

# KIST Newsletter

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## Togetherness & Progress

**W**e at KIST believe that improvement, achievement, and success derive their meaning from continual growth and progress. Coming together was a glorious beginning for us. Our continuing scholastic gains are because we have kept together as an educational community in our struggle to be excellent.

Each KIST Fair – admirably blending Science, IT, and Management – is a microcosm of this institution: Distinctive, Creative, and Committed. What defines learning with us is the application of theoretical knowledge leading to realizable goals – goods or services for society at large. We nurture students who can do not merely think. This annual event reflects core institutional values and goals. Prominent too are the various competitions, most including projects, organized during each Fair.

Progress is neither swift nor easy. Yet, we were lucky as we moved fast. Clear thinking and bold decisions yield results: Progress is impossible without change . . . and sacrifice. Hard work, sustained focus, and indomitable perseverance set apart the KIST community – stakeholders, managers, faculty & staff, and its students. Our passion is woven into professionalism, academics, co-curricular and extracurricular activities. To have kept together is a sign of progress but to work together is success itself.

Remarkable progress, both qualitative & quantitative, has established the College as a topmost college of Nepal. KIST functions as an exclusive bridge between Secondary and Tertiary education in the realms of Science, IT, and Management. Linked to the knowledge economy, this cherished institution has forever been widening its outreach: Social work, community projects, and inter-institutional engagement – even the encouragement of art & craft exhibits of school pupils – regale visitors to our College and its fascinating events.

Ever progressive, KIST has been moving forward, and changing rapidly – constructively. Yet, our legacy, the triadic fusion of SciTech, IT, and Management, remains a powerful admixture for individual, social, and national development.



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# Air Pollution

## *How It Affects Kathmandu Valley*

Dr Dambar Singh Air



**A**ir pollution is one of the biggest health risks, mostly in urban areas like Kathmandu.

This city resides in a bowl-shaped valley which greatly enhances the likelihood of air pollution problems. Kathmandu is located in the mid-hills of Nepal. The floor of the valley is relatively flat with an average elevation of 1350 meters but it is surrounded by hills that rise up to 1950 meters or more. The bowl-like topography restricts air movement, and the pollutants generated in the valley are often trapped within this feature. There are only a few passes where air enters or leaves the natural bowl. Further, the relatively high elevation also means that vehicles tend to produce more emissions in Kathmandu than places lower down. Cooler temperatures aggravate this problem.

In recent decades, the air pollution in Kathmandu has worsened, due to two main causes: One, the rapid rise in the number of vehicles, usually of inferior quality or badly maintained and using unsustainable technology dependent upon petrol or diesel, on the traffic-congested roads; two, the unregulated location of industries, particularly brick-manufacturing ones. These poorly-maintained vehicles along with excessive traffic congestion produce large amounts of polluting emissions. More than a hundred brick kilns and factories have been set up in the south and east of the Kathmandu environs, 5 to 10 kms outside the city centre. The coal used in these industries emits dust, smoke, and CO, which have aggravated air pollution.

Besides these, air pollution in Kathmandu has other potent reasons. Emissions from domestic cooking, heating, and burning of coal also contribute, to quite an extent, to the air pollution in Kathmandu. All

these produce high amounts of pollutant emissions in various forms, which eventually pollute the surrounding environment and unfavorably affect human health in the city. In particular, the suspended particular matter (SPM) such as dust, pollen, soot, smoke, and liquid droplets is very high in Kathmandu. Air pollution indices reveal alarming facts, and warn the wise.

What needs to be understood by the public and regulatory bodies is that fine particles (less than 1 micron in size) are the most dangerous air pollutants: Often coated with toxic substances, these particles can enter deep into the human body. The main source of such fine particles is the combustion of fossil fuels, as evinced in vehicle emissions. As the most common route for pollutants to enter the human body is by breathing, the most common effect of air pollution is damage to the respiratory system.

Exposure to air pollutants can overload or break down natural defense mechanisms in the body, causing or contributing to respiratory diseases such as lung cancer, asthma, chronic bronchitis, and emphysema. Air pollution can also have opposing impacts on other important systems such as circulatory system and central nervous system. Fine particulate matter are likely to pass into the systemic circulation and may affect blood vessels by enhancing coagulation leading to blood clots, causing inflammation and also making the fatty deposits in the arteries less stable that might lead to a number of circulatory outcomes such as hypertension, arrhythmias, myocardial infarction, atherosclerosis, ischemia, other types of heart attacks including heart failure, and strokes.

As air pollution affects everybody, and individual activities probably play a major role in opposing air pollution problems, it is, therefore, essential that the whole community, from individuals to the government, must act immediately to protect individual and public health. It is also vital for the government to empower local bodies and also encourage academic institutions with expertise in the matter to educate society at large inclusive of health professionals by designing an effective communication strategy. In Kathmandu, the government should also make their implementation-and-monitoring teams more effective to protect human health and the environment. One of the major concerns in Kathmandu is that there is no reliably clean public transportation. A way out is creating safe cycling routes as an alternative mode of clean transportation for short distances.

As fine particles are the main problem in Kathmandu's air, any future programme to control Kathmandu's air pollution levels should focus on reducing the presently unhealthy and high concentration of polluting fine particles. This means that diesel vehicles, one of the main sources of these fine particles, need to be discouraged, or even banned. Similarly, the rapid growth in the number of private vehicles using non-renewable energy needs to be severely controlled. On the other hand, Kathmandu is most suitable for the use of electric vehicles; these vehicles should be promoted, not taxed heavily, or even subsidized. Although there is plenty of evidence linking air pollution to adverse health effects, further studies on the health effects of air pollution should be done mainly to

stimulate action from both policy makers and civil society members. Simultaneously, powerful public awareness campaigns are regularly required to inform the public, and decision-makers, about the dangers of air pollution, and possible mitigation measures.

Of late, the government has introduced some policies to improve air quality and mitigate associated risks. However, the challenge lies in implementing these policies, and related decisions. There is a lack of strategic air quality monitoring policy, infrastructure and technology, and the concept of Air Quality Management System has not been addressed in national policies. It may come as no surprise to you to learn that the Nepalese government hasn't been able to keep pace with the rapid increase in demand for building construction, road infrastructure and other types of services due to the tremendous population growth. As a consequence, there has been inadequate urban planning and this has led to pollution emitting industries being located in the middle of rapidly expanding residential suburbs. The Nepalese government has to make some policies to reduce the presence of large existing industries that are located too close to Kathmandu.

These government policies should absolutely reduce the severe air pollution in Kathmandu.

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# Smashing the Glass Ceiling

## *Empowering Women in Management*

- Medan Kumar Gauli



**G**lass ceiling is a term used to describe an unseen barrier preventing you as a female from achieving your goals just because of your gender regardless of any qualifications or achievements you may have to your credit. The term covers trying to get certain work positions, wage gaps between men and women for equal work, or stereotyping females in their work roles and skills.

In effect, glass ceiling stands for an invisible upper limit blocking the entry of women into high-level positions in organizations. They can see beyond this glass ceiling because their goal is to get to the very top of the stairs but they can't get past this barrier. For it is an invisible barrier beyond which women at middle-level management, in particular, never rise. This, importantly, is why far less women occupying top-level management jobs than men.

### **The fundamental question that arises here is: *How do they do get past the barrier?***

Consequently, there have been many experiential studies examining the issue in various countries. They point, more or less, to one conclusion. Although the empirical benchmarks for more senior positions in organizations differ, we believe that the minimum proposition of the glass ceiling assumption is that the gender gap becomes wider in higher executive positions.

### **Reasons for the Dominance of the *Glass Ceiling***

Women are generally not regarded as a serious threat to men in the corporate sector in most cases. There are, however, instances of some women reaching the top in a very male-dominated world.

Indeed, the glass ceiling is a reality! This is not only because of supposedly higher standards expected but also because of women are neither made aware of nor given opportunities that would project them to the upper levels. Often, women with technical competencies in line functions such as manufacturing, R&D and operations end up working in staff functions.

### **How Women Are Blocked from Getting to the Top**

Ann M. Morrison, Author, Center for Creative Leadership, describes the problem: the *glass ceiling* is a barrier 'so subtle that it is transparent,

yet so strong that it prevents women from moving up the corporate hierarchy.' From their vantage point on the corporate ladder, women can see the high-level corporate positions but are kept from 'reaching the top' (*Breaking the Glass Ceiling*).

According to Morrison and her colleagues, the *glass ceiling* 'is not simply a barrier for an individual, based on the person's inability to handle a higher-level job. Rather, the glass ceiling applies to women as a group who are kept from advancing higher because they are women.'

In developing strategies for empowering women in any corporation or organization, we ought to keep in mind the need to: Organize and fight for change. Be willing to take risks and concentrate on how you can change the rules that block women from getting to the top.

### **Is the Term *Glass Ceiling* misleading?**

Yes, the idea that there is a continuing discrimination against women that keeps them from top roles in society is a myth out of sync with reality.

### **Gender Pay Gap: The Bitter Facts**

The truth is that female bosses earn 35% less than their male counterparts. It is believed, maybe unjustifiably, that men have better leadership qualities than women, especially in technology and finance, because of the lack of an adequate number of female role models, presently. This hampers making working environments more positive and inspiring for women; it also does not accommodate the very need for women leadership roles.

### **All It Needs Is Teamwork**

Tackling the so-called glass ceiling is something that needs teamwork, but as clichéd as it sounds, the glory in life is that we learn from our past experiences and have no regrets. But when we see that barrier in front of or above us, we really do wonder how we could break through it.

When we learn that we are all trying to break through the same barrier, we feel the urgent need to start working together. Working collaboratively makes things easier for generations to come. We can give others after us the ability to break through almost any inequitable glass ceiling they may face; this, in turn, would allow them to attain their career goals, and perhaps, even realize their dream lives.

By understanding all these facts, one thing seems clear: That we cannot truly enjoy success until we have tasted failure. We have to take calculated risks to evolve because we cannot truly explore the full extent of possibilities and yet remain stagnant.

The ultimate, maybe the only, choice here, especially for women, is to shatter the glass ceiling and, thereby, reach the top.

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# Antimicrobial Resistance

## *A Quickly Spreading Global Threat – A Challenge to Nepal*

- Rabin Paudyal

It was not a pleasant thing for Emily Morris, a UK citizen with a four-month pregnancy, who was lying on a hospital bed, when she found out that the only drug that could treat her urinary tract infection had never been tested on pregnant women and could harm her unborn child. Luckily for Emily, the medicine worked!

However, not everybody would be as lucky as Emily . . . The terror, literally, of this issue of antimicrobial resistance<sup>1</sup> (AMR) is now threatening the whole world, and, scarily, few can actually control it.

### What Actually Is Antimicrobial Resistance?

Antimicrobial resistance is the phenomenon in which pathogenic bacteria, fungi, viruses, and parasites do not respond to the antibiotics that were effective earlier. This results in the ineffective response of the medicine. The related infection would never be treated with that particular medicine and there is a major risk of the spread of such an infection to others. The microorganisms involved are resistant to a large array of antibiotics and called 'Superbugs'.

In addition, such antibiotic resistance results in patients' longer hospital stays, extra tests, expensive drugs, and costlier treatment. This might not be in the reach of ordinary individuals for whom death may become the only option available. Some experts consider antimicrobial resistance as a 'silent tsunami' that does not respect national borders: You always live under the shadow of this serious threat – antimicrobial resistance.

### Who Is Most at Risk?

The most-at-risk populations (MARPs) of antimicrobial resistance are those who are the most vulnerable such as:

- Patients undergoing cancer therapy
- Patients undergoing complex surgery
- Patients of end-stage renal disease (ESRD) undergoing dialysis
- Patients with organ and bone marrow transplants
- Pregnant mothers even if healthy otherwise

### How Do Microorganisms Become Resistant to Antibiotics?

The major reason behind the development of antimicrobial resistance is the misuse, or overuse, of antibiotics.

In many developing countries, antibiotics are available over the counter without any prescriptions. People tend to treat themselves without physicians' advice. Furthermore, animals raised for meat are provided with higher doses of antibiotics as growth promoters without proper guidance, and prescriptions, from veterinarians. Similarly, poor sanitary conditions alongside inappropriate handling of food items containing antibiotics have fostered antimicrobial resistance. For microorganisms, it is a simple dictum, 'Evolve and improvise'; they just adapt themselves to the substances they live with – the antimicrobials.

### The Current Global Scenario of Antimicrobial Resistance

Antimicrobial resistance is present in every country of the world. Prominent instances require mentioning:

Significantly, *Escherichia coli* which is a normal flora of our gastrointestinal tract has converted itself to an extended-spectrum beta-lactamase (ESBL) producer. This means that a urinary tract infection caused by such *E.coli* cannot be treated by penicillin now. Resistance to colistin, a last-resort drug, an antibiotic of last resort, has also been observed.

Then, multidrug-resistant *Mycobacterium tuberculosis* is becoming a leading killer disease in the world. Multidrug-resistant Tuberculosis (MDR-TB) requires treatment courses that are much longer and less effective than those for non-resistant tuberculosis. In fact, Extensively Drug-Resistant Tuberculosis (XDR-TB) in which the *Mycobacterium tuberculosis* bacteria is resistant to 4 core anti-TB drugs has been identified in 105 countries. It is very hard to treat it, and the success rate of treatment is also extremely low.

Also, along the Cambodia-Thailand border, the malarial parasite *Plasmodium falciparum* has become resistant to almost all available antimalarial medicines making treatment more challenging if not impossible. Similarly, other countries are reporting an increase of antimicrobial resistance up to 15% in patients undergoing antiretroviral therapy (ART).

Additionally, virtually all influenza A viruses have now become resistant to M2 inhibitors (Amantadine and rimantadine).

In short, antimicrobial resistance has now become a pressing global issue.

### Antimicrobial Resistance (AMR) Status in Nepal

Much credible research conducted in Nepal suggests the rapid emergence of resistance in many pathogens such as *E.coli*, *Klebsiella pneumoniae*, *Streptococcus pneumoniae*, *Staphylococcus aureus*, and *Shigella spp.* ESBL production in the Enterobacteriaceae family is becoming a real threat when it comes to treating bloodborne infections. Neonates, children, pregnant women, the elderly, and patients undergoing complex surgery are at major risk in our country.

According to a report [2014/15] of the National Tuberculosis Centre, a total of 22 deaths among MDR-TB cases and 3 among XDR-TB cases were reported. Resistance to fluoroquinolones in Nepal showed a higher level than elsewhere. Among MDR patients, 8% of them developed XDR. Sadly, satisfactory results for treating XDR-TB have not yet been achieved as yet in Nepal. Further, increasing drug resistance in malarial parasites has been reported which is very alarming while the resistance to antiretroviral therapy too is surging.

### Why is Antimicrobial Resistance More Alarming for Nepal?

The chief reason for antimicrobial resistance being so alarming in Nepal is people appear largely, if not wholly, unaware of this phenomenon.

The Department of Drug Administration is the only authorized body responsible for regulating the use of drugs, and in this case, veterinary drugs, in the entire country. Socially, there is large-scale misuse, and even overuse, of antibiotics which are freely available currently. In truth, in Nepal like many nations, over-the-counter (OTC) drugs are sold directly to consumers who, oftener than not, lack sufficient knowledge,

and fail, or deliberately ignore, to get genuine prescriptions from healthcare professionals!

Antibiotics are used in large quantities for animals meant for human consumption; no authorized body, as such, regulates such rampant, and unchecked, use. What's more, inadequate understanding, a lack of reliable antimicrobial surveillance data, a very small number of participating laboratories, and weak national policies plus poor implementation hinder antimicrobial resistance control in Nepal.

### What is the World Doing about Antimicrobial Resistance?

The World Health Organization (WHO) has suitably warned the globe about the urgency in developing new antibiotics. It has even officially announced the names of a few organisms against which new antibiotics have to be developed immediately.

These organisms include:

Priority 1: Critical	
<i>Acinetobacter baumannii</i>	Carbapenem resistant
<i>Pseudomonas aeruginosa</i>	Carbapenem resistant
Enterobacteriaceae	Carbapenem resistant, ESBL producing

Priority 2: High	
<i>Enterococcus faecium</i>	Vancomycin resistant
<i>Staphylococcus aureus</i>	Methicillin resistant / Vancomycin resistant
<i>Helicobacter pylori</i>	Clarithromycin resistant
<i>Campylobacter</i> spp.	Fluroquinolone resistant
<i>Salmonella</i> spp.	Fluroquinolone resistant
<i>Neisseria gonorrhoeae</i>	Cephalosporin resistant / Fluroquinolone resistant

Priority 3: Medium	
<i>Streptococcus pneumoniae</i>	Penicillin non-susceptible
<i>Haemophilus influenzae</i>	Ampicillin resistant
<i>Shigella</i> spp.	Fluroquinolone resistant

The WHO has strongly suggested the formulation of national plans, promotion of surveillance and laboratory capacity, increasing access to quality-assured medicines, reducing overuse or misuse of antimicrobial medicines, preventing infections, and raising public awareness. Correspondingly, a World Antibiotic Awareness Week has been held every November since 2015. The WHO is at present developing a Global Action Plan (2017-2021) for HIV drug resistance. The Organization is also supporting systems like the Global Antimicrobial Resistance Surveillance System (GLASS) and Interagency Coordination Group on Antimicrobial Resistance (IACG).

### What is Nepal Doing about AMR?

Even though antimicrobial resistance is a great challenge to Nepal, little work has been done to monitor this menacing global phenomenon.

An AMR surveillance programme was first started in 1999 with the financial support of USAID and the technical support of ICDDR/B (International Centre for Diarrheal Disease Research / Bangladesh). The National Public Health Laboratory (NPHL) took the initiative starting surveillance with the participation of 9 laboratories nationwide. Currently, 21 hospitals / laboratories are involved in this programme monitoring ten organisms of interest.

Notably, the national strategy on HIV Drug Resistance Monitoring and Surveillance in Nepal (2014-2020) has been implemented to monitor resistance concerning antiretroviral therapy. Alongside, the National Tuberculosis Centre has been continuously working to monitor, and treat, MDR- and XDR-Tuberculosis cases. Nonetheless, Nepal is still lagging behind in efficacious national policies for AMR, adequate monitoring and surveillance, and adequate financing for control and in the availability of reliable data on antimicrobial resistance for the purpose of reference or research.

### What Should Be Done to Control Antimicrobial Resistance Here?

All actions regarding antimicrobial resistance should aim to meet the following objectives:

- Improve awareness and understanding of antimicrobial resistance
- Promote surveillance and research
- Reduce incidence of infection through effective sanitation and hygiene
- Use quality-assured antimicrobials rationally
- Promote investment in new diagnostic tools, research, vaccines, and the development of new antibiotics for resistant organisms

### What If We Ignore Antimicrobial Resistance?

What would happen – to stretch one's imagination – if we were to ignore somebody trying to kill us? D.E.A.T.H.

If we ignore waking up to the scary global alarm of antimicrobial resistance, we may soon be forced to plunge into a 'post-antibiotic era' where a tiny scratch on our skin could, more likely than not, kill us sooner or later . . .

### An Unassailable Conclusion

Undoubtedly, antimicrobial resistance is a global threat howsoever hidden from or ignored by us it may be.

Evidently, it is much more of a challenge to developing, and poor, countries like Nepal. Problems fester: We lack adequate surveillance and monitoring of AMR, skilled manpower to track infections, and public consensus about this prevailing but mainly unattended condition. Solutions, nevertheless, exist: The rational use of antibiotics must be emphasized and the implementation, of new strategies and plans, is needed to overcome this global terror haunting our land.

WHO defines Antimicrobial resistance (AMR) as the ability of a microorganism (like bacteria, viruses, and some parasites) to stop an antimicrobial (such as antibiotics, antivirals and antimalarials) from working against it. As a result, standard treatments become ineffective, infections persist and may spread to others.

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# Homestay

## *Its Growing Demand*

- Suvash Khanal



**T**ourism is a really important industry in Nepal. But what has really become important for the country, its economy, and the large rural populace is the emerging micro-enterprise model in tourism: Homestay! This has become a wonderfully successful business model particularly in the rural, and, to an extent, urban, semi-urban, or suburban, areas of the country.

Homestay means living in a personalized home especially made for the owner's own purpose but some select space is offered to paying guests who wish to be in a home, different and away from their own. Guests eat what is normally cooked in that home, enjoy themselves with the host family, observe local rituals, and explore another culture with its music, dance, and cuisine.

This small, home-based business of homestay often has great potential in the form of helping local residents to earn adequate, additional income without having to leave their homes.

### **Conventional Models of Homestay**

The model of the homestay operation was conceptualized by the Government of Nepal (GoN) through the Homestay Working Procedures, 2067 BS. This model is community-based comprising the whole community or some houses, at least 5 houses, in one neighbourhood; it offers homestay services to guests mostly in the rural parts of Nepal.

Homestay has become a wonderfully enterprising small-scale model in the rural areas of Nepal. It has effects: One, it contributes to the income generation of indigenous, and usually poor, people against minimum investment; two, it helps in the conservation of local cultural and natural diversity.

The fundamental requirements of this enterprising model are:

- Suitability of the locality for tourism promotion, i.e. the hosting

community must be rich in natural heritage such as rivers, springs, lakes, ponds, waterfalls, forests, hills, mountains, or wildlife diversity, and must be rich in cultural heritage such as temples, gumbas (monasteries), festivals, dances, food, or distinct lifestyles.

- Upgrading of the hosting community regarding the basic physical facilities to run a homestay at a standard level so that guests can stay comfortably.
- Upgrading the managerial and technical skills of people involved in hosting guests or running any homestay such as record-keeping, communication, programme management, housekeeping, cooking, and hospitality.

These guidelines are based on the assumption that they would reduce adverse impact on environmental components such as forests, biodiversity, water, air, soil, and land, nurture local cultures, food, and materials, and contribute to the socio-economic well-being of such homestay-operating communities.

Guests, the tourists, participate in community or family activities such as cooking local food, wearing local dresses, engaging in local cultural rituals such as dancing, celebrating, or feasting. Further, they visit nearby parks, hike to the tops of adjacent hills, participate in jungle safaris, do boating, fish in rivers, streams, or ponds, and visit local museum or markets.

The most popular homestays in Nepal are Ghale Gaun Homestay, Lumjung, Sirubari Homestay, Syanja, and Tharu Gaun Homestay of Nawalparasi, and Bardiya.

### **Modern Homestay**

Atithi Devo Bhava – The Guest is God – is a popular saying, and the Nepalese consider it a huge honour to entertain guests in their homes.

Today, in Nepal, based upon this religico-cultural backdrop, an appealing and wide-ranging variety of modern homestay businesses have mushroomed. They target international, regional, and local guests. In cities such as Kathmandu, Pokhara, or Chitwan, the majority of homestay businesses provide high quality hospitality services similar to the bed-and-breakfast accommodation provided by standard tourist hotels. Guests are invited to a private home, share the family's meals, and also their welcoming smiles!

Living with local people is the best way to learn about their culture and beliefs. Mostly, guests stay in such homestays before or after travel and trekking holidays, and enjoy festivals, rituals, or prayers. Some visitors even volunteer in some cases. Local people even provide paying guest services for foreigners who stay in Nepal for specific projects over longer periods. These homestays also organize yoga, meditation, volunteering, day hiking, or sightseeing. These are also ideal for the families who have kids. A few homestays are quiet retreats for those who want solitude in a natural setting.

Homestays may have tie-ups with leading adventure travel companies. Depending upon the location, they can arrange trekking, cultural tours, day hiking, day biking trips, rafting, day sightseeing, volunteering, airport transfers, or flight tickets.

Some of the popular homestays in cities are:

- Golden Haven Homestay, Dhungedhara, Kathmandu
- Homestay, Ichangunarayan, Kathmandu
- Bluemoon Homestay, Maipi, Kathmandu
- Nature Home Retreat, Pokhara

If you are looking for a great experience of staying at a comfortable Nepalese home with a family who cook fine Nepalese food, these are the ideal choices for you.

## Global Models

The global hospitality industry has been revolutionized after the innovation of the sharing-based, private apartment business model promoted by the international renowned web agencies such as Airbnb or Booking.com. They place huge emphasis on sharing both private apartments and locally available travel services with a wide range of international guests.

Airbnb founded in August 2008 in the USA is a trusted community marketplace for people to list, discover, and book unique accommodation around the world – online or from a mobile phone or tablet. It is the easiest way for people offering homestays to monetize their extra space and showcase it to an audience of millions. Airbnb is an online marketplace and hospitality service, enabling people to lease or rent short-term lodging including vacation rentals, apartment rentals, homestays, hostel beds, or hotel rooms. The company does not own any lodging; it is merely a broker and receives a percentage of the service fees (commissions) from both guests and hosts in conjunction with every booking. It has over 3,000,000 lodging listings in 65,000 cities and 191 countries; the cost of lodging is set by the host.

Similarly, Booking.com is a travel fare aggregator website and travel net search for lodging reservations. Of Dutch origin, the website lists more than 1,534,024 properties in 226 countries and books 1,200,000 rooms per day. Other web agencies such as homeaway.com or ApartmentGuide.com also provide such platforms for hosts and clients at an international level. Today, many homestays are listed in such websites offering varieties of travel services from Nepal too, and actually providing services to a very large number of international guests.

## Starting a Homestay

The GoN formulated Procedures could be a formal guideline for starting a homestay. All homestays must be legally registered at the Department of Tourism. If you have some free space in your house, it does not need much money to start a homestay. You can start it from a one- or two-bed system which usually costs less than NRs 50,000/-. Moreover, you should improve the sanitation level of the house and its bathroom; you should learn hospitality skills which are easily available on YouTube.

Yet what is most essential is that you should make a Facebook page or that of any other popular social media site and upload videos or pictures of your facilities, services, and activities for prospective clients. The client review in your page plays an important role in sustaining your business. Moreover, you can place your offerings with international web agencies such as Airbnb or Booking.com. These are commonly used ways of selling travel products worldwide nowadays. Business is done with passion and determination; do not forget to make unique offerings and client loyalty will repay you in the long run. Moreover, homestay marketing can be done through selling accommodation to local and international travel agents.

Collaboration and networking are always useful ways of achieving success. In this case, National Homestay Association or Taragaun Development Committee are national-level associations providing skill-training and entrepreneurial support for deserving homestay startups. The Nepal Academy of Tourism and Hotel Management (NATHM) provides short-term cooking courses. Such skills play a vital role for operating a gainful homestay in a competitive market.

Significantly, homestay tourism is connected with organic farming, local and traditional skills, usage of local labour, earning foreign currency, mobilization of funds, souvenirs, and exposure to insiders and outsiders, and ultimately economic prosperity. Therefore, it should be helped to flourish at local levels in Nepal so that self-employment can be generated by showcasing our rich natural and cultural heritage.

In summary, homestay promotion can certainly amplify the micro-entrepreneurship of very many rural Nepalese through a most profitable engagement with the already thriving tourism sector.

Tourism, as far as economics is concerned, is a really important industry in Nepal for its foreign currency earnings, internal revenue generation, and almost round-the-year employment opportunities. Notably, it contributes to at least 3.0% of our GDP.

The tourism industry conserves nature and promotes the arts and culture of the country. Nepal is one of the most popular tourist destinations in the world because of many reasons including its unique geography, biodiversity, and multi-culturism. About half a million tourists from around the world visit us every year. Annual tourist arrivals are steadily increasing.

Consequently, a number of promotional schemes and activities are being implemented in the country. Homestay Enterprising Model in tourism is one such innovative scheme being jointly promoted by the government and the private sector. Initially, the main objective of homestay promotion was to amplify the micro-entrepreneurship of rural people through a profitable engagement with the already thriving tourism sector.

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# App Development

## *Native or Hybrid?*

- Sijan Gurung



**A**n introduction to native and hybrid app-(lication) development along with the most common programming languages used in both technologies for smartphones

Since smartphones have become an integral part of our ever-growing technology and mobile app consumption has surpassed that of desktop apps, the need for mobile apps is growing tremendously. So every business, or industry, is trying to provide their services via mobile apps.

In the current scenario there are two platforms which dominate the mobile phone industry – iOS and Android.

### **iOS**

iOS was developed and is supported by Apple only on iPhones or iPads. In short, Apple controls both the hardware and the software related to this platform.

### **Android**

Android was developed and is supported by Google, and is often considered a more open platform than iOS. In fact, Android is an open source operating system, which means that anyone can use his or her code to run a device.

### **A Comparison**

There are primarily two technologies for app development on these platforms, namely Hybrid and Native.

Also, Google sells a few devices of its own; Android normally runs on devices built by other companies like Samsung, Huawei, LG, or HTC.

### **Native Apps**

A native app is an application developed specifically for a mobile operating system or a platform specific app. The languages popularly used for iOS are Objective-C or Swift and for Android, Java or Kotlin.

Since native apps are developed for specific platforms, they can take full advantage of their platform features by interacting directly. Platform features like the camera, accelerometer, or contacts can be easily accessed and used by native apps.

Some might argue that native apps have the best performance, highest security, and best user experience. But it totally depends upon the nature of the app, time frame given for the development, project's outcome, or expected user-experience.

According to an Apple developer's page, 'Objective-C is the primary programming language you use when writing software for OS X and iOS. It's a superset of the C programming language and provides object-oriented capabilities and a dynamic runtime. Objective-C inherits the syntax, primitive types, and flow control statements of C and adds syntax for defining classes and methods. It also adds language-level support for object graph management and object literals while providing dynamic typing and binding, deferring many responsibilities until runtime.'

However, Objective-C is being less and less used, because of the new language that was introduced for the iOS app development, i.e. Swift which tends to be easy to read and is concise as well as faster while supporting dynamic libraries [3]. This makes Swift a better option than Objective-C for iOS app development.

## Swift

Swift is a new programming language for iOS, macOS, watchOS, and tvOS app development. Still, many parts of Swift ought to be familiar because of the experience of developing in C and Objective-C.

Swift provides its own versions of all fundamental C and Objective-C types, including Int for integers, Double and Float for floating-point values, Bool for Boolean values, and String for textual data. Swift also provides powerful versions of the three primary collection types, Array, Set, and Dictionary.

Like C, Swift uses variables to store and refer to values by an identifying name. Swift also extensively uses variables known as constants, which are much more powerful than constants in C. Constants are used throughout Swift to make codes safer and clearer in intent when you work with values that do not need to change.

In addition to familiar types, Swift introduces advanced types not found in Objective-C, such as tuples which enable you to create and pass around groupings of values. You can use a tuple to return multiple values from a function as a single compound value.

Swift also introduces optional types, which handle the absence of a value. Optionals say either 'there is a value, and it equals x' or 'there isn't a value at all'. Using optionals is similar to using nil with pointers in Objective-C, but they work for any type, not just classes. Not only are optionals safer and more expressive than nil pointers in Objective-C, but are also at the heart of many of Swift's most powerful features.

Swift is a type-safe language, which means the language helps you to be clear about the types of values your code can work with. If part of your code requires a String, type safety prevents you from passing it an Int by mistake. Likewise, type safety prevents you from accidentally passing an optional String to a piece of code that requires a non-optional String. Importantly, type safety helps you catch and fix errors as early as possible in the development process.

## Java

Android apps are developed using the Java language. For a long period, Java was really your only option for native apps. Java developed by Sun Microsystems (now owned by Oracle) is a very popular programming language. Developed long after C and C++, Java incorporates many of the powerful features of those potent languages while it addresses some of their drawbacks. Still, like all programming languages which are only as powerful as their libraries that help developers build apps, Java has its own limitations.

Yet, some of Java's significant core features are:

1. Easy to learn and understand
2. Designed to be platform-independent and secure, using virtual machines
3. Object-oriented

Android relies heavily on these Java fundamentals. The Android SDK includes many standard Java libraries (data structure libraries, math libraries, graphics libraries, and networking libraries and almost everything else you could want!) as well as special Android libraries that will help you develop awesome Android apps.

## Kotlin

Kotlin is now an official language on Android. It's expressive, concise, and powerful. Best of all, it's interoperable with our existing Android languages and runtime.

Kotlin aims to fill that gap of a missing modern language for the Android platform [4]. There are a few core tenets of Kotlin:

1. Concise – Reduces the amount of boilerplate code you need to write
2. Expressive – Makes your code more readable and understandable
3. Safe – Avoids entire classes of errors such as null pointer exceptions
4. Versatile – Builds server-side applications, Android apps, or frontend code running in the browser
5. Interoperable to leverage existing frameworks and libraries of the JVM with 100 percent Java interoperability

## Hybrid Apps

Hybrid apps are basically running web packages in a native wrapper. They look and feel like a native app, but are ultimately outside the basic frame of the app. Typically restricted to the controls or navigational elements, they are fuelled by a company's website. Basically, a hybrid app is a web app built using HTML5 and JavaScript, wrapped in a native container which loads most of the information on the page as the user navigates through the app. (Native apps instead download most of the content when the user first installs the app.) Usual suspects here are Facebook, Twitter, Instagram, and even your mobile banking app.

### Advantages of using hybrid apps:

1. One codebase to manage
2. Saves time and resources
3. Easier to scale

### Disadvantages of hybrid apps:

1. Performance
2. Getting UX right on each platform is tough
3. Device components are not directly accessible

## Xamarin

Made by Microsoft, Xamarin is a platform that lets developers build one app that works on multiple platforms in C#. They also provide free tools to build, test, distribute, and learn from your apps.

Xamarin seems like a more complete development environment than PhoneGap and Titanium, even offering a test environment where you can test your app on thousands of virtual devices before launching the app. (This is crucial for cross-platform apps.)

Xamarin also offers a few prebuilt apps you can use to get a quick start. Some companies that have built apps with Xamarin include Slack, Pinterest, and Honeywell.

## React Native

Not wanting to be left out, Facebook recently open-sourced a project of theirs called React Native which lets you build real, native iOS and Android apps with one codebase.

It's not a 'mobile web app', an 'HTML5 app', or a 'hybrid app'. You build a real mobile app that's indistinguishable from an app built using Objective-C or Java.

You just use JavaScript and React to put things together. There are some pretty heavy hitters using React Native, including Facebook, Walmart, Tesla, and Airbnb!



Image extract from Media Labs [2]

## Choice

There isn't any sure shot answer as to which technology is better. There are some factors to be considered before choosing the right platform for your mobile app development:

1. Cost of the project
2. Time frame of the whole project
3. Experience and comfort ability of the developers
4. Development team and nature of the product
5. Tools used and compatibility of the project

## A Conclusion

Both apps – native and hybrid – are ways to satisfy different needs or preferences whether of users or developers. None of them is a perfect solution.

It is completely up to the user – you – to decide which would suit you: Each has its own weaknesses and strengths.

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# Creatively Yours



Welcome to a prestigious Art & Craft Competition at KIST College, Kathmandu, on Saturday, January 20, 2018!

- Our purpose is to encourage very young artists to find a platform downtown to put on show their talent through diverse artistic exhibits.
- Pupils from an array of schools – private, governmental, or charitable – across the Valley will take part.

Fascinatingly engaging, this inter-institutional event is likely to be a glorious experience for all of us!

# KIST FAIR 2014

*Fostering Talent*

## SCIENCE • IT • MANAGEMENT

6 Magh 2074, Kathmandu

## We Remember

The last KIST Fair – 25 Mangsir 2073 – brings back fond memories!

As usual, it was packed with keen visitors who were ever so admiring. The highlights of the Fair included the Inter-College SciTech Competition which drew brilliant student participants representing Kathmandu's paramount colleges. Appreciably, our exclusive Imagineering Competition appealed to the most creative of collegiate students.

We expect similar zeal for this Fair – decidedly informative and useful to the young. Widening our educative outreach, unsurprisingly there are art & craft exhibits by talented Grade 8, 9 & 10 pupils from a cross-section of schools in the Valley to encourage artistic competence and enrich blossoming lives.



**Do enjoy yourselves!**

## Events

- Inter-College Science & Technology Projects Competition
- Intra-College IT Projects Competition
- Intra-College Management Projects Competition
- Intra-College Science & Technology Projects Competition
- Inter-School Art & Craft Competition
- KIST Imagineering Competition



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