods Division

ITC was incorporated on August 24, 1910 under the name Imperial Tobacco Company of India Limited. As the Company's ownership progressively Indianised, the name of the company was changed from Imperial Tobacco Company of India Limited to India Tobacco Company Limited in 1970 and then to I.T.C. Limited in 1974. In recognition of the company's multi-business portfolio encompassing a wide range of businesses - Cigarettes & Tobacco, Hotels, Information Technology, Packaging, Paperboards & Specialty Papers, Agri-business, Foods, Lifestyle Retailing, Education & Stationery and Personal Care - the full stops in the Company's name were removed effective September 18, 2001. The Company now stands rechristened 'ITC Limited'.

I worked at ITC Limited Foods Division that sells the following products:

- Staples
- Biscuits
- Ready to eat
- Confectionary
- Noodles
- Chips

3.2. Project

I worked for the procurement department and I worked the whole time on one project. I wrote a report about the project of approximately 50 pages and at the end of my internship I gave a presentation for my colleagues and upper management. The topic was: Study on reduction in consumption of Sugar, Oil and Skimmed milk powder.

I had to find out: substitutes for all three ingredients, manufacturer of the substitutes, dosage, and if other food companies still use it. Furthermore I checked if the substitute is allowed regarding food law and if there are limits for the consumption or exceptions for children etc. The last thing I did was a cost analysis with different scenarios like the price with the common ingredient, full replacement and 50% replacement. Most information I needed I received from the manufacturer. So I had to work close together with them and we had email or telephone contact. I received all the technical details from them as well as the information where it is used and how. The other information I needed I searched on the internet or I discussed with my colleagues.

3.3. Summary and Results

Sugar

ITC Foods Division uses sugar for biscuits and confectionary. For both categories the annual requirement for sugar by ITC Foods Division is 100,000 MT.

Biscuits are products that consist of 28 % sugar. So sugar replacement is very interesting for this product so I concentrated on the biscuit products. Sugar is a cheap raw material and is currently priced at INR 30 per kg but on the other side it has serious disadvantages. Sugar is unhealthy and it has a lot of calories so people can put on weight or get illnesses like diabetes. But everybody likes sweets and so ITC is searching for a healthier way to produce biscuits and one of the following products could be a product that can support ITC with its plans. For these reasons I found out the substitute for sugar which can be categorized into 6 groups.

1. Sugars
2. Sugar Alcohols
3. Natural Caloric Sweeteners
4. Natural Zero Calorie Sweeteners
5. Modified Sugars
6. Artificial Sweeteners

But not all will be suitable for biscuits, because they could have perhaps negative properties or are not allowed in India etc. After weighing the pros and cons I decided that sucralose that
belongs to the group 6. Artificial sweeteners, can be a good substitute. Sucralose is the only artificial sweetener made from sugar. Since it is made from sugar it provides excellent sweetness just like sugar without any aftertaste. With sucralose it is possible to make a wide range of low calorie products by replacing sugar. It can be used almost anywhere, like in beverages, dairy, ice-cream, baked products, bakery goods, juices, Aerated drinks and in more than 3000 food items worldwide. Today with increasing trends of obesity and diabetes the new generation is demanding low calorie and sugar free foods and thus the global food industry and in India the industry demands at non-calorie sweetener.  

Sucralose is, on average, about 600 times sweeter than sugar and thus only very small amounts are required to sweeten foods and beverages, so 1kg sucralose is equal to 600 kgs. of sugar and it is allowed according food law and the cost analysis showed that ITC could be save money by using this replacement.

Oil
ITC Foods division uses oil and fats for biscuits, confectionary, snacks and noodles and their annual requirement is 70,000MT of oil and fats. For snacks and noodles ITC needs most of the oil and that's why I concentrated on these products in my project.

They use palm oil that can be divided into:

- **Refined Palm Oil (RPO)**
- **Refined Palmolein**

and fats derived from palms (Hydrogenated **Palm Kernel Oil** (HPKO)), Sunflower oil or vegetable oils like **Hydro treated Vegetable Oil** (HVO).

For frying snacks palmolein is used and the price is 70.53 Rs. Palmolein is the liquid fraction obtained by fractionation of palm oil after crystallization at controlled temperatures. The physical characteristics of palmolein differ from those of palm oil. It is fully liquid in warm climate.

On the market you find some methods to reduce oil. One method is the addition of chemicals that help in reducing oil absorption and another method is technical interventions like vacuum frying or you use special filter for oil reduction. The chemical method was HPMC (Hydroxy Propyl Methyl Cellulose) and ITC was most interested in this method. HPMC has the E-number E464 and is known under the class name gelling agent, stabilizer, coating agents and thickening agents declared. It is a semi synthetic, inert, viscoelastic polymer used as an ophthalmic lubricant, as well as an excipient and controlled-delivery component in oral medicaments, found in a variety of commercial products. The function of HPMC is that not that much oil can enter the product and so more moisture can stay inside the product.

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1 [http://www.sucralose.in/products.html](http://www.sucralose.in/products.html)
The recommended dosage (0,3%) from the manufacturer is allowed according to the food law and after the cost analysis it was shown that ITC can save lots of money by using this product.

**Skimmed milk powder**

ITC uses skimmed milk powder for their confectionary and biscuits. ITC needs approximately 100 MT skimmed milk powder for biscuits and 110 MT for confectionary per month.

It is also known as fat free dried milk and it is a milk powder produced by evaporating the water from the skimmed or 0.5 % fat milk by heat treatment. By using the spray drying method, the skimmed milk is introduced in a chamber where hot air is circulated. Soon the milk globules lose their moisture and fall off as fine powder. Then it is collected and packaged. It is a creamy fine powder to feel, white in colour. It can be mixed easily with water to reconstitute it.\(^6\) The price is very high and for this reason ITC looks for a replacement for this product and one common product is Whey powder.

Whey is the fluid that remains of the milk of any animal after cheese making. Cheese is made by clotting milk. After clotting the fluid is separated from the curd. This fluid is called whey. It contains approximately 50% of the lactose of the milk, as well as proteins, vitamins and minerals. The proteins are often purified and marketed as whey protein. Dried whey is called whey powder. Whey obtained as a by-product in the manufacture of hard, semi-hard or soft cheese and rennet casein is known as sweet whey. Manufacture of mineral-acid-precipitated casein yields acid whey (sour whey).\(^7\)

Whey is a co-product of cheese production. It is one of the components that separate from milk after curdling, when rennet or an edible acidic substance is added. Then it will be de-mineralized because whey contains a lot of minerals which are not good because the taste is not well like metal or salty. After this step you have the Whey powder.

Whey can be categorized into two main groups, namely sweet whey and sour whey - both types can be spray-dried but requires different types of spray dryers as well as different handling techniques. Sweet whey is manufactured during the making of rennet types of hard cheese like cheddar or Swiss cheese. Acid whey is obtained during the making of acid types of cheese such as cottage cheese.\(^8\)

The drying system can vary from the very simple to highly sophisticated depending of the quality of the feed and well as the required use. Anyway, sweet whey (a.k.a. cheese whey) is easier to dry than acid whey.\(^9\)

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\(^7\) [http://www.food-info.net/uk/qa/qa-wi24.htm](http://www.food-info.net/uk/qa/qa-wi24.htm)

\(^8\) [http://en.wikipedia.org/wiki/Whey](http://en.wikipedia.org/wiki/Whey)

As per industry sources the dosage recommendation for biscuits and confectionary is 50% Whey powder (sweet) and 50% Skimmed milk powder. Whey Powder brings a brown colour more quickly than skimmed milk powder and regarding the different properties of whey powder and skimmed milk powder a test will be necessary to find the right dosage, so that the properties stay the same.

Whey powder has some advantages for biscuits and confectionary. As per cost analysis the cost saving is a main advantage, but apart from that you find the following:

**Biscuits**
- Enhance crust brown
- Improve toasting qualities
- Enhance crumb structure
- Have the potential, to slow staling of bread, thus increasing shelf life

**Confectionary**
- Good rate of solubility over a wide range of pH levels
- Water binding capacity
- Gelation properties
- Ability to emulsify with fats
- Enhance whipping and forming performance and improved viscosity and texture

All these three methods could help ITC to improve the products and to save costs. At the moment they make tests with HPMC and sucralose to determine if it is compatible with their products.

### 4. Conclusion

It was a very good and interesting experience. I like the country even if I needed some time to settle down. But because of the people I met there and they helped me with some things, after a short while I felt like home.

Furthermore it was interesting to see how another company works and because the structure is very different from the Germans a lot of things take a long time. So you have to learn patience and now I know why some things do not work as fast as in Germany. I learned a lot of other ways of life and how good this can be. And I know that I will go back for travelling to learn more about India.

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10 Product information from Agri-Best Confectionary and Bakery products
5. Bibliograph


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