

The Relationship Between Science and Technology

There is a very strong relationship between science and technology since scientific discoveries lead to technological advances and technological advances lead to more scientific discoveries.

Let us take for example the camera or what is now known as imaging technology. During the time of Jose Rizal, it would take about three persons to set up the equipment to take a good picture and if you have seen the movie Goyo, you would see that there were a lot of boxes they needed to bring along to take pictures. But now, your cellphone camera could take pictures with better resolution than all the equipment they had then. What makes it so convenient is that the camera could fit inside your pocket. Clearly, so much technological advances have been added to the camera.

With more scientific discoveries that led to the capability to produce tiny cameras with greater resolution and magnification capabilities, they are now able to insert tiny cameras inside the body of a person. Let us take a medical procedure, endoscopy, as an example, where an endoscope is used. An endoscope is a flexible tube with a light and camera attached to it that enables a doctor to view pictures of a patient's digestive tract on a color TV monitor (WebMD).

The endoscope is a result of a combination of scientific discoveries about light, materials, nanotechnology and many other fields. With the endoscope, doctors are able to see the digestive tract of a person. They can see if there are abnormal growths or they may even find new parts of the digestive tract that were never seen before. Hence, the endoscope as an instrument could lead to even more scientific discoveries about the digestive tract.

Likewise, remotely controlled cameras are also used to explore the deepest part of the ocean. Such remote cameras are deployed because it may be too dangerous for human divers to go to such depths and explore the bottom of the ocean by themselves. With such remotely-controlled cameras, marine scientists may even get to discover new lifeforms at the bottom of the ocean that were never seen before. This is how a technological product could add more scientific knowledge and discoveries to mankind. But it should be remembered too that these modern technologies are also a result of a combination of all kinds of previous scientific discoveries.

The table of periodic elements that you had in high school is different from what I had as a student when I was in high school. The reason is that years after I graduated from high school, chemists or scientists came to discover more and more elements which were subsequently added to the periodic table as we have it today.

Plastic is a product of technology which is now being phased out because it is harmful to the environment, being non-biodegradable. What they are now trying to promote for use is biodegradable plastic or not use plastic at all. In fact, some cities are now requiring department stores to charge an extra amount if a customer chooses to use plastic as the container of the goods that were purchased.

In the field of business, technology has also changed the way people conduct business. We now have electronic commerce or e-commerce that encompasses a wide range of conducting business. We have e-banking, e-“burol”, e-learning, e-shopping and so on. The “e” pertains to the electronic manner by which the business transaction is conducted in the sense that the traditional system has been replaced by information and computer technologies. If you have bought merchandise from Lazada, Shopee or Alibaba, then you have already experienced electronic commerce.

To understand this better, let us first try to understand the traditional business model.

Let us say, I am a businessman engaged in the sale of clothing and accessories. In order to have merchandise for sale, I am going to Manila to buy my supplies from manufacturers there. I have to spend a day or two there buying and haggling with suppliers. When I have bought my supplies, I am going to hire a truck to bring my merchandise to Tuguegarao. If I want to save a little, I might just ride a bus with all my supplies. When I reach Tuguegarao, I am going to put up my products in a stall that I rent on a monthly basis at the Mall of the Valley, for example. I am going to stand in front of my stall there urging people to go in and take a look at my products from 8 am to 6 pm. If that is too taxing for me, I am going to hire another person who will do the selling for me but I have to pay the person on a monthly basis as well. When the weather gets bad, I might even close my store for the day as there would be very few people who would come by that day. If I am sick or if my salesperson gets sick, we close the store.

That is the traditional business model.

Lazada, Shopee and other individuals engaged in drop-shipping are different. Their business models have changed the way business is done through computer technologies. All they need is a website from which shoppers could select the merchandise they wish to buy from manufacturers and whole-sale companies that these entities have previously contacted. When an online shopper clicks, for example, a Bench T-shirt, the color, the size and the design are selected. When he finalizes the order, the order gets received by the warehouse of Bench. Bench personnel packs the t-shirt and when they are done, their official courier which may be LBC, J & T Express, Ninja Van or JRS, are electronically notified. A messenger picks up the T-shirt from the Bench warehouse and then it is

shipped to Tuguegarao. When the customer pays for the product, the amount is deposited in the bank account of Bench. When that happens, some percentage of the amount goes to the owner of the drop-shipping website, Lazada or Shopee. A certain amount also goes to the official courier of Bench.

What is the difference here? The owner of the website need not go to Manila to shop, he does not hire a trucking company or a bus company, he does not stay inside his stall from 8 am to 6 pm. He does not need an extra sales person. The store is open 24/7 regardless of the weather condition. His store could make a sale even if he is asleep.

The cost of conducting business is greatly lessened. The physical effort is likewise lessened. This explains why these online stores are able to price their merchandize a lot lower than traditional stores. In fact, at this time of the pandemic, their sales volume have even multiplied.

This illustrates how new information and computer technologies have given rise to new ways of conducting business and new business models.

Another example of how ICT technologies have changed the business landscape of international business is what is known as Business Process Outsourcing (BPO). BPO is a subset of outsourcing that involves contracting the operations and responsibilities for a particular business process to a third-party service provider (Taskus.com).

If you are not familiar with BPO, perhaps you are familiar with what they call Call Centers like Convergys Corporation, Cyber City TeleServices Ltd. In fact, many Information Technology graduates are employed by these companies.

When a multinational company outsources a business process, it hires another company, that is, a BPO company, to do the said business process. Suppose an appliance or gadget manufacturer like Apple or Philips would like to put up a Technical Help Desk for its newly-purchased products, they might opt to “outsource” this helpdesk to another country like the Philippines.

A Technical Helpdesk provides information to whatever problems that a new customer or an existing customer might encounter in using a gadget or appliance. Multinational companies often outsource a business process to save on costs. Instead of hiring an American employee who is paid in dollars by the hour, Apple might opt to hire a BPO company in the Philippines who pay workers a wage that may be 350.00-400.00 pesos per day based on existing rates allowed by the government. If, hypothetically, an American employee gets paid 3 dollars an hour, he would be paid a total of 24 dollars per day which is 1,176.00 pesos when converted to the present exchange rate of 49

pesos to a dollar. Apple would then save a lot of money when it hires a Filipino in Cebu or Makati who may get paid 500.00 pesos per day.

But how do they pull it off? By way of Information and Computer Technologies. When a client in America or Singapore calls the Technical Helpdesk, the call gets routed to the Call Center company in the Philippines. The call center agents are trained to speak like Americans such that the caller thinks that he is speaking to a fellow American. The Apple customer is happy because his problem is addressed, Apple company is happy because it is able to save money and the Filipino employee is happy because he is also paid money for his services.

This was never possible before the advent of computers and advanced communication technologies.

Finally, you must have heard of Grab Food or Grab Taxi.

If we had a service similar to Grab Taxi, like Grab Tricycle in Tuguegarao, for example, it would make life more convenient for commuters.

After a 5:30 pm class in CSU Carig, it would be extremely difficult to take a ride on jeepneys or tricycles already. So you would have to wait by the gate praying for a tricycle or a jeepney to come by.

With Grab Tricycle, if ever there could be one, you could book a tricycle ride while walking to the Campus Gate. You download the app and when you book a ride, Grab-accredited tricycles in the vicinity of CSU Carig would get notified and the drivers would post the cost they would charge for transporting you to your destination. Of course, you book the unit that charges you the least. So, by the time you get to the gate, your tricycle ride would already be there waiting for you. You are spared the agony of waiting.

Should anything happen to you as the passenger while being transported, the personal identity of the driver could be easily retrieved by the system: the time you took the ride, the name of the driver, the destination. Should you harm the driver, your identity and place where you got off would also be easily retrieved. The technology makes it safer for both rider and driver.

Also, the tricycle driver is spared from the drudgery of driving around the city looking for potential passengers. He could simply proceed to the place where a sure passenger is waiting.

This is how technology is changing our lives.

