

KIST Newsletter

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Moving Forward

The KIST Fair is a regular feature of our College. KIST Fair 2073 is no exception. Its purpose is to emphasize the connection between science, IT, and management. College-going students need to be aware of integrating SciTech & management.

The Fair focuses on the appreciation of the breadth and depth of scientific knowledge applicable to management practice. We envision heightened inter-institutional cooperation since Nepalese students should be conscious of the soft-power of blended learning by a creative exploration of knowledge. KIST holds that decision-making by upcoming knowledge workers should be based on sound information and the best available knowledge. As educators, we believe in creating a new knowledge-based work culture attuned to growth by the fostering of individual talent.

Institutionally transformative and scientifically innovative, the Fair nurtures collaboration between students, faculty members & college participants. Motivating, it promotes SciTech research among youngsters. Pragmatic, it expands our interdisciplinary approach towards education. Futuristic, this collegiate initiative examines the challenges of an increasingly competitive corporate world. Socially useful, and nationally relevant, this occasion spreads the basics of science, IT and management to the public including school children.

The College expects that this event shall help students choose their specialized area of focus for further studies through the right mix of theory and practice, entrepreneurial skills, and a sound work ethos. Additionally, participants are most likely to acquire lasting leadership skills of inspiring and directing others. What they learn and demonstrate here should greatly help these budding professionals to choose suitable careers, to handle fast technological change, and to assume managerial roles.

A showcase of the College, the KIST Fair is a microcosm of this enlightened yet growing institution. It opens the doors to all visitors, particularly students, to our exceptional environment at Kamalpokhari with all its fine opportunities. Today, KIST is most effective educationally at all levels – Grades XI & XII, Bachelor's, and Master's. The Management continues to build up on the 21-year long legacy of the College. Our growing popularity is evinced in the overall student intake. Our distinct pedagogy – customized & pragmatic – assists these qualitative scholars to get top results. Student engagement in college activities including guest lectures, seminars, workshops, and training is impressive while parental appreciation is apparent.

The KIST Fair reflects all these features while furthering our ongoing developmental initiatives. We sincerely hope that this Fair shall be a step forwards in the right direction.

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The Internet of Things

Connecting the Physical World to the Internet

Jhanak Parajuli

The Internet, known to the general public since the mid-1990s, has become an integral part of global society and has brought about huge economic development and social changes. It has revolutionized ideas in business, education, health, industry, communication, and lifestyle. Furthermore, E-commerce, e-banking, telemedicine, online education, e-mail, video(phone) chat, live video broadcasting, digital online music, online videos or movies, and web browsing have become an everyday activity among very many people in the world. Social media like Facebook, Twitter, Snapchat, Instagram, WhatsApp, and Viber keep most of us connected almost all the time.

Wireless communication is developing very fast, with 4G reaching its peak and 5G starting soon with a very high data rate and a far better quality of service. Tremendous improvements have been made in the development of integrated circuits, sensors, actuators, and power sources. Cloud and fog computing is no longer a new technology while cyber security has made considerable progress. This rapid improvement in connectivity, wireless transmission, database management, hardware, sensor technology, power resources, and cyber security have led scientists, researchers, engineers, and industrialists to talk about "the next big thing", called the Internet of Things stylized as IoT.

What is IoT?

IoT is the concept of connecting physical things to the Internet. In fact, it is the idea of connecting possibly all things in the world and making them "smart". Hence, sometimes it is also referred to as "Internet of Everything or IoE". In IoT, "things" can refer to any goods, objects, buildings, vehicles, electric power sources, animals, people, plants, soil, accessories, machines, or clothes. In the IoT world, not only computers and mobile phones but everything around us is connected to the Internet. This includes chairs, desks, TVs, jackets, beds, kitchen accessories, home appliances, cars, buses, bikes, traffic lights, lamp posts, and all the parts of buildings to name a few things. Thus, things can even talk to people like we see in science fiction movies. Chairs talk to desks; cars talk to lamp posts; trucks talk to other trucks; goods in a super market introduce themselves to customers; machines talk to each other, or to people, and even make autonomous decisions. Driverless vehicles have already been tested for their successful use of IoT.

Certainly, the IoT era has begun! An estimated 13.4 billion devices (twice as many as the number of human beings worldwide) were connected to the Internet in 2015. The number of such devices is estimated to triple to nearly 38.5 billion by 2020 and to more than 500 billion by 2030. All these connected devices would collect huge amounts of data with the help of suitable sensors and actuators attached to them and store it in cloud servers. This "big data" would be analyzed and shared among these devices to enable them to interact and take suitable decisions.

Chairs talk to desks; cars talk to lamp posts; trucks talk to other trucks; goods in a super market introduce themselves to customers; machines talk to each other, or to people, and even make autonomous decisions.



Figure 1: Things connected to each other – The Internet of Things

Source: www.business2community.com

How does IoT work?

In order to connect physical things to the Internet, the following attributes, actions, or processes are essential:

1. Give unique identity to the things considered: This is achieved by providing a unique internet protocol (IP) address. The newer IPV6 provides 2 unique addresses which is enough to connect all the possible devices in the world.
2. Provide them the ability to communicate: Things are allowed to communicate via wireless media like Bluetooth or ZigBee, near field communication (NFC), cellular systems (3G, HSPDA, W-CDMA, or LTE), or Wi-Fi.
3. Give senses: Suitable sensors and actuators are attached to things in order to collect enough data which are analyzed using proper analytic algorithms.
4. Control them from anywhere: By connecting things to cloud servers, they can be controlled from anywhere in the world because of the development of very small embedded electric circuits.

Why must we care about IoT?

IoT has many applications – small daily activities to big industrial activities. Let us consider some examples to observe how IoT can change the world in which we live:

1. Smart homes, smart villages, and smart cities: When all home appliances are connected to the Internet, your refrigerator can send you a reminder about the finished items; you can heat the water in the shower before reaching home from office; you can vary the intensity of electric bulbs as per need. Smart villages allow villagers to perform effective e-commerce and e-banking. Children can learn from their homes using the Internet. Effective smart farming can be implemented not only for growing crops but also for harvesting, storing, and selling them to the proper retailers. Smart parking, which helps drivers to find out free space for parking or inform their garages in case there's no space left for parking, is already available in many major cities. In smart cities, the data from every individual and every region would be collected and analyzed to prepare smart infrastructure, making it easier for the municipalities to manage waste, control crime, collect taxes, implement policy decisions, and keep track of all the activities happening in different localities.
2. Intelligent Transport System (ITS): IoT helps to manage vehicles intelligently by providing all the necessary data to these vehicles in all situations and instructing their drivers to act accordingly. This avoids traffic congestion, reduces fuel consumption, prioritizes vehicle maintenance and repair, manages travel costs, checks proper payment of insurance, and reduces accidents. Clearly, this is essential in a big city like Kathmandu.



Figure 2: Smart home system

Source: www.digitaltrends.com

3. Health: By connecting IoT devices to the human body, their health condition can be monitored in almost every instance. The devices, for instance, can indicate if the sugar level in anybody's body is high, and even suggest which medicines to take or contact a doctor with the available medical information. If you are alone and suddenly suffer a heart attack, IoT devices can immediately recognize the problem, look for the nearest ambulance, and inform both the hospital and doctors as soon as possible, which will definitely vastly improve the chances of saving the life of an individual.
4. Retail: The condition of stored goods can be monitored round-the-clock. If some goods are damaged or unavailable, owners or customers are informed as soon as possible to avoid unnecessary loss or trouble.
5. Smart grids / Energy Internet: By connecting all the energy collected from different renewable sources to a central grid, it can be

distributed properly. Smart grids help to determine which consumer requires what type of energy and makes decisions which help both the consumers and distributors. Smart grids allow individuals to produce their own energy and sell it to the government or public. In the context of Nepal where there is always lack of energy this would be exceedingly beneficial.

6. Industry: IoT is creating great interest in industrialization as it is supposed to bring huge economic gain. Industrial IoT (IIoT) is also considered as the fourth industrial revolution (Industry 4.0). Connected things make machinery artificially intelligent to take proper decisions and perform their tasks energetically and accurately. Big companies like Apple and Google are spending a lot of money on perfecting driverless cars and smart vehicles.

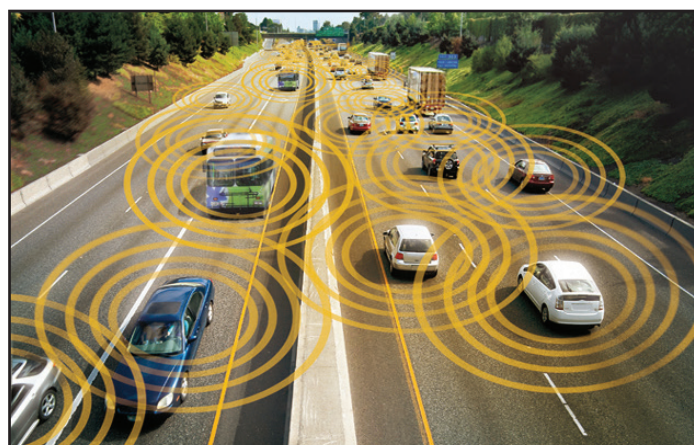


Figure 3: Intelligent transport system

Source: www.extremetech.com

One of the interesting features that IoT introduces is the idea of the "reality search engine", where one can search physical things via the Internet. One can ask the search engine questions like "Where are my bike keys?" if you lose them or "Where are my children?" if they don't return home in time. IoT has numerous other useful applications. It is estimated that internet traffic generated by non-PC devices will rise from 40% in 2014 to 67% by 2019. Obviously, IoT will dominate all future interconnectivity between the physical world and virtual reality.

IoT, in fact, is the convergence of multiple topics such as wireless communications, real-time analytics, statistics, machine learning, sensor networks, embedded systems, control systems, and automation. It plainly possesses great research opportunities. Though the idea of connectivity sounds rather simple, its implementation and the security challenges posed by IoT are enormous. Privacy, security, data integrity, and data management are matters of deep concern. However, the world has already stepped into the IoT era and is trying to address all the challenges that crop up with the collective efforts of researchers, scientists, engineers, and industrialists.

What we know about IoT presently is just the tip of the iceberg: Massive exploration leading to fantastic discoveries, and related SciTech inventions, awaits a digitalized & internet-savvy mankind . . .

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Forensic Entomology

Insects Are Evidence

Indra Prasad Subedi

Amazing though it may sound, Forensic Entomology has gained huge importance because insects yield incontrovertible evidence. It is now almost a conclusive fact that omnipresent insects are perhaps the very embodiment of proof. Unsurprisingly, entomons are a potent tool in criminal jurisprudence particularly when it comes to unnatural deaths or fatal accidents. So readily available, insects are the most abundant of all living creatures making them vitally important in criminal investigation. Therefore, the use of insects as substantiating data in forensic investigations is becoming increasingly common.

Yet, what exactly is Forensic Entomology? Forensic Entomology deals with the application and study of insects and other arthropods for medico-legal purposes. It uses evidence based on arthropods, including insects for criminal or legal cases. Its main use is in investigations concerning death, but this science is also used for the detection of drugs or poisons, ascertaining where an incident happened, and finding out details about inflicted wounds.



Chrysomya megacephala - a common blowfly
Credit: Image courtesy of Universiti Teknologi MARA (UiTM)

Nowadays, the principal purpose of forensic entomology is to find out the time of death. Insect evidence may also show that the dead body has been moved to a second site after death, or that the body has been disturbed at some time, either by animals, or by the killer returning to the scene of the crime. Insects or arthropods are found in a decomposing vertebrate corpse or carrion. These insect colonizers can be used to estimate the time of death – the time interval between actual death and corpse discovery, technically called the postmortem index or PMI. Evidence can also be garnered about the movement of the corpse, manner or cause of death, and the connection of suspects with the incident or the scene of death. Although, there are historical accounts about using insects in criminal investigation as far back as the 13th century in China, the first recorded application of forensic entomology in a modern case was in the 18th century in France. Forensic entomology has now become rather common in police investigations worldwide.

The central premise of the science is that from the moment of death, a body starts to decompose and the putrefying flesh gives off specific odours. These smells of carrion attract blowflies, such as common bluebottles and greenbottles. The flies lay eggs which hatch into maggots which then start feeding on the remains. The decomposition of a dead body starts with the action of microorganisms such as fungi and bacteria, followed by the action of a series of insects. The decomposition rate depends on weather conditions, if the dead body has been buried or exposed to the elements, if there is the presence of insects, or if it has features that prevent its fast decomposition such as body size and weight or clothing.

The dead body goes through constant changes letting investigators to estimate how long that person has been dead. According to studies done by K. Tullies and M. L. Goff on exposed carrion in a tropical rainforest, it was found that the decomposition process was best divided into five stages on the basis of the physical appearance of carcasses, internal temperatures, and characteristic insect populations: Fresh (Days 1-2), Bloating (Days 2-7), Decay (Days 5-13), Post-Decay (Days 10-23), and Remains (Days 18-90+). Every stage attracts different kinds of organisms that feed off the body and recycle matter. These stages may take days or years. It is by collecting, and studying, the insects that feed on a body that a forensic entomologist can estimate the time elapsed since the person died.



larva and pupa of *Chrysomya megacephala*

Credit: *Chrysomya megacephala*; CC-BY 4.0

Insects found on decomposing carrion fall into four categories:

- Necrophagous species feeding on the carrion
- Predators and parasites feeding on the necrophagous species

- Omnivorous species feeding on the carrion and other arthropods like ants, wasps, or beetles
- Other species like springtails and spiders which use the corpse as an extension of their environment.

The first two categories which mainly include Diptera (flies) and Coleoptera (beetles) have importance. Flies speedily discover corpora, by and large ahead of beetles, since they have great powers of dispersal. However, though flies can feed on fluid exuding from a fresh corpse, acidic tissues cannot be digested by them. Blowflies are insects most commonly linked to cadavers. However many other species of flies, beetles and arthropods may also occur at a death scene. Blowflies arrive earlier in the decomposition process so they provide the most accurate estimation of time since death.

Beetles appear later. As a corpus dries, it becomes less suitable for blowflies, flesh flies, or house flies which prefer a semi-liquid environment. Different fly families, like cheese flies and coffin flies, come as the corpse dries. Eventually, the cadaver becomes too dry for the mouth hooks of maggots to operate effectively. It is then that hide beetles, ham beetles, and carcass beetles, with their strong chewing mouthparts, devour the dry flesh, skin, and ligaments. Common among them are the Silphidae (Carrion beetles), Dermestidae (Dermestid beetles), and Staphylinidae (Rove beetles). Other insects that may be found comprise Piophilidae (Skipper flies), Sphaeroceridae (Dung flies), and Phoridae (Humpback flies). Finally, moth larvae and mites consume the hair still left in the carcass, leaving only the bones of the skeleton to disintegrate slowly.



Immature Blowflies survive burial

Credit: Wes Watson, North Carolina State University

Most cases that involve a forensic entomologist are 72 hours or more old, as till then, other forensic methods are more effective than insect evidence. However, after three days, insect evidence is often the most accurate, and sometimes, the only method, of determining elapsed time since death. There are two main ways of using insects to determine elapsed time since death: Using successional waves of insects or using maggot age and development. The method used is determined by the circumstances of each case. In general, the first method is used when the elapsed time is a month up to a year or more, and the second

method is used when death occurs less than a month prior to discovery. Each developmental stage takes a known amount of time, depending on the temperature and availability of food. Consequently, a forensic entomologist can estimate the day, or the range of days, during which insects lay eggs and provide an estimate of the time of death. This method applies until the first adults emerge. After this, it is impossible to determine which generation is present and the approximate time of death since the time of death must be estimated from insect succession.

Forensic investigations rely on carefully recorded and collected evidence at a crime scene. Forensic entomologists first consider the surroundings. If the scene is outdoors, they note the landscape, plants, soil types, and weather conditions. Temperature records are vital. A soil sample is often taken, since larvae may wander away from the body to pupate. If the scene is indoors, investigators look for access points where insects could get in. Once at the body, the forensic entomologist takes several samples for better results from different areas of the body. If there are maggots, some are collected, and preserved. Insect eggs or pupal casings could be collected if need be. Adult flies with crumpled wings should be collected.

The careful and accurate collection of insect evidence at the scene is essential. Ideally, an entomologist collects a range of insect stages from different areas of the body and the surroundings (for example, clothing or soil). Different species, or insects collected from different areas, are kept separately. Investigators take into account the habitat, site, vegetation, soil type, weather including temperature and humidity, elevation, map coordinates, or any unusual details at the scene of death.

It is helpful too for forensic entomologists to know the presence, extent, and type of clothing on the remains or relics, especially if

- The body is covered or buried
- There is an obvious cause of death
- There are wounds on the body
- There are body fluids (like blood)
- Drugs are involved
- The position of the body
- The state of decomposition
- The body has been moved or disturbed

They must keep in mind if other carrion is also found in the area that might have attracted, or continues to attract, insects that may not relate to the corpse being studied.

When at the laboratory, entomologists examine immature specimens. These insects are repeatedly checked; when they pupate, they are removed. Dates of pupation and emergence are precisely noted. Adults are preserved for future reference. Pupation and emergence times yield the age of these insects helping in reconstructing the timeline of death.

Insects can provide other imperative information about crimes, criminals, or victims. A careful examination can reveal species variation particularly when the corpse is transported after death. The presence of insects on the body that are not found in the area suggests the body was moved, and may indicate the type of area where the murder took place. Findings could suggest the killer returned to the scene of the homicide if the insect cycle. Or, if maggot activity occurs away from a

natural opening, this may indicate a wound, and if maggots feed on a body with drugs in its system, those chemicals accumulate and may be detected. Or even, in case an insect is found at a specific site, it may place a suspect at the scene of that crime. Further, insects found on living individuals – often young children or the elderly – may indicate neglect or abuse as a background to the crimes committed.

Although forensic entomology can be very effective in determining elapsed time since death, it has its limitations:

- Time-of-death estimates depend on accurate temperature information, but data may be unreliable.
- Forensic entomology relies on insect abundance so its use is limited in winter because of fewer insects.
- Treatment – freezing, burial, or wrapping – excluding insects can affect estimates.
- Chemicals can slow or accelerate growth, so insect evidence may be affected by the presence of drugs within a corpse.
- Forensic entomology cannot produce immediate results as the rearing of insects takes time.

Medico-legal forensic entomology deals with insect egg types, their location on the dead body, and the order they appear. Since many insects exhibit a degree of endemism (presence at certain places only), or have a well-defined phenology (activeness during a certain season or at a particular time of day), their presence in association with other evidence can demonstrate potential links to times and locations where other events may have occurred. Another crucial area covered by medico-legal forensic entomology is the relatively new field of entomo-toxicology. This particular branch involves the utilization of entomological specimens found at a scene in order to test drugs that may have possibly played a role in the death of the victim.

Forensically important insects can be a powerful tool in investigations of homicide, untimely death, and other violent crimes. Accurate forensic determinations are possible, however, only when representative specimens are recognized, properly collected, preserved, and forwarded in a timely manner to qualified forensic entomologists for analysis. Prosecutors, police, or pathologists involved in solving heinous crimes need to be aware of the complex ecology of the decay process, the important role which insects play in decomposition, and the necessity of collecting representative specimens and supplemental field data if this evidence is to be conclusive.

The use of DNA in forensic entomology, such as that extracted from the blowfly, is a growing area of research.

However, though it may be the only method available to determine, more or less accurately, elapsed time since death, the forensic entomologist needs to collect insects properly. The general admissibility of evidence is determined on the basis of the collection of arthropodic data and through a series of tests and previously set of rules. The vast majority of forensic entomological casework consists of establishing a very concrete timeline of the events involved in the crime scene. Such data

provides a solid case for either the defense or the prosecution. The use of DNA in forensic entomology, such as that extracted from the blowfly, is a growing area of research. Ultimately, however, the admissibility of forensic evidence is still a matter of judgement by the court.

Variability and unpredictability are not ruled out. Yet, given a whole range of variables – including weather conditions and the extent to which a body has been concealed – entomologists can establish the minimum time a person has been dead. The study of the stomach contents of bugs found on burnt or badly decomposed bodies, for instance, can provide traces of drugs the victim had taken – and even samples of their DNA – aiding in the identification of the dead body.

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On the whole, forensic entomology, an important subdivision of forensic science, examines insects in, on, and around human remains as evidence. It has a pivotal role in forensics, that is, scientific tests or techniques used for the detection of crime. In time, it may provide irrefutable evidence. For this reason, this science itself may well become one of the pillars of criminal jurisprudence!

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Exploring Management Learning to Grapple with the Real World

Medan Gauli

According to Julie Winkle Giulioni “It is time to rebrand, redefine and reconstitute career development to focus on learning”.

Management learning permits a manager to understand every attribute that makes up the business and the different decisions made at every management level. This learning not only ensures managers to cope with making the right decisions for the business in times of uncertainty or to predict future crises but also to find compatibility for changes. Being able to predict a future crisis that could potentially affect a business means that businesses can react proactively before suffering deficiency. Knowing how the functions of the business are affected by external changes also helps to prevent loss to the business financially. The importance of management learning cannot be stressed enough. In a struggling economy, businesses need leadership or else they will most likely fail in their ventures.

Today, management students need to understand the significance of management learning and know how it interacts with real business practice. Exploring knowledge in a business-related subject strikes a balance between theoretical and practical applications. Many business schools around the globe enjoy good relations with local and global businesses so that students benefit from cutting-edge business techniques as well as high competence work placements during their time at university.

Modern business is very multidimensional and this is reflected in the variety of modules that management students are able to select from. Management students can tailor their learning according to their career ambitions or keep their education broad, specializing later in life.

If management graduates prefer to take an alternative path, they can be sure that the transferable expertise a business degree develops is in high demand. Expertise includes understanding how an organization operates, communicates, makes decisions, maintains proficiency and presents itself. Management graduates have a wide variety of career choices and develop the aptitude required to work in any industry.

Management principles face constraints, because models of human behavior in a business do not consider all the variables that can impact profitability. Different businesses face different issues with employees, financial resources, and the use of technology. Understanding human psychology is always complex and organizations do not have choices. If they fail to do the same, a lack of motivation may arise which ultimately makes an impact on productivity and performance. For example, a workplace of single mothers requires a company to focus more on family leave, a consideration that a theorist might not work into a general business model. Management practice can also result in erratic management behavior, because managers cannot see the business as a whole and instead rely solely upon their own experience.

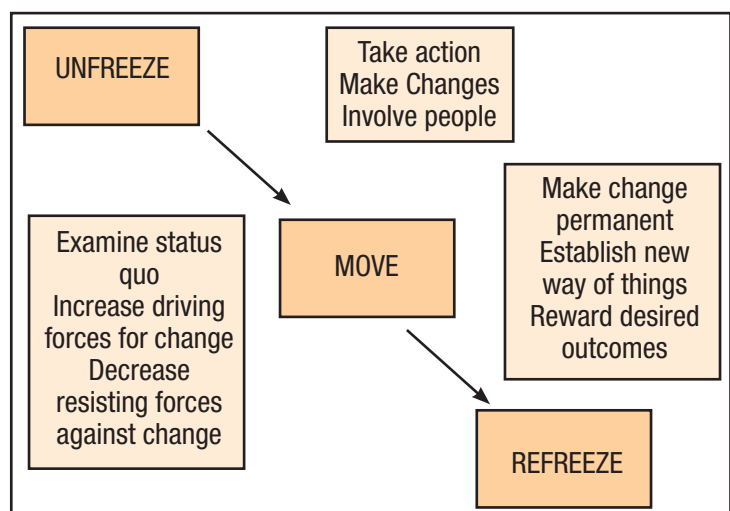
Management theories work best from a macro perspective, such as when a business determines the appropriate model for management as a whole or starts a large project that it has never attempted before. Management applications focus more on group dynamics, which allows managers more flexibility in decision-making and encourages employees to function collectively as a unit in a venture.

Business owners should blend management practices and philosophies in their business models. Small or middle-class business owners will usually study and implement management practices, because they require flexibility to sustain their business models. As their businesses grow, they may add some more aspects of management theory in order to reinforce their decision-making and leadership qualities.

The essence of studying business management is that it can equip entrepreneurs with prerequisite business aptitudes and knowledge. An entrepreneur with no formal business training might be ill-prepared to handle tasks on the business side of the venture, such as creating a business plan, accounting, or negotiating.

Studying business management enhances an entrepreneur's chances of launching a successful business, but it does not guarantee success. Even seasoned and successful business people can fail when creating new companies. Formal business training simply gives business owners more tools to deal with challenges and take advantage of opportunities. This can be enhanced through the learning of practical application of management theories even in regular classes of a university.

At the beginning, the career path of everyone who enthusiastically wants to have sustainable growth should follow Kurt Lewin's three stage change model. This three stage change model is equally important for all beginners although the beginning is for learning or an implementation phase of learning.



If we want to get success in any career path, we need to understand this change model and make ourselves strategically fit with the scanned environment. Start with unfreezing to make a best fit with the change and finally end up with refreezing to make it permanent.

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Governance and Development in Local Bodies (LBs)

Suvash Khanal

Nepal suffers from a poor public governance system exhibiting poor public utilization of government goods and services, lack of accountability, lack of facilitation of service-providing officials, harassment by service providers during the service execution, leakage, corruption, service delay, and a lack of meaningful participation of socially excluded people. It ranks 157 out of 187 countries in the UN Development Program's HDI, 2011, and over half of Nepal's population lives on less than US\$ 1.25 per day. The low economic status of the Nepalese people means that the majority of the people are compelled to depend on the public sector for the provision of goods and services.

The application of accountability tools is critically essential for promoting accountability and effective service delivery. The Local Body Resource Utilization and Management Procedure, 2011, has clearly outlined good governance tools such as: Public participation through planning process to user group formation, application of social and inclusion audit, and citizen charter for transparency which are not adequately exercised by the line agencies.

Despite long decentralized and centralized planned development efforts of the government, the Nepalese development indicator is not improving in the manner prescribed in the legal and policy documents and the services are not delivered in an efficient, transparent, and accountable manner. Citizens are deprived of access to information, resources, or services they deserve due to sheer ignorance. They are not fully informed about their roles and responsibilities to be capable enough to handle the service providers accountable to them. The absence of elected people's representatives in local bodies since 1997 has further aggravated the problem. The local bodies are run by government officials who lack accountability and are found less effective in public services delivery. The application of accountability tools is critically essential for promoting accountability and effective service delivery. But accountability tools are not adequately exercised, notably by the line agencies. The delivery of services related to education, health, and drinking water is reported to be most deficient. Over 40% of the annual national budget is allocated for these sectors. However, the government plan for "education for all" – free and compulsory education and improved quality of education – has yet remained unfulfilled. Similarly, no satisfactory results have been achieved in improving peoples' access to efficient essential/primary health services". The plan to declare all districts "open defecation free: ODF" and provide safe drinking water to all has largely remained unfulfilled. The decentralization process adopted by the country since a long time has emphasized the roles and responsibilities of CSO (Civil Society Organizations) including NGOs

and media in the development process. Consequently, the country has witnessed tremendous growth in the number of CSOs and media (both electronic and print) over the past decade. Nevertheless, their efforts for public resource use and service delivery overseeing have not yet been impacted so far.

According to the Local Self Governance Act, 1999, and its Regulations, each district has been the focal point for local development. The local bodies (District Development Committees, municipalities and Village Development Committees) are shouldered with the responsibilities of formulating and implanting development plans to deliver services to their citizens including health, education, and agricultural extension services. These development plans are based on resources internally mobilized and development grants received from the centre. One of the prominent features of such decentralized planning and development process is that all the district/VDC level line agencies have to integrate their annual development plans with the District Development Annual Plan. These line agencies are also fully accountable to the DDC/VDC for the implementation of their programs. Participatory planning processes that require massive participation of the citizens through 14 planning steps in the case of formulating the District Annual Plan and 7 steps in case of the VDC/municipality Annual Plan is the key for addressing people's needs and demands. However, these planning processes/steps are not fully adopted by many local bodies.

The local bodies are run by government officials who lack accountability and are found less effective in public services delivery. The application of accountability tools is critically essential for promoting accountability and effective service delivery. The Local Body Resource Utilization and Management Procedure, 2011, has clearly outlined good governance tools such as: Public participation through planning process to user group formation, application of social and inclusion audit, and citizen charter for transparency which are not adequately exercised by the line agencies. Delivery of services according to the citizens' charter displayed by respective agencies is hardly fulfilled. Citizen participation in local development is extremely low against what is envisaged. Likewise, the provisions of Governance Act, 2007, and the Right to Information Act, 2007, related to ensuring accountability and improving service delivery are either not looked into or not adopted properly. The results of Minimum Conditions and Performance Measurement (MCPM) assessments in several districts and VDCs/municipalities have clearly indicated the absence of the use of social accountability tools such as public hearing, public audit, and social audit. Such constantly observed deficiencies in the application of all these legally prescribed processes and attributes have obstructed the meaningful engagement of citizens in local development efforts. The citizens are deprived of access to information, resources, and services they deserve to receive due to sheer ignorance. The absence of capacity and resources to use social accountability tools on the parts of duty bearers and ignorance on the part of rights' holders are most often stressed as contributing factors.

Although the government advocates citizen participation in various phases of governance and service delivery process, no noteworthy civic

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Overview

Performance of Commercial Banks

Smriti Singh

The financial sector is the backbone and driving engine of any economy. It plays an enabling and catalyzing role in mobilizing financial resources into various productive sectors and in facilitating economic development, investment, and employment opportunity creation. The Nepalese financial sector is largely a bank-based system as opposed to a market or capital market-based system. Commercial banks play a vital role in the economic resource allocation of countries. Economic development is synonymous with development of the banking and financial sector in Nepal leading to the strengthening of financial institutions, systems, and products. Nepal Rastra Bank (NRB) has been making great efforts to structure and systematize the sector.

One of the first steps taken by NRB to promote financial stability includes the expedition of the mergers and acquisitions among Banks and Financial Institutions (BFIs) through the implementation of the Merger Bylaws 2068 (recently updated to Merger and Acquisition By-laws 2073). The second key step taken by NRB includes the increment of the minimum paid-up capital for all BFIs and the implementation of new capital adequacy framework (BASEL III). The minimum paid-up capital increment requirement has, in turn, encouraged mergers and acquisitions among BFIs. This has significantly reduced the number of BFIs in the past five years. The number of commercial banks which had reached to 32 in 2012 has reduced to 28 by 2016 with the latest merger between BOK and Lumbini Bank in mid-July 2016. The financial sector of Nepal is largely based on these commercial banks as they have the biggest contribution in the total deposit (82.9%) and lending (76.1%) of the country. The analysis has been based on the quarterly financial highlights published by the banks for the first quarter ending Ashwin 2073, which is shown below in table:

Amount in NRs. In arab

Portfolio			Loans & Advances			Deposits		
Rank	Bank	Amount	Rank	Bank	Amount	Rank	Bank	Amount
1 st	NIBL	196	1 st	NIBL	87	1 st	NABIL	110
2 nd	NABIL	188	2 nd	NABIL	78	2 nd	NIBL	109
3 rd	HBL	156	3 rd	HBL	69	3 rd	EBL	94
4 th	EBL	163	4 th	EBL	69	4 th	HBL	87
5 th	GLOBAL	136	5 th	GLOBAL	61	5 th	GLOBAL	75

Net Profit			Paid-Up Capital		
Rank	Bank	Amount	Rank	Bank	Amount
1 st	NABIL	2.8	1 st	NIBL	7.3
2 nd	NIBL	2.6	2 nd	GLOBAL	6.2
3 rd	HBL	1.9	3 rd	PRABHU	5.9
4 th	EBL	1.7	4 th	NABIL	4.8
5 th	GLOBAL	1.4	5 th	BOK	4.6

The major banks that led the industry during the past fiscal year i.e. FY 2072-73 were mainly the big players of the industry namely, Nabil Bank, NIBL Bank, Global Bank, Himalayan Bank, Everest Bank, and BOK (Now BOKL) Bank. Prabhu Bank figures in the top five Paid-up Capital Chart, primarily owing to its relatively large capital plan resulting from several rounds of mergers.

The performance of the above mentioned banks and others in the first quarter, in six major parameters, follows:

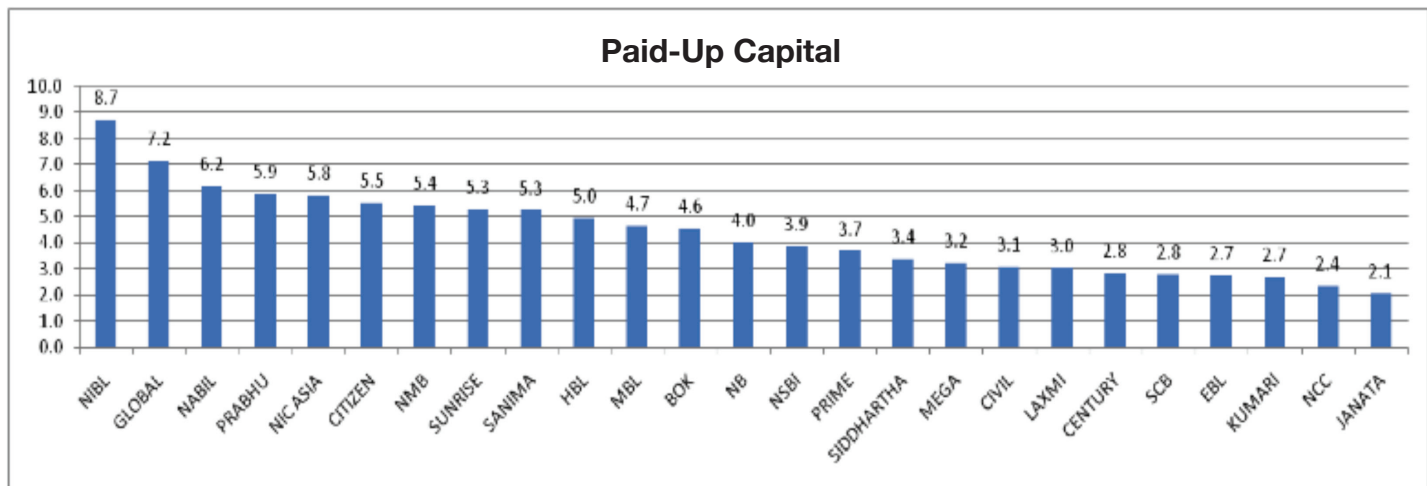
Portfolio: The analysis of the commercial banks shows an average growth in the entire portfolio (loan and deposit) of the banking industry in the first quarter of the current fiscal year. The total portfolio of the industry increased by Rs. 155 arab, registering an average portfolio growth rate of 5.97%. Similarly, the total loan increased by Rs. 79 arab with an average loan growth rate of 6.85% whereas the total deposit increased by Rs. 76 arab with an average deposit growth rate of 5.27%. The bank which made the greatest volume-wise leap in its portfolio was Nabil Bank Ltd, whose portfolio grew by Rs. 15.7 arab. On the other hand, the bank which made the highest percentage growth in its portfolio was Mega Bank Ltd, whose portfolio grew by 17.5% in the first quarter of the fiscal year.

Loan: Similarly, the top five banks leading the loan portfolio during the quarter were NIBL Bank (Rs. 94 arab, Nabil Bank (Rs. 84 arab), Himalayan Bank (Rs. 72 arab), Everest Bank (Rs. 69 arab) and Global Bank (Rs. 67 arab).

Deposit: Likewise, the top five banks leading the deposit portfolio were Nabil Bank (Rs. 120 arab), NIBL Bank (Rs. 115 arab), Everest Bank Ltd (Rs. 89 arab), Himalayan Bank (Rs. 93 arab) and Global Bank (Rs. 80 arab).

Net Profit: In terms of the net profit earned in the first quarter, Nabil Bank ranked in the first position by earning a net profit of Rs. 78.8 crore, whereas NIBL Bank and Everest Bank Ltd were in the second and third positions. On the other hand, the bottom three banks making the least profit were the relatively young banks like Century Bank (Rs. 7.4 crore), Janata Bank (Rs. 6.4 crore) and Civil Bank (Rs. 1.5 crore).

Average Interest Spread: In addition to the net profit, another key parameter that truly reflects the performance of banks is their average interest spread. Interest Spread refers to the difference between the yield or earning of a bank and its cost of funds. It is the true earning of a bank. Thus the bank which optimizes its spread during a period is said to have performed well during the period. As per the NRB regulation, commercial banks can have a spread of maximum 5%. The bank having the highest spread during the first quarter of the current fiscal year was Nabil Bank with 4.92%. On the other hand, the Bank having the lowest spread was Civil Bank with a spread of just 3.19%, where it had a more or less decent yield of 7.44% but a relatively high cost of 4.24%.



Paid-Up Capital: NRB has imposed the minimum paid-up capital requirement for all commercial banks. Commercial banks are required to raise their paid-up capital to Rs. 8 arab by the end of the current fiscal year. However, only NIBL has managed to fulfill this requirement by first quarter of the fiscal year. 15 out of 25 banks still have paid-up capitals below Rs. 5 arab. Banks like Global (Rs. 7.2 arab), Global (Rs. 6.2 arab) and Prabhu (Rs. 5.9 arab) have managed to close the gap to Rs. 8 arab. Whereas, banks like Kumari Bank (Rs. 2.7 arab), NCC Bank (Rs. 2.3 arab) and Janata Bank (Rs. 2.1) still have a long way to go.

In conclusion, banks such as Nabil, NIBL, or Global have a clear advantage over others given their originally stable and strongly growing loan and deposit portfolios as well as a stable capital base. However, it can also be noted that some of the relatively newer banks are also doing exceptionally well in these parameters. Sanima, Citizen, Machhapuchhre, and Sunrise banks are also gradually picking pace and moving up the ranks while fiercely competing with each other.

The stringency of the minimum paid-up capital requirement of NRB is a matter of worry for the majority of the banks. Hence, banks need to implement their capital plan effectively by the end of the current

fiscal year by mobilizing suitable capital options. This may prove to be a herculean task for some of the banks having paid-up capitals of less than Rs. 3 billion and it seems like mergers & acquisitions may prove to be the only possible way-out for these banks. However, the performance of the Banks in general seems satisfactory, with none of the Banks earning any negative net interest income or net loss. However, starting from the month of Bhadra, a gradual liquidity crunch has appeared in the financial industry. This has made it difficult for banks to collect deposits at cheaper rates than they had been enjoying since the past fiscal year. Hence, almost all commercial banks have raised their deposit rates to attract more deposits. Similarly, many banks are also making price revisions of their loan products to match the rising cost of funds. In this scenario, it would be difficult for banks to maintain their costs and yet expand their portfolios. It would be interesting to observe which banks would be able to deal with this ever-tightening liquidity challenge while maintaining their spread and net income.

Smriti Singh is a former KIST student. She is a TU gold medalist from her batch in BBA from the KIST College of Management.

Governance and Development ...

education programs have been launched to prepare them to play their roles and claim for rights. The citizens lack the capacity to evaluate the services received and provide feedback. Neither they are sufficiently aware about their entitlements nor do they have knowledge and skills to negotiate for the type, quality, and quantity of services needed by them.

Though the new constitution of Nepal has put forward a sufficient consideration to make an inclusive Nepalese society, a significant section of the population in Nepal cannot access political participation and representation in public affairs due to economic and social conditions, social stigma, and the lack of access to information. For more than a decade, the problem of corruption has been at the core of governance in Nepal. According to the Corruption Perceptions Index reported by Transparency International, Nepal is the 130 least corrupt out of 175 countries. It is recognized as one of the chief causes of Nepal's underdevelopment. The main reasons for these shortcomings

and issues may be poor knowledge and practices of the current rules, regulations, plans, policies, and programs by local-level stakeholders, inactive and incompetent community-based organizations, poor monitoring, slack supervision, and inaccurate evaluation by the implementing stakeholders. One of the main reasons is the less active participation of the community members in the management, functioning, and monitoring of local-level development practices. In the present context, the local body has been made more powerful and responsible for the overseeing and regulation of each developmental activity at the ground level. Therefore, people's representatives in local bodies should be elected without delay for making a sustainable governance system envisioned by the national policy documents.

Suvash Khanal, is a faculty member of MBS and BBS at KIST.

Event Highlights

Inter-College Science & Technology Projects Competition – 13 reputed +2 colleges of Kathmandu valley to participate in the Fair

Intra-College IT Projects Competition – over 15 exhibits of KISTians

Intra-College Management Projects Competition – over 12 exhibits of KISTians

KIST Imagineering Competition – Intra-College Competition displaying imaginative engineering concepts & designs for the country's future

Intra-College Science & Technology Projects Competition – Over 20 exhibits of KISTians

Inter-School Art & Craft Competition - Over 15 reputed schools of Kathmandu valley to participate in the competition. Exhibits in three categories: Sketching, Painting & Craft.

Inter-College SciTech Competition

Canvas International College

Grammar Public HS School

Himalayan Whitehouse International College

Kathmandu Model College

KIST College & HSS

NASA International College

Nepal Mega College

Pentagon International College

Southwestern State College

St. Lawrence College

Trinity International College

Triton College

Uniglobe College & HSS

Inter-School Art & Craft Competition

Baba Boarding School

Cosmopolitan Boarding Secondary School

Green Peace Co-Ed School

Gyan Niketan School

Kamal Netra Chhuna Muna HSS

Kathmandu English School

Loyalty Academy

NK Singh Memorial EPS School

New Knowledge Boarding School

Satya Sai School

Shivapuri Higher Secondary School

St. Xavier's School

Triyog HS School

Intra-College SciTech Competition

Rain water harvesting and its use	BSc Microbiology
Detection of blood glucose level	BSc Microbiology
Blood grouping, Bacterial growth	BSc Microbiology
Dark activated switch	BIT
VR set	BIM
IT revolution	XII Science
Regeneration / Fuel from plastic	XII Science
Mechanical hand	XII Science
Multi projects	XII Science
Metal detector	XII Science
Vacuum cleaner	XII Science
Earthquake detector	XII Science
Solar car	XI Science
Hummanite robot	XI Science
Line flowing car	XI Science
Presenting evolution	XI Science
Electric model motor car	XI Science
Clap switch	XI Science
Hydraulic nova	XI Science
Remote control car	XI Science
Hover board	XI Science
Robot	XI Science

Intra-College Imagineering Competition

We are maker	BIM
City of future	BIM
Laser security/Balloon car	BIM
Future roadway of Nepal	BIT
Future football stadium of Nepal	BIT
Wind energy	BBA
Factory	BBA
Future Kathmandu	BBA

Intra-College Management Projects Competition

Don't throw it away	XII Management
How can we develop Nepal ?	XI Management
Best from waste	XI Management
Making game, Mobile detector & Laser security	XI Management
Green city	XII Management
Current condition of environment	XII Management
Handicraft products	XII Management
Modern and traditional society	XII Management
Home stay	XII Management
Evolution	XI Management
Pollution management	BBA
Waste management	BBA
Barriers for youths startups in Nepal	BBA
Emancipation	BBA
Lets play game	BBA

Intra-College IT Projects Competition

Activity logout	BIT
Chat system	BIT
Real time electricity monitoring	BIT
Event player	BIT
Chat messenger	BIT
Restaurant ordering system	BIT
E-shop Nepal	BIT
Game	BIM
Quiz	BIM
Blood donation	BIM
Mobile Apps	BIM

and many more....

KIST FAIR 2013

Fostering Talent
SCIENCE • IT • MANAGEMENT
25 Mangsir 2073, Kathmandu



The KIST Fair 2016 held on 6 February was well attended, and widely appreciated. The Inter-College SciTech Competition saw the keen participation of students from Kathmandu's best colleges. Significantly, the Imagineering Competition – perhaps the first ever in collegiate Nepal – proved to be a resounding success appealing that it was to all creative students.

Likewise, we expect the same enthusiasm for this Fair on 10 December 2016 since it has been made more informative and decidedly useful to the youth. Widening our outreach, we have included art & craft exhibits by Grade 8, 9 & 10 students from schools in the Valley in this event to enrich the lives of both the visitors and the participants!

Events

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

Welcome!



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