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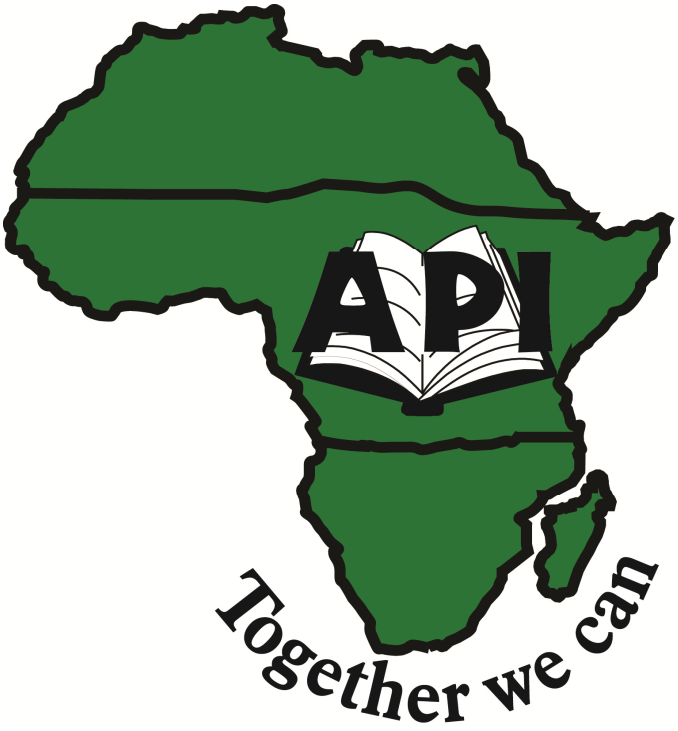

INTERNATIONAL RELATIONS MANAGEMENT TERM THREE STUDENT'S MODULES (IRM)

Contents

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Course Name: GLOBLE CHANGE AND SECURITY

International relations, is a branch of political science. It represents the study of foreign affairs and global issues among states within the **international system**, including the roles of states, international organizations (IGOs), non-governmental organizations (NGOs), and multinational corporations (MNCs).

United Nations

The **United Nations** (**UN**) is an international organization that describes itself as a "global association of governments facilitating co-operation in international law, international security, economic development, and social equity"; It is the most prominent international institution. Many of the legal institutions follow the same organisational structure as the UN.

Economic institutions

- World Trade Organisation
- World Bank
- International Monetary Fund
- asim Asian Development Bank

International legal bodies

Human rights

- United Nations Human Rights Council
- Human Rights Committee
- European Court of Human Rights
- Inter-American Court of Human Rights
- International Criminal Tribunal for Rwanda
- International Criminal Tribunal for the Former Yugoslavia
- International Criminal Court

Legal

- International Court of Justice
- European Court of Justice
- African Court of Justice
- International Tribunal for the Law of the Sea

Global Change, Peace & Security

September 11 and its aftermath have dramatised one of the distinguishing trends of our time: *the globalisation of insecurity.* These extraordinary events have served to remind us of the sheer scale and complexity of contemporary change.

Global Change, Peace & Security is a leading refereed journal that addresses the difficult practical and theoretical questions posed by a rapidly globalising world. By focusing on the international dimension of political, economic and cultural life, it cuts across the traditional boundaries that separate states, economies and societies, as well as disciplines and ideologies.

Global Change, Peace & Security seeks to illuminate the sharp and often perplexing contradictions of an increasingly integrated yet fragmented world. Ethno-nationalism, the break-up of established states, and religious and civilizational divisions coexist with new forms of economic and financial integration. Gross violations of human rights, environmental degradation, large and uncontrolled population movements, and rapidly expanding transnational crime are taking place at a time of unparalleled UN activism, and the rise of a host of new legal and institutional arrangements, both regionally and globally.

Global Change, Peace & Security aims to explore these trends and counter-trends. It endeavours to foster a more holistic interpretation of the dichotomy of competitive geopolitics and geoconomics on the one hand and emerging conceptions of common, comprehensive and human security on the other.It analyses the sources and consequences of conflict, violence and insecurity, but also the conditions and prospects for conflict transformation, peacekeeping and peace-building.

Global Change, Peace & Security intends to bring to this task the insights of diverse cultural and intellectual traditions, not least the increasingly influential and diverse perspectives of the Asia-Pacific region. Its aim is to contribute to a scholarly and cosmopolitan dialogue on the nature, origins and remedies of the contemporary human predicament.

Peer Review: ***Global Change, Peace & Security*** is internationally refereed. Submissions are refereed by specialists in the field for originality, structural integrity and factual accuracy. An editorial review, referee reports and the author's response to these reports form the basis of the decision whether to publish submitted articles. All decisions of the Editors are final.

Views expressed in articles and communications do not reflect the opinion of the Editorial Committee or the Editors. Communications in ***Global Change, Peace & Security*** are reflective opinion pieces and the Editorial Committee welcomes diverse perspectives on contemporary issues.

Food Security and Global Change

In recent years, the challenge of ensuring that our food system remains safe and secure has gained significant attention. Driven by concerns over hunger and insecurity caused by rising food prices and high profile events of food system contamination including spinach, pet food and peanut butter, experts, policymakers, the media and the public are asking hard questions about the implication of processes of global change on our increasingly global food networks.

In today's changing and globalized world, food insecurity is not just hunger. Food insecurity continues to impact billions of people on a daily basis and solving this problem requires addressing malnutrition from undernourishment, nutrient deficiency, and overnutrition.

Food security also requires ensuring that food supplies remain free from threats to human health whether from unintentional contamination (food safety) but also from intentional contamination by actors intent on using networked food systems to intentionally cause harm (food defense).

Sustainability will need to be a key core theme of food security efforts to ensure their long terms success. The environmental impacts of agriculture and food production are significant drivers of processes of global change. Agriculture and food production will experience significant impacts as a result of those processes and efforts to develop a more sustainable global food system are central to addressing global change processes through mitigating effects and helping people adapt impacts.

CUSA's research program on food security examines the evolving landscape of challenges to the security, safety and sustainability of the global food systems and identifies ways to manage threats and reduce vulnerabilities to help ensure people have access to the sufficient, safe and nutritious food necessary to lead active and healthy lives.

Food security
Growth in food production has been greater than population growth. Food per person increased during the 1961-2005 period. The y-axis is percent of 1999-2001 average food production per capita. Data source: World Resources Institute.

Food security refers to the availability of food and one's access to it. A household is considered food secure when its occupants do not live in hunger or fear of starvation. According to the World Resources Institute, global per capita food production has been increasing substantially for the past several decades. In 2006, MSNBC reported that globally, the number of people who are overweight has surpassed the number who are undernourished - the world had more than one billion people who were overweight, and an estimated 800 million who were undernourished. According to a 2004 article from the BBC, China, the world's most populous country, is suffering from an obesity epidemic. In India, the second-most populous country in the world, 30 million people have been added to the ranks of the hungry since the mid-1990s and 46% of children are underweight.

Worldwide around 852 million people are chronically hungry due to extreme poverty, while up to 2 billion people lack food security intermittently due to varying degrees of poverty (source: FAO, 2003). Six million children die of hunger every year - 17,000 every day. As of late 2007, increased farming for use in biofuels, world oil prices at more than $100 a barrel, global population growth, climate change, loss of agricultural land to residential and industrial development, and growing consumer demand in China and India have pushed up the price of grain. Food riots have recently taken place in many countries across the world

It is becoming increasingly difficult to maintain food security in a world beset by a confluence of "peak" phenomena, namely peak oil, peak water, peak phosphorus, peak grain and peak fish. More than half of the planet's population, numbering approximately 3.3 billion people, live in urban areas as of November 2007. Any disruption to farm supplies may precipitate a uniquely urban food crisis in a relatively short time. The ongoing global credit crisis has affected farm credits, despite a boom in commodity prices. Food security is a complex topic, standing at the intersection of many disciplines.

A new peer-reviewed journal of *Food Security: The Science, Sociology and Economics of Food Production and Access to Food* began publishing in 2009. In developing countries, often 70% or more of the population lives in rural areas. In that context, agricultural development among smallholder farmers and landless people provides a livelihood for people allowing them the opportunity to stay in their communities. In many areas of the world, land ownership is not available, thus, people who want or need to farm to make a living have little incentive to improve the land.

In the US, there are approximately 2,000,000 farmers, less than 1% of the population. A direct relationship exists between food consumption levels and poverty. Families with the financial resources to escape extreme poverty rarely suffer from chronic hunger; while poor families not only suffer the most from chronic hunger, but are also the segment of the population most at risk during food shortages and famines.

Two commonly used definitions of food security come from the UN's Food and Agriculture Organization (FAO) and the United States Department of Agriculture (USDA):

- Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. (FAO)
- Food security for a household means access by all members at all times to enough food for an active, healthy life. Food security includes at a minimum (1) the ready availability of nutritionally adequate and safe foods, and (2) an assured ability to acquire acceptable foods in socially acceptable ways (that is, without resorting to emergency food supplies, scavenging, stealing, or other coping strategies). (USDA)

The stages of food insecurity range from food secure situations to full-scale famine. "Famine and hunger are both rooted in food insecurity. Food insecurity can be

categorized as either chronic or transitory. Chronic food insecurity translates into a high degree of vulnerability to famine and hunger; ensuring food security presupposes elimination of that vulnerability. [Chronic] hunger is not famine. It is similar to undernourishment and is related to poverty, existing mainly in poor countries."

Stunting and chronic nutritional deficiencies

Many countries experience perpetual food shortages and distribution problems. These result in chronic and often widespread hunger amongst significant numbers of people. Human populations respond to chronic hunger and malnutrition by decreasing body size, known in medical terms as stunting or stunted growth. This process starts *in utero* if the mother is malnourished and continues through approximately the third year of life. It leads to higher infant and child mortality, but at rates far lower than during famines. Once stunting has occurred, improved nutritional intake later in life cannot reverse the damage. Stunting itself is viewed as a coping mechanism, designed to bring body size into alignment with the calories available during adulthood in the location where the child is born. Limiting body size as a way of adapting to low levels of energy (calories) adversely affects health in three ways:

- Premature failure of vital organs occurs during adulthood. For example a 50 year old individual might die of heart failure because his/her heart suffered structural defects during early development.
- Stunted individuals suffer a far higher rate of disease and illness than those who have not undergone stunting.
- Severe malnutrition in early childhood often leads to defects in cognitive development.

"The analysis ... points to the misleading nature of the concept of subsistence as Malthus originally used it and as it is still widely used today. Subsistence in not located at the edge of a nutritional cliff, beyond which lies demographic disaster. Rather than one level of subsistence, there are numerous levels at which a population and a food supply can be in equilibrium in the sense that they can be indefinitely sustained. However, some levels will have smaller people and higher normal mortality than others."

Global water crisis

Grain storage facilities in Australia

Water deficits, which are already spurring heavy grain imports in numerous smaller countries, may soon do the same in larger countries, such as China or India. The water tables are falling in scores of countries (including Northern China, the US, and India) due to widespread overpumping using powerful diesel and electric pumps. Other countries affected include Pakistan, Afghanistan, and Iran. This will eventually lead to water scarcity and cutbacks in grain harvest. Even with the overpumping of its aquifers, China is developing a grain deficit. When this happens, it will almost certainly drive grain prices upward. Most of the 3 billion people projected to be added worldwide by mid-century will be born in countries already

experiencing water shortages. After China and India, there is a second tier of smaller countries with large water deficits—Afghanistan, Algeria, Egypt, Iran, Mexico, and Pakistan. Four of these already import a large share of their grain. Only Pakistan remains self-sufficient. But with a population expanding by 4 million a year, it will also likely soon turn to the world market for grain.

Land degradation

Intensive farming often leads to a vicious cycle of exhaustion of soil fertility and decline of agricultural yields. Approximately 40% of the world's agricultural land is seriously degraded. In Africa, if current trends of soil degradation continue, the continent might be able to feed just 25% of its population by 2025, according to UNU's Ghana-based Institute for Natural Resources in Africa.

Land deals

Rich governments and corporations are buying up the rights to millions of hectares of agricultural land in developing countries in an effort to secure their own long-term food supplies. The head of the Food and Agriculture Organisation (FAO), Jacques Diouf, has warned that the controversial rise in land deals could create a form of "neocolonialism", with poor states producing food for the rich at the expense of their own hungry people. The South Korean firm Daewoo Logistics has secured a large piece of farmland in Madagascar to grow maize and crops for biofuels. Libya has secured 250,000 hectares of Ukrainian farmland, and China has begun to explore land deals in Southeast Asia.[32] Oil-rich Arab investors, including the sovereign wealth funds, are looking into Sudan, Ethiopia, Ukraine, Kazakhstan, Pakistan, Cambodia and Thailand.[33]

Some countries are using the acquisition of land for agriculture in return for other gains. Egypt is seeking land acquisition in Ukraine in exchange for access to its natural gas. Qatar has plans to lease 40,000 hectares of agricultural land along Kenya's coast to grow fruit and vegetables, in return for building a £2.4 billion port close to the Indian Ocean tourist island of Lamu.

Agriculture

According to a UN climate report, the Himalayan glaciers that are the principal dry-season water sources of Asia's biggest rivers - Ganges, Indus, Brahmaputra, Yangtze, Mekong, Salween and Yellow - could disappear by 2035 as temperatures rise. Approximately 2.4 billion people live in the drainage basin of the Himalayan rivers. India, China, Pakistan, Afghanistan, Bangladesh, Nepal and Myanmar could experience floods followed by severe droughts in coming decades. In India alone, the Ganges provides water for drinking and farming for more than 500 million people. The west coast of North America, which gets much of its water from glaciers in mountain ranges such as the Rocky Mountains and Sierra Nevada, also would be affected. Glaciers aren't the only worry that the developing nations have, sea level is also reported to rise as climate changes progresses, reducing the amount of land available for agriculture.

In other parts of the world a big effect will be low yields of grain according to the World Food Trade Model, specifically in the low latitude regions where much of the developing world is located. From this the price of grain will rise, along with the developing nations trying to grow the grain. Due to this, every 2-2.5% price hike will increase the number of hungry people 1%. And low crop yields is just one of the problem facing farmers in the low latitudes and tropical regions. The timing and length of the growing seasons, when farmers plant their crops, are going to be changing dramatically, per the USDA, due to unknown changes in soil temperature and moisture conditions.

Children

On 2008-04-29, a UNICEF UK report found that the world's poorest and most vulnerable children are being hit the hardest by the impact of climate change. The report, "Our Climate, Our Children, Our Responsibility: The Implications of Climate Change for the World's Children," says access to clean water and food supplies will become more difficult, particularly in Africa and Asia.

Watch the DIVERSEEDS short films on ways to fight wheat rust using crop wild relatives to improve resistance in modern varieties.

An epidemic of stem rust on wheat caused by race Ug99 is currently spreading across Africa and into Asia and is causing major concern. A virulent wheat disease could destroy most of the world's main wheat crops, leaving millions to starve. The fungus has spread from Africa to Iran, and may already be in Pakistan.[45][46][47]

The genetic diversity of the crop wild relatives of wheat can be used to improve modern varieties to be more resistant to rust. In their centers of origin wild wheat plants are screened for resistance to rust, then their genetic information is analysed and finally wild plants and modern varietes are crossed through means of modern plant breeding in order to transfer the resistance genes from the wild plants to the modern varieties.[48]

Dictatorship and kleptocracy

As the Nobel Prize-winning economist Amartya Sen has observed that "there is no such thing as an apolitical food problem." While drought and other naturally occurring events may trigger famine conditions, it is government action or inaction that determines its severity, and often even whether or not a famine will occur. The 20th century is full of examples of governments undermining the food security of their own nations–sometimes intentionally.

When governments come to power by force or rigged elections, and not by way of fair and open elections, their base of support is often narrow and built upon cronyism and patronage. Under such conditions "The distribution of food within a country is a political issue. Governments in most countries give priority to urban areas, since that is where the most influential and powerful families and enterprises are usually located. The government often neglects subsistence farmers and rural areas in general. The more remote and underdeveloped the area the less likely the

government will be to effectively meet its needs. Many agrarian policies, especially the pricing of agricultural commodities, discriminate against rural areas. Governments often keep prices of basic grains at such artificially low levels that subsistence producers can not accumulate enough capital to make investments to improve their production. Thus, they are effectively prevented from getting out of their precarious situation."

Further dictators and warlords have used food as a political weapon, rewarding their supporters while denying food supplies to areas that oppose their rule. Under such conditions food becomes a currency with which to buy support and famine becomes an effective weapon to be used against the opposition.

Governments with strong tendencies towards kleptocracy can undermine food security even when harvests are good. When government monopolizes trade, farmers may find that they are free to grow cash crops for export, but under penalty of law only able to sell their crops to government buyers at prices far below the world market price. The government then is free to sell their crop on the world market at full price, pocketing the difference. This creates an artificial "poverty trap" from which even the most hard working and motivated farmers may not escape.

When the rule of law is absent, or private property is non-existent, farmers have little incentive to improve their productivity. If a farm becomes noticeably more productive than neighboring farms, it may become the target of individuals well connected to the government. Rather than risk being noticed and possibly losing their land, farmers may be content with the perceived safety of mediocrity.

As pointed out by William Bernstein in his book *The Birth of Plenty*: "Individuals without property are susceptible to starvation, and it is much easier to bend the fearful and hungry to the will of the state. If a [farmer's] property can be arbitrarily threatened by the state, that power will inevitably be employed to intimidate those with divergent political and religious opinions."

Economic approaches

There are many economic approaches advocated to improve food security in developing countries. Three typical approaches are listed below. The first is typical of what is advocated by most governments and international agencies. The other two are more common to non-governmental organizations (NGO's).

Westernized view

Conventional thinking in westernized countries is that maximizing the farmers profit is the surest way of maximizing agricultural production; the higher a farmer's profit, the greater the effort that will be forthcoming, and the greater the risk the farmer is willing to take.

Place into the hands of farmers the largest number and highest quality tools possible (tools is used here to refer to improved production techniques, improved seeds, secure land tenure, accurate weather forecasts, etc.) However, it is left to the

individual farmer to pick and choose which tools to use, and how to use them, as farmers have intimate knowledge of their own land and local conditions.

As with other businesses, a percentage of the profits are normally reinvested into the business in the hopes of increasing production, and hence increase future profits. Normally higher profits translate into higher spending on technologies designed to boost production, such as drip irrigation systems, agriculture education, and greenhouses. An increased profit also increases the farmer's incentive to engage in double-cropping, soil improvement programs, and expanding usable area.

Food justice

Fight Hunger: Walk the World campaign is a United Nations World Food Programme initiative. An alternative view takes a collective approach to achieve food security. It notes that globally enough food is produced to feed the entire world population at a level adequate to ensure that everyone can be free of hunger and fear of starvation. That no one should live without enough food because of economic constraints or social inequalities is the basic goal.

This approach is often referred to as food justice and views food security as a basic human right. It advocates fairer distribution of food, particularly grain crops, as a means of ending chronic hunger and malnutrition. The core of the Food Justice movement is the belief that what is lacking is not food, but the political will to fairly distribute food regardless of the recipient's ability to pay.

Food sovereignty

A third approach is known as food sovereignty; though it overlaps with food justice on several points, the two are not identical. It views the business practices of multinational corporations as a form of neocolonialism. It contends that multinational corporations have the financial resources available to buy up the agricultural resources of impoverished nations, particularly in the tropics. They also have the political clout to convert these resources to the exclusive production of cash crops for sale to industrialized nations outside of the tropics, and in the process to squeeze the poor off of the more productive lands. Under this view subsistence farmers are left to cultivate only lands that are so marginal in terms of productivity as to be of no interest to the multinational corporations. Likewise, food sovereignty holds it to be true that communities should be able to define their own means of production and that food is a basic human right. With several multinational corporations now pushing agricultural technologies on developing countries, technologies that include improved seeds, chemical fertilizers, and pesticides, crop production has become an increasingly analyzed and debated issue. Many communities calling for food sovereignty are protesting the imposition of Western technologies on to their indigenous systems and agency.

Those who hold a "food sovereignty" position advocate banning the production of most cash crops in developing nations, thereby leaving the local farmers to concentrate on subsistence agriculture. In addition, they oppose allowing low-cost subsidized food from industrialized nations into developing countries, what is

referred to as "import dumping". Import dumping also happens by way of food aid distribution through programs like the USA's "Food for Peace" initiative.

World Food Summit

The World Food Summit was held in Rome in 1996, with the aim of renewing global commitment to the fight against hunger. The Food and Agriculture Organization of the United Nations (FAO) called the summit in response to widespread under-nutrition and growing concern about the capacity of agriculture to meet future food needs. The conference produced two key documents, the Rome Declaration on World Food Security and the World Food Summit Plan of Action.

The Rome Declaration calls for the members of the United Nations to work to halve the number of chronically undernourished people on the Earth by the year 2015. The Plan of Action sets a number of targets for government and non-governmental organizations for achieving food security, at the individual, household, national, regional and global levels.

AWorld Summit on Food Security

The World Summit on Food Security took place in Rome, Italy, between 16 and 18 November 2009. The decision to convene the summit was taken by the Council of FAO in June 2009, at the proposal of FAO Director-General Dr Jacques Diouf. Heads of State and Government attended the summit, which took place at the FAO's headquarters.

Achieving food security

"The number of people without enough food to eat on a regular basis remains stubbornly high, at over 800 million, and is not falling significantly. Over 60% of the world's undernourished people live in Asia, and a quarter in Africa. The proportion of people who are hungry, however, is greater in Africa (33%) than Asia (16%). The latest FAO figures indicate that there are 22 countries, 16 of which are in Africa, in which the undernourishment prevalence rate is over 35%."[

In its "The State of Food Insecurity in the World 2003", FAO states that:]

> 'In general the countries that succeeded in reducing hunger were characterised by more rapid economic growth and specifically more rapid growth in their agricultural sectors. They also exhibited slower population growth, lower levels of HIV and higher ranking in the Human Development Index'.

As such, according to FAO, addressing agriculture and population growth is vital to achieving food security. Other organisations and people (eg Peter Singer, ...) too have come to this conclusion and advocate improvements in agriculture, and population control.

USAID proposes several key steps to increasing agricultural productivity which is in turn key to increasing rural income and reducing food insecurity. They include:

- Boosting agricultural science and technology. Current agricultural yields are insufficient to feed the growing populations. Eventually, the rising agricultural productivity drives economic growth.
- Securing property rights and access to finance.
- Enhancing human capital through education and improved health.
- Conflict prevention and resolution mechanisms and democracy and governance based on principles of accountability and transparency in public institutions and the rule of law are basic to reducing vulnerable members of society.

The UN Millennium Development Goals are one of the initiatives aimed at achieving food security in the world. In its list of goals, the first Millennium Development Goal states that the UN "is to eradicate extreme hunger and poverty", and that "agricultural productivity is likely to play a key role in this if it is to be reached on time".

"Of the eight Millennium Development Goals, eradicating extreme hunger and poverty depends on agriculture the most. (MDG 1 calls for halving hunger and poverty by 2015 in relation to 1990.)

Notably, the gathering of wild food plants appears to be an efficient alternative method of subsistence in tropical countries, which may play a role in poverty alleviation.[54]

The agriculture-hunger-poverty nexus

Eradicating hunger and poverty requires an understanding of the ways in which these two injustices interconnect. Hunger, and the malnourishment that accompanies it, prevents poor people from escaping poverty because it diminishes their ability to learn, work, and care for themselves and their family members. Food insecurity exists when people are undernourished as a result of the physical unavailability of food, their lack of social or economic access to adequate food, and/or inadequate food utilization. Food-insecure people are those individuals whose food intake falls below their minimum calorie (energy) requirements, as well as those who exhibit physical symptoms caused by energy and nutrient deficiencies resulting from an inadequate or unbalanced diet or from the body's inability to use food effectively because of infection or disease. An alternative view would define the concept of food insecurity as referring only to the consequence of inadequate consumption of nutritious food, considering the physiological utilization of food by the body as being within the domain of nutrition and health. Malnourishment also leads to poor health hence individuals fail to provide for their families. If left unaddressed, hunger sets in motion an array of outcomes that perpetuate malnutrition, reduce the ability of adults to work and to give birth to healthy children, and erode children's ability to learn and lead productive, healthy, and happy lives. This truncation of human development undermines a country's potential for economic development–for generations to come.

There are strong, direct relationships between agricultural productivity, hunger, and poverty. Three-quarters of the world's poor live in rural areas and make their living from agriculture. Hunger and child malnutrition are greater in these areas than in urban areas. Moreover, the higher the proportion of the rural population that obtains its income solely from subsistence farming (without the benefit of pro-poor technologies and access to markets), the higher the incidence of malnutrition. Therefore, improvements in agricultural productivity aimed at small-scale farmers will benefit the rural poor first.

Increased agricultural productivity enables farmers to grow more food, which translates into better diets and, under market conditions that offer a level playing field, into higher farm incomes. With more money, farmers are more likely to diversify production and grow higher-value crops, benefiting not only themselves but the economy as a whole."[55]

Biotechnology for smallholders in the (sub)tropics

The area sown to genetically engineered crops in developing countries is rapidly catching-up with the area sown in industrial nations. According to the International Service for the Acquisition of Agri-biotech Applications (ISAAA), genetically engineered (biotech, GM) crops were grown by approximately 8.5 million farmers in 21 countries in 2005, up from 8.25 million farmers in 17 countries in 2004. The largest increase in biotech crop area in any country in 2005 was in Brazil, provisionally estimated at 44,000 km² (94,000 km² in 2005 compared with 50,000 km² in 2004). India had by far the largest year-on-year proportional increase, with almost a threefold increase from 5,000 km² in 2004 to 13,000 km² in 2005.

Current high regulatory costs imposed on varieties created by the more modern methods are a significant hurdle for development of genetically engineered crops well suited to developing country farmers by modern genetic methods. Once a new variety is developed, however, seed provides a good vehicle for distribution of improvements in a package that is familiar to the farmer.

Currently there are some institutes and research groups that have projects in which biotechnology is shared with contact people in less-developed countries on a non-profit basis. These institutes make use of biotechnological methods that do not involve high research and registration costs, such as conservation and multiplication of germplasm and phytosanitation.

Apart from genetic engineering, other forms of biotechnology also hold promise for enhancing food security. For instance, perennial rice is being developed in China, which could dramatically reduce the risk of soil erosion on upland smallholder farms.

Fossil fuel dependence

Further information: Agriculture and petroleum and Peak oil's effects on agriculture

While agricultural output increased as a result of the Green Revolution, the energy input into the process (that is, the energy that must be expended to produce a crop) has also increased at a greater rate, so that the ratio of crops produced to energy input has decreased over time. Green Revolution techniques also heavily rely on chemical fertilizers, pesticides and herbicides, some of which must be developed from fossil fuels, making agriculture increasingly reliant on petroleum products.

Between 1950 and 1984, as the Green Revolution transformed agriculture around the globe, world grain production increased by 250%. The energy for the Green Revolution was provided by fossil fuels in the form of fertilizers (natural gas), pesticides (oil), and hydrocarbon fueled irrigation.

David Pimentel, professor of ecology and agriculture at Cornell University, and Mario Giampietro, senior researcher at the National Research Institute on Food and Nutrition (INRAN), place in their study *Food, Land, Population and the U.S. Economy* the maximum U.S. population for a sustainable economy at 200 million. To achieve a sustainable economy and avert disaster, the United States must reduce its population by at least one-third, and world population will have to be reduced by two-thirds, says the study.

The authors of this study believe that the mentioned agricultural crisis will only begin to impact us after 2020, and will not become critical until 2050. The oncoming peaking of global oil production (and subsequent decline of production), along with the peak of North American natural gas production will very likely precipitate this agricultural crisis much sooner than expected.[12] Geologist Dale Allen Pfeiffer claims that coming decades could see spiraling food prices without relief and massive starvation on a global level such as never experienced before.

However, one should take note that, (numbers taken from the CIA World Factbook), the country of Bangladesh achieved food self-sufficiency in 2002 with both a far higher population density than the USA (~1000 inhabitants per square kilometer in comparison to just 30/km^2 for the USA - so this is more than 30 times as many), and at only a tiny fraction of the USA's usage of oil, gas, and electricity. Also, pre-industrial Chinese mini-farmers/gardeners developed techniques to feed a population of more than 1000 people per square kilometer (cf. e.g. F.H. King's 1911 report, "Farmers of Forty Centuries"). Hence, the dominant problem is not energy availability but the need to stop and revert soil degradation.

Hybridization, genetic engineering and loss of biodiversity

In agriculture and animal husbandry, the green revolution popularized the use of conventional hybridization to increase yield by creating "high-yielding varieties". Often the handful of hybridized breeds originated in developed countries and were further hybridized with local varieties in the rest of the developing world to create high yield strains resistant to local climate and diseases. Local governments and industry have been pushing hybridization which has resulted in several of the indigenous breeds becoming extinct or threatened. Disuse because of unprofitability and uncontrolled intentional and unintentional cross-pollination and crossbreeding (genetic pollution), formerly huge gene pools of various wild and indigenous breeds

have collapsed causing widespread genetic erosion and genetic pollution. This has resulted in loss of genetic diversity and biodiversity as a whole.[60]

A genetically modified organism (GMO) is an organism whose genetic material has been altered using the genetic engineering techniques generally known as recombinant DNA technology. Genetically Modified (GM) crops today have become a common source for genetic pollution, not only of wild varieties but also of other domesticated varieties derived from relatively natural hybridization.

Genetic erosion coupled with genetic pollution may be destroying unique genotypes, thereby creating a hidden crisis which could result in a severe threat to our **food security**. Diverse genetic material could cease to exist which would impact our ability to further hybridize food crops and livestock against more resistant diseases and climatic changes.

Genetic erosion in agricultural and livestock biodiversity

Genetic erosion in agricultural and livestock biodiversity is the loss of genetic diversity, including the loss of individual genes, and the loss of particular combinants of genes (or gene complexes) such as those manifested in locally adapted landraces of domesticated animals or plants adapted to the natural environment in which they originated. The term genetic erosion is sometimes used in a narrow sense, such as for the loss of alleles or genes, as well as more broadly, referring to the loss of varieties or even species. The major driving forces behind genetic erosion in crops are: variety replacement, land clearing, overexploitation of species, population pressure, environmental degradation, overgrazing, policy and changing agricultural systems.

The main factor, however, is the replacement of local varieties of domestic plants and animals by high yielding or exotic varieties or species. A large number of varieties can also often be dramatically reduced when commercial varieties (including GMOs) are introduced into traditional farming systems. Many researchers believe that the main problem related to agro-ecosystem management is the general tendency towards genetic and ecological uniformity imposed by the development of modern agriculture.

Price setting

On April 30, 2008 Thailand announces the project of the creation of the Organisation of Rice Exporting Countries with the potential to develop into a price-fixing cartel for rice.

Treating food the same as other internationally traded commodities

On October 23, 2008, Associated Press reported the following:

"Former President Clinton told a U.N. gathering Thursday [Oct 16, 2008] that the global food crisis shows "we all blew it, including me," by treating food crops "like color TVs" instead of as a vital commodity for the world's poor....Clinton criticized

decades of policymaking by the World Bank, the International Monetary Fund and others, encouraged by the U.S., that pressured Africans in particular into dropping government subsidies for fertilizer, improved seed and other farm inputs as a requirement to get aid. Africa's food self-sufficiency declined and food imports rose. Now skyrocketing prices in the international grain trade—on average more than doubling between 2006 and early 2008—have pushed many in poor countries deeper into poverty."

Food is not a commodity like others. We should go back to a policy of maximum food self-sufficiency. It is crazy for us to think we can develop countries around the world without increasing their ability to feed themselves.[68]

– Former US President Bill Clinton, *Speech at United Nations World Food Day, October 16, 2008*

Hai Vo wins Brower Youth Award

Hai Vo, a 2009 graduate of Social Ecology at UCI and a CUSA Student Research Associate, has been chosen as a winner of a 2009 Brower Youth Award. Hai co-founded the Real Food Challenge (RFC) at the University of California at Irvine (UCI) and worked with CUSA on a series of research, education and advocacy projects related to improving the sustainability of campus food systems.

In their citation of Hai, Earth Island Institute noted, "In order to educate and connect students, Hai co-organized events that brought students together to "simply eat," and to discuss their understanding of food. The RFC at UCI has engaged over 500 campus and community members in leadership development, networking convergences, dinners, roundtable events, educational series, and online networks, all centered around sustainable food systems." Earth Island Institute established the Brower Youth Awards in 2000 to honor founder and legendary environmental activist, David R. Brower and to call forth a new generation of leaders. Vo was be formally recognized for his efforts at the 10th Annual Brower Youth Awards on October 20, 2009 in San Francisco, California. Learn more about Hai and the other 2009 Brower Youth Award winners at Earth Island Institute's website.

Related Publications and Activities

Bryan McDonald presented "Food Security in an Age of Global Change" to the Paul Merage School of Business' Prosperitas group on January 28, 2010. Visit the Proseritas website to learn more about this event.

Bryan McDonald presented a paper on "Food Security and Global Environmental Change: Improving U.S. and Canadian Cooperation in the Face of Shared Threats and Vulnerabilities" to and interdisciplinary symposium on "Canadian Studies: On the Edge" held at the University of Southern California on October 9, 2009.

McDonald, Bryan L. and Richard A. Matthew. "Food Security in a Global Age: Addressing Challenges from Malnutrition, Food Safety and Environmental Change."

Presented at the 2009 Annual Meeting of the American Political Science Association, Toronto, ON, Canada, September 3-6, 2009.

Bryan McDonald presented on "The Security of Food Production: What does the Future Hold?" as part of the 2008 California Alfalfa & Forage Symposium and Western Seed Conference held from December 2-4, 2008 in San Diego, California. This conference was organized by: UC Alfalfa & Forage Systems Workgroup, University of California Cooperative Extension, Western Alfalfa Seed Growers Association, University of Arizona Cooperative Extension.

CUSA presented a course on "Unconventional Security Issues" to the Osher Lifelong Learning Institute at UC, Irvine. The course, on October 14 and 21 included presentations by CUSA's Bryan McDonald about the changing landscape of security threats facing the United States including discussions about CUSA's work on food security.

Dr. Vandana Shiva presented the Center for Global Peace and Conflict Studies' 17th Annual Margolis Lecture on "The New Food Wars: Globalization, GMOs, and Biofuels." This speech on Wednesday, April 30, 2008 was supported by CUSA as part of our program of activities on food secuirty.

CUSA presented a course on "Unconventional Security Issues II" to the Osher Lifelong Learning Institute at UC, Irvine. The course, on April 17 and 24, included presentations by CUSA's Richard Matthew, Heather Goldsworthy, Bryan McDonald and Crystal Murphy Morgan on a range of issues including climate change, food security, terrorism, infectious disease, and microfinance and social entreprenuership.

CUSA took part in Focus the Nation: Sustainability and Climate Change Solutions at UCI on January 31, 2008. Part of a nationwide series of events, the Focus the Nation event at UC Irvine lays the foundation for a serious discussion about global warming solutions. CUSA related presentations included: Richard Matthew, "Climate Change, Peace and Conflict" and Bryan McDonald, "Climate Change, Sustainability and the Global Food System."

Bryan McDonald presented "Navigating the Changing Security Landscape"to the UC, Irvine Chancellor's Club on Tuesday, January 22, 2008. McDonald, who was a 2006-2007 Chancellor's Club Fellowship recipient, provided an overview of unconventional security issues and the changing security landscape in the context of two cases: (1) food safety and security, and (2) the growth of virtual worlds and cyber security challenges.

CUSA presented a course on "Unconventional Security Issues" to the Osher Lifelong Learning Institute at UC, Irvine. The course, on September 18 and 25, included lessons on a range of security issues including climate change, food security, terrorism, and infectious disease.

Bryan McDonald, "The Food System and Human Security: Confronting Hunger and Biological Threats in a Time of Global Change." Presented at 47th International Studies Associationconvention, held March 22-25, 2006, in San Diego, California.

Richard Matthew and Bryan McDonald. "Cities Under Siege: Urban Planning and the Threat of Infectious Disease." *Journal of the American Planning Association (JAPA)* Vol. 72 No. 1 (Winter 2006): 109-117.

Bryan McDonald, "Human Security and Food Security in an Age of Transnational Threats,"Public Policy and Security Speaker Series, University of California, Los Angeles, May 10 2005.

Richard Matthew and Bryan McDonald. "Cities Under Siege: Transnational Threats and Urban Vulnerabilities." Presented at the American Planning Association's 2005 National Planning Conference, San Francisco, California., March 20, 2005.

Bryan McDonald, "Biotech Food, Biosecurity, and Changes in World Politics."Presented at the annual meeting of theAmerican Political Science Association, Chicago, Illinois, September 2-5, 2004.

Bryan McDonald, "From AgBioTech to AgBioTerror: Genetically Modified Food and International Security in the 21st Century." Presented at the annual meeting of The International Studies Association, Montreal, Canada, March 17-20, 2004.

Program Areas

Work at the SSRC is focused on four program areas, each of which supports working groups, conferences, grants and fellowships, and a wide range of other research activities: 1) Global Security and Cooperation; 2) Knowledge Institutions; 3) Migration; and 4) Renewing the Public. Examples of our work in each of these areas are provided below.

Global Security And Cooperation

The SSRC has a long-standing commitment to developing better understanding of problems of global security and cooperation, from work on arms control and nuclear proliferation, to emerging social, political, and religious movements, global public health challenges, and persistent forms of conflict and threats to human security. More recently, a significant portion of our work in this area clusters around the environment, building on the Council's decade-long "Global Environmental Change Program" as well as on our staff capacities in East Asia.

Examples of current program activity in this area include:

- Conflict Prevention and Peace Forum (CPPF), working to strengthen the knowledge base and analytical capacity of the United Nations system by providing UN staff with systematic channels of access to scholars, experts and practitioners outside

the intergovernmental system. In 2008, CPPF engaged with some 23 countries and conflict situations in Africa, Asia and Latin America.

- HIV/AIDS Program, engaging government, non-governmental, and multilateral policy makers, as well as practitioners, in discussions on the global politics of AIDS, while also tackling methodological issues relating to sexual violence and conflict and HIV/AIDS.

- Gender and Security Program, an offshoot of our work on HIV/AIDS that is helping to advance new research agendas relating to gender, conflict and security, and sexual violence.

- Project on HIV/AIDS in the Russian Federation, which recently completed its first phase.

- China Environment and Health Program, promoting the generation and dissemination of new, social science-based research on the relationship between health, environment, and development in China.

- Ongoing work on provincial health in Vietnam by the Vietnam Program.

- Inaugural CGP-SSRC Policy Forum, which explored measures for energy saving and reducing air pollution and CO2 emissions for use by local officials, activists, and other actors in mid-sized cities within developing Asian countries.

- American Human Development Project, which by gathering data on well-being for each of America's congressional districts turns the lens of human security on the United States.

- Alex de Waal's program on Sudan and Darfur as well as his initiatives on How Genocides End, the Epidemiology of Lethal Violence, and the Political Marketplace.

- Leon Sigal's Northeast Asia Security Project, which among other activities has been helping to facilitate visits to Pyongyang, North Korea, for Obama administration officials.

Knowledge Institutions

Technological, social, political, and economic conditions are changing the production of knowledge in contemporary societies. Traditional institutions of science and education are being transformed and new ones created. The SSRC works to understand these shifts and their implications. It affirms a commitment to rigorous social science that can inform public and private sectors on topics related to mounting challenges in public higher education, changing models of undergraduate

and graduate training, new practices of scientific research, and emerging partnerships in K-12 education.

Examples of current program activity in this area include:

- Digital Media and Learning Program, examining the impacts of digital media on the learning practices and processes of social institutions like schools, libraries, museums, community centers, and science centers.

- Future of Science Program, assessing the effectiveness of NSF-sponsored programs that have been designed to prepare graduate students in the sciences for collaborative interdisciplinary research.

- Education Research Program, dedicated to the promotion of rigorous social science research on education. Recent intiatives have included incubating a Research Alliance on New York City Schools, leading a longitudinal study on the effectiveness of higher education for America's underserved populations, and initiating a major cross-national study of school discipline and its impact on student performance.

Migration

International migration is at historically high levels. Enormous movements of people are changing the demographic composition of host and sending societies, with profound implications for economic, cultural and political life. The SSRC organizes and sponsors research on migration that focuses both on the experiences of individual nations and localities and on the comparative and collaborative dimensions of immigration across nations and regions.

The SSRC's Migration Program has led our work in this area since 1994. Its recent work focuses on:

- Migration and Development, helping researchers and practitioners to better understand how migration and development affect one another.

- Migration and Religion, bringing together scholars to explore the interrelationship between religion and settlement in new societies.

- Migration and Education, studying the educational needs of immigrant and second generation students.

- Diaspora-Government Relations, working to determine how members of diasporas and the U.S. government seek to influence one another in attaining goals having to do with migrants' homelands.

Renewing The Public

The "public" is distinct from community or even civil society in general. Publics connect people who are not in the same families, communities, and clubs–people who are not the same as each other. As such, they are central to the functioning of modern societies. What are the forms, locations, and conditions of public life? How do publics work, how are they supported by different kinds of physical and virtual communicative spaces, how do they figure in political and cultural life? For several years, the SSRC's work in this area centers on the parts played by media and religion in fostering a democratic public sphere, on public and private responses to risk and catastrophe, and on public issues in urban development. Moving forward, we are pursuing projects related to President Obama's efforts to make the government a more effective provider of public services and a more effective partner to private organizations that pursue the public good. See Craig Calhoun's recent essay, "Remaking America: Public Institutions and the Public Good."

Examples of current program activity in this area include:

- The Transformations of the Public Sphere essay forum and Public Sphere Guide, resources for the renewal of the public sphere.

- Necessary Knowledge for a Democratic Public Sphere Program, working to foster a stronger culture of collaboration among researchers, advocates, and activists working on policy and social change issues in media and communications.

- "Toward Detente in Media Piracy" Project, continuing a long line of SSRC work on intellectual property.

- Media Research Hub, designed to map relations among people, institutions, and resources within the media field.

- Religion and the Public Sphere Program, pursuing projects on religion and international affairs and on how spiritual practice shapes public life in the United States.

- Academia and the Public Sphere Grants Program, promoting public engagement by scholars who have specialized knowledge of Islamic traditions and Muslim communities.

- Privatization of Risk Project, seeking to advance work on the consequences of America having displaced risk from institutions and communities onto families.

- Learning from Katrina Project, mobilizing research on issues connected to the Katrina disaster and to similar events.

- Mixed Income Housing Research Design Project, addressing a significant lacuna in research literature on public housing in the United States.

Global Monitoring for Environment and Security

Global Monitoring for Environment and Security (**GMES**) is a joint initiative of the European Commission and European Space Agency, which aims at achieving an autonomous and operational Earth observation capacity.

The objective is to rationalize the use of multiple-sources data to get a timely and quality information, services and knowledge, and to provide autonomous and independent access to information in relation to environment and security. In other words, it will pull together all the information obtained by environmental satellites, air and ground stations to provide a comprehensive picture of the "health" of Earth.

Main users of GMES will be policy-makers. GMES should allow them to prepare national, European and international legislation on environmental matters (including climate change) and to monitor the implementation of this legislation.

GMES builds upon 4 pillars: the space component (observation satellites and associated ground segment with missions observing land, atmospheric and oceanographic parameters), in-situ measurements (ground-based and airborne data gathering networks providing information on oceans, continental surface and atmosphere), data harmonization and standardization, and services to users.

The geo-spatial information services offered by GMES can be grouped into six main interacting themes: land, ocean, emergency response, atmosphere, security and climate change. The first three GMES services under the land, ocean and emergency response themes and two additional services addressing the atmosphere and security themes were unveiled at the GMES Forum held in Lille in September 2008. Currently in their pre-operational phase, it is foreseen that these services enter into a EU-wide operational phase by 2011, with the objective to be fully operational by 2014.

GMES is fast moving towards an operational phase. The key to providing operational GMES services is to have an appropriate governance and business model structure in place which supports provisioning of these services.

GMES is the European Union contribution to the Global Earth Observation System of Systems GEOSS.

A brief history of GMES

19 May 1998: institutions involved in the development of space activities in Europe give birth to GMES through a declaration known as "The Baveno Manifesto". At that time, GMES stands for "Global Monitoring for Environmental Security"

Year 1999: the name is changed to "Global Monitoring for Environment and Security", thus illustrating that the management of the environment also has security implications.

Year 2001: at the occasion of the Gothenburg Summit, the Heads of State and Government request that "*the Community contribute to establishing by 2008 a European capacity for Global Monitoring for Environment and Security*".

October 2002: the nature and scope of the "Security" component of GMES are defined as addressing prevention of and response to crises related to natural and technological risk, humanitarian aid and international cooperation, monitoring of compliance with international treaties for conflict prevention, humanitarian and rescue tasks, peacekeeping tasks and surveillance of EU borders.

February 2004: the Commission Communication "*GMES: Establishing a GMES capacity by 2008*" introduces an Action Plan aimed at establishing a working GMES capacity by 2008. In 2004, a Framework Agreement is also signed between EC and ESA, thus providing the basis for a space component of GMES.

May 2005: the Commission Communication "*GMES: From Concept to Reality*" establishes priorities for the roll-out of GMES services in 2008, the initial focus being on land monitoring, marine monitoring and emergency response services, also known as Fast Track Services (FTS). Later services, also known as Pilot Services, are expected to address atmosphere monitoring, security and climate change.

June 2006: the EC establishes the GMES Bureau, with the primary objective of ensuring the delivery of the priority services by 2008. Other objectives of the GMES Bureau are to address the issues of the GMES governance structure and the long-term financial sustainability of the system.

May 2007: adoption of the European Space Policy Communication, recognising GMES as a major flagship of the Space Policy.

September 2008: official launch of the 3 FTS services and 2 Pilot services in their pre-operational version at the occasion of the GMES Forum held in Lille, France.

November 2008: the Commission Communication "*GMES: We care for a Safer Planet*" establishes a basis for further discussions on the financing, operational infrastructure and effective management of GMES.

May 2009: the Commission Proposal for a Regulation on "*the European Earth Observation Programme (GMES) and its initial operations (2011-2013)*" proposes a legal basis for the GMES programme and EC funding of its initial operations.

From R&D to operational services

Over the last decades, European and national institutions have made substantial R&D efforts in the field of Earth observation. These efforts have resulted into tremendous achievements but the services and products developed during this period have limitations which are inherent to R&D activities (e.g. lack of service continuity on the long-term).

GMES has been conceived to move from R&D to operational services. The transition to operational services follows a phased approach:

- **2008 – 2010**: GMES pre-operational services (FTS and Pilot services)
- **2011 – 2013**: GMES initial operations
- **From 2014**: GMES fully operational services

The development of the five services is being realised by a series of projects launched by the European Commission and partly funded through the EU's 7th Framework Programme (FP7). These projects are geoland2 (land), MyOcean (marine), SAFER (emergency response), MACC (atmosphere) and G-MOSAIC (security).

- Geoland2 started on 1 September 2008. The project covers a wide range of domains such as land use, land cover change, soil sealing, water quality and availability, spatial planning, forest management, carbon storage and global food security.
- **MyOcean** started on 1 January 2009. It covers themes such as maritime security, oil spill prevention, marine resource management, climate change, seasonal forecast, coastal activities, ice survey and water pollution.
- **SAFER** started on 1 January 2009. The project addresses three main domains: civil protection, humanitarian aid and Security crises management.
- **MACC** started on 1 June 2009. The project will continue and refine the products developed in the projects GEMS and PROMOTE.
- **G-MOSAIC** started on 1 January 2009. Together with the LIMES project (partly funded by the European Commission under FP6), G-MOSAIC addresses domains such as maritime surveillance, critical infrastructure surveillance and support to peace-keeping operations.

Space missions

ESA is currently developing five types of new satellites called Sentinel to meet the needs of the GMES programme. The Sentinel missions include radar and super-spectral imaging for land, ocean and atmospheric monitoring. The Sentinel missions will have the following objectives:

- Sentinel 1 will provide all-weather, day and night radar imaging for land and ocean services. The first Sentinel-1 satellite is planned for launch at the end of 2011;
- Sentinel 2 will provide high-resolution optical imaging for land services (e.g. imagery of vegetation, soil and water cover, inland waterways and coastal areas). Sentinel-2 will also provide information for emergency services. The first Sentinel-2 satellite is planned for launch at the end of 2012;
- Sentinel 3 will provide ocean and global land monitoring services. The first Sentinel-3 satellite is planned for launch at the end of 2012;
- Sentinel-4, embarked as a payload upon a Meteosat Third Generation Satellite, will provide data for atmospheric composition monitoring. It will be launched in 2017;

- Sentinel-5 will also provide data for atmospheric composition monitoring. It will be embarked on a post-EUMETSAT Polar System (EPS) spacecraft and launched in 2019;
- Sentinel-6 is the intent to sustain high precision altimetry missions following the Jason-2 satellite.

Before the Sentinel missions provide data to GMES, numerous existing or planned space missions provide or will provide data useful to the provision of GMES services. These missions are often referred to as "*GMES Contributing Missions (GCMs)*".

ERS: The European Remote Sensing Satellite ERS-1 (1991-2000) was ESA's first Earth observation satellite. ERS-2, launched in 1995, provides data related to ocean surface temperature, winds at sea and atmospheric ozone.

ENVISAT: Launched in 2002, Envisat is the largest Earth Observation spacecraft ever built. It carries sophisticated optical and radar instruments among which the Advanced Synthetic Aperture Radar (ASAR) and the Medium Resolution Imaging Spectrometer (MERIS). Envisat provides continuous observation and monitoring of the Earth's land, atmosphere, oceans and ice caps. ESA Member States have unanimously voted to extend the Envisat mission through to 2013.

Earth Explorers: Earth Explorers are smaller research missions dedicated to specific aspects of our Earth environment. Earth Explorer missions focus on the atmosphere, biosphere, hydrosphere, cryosphere and the Earth's interior with the overall emphasis on learning more about the interactions between these components and the impact that human activity is having on natural Earth processes. There are 6 missions selected for implementation:

- GOCE (Gravity Field and Steady-State Ocean Explorer), launched on 17 March 2009
- SMOS (Soil Moisture and Ocean Salinity), launched on 2 November 2009
- CryoSat-2 (measurement of the thickness of floating ice), scheduled for launch on 25 February 2010.
- Swarm (high-precision and high-resolution measurements of the strength and direction of the Earth's magnetic field), scheduled for launch in 2011
- ADM-Aeolus (Atmospheric Dynamics Mission), scheduled for launch in 2011
- EarthCARE (Earth Clouds, Aerosols and Radiation Explorer), scheduled for launch in 2013

MSG: the Meteosat Second Generation is a joint project between ESA and EUMETSAT.

MetOp: MetOp is Europe's first polar-orbiting satellite dedicated to operational meteorology. MetOp is a series of three satellites to be launched sequentially over 14 years from October 2006. The series will provide data for both operational meteorology and climate studies.

SPOT: SPOT (Satellite Pour l'Observation de la Terre) consists of a series of earth observation satellites providing high resolution images of the Earth. SPOT-4 and SPOT-5 include sensors called VEGETATION able to monitor continental ecosystems.

TerraSAR-X: TerraSAR-X is a Earth observation satellite providing high quality topographic information. TerraSAR-X data have a wide range of applications (e.g. hydrology, meteorology, land use monitoring for agriculture, forest management and environmental protection)

COSMO-SkyMed: the COnstellation of small Satellites for the Mediterranean basin Observation is an Earth observation satellite system which will include four satellites equipped with synthetic aperture radar (SAR) sensors. Applications include seismic hazard analysis, environmental disaster monitoring and agricultural mapping.

DMC: The Disaster Monitoring Constellation (DMC) consists of five remote-sensing satellites. The constellation provides emergency Earth imaging for disaster relief under the International Charter for Space and Major Disasters.

JASON-2: The JASON-2 satellite provides precise measurements of ocean surface topography, surface wind speed and wave height; as this type of measurement is a crucial requirement for the GMES Marine Services the European Commission has included this type of mission in its latest communication on the future GMES Space Component as Sentinel 6

PLEIADES: The PLEIADES constellation consists of two satellites providing very high resolution images of the Earth

Data provided by non-European satellite missions (e.g. LANDSAT, GOSAT, RADARSAT) can also be used by GMES.

Other relevant initiatives

Other initiatives will also facilitate the development and functioning of GMES services:

- INSPIRE: this initiative aims at building a European spatial data infrastructure beyond national boundaries.
- Urban Atlas: Compiled from thousands of satellite photographs, the Urban Atlas provides detailed and cost-effective digital mapping, ensuring that city planners have the most up-to-date and accurate data available on land use and land cover. The Urban Atlas will enable urban planners to better assess risks and opportunities, ranging from threat of flooding and impact of climate change, to identifying new infrastructure and public transport needs. All cities in the EU will be covered by the Urban Atlas by 2011.
- SEIS: The Shared Environmental Information System (SEIS) is a collaborative initiative of the European Commission and the European Environment Agency (EEA) to establish together with the Member States an integrated and shared EU-wide environmental information system.

GMES is one of three related initiatives that are the subject of the GIGAS (*GEOSS, INSPIRE and GMES an Action in Support*) harmonization project under the auspices of the EU 7th Framework Programme.[1]

Environmental security

The Copenhagen School defines the referent object of environmental security as the environment as such, or some strategic part of the environment. [1]

Historically, the definition of international security has been debated extensively by political scientists and others, and has varied over time. After World War II, definitions typically focused on the subject of realpolitik that developed during the Cold War between the United States and the Soviet Union.

As tensions between the superpowers eased after the collapse of the Soviet Union, academic discussions of definitions of security significantly expanded to encompass a far broader range of threats to peace, including, particularly, environmental threats associated with the political implications of resource use or pollution. By the mid-1980s, this field of study was becoming known as "environmental security". Despite a wide range of semantic and academic debates over terms, it is now widely acknowledged that environmental factors play both direct and indirect roles in both political disputes and violent conflicts.

In the academic sphere environmental security is defined as the relationship between security concerns such as armed conflict and the natural environment. A small but rapidly developing field, it has become particularly relevant for those studying resource scarcity and conflict in the developing world. Prominent early researchers in the field include Felix Dodds, Norman Myers, Jessica Tuchman Mathews, Richard Ullman, Arthur Westing, Thomas Homer Dixon, Geoffrey Dabelko, Peter Gleick, and Joseph Romm.

The Millennium Project did a global assessment of the definitions of environmental security and created a synthesis definition: Environmental Security is environmental viability for life support, with three sub-elements:

- preventing or repairing military damage to the environment,
- preventing or responding to environmentally caused conflicts, and
- protecting the environment due to its inherent moral value.

Information security

The protection of data against unauthorized access. Programs and data can be secured by issuing passwords and digital certificates to authorized users. However, passwords only validate that a correct number has been entered, not that it is the actual person. Digital certificates and biometric techniques (fingerprints, eyes, voice, etc.) provide a more secure method (see authentication). After a user has been authenticated, sensitive data can be encrypted to prevent eavesdropping.

Authorized Users Can Be the Most Dangerous

Although precautions can be taken to authenticate users, it is much more difficult to determine if an authorized employee is doing something malicious. Someone may have valid access to an account for updating, but determining whether phony numbers are being entered requires a great deal more processing. The bottom line is that effective security measures are always a balance between technology and personnel management. See Parkerian hexad, information assurance, security scan, security audit, audit trail, NCSC, ICSA, access control, share-level security, user-level security and social engineering.

Face recognition is one of the best ways to authenticate a person. This TrueFace system from Miros uses neural network technology to distinguish a face with different appearances, such as with and without glasses and changing hair styles. (Image courtesy of Miros, Inc.)

Information security, often compressed to "infosec," is the preservation of secrecy and integrity in the storage and transmission of information. Whenever information of any sort is obtained by an unauthorized party, information security has been breached. Breaches of information security can be grouped into five basic classes: (1) interception of messages; (2) theft of stored data; (3) information sabotage (i.e., alteration or destruction of data belonging to another party); (4) spoofing (i.e., using stolen information to pose as somebody else); and (5) denial of service (i.e., deliberate shutdown of cash machines, electric-supply grids, air-traffic control networks, or the like). Individual computer experts ("hackers"), intelligence agencies, criminals, rival businesses, disgruntled employees, and other parties may all seek to breach information security. All these parties, plus law-abiding private individuals who wish to guard their privacy and protect themselves from identity theft, also have an interest in preserving information security.

Messages and secrets have been subject to interception and theft ever since the invention of writing, but the modern situation is especially challenging. Electronic storage, processing, and transmission of information are now ubiquitous in the developed world, creating novel vulnerabilities. People are authorized to withdraw cash or purchase products on the basis of a piece of information (password or credit card number); trade secrets and business plans are electronically transmitted around the globe. In the U.S., over 95% of military and intelligence communications pass through network facilities owned by private carriers (e.g., the telephone system). Private speech may be broadcast locally by a mobile or cellular telephone or transmitted digitally over a network that can be tapped in numerous locations; databases full of confidential data reside in computers that can be accessed, perhaps illegally, by other computers communicating through networks; and so on. Information security—or insecurity—is a pervasive fact of modern life.

Consequently, breaching information security has become a common practice. For example, credit-card fraud costs approximately $20 per card per year. In 1994, an international criminal group used the Internet to penetrate Citicorp's computer system and shift $12 million from legitimate users' accounts to its own. Two ex-

directors of the French in[1]telligence agency DGSE (Direction Generale de la Sécurité Extérieure) have confirmed that one of the agency's highest priorities is to spy on non-French corporations and business-related government agencies. United States government agencies such as the Office of the U.S. Trade Representative and high-tech companies such as Boeing, General Dynamics, Hughes Aircraft, and others have been specifically targeted by French espionage—and probably also by other organizations that happen to be less frank (or more prudent) in their public statements.

There are many tools for increasing information security, including software that scans for computer viruses or prevents unauthorized intrusions into computer systems from the networks; password systems of all sorts; physical access security for computers, discs, passcards, credit cards, and other objects containing sensitive information; and encryption of messages and of databases. While all these tools are important to the conduct of business by a large business or government department, passwords and encryption are probably the most important.

Passwords have the advantage of being simple to use. They are not, however, capable by themselves of providing a high level security for large numbers of users. First, most users are asked to supply passwords for many different systems: banking, shopping, e-mail, and so forth. This tempts users to choose short passwords (which are easier to remember but also easier to guess, therefore weaker) and to use the same password for more than one system (causing a domino effect if a password is guessed).

Cryptography—the process by which raw message information (*plaintext*) is mapped or *encrypted* to a scrambled form (*ciphertext*) before transmission or storage, then mapped back to its original form again (*decrypted*) when an authorized party wishes to read the plaintext—is arguably the ultimate tool of information security. High-quality cryptographic systems that are breachable (if at all) only by resource-rich groups like the U.S. National Security Agency are widely available to businesses, governments, and private individuals. Appropriate cryptography can virtually guarantee the security of messages in transit and of information in databases; it can also, through "authentication," act as a super-password system whereby the identity of a would-be user (or information service supplier) can be positively confirmed. Cryptography has the disadvantages of added complexity, higher cost, and system slowdown.

Cryptography is also politically controversial, despite—or rather, because of—its technical power. Governments, corporations, private individuals, and private groups all have both legitimate and, occasionally, illegitimate motives for information security. Law-abiding persons and groups, or those rebelling against repressive laws, wish to be secure from surveillance by governments; criminals, terrorists, and the like also wish to be secure from surveillance by governments; government agents who are committing crimes wish to avoid public exposure; and so forth. It is generally advantageous to *all* parties, whether their activities are legitimate or illegitimate in whatever sense, to advocate maximum privacy for their own activities;

it is generally advantageous to *governments* to advocate, in addition, maximum transparency for everyone else. Thus, for example, the U.S. government has sought (with little success) to prevent the spread of high-quality encryption algorithms, such as Pretty Good Privacy, outside the U.S., and inside the country has sought to establish voluntary compliance with "escrowed" cryptography systems. In such systems a government agency stores copies of cryptographic keys that enable it to decrypt communications between private parties using the system. In theory, these escrowed keys would be released to police or other government agents only when the court system had determined that there was a legitimate lawenforcement or national-security need to do so. Because such systems allow for third-party access to encrypted information by design, they are intrinsically less secure than a non-escrowed cryptography system, and therefore predictably unpopular with the private sector.

(DOD) The protection of information and information systems against unauthorized access or modification of information, whether in storage, processing, or transit, and against denial of service to authorized users. Information security includes those measures necessary to detect, document, and counter such threats. Information security is composed of computer security and communications security. Also called INFOSEC. See also communications security; computer security; information security; information system.

Information Security Components: or qualities, i.e., Confidentiality, Integrity and Availability (CIA). Information Systems are decomposed in three main portions, hardware, software and communications with the purpose to identify and apply information security industry standards, as mechanisms of protection and prevention, at three levels or layers: Physical, personal and organizational. Essentially, procedures or policies are implemented to tell people (administrators, users and operators)how to use products to ensure information security within the organizations.

Information security means protecting information and information systems from unauthorized access, use, disclosure, disruption, modification or destruction.[1]

The terms information security, computer security and information assurance are frequently incorrectly used interchangeably. These fields are interrelated often and share the common goals of protecting the confidentiality, integrity and availability of information; however, there are some subtle differences between them.

These differences lie primarily in the approach to the subject, the methodologies used, and the areas of concentration. Information security is concerned with the confidentiality, integrity and availability of data regardless of the form the data may take: electronic, print, or other forms.

Computer security can focus on ensuring the availability and correct operation of a computer system without concern for the information stored or processed by the computer.

Governments, military, corporations, financial institutions, hospitals, and private businesses amass a great deal of confidential information about their employees, customers, products, research, and financial status. Most of this information is now collected, processed and stored on electronic computers and transmitted across networks to other computers.

Should confidential information about a business' customers or finances or new product line fall into the hands of a competitor, such a breach of security could lead to lost business, law suits or even bankruptcy of the business. Protecting confidential information is a business requirement, and in many cases also an ethical and legal requirement.

For the individual, information security has a significant effect on privacy, which is viewed very differently in different cultures.

The field of information security has grown and evolved significantly in recent years. As a career choice there are many ways of gaining entry into the field. It offers many areas for specialization including: securing network(s) and allied infrastructure, securing applications and databases, security testing, information systems auditing, business continuity planning and digital forensics science, to name a few.

History

Since the early days of writing, heads of state and military commanders understood that it was necessary to provide some mechanism to protect the confidentiality of written correspondence and to have some means of detecting tampering.

Julius Caesar is credited with the invention of the Caesar cipher c50 B.C., which was created in order to prevent his secret messages from being read should a message fall into the wrong hands.

World War II brought about many advancements in information security and marked the beginning of the professional field of information security.

The end of the 20th century and early years of the 21st century saw rapid advancements in telecommunications, computing hardware and software, and data encryption. The availability of smaller, more powerful and less expensive computing equipment made electronic data processing within the reach of small business and the home user. These computers quickly became interconnected through a network generically called the Internet or World Wide Web.

The rapid growth and widespread use of electronic data processing and electronic business conducted through the Internet, along with numerous occurrences of international terrorism, fueled the need for better methods of protecting the computers and the information they store, process and transmit. The academic disciplines of computer security, information security and information assurance emerged along with numerous professional organizations - all sharing the common goals of ensuring the security and reliability of information systems.

Basic principles

Key concepts

For over twenty years, information security has held confidentiality, integrity and availability (known as the CIA triad) as the core principles of information security. Many information security professionals firmly believe that Accountability should be added as a core principle of information security.

Confidentiality

Confidentiality is the term used to prevent the disclosure of information to unauthorized individuals or systems. For example, a credit card transaction on the Internet requires the credit card number to be transmitted from the buyer to the merchant and from the merchant to a transaction processing network. The system attempts to enforce confidentiality by encrypting the card number during transmission, by limiting the places where it might appear (in databases, log files, backups, printed receipts, and so on), and by restricting access to the places where it is stored. If an unauthorized party obtains the card number in any way, a breach of confidentiality has occurred.

Breaches of confidentiality take many forms. Permitting someone to look over your shoulder at your computer screen while you have confidential data displayed on it could be a breach of confidentiality. If a laptop computer containing sensitive information about a company's employees is stolen or sold, it could result in a breach of confidentiality. Giving out confidential information over the telephone is a breach of confidentiality if the caller is not authorized to have the information.

Confidentiality is necessary (but not sufficient) for maintaining the privacy of the people whose personal information a system holds.

Integrity

In information security, integrity means that data cannot be modified without authorization. This is not the same thing as referential integrity in databases. Integrity is violated when an employee accidentally or with malicious intent deletes important data files, when a computer virus infects a computer, when an employee is able to modify his own salary in a payroll database, when an unauthorized user vandalizes a web site, when someone is able to cast a very large number of votes in an online poll, and so on.

There are many ways in which integrity could be violated without malicious intent. In the simplest case, a user on a system could mis-type someone's address. On a larger scale, if an automated process is not written and tested correctly, bulk updates to a database could alter data in an incorrect way, leaving the integrity of the data compromised. Information security professionals are tasked with finding ways to implement controls that prevent errors of integrity.

Availability

For any information system to serve its purpose, the information must be available when it is needed. This means that the computing systems used to store and process the information, the security controls used to protect it, and the communication channels used to access it must be functioning correctly. High availability systems aim to remain available at all times, preventing service disruptions due to power outages, hardware failures, and system upgrades. Ensuring availability also involves preventing denial-of-service attacks.

In 2002, Donn Parker proposed an alternative model for the classic CIA triad that he called the six atomic elements of information. The elements are confidentiality, possession, integrity, authenticity, availability, and utility. The merits of the Parkerian hexad are a subject of debate amongst security professionals.

Authenticity

In computing, e-Business and information security it is necessary to ensure that the data, transactions, communications or documents (electronic or physical) are genuine. It is also important for authenticity to validate that both parties involved are who they claim they are

Non-repudiation

In law, non-repudiation implies one's intention to fulfill their obligations to a contract. It also implies that one party of a transaction cannot deny having received a transaction nor can the other party deny having sent a transaction.

Electronic commerce uses technology such as digital signatures and encryption to establish authenticity and non-repudiation.

Risk management

A comprehensive treatment of the topic of risk management is beyond the scope of this article. However, a useful definition of risk management will be provided as well as some basic terminology and a commonly used process for risk management.

The CISA Review Manual 2006 provides the following definition of risk management: *"Risk management is the process of identifying vulnerabilities and threats to the information resources used by an organization in achieving business objectives, and deciding what countermeasures, if any, to take in reducing risk to an acceptable level, based on the value of the information resource to the organization."*[2]

There are two things in this definition that may need some clarification. First, the *process* of risk management is an ongoing iterative process. It must be repeated indefinitely. The business environment is constantly changing and new threats and vulnerability emerge every day. Second, the choice of countermeasures (controls) used to manage risks must strike a balance between productivity, cost, effectiveness of the countermeasure, and the value of the informational asset being protected.

Risk is the likelihood that something bad will happen that causes harm to an informational asset (or the loss of the asset). A **vulnerability** is a weakness that could be used to endanger or cause harm to an informational asset. A **threat** is anything (man made or act of nature) that has the potential to cause harm.

The likelihood that a threat will use a vulnerability to cause harm creates a risk. When a threat does use a vulnerability to inflict harm, it has an impact. In the context of information security, the impact is a loss of availability, integrity, and confidentiality, and possibly other losses (lost income, loss of life, loss of real property). It should be pointed out that it is not possible to identify all risks, nor is it possible to eliminate all risk. The remaining risk is called *residual risk*.

A risk assessment is carried out by a team of people who have knowledge of specific areas of the business. Membership of the team may vary over time as different parts of the business are assessed. The assessment may use a subjective qualitative analysis based on informed opinion, or where reliable dollar figures and historical information is available, the analysis may use quantitative analysis.

In broad terms the risk management process consists of:

1. Identification of assets and estimating their value. Include: people, buildings, hardware, software, data (electronic, print, other), supplies.
2. Conduct a threat assessment. Include: Acts of nature, acts of war, accidents, malicious acts originating from inside or outside the organization.
3. Conduct a vulnerability assessment, and for each vulnerability, calculate the probability that it will be exploited. Evaluate policies, procedures, standards, training, physical security, quality control, technical security.
4. Calculate the impact that each threat would have on each asset. Use qualitative analysis or quantitative analysis.

5. Identify, select and implement appropriate controls. Provide a proportional response. Consider productivity, cost effectiveness, and value of the asset.
6. Evaluate the effectiveness of the control measures. Ensure the controls provide the required cost effective protection without discernible loss of productivity.

For any given risk, Executive Management can choose to **accept the risk** based upon the relative low value of the asset, the relative low frequency of occurrence, and the relative low impact on the business. Or, leadership may choose to **mitigate the risk** by selecting and implementing appropriate control measures to reduce the risk. In some cases, the risk can be **transferred** to another business by buying insurance or out-sourcing to another business. The reality of some risks may be disputed. In such cases leadership may choose to **deny the risk**. This is itself a potential risk.[*citation needed*]

Controls

When Management chooses to mitigate a risk, they will do so by implementing one or more of three different types of controls.

Administrative

Administrative controls (also called procedural controls) consist of approved written policies, procedures, standards and guidelines. Administrative controls form the framework for running the business and managing people. They inform people on how the business is to be run and how day to day operations are to be conducted. Laws and regulations created by government bodies are also a type of administrative control because they inform the business. Some industry sectors have policies, procedures, standards and guidelines that must be followed - the Payment Card Industry (PCI) Data Security Standard required by Visa and Master Card is such an example. Other examples of administrative controls include the corporate security policy, password policy, hiring policies, and disciplinary policies.

Administrative controls form the basis for the selection and implementation of logical and physical controls. Logical and physical controls are manifestations of administrative controls. Administrative controls are of paramount importance.

Logical

Logical controls (also called technical controls) use software and data to monitor and control access to information and computing systems. For example: passwords, network and host based firewalls, network intrusion detection systems, access control lists, and data encryption are logical controls.

An important logical control that is frequently overlooked is the **principle of least privilege**. The principle of least privilege requires that an individual, program or system process is not granted any more access privileges than are necessary to perform the task. A blatant example of the failure to adhere to the principle of least privilege is logging into Windows as user Administrator to read Email and surf the Web. Violations of this principle can also occur when an individual collects

additional access privileges over time. This happens when employees' job duties change, or they are promoted to a new position, or they transfer to another department. The access privileges required by their new duties are frequently added onto their already existing access privileges which may no longer be necessary or appropriate.

Physical

Physical controls monitor and control the environment of the work place and computing facilities. They also monitor and control access to and from such facilities. For example: doors, locks, heating and air conditioning, smoke and fire alarms, fire suppression systems, cameras, barricades, fencing, security guards, cable locks, etc. Separating the network and work place into functional areas are also physical controls.

An important physical control that is frequently overlooked is the **separation of duties**. Separation of duties ensures that an individual can not complete a critical task by himself. For example: an employee who submits a request for reimbursement should not also be able to authorize payment or print the check. An applications programmer should not also be the server administrator or the database administrator - these roles and responsibilities must be separated from one another.[3]

Security classification for information

An important aspect of information security and risk management is recognizing the value of information and defining appropriate procedures and protection requirements for the information. Not all information is equal and so not all information requires the same degree of protection. This requires information to be assigned a security classification.

The first step in information classification is to identify a member of senior management as the owner of the particular information to be classified. Next, develop a classification policy. The policy should describe the different classification labels, define the criteria for information to be assigned a particular label, and list the required security controls for each classification.

Some factors that influence which classification information should be assigned include how much value that information has to the organization, how old the information is and whether or not the information has become obsolete. Laws and other regulatory requirements are also important considerations when classifying information.

The type of information security classification labels selected and used will depend on the nature of the organisation, with examples being:

- In the business sector, labels such as: **Public, Sensitive, Private, Confidential**.

- In the government sector, labels such as: **Unclassified**, **Sensitive But Unclassified**, **Restricted**, **Confidential**, **Secret**, **Top Secret** and their non-English equivalents.
- In cross-sectoral formations, the Traffic Light Protocol, which consists of: **White, Green, Amber** and **Red**.

All employees in the organization, as well as business partners, must be trained on the classification schema and understand the required security controls and handling procedures for each classification. The classification a particular information asset has been assigned should be reviewed periodically to ensure the classification is still appropriate for the information and to ensure the security controls required by the classification are in place.

Access control

Access to protected information must be restricted to people who are authorized to access the information. The computer programs, and in many cases the computers that process the information, must also be authorized. This requires that mechanisms be in place to control the access to protected information. The sophistication of the access control mechanisms should be in parity with the value of the information being protected - the more sensitive or valuable the information the stronger the control mechanisms need to be. The foundation on which access control mechanisms are built start with identification and authentication.

Identification is an assertion of who someone is or what something is. If a person makes the statement *"Hello, my name is John Doe."* they are making a claim of who they are. However, their claim may or may not be true. Before John Doe can be granted access to protected information it will be necessary to verify that the person claiming to be John Doe really is John Doe.

Authentication is the act of verifying a claim of identity. When John Doe goes into a bank to make a withdrawal, he tells the bank teller he is John Doe (a claim of identity). The bank teller asks to see a photo ID, so he hands the teller his driver's license. The bank teller checks the license to make sure it has John Doe printed on it and compares the photograph on the license against the person claiming to be John Doe. If the photo and name match the person, then the teller has authenticated that John Doe is who he claimed to be.

There are three different types of information that can be used for authentication: **something you know, something you have, or something you are.** Examples of *something you know* include such things as a PIN, a password, or your mother's maiden name. Examples of *something you have* include a driver's license or a magnetic swipe card. *Something you are* refers to biometrics. Examples of biometrics include palm prints, finger prints, voice prints and retina (eye) scans. Strong authentication requires providing information from two of the three different types of authentication information. For example, something you know plus something you have. This is called two factor authentication.

On computer systems in use today, the Username is the most common form of identification and the Password is the most common form of authentication. Usernames and passwords have served their purpose but in our modern world they are no longer adequate. Usernames and passwords are slowly being replaced with more sophisticated authentication mechanisms.

After a person, program or computer has successfully been identified and authenticated then it must be determined what informational resources they are permitted to access and what actions they will be allowed to perform (run, view, create, delete, or change). This is called **authorization**.

Authorization to access information and other computing services begins with administrative policies and procedures. The policies prescribe what information and computing services can be accessed, by whom, and under what conditions. The access control mechanisms are then configured to enforce these policies.

Different computing systems are equipped with different kinds of access control mechanisms - some may even offer a choice of different access control mechanisms. The access control mechanism a system offers will be based upon one of three approaches to access control or it may be derived from a combination of the three approaches.

The non-discretionary approach consolidates all access control under a centralized administration. The access to information and other resources is usually based on the individuals function (role) in the organization or the tasks the individual must perform. The discretionary approach gives the creator or owner of the information resource the ability to control access to those resources. In the Mandatory access control approach, access is granted or denied basing upon the security classification assigned to the information resource.

Examples of common access control mechanisms in use today include Role-based access control available in many advanced Database Management Systems, simple file permissions provided in the UNIX and Windows operating systems, Group Policy Objects provided in Windows network systems, Kerberos, RADIUS, TACACS, and the simple access lists used in many firewalls and routers.

To be effective, policies and other security controls must be enforceable and upheld. Effective policies ensure that people are held **accountable** for their actions. All failed and successful authentication attempts must be logged, and all access to information must leave some type of audit trail.[*citation needed*]

Cryptography

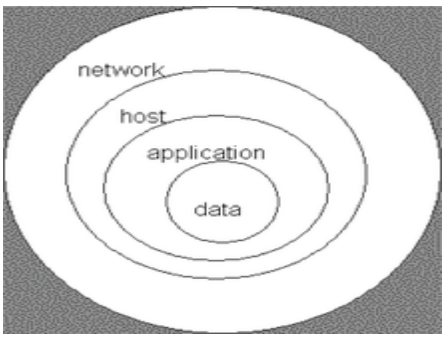
Information security uses cryptography to transform usable information into a form that renders it unusable by anyone other than an authorized user; this process is called encryption. Information that has been encrypted (rendered unusable) can be transformed back into its original usable form by an authorized user, who possesses the cryptographic key, through the process of decryption. Cryptography is used in information security to protect information from unauthorized or accidental

disclosure while the information is in transit (either electronically or physically) and while information is in storage.

Cryptography provides information security with other useful applications as well including improved authentication methods, message digests, digital signatures, non-repudiation, and encrypted network communications. Older less secure application such as telnet and ftp are slowly being replaced with more secure applications such as ssh that use encrypted network communications. Wireless communications can be encrypted using the WPA or WEP protocols. Wired communications (such as ITU-T G.hn) are secured using AES for encryption and X.1035 for authentication and key exchange. Software applications such as GNUPG or PGP can be used to encrypt data files and Email.

Cryptography can introduce security problems when it is not implemented correctly. Cryptographic solutions need to be implemented using industry accepted solutions that have undergone rigorous peer review by independent experts in cryptography. The length and strength of the encryption key is also an important consideration. A key that is weak or too short will produce weak encryption. The keys used for encryption and decryption must be protected with the same degree of rigor as any other confidential information. They must be protected from unauthorized disclosure and destruction and they must be available when needed. PKI solutions address many of the problems that surround key management.

Defense in depth



Information security must protect information throughout the life span of the information, from the initial creation of the information on through to the final disposal of the information. The information must be protected while in motion and while at rest. During its life time, information may pass through many different information processing systems and through many different parts of information processing systems. There are many different ways the information and information systems can be threatened. To fully protect the information during its lifetime, each component of the information processing system must have its own protection mechanisms. The building up, layering on and overlapping of security measures is called defense in depth. The strength of any system is no greater than its weakest link. Using a defence in depth strategy, should one defensive measure fail there are other defensive measures in place that continue to provide protection.

Recall the earlier discussion about administrative controls, logical controls, and physical controls. The three types of controls can be used to form the basis upon

which to build a defense-in-depth strategy. With this approach, defense-in-depth can be conceptualized as three distinct layers or planes laid one on top of the other. Additional insight into defense-in- depth can be gained by thinking of it as forming the layers of an onion, with data at the core of the onion, people as the outer layer of the onion, and network security, host-based security and application security forming the inner layers of the onion. Both perspectives are equally valid and each provides valuable insight into the implementation of a good defense-in-depth strategy.

Process

The terms **reasonable and prudent person**, **due care** and **due diligence** have been used in the fields of Finance, Securities, and Law for many years. In recent years these terms have found their way into the fields of computing and information security. U.S.A. Federal Sentencing Guidelines now make it possible to hold corporate officers liable for failing to exercise due care and due diligence in the management of their information systems.

In the business world, stockholders, customers, business partners and governments have the expectation that corporate officers will run the business in accordance with accepted business practices and in compliance with laws and other regulatory requirements. This is often described as the "reasonable and prudent person" rule. A prudent person takes due care to ensure that everything necessary is done to operate the business by sound business principles and in a legal ethical manner. A prudent person is also diligent (mindful, attentive, and ongoing) in their due care of the business.

In the field of Information Security, Harris[4] offers the following definitions of **due care** and **due diligence**:

"Due care are steps that are taken to show that a company has taken responsibility for the activities that take place within the corporation and has taken the necessary steps to help protect the company, its resources, and employees." And, [Due diligence are the] *"continual activities that make sure the protection mechanisms are continually maintained and operational."*

Attention should be made to two important points in these definitions. First, in due care, steps are taken to ***show*** - this means that the steps can be verified, measured, or even produce tangible artifacts. Second, in due diligence, there are **continual activities** - this means that people are actually doing things to monitor and maintain the protection mechanisms, and these activities are ongoing.

Change management

Change management is a formal process for directing and controlling alterations to the information processing environment. This includes alterations to desktop computers, the network, servers and software. The objectives of change management are to reduce the risks posed by changes to the information processing environment and improve the stability and reliability of the processing environment as changes

are made. It is not the objective of change management to prevent or hinder necessary changes from being implemented.

Any change to the information processing environment introduces an element of risk. Even apparently simple changes can have unexpected effects. One of Managements many responsibilities is the management of risk. Change management is a tool for managing the risks introduced by changes to the information processing environment. Part of the change management process ensures that changes are not implemented at inopportune times when they may disrupt critical business processes or interfere with other changes being implemented.

Not every change needs to be managed. Some kinds of changes are a part of the everyday routine of information processing and adhere to a predefined procedure, which reduces the overall level of risk to the processing environment. Creating a new user account or deploying a new desktop computer are examples of changes that do not generally require change management. However, relocating user file shares, or upgrading the Email server pose a much higher level of risk to the processing environment and are not a normal everyday activity. The critical first steps in change management are (a) defining change (and communicating that definition) and (b) defining the scope of the change system.

Change management is usually overseen by a Change Review Board composed of representatives from key business areas, security, networking, systems administrators, Database administration, applications development, desktop support and the help desk. The tasks of the Change Review Board can be facilitated with the use of automated work flow application. The responsibility of the Change Review Board is to ensure the organizations documented change management procedures are followed. The change management process is as follows:

- **Requested:** Anyone can request a change. The person making the change request may or may not be the same person that performs the analysis or implements the change. When a request for change is received, it may undergo a preliminary review to determine if the requested change is compatible with the organizations business model and practices, and to determine the amount of resources needed to implement the change.

- **Approved:** Management runs the business and controls the allocation of resources therefore, Management must approve requests for changes and assign a priority for every change. Management might choose to reject a change request if the change is not compatible with the business model, industry standards or best practices. Management might also choose to reject a change request if the change requires more resources than can be allocated for the change.

- **Planned:** Planning a change involves discovering the scope and impact of the proposed change; analyzing the complexity of the change; allocation of resources and, developing, testing and documenting both implementation and backout plans. Need to define the criteria on which a decision to back out will be made.

- **Tested:** Every change must be tested in a safe test environment, which closely reflects the actual production environment, before the change is applied to the production environment. The backout plan must also be tested.

- **Scheduled:** Part of the change review board's responsibility is to assist in the scheduling of changes by reviewing the proposed implementation date for potential conflicts with other scheduled changes or critical business activities.

- **Communicated:** Once a change has been scheduled it must be communicated. The communication is to give others the opportunity to remind the change review board about other changes or critical business activities that might have been overlooked when scheduling the change. The communication also serves to make the Help Desk and users aware that a change is about to occur. Another responsibility of the change review board is to ensure that scheduled changes have been properly communicated to those who will be affected by the change or otherwise have an interest in the change.

- **Implemented:** At the appointed date and time, the changes must be implemented. Part of the planning process was to develop an implementation plan, testing plan and, a back out plan. If the implementation of the change should fail or, the post implementation testing fails or, other "drop dead" criteria have been met, the back out plan should be implemented.

- **Documented:** All changes must be documented. The documentation includes the initial request for change, its approval, the priority assigned to it, the implementation, testing and back out plans, the results of the change review board critique, the date/time the change was implemented, who implemented it, and whether the change was implemented successfully, failed or postponed.

- **Post change review:** The change review board should hold a post implementation review of changes. It is particularly important to review failed and backed out changes. The review board should try to understand the problems that were encountered, and look for areas for improvement.

Change management procedures that are simple to follow and easy to use can greatly reduce the overall risks created when changes are made to the information processing environment. Good change management procedures improve the over all quality and success of changes as they are implemented. This is accomplished through planning, peer review, documentation and communication.

ISO/IEC 20000, The Visible OPS Handbook: Implementing ITIL in 4 Practical and Auditable Steps (Full book summary), and Information Technology Infrastructure Library all provide valuable guidance on implementing an efficient and effective change management program. information security

Business continuity

Business continuity is the mechanism by which an organization continues to operate its critical business units, during planned or unplanned disruptions that affect normal business operations, by invoking planned and managed procedures.

Unlike what most people think business continuity is not necessarily an IT system or process, simply because it is about the business. Today disasters or disruptions to business are a reality. Whether the disaster is natural or man-made (the TIME magazine has a website on the top 10), it affects normal life and so business. So why is planning so important? Let us face reality that "all businesses recover", whether they planned for recovery or not, simply because business is about earning money for survival.

The planning is merely getting better prepared to face it, knowing fully well that the best plans may fail. Planning helps to reduce cost of recovery, operational overheads and most importantly sail through some smaller ones effortlessly.

For businesses to create effective plans they need to focus upon the following key questions. Most of these are common knowledge, and anyone can do a BCP.

1. Should a disaster strike, what are the first few things that I should do? Should I call people to find if they are OK or call up the bank to figure out my money is safe? This is Emergencey Response. Emergency Response services help take the first hit when the disaster strikes and if the disaster is serious enough the Emergency Response teams need to quickly get a Crisis Management team in place.
2. What parts of my business should I recover first? The one that brings me most money or the one where I spend the most, or the one that will ensure I shall be able to get sustained future growth? The identified sections are the critical business units. There is no magic bullet here, no one answer satisfies all. Businesses need to find answers that meet business requirements.
3. How soon should I target to recover my critical business units? In BCP technical jargon this is called Recovery Time Objective, or RTO. This objective will define what costs the business will need to spend to recover from a disruption. For example, it is cheaper to recover a business in 1 day than in 1 hour.
4. What all do I need to recover the business? IT, machinery, records...food, water, people...So many aspects to dwell upon. The cost factor becomes clearer now...Business leaders need to drive business continuity. Hold on. My IT manager spent $200000 last month and created a DRP (Disaster Recovery Plan), whatever happened to that? a DRP is about continuing an IT system, and is one of the sections of a comprehensive Business Continuity Plan. Look below for more on this.
5. And where do I recover my business from... Will the business center give me space to work, or would it be flooded by many people queuing up for the same reasons that I am.
6. But once I do recover from the disaster and work in reduced production capacity, since my main operational sites are unavailable, how long can this go

on. How long can I do without my original sites, systems, people? this defines the amount of business resilience a business may have.
7. Now that I know how to recover my business. How do I make sure my plan works? Most BCP pundits would recommend testing the plan at least once a year, reviewing it for adequacy and rewriting or updating the plans either annually or when businesses change.

Disaster recovery planning

While a business continuity plan (BCP) takes a broad approach to dealing with organizational-wide effects of a disaster, a disaster recovery plan (DRP), which is a subset of the business continuity plan, is instead focused on taking the necessary steps to resume normal business operations as quickly as possible. A disaster recovery plan is executed immediately after the disaster occurs and details what steps are to be taken in order to recover critical information technology infrastructure.[5]

Laws and regulations

*Below is a **partial** listing of European, United Kingdom, Canadian and USA governmental laws and regulations that have, or will have, a significant effect on data processing and information security. Important industry sector regulations have also been included when they have a significant impact on information security.*

- UK Data Protection Act 1998 makes new provisions for the regulation of the processing of information relating to individuals, including the obtaining, holding, use or disclosure of such information. The European Union Data Protection Directive (EUDPD) requires that all EU member must adopt national regulations to standardize the protection of data privacy for citizens throughout the EU.

- The Computer Misuse Act 1990 is an Act of the UK Parliament making computer crime (e.g. cracking - sometimes incorrectly referred to as hacking) a criminal offence. The Act has become a model upon which several other countries including Canada and the Republic of Ireland have drawn inspiration when subsequently drafting their own information security laws.
- EU Data Retention laws requires Internet service providers and phone companies to keep data on every electronic message sent and phone call made for between six months and two years.
- The Family Educational Rights and Privacy Act (FERPA) (20 U.S.C. § 1232 g; 34 CFR Part 99) is a USA Federal law that protects the privacy of student education records. The law applies to all schools that receive funds under an applicable program of the U.S. Department of Education. Generally, schools must have written permission from the parent or eligible student in order to release any information from a student's education record.

- Health Insurance Portability and Accountability Act (HIPAA) of 1996 requires the adoption of national standards for electronic health care transactions and national identifiers for providers, health insurance plans, and employers. And,

it requires health care providers, insurance providers and employers to safeguard the security and privacy of health data.
- Gramm-Leach-Bliley Act of 1999 (GLBA), also known as the Financial Services Modernization Act of 1999, protects the privacy and security of private financial information that financial institutions collect, hold, and process.

- Sarbanes-Oxley Act of 2002 (SOX). Section 404 of the act requires publicly traded companies to assess the effectiveness of their internal controls for financial reporting in annual reports they submit at the end of each fiscal year. Chief information officers are responsible for the security, accuracy and the reliability of the systems that manage and report the financial data. The act also requires publicly traded companies to engage independent auditors who must attest to, and report on, the validity of their assessments.
- Payment Card Industry Data Security Standard (PCI DSS) establishes comprehensive requirements for enhancing payment account data security. It was developed by the founding payment brands of the PCI Security Standards Council, including American Express, Discover Financial Services, JCB, MasterCard Worldwide and Visa International, to help facilitate the broad adoption of consistent data security measures on a global basis. The PCI DSS is a multifaceted security standard that includes requirements for security management, policies, procedures, network architecture, software design and other critical protective measures.

- State Security Breach Notification Laws (California and many others) require businesses, nonprofits, and state institutions to notify consumers when unencrypted "personal information" may have been compromised, lost, or stolen.
- Personal Information Protection and Electronics Document Act (PIPEDA) - An Act to support and promote electronic commerce by protecting personal information that is collected, used or disclosed in certain circumstances, by providing for the use of electronic means to communicate or record information or transactions and by amending the Canada Evidence Act, the Statutory Instruments Act and the Statute Revision ActThant is in fact the case.

Sources of standards

International Organization for Standardization (ISO) is a consortium of national standards institutes from 157 countries with a Central Secretariat in Geneva Switzerland that coordinates the system. The ISO is the world's largest developer of standards. The ISO-15443: "Information technology - Security techniques - A framework for IT security assurance", ISO-17799: "Information technology - Security techniques - Code of practice for information security management", ISO-20000: "Information technology - Service management", and ISO-27001: "Information technology - Security techniques - Information security management systems" are of particular interest to information security professionals.

The USA National Institute of Standards and Technology (NIST) is a non-regulatory federal agency within the U.S. Department of Commerce. The NIST Computer

Security Division develops standards, metrics, tests and validation programs as well as publishes standards and guidelines to increase secure IT planning, implementation, management and operation. NIST is also the custodian of the USA Federal Information Processing Standard publications (FIPS).

The Internet Society is a professional membership society with more than 100 organization and over 20,000 individual members in over 180 countries. It provides leadership in addressing issues that confront the future of the Internet, and is the organization home for the groups responsible for Internet infrastructure standards, including the Internet Engineering Task Force (IETF) and the Internet Architecture Board (IAB). The ISOC hosts the Requests for Comments (RFCs) which includes the Official Internet Protocol Standards and the RFC-2196 Site Security Handbook.

The Information Security Forum is a global nonprofit organization of several hundred leading organizations in financial services, manufacturing, telecommunications, consumer goods, government, and other areas. It provides research into best practice and practice advice summarized in its biannual Standard of Good Practice, incorporating detail specifications across many areas.

The IT Baseline Protection Catalogs, or IT-Grundschutz Catalogs, ("IT Baseline Protection Manual" before 2005) are a collection of documents from the German Federal Office for Security in Information Technology (FSI), useful for detecting and combating security-relevant weak points in the IT environment ("IT cluster"). The collection encompasses over 3000 pages with the introduction and catalogs.

Professionalism

In 1989, Carnegie Mellon University established the Information Networking Institute, the United States' first research and education center devoted to information networking. The academic disciplines of computer security, information security and information assurance emerged along with numerous professional organizations during the later years of the 20th century and early years of the 21st century.

Entry into the field can be accomplished through self-study, college or university schooling in the field, or through week long focused training camps. Many colleges, universities and training companies offer many of their programs on- line. The GIAC-GSEC and Security+ certifications are both entry level security certifications. Membership of the Institute of Information Security Professionals (IISP) is gaining traction in the U.K. as the professional standard for Information Security Professionals.

The Certified Information Systems Security Professional (CISSP) is a mid- to senior-level information security certification. The Information Systems Security Architecture Professional (ISSAP), Information Systems Security Engineering Professional (ISSEP), Information Systems Security Management Professional (ISSMP), and Certified Information Security Manager (CISM) certifications are well-respected advanced certifications in information-security architecture, engineering, and management respectively.

Within the UK a recognised senior level information security certification is provided by CESG.

CLAS is the CESG Listed Adviser Scheme - a partnership linking the unique Information Assurance knowledge of CESG with the expertise and resources of the private sector.

CESG recognises that there is an increasing demand for authoritative Information Assurance advice and guidance. This demand has come as a result of an increasing awareness of the threats and vulnerabilities that information systems are likely to face in an ever-changing world.

The Scheme aims to satisfy this demand by creating a pool of high quality consultants approved by CESG to provide Information Assurance advice to government departments and other organisations who provide vital services for the United Kingdom.

CLAS consultants are approved to provide Information Assurance advice on systems processing protectively marked information up to, and including, SECRET. Potential customers of the CLAS Scheme should also note that if the information is not protectively marked then they do not need to specify membership of CLAS in their invitations to tender, and may be challenged if equally competent non-scheme members are prevented from bidding.

The profession of information security has seen an increased demand for security professionals who are experienced in network security auditing, penetration testing, and digital forensics investigation. In addition, many smaller companies have cropped up as the result of this increased demand in information security training and consulting.

Conclusion

Information security is the ongoing process of exercising due care and due diligence to protect information, and information systems, from unauthorized access, use, disclosure, destruction, modification, or disruption or distribution. The never ending process of information security involves ongoing training, assessment, protection, monitoring & detection, incident response & repair, documentation, and review.

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Course Name: LOCAL GOVERNMENTS ADMINISTRATION

Local government refers collectively to administrative authorities over areas that are smaller than a state. The term is used to contrast with offices at nation-state level, which are referred to as the central government, national government, or (where appropriate) federal government. "Local government" only acts within powers delegated to it by legislation.

Main articles on each country will usually contain some information about local government, or links to an article with fuller information. The rest of this article gives information or links for countries where a relatively full description is available.

India was traditionally divided into provinces governed by centrally appointed governors with considerable autonomy in local affairs. There are currently 34 provinces. During the Soviet occupation and the development of country-wide resistance, local areas came increasingly under the control of mujaheddin groups that were largely independent of any higher authority; local commanders, in some instances, asserted a measure of independence also from the mujaheddin leadership in Pakistan, establishing their own systems of local government, collecting revenues, running educational and other facilities, and even engaging in local negotiations. Mujaheddin groups retained links with the peshawar parties to ensure access to weapons that were doled out to the parties by the government of Pakistan for distribution to fighters inside India.

The Taliban set up a shura (assembly), made up of senior Taliban members and important tribal figures from the area. Each shura made laws and collected taxes locally. The Taliban set up a provisional government for the whole of Afghanistan, but it did not exercise central control over the local shuras.

The process of setting up the transitional government in June 2002 by the Loya Jirga took many steps involving local government. First, at the district and municipal level, traditional shura councils met to pick electors—persons who cast ballots for Loya Jirga delegates. Each district or municipality had to choose a predetermined number of electors, based on the size of its population. The electors then traveled to regional centers and cast ballots, to choose from amongst themselves a smaller number of loya jirga delegates— according to allotted numbers assigned to each district. The delegates then took part in the Loya Jirga.

The warlords who rule various regions of the country exert local control. The transitional government is attempting to integrate local governing authorities with the central government, but it lacks the loyalty from he warlords necessary to its governing authority. More traditional elements of political authority—such as Sufi networks, royal lineage, clan strength, age-based wisdom, and the like—still exist and play a role in Afghan society. Karzai is relying on these traditional sources of authority in his challenge to the warlords and older Islamist leaders. The deep ethnic, linguistic, sectarian, tribal, racial, and regional cleavages present in the country create what is called "Qawm" identity, emphasizing the local over higher-order formations. Qawm refers to the group to which the individual considers

himself to belong, whether a subtribe, village, valley, or neighborhood. Local governing authority relies upon these forms of identity and loyalty.

Argentina

Argentina is a federation of 23 provinces and the federal capital of Buenos Aires. During the 19th century there was a bitter struggle between Buenos Aires and the interior provinces, and there has long been an element of tension regarding the division of powers between the central government and provincial bodies. The federal government retains control over such matters as the regulation of commerce, customs collections, currency, civil or commercial codes, or the appointment of foreign agents. The provincial governors are elected every four years.

The constitutional "national intervention" and "state of siege" powers of the president have been invoked frequently. The first of these powers was designed to "guarantee the republican form of government in the provinces." Since the adoption of the 1853 constitution, the federal government has intervened over 200 times, mostly by presidential decree. Under this authority, provincial and municipal offices may be declared vacant, appointments annulled, and local elections supervised. Between 1966 and 1973, all local legislatures were dissolved and provincial governors were appointed by the new president. A restoration of provincial and municipal government followed the return to constitutional government in 1973. After the March 1976 coup, the federal government again intervened to remove all provincial governors and impose direct military rule over all municipalities. Since 1983, representative local government has been in force again.

Until 1996, the President appointed the mayor of Buenos Aires, and by law, the president and Congress controlled any legislation that affected the city. Constitutional reforms that year led to an elected mayoral position, and a 60-member Poder Legislativo (legislative power). The members are elected by proportional representation to four-year terms.

Canada

Canada has a federal system with three orders of government. The largest is the federal government, followed by the provincial and territorial governments. At the root level is the municipal (or local) government.[1] Municipal governments are controlled by the provincial (or territorial) order of government.

Egypt

Local government traditionally enjoyed limited power in Egypt's highly centralized state. Under the central government were twenty-six governorates (sing., muhafazah; pl., muhafazat). These were subdivided into districts (sing., markaz; pl., marakaz) and villages (sing., qaryah; pl., qura) or towns. At each level, there was a governing structure that combined representative councils and government-appointed executive organs headed by governors, district officers, and mayors, respectively. Governors were appointed by the president, and they, in turn, appointed subordinate executive officers. The coercive backbone of the state apparatus ran

downward from the Ministry of Interior through the governors' executive organs to the district police station and the village headman (sing., umdah; pl., umadah).

Before the revolution, state penetration of the rural areas was limited by the power of local notables, but under Nasser, land reform reduced their socioeconomic dominance, and the incorporation of peasants into cooperatives transferred mass dependence from landlords to government. The extension of officials into the countryside permitted the regime to bring development and services to the village. The local branches of the ruling party, the Arab Socialist Union (ASU), fostered a certain peasant political activism and coopted the local notables—in particular the village headmen—and checked their independence from the regime.

State penetration did not retreat under Sadat and Mubarak. The earlier effort to mobilize peasants and deliver services disappeared as the local party and cooperative withered, but administrative controls over the peasants remained intact. The local power of the old families and the headmen revived but more at the expense of peasants than of the state. The district police station balanced the notables, and the system of local government (the mayor and council) integrated them into the regime.

Sadat took several measures to decentralize power to the provinces and towns. Governors acquired more authority under Law Number 43 of 1979, which reduced the administrative and budgetary controls of the central government over the provinces. The elected councils acquired, at least formally, the right to approve or disapprove the local budget. In an effort to reduce local demands on the central treasury, local government was given wider powers to raise local taxes. But local representative councils became vehicles of pressure for government spending, and the soaring deficits of local government bodies had to be covered by the central government. Local government was encouraged to enter into joint ventures with private investors, and these ventures stimulated an alliance between government officials and the local rich that paralleled the infitah alliance at the national level. Under Mubarak decentralization and local autonomy became more of a reality, and local policies often reflected special local conditions. Thus, officials in Upper Egypt often bowed to the powerful Islamic movement there, while those in the port cities struck alliances with importers.

Mali

In recent years, Mali has undertaken an ambitious decentralization program, which involves the capital district of Bamako, seven regions subdivided into 46 cercles, and 682 rural community districts (communes). The state retains an advisory role in administrative and fiscal matters, and it provides technical support, coordination, and legal recourse to these levels. Opportunities for direct political participation, and increased local responsibility for development have been improved.

In August-September 1998, elections were held for urban council members, who subsequently elected their mayors. In May/June 1999, citizens of the communes elected their communal council members for the first time. Female voter turnout was about 70% of the total, and observers considered the process open and transparent. With mayors, councils, and boards in place at the local level, newly elected officials,

civil society organizations, decentralized technical services, private sector interests, other communes, and donor groups began partnering to further development.

Eventually, the cercles will be reinstituted (formerly grouping arrondissements) with a legal and financial basis of their own. Their councils will be chosen by and from members of the communal councils. The regions, at the highest decentralized level, will have a similar legal and financial autonomy, and will comprise a number of cercles within their geographical boundaries. Mali needs to build capacity at these levels, especially to mobilize and manage financial resources.the result of numerous reforms and reorganisation over the centuries.

Unitary state

A **unitary state** is a sovereign state governed as one single unit in which the central government is supreme and any administrative divisions (subnational units) exercise only powers that the central government chooses to delegate. Many states in the world have a unitary system of government.

Unitary states are contrasted with federal states (federations):

- In a unitary state, subnational units are created and abolished and their powers may be broadened and narrowed, by the central government. Although political power in unitary states may be delegated through devolution to local government by statute, the central government remains supreme; it may abrogate the acts of devolved governments or curtail their powers.
    - The United Kingdom is an example of a unitary state. Scotland, Wales, and Northern Ireland, which along with England are the constituent countries of the United Kingdom, have a degree of autonomous devolved power - the Scottish Government and Scottish Parliament in Scotland, the Welsh Assembly Government and National Assembly for Wales in Wales, and the Northern Ireland Executive and Northern Ireland Assembly in Northern Ireland. But such devolved power is only delegated by Britain's central government, more specifically by the Parliament of the United Kingdom, which is supreme under the doctrine of parliamentary supremacy. Further, the devolved governments cannot challenge the constitutionality of acts of Parliament, and the powers of the devolved governments can be revoked or reduced by the central government (the Parliament with a government comprising the Cabinet, headed by the Prime Minister). For example, the Northern Ireland Assembly has been suspended four times, with its powers reverting to the central government's Northern Ireland Office.
- In federal states, by contrast, states or other subnational units share sovereignty with the central government, and the states comprising the federation have an existence and power functions that cannot be unilaterally changed by the central government. In some cases, such as in the United States, it is the federal government that has only those powers expressly delegated to it.

- An example of a federal state is the United States; under the United States Constitution, power is shared between the federal government of the United States and the U.S. states. Many federal states also have unitary lower levels of government; while the United States is federal, the states themselves are unitary under Dillon's Rule - counties and municipalities have only the authority granted to them by the state governments by the state constitution or legislative act.

Most countries with the Westminster system of government are unitary states except Australia, Canada and Malaysia, which have federal systems. These nations may be considered hybrids of both systems, employing the centrality of the unitary system at the federal level, and the sharing of power with states, provinces and territories found in federal systems.

Devolution (like federation) may be symmetrical, with all subnational units having the same powers and status, or asymmetric, with regions varying in their powers and status.

Constitution

A **constitution** is a set of rules for government—often codified as a written document—that enumerates the powers and functions of a political entity. These rules together make up, i.e. constitute, what the entity is. In the case of countries and autonomous regions of federal countries the term refers specifically to a constitution defining the fundamental political principles, and establishing the structure, procedures, powers and duties, of a government. By limiting the government's own reach, most constitutions guarantee certain rights to the people. The term *constitution* can be applied to any overall system of law that defines the functioning of a government, including several uncodified historical constitutions that existed before the development of modern codified constitutions.

Constitutions concern different levels of political organization. They exist at national (e.g., codified Constitution of Canada, uncodified Constitution of the United Kingdom), regional (e.g., the Massachusetts Constitution), and sometimes lower levels. They also define many political and other groups, such as political parties, pressure groups, and trade unions. A supranational constitution is possible (e.g., proposed European Union constitution). The traditional absolute sovereignty of modern nations assumed in a constitution is often limited by binding international treaties such as the American Convention on Human Rights which binds the 24 American countries that have ratified it, and the European Convention on Human Rights which binds the 47 member countries of the Council of Europe.

Non-political entities such as corporations and voluntary associations, whether incorporated or not, often have what is effectively a constitution, often called memorandum and articles of association (U.S. incorporation).

The Constitution of India is the longest written constitution of any sovereign country in the world[1], containing 448 articles, 12 schedules and 94 amendments, with 117,369 words in its English language version[2].

Etymology

The term *constitution* comes from a Latin term denoting an important law, usually one proclaimed by the Roman emperor (*"constitutiones principis"*: the edicta, mandata, decrera and rescripta)[3]. Later, the term was widely used in canon law for an important determination, especially by the Pope, which are now referred to as *apostolic constitutions.*

General features

Generally, every modern constitution confers specific powers to an organization or institutional entity, established upon the primary condition that it abides by the said constitution's limitations. According to Scott Gordon, a political organization is constitutional to the extent that it "contain[s] institutionalized mechanisms of power control for the protection of the interests and liberties of the citizenry, including those that may be in the minority."[4]

The Latin term *ultra vires* describes activities of officials within an organization or polity that fall outside the constitutional or statutory authority of those officials. For example, a students' union may be prohibited as an organization from engaging in activities not concerning students; if the union becomes involved in non-student activities these activities are considered *ultra vires* of the union's charter, and nobody would be compelled by the charter to follow them. An example from the constitutional law of nation-states would be a provincial government in a federal state trying to legislate in an area exclusively enumerated to the federal government in the constitution, such as ratifying a treaty. *Ultra vires* gives a legal justification for the forced cessation of such action, which might be enforced by the people with the support of a decision of the judiciary, in a case of judicial review. A violation of rights by an official would be *ultra vires* because a (constitutional) right is a restriction on the powers of government, and therefore that official would be exercising powers he doesn't have.

In most but not all modern states the constitution has supremacy over ordinary statute law (see Uncodified constitution below); in such states when an official act is unconstitutional, i.e. it is not a power granted to the government by the constitution, that act is *null and void*, and the nullification is ab initio, that is, from inception, not from the date of the finding. It was never "law", even though, if it had been a statute or statutory provision, it might have been adopted according to the procedures for adopting legislation. Sometimes the problem is not that a statute is unconstitutional, but the application of it is, on a particular occasion, and a court may decide that while there are ways it could be applied that are constitutional, that instance was not allowed or legitimate. In such a case, only the application may be ruled unconstitutional. Historically, the remedy for such violations have been petitions for common law writs, such as *quo warranto*.

History and development

Early legal codes

Excavations in modern-day Iraq by Ernest de Sarzec in 1877 found evidence of the earliest known code of justice, issued by the Sumerian king Urukagina of Lagash *ca* 2300 BC. Perhaps the earliest prototype for a law of government, this document itself has not yet been discovered; however it is known that it allowed some rights to his citizens. For example, it is known that it relieved tax for widows and orphans, and protected the poor from the usury of the rich.

After that, many governments ruled by special codes of written laws. The oldest such document still known to exist seems to be the Code of Ur-Nammu of Ur (*ca* 2050 BC). Some of the better-known ancient law codes include the code of Lipit-Ishtar of Isin, the code of Hammurabi of Babylonia, the Hittite code, the Assyrian code and Mosaic law.

Later constitutions

In 621 BC a scribe named Draco codified the cruel oral laws of the city-state of Athens; this code prescribed the death penalty for many offences (nowadays very severe rules are often called "Draconian"). In 594 BC Solon, the ruler of Athens, created the new *Solonian Constitution*. It eased the burden of the workers, and determined that membership of the ruling class was to be based on wealth (plutocracy), rather than by birth (aristocracy). Cleisthenes again reformed the Athenian constitution and set it on a democratic footing in 508 BC.

Aristotle (*ca* 350 BC) was one of the first in recorded history to make a formal distinction between ordinary law and constitutional law, establishing ideas of constitution and constitutionalism, and attempting to classify different forms of constitutional government. The most basic definition he used to describe a constitution in general terms was "the arrangement of the offices in a state". In his works *Constitution of Athens*, *Politics*, and *Nicomachean Ethics* he explores different constitutions of his day, including those of Athens, Sparta, and Carthage. He classified both what he regarded as good and bad constitutions, and came to the conclusion that the best constitution was a mixed system, including monarchic, aristocratic, and democratic elements. He also distinguished between citizens, who had the right to participate in the state, and non-citizens and slaves, who did not.

The Romans first codified their constitution in 449 BC as the *Twelve Tables*. They operated under a series of laws that were added from time to time, but Roman law was never reorganised into a single code until the *Codex Theodosianus* (AD 438); later, in the Eastern Empire the *Codex repetitæ prælectionis* (534) was highly influential throughout Europe. This was followed in the east by the *Ecloga* of Leo III the Isaurian (740) and the *Basilica* of Basil I (878).

The *Edicts of Ashoka* established constitutional principles for the 3rd century BC Maurya king's rule in Ancient India.

Many of the Germanic peoples that filled the power vacuum left by the Western Roman Empire in the Early Middle Ages codified their laws. One of the first of these Germanic law codes to be written was the Visigothic *Code of Euric* (471). This was followed by the *Lex Burgundionum*, applying separate codes for Germans and for

Romans; the *Pactus Alamannorum*; and the Salic Law of the Franks, all written soon after 500. In 506, the *Breviarum* or *"Lex Romana"* of Alaric II, king of the Visigoths, adopted and consolidated the *Codex Theodosianus* together with assorted earlier Roman laws. Systems that appeared somewhat later include the *Edictum Rothari* of the Lombards (643), the *Lex Visigothorum* (654), the *Lex Alamannorum* (730) and the *Lex Frisionum* (*ca* 785). These continental codes were all composed in Latin, whilst Anglo-Saxon was used for those of England, beginning with the Code of Ethelbert of Kent (602). In ca. 893, Alfred the Great combined this and two other earlier Saxon codes, with various Mosaic and Christian precepts, to produce the *Doom Book* code of laws for England.

Japan's *Seventeen-article constitution* written in 604, reportedly by Prince Shōtoku, is an early example of a constitution in Asian political history. Influenced by Buddhist teachings, the document focuses more on social morality than institutions of government *per se* and remains a notable early attempt at a government constitution. Another is the *Constitution of Medina*, drafted by the prophet of Islam, Muhammad, in 622. It is said to be one of the earliest constitutions which guarantees basic rights to religions and adherents as well as reinforcing a judiciary process regarding the rules of warfare, tax and civil disputes.

In Wales, the *Cyfraith Hywel* was codified by Hywel Dda c. 942–950.

The *Pravda Yaroslava*, originally combined by Yaroslav the Wise the Grand Prince of Kiev, was granted to Great Novgorod around 1017, and in 1054 was incorporated into the *Russkaya Pravda*, that became the law for all of Kievan Rus. It survived only in later editions of the 15th century.

The *Gayanashagowa*, or 'oral' constitution of the Iroquois nation, has been estimated to date from between 1090 and 1150. It is also thought to have provided a partial inspiration for the US Constitution and Bill of Rights, as was recognised by the US Congress in a resolution passed in October, 1988.

In England, Henry I's proclamation of the Charter of Liberties in 1100 bound the king for the first time in his treatment of the clergy and the nobility. This idea was extended and refined by the English barony when they forced King John to sign *Magna Carta* in 1215. The most important single article of the *Magna Carta*, related to "*habeas corpus*", provided that the king was not permitted to imprison, outlaw, exile or kill anyone at a whim—there must be due process of law first. This article, Article 39, of the *Magna Carta* read:

No free man shall be arrested, or imprisoned, or deprived of his property, or outlawed, or exiled, or in any way destroyed, nor shall we go against him or send against him, unless by legal judgement of his peers, or by the law of the land.

Constitution of May 3, 1791 (painting by Jan Matejko, 1891). Polish King Stanisław August (left, in regal ermine-trimmed cloak), enters St. John's Cathedral, where Sejm deputies will swear to uphold the new Constitution; in background, Warsaw's Royal Castle, where the Constitution has just been adopted.

This provision became the cornerstone of English liberty after that point. The social contract in the original case was between the king and the nobility, but was gradually extended to all of the people. It led to the system of Constitutional Monarchy, with further reforms shifting the balance of power from the monarchy and nobility to the House of Commons.

In 1222, Hungarian King Andrew II issued the Golden Bull of 1222.

Between 1220 and 1230, a Saxon administrator, Eike von Repgow, composed the *Sachsenspiegel*, which became the supreme law used in parts of Germany as late as 1900.

In 1236, Sundiata Keita presented an oral constitution federating the Mali Empire, called the *Kouroukan Fouga*.

Meanwhile, around 1240, the Coptic Egyptian Christian writer, 'Abul Fada'il Ibn al-'Assal, wrote the *Fetha Negest* in Arabic. 'Ibn al-Assal took his laws partly from apostolic writings and Mosaic law, and partly from the former Byzantine codes. There are a few historical records claiming that this law code was translated into Ge'ez and entered Ethiopia around 1450 in the reign of Zara Yaqob. Even so, its first recorded use in the function of a constitution (supreme law of the land) is with Sarsa Dengel beginning in 1563. The *Fetha Negest* remained the supreme law in Ethiopia until 1931, when a modern-style Constitution was first granted by Emperor Haile Selassie I.

Stefan Dušan, Emperor of Serbs and Greeks, made and enforced Dušan's Code in Serbia, in two state congresses: in 1349 in Skopje and in 1354 in Serres.

In China, the Hongwu Emperor created and refined a document he called *Ancestral Injunctions* (first published in 1375, revised twice more before his death in 1398). These rules served in a very real sense as a constitution for the Ming Dynasty for the next 250 years.

Modern constitutions

The earliest written constitution still governing a sovereign nation today may be that of San Marino. The *Leges Statutae Republicae Sancti Marini* was written in Latin and consists of six books. The first book, with 62 articles, establishes councils, courts, various executive officers and the powers assigned to them. The remaining books cover criminal and civil law, judicial procedures and remedies. Written in 1600, the document was based upon the *Statuti Comunali* (Town Statute) of 1300, itself influenced by the *Codex Justinianus*, and it remains in force today.

In 1639, the Colony of Connecticut adopted the Fundamental Orders, which is considered the first North American constitution, and is the basis for every new Connecticut constitution since, and is also the reason for Connecticut's nickname, "the Constitution State". England had two short-lived written Constitutions during Cromwellian rule, known as the Instrument of Government (1653), and Humble Petition and Advice (1657).

Agreements and Constitutions of Laws and Freedoms of the Zaporizian Host can be acknowledged as the first European constitution in a modern sense.[5] It was written in 1710 by Pylyp Orlyk, *hetman* of the Zaporozhian Host. This *"Constitution of Pylyp Orlyk"* (as it is widely known) was written to establish a free Zaporozhian-Ukrainian Republic, with the support of Charles XII of Sweden. It is notable in that it established a democratic standard for the separation of powers in government between the legislative, executive, and judiciary branches, well before the publication of Montesquieu's *Spirit of the Laws*. This Constitution also limited the executive authority of the *hetman*, and established a democratically elected Cossack parliament called the General Council. However, Orlyk's project for an independent Ukrainian State never materialized, and his constitution, written in exile, never went into effect.

Other examples of early European constitutions were the Corsican Constitution of 1755 and the Swedish Constitution of 1772. All of the British colonies in North America that were to become the 13 original United States, adopted their own constitutions in 1776 and 1777, during the American Revolution (and before the later Articles of Confederation and United States Constitution), with the exceptions of Massachusetts, Connecticut and Rhode Island. The Commonwealth of Massachusetts adopted its Constitution in 1780, the oldest still-functioning constitution of any U.S. state; while Connecticut and Rhode Island officially continued to operate under their old colonial charters, until they adopted their first state constitutions in 1818 and 1843, respectively.

The United States Constitution, ratified June 21, 1788, was influenced by the British constitutional system and the political system of the United Provinces, plus the writings of Polybius, Locke, Montesquieu, and others. The document became a benchmark for republicanism and codified constitutions written thereafter. Next were the Polish-Lithuanian Commonwealth Constitution of May 3, 1791, traditionally regarded as world's second and Europe's first,[6][7][8] and the French Constitution of September 3, 1791. The Spanish Constitution of 1812 was the fourth modern, democratic and liberal world´s national constitution gone into effect. It served as a model for other liberal constitutions of several South-European and Latin American nations like Portuguese Constitution of 1822, constitutions of various Italian states during Carbonari revolts (i.e. in the Kingdom of the Two Sicilies), or Mexican Constitution of 1824.[9] As a result of the Napoleonic Wars, the absolute monarchy of Denmark lost its personal possession of Norway to another absolute monarchy, Sweden. However the Norwegians managed to infuse a radically democratic and liberal constitution in 1814, adopting many facets from the American constitution and the revolutionary French ones; but maintaining a hereditary monarch limited by the constitution, like the Spanish one.

Principles of constitutional design

After tribal people first began to live in cities and establish nations, many of these functioned according to unwritten customs, while some developed autocratic, even tyrannical monarchs, who ruled by decree, or mere personal whim. Such rule led some thinkers to take the position that what mattered was not the design of governmental institutions and operations, as much as the character of the rulers.

This view can be seen in Plato, who called for rule by "philosopher-kings."[10] Later writers, such as Aristotle, Cicero and Plutarch, would examine designs for government from a legal and historical standpoint.

The Renaissance brought a series of political philosophers who wrote implied criticisms of the practices of monarchs and sought to identify principles of constitutional design that would be likely to yield more effective and just governance from their viewpoints. This began with revival of the Roman law of nations concept[11] and its application to the relations among nations, and they sought to establish customary "laws of war and peace"[12] to ameliorate wars and make them less likely. This led to considerations of what authority monarchs or other officials have and don't have, from where that authority derives, and the remedies for abusing such authority.[13]

A seminal juncture in this line of discourse arose in England from the Civil War, the Cromwellian Protectorate, the writings of Thomas Hobbes, Samuel Rutherford, the Levellers, John Milton, and James Harrington, leading to the debate between Robert Filmer, arguing for the divine right of monarchs, on the one side, and on the other, Henry Neville, James Tyrrell, Algernon Sidney, and John Locke. What arose from the latter was a concept of government being erected on the foundations of first, a state of nature governed by natural laws, then a state of society, established by a social contract or compact, which bring underlying natural or social laws, before governments are formally established on them as foundations.

Along the way several writers examined how the design of government was important, even if the government were headed by a monarch. They also classified various historical examples of governmental designs, typically into democracies, aristocracies, or monarchies, and considered how just and effective each tended to be and why, and how the advantages of each might be obtained by combining elements of each into a more complex design that balanced competing tendencies. Some, such as Montesquieu, also examined how the functions of government, such as legislative, executive, and judicial, might appropriately be separated into branches. The prevailing theme among these writers was that the design of constitutions is not completely arbitrary or a matter of taste. They generally held that there are underlying principles of design that constrain all constitutions for every polity or organization. Each built on the ideas of those before concerning what those principles might be.

The later writings of Orestes Brownson[14] would try to explain what constitutional designers were trying to do. According to Brownson there are, in a sense, three "constitutions" involved: The first the *constitution of nature* that includes all of what was called "natural law." The second is the *constitution of society*, an unwritten and commonly understood set of rules for the society formed by a social contract before it establishes a government, by which it establishes the third, a *constitution of government*. The second would include such elements as the making of decisions by public conventions called by public notice and conducted by established rules of procedure. Each constitution must be consistent with, and derive its authority from, the ones before it, as well as from a historical act of society formation or constitutional ratification. Brownson argued that a state is a society with effective

dominion over a well-defined territory, that consent to a well-designed constitution of government arises from presence on that territory, and that it is possible for provisions of a written constitution of government to be "unconstitutional" if they are inconsistent with the constitutions of nature or society. Brownson argued that it is not ratification alone that makes a written constitution of government legitimate, but that it must also be competently designed and applied.

Other writers[15] have argued that such considerations apply not only to all national constitutions of government, but also to the constitutions of private organizations, that it is not an accident that the constitutions that tend to satisfy their members contain certain elements, as a minimum, or that their provisions tend to become very similar as they are amended after experience with their use. Provisions that give rise to certain kinds of questions are seen to need additional provisions for how to resolve those questions, and provisions that offer no course of action may best be omitted and left to policy decisions. Provisions that conflict with what Brownson and others can discern are the underlying "constitutions" of nature and society tend to be difficult or impossible to execute, or to lead to unresolvable disputes.

Constitutional design has been treated as a kind of metagame in which play consists of finding the best design and provisions for a written constitution that will be the rules for the game of government, and that will be most likely to optimize a balance of the utilities of justice, liberty, and security. An example is the metagame Nomic.[16]

Governmental constitutions

Most commonly, the term *constitution* refers to a set of rules and principles that define the nature and extent of government. Most constitutions seek to regulate the relationship between institutions of the state, in a basic sense the relationship between the executive, legislature and the judiciary, but also the relationship of institutions within those branches. For example, executive branches can be divided into a head of government, government departments/ministries, executive agencies and a civil service/bureaucracy. Most constitutions also attempt to define the relationship between individuals and the state, and to establish the broad rights of individual citizens. It is thus the most basic law of a territory from which all the other laws and rules are hierarchically derived; in some territories it is in fact called "Basic Law."

Key features

The following are features of democratic constitutions that have been identified by political scientists to exist, in one form or another, in virtually all national constitutions.

Codification

A fundamental classification is codification or lack of codification. A codified constitution is one that is contained in a single document, which is the single source of constitutional law in a state. An uncodified constitution is one that is not

contained in a single document, consisting of several different sources, which may be written or unwritten.

Codified constitution

Most states in the world have codified constitutions.

Codified constitutions are often the product of some dramatic political change, such as a revolution. The process by which a country adopts a constitution is closely tied to the historical and political context driving this fundamental change. The legitimacy (and often the longevity) of codified constitutions has often been tied to the process by which they are initially adopted.

States that have codified constitutions normally give the constitution supremacy over ordinary statute law. That is, if there is any conflict between a legal statute and the codified constitution, all or part of the statute can be declared *ultra vires* by a court, and struck down as unconstitutional. In addition, exceptional procedures are often required to amend a constitution. These procedures may include: convocation of a special constituent assembly or constitutional convention, requiring a supermajority of legislators' votes, the consent of regional legislatures, a referendum process, and other procedures that make amending a constitution more difficult than passing a simple law.

Constitutions may also provide that their most basic principles can never be abolished, even by amendment. In case a formally valid amendment of a constitution infringes these principles protected against any amendment, it may constitute a so-called *unconstitutional constitutional law*.

Codified constitutions normally consist of a ceremonial preamble, which sets forth the goals of the state and the motivation for the constitution, and several articles containing the substantive provisions. The preamble, which is omitted in some constitutions, may contain a reference to God and/or to fundamental values of the state such as liberty, democracy or human rights.

Uncodified constitution

As of 2010 only three states have uncodified constitutions: Israel, New Zealand, and the United Kingdom. Uncodified constitutions (also known as unwritten constitutions) are the product of an "evolution" of laws and conventions over centuries. By contrast to codified constitutions, in the Westminster tradition that originated in England, uncodified constitutions include written sources: e.g. constitutional statutes enacted by the Parliament (House of Commons Disqualification Act 1975, Northern Ireland Act 1998, Scotland Act 1998, Government of Wales Act 1998, European Communities Act 1972 and Human Rights Act 1998); and also unwritten sources: constitutional conventions, observation of precedents, royal prerogatives, custom and tradition, such as always holding the General Election on Thursdays; together these constitute the British constitutional law. In the days of the British Empire, the Judicial Committee of the Privy Council

acted as the constitutional court for many of the British colonies such as Canada and Australia which had federal constitutions.

In states using uncodified constitutions there is no entrenchment of constitutional provisions and thus constitutional law as such: laws of constitutional significance can be created, altered, or repealed by the legislative body in the same was as any statute.

Written versus unwritten / codified versus uncodified

The term *written constitution* is used to describe a constitution that is entirely written, which by definition includes every codified constitution; but not all constitutions based entirely on written documents are codified.

Some constitutions are largely, but not wholly, codified. For example, in the Constitution of Australia, most of its fundamental political principles and regulations concerning the relationship between branches of government, and concerning the government and the individual are codified in a single document, the Constitution of the Commonwealth of Australia. However, the presence of statutes with constitutional significance, namely the Statute of Westminster, as adopted by the Commonwealth in the Statute of Westminster Adoption Act 1942, and the Australia Act 1986 means that Australia's constitution is not contained in a single constitutional document. The Constitution of Canada, which evolved from the British North America Acts until severed from nominal British control by the Canada Act 1982 (analogous to the Australia Act 1986), is a similar example.

The terms *written constitution* and *codified constitution* are often used interchangeably, as are *unwritten constitution* and *uncodified constitution*, although this usage is technically inaccurate. Strictly speaking, *unwritten constitution* is never an accurate synonym for *uncodified constitution*, because all modern democratic constitutions mainly comprise written sources, even if they have no different legal status than ordinary statutes. Another, correct, term used is *formal* (or *formal written*) *constitution*, for example in the following context: "The United Kingdom has no formal [written] constitution" (which does not preclude a constitution based on documents but not codified).

Entrenchment

The U.S. Constitution

The presence or lack of entrenchment is a fundamental feature of constitutions. An entrenched constitution cannot be altered in any way by a legislature as part of its normal business concerning ordinary statutory laws, but can only be amended by a different and more onerous procedure. There may be a requirement for a special body to be set up, and the proportion of favourable votes of members of this body may be required to be higher to pass an amendment than for statutes. Some constitutions contain entrenched clauses, i.e. articles stating that certain modifications are either more difficult to make than normal modifications, or may never be made under any circumstances. Entrenchment is an inherent feature in

most codified constitutions. A codified constitution will incorporate the rules which must be followed for the constitution itself to be changed.

The US constitution is an example of an entrenched constitution, and the UK constitution is an example of a constitution that is not entrenched (or codified). In some states the text of the constitution may be changed; in others the original text is not changed, and amendments are passed which add to and may override the original text and earlier amendments.

Procedures for constitutional amendment vary between states. In a nation with a federal system of government the approval of a majority of state or provincial legislatures may be required. Alternatively, a national referendum may be required. Details are to be found in the articles on the constitutions of the various nations and federal states in the world.

In constitutions that are not entrenched, no special procedure is required for modification. Lack of entrenchment is a characteristic of uncodified constitutions; the constitution is not recognised with any higher legal status than ordinary statutes. In the UK, for example laws which modify written or unwritten provisions of the constitution are passed on a simple majority in Parliament. No special "constitutional amendment" procedure is required. Indeed it is an often-stated principle of UK Parliamentary Sovereignty that no sovereign Parliament is bound by the acts of its predecessors. [17]; and there is no higher authority that can create law which binds Parliament.

In practice democratic governments do not use the lack of entrenchment of the constitution to impose the will of the government or abolish all civil rights, as they could in theory do, but the distinction between constitutional and other law is still somewhat arbitrary, usually following historical principles embodied in important past legislation. For example, several UK Acts of Parliament such as the Bill of Rights, Human Rights Act and, prior to the creation of Parliament, Magna Carta are regarded as granting fundamental rights and principles which are treated as almost constitutional. Several rights that in another state might be guaranteed by constitution have indeed been abolished or modified by the UK Parliament in the early twentyfirst century, including the unconditional right to trial by jury, the right to silence without prejudicial inference, permissible detention before a charge is made extended from 24 hours to 42 days, and the right not to be tried twice for the same offence.

Fundamental Laws of England

Absolutely unmodifiable articles

The strongest level of entrenchment exists in those constitutions that state that some of their most fundamental principles are absolute, i.e. certain articles may not be amended under any circumstances. An amendment of a constitution that is made consistently with that constitution, except that it violates the absolute non-modifiability, can be called an *unconstitutional constitutional law*. Ultimately it is always possible for a constitution to be overthrown by internal or external force, for

example, a revolution (perhaps claiming to be justified by the right to revolution) or invasion.

An example of absolute unmodifiability is the German Federal Constitution. This states in Article 20 that the country has to be a democratic, federal and social republic, and in Article 1 that the state powers have to: (i) leave dignity of man inviolable; (ii) where rule of law prevails; and (iii) where sovereignty lies with the people. Article 79, Section 3 states that these articles cannot be changed, even according to the methods of amendment defined elsewhere in the document.

Another example is the Constitution of Honduras, which has an article stating that the article itself and certain other articles cannot be changed in any circumstances. Article 374 of the Honduras Constitution asserts this unmodifiability, stating, "It is not possible to reform, in any case, the preceding article, the present article, the constitutional articles referring to the form of government, to the national territory, to the presidential period, the prohibition to serve again as President of the Republic, the citizen who has performed under any title in consequence of which she/he cannot be President of the Republic in the subsequent period."[18] This unmodifiability article has played an important role in the 2009 Honduran constitutional crisis.

Distribution of sovereignty

Federalism

Constitutions also establish where sovereignty is located in the state. There are three basic types of distribution of sovereignty according to the degree of centralisation of power: unitary, federal, and confederal. The distinction is not absolute.

In a unitary state, sovereignty resides in the state itself, and the constitution determines this. The territory of the state may be divided into regions, but they are not sovereign and are subordinate to the state. In the UK, the constitutional doctrine of Parliamentary sovereignty dictates than sovereignty is ultimately contained at the centre. Some powers have been devolved to Northern Ireland, Scotland, and Wales (but not England).Some unitary states (Spain is an example) devolve more and more power to sub-national governments until the state functions in practice much like a federal state.

A federal state has a central structure with at most a small amount of territory mainly containing the institutions of the federal government, and several regions (called *states*, *provinces*, etc.) which comprise the territory of the whole state. Sovereignty is divided between the centre and the constituent regions. The constitutions of Canada and the United States establish federal states, with power divided between the federal government and the provinces or states. Each of the regions may in turn have its own constitution (of unitary nature).

A confederal state comprises again several regions, but the central structure has only limited coordinating power, and sovereignty is located in the regions. Confederal constitutions are rare, and there is often dispute to whether so-called "confederal"

states are actually federal. A historical example of a confederal constitution is the Swiss Federal Constitution.[*citation needed*]

To some extent a group of states which do not constitute a federation as such may by treaties and accords give up parts of their sovereignty to a supranational entity. For example the countries comprising the European Union have agreed to abide by some Union-wide measures which restrict their absolute sovereignty in some ways, e.g., the use of the metric system of measurement instead of national units previously used.

Separation of powers

Constitutions usually explicitly divide power between various branches of government. The standard model, described by the Baron de Montesquieu, involves three branches of government: executive, legislative and judicial. Some constitutions include additional branches, such as an auditory branch. Constitutions vary extensively as to the degree of separation of powers between these branches.

Lines of accountability

In presidential and semi-presidential systems of government, department secretaries/ministers are accountable to the president, who has patronage powers to appoint and dismiss ministers. The president is accountable to the people in an election.

In parliamentary systems, ministers are accountable to Parliament, but it is the prime minister who appoints and dismisses them. In Westminster systems, this power derives from the monarch (or head of state in Westminster-style republics, such as India and the Republic of Ireland), a component of Parliament. There is the concept of a vote of no confidence in many countries with parliamentary systems, which means that if a majority of the legislature vote for a no confidence motion, then the government must resign, and a new one will be formed, or parliament will be dissolved and a general election called.

State of emergency

Main article: State of emergency

Many constitutions allow the declaration under exceptional circumstances of some form of state of emergency during which some rights and guarantees are suspended. This deliberate loophole can be and has been abused to allow a government to suppress dissent without regard for human rights—see the article on state of emergency.

Façade constitutions

Constitutionalism

Italian political theorist Giovanni Sartori noted the existence of national constitutions which are a façade for authoritarian sources of power. While such documents may express respect for human rights or establish an independent judiciary, they may be ignored when the government feels threatened, or never put into practice. An extreme example was the Constitution of the Soviet Union that on paper supported freedom of assembly and freedom of speech; however, citizens who transgressed unwritten limits were summarily imprisoned. The example demonstrates that the protections and benefits of a constitution are ultimately provided not through its written terms but through deference by government and society to its principles. A constitution may change from being real to a façade and back again as democratic and autocratic governments succeed each other.

The constitution of the United States, being the first document of its type, necessarily had many unforeseen shortcomings which had to be patched through amendments, but has generally been honored and a powerful structure, and no dictatorship has been able to take hold; the constitution of Argentina written many years later in 1853 building on many years of experience of the US constitution was arguably a better document, but did not prevent a succession of dictatorial governments from ignoring it—a state of emergency was declared 52 times to bypass constitutional guarantees[19].

Constitutional courts

The constitution is often protected by a certain legal body in each country with various names, such as *supreme*, *constitutional* or *high* court. This court judges the compatibility of legislation with the provisions and principles of the constitution, which is termed "constitutionality." Especially important is the court's responsibility to protect constitutionally established rights and freedoms. In constitutions without the concept of supreme law, such as the United Kingdom constitution, the concept of "constitutionality" has little meaning, and constitutional courts do not exist. A "constitutional violation" is an action or legislative act that is judged by a constitutional court to be contrary to the constitution, that is, "unconstitutional." An example of constitutional violation by the executive could be a politician who abuses the powers of his constitutionally-established office. An example of constitutional violation by the legislature is an attempt to pass a law that would contradict the constitution, without first going through the proper constitutional amendment process.

A constitutional court is normally the court of last resort, the highest judicial body in the government. The process of judicial review is then integrated into the system of courts of appeal. This is the case, for example, with the Supreme Court of the United States or Supreme Court of India. Cases must normally be heard in lower courts before being brought before the Supreme Court, except cases for which the Supreme Court has original jurisdiction. Some other countries dedicate a special court solely to the protection of the constitution, as with the German Constitutional Court. Most constitutional courts are powerful instruments of judicial review, with the power to declare laws "unconstitutional," that is, incompatible with the constitution. The effect of this ruling varies between governments, but it is common for the courts' action to rule a law unenforceable, as is the case in the United States. However,

many courts have the problem of relying on the legislative and executive branches' co-operation to properly enforce their decisions. For example, in the United States, the Supreme Court's ruling overturning the "separate but equal" doctrine in the 1950s depended on individual states co-operation to enforce. Some failed to do so, prompting the federal government to intervene. Other countries, such as France, have a Constitutional Council which may only judge the constitutionality of laws before the ratification process.

Some countries, mainly those with uncodified constitutions, have no such courts at all – for example, as the United Kingdom traditionally functions under the principle of parliamentary sovereignty: the legislature has the power to enact any law it wishes. However, through its membership in the European Union, the UK is now subject to the jurisdiction of European Union law and the European Court of Justice; similarly, by acceding to the Council of Europe's European Convention on Human Rights, it is subject to the European Court of Human Rights. In effect, these bodies can invalidate or interpret UK legislation for compliance with international treaty obligations, first established as a principle by the Factortame case.

Administrative division

"Subnational entity", "administrative unit", "administrative area" and "regional government" redirect here.
This article is about the country subdivisions generally used in regional and local government. For "administrative division" in the sense of a company department, see Administration (business) and Administration.

Administrative divisions are divisions of a political division. In other words, they are designated portions of a country. They are also called **subnational entities**. They are each granted a certain degree of autonomy, and are required to manage themselves through their own local governments. Countries are divided up into these smaller units to make managing their land and the affairs of their people easier. For example, a country may be divided into provinces (or states), which in turn are divided into counties, which in turn may be divided in whole or in part into municipalities. These are only a few of the names given to administrative subdivisions; more examples are provided below.

Administrative divisions are a type of country subdivision, and can overlap with the other types. The other types of country subdivision generally don't have governments.

Administrative divisions are conceptually separate from *dependent areas*, in that the former are included in the core or mainland of the respective state.

Examples of administrative divisions

English terms

In many of the following terms corresponding to British cultural influence, areas of relatively low mean population density might bear a title of an entity one would

expect to be either larger or smaller. There is no fixed rule, for "all politics is local"[1] as is perhaps well demonstrated by their relative lack of systemic order. In the realm of self-government, any of these can and does occur along a stretch of road—which for the most part is passing through rural unsettled countryside. Since the terms are administrative political subdivisions of the local regional government their exact relationship and definitions are subject to home rule considerations, tradition, as well as state statute law and local governmental (administrative) definition and control. In the British cultural legacy, most regional entities begin with fairly expansive counties which encompass an appreciable territorial area and proceed down in size to smaller entities.

Within those entities are the large and small cities or towns, which may or may not be the county seat. Some of the world's larger cities culturally, if not officially, span into multiple counties and those crossing state or provincial boundaries culturally are quite common as well, but are rarely incorporated within the same municipal government. Many sister cities share a water boundary which quite often serves as a border of both cities and counties. For example, Cambridge and Boston, Massachusetts appear to the casual traveler as one large city, while locally they each are quite culturally different and occupy different counties.

a supra-national division. Municipality

A **municipality** is an administrative entity composed of a clearly defined territory and its population and commonly denotes a city, town, or village, or a small grouping of them. A municipality is typically governed by a mayor and a city council or municipal council.

The notion of municipality includes townships but is not restricted to them. A municipality is a general-purpose district, as opposed to a special-purpose district.

In most countries, a municipality is the smallest administrative subdivision to have its own democratically elected representative leadership. In some countries, municipalities are referred to as "communes" (for example, French *commune*, Italian *comune*, Romanian *comună*, Swedish *kommun* and Norwegian/Danish *kommune*). The term derives from the medieval commune. In some countries, especially in the Middle East, the term "municipality" is also used to refer to the municipal administrative building known elsewhere as the town hall or city hall.

The largest municipalities can be found in Canada, Greenland, Iceland, Australia and Brazil.

Public administration

Public administration can be broadly described as the development, implementation and study of branches of government policy. The pursuit of the public good by enhancing civil society, ensuring a well-run, fair, and effective public service are some of the goals of the field.

Public administration is carried out by public servants who work in public departments and agencies, at all levels of government, and perform a wide range of tasks. Public administrators collect and analyze data (statistics), monitor budgets, draft legislation, develop policy, and execute legally mandated government activities. Public administrators serve in many roles: ranging from "front-line" positions serving the public (e.g., peace officers, parole officers, border guards); administrators (e.g., auditors); analysts (e.g., policy analysts); and managers and executives of government branches and agencies.

Public administration is also an academic field. In comparison with related fields such as political science, public administration is relatively new, having emerged in the 19th century. Multidisciplinary in character, it draws on theories and concepts from political science, economics, sociology, administrative law, behavioural science, management and a range of related fields. The goals of the field of public administration are related to the democratic values of improving equality, justice, security, efficiency, effectiveness of public services usually in a non-profit, non-taxable venue; business administration, on the other hand, is primarily concerned with taxable profit. For a field built on concepts (accountability, governance, decentralization, clientele), these concepts are often ill-defined and typologies often ignore certain aspects of these concepts (Dubois & Fattore 2009).[1]

In academia

In the United States, the academic field draws heavily on political science and law. Scholars such as John A. Rohr write of a long history behind the constitutional legitimacy of government bureaucracy. In Europe (notably in Britain and Germany), the divergence of the field from other disciplines can be traced to the 1720s continental university curriculum. Formally, official academic distinctions were made in the 1910s and 1890s, respectively.

One minor tradition that the more specific term "public management" refers to ordinary, routine or typical management concerns, in the context of achieving public good. Others argue that public management as a new, economically driven perspective on the operation of government. This latter view is often called "new public management" by its advocates. New Public Management represents a reform attempt, aimed at reemphasizing the professional nature of the field. This will replace the academic, moral or disciplinary emphasis. Some theorists advocate a bright line differentiation of the professional field from related academic disciplines like political science and sociology; it remains interdisciplinary in nature.

As a field, public administration can be compared to business administration, and the master of public administration (MPA) viewed as similar to a master of business administration (MBA) for those wishing to pursue governmental or non-profit careers. An MPA often emphasizes substantially different ethical and sociological criteria that are traditionally secondary to that of profit for business administrators. The MPA is related to similar government studies including public affairs, public policy, and political science. Differences often include program emphases on policy analysis techniques or other topical focuses such as the study of international affairs

as opposed to focuses on constitutional issues such as separation of powers, administrative law, problems of governance and power, and participatory democracy.

The Doctor of Public Administration (DPA) is an applied-research doctoral degree in the field of public administration, focusing on practice. The DPA requires a dissertation and significant coursework beyond the masters level. Upon successful completion of the doctoral requirements, the title of "Doctor" is awarded and the post-nominals of D.P.A. are often added.

Public administration theory is the domain in which discussions of the meaning and purpose of government, bureaucracy, budgets, governance, and public affairs takes place. In recent years, public administration theory has periodically connoted a heavy orientation toward critical theory and postmodern philosophical notions of government, governance, and power. However, many public administration scholars support a classic definition of the term emphasizing constitutionality, service, bureaucratic forms of organization, and hierarchical government.

History

Antiquity to the early 19th century

Classic scholars including Plato, Aristotle, Vishnu Gupta (Kautilya) and Machiavelli are the basis of subsequent generations of public administration. Until the birth of a national state, the governors principally emphasized moral and political human nature, as well as the on the organization of the governing bodies. Operations were perceived to be secondary to establishing and clarifying the overall guiding theory of government. In Machiavelli's *The Prince*, European princes or governors were offered advice for properly administering their governments. This work represents one of the first Western expressions of the methodology of government. As the centuries moved past, scholars and governors persisted in their various endeavors explaining how one governs.

Though progress varied across the globe, 16th century Western Europe primarily ascribed to the "national-state" model of government and its corresponding administrative structures. Predominantly imperial Asia, tribal Africa, and the tribal/colonial Americas were each feeling the extent of Europe's diplomatic strategies whose emphasis was war, profit, and proselytizing. In any event, nation-states required a professional force and structure for carrying out the primary purposes of government: ensuring stability with through law, security with a military, and some measure of equity through taxation.

Consequently, the need for expert civil servants whose ability to read and write formed the basis for developing expertise in such necessary activities as legal records, military prowess, and tax administration, and record keeping. As the European imperialist age progressed and the militarily dominant region extended its hold over other continents and people, the need for increasingly conventional administrative expertise grew.

Eighteenth century noble, King Frederick William I of Prussia, created professorates in Cameralism in an effort to service this need. The universities of Frankfurt an der Oder and University of Hallewere Prussian institutions emphasizing economic and social disciplines, with the goal of societal reform. Johann Heinrich Gottlob Justi was the most well-known professor of Cameralism. Thus, from a Western European perspective, classic, medieval, and enlightened scholars formed the foundation of the discipline that has come to be called public administration.

Mid-1800s - 1930s

Lorenz von Stein, an 1855 German professor from Vienna, is considered the founder of the science of public administration in many parts of the world. In the time of Von Stein, public administration was considered a form of administrative law, but Von Stein believed this concept too restrictive.

Von Stein taught:

- Public administration relies on many prestablished disciplines such as sociology, political science, administrative law and public finance. Further, public administration is an integrating science.
- Public administrators need be concerned with both theory and practice. Practical considerations are at the forefront of the field, but theory is the basis of best practices.
- Public administration is a science because knowledge is generated and evaluated according to the scientific method.

In the United States, Woodrow Wilson is considered the father of public administration. He first formally recognized public administration in an 1887 article entitled "The Study of Administration." The future president wrote that "it is the object of administrative study to discover, first, what government can properly and successfully do, and, secondly, how it can do these proper things with the utmost possible efficiency and at the least possible cost either of money or of energy."[2] Wilson was more influential to the science of public administration than Von Stein, primarily due to an article Wilson wrote in 1887 in which he advocated four concepts:

- Separation of politics and administration
- Comparative analysis of political and private organizations
- Improving efficiency with business-like practices and attitudes toward daily operations
- Improving the effectiveness of public service through management and by training civil servants, merit-based assessment

The separation of politics and administration has been the subject of lasting debate. The different perspectives regarding this dichotomy contribute to differentiating characteristics of the suggested generations of public administration.

1940s

The separation of politics and administration advocated by Wilson continues to play a significant role in public administration today. However, the dominance of this dichotomy was challenged by second generation scholars, beginning in the 1940s. Luther Gulick's fact-value dichotomy was a key contender for Wilson's allegedly impractical politics-administration dichotomy. In place of Wilson's first generation split, Gulick advocated a "seamless web of discretion and interaction" (Fry 1989, 80).[3]

Luther Gulick and Lyndall Urwick are two such second generation scholars. Gulick, Urwick, and the new generation of administrators stood on the shoulders of contemporary behavioral, administrative, and organizational "giants" including Henri Fayol, Fredrick Winslow Taylor, Paul Appleby, Frank Goodnow, and Willam Willoughby. With the help of these specialists and their empirical work on human nature, group behavior, and business organizations, second generation public administration scholars had a necessary advantage over the pre-generation and first generation scholars. That is, the new generation of organizational theories no longer relied upon logical assumptions and generalizations about human nature like classical and enlightened theorists.

Gulick is considered a watershed theorist, a truly unique administrative scholar credited with generating a comprehensive, generic theory of organization. During his seven decade career Gulick differentiated his theories from those of his predecessors by emphasizing the scientific method, efficiency, professionalism, structural reform, and executive control. Gulick summarized the duties of administrators with an acronym; POSDCORB, which stands for planning, organizing, staffing, directing, coordinating, reporting, and budgeting. Finally, Fayol offered a systematic, 14-point, treatment of private management. Second generation theorists drew upon private management practices for administrative sciences. A single, generic management theory bleeding the borders between the private and the public sector, was thought to be possible. With the general theory, the administrative theory could be focused on governmental organizations.

Post-World War II - 1970s

The mid-1940s theorists challenged Wilson and Gulick. The politics-administration dichotomy remained the center of criticism in the third generation. In addition to this area of criticism, government itself came under fire as ineffective, inefficient, and largely a wasted effort. The sometimes deceptive, and expensive American intervention in Vietnam along with domestic scandals including Watergate are two examples of self-destructive government behavior during the third generation. There was a call by citizens for efficient administration to replace ineffective, wasteful bureaucracy. Public administration would have to distance itself from politics to answer this call and remain effective.

Elected officials supported such reform. The Hoover Commission, chaired by University of Chicago professor Louis Brownlow, to examine reorganization of government. Dr. Brownlow subsequently founded the public administration service on the university, 1313 E. 60th Street. The organization PAS provided consulting services to governments at all levels of government until the 1970s.

1980s

In the late 1980s, yet another generation of public administration theorists began to displace the last. What was called New Public Management was proposed by David Osborne and Ted Gaebler [4] . The new model advocated the use of private sector innovation, resources, and organizational ideas to improve the public sector. During the Clinton Administration (1992-2000), Vice President Al Gore adopted and reformed federal agencies accordingly. New public management there by became prevalent throughout the US bureaucracy.

Some critics argue that the New Public Management concept of Americans as "customers" rather than "citizens" is an unacceptable abuse. That is, customers are a means to an end, profit, rather than part of the policy making process. Citizens are in fact the proprietors of government (the owners), opposed to merely the customers of a business (the patrons). In New Public Management, people are viewed as economic units not democratic participants. Nevertheless, the model is still widely accepted at all levels of government.

1990s

In the late 1990s, Janet and Robert Denhardt proposed a new public service model [5]. This model's chief contribution is a focus on Americans as "citizens" rather than "customers". Accordingly, the citizen is expected to participate in government and take an active role throughout the policy process. No longer are the proprietors considered an end to a mean. Whilse this remains feasible at the federal, state & local levels, where the concept of citizenship is commonly wedded, the emergence of 'transnational administration' with the growing number of international organizations and 'transnational executive networks' complicates the prospects for citizen engagement.[6]

One example of this is openforum.com.au, an Australian non-for-profit eDemocracy project which invites politicians, senior public servants, academics, business people and other key stakeholders to engage in high-level policy debate.

New public management (NPM)

The critics of NPM claim that a successor to NPM is digital era governance, focusing on themes of reintegrating government responsibilities, needs-based holism (executing duties in cursive ways), and digitalization (exploiting the transformational capabilities of modern IT and digital storage).

Core branches of public administration

In academia, the fields of Public Administration, are contrived in five disciplines. These disciplines make up the whole of the academic field of Public Administration.

Ethics in Public Administration serves as a normative approach to decision making.
Policy Analysis serves as an empirical approach to decision making.

Public Budgeting is the activity within a government that seeks to allocate scarce resources among unlimited demands.
Organizational Theory in Public Administration is the study of the structure of governmental entities and the many particulars inculcated in them.
Human Resource Management in Public Administration is an internal service insuring equitable treatment, ethical standards, and promoting a merit-based system.

Decision-making models and public administration

Given the array of duties public administrators find themselves performing, the professional administrator might refer to a theoretical framework from which he or she might work. Indeed, many public and private administrative scholars have devised and modified decision-making models.

William Niskanen's budget-maximizing

An relatively recent rational choice variation, proposed by William Niskanen in a 1971 article budget-maximizing model, argued that rational bureaucrats will universally seek to increase their budgets, thereby contributing to state growth, measured by expenditure. Niskanen served on President Reagan's Council of Economic Advisors; his model underpinned what has been touted as curtailed public spending and increased privatization. However, budgeted expenditures and the growing deficit during the Reagan administration is evidence of a different reality. A range of pluralist authors have critiqued Niskanen's universalist approach. These scholars have argued that officials tend also to be motivated by considerations of the public interest.

Patrick Dunleavy's bureau shaping

The bureau-shaping model, a modification of Niskanen, holds that rational bureaucrats only maximize the part of their budget that they spend on their own agency's operations or give to contractors and interest groups. Groups that are able to organize a "flowback" of benefits to senior officials would, according to this theory, receive increased budgetary attention. For instance, rational officials will get no benefit from paying out larger welfare checks to millions of low-income citizens because this does not serve a bureaucrats' goals. Accordingly, one might should instead expect a jurisdiction to seek budget increases for defense and security purposes in place of domestic social programming. If we refer back to Reagan once again, Dunleavy's bureau shaping model accounts for the alleged decrease in the "size" of government while spending did not, in fact, decrease. Domestic entitlement programming was financially de-emphasized for military research and personnel.

Notable scholars

Notable scholars of public administration have come from a range of fields. In the period before public administration existed as its own independent discipline, scholars contributing to the field came from economics, sociology, management,

political science, law, and, other related fields. More recently, scholars from public administration and public policy have contributed important studies and theories.

For a longer list of academics and theorists, see the List of notable public administration scholars article .

International public administration

There are several organizations that are active. The oldest is the International Association of Schools and Institutes of Administration (IASIA). Based in Brussels, Belgium, IASIA is an association of organizations and individuals whose activities and interests focus on public administration and management. The activities of its members include education and training of administrators and managers. It is the only worldwide scholarly association in the field of public management. Visit their Web site at www.iiasiisa.be/schools/aeacc.htm.

Also the International Committee of the US-based National Association of School of Public Affairs and Administration (NASPAA) has developed a number of relationships around the world. They include sub regional and National forums like CLAD, INPAE and NISPAcee, APSA, ASPA. For general information about these regional networks, visit www.GlobalMPA.net.

The Center for Latin American Administration for Development (CLAD), based in Caracas, Venezuela, this regional network of schools of public administration set up by the governments in Latin America is the oldest in the region. Information about CLAD is accessible at www.clad.org.ve.

The Institute is a founding member and played a central role in organizing the Inter-American Network of Public Administration Education (INPAE). Created in 2000, this regional network of schools is unique in that it is the only organization to be composed of institutions from North and Latin America and the Caribbean working in public administration and policy analysis. It has more than 49 members from top research schools in various countries throughout the hemisphere, www.ebape.fgv.br/inpae.

NISPAcee is a network of experts, scholars and practitioners who work in the field of public administration in Central and Eastern Europe, including the Russian Federation and the Caucasus and Central Asia. Their English Web site is located at www.nispa.sk/_portal/homepage.php.

The US public administration and political science associations like NASPA, APSA and ASPA. These organizations have helped to create the fundamental establishment of modern public administration. For more information visit the Web sites of American Political Science Association, www.apsanet.org, and the American Society of Public Administration www.aspanet.org.

Government

A **government** is the body within a community, political entity or organization which has the authority to make and enforce rules, laws, and regulations.

Typically, the term "government" refers to a civil government or sovereign state which can be either local, national, or international. However, commercial, academic, religious, or other formal organizations are also governed by internal bodies. Such bodies may be called boards of directors, managers, or governors or they may be known as the administration (as in schools) or councils of elders (as in churches). The size of governments can vary by region or purpose.

Growth of an organization advances the complexity of its government, therefore small towns or small-to-medium privately-operated enterprises will have fewer officials than typically larger organizations such as multinational corporations which tend to have multiple interlocking, hierarchical layers of administration and governance. As complexity increases and the nature of governance becomes more complicated, so does the need for formal policies and procedures.

Types of governments

- Anarchism - a political philosophy which considers the state to be unnecessary, harmful, or otherwise undesirable, and favors instead a stateless society
- Authoritarian – Authoritarian governments are characterized by an emphasis on the authority of the state in a republic or union. It is a political system controlled by nonelected rulers who usually permit some degree of individual freedom.
- Constitutional monarchy – A government that has a monarch, but one whose powers are limited by law or by a formal constitution. Example: United Kingdom[1][2]
- Constitutional republic – A government whose powers are limited by law or a formal constitution, and which is chosen by a vote amongst at least some sections of the populace (Ancient Sparta was in its own terms a republic, though most inhabitants were disenfranchised : The early United States was a republic, but the large numbers of slaves did not have the vote). Republics which exclude sections of the populace from participation will typically claim to represent all citizens (by defining people without the vote as "non-citizens").

- Democracy – Rule by a government (usually a Constitutional Republic or Constitutional Monarchy) chosen by election where most of the populace are enfranchised. The key distinction between a democracy and other forms of constitutional government is usually taken to be that the right to vote is not limited by a person's wealth or race (the main qualification for enfranchisement is usually having reached a certain age). A Democratic government is therefore one supported (at least at the time of the election) by a majority of the populace (provided the election was held fairly). A "majority" may be defined in different ways. There are many "power-sharing" (usually in countries where people mainly identify themselves by race or religion) or

"electoral-college" or "constituency" systems where the government is not chosen by a simple one-vote-per-person headcount.

- Dictatorship – Rule by an individual who has full power over the country. The term may refer to a system where the Dictator came to power, and holds it, purely by force - but it also includes systems where the Dictator first came to power legitimately but then was able to amend the constitution so as to, in effect, gather all power for themselves.[3] See also Autocracy and Stratocracy.
- Monarchy – Rule by an individual who has inherited the role and expects to bequeath it to their heir.[4]
- Oligarchy – Rule by a small group of people who share similar interests or family relations.[5]
- Plutocracy – A government composed of the wealthy class. Any of the forms of government listed here can be plutocracy. For instance, if all of the voted representatives in a republic are wealthy, then it is a republic and a plutocracy.
- Theocracy – Rule by a religious elite.[6]
- Totalitarian – Totalitarian governments regulate nearly every aspect of public and private life.
- Legalism - A legalistic government enforces the law with rewards to those who obey the laws and harsh punishments to people who go against the law.

Origin

For many thousands of years when people were hunter-gatherers and small scale farmers, humans lived in small, non-hierarchical and self-sufficient communities.

The development of agriculture resulted in ever increasing population densities.[7] David Christian explains how this helped result in states with laws and governments:

As farming populations gathered in denser and larger communities, interactions between different groups increased and the social pressure rose until, in a striking parallel with star formation, new structures suddenly appeared, together with a new level of complexity. Like stars, cities and states reorganize and energize the smaller objects within their gravitational field.
—David Christian, p. 245 , Maps of Time

The exact moment and place that the erectional phenomenon of human government developed is lost in time; however, history does record the formations of very early governments. About 5,000 years ago, the first small city-states appeared.[7] By the third to second millenniums BC, some of these had developed into larger governed areas: Sumer, Ancient Egypt, the Indus Valley Civilization, and the Yellow River Civilization.[8]

States formed as the results of a positive feedback loop where *population growth* results in *increased information exchange* which results in *innovation* which results in *increased resources* which results in further population growth.[9][10] The role of cities in the feedback loop is important. Cities became the primary conduits for the dramatic increases in information exchange that allowed for large and densely

packed populations to form, and because cities concentrated knowledge, they also ended up concentrating power.[11][12] "Increasing population density in farming regions provided the demographic and physical raw materials used to construct the first cities and states, and increasing congestion provided much of the motivation for creating states."[13]

Fundamental purpose

According to supporters of government,the fundamental purpose of government is the maintenance of basic security and public order.[14] The philosopher Thomas Hobbes figured that people were rational animals and thus saw submission to a government dominated by a sovereign as preferable to anarchy.[15][16] According to Hobbes, people in a community *create* and *submit to* government for the purpose of establishing for themselves, safety and public order.[16][17][18][19]

Military defense

The fundamental purpose of government is to maintain social order and protect property. “Security of person and property, and equal justice between individuals, are the first needs of society, and the primary ends of government: if these things can be left to any responsibility below the highest, there is nothing, except war and treaties, which requires a general government at all.” [22]

Militaries are created to deal with the highly complex task of confronting large numbers of enemies.

Once governments came onto the scene, they began to form and use armies for conflicts with neighboring states, and for conquest of new lands. Governments seek to maintain monopolies on the use of force,[23] and to that end, they usually suppress the development of private armies within their borders.

Social security

Social security is related to economic security. Throughout most of human history, parents prepared for their old age by producing enough children to ensure that some of them would survive long enough to take care of the parents in their old age.[24] In modern, relatively high-income societies, a mixed approach is taken where the government shares a substantial responsibility of taking care of the elderly.[24]

This is not the case everywhere since there are still many countries where social security through having many children is the norm. Although social security is a relatively recent phenomenon, prevalent mostly in developed countries, it deserves mention because the existence of social security substantially changes reproductive behavior in a society, and it has an impact on reducing the *cycle of poverty*.[24] By reducing the cycle of poverty, government creates a self-reinforcing cycle where people see the government as friend both because of the financial support they receive late in their lives, but also because of the overall reduction in national poverty due to the government's social security policies—which then adds to public support for social security.[25]

Aspects of government

The Parliament of the United Kingdom, the 'Mother of all Parliaments'

Governments vary greatly, as do the relationships of citizens of a state to its government.

Abuse of power

The leaders of governments are human beings, and given human nature, what constitutes good governance has been a subject written about since the earliest books known. In the western tradition Plato wrote extensively on the question, most notably in The Republic. He (in the voice of Socrates) asked if the purpose of government was to help ones friends and hurt ones enemies, for example. Aristotle, Plato's student picked up the subject in his treatise on *Politics*. Many centuries later, John Locke addressed the question of abuse of power by writing on the importance of checks and balances [26] to prevent or at least constrain abuse. It is believed that Thomas Jefferson was influenced by John Locke.[27]

Legitimacy

The concept of legitimacy is central to the study of governments. Statists have attempted to formalize ways to legitimize government or state authority.

Social contract theorists, such as Thomas Hobbes and Jean-Jacques Rosseau, believe that governments reduce people's freedom/rights in exchange for protecting them, and maintaining order. Many people question, however, whether this is an actual exchange (where people voluntarily give up their freedoms), or whether they are taken by threat of force by the ruling party.

Other statist theorists, like David Hume, reject social contract theory on the grounds that, in reality, consent is not involved in state-individual relationships and instead offer different definitions of legitimacy based on practicality and usefulness.

Anarchists, on the other hand, claim that legitimacy for an authority must be consensual and reject the concept of states altogether; For them, authority must be earned not self-legitimated. For example, a police officer does not earn his authority as a doctor does since the authority is voluntarily transferred to the doctor while the police officer just takes it.

Criticised aspects

War

In the most basic sense, people of one nation will see the government of another nation as the enemy when the two nations are at war. For example, the people of Carthage saw the Roman government as the enemy during the Punic wars.[28]

Enslavement

In early human history, the outcome of war for the defeated was often enslavement. The enslaved people would not find it easy to see the conquering government as a friend.

Religious opposition

People with religious views opposed to the official state religion will have a greater tendency to view that government as their enemy. A good example would be the condition of Roman Catholicism in England before the Catholic Emancipation. Protestants—who were politically dominant in England—used political, economic and social means to reduce the size and strength of Catholicism in England over the 16th to 18th centuries, and as a result, Catholics in England felt that their religion was being oppressed.[29]

Class oppression

Whereas capitalists in a capitalist country may tend to see that nation's government positively, a class-conscious group of industrial workers—a proletariat—may see things very differently.[*original research?*] If the proletariat wishes to take control of the nation's productive resources, and they are blocked in their endeavors by continuing adjustments in the law made by capitalists in the government,[30] then the proletariat will come to see the government as their enemy—especially if the conflicts become violent.

The same situation can occur among peasants. The peasants in a country, e.g. Russia during the reign of Catherine the Great, may revolt against their landlords, only to find that their revolution is put down by government.

Critical views and alternatives

The relative merits of various forms of government have long been debated by philosophers, politicians and others. However, in recent times, the traditional conceptions of government and the role of government have also attracted increasing criticism from a range of sources. Some argue that the traditional conception of government, which is heavily influenced by the zero-sum perceptions of state actors and focuses on obtaining security and prosperity at a national level through primarily unilateral action, is no longer appropriate or effective in a modern world that is increasingly connected and interdependent.

Human security

One such school of thought is human security, which advocates for a more people-based (as opposed to state-based) conception of security, focusing on protection and empowerment of individuals. Human security calls upon governments to recognise that insecurity and instability in one region affects all and to look beyond national borders in defining their interests and formulating policies for security and development. Human security also demands that governments engage in a far

greater level of cooperation and coordination with not only domestic organisations, but also a range of international actors such as foreign governments, intergovernmental organisations and non-government organisations.

Whilst human security attempts to provide a more holistic and comprehensive approach to world problems, its implementation still relies to a large extent on the will and ability of governments to adopt the agenda and appropriate policies. In this sense, human security provides a critique of traditional conceptions of the role of government, but also attempts to work within the current system of state-based international relations. Of course, the unique characteristics of different countries and resources available are some constraints for governments in utilising a human security framework.

Anarchism

Anarchists disagree with the very nature of government, the hierarchical nature of a society which is governed, the government possessing legislative and political power, and the governed possessing none. Anarchists believe that explicit consent is necessary for legitimacy within a collective group or government. There are many forms of anarchist theories. Some anarchists, such as anarcho-syndicalists or anarcho-primitivists, advocate egalitarianism and non-hierarchical societies while others, such as anarcho-capitalists, advocate free markets, individual sovereignty and freedom.

Public services

Public services is a term usually used to mean services provided by government to its citizens, either directly (through the public sector) or by financing private provision of services. The term is associated with a social consensus (usually expressed through democratic elections) that certain services should be available to all, regardless of income. Even where public services are neither publicly provided nor publicly financed, for social and political reasons they are usually subject to regulation going beyond that applying to most economic sectors. Public services is also a course that can be studied at college and/or university. These courses can lead entry in to the: police, ambulance and fire services.

It is also an alternative term for civil service.

Sectors

Public service tend to be those considered so essential to modern life that for moral reasons their universal provision should be guaranteed, and they may be associated with fundamental human rights (such as the right to water). An example of a service which is not generally considered an essential public service is hairdressing.The Volunteer Fire Dept. and Ambulance Corps. are institutions with the mission of servicing the community. A service is helping others with a specific need or want. Service ranges from a doctor curing an illness, to a repair man, to even a food pantry. All of these services are important in people's lives.

Characteristics

A public service may sometimes have the characteristics of a public good (being non-rivalrous and non-excludable), but most are merit goods, that is, services which may (according to prevailing social norms) be under-provided by the market. In most cases public services are services, i.e. they do not involve manufacturing of goods such as nuts and bolts. They may be provided by local or national monopolies, especially in sectors which are natural monopolies.

They may involve outputs that are hard to attribute to specific individual effort and/or hard to measure in terms of key characteristics such as quality. They often require high levels of training and education. They may attract people with a public service ethos who wish to give something to the wider public or community through their work and are prepared to work harder for less pay as a result. (John Kenneth Galbraith has looked at the role of such "public virtue" in economic growth.)

History

Historically, the widespread provision of public services in developed countries usually began in the late nineteenth century, often with the municipal development of gas and water services. Later, other services such as electricity and healthcare began to be provided by governments. In most developed countries such services are still provided by local or national government, the biggest exceptions being the U.S. and the UK, where private provision is more significant. Nonetheless, such privately-provided public services are often strongly regulated, for example (in the US) by Public Utility Commissions.

In developing countries public services tend to be much less well developed. Water services, for example, may only be available to the wealthy middle class. For political reasons the service is often subsidised, which reduces the finance available for expansion to poorer communities.

Nationalization

Nationalization really took off following the World Wars of the first half of the twentieth century. Across Europe, because of the extreme demands on industries and the economy, central planning was required to ensure the maximum degree of efficient production was obtained. Many public services, especially electricity, gas and public transport were products of this era. Following the second world war, many countries also began to implement universal health care and expanded education under the funding and guidance of the state.

Privatization

There are several ways to privatise public services. A free-market corporation may be established and sold to private investors, relinquishing government control altogether. This essentially ends the public service and makes it a private service. Another option, used in the Nordic countries, is to establish a corporation, but keep ownership or voting power essentially in the hands of the government. For example,

the Finnish state owned 49% of Kemira, the rest being owned by private investors. A 49% share doesn't make it a "government enterprise", but it means that all other investors together would have to oppose the state's opinion in order to overturn the state's decisions in the shareholder's meeting. Regulated corporation can also acquire permits on the agreement that they fulfill certain public service duties. When a private corporation runs a natural monopoly, then the corporation is typically heavily regulated, to prevent abuse of monopoly power. Lastly, the government can buy the service on the free market. In many countries, medication is provided in this manner: the government reimburses part of the price of the medication. Also, bus traffic, electricity, healthcare and waste management are privatized in this way. One recent innovation, used in the UK increasingly as well as Australia and Canada is public-private partnerships. This involves giving a long lease to private consortia in return for partly funding infrastructure.

Public services versus Services of General Interest

At the European level, some countries use the name service of general interest, while other prefer public services. It has been a discussion, for instance during the writing of the european constitution (the word services of general interest has been used).

Also most see the two names as synonyms, the services of general interest doesn't imply that the "public services" are delivered by public servants, but can also be delivered by a private company. ETUC named its petition "for high quality public services" but explains "Public services are known as Services of general interest (SGI) and Services of general economic interest (SGEIs) in European Union terminology."

Civil service

The term **civil service** has two distinct meanings:

- A branch of governmental service in which individuals are employed on the basis of professional merit as proven by competitive examinations.
- The body of employees in any government agency other than the military.

A **civil servant** or **public servant** is a civilian public sector employee working for a government department or agency. The term explicitly excludes the armed services, although civilian officials will work at "Defence Ministry" headquarters. The term always includes the (sovereign) state's employees; whether regional, or sub-state, or even municipal employees are called "civil servants" varies from country to country. In the United Kingdom, for instance, only Crown employees are civil servants, county or city employees are not.

Many consider the study of civil service to be a part of the field of public administration. Workers in "non-departmental public bodies" (sometimes called "QUANGOs") may also be classed as civil servants for the purpose of statistics and possibly for their terms and conditions. Collectively a state's civil servants form its **Civil Service** or **Public Service**.

No state of any extent can be ruled without a bureaucracy, but organizations of any size have been few until the modern era. Administrative institutions usually grow out of the personal servants of high officials, as in the Roman Empire. This developed a complex administrative structure, which is outlined in the Notitia Dignitatum and the work of John Lydus, but as far as we know appointments to it were made entirely by inheritance or patronage and not on merit, and it was also possible for officers to employ other people to carry out their official tasks but continue to draw their salary themselves. There are obvious parallels here with the early bureaucratic structures in modern states, such as the Office of Works or the Navy in 18th century England, where again appointments depended on patronage and were often bought and sold.

An **international civil servant** or **international staff member** is a civilian employee that is nominated by an international organisation.[1] These international civil servants do not resort under any national legislation (from which they have immunity of jurisdiction) but are governed by an internal staff regulation. All disputes related to international civil service are brought before special tribunals created by these international organisations such as, for instance, the Administrative Tribunal of the ILO.[2]

Specific referral can be made to the International Civil Service Commission (ICSC) of the UN, an independent expert body established by the United Nations General Assembly. Its mandate is to regulate and coordinate the conditions of service of staff in the United Nations common system, while promoting and maintaining high standards in the international civil service.

By Selected Countries

Canada

Canada's public service is a large body, with over 200 departments and 450,000 members, including commissions, councils, crown corporations, the Office of the Queen's Privy Council for Canada, and the Royal Canadian Mounted Police.

China

Emperor Wen of Sui (r. 581–604), who established the first civil service examination system in China; a painting by the chancellor and artist Yan Liben (600–673).

One of the oldest examples of a civil service based on meritocracy is the Imperial bureaucracy of China, which can be traced as far back as the Qin Dynasty (221–207 BC). During the Han Dynasty (202 BC–220 AD) the *xiaolian* system of recommendation by superiors for appointments to office was established. In the areas of administration, especially in the military, appointments would be based solely on merit.

After the fall of the Han Dynasty, the Chinese bureaucracy would regress into a semi-merit system known as the Nine-rank system, yet in this system noble birthright became the most significant prerequisite for one to gain access to more authoritative posts.

This system was reversed during the short-lived Sui Dynasty (581–618), which initiated a civil service bureaucracy recruited by written examinations and recommendation. The following Tang Dynasty (618–907) would adopt the same measures of drafting officials, and would decreasingly rely upon aristocratic recommendations and more and more upon promotion based on the written examinations.

However, the civil service examinations were practiced on a much smaller scale in comparison to the stronger, centralized bureaucracy of the Song Dynasty (960–1279). In response to the regional military rule of jiedushi and loss of civil authority during the late Tang period and Five Dynasties (907–960), the Song emperors were eager to implement a system where civil officials would owe their social prestige to the central court and gain their salaries strictly from the central government. This ideal was not fully achieved since many scholar officials were affluent landowners and partook in many anonymous business affairs in an age of economic revolution in China. Nonetheless, gaining a degree through three levels of examination — prefectural exams, provincial exams, and the prestigious palace exams — was a far more desirable goal in society than becoming a merchant. This was because the mercantile class was traditionally regarded with some disdain by the scholar official class. This class of state bureaucrats in the Song period were far less aristocratic than their Tang predecessors. The examinations were carefully structured in order to ensure people of lesser means than candidates born into wealthy, landowning families were given a greater chance at passing the exams and gaining an official degree. This included the employment of a bureau of copyists who would rewrite all of the candidate's exams in order to mask one's handwriting and therefore make all candidates anonymous and unable to employ favoritism by graders of the exams who might be associated to them and recognize their handwriting. The advent of widespread printing in the Song period allowed many more candidates of the exams access to required Confucian texts which could be utilized in passing the exams.

United Kingdom

The civil service in the United Kingdom only includes Crown employees; not those who are parliamentary employees. Public sector employees such as teachers and NHS doctors are not considered to be civil servants. Note that civil servants in devolved government departments in Northern Ireland are not part of the British Civil Service, but constitute the separate Northern Ireland Civil Service.

Brazil

In Brazil public servants are hired through entrance examinations, known as Public Contests - ***Concurso Público****, in Portuguese* -. There are several companies that the government hires to do the examinations, the most known are the Cespe, the Getúlio Vargas Foundation, ESAF, established in universities and the Foundation Cesgranrio. The position is filled according to the examination score.

In Brazil, public officials are privileged compared to the private sector.

- Culture Pass (yet to be enforced) - About 15% of their salary to spend more on movies, theater and other leisure and culture
- Maternity leave - Maternity leave for a time in Brazil is 120 days to 180 days are public officials
- Lifelong employment - It is prohibited to resign civil servants in Brazil, except if there is any occurrence or very serious violation.
- Wage - The civil servants are among the richest working class in Brazil, depending on the career

Spain

The civil service in Spain (*funcionariado*) is often considered to include government employees, "Comunidades Autónomas" employees as well as city's employees. There are three main bodies on the Spanish civil services, political posts ("puestos de libre designación, level 28-30") with poor or no exam to get them, posts "funcionarios de carrera" with an exam to get them and "personal laboral" posts also with an exam similar of "funcionarios de carrera". There are differences in exams between state, the 17 autonomic communities and the city councils, and differences between "funcionarios" and "personal laboral" exams vary in difficulty from one to others.

Ireland

The civil service of Ireland includes the employees of the Department of State (excluded are government ministers and a small number of paid political advisors) as well as a small number of core state agencies such as the Office of the Revenue Commissioners, the Office of Public Works, and the Public Appointments Service. The organisation of the Irish Civil Service is very similar to the traditional organisation of the British Civil Service, and indeed the grading system in the Irish Civil Service is nearly identical to the traditional grading system of its British counterpart. In Ireland, public sector employees such as teachers or members of the country's police force, *An Garda Síochána* are not considered to be civil servants, but are rather described as "public servants" (and form the Public service of the Republic of Ireland).

United States

In the United States, the civil service was established in 1872. The Federal Civil Service is defined as "all appointive positions in the executive, judicial, and legislative branches of the Government of the United States, except positions in the uniformed services." (5 U.S.C. § 2101). In the early 19th century, government jobs were held at the pleasure of the president — a person could be fired at any time. The spoils system meant that jobs were used to support the political parties. This was changed in slow stages by the Pendleton Civil Service Reform Act of 1883 and subsequent laws. By 1909, almost 2/3 of the U.S. federal work force was appointed based on merit, that is, qualifications measured by tests. Certain senior civil service positions, including some heads of diplomatic missions and executive agencies are filled by political appointees. Under the Hatch Act of 1939, civil servants are not allowed to engage in political activities while performing their duties.

The U.S. civil service includes the Competitive service and the Excepted service. The majority of civil service appointments in the U.S. are made under the Competitive Service, but certain categories in the Diplomatic Service, the FBI, and other National Security positions are made under the Excepted Service. (U.S. Code Title V)

U.S. state and local government entities often have competitive civil service systems that are modeled on the national system, in varying degrees.

As of January 2007, the Federal Government, excluding the Postal Service, employed about 1.8 million civilian workers. The Federal Government is the Nation's single largest employer. Although most federal agencies are based in the Washington D.C. region, only about 16% (or about 288,000) of the federal government workforce is employed in this region.[3]

There are over 1,300 federal government agencies.[4]

Other countries tend to use systems which vary between these two extremes. Germany makes a clear distinction, as in the U.S., between political and official posts (though the threshold is placed rather higher); also see Beamter.

Employees of international organisations (e.g., the United Nations or the International Atomic Energy Agency) are sometimes referred to as *international civil servants*.

Other meanings

Civil service also means a form of legal conscientious objection, for example the Swiss Civilian Service. More accurately, in this scope Civil service is work of public interest done as a replacement for a military obligation to which one objects. It should be noted that the Finnish "siviilipalvelus", French "service civil", German "Zivildienst", Italian "servizio civile" and Swedish "civiltjänst" all can be translated to "civil service".

Legislation

Legislation (or "statutory law") is law which has been promulgated (or "enacted") by a legislature or other governing body, or the process of making it. (Another source of law is judge-made law or case law) Before an item of legislation becomes law it may be known as a bill, and may be broadly referred to as "legislation" while it remains under consideration to distinguish it from other business. Legislation can have many purposes: to regulate, to authorize, to proscribe, to provide (funds), to sanction, to grant, to declare or to restrict.

It can be used to help data protection within computers in the form of the data protection act 1998. It helps keep data safe and with ever growing leglislation laws being passed, it improves the security of your details on the internet.

In some jurisdictions legislation must be confirmed by the executive branch of government before it enters into force as law. Primary legislation may delegate to the executive or other parties limited powers to make secondary legislation, such as Rules, Regulations and Orders which implement its policy in detail.

Under the Westminster system, an item of primary legislation is known as an Act of Parliament after enactment.

Legislation is usually proposed by a member of the legislature (e.g. a member of Congress or Parliament), or by the executive, whereupon it is debated by members of the legislature and is often amended before passage. Most large legislatures enact only a small fraction of the bills proposed in a given session.[Whether a given bill will be proposed and enter into force is generally a matter of the legislative priorities of government.

Legislation is regarded as one of the three main functions of government, which are often distinguished under the doctrine of the separation of powers. Those who have the formal power to *create* legislation are known as legislators; a judicial branch of government will have the formal power to *interpret* legislation (see statutory interpretation); the executive branch of government can act only within the powers and limits set by the law.

Alternate means of law-making

The function and procedures are primarily the responsibility of the legislature. However, there are situations where legislation is made by other bodies or means, such as when constitutional law or secondary legislation is enacted. Such other forms of law-making include referendums, constitutional conventions, orders-in-council or regulations. The term *legislation* is sometimes used to include these situations, or the term *primary legislation* may be used to exclude these other forms.

Other empirical and conceptual problems

On the surface, identifying a form of government appears to be easy. Most would say that the United States is a democratic republic while the former Soviet Union was a totalitarian state. However, as Kopstein and Lichbach (2005:4) argue, defining regimes is tricky. Defining a form of government is especially problematic when trying to identify those elements that are essential to that form. There appears to be a disparity between being able to identify a form of government and identifying the necessary characteristics of that form.

For example, in trying to identify the essential characteristics of a democracy, one might say "elections." However, both citizens of the former Soviet Union and citizens of the United States voted for candidates to public office in their respective states. The problem with such a comparison is that most people are not likely to accept it because it does not comport with their sense of reality. Since most people are not going to accept an evaluation that makes the former Soviet Union as democratic as the United States, the usefulness of the concept is undermined.

In political science, it has long been a goal to create a typology or taxonomy of polities, as typologies of political systems are not obvious [3]. It is especially important in the political science fields of comparative politics and international relations. One important example of a book which attempts to do so is Robert Dahl's Polyarchy (Yale University Press (1971)).

One approach is to further elaborate on the nature of the characteristics found within each regime. In the example of the United States and the Soviet Union, both did conduct elections, and yet one important difference between these two regimes is that the USSR had a single-party system, with all other parties being outlawed. In contrast, the United States effectively has a bipartisan system with political parties being regulated, but not forbidden. A system generally seen as a representative democracy (for instance Canada, India and the United States) may also include measures providing for: a degree of direct democracy in the form of referendums and for deliberative democracy in the form of the extensive processes required for constitutional amendment.

Another complication is that a huge number of political systems originate as socio-economic movements and are then carried into governments by specific parties naming themselves after those movements. Experience with those movements in power, and the strong ties they may have to particular forms of government, can cause them to be considered as forms of government in themselves. Some examples are as follows:

- Perhaps the most widely cited example of such a phenomenon is the communist movement. This is an example of where the resulting political systems may diverge from the original socio-economic ideologies from which they developed. This may mean that adherents of the ideologies are actually *opposed* to the political systems commonly associated with them. For example, activists describing themselves as Trotskyists or communists are often opposed to the communist states of the 20th century.

- Islamism is also often included on a list of movements that have deep implications for the form of government. Indeed, many nations in the Islamic world use the term *Islamic* in the name of the state. However, these governments in practice exploit a range of different mechanisms of power (for example debt and appeals to nationalism). This means that there is no single form of government that could be described as “Islamic” government. Islam as a political movement is therefore better seen as a loose grouping of related political practices rather than a single, coherent political movement.

- The basic principles of many other popular movements have deep implications for the form of government those movements support and would introduce if they came to power. For example, bioregional democracy is a pillar of green politics.

Institution

This article is about institutions as social mechanisms. For formal establishments, see Organization. For a computer science concept, see Institution (computer science).

Institutions are structures and mechanisms of social order and cooperation governing the behavior of a set of individuals within a given human collectivity. Institutions are identified with a social purpose and permanence, transcending individual human lives and intentions, and with the making and enforcing of rules governing cooperative human behavior. The term "institution" is commonly applied to customs and behavior patterns important to a society, as well as to particular formal organizations of government and public service. As structures and mechanisms of social order among humans, institutions are one of the principal objects of study in the social sciences, including sociology, political science, and economics. Institutions are a central concern for law, the formal mechanism for political rule-making and enforcement. The creation and evolution of institutions is a primary topic for history.

Aspects of institutions

Although individual, formal organizations, commonly identified as "institutions," may be deliberately and intentionally created by people, the development and functioning of institutions in society in general may be regarded as an instance of emergence; that is, institutions arise, develop and function in a pattern of social self-organization, which goes beyond the conscious intentions of the individual humans involved.

As mechanisms of social cooperation, institutions are manifest in both objectively real, *formal* organizations, such as the U.S. Congress, or the Roman Catholic Church, and, also, in *informal* social order and organization, reflecting human psychology, culture, habits and customs. Most important institutions, considered abstractly, have both objective and subjective aspects: examples include money and marriage. The institution of money encompasses many formal organizations, including banks and government treasury departments and stock exchanges, which may be termed, "institutions," as well as subjective experiences, which guide people in their pursuit of personal well-being. Powerful institutions are able to imbue a paper currency with certain value, and to induce millions into cooperative production and trade in pursuit of economic ends abstractly denominated in that currency's units. The subjective experience of money is so pervasive and persuasive that economists talk of the "money illusion" and try to disabuse their students of it, in preparation for learning economic analysis.

Marriage and family, as a set of institutions, also encompass formal and informal, objective and subjective aspects. Both governments and religious institutions make and enforce rules and laws regarding marriage and family, create and regulate various concepts of how people relate to one another, and what their rights, obligations and duties may be as a consequence. Culture and custom permeate marriage and family. In the United States and western Europe, a transition from a conception of marriage, as license for sexual intercourse granted by Church and State, to a conception of marriage as a form of contract, freely entered into, has

occasioned momentous social and political controversies regarding laws and customs governing the freedom of women, divorce, cohabitation outside marriage, contraception, and homosexuality.

Examples of recently emerging institutions may include many Web 2.0 socially based internet activities, such as open source software or free software, and Wikipedia itself. Gilles Deleuze compared emergent institutions with legal codes, such that,

...tyranny is a regime in which there are many laws and few institutions; democracy is a regime in which there are many institutions, and few laws. Oppression becomes apparent when laws bear directly on people, and not on the prior institutions that protect them.[1]

Perspectives of the social sciences

While institutions tend to appear to people in society as part of the natural, unchanging landscape of their lives, study of institutions by the social sciences tends to reveal the nature of institutions as social constructions, artifacts of a particular time, culture and society, produced by collective human choice, though not directly by individual intention.

The relationship of institutions to human nature is a foundational question for the social sciences. Institutions can be seen as "naturally" arising from, and conforming to, human nature—a fundamentally conservative view—or institutions can be seen as artificial, almost accidental, and in need of architectural redesign, informed by expert social analysis, to better serve human needs—a fundamentally progressive view. Adam Smith anchored his economics in the supposed human "propensity to truck, barter and exchange". Modern feminists have criticized traditional marriage and other institutions as element of an oppressive and obsolete patriarchy. The Marxist view which sees human nature as historically 'evolving' towards voluntary social cooperation, shared by some anarchists, is that supraindividual institutions such as the market and the state are incompatible with the individual liberty which would obtain in a truly free society.

Economics, in recent years, has used game theory to study institutions from two perspectives. Firstly, how do institutions survive and evolve? In this perspective, institutions arise from Nash equilibria of games. For example, whenever people pass each other in a corridor or thoroughfare, there is a need for customs, which avoid collisions. Such a custom might call for each party to keep to their own right (or left—such a choice is arbitrary, it is only necessary that the choice be uniform and consistent). Such customs may be supposed to be the origin of rules, such as the rule, adopted in many countries, which requires driving automobiles on the right side of the road.

Secondly, how do institutions affect behaviour? In this perspective, the focus is on behaviour arising from a given set of institutional rules. In these models, institutions determine the rules (i.e. strategy sets and utility functions) of games, rather than arise as equilibria out of games. For example, the Cournot duopoly model is based on an institution involving an auctioneer who sells all goods at the market-clearing

price. While it is always possible to analyse behaviour with the institutions-as-equilibria approach instead, it is much more complicated.

In political science, the effect of institutions on behavior has also been considered from a meme perspective, like game theory borrowed from biology. A "memetic institutionalism" has been proposed, suggesting that institutions provide selection environments for political action, whereby differentiated retention arises and thereby a Darwinian evolution of institutions over time. Public choice theory, another branch of economics with a close relationship to political science, considers how government policy choices are made, and seeks to determine what the policy outcomes are likely to be, given a particular political decision-making process and context.

Sociology traditionally analyzed social institutions in terms of interlocking social roles and expectations. Social institutions created and were composed of groups of roles, or expected behaviors. The social function of the institution was executed by the fulfillment of roles. Basic biological requirements, for reproduction and care of the young, are served by the institutions of marriage and family, for example, by creating, elaborating and prescribing the behaviors expected for husband/father, wife/mother, child, etc.

In history, a distinction between eras or periods, implies a major and fundamental change in the system of institutions governing a society. Political and military events are judged to be of historical significance to the extent that they are associated with changes in institutions. In European history, particular significance is attached to the long transition from the feudal institutions of the Middle Ages to the modern institutions, which govern contemporary life.

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Course Name	: Elements of Taxation

Course Description
The Course details from the definition and meaning of a tax, common features in a tax system, principles of taxation, classification of taxes, budgetary & fiscal measures, tax accounting principles, dividend income, international agreements, capital expenditures, insurances business.

Course Objectives

- To help students analyze the impact of tax on economic growth, wealth distribution & Gross Domestic Product (GDP).
- To improve students' knowledge on understanding several controversies in the tax structure.
- To develop students' capacity to compute tax obligation to respective individuals.
- To provide students with opportunity to understand several principles of taxation relevant to their economies.

Course content
Introduction

- What is a tax
- Public Finance
- Common features in any tax system
- Different types of taxes
- Purposes of taxes
- Principles/Cannons of taxation
- Taxable capacity
- Incidence of a tax and tax shifting
- Classification of taxes
- Advantages and disadvantages of different types of taxes

Budgetary and Fiscal Measures

- Definition of a budget
- Types of budgets
- Main sources of revenue
- What is included in expenditure
- Budgetary policy
- Fiscal policy
- Instruments of fiscal policy
- Effects of taxation on production and distribution

Tax Accounting Principles

- Forms of accounting principles
- Methods of accounting
- Foreign currency debt gains and losses
- Special rules for consideration received
- Taxation of partnerships and partners

Dividend Income

- Meaning of dividend income
- Withholding of a tax at source
- Withholding as a final tax
- Payment of tax with held
- Small business tax payer rates
- Foreign employment income
- Tax on international payments

Other related topics; International agreements, Capital expenditure, Insurance Business etc

Mode of delivery Face to face lectures
Assessment
Coursework 40%
Exams 60%
Total Mark 100%

Introduction

A tax is a compulsory levy by the gov't on incomes of individuals or corporations or companies. Taxation is part of public finance and its's on é of the ways inch gov't raises revenue to finance its activities.

The gove't is expected to carry out some activities as part of its social sus.2 é public. Such activities include:-

1. Maintaining internal security and external defence and to carry out general administration. Such expenditure relates to:-
   (a) Cost of police and judicial maintenance ie maintenance of law and order
   (b) Cost of armed forces/navy against external aggression.
   (c) Cost of provincial or general administration of law and order.

2. Providing infrastructure and communication such as construction of roads, railways, harbours as well as electricity and telephone works, television and radio system etc.
3. To provide social basic services e.g medical services, education, water ss and sewerage, sports and casual activities and entertainment information.

4. To participate in the production and marketing of goods e.g through parastatals, guaranteeing markets, protection and legal procedures from competition.
5. Influencing and guiding the level and direction of economic activities through various regulations e.g monetary and fiscal policies.
6. Redistribution of income and wealth through taxation and public spending e.g by taxing the rich at a high rate án é poor or providing basic needs 2 é poor e.g free education.

PUBLIC FINANCE

This involves aunts di are received by é gov't from all é different sources e.g fees.

(a) Fees: These are amts received 4 any direct sv rendered by é gov't central or local authority e.g National Park fees, airport fees, parking fees, television and radio fees.
(b) Prices: Ese are é amts received by é central or local authority for commercial svs e.g r/way fare, postage & revenue stamps, telephone charges etc, radio advertisements.

(c) Fines and penalties: If individuals or firms don't observe laws of the country, fines and penalties are imposed on them and éry am part of gov't y. Land rent & rates are paid to local authority on basis of
aq source of government revenue.

(d) State property. Some land, Forests, mines, national parks are government property. The y át arises from such property is also public revenue. The y will arise from payment of rent, royalties or sale of the produce, also from tourism.
(e) Specific assessments: Ese are charged 4 specific purposes. The government may charge a specific assessment from residents of a place area 4 the purposes of establishing a hospital in that area.

(f) Taxation: Taxes are the most important source of public finance. A tax can be defined as an involuntary payment by tax payer account involving the direct payment of goods and services in return. The tax payer can however enjoy goods and services by the government like other citizens ..... and preference or discrimination.

Common features in any tax system

1. Taxing authority : This is the authority of the power that impose tax e.g Central or local government.
2. The payer; Person of entity ... pays the tax e.g an individual, a ...., business firm or other organisations.
3. A tax: The amount ..... paid ..... Taxing authority directly by cash payment or indirectly through purchase of commodities.

Different types of taxes

i) **INCOME TAX**: This is a tax that is imposed on the annual gains /profits earned by companies or
individuals.

(ii) **VALUE ADDED TA X (VAT):** a TAX IMPOSED ON SALE OF GOODS AND SERVICES . Replaced sales Tax ..... effect from 1st January 1990.
(iii)
(iv) **SALES TAX:** Is a tax imposed on the sale of commodities. However, this was replaced by VAT.

(iv) CUSTOMS DUTY: This is a tax imposed on imports and exports of commodities**.**

(vi) **STAMP DUTY:** Tax imposed on transfer of property ie **CORPORATION TAX**, Imposed on gains of a company.

(vii) **LAND RATES AND RENT**: tax paid on property. Rent's paid to the central government as leases and rates

PURPOSES OF TAXES:

Raising revenue's not the only purpose for taxes. Taxes are levied for various other purposes and they include:-

1. Raising revenue for the government: The income so earned from such taxes is used to maintain peace and security, these social welfare, complete development projects e.g roads, schools hospital, power stations etc.
2. Economic stability: During inflation, the government imposes more taxes in order to discourage the unnecessary expenditure of the individuals. During deflation on the other hand, taxes are reduced in order to encourage individuals to spend more on goods and services. This ....in taxes or ..... in taxes thus leads to maintenance of economic stability.
3. Protection policy: The government has a policy of protecting some industries, high taxes are thus imposed on commodities imported from other countries to compete within them selves thus making them more expensive.
4. Social welfare (check on consumption of harmful food) some commodities like tobacco, cigarettes and alcoholic drinks are taxed highly to make them more expensive and thus out of each of as many people as possible.

5. Fair distribution of income: The rich taxed at a high rate than the poor and the amounts obtained are
   spent on increasing the poor's welfare. In so doing, taxes help to achieve a fair distribution of income
   in the country.

6. Allocation of resources;

   The may remove taxes on some industries or impose low rates of taxes 2 encourage allocation of
   resources in particular direction.

7. Increase employment: Funds collected from taxes can be used on programmes like roads, drainage,
   public buildings etc. Such projects and programs provide more employment opportunities to the
   citizens.

POWER TO TAX

The laws of the country will authorise the government (central and local authorities) to levy taxes. Taxes imposed are legally enforceable and must be paid by all those individuals and business that come concerning the jurisdiction of the taxing authority. Fines and penalties are imposed for failure to pay. The Parliament

and local councils have the power to pass laws and by-laws respectively. The Central government and local authorities both have the power to impose taxes.

PRINCIPLES/CANNONS OF TAXATION

The principles of an optimum tax system may be one of the following:-

1. **Simplicity:**

A tax system should be simple enough to enable a tax payer understand it and be able to compute it him/herself. A complex and difficult to understand tax system may produce law yield as it may discourage a tax payer's willingness to declare income. It may also create administrative difficulties and hence inefficiency.

2. **Economy (administrative efficiency):**

A good tax system should be capable of being administered efficiently. The system should produce the highest possible yield at the lowest possible cost both to the tax authorities and to the tax payers.

3. **Neutrality**

This is the measure of the extent to ..... Tax avoids distorting the workings of the market mechanism. A neutral tax system should market affect the tax payer's choice of goods or services to be consumed.

4. **Certainty**

A tax should be formulated so that the tax payers are certain of how much they have to pay and when Tax shouldn't be arbitrary. ..... Should be readily available information if tax payers need it. Certainty's essential in planning and uprising of certain biz investments. It's also important in designing remuneration packages.

5. **Conviniencing**

The method and frequency of payment should be convenient to the tax payer e.g PAYE. This may discourage tax evasion e.g it may be difficult for tax payers to pay a lump sum at the end of the year.

6. **Productivity**

A tax should be productive in ..... sense that should bring large revenue adequate for the government. However, ...shouldn't tax people heavily to adversely affect their efforts.

7. **Diversity/Comprehensiveness**

……. Should be variety in taxation. A …… of few taxes will neither meet the revenue requirements of the state nor satisfy the cannon of equity. …….. should be a variety of direct and indirect taxes.

8. **Flexibility**

Flexibility in taxation is different from elasticity. It means that there should be no rigidity in taxation…. Tax system can be …. To meet the revenue requirements of the state. On the other hand, elasticity in taxation means that the revenues can be …….. under the prevailing tax system. However, there can't be flexibility ….. elasticity.

9. **Equity:**

A…… tax system should be based on ability to pay. Equity's ….. now the burden of tax is distributed. The tax system should be arranged so as to result in the minimum possible sacrifice. People ….. high incomes pay large amounts of tax. People with similar circumstances should be given similar treatment and those ……. Similar treatment be given circumstances.

……. Are 3 alternative principles that may be applied in the equitable distribution of the tax burden ie:-

(a) Benefit Principle or Insurance theory or Quid Pro Quotheong.

This dictates that tax's apportioned to individuals according to the benefit they derive from the government activity and spending. The government is regarded as a market and taxes are treated as payment for goods and provided by the state.

Its criticisms

The provision is inadmissible as it goes …….the aims of taxation which are also duties to the government the market economy …… redistribution of income.
In instances of road users, whom may pay road licences for use of roads, they may not obtain the benefit of such payment if the revenue so raised isn't applied to the ……..of road users.

(b) Ability to pay principle

This is concerned …….. the equitable distribution of taxes according to the stated taxable capacity of an individual or some stated criterion of ability to pay.

Its criticism

-The difficulty in application of this theory is in determining the criterion of ability to pay. Three prepositions have been advanced ie:

i) Income
ii) Wealth
iii) Expenditure

A wealth based tax may be useful in redistribution of income and wealth but may not provide sufficient revenue by itself.

An expenditure tax ensures that income and wealth are taxed when they are spent. Most tax regimes would thus partly be income based and partly expenditure based.

c) Cost of service principle or Purchase Theory:

This is the cost to the taxing authority of services rendered to individual tax payers. Tax is a payment for ..... there is no ..... pro quo' between tax authority and tax payer. The payer doen't necessarily have to receive services and goods equivalent to the tax paid. For this reason, the principle can't be applied to services provided out of the proceeds of taxes e.g taxes e.g police and judiciary. Rather, it may be applied for such services as postal, electricity or water ..... where the pxs are fixed.

TAXABLE CAPACITY

This refers to the maximum tax..... may be collected from a tax payer ..... producing undesirable effects on him/her. A good tax system ensures that people pay taxes ..... to the extent they can afford. ..... Are to aspects of taxable capacity:-

1. **Absolute taxable capacity**:

It's measured in relation to the general economic conditions and individual position e.g region or industries to which the payer belongs. ..... Individual having regard to his circumstances and the prevailing economic conditions pays more tax ..... he should, his taxable capacity will have exceeded in the absolute sense.

2. **Relative taxable capacity**

Measured by comparing absolute taxable capacities of different individuals or communities.

TAX IMPACT

This means person on whom a tax is imposed and who has to bear the burden of a tax. Here taxes may be direct or indirect.

TAX BASE

This is the object upon which the tax is levied and to which tax rates are applied e.g for ...tax, the base is ...., property tax - property; sales tax - px of the goods export tax -value of .... And .... Tax - value of ....

TAX INCIDENCE

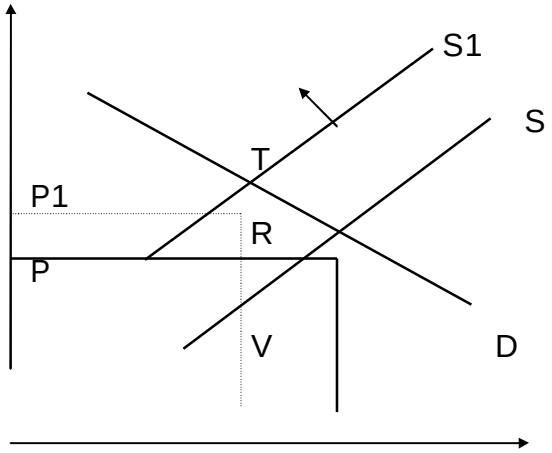
Refers to the direct money burden of the tax ie who ultimately pays the tax.

Importance of tax incidence.
A good tax system must be designed having regard of the impossible incidence of the taxation. A tax imposed on cigarette sales in order to discourage smoking and hence cut expenditure on health must be ascertained whether the smokers will be affected adversely by the tax.

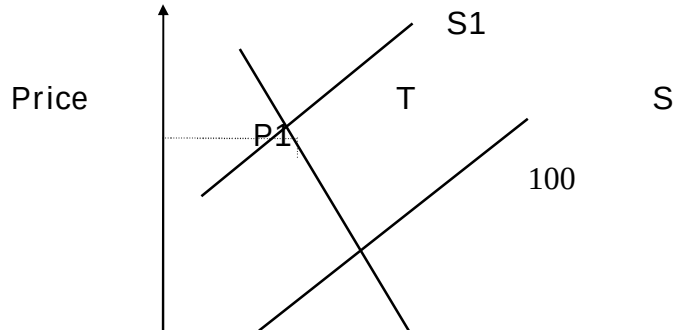
INCIDENCE OF A TAX AND TAX SHIFTING

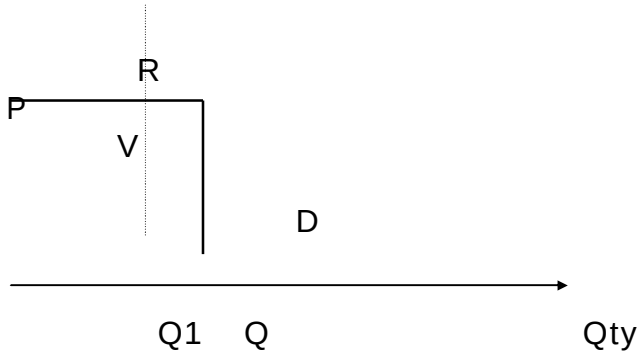
Tax ……. The transfer of the burden of a tax from a person on whom it's legally imposed to another person. Tax shifting in the eyes of the taxing authority is the governing principle for levying of taxes. Tax authorities will always look at the …. Elasticity of …. And …… ……. levying a tax.

Hypothetical example of tax incidence.



Price elastic demand curve means that the producers will respond more in the event of an increase or decrease in price. In the diagram above , the original equilibrium position is the intersection of the demand curve D and supply curve S at price P and quantity Q. The imposition of a tax will shift the original supply curve S1. The resultant price P1 will emerge as P1 that the intersection of the sully curve S1 and demand curve DD. New quantity will now be Q1. The tax has caused an increase TV in price. TR will be borne by the buyer and RV by the seller/supplier. For price elastic goods, a smaller portion of the tax is borne by the buyer than by the seller.





Price inelastic demand curve means producers will respond less proportionately too demands in the price. Examples of goods ... inelastic demand are salt, cigarettes etc. In the diagram above, original eg ... positions the intersection between the demand curve D and supplies curve w S at price P and quantity Q. When a tax is imposed, supplies curve will shift from S to S1. The resultant price P1 is the intersection between demand curve D and suppliers curve S1. The new quantity will be Q1. The tax causes an increase in price TV. TR will be borne by the buyer & RV by the seller. For price inelastic goods, TR > RV hence a bigger proportion of the tax is borne by the buyer than by the seller.

CLASSIFICATION OF TAXES

Taxes may be classified in various ways ie:-

1. Direct or indirect taxes
2. Progressive, Proportional or Regressive taxes.

DIRECT TAXES

A direct tax is one whose impact and incidence are on the same person. Tax has impact on the person on whom it is legally imposed. The incidence of a tax is on the person who ultimately pays the tax whether or not .... Legally imposed on him. Thus, a direct tax is one which is paid (incidence) by the person on who ... legally imposed (impact) e.g Income tax and corporate tax.

Indirect taxes

An indirect tax is one whose impact is on one person but paid partly or wholly by another person. An indirect tax can be shifted on passed on as opposed to a direct tax which can't be passed on e.g sales tax, excise tax, excise tax etc. Taxes are also classified according to the marginal tax rates which the level of income and they include:-

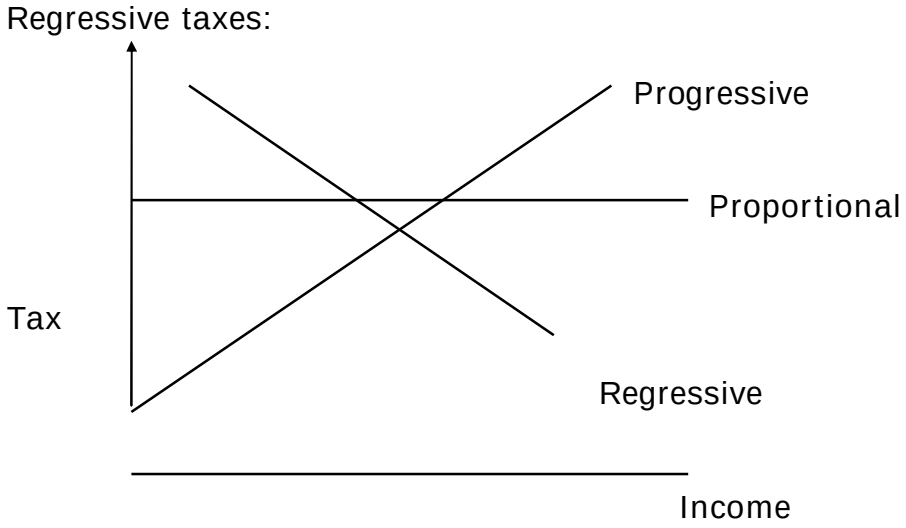
PROGRESSIVE TAX

A proportional tax is a tax where the same rate is applied to all tax payers e.g corporate tax.

REGRESSIVE TAX

Is one where the tax rate falls as income rises. Here, the poor are called upon to make a greater sacrifice compared to the rich.

Diagrammatic illustration of proportion, progressive taxes



A progressive tax is preferred for its redistribution of it's also a productive tax since it yields more than the proportional tax. It's also more economical since the cost of collection doesn't increase with the rate of tax. It also brings about equality of sacrifice among tax payers. The richer one's the less sacrifice felt in paying the tax. It tries to reduce the inequality as higher burdens fall on high income earners.

Advantages of direct taxes.

1. ..... economical in collection e.g the tax is collected through ..... who are 'unpaid tax collectors.'
2. Direct taxes are progressive and fall equitably on tax payers having regard on their relative abilities to pay.

3. .... Are more certain in quantity as opposed to indirect taxes.
4. ..... usually less inflationary than indirect taxes ... are imposed on goods hence a rise in prices of goods.

Disadvantages of direct taxes.

a) Ey're costly to administer. People who are liable for tax would be assessed independently depending on their taxable capacity. Ey've fewer collection points hence administrative inefficiency.

b) Ey're not flexible hence not adapted to differing indirect taxes.

c) Higher levels of tax reduce the incentive to save on the other hand, higher level's of indirect taxes may encourage saving when goods become unaffordable and the purchasing of those goods is delayed in the hope that their prices will reduce later.

d) Some .... Of taxes are paid annually as a lump sum and thus, it may be difficult for tax payers to find the lump sum. This gives opportunity for tax evasion by submission of fraudulent returns.
e) Indirect taxes as opposed to direct taxes lack announcement (awareness) effect. People are often un aware that they are paying tax or even now much they are paying. Direct taxes, have a defect of ... and thus affect effort and enterprise.

BUDGETARY AND FISCAL MEASURES

Ey're adopted by the government to maintain economic stability in the country and accelerate the rate of economic growth.

Budget

A statement which consists of revenue and expenditure estimates of a government in one particular year. If government > revenue, then we get a Deficit Budget. If revenue expenditure its known as a surplus Budget. If revenue = expenditure its a Balanced Budget.
Budgets may be of two types ie:
a) Revenue Budget
b) Capital Budget

Revenue budget relates to normal income & expenditure items whole capital budget relates to development projects. In revenue budgets, the main sources of revenue are:-
i) Customs and excise duties
ii) Income and corporate taxes.
iii) Income from state property and fines.

Expenditures include the following:-
-Defence
-Administration
-Education
-health
-Cost of tax collection.

Major sources of income for capital budgets are:-
a) Loans and grants obtained by the government.

b) Main expenditures on capital budget include:

1. Development projects

2. Establishment of new industrial agricultural projects.

Budgetary policy

These are measures designed to clearly attain the set budgetary objectives. Budgets are annual plans designed by the government to achieve economic growth, equitable distribution of income, capital accumulation, distribution of income and provision of government services.

FISCAL POLICY

This is a policy according to ..... government uses its ... expenditure and revenue programmes to produce desirable effects and avoid undesirable effects on National ..... and ..... It's combination of deliberate .... In expenditure, revenue & tax programmes & debt night policy. The main objectives of fiscal policies in LDOS is to promote investment , to maintain stability & reduce extreme inequality. The main objective's thus are:-

a) Achievement of desirable price level
b) Achievement of desirable consumption level
c) " " " e+ level
d) " " " distribution

The main objective of fiscal policy to attain desirable level of consumption. Fiscal policy in LDCs is used:-
-To increase the rate of investment by checking consumption.
-To encourage the flow of investment .... Channels which are most desirable from the... of view of society.
-To regulate the flow of purchasing power in accordance ..... the requirements of the plan.

Instruments of fiscal policy.

a) Public revenue
b) Public expenditure
c) Public debt.

When a country faces .. a threat of inflation, it raises its taxes & cuts expenditure. On the other hand, during deflation, the government increase expenditure & reduces taxes so that ... can be decreased by increasing effective ad.

Economic stability can be maintained by spending public loans on development programmes.
Effective tax policy for an LDC

A developing countries must have different tax policies from a developed one ....:-
a) Its primary objective's to achieve a high level of economic development & not .... Economic stability.

b) Greater attention has to be paid to maxi…… of revenue and not ability to pay or equity.
c) It has to follow a policy of active intervention in economic affairs.
d) It aims at accelerating economic growth and not merely reducing economic inequality.

Effects of Taxation

The quality of a tax system will depend on the effects produced . The best tax system is one which produces the least undesirable effects. Effects can be observed under:-

i) On Production
ii) On distribution

Effects on plan.

……. Are two aspects of effects on production and they are:-
-Ability to work & save
-Desire to work and save.
Taxes have adverse effects on the ability to work if they lower efficiency of the workers. A person's ability to work will be reduced by taxation which reduces efficiency. The ability to save's reduced by all taxes on those who have any margin of income out of which saving's possible. This happens when a person maintains the same standard of living after imposing or increasing a tax and doesn't reduce the expenditure on goods accordingly.

Taxes especially the direct type are argued to be a disincentive to work. It's argued that if taxes are ..., this will increase incentive because people will receive more from their efforts.

Illustration of the desire to work due to tax
-

.

Higher tax
reduced incentive productivity unit output
revenues

Greater incentive will lead to hard work and higher productivity & explanation of the economy to create more ….. This will lead to a rise in the level of real NY and high yield from taxation. On the otherhand, it may be argued that an increase in taxes will induce people to work harder to rise disposable ….. It follows thus that increase in taxation may or may not be a disincentive to work. The effect upon the tax payer's desire to work & save will depend partly on the nature of the tax and partly on the individual's reaction ie:

a) **Nature of the tax:**

An unexpected or temporary tax might not have any effort at all and will not continue in the future thus, the effect on the desire to work is negligible.

b) Nature of individual reaction to taxation

This is largely governed by the elasticity of his demand for income, in terms of effort and sacrifice which he makes in order to obtain his net .... Increased taxation ... the net ... earned although the efforts and sacrifice remain the same if the elasticity of his demand for ... is small, he will desire to work harder.

Effects on distribution

A person who owns ... or by himself embodies ... which in their actual ... are subject to taxation may ... to escape taxation by diverting his resources to over ... in which they will either be untaxed or not taxed heavily. A tax's concerned to have adverse effects if it diverts ... from their natural channels. A tax's considered to produce desirable effects on distribution if it helps to encourage the slow of resources along their natural channels. Taxes levied for this purpose are called redistributive taxes.

Deductions allowable against income (i) Expenses of deriving income

All expenditures and losses incurred by the person during the year of income to the extent to which the expenditures or losses were incurred in the production of income included in gross income.

Any loss on disposal of assets incurred by the person on the disposal of a business asset during the year of income whether or not the asset was on revenue or capital account.

The following are however not allowable against income except in so far as it is provided in the Act.

any expenditure or loss incurred by a person to the extent to which it is of a domestic or private nature i.e.

cost incurred in the maintenance of the person and the persons' family or residence.

the cost of commuting between the person's residence and work..

The cost of clothing worn to work, except clothing which is not suitable for wearing outside work..

The cost of education leading to a degree whether or not it is directly relevant to the person's employment or business.

any expenditure or loss of a capital nature or any amount included in the cost base of an asset (amount paid for asset).

any expenditure or loss which is recoverable under any insurance, contract or indemnity.

income tax payable in Uganda or a foreign country.

any income carried to a reserve fund or capitalized in any way.

the cost of a gift made directly or indirectly to an individual where the gift is not included in the individual's gross income.

any allowance given to or a reimbursement or discharge of expenditure incurred by our employee in respect of employee's housing and any expenditures incurred in respect of housing provided to an employee.

any fire or similar penalty paid to any government or a political sub division of a government for breach of law.

a contribution or similar payment made to a retirement fund either for the benefit of the person making the payment or for the benefit of any other person.

a premium or similar payment made to a person carrying on a life insurance business on the life of the person making the premium or on the life of some other person.

the amount of a pension paid to any person

any alimony or allowance paid under any judicial order or written agreement of separation.

(ii) <u>Meals refreshments and entertainment expenditure</u>

a deduction is allowed for expenditure incurred by a person in providing meals, refreshment or entertainment in the production of income included in gross income but only where ;

the value of meals, refreshment or entertainment is included in the employment income of an employee or is excluded owing to the fact that it is provided on equal terms to all workers.

the person's business includes the provision of meals refreshment and entertainment and the persons to whom the meals

refreshment or entertainment have been provided have paid an arm's length consideration for them.

(iii) Bad debts

a person is allowed a deduction for the amount of bad debt written off in the person's accounts during the year of income.

if the amount of the debt claim was included in the person's income in any year of income or
if the amount of the debt claim was in respect of money lent in the ordinary course of business carried on by a financial institution in the production of income included in gross income.

(iv) Interest

This is allowable in respect of a debt obligation to the extent that the debt obligation has been incurred in production of income included in gross income.

Repairs and minor capital equipment (loose tools)

A person is allowed expenditure for repairs of property occupied or used by the person in the production of income and in acquiring a depreciable asset with a cost base of less than 5 currency points (one currency point = 20,000/=)

Depreciation of depreciable assets as per the Act.
Start up costs - a person shall be allowed a deduction of an amount equal to 25% of the amount of the expenditure in the year of income in which the expenditure was incurred and in the following 3 years of income.
Costs of intangible assets - these are allowed on the gross income of a person after ascertaining their useful life. The annual amount is calculated according to this formula

$$\frac{A}{B}$$

Where A = amount of expenditure incurred
B = useful life of the asset in whole years

Scientyic research expenditure – allowable deduction on gross income of a business whether incurred by business or a contribution to a scientyic research institution for purpose of developing a person's business but does not include

expenditure for acquisition of a depreciable or tangible asset
" for " of land or buildings
" for the purpose of ascertaining the existence, location, extent or quality of a natural deposit

Training expenditure - employer's allowed a deduction for expenditure on training or tertiary education not exceeding in the aggregate five years on a citizen or permanent resident of Uganda other than associate of employer who is employed by the employer in a business.

Charitable donations

A person is allowed a deduction of a gift made to an organistaion belonging to "exempt organisations" class and is either an amateur sporting association or a religious charitable or educational institution of a public character.

The value of the gift of property is the lesser of

the value of the property at the time of the making of the gift.

The consideration paid by the person for the property. However, the amount of deduction allowed shall not exceed 5% of the person's chargeable income before allowable deduction.

Farming - the expenditure on horticultural establishments and farm works deductions as per the Act.

Carry forward losses – any "assessed loss" for the previous year of income shall be carried forward & deducted from following year's income. Applies separately to sources in Uganda

Assessed farming loss may not be deducted from any other income other than farming income.

The amount of an assessed loss c/f shall be reduced by the amount or value of any benefit to the tax payer from a concession by a compromise with the creditors which reduces or extinguishes such liabilities, provided such liabilities arose from the production of income included in gross income.

N.B

A deduction relating to the production of more than one class of income shall be reasonably apportioned among the classes of income to which it relates.

Where a person derives more than one class of income, the deduction allowed in relation to charitable donations shall be allocated ratably to each class of income.

Where a tax payer has more than one class of loss, the reduction, in case of a concession or compromise by creditors, will be applied ratably to each class of loss.

TAX ACCOUNTING PRINCIPLES

A tax payer may apply in writing to use a substituted year, being a twelve month period other than the normal year of income.

He may also apply to commissioner to change his year of income from a substituted to the normal year of income or to another substituted year.

The commissioner may only approve such application if the tax payer has shown a compelling need to change the year of income in any of the above instances.

The commissioner may, by notice in writing, with draw the permission granted.

Where the year of income of a tax payer changes as a result of the above circumstances, the period between the last full year of income prior to the change and the date on which the changed year of income commences is treated as a separate year of income, to be known as the "transitional year of income."

Method of accounting

This slid conform to generally acceptable accounting principles. Unless the commissioner prescribes, a tax payer may account for tax purposes on cash or accrual basis.

A tax payer may apply for a change in the method of accounting and the commissioner may approve only if he is satisfied that the change will clearly reflect the tax payer's income. The adjustments to items of income, deductions, or credit or to other items shall be made in the year of income following the change so that no item is omitted and no item is taken into account more than once.

Cash basis tax payer – here income is derived when it is received or made available and incurs expenditure when it is paid.
Accrual basis tax payer – here income is derived when it is receivable and expenditure incurred when it is payable.
Long term contracts - incomes and deductions are taken into account on the basis of % of the contract completed during the year.

Where in the year of income in which a long term contract is completed, it is determined that the contract has made a final year loss, the commissioner may allow the loss to be carried back to the preceding years of income and applied against the amount included in income over the period of the contract for these years starting with the one immediately preceding the year in which the contract was completed.
Trading stock – closing value of trading stock is the lower of cost or market value of trading stock on hand. Cash basis tax payers may calculate the cost of trading stock on the prime – cost or absorption cost method and for accrued basis, the

absorption cost method is used. The relevant methods for stock valuation are either FIFO or average cost method.

Interest in the form of discounts, premium or deferred interest shall be taken into account as it accrues. However, where it is subject to w/tax, it shall be taken to be derived or incurred when paid.

Foreign currency debt gains and losses

Gains arise from the disposal of an asset where the consideration received exceeds the cost base of the asset at the time of the disposal.

The amount of any loss arising from the disposal of an asset is the excess of the cost base of the asset at the time of disposal over the consideration received for the disposal.

A tax payer is treated as having disposed of an asset if the has been
sold, exchanged, redeemed, or distributed
transferred by way of gift
destroyed or lost
it may also include disposal of part of the asset.

The conversion of an asset from a taxable use to a non taxable use or vice versa is deemed to be a disposal and it's converted at a value equal to the market value of the asset at that time of the asset is also deemed to have been re acquired for a cost base equal to that same value.

A non resident person who becomes a resident person is deemed to have acquired all assets, other than taxable assets owned by the person at the time of becoming a resident for their market value eat that time and vice versa where person becomes non resident.

<u>Special rules for consideration received.</u>

Where consideration for an asset is paid in kind, the value should be the market value of that asset

Where an asset is disposed in a way other than by way of transmission of asset to a trustee or beneficiary on death the person disposing the asset (disposer) is treated as having received consideration equal to the greater of

- the cost base of the asset to the disposer at the time of disposal
- the fair market value of the asset at the date of disposal.

Where 2 or assets are disposed of in a single transaction, the amount to each asset is apportioned using the market values.

No gain or loss is taken into account in determining chargeable income in relation to :-

- transfer of an asset between spouses
- transfer of an asset between former spouses

an involuntary disposal of an asset to the extent to which the proceeds are reinvested in an asset of a like kind within one year of the disposal.
Transmission of an asset to a trustee or beneficiary on the death of a tax payer.

Miscelleneous Rules for determining chargeable income

Income joint outners :- Income or deductions relating to jointly owned property are apportioned among the joint owners in proportion to their respective interests in the property. Where such interests can not be ascertained , equal interests shall be deemed.

Valuation :- Value of any benefit in kind is the fair market value of the benefit on the date it is taken into account for tax purposes.

Currency conversion :- Where income involves amounts in other currencies, the amounts shall be converted to Uganda shillings at the bank of Uganda mid – exchange rate applying between the currency and the Uganda Shilling on the date the amount is derived, incurred or otherwise taken into account for tax purposes.

A tax pay may keep books of accounts in a foreign currency or use the average rate of exchange.

Indirect payments and benefits :- The income of person includes,

payment that directly benefits the person.
Payment dealt with as the person directs, which would have been income of the person if the payment had been made directly to the person.

Finance lease :- a lease of property is a finance lease if,

the lease term exceeds 75% of the effective life of the leased property.
the lessee has an option to purchase the property for a fixed or determinable price at the expiration of the lease.
The estimated residual value of the property to the lessor at the expiration of the lease term is less than 20% of its fair market value at the commencement of the lease.

The interest component of the lease is treated as interest expense incurred by the lessee and income derived by the lessor.

Recouped expenditure :- Where a previously deducted expenditure is recovered by the tax payer, it is deemed to be income for the year of recovery.

Persons Assessable

Taxation of individuals

Chargeable income of each tax payer is determined separately. Where a tax payer splits income with another person, the commissioner may adjust the chargeable incomes of both payers to prevent any reduction in tax payable as a result of the splitting of income.

A tax payer is treated as having attempted to split income where

the tax payer transfers income, directly or indirectly to an associate, or
the tax payer transfers property including money directly or indirectly to an associate and the associate receives or enjoys the income from that property, and one of the reasons to transfer is to lower the total tax payable upon the income of the transfer or and the transferee.

Taxation of Partnerships and Partners.

The income or loss arising from activities of a partnership is liable to tax. A partnership shall be liable to furnish a partnership return of income but shall not be liable to pay tax on that income.

A notice of statement required to be furnished or filed in relation to a partnership's activities shall be filed by the partnership.

Calculation of partnership income or loss :- this is

the gross income of the partnership for the year calculated as if the partnership were a resident tax payer less
the total amount of deductions allowed in deriving the income

Taxation of non resident partners is on withholding tax basis where such tax is final on gross income earned without deductions for allowable expenditure.

Taxation of Partners

The gross income of a non resident partner includes the partner's share of partnership income attributable to sources in Uganda.

A resident Partner is allowed a deduction for a year of income for partner's share of a partnership loss. A partnership loss is deductible from non residents income only to the extent that the activity giving rise to the loss would have given rise to partnership income attributable to sources in Uganda if a loss had not been incurred.
Share of Partnership income or loss is in relation to their percentage interests in the Partnership or capital contributions where the agreement does not show the interest.

A contribution to a partnership by a partner of an asset owned by the partner is treated as a disposal of the asset by the partner to the partnership for a consideration equal to :-

the cost base of the asset to the partner at the date in which the contribution was made where all the ff conditions are satisfied-
the asset was a buz asset of the partner before its disposal.
The parties and partnership are residents at time of contribution
Partner's interest in the capital of partnership after contribution is 25% or more
in any other case, market value of the asset at the time of contribution where (a) applies, the asset retain the same character as it did before disposal to partnership.

N.B. The same principle applies where a partnership has sold its undertaking to another partnership.

Taxation of Trusts and Beneficiaries

Chargeable trust income is the gross income of the trust (other than an amount derived for immediate or future benefit of an ascertained beneficiary) calculated as if the trust is a resident tax payer, less

The total amount of deductions allowed under the Act qualified beneficiary trust – means

trust in relation to which a person other than a settlor has a power solely exercisable by that person to vest the corpus or income of the trust in that person.

A trust whose sole beneficiary is an individual or an individuals estate or appointees

But does not include a trust whose beneficiary is an incapacitated person.

Settlor trust – means a trust where the settlor has

the power to revoke or alter the trust, so as to acquire a beneficial entitlement in the corpus or income of the trust

reversionary interest in the corpus or income of the trust

The income of a trust is taxed either to the trustee or to beneficiary of the trust.

A trust is required to furnish returns of income

A settlor trust or qualified beneficiary trust

is not treated as an entity separate from the settlor or qualified beneficiary respectively.

The income of such a trust is taxed to the settlor or qualified beneficiary of the property owned by the trust is deemed to be owned by the settlor or qualified beneficiary.

The trustee of an incapacitated person's trust is liable for tax on the chargeable trust income of the trust.

Trustees are jointly and severally liable for a tax liability arising in respect of chargeable trust income that is not satisfied out of the assets of the trust.

Where the trustee has paid tax on the chargeable trust income of the trust, that income shall not be taxed again in the hands of the beneficiary.

Any amount derived by the trustee for the immediate or future benefit of any ascertained beneficiary, other than an incapacitated person with a vested right to

such amount is treated as having been derived by the beneficiary for the purposes of the Act.

A trustee of a trust that is non resident is liable for tax or so much of chargeable trust income as is attributable to sources in Uganda.

Any amount derived by a trustee as execution of the estate of a deceased person shall, to the extent that the commissioner is satisfied that such amount has been derived for the immediate or future benefit of any ascertained heir or legatie of the deceased, be treated as having been derived by such heir or legatie.

The heir or legatie shall be allowed a deduction for expenditure and loss incurred in deriving such income.

The trustee of an estate of a deceased person is responsible for the tax liability of the deceased tax payer arising for any year of income prior to the year in which the tax payer died.

Taxation of Companies and Share holders

A Company is liable to tax separately from its shareholders

A dividend paid to a resident Company other than an exempt organisation by another by another resident Company is exempt from tax where the Company receiving the dividend controls, directly or indirectly, 25% or more of the returning power in the Company paying the dividend. This however does not apply to :-

- a dividend paid to a financial institution by virtue of its ownership of redeemable shares in the Company paying the dividend or
- where a Company takes part in a transaction in the nature of **dividend stripping** and receives a dividend from a resident Company in the transaction, the Company receiving the dividend shall include the dividend in its gross income to the extent the commissioner considers necessary to offset any decrease in the value of shares in respect of which the dividend is paid or in the value of any property caused by the payment of the dividend.

In case of such transaction, commissioner may also reduce the amount of any deduction arising to the extent to which it represents the decrease in value of the shares or other property.

dividend stripping includes an arrangement under which

- a Company referred to as the "**acquiring Company**" acquires the shares in the target Company for an amount that reflects the profits of the target Company
- a Company referred to as the "**target Company**" has accumulated or current year profits or both represented by cash or other readily realizable assets.
- the disposal of shares in the target Company gives rise to a tax free capital gain to the share holders in the target Company.
- After the acquiring company has acquired the shares in the target Company, the target Company pays a dividend to the acquiring Company which in the absence of dividend stripping transaction would be exempt from tax in the hands of the target company.
- After the dividend is declared, the acquiring Company sells the shares for a loss.

Where a resident person transfers a business asset, with or without any liability not in excess of the cost base of the asset to a resident Company other than an except organisation in exchange of a share in the transferee and the transferor has 5% or quarter interest in the returning power of the transferee immediately after the transfer.

the transfer is not treated as a disposal of the asset by the transferor but is treated as the acquisition by the transferee of a buz asset .

the transferee's cost base for the asset is equal to the transferor's cost base for the asset at the time of transfer.

the cost base of a share received by the transferor in exchange for the asset is equal to the cost base of the asset transferred less any liability assured by the transferor in respect of the asset.

The above apply for liquidation of Companies but the transfer of the asset is not a dividend and no gain or loss is taken into account on the cancellation of the transferee's shares in the liquidated Company.

Dividend Income :-

Dividend means

where a company issues debentures or redeemable profit shares to a shareholder in respect of which the share holder gave no consideration, an amount equal to the greater of the nominal or redeemable value of the debentures or shares or

in respect of which the share holders gave consideration which is less than the greater of nominal or redeemable value, an amount equal to the excess.

any distribution upon redemption or cancellation of a share or made in the course of liquidation, in excess of the nominal value of the share redeemed, cancelled or subject to liquidation.

In the case of a partial return of capital, any payment made in excess of the amount by which the nominal value of the shares was reduced.

In the case of a reconstruction of a company any payment made in respect of the shares in the company in excess of the nominal value of the shares before the reconstruction or

the amount of any loan, the amount of any payment for an asset or services, the value of any asset or services provided or the amount of any debt obligation released by a company to or in favour of a shareholder of the Company or an associate of a share holder to the extent to which the transaction is in substance of distribution of profits, but does not include a distribution made by a building society.

The rate of tax for dividend is 15% and this tax is final.

Exempt

Dividend from a Company where one owns > 251 of the shares in the paying Company.

Withholding of tax at source

Every employer shall hold tax from payment of employment income to an employee not withstanding any other law that provides otherwise.

Interest income – a resident person who pays interest to another resident person shall withhold tax on the gross amount of the payment at the rate of 15% of gross paymen

This does apply to interest paid by a natural person

interest paid to a financial institution

interest paid by a company to an associated Company

interest paid which is exempt from tax in the hands of the recipient.

(associated 6 refers to 50% holding of Company by another)

Dividend income :- a resident company which pays a dividend to a resident share holder shall withheld tax on the gross amount of the payment at a rate of 15% of gross dividend.

Payment for goods and services - Where the government of Uganda, a government institution, a local authority, any Company controlled by government or any person designated in a notice issued by the minister as payer, pays an amount or amounts in aggregate exceeding one million shillings to any person in Uganda.

for a supply of goods or materials of any kind

for a supply of any services

The Payer shall withhold on the gross amount of payment, 4% and shall issue a receipt to the payee. Where separate amounts are supplied which would have ordinarily been supplied together and thus exceeding one million shillings in value the act prescribes that the consignments be taxed separately even though they may be less than one million.

5. **International payments** - a 15% withholding tax is levied on the amount being paid to a non resident person and also for dividend interest and royalties to a non resident person and foreign entertainers and sportsmen.

Non resident services contract – a person who is in agreement with another non resident person is required to with hold tax from any payment made under the agreement at a rate prescribed by the commissioner.

Withholding as a final tax.

Where the tax has been withheld under payment of interest by financial institution to a resident individual and or payment of dividends to resident individual, the tax is final and;

(a) no further tax liability is imposed upon the tax payer in respect of the income to which the tax relates.

(b) That income is not aggregated with the other income of the payer for the purpose of ascertaining chargeable income.

(c) no deduction is allowed for any expenditure or losses actually incurred in deriving the income.
(d) No refund of tax shall be made in respect of the income.

Payment of tax withheld.

The withholding agent should pay the tax withheld or supposed to be withheld within 15 days after the end of the month in which payment subject to the tax was made by the agent.

Where a person withholds or should have withheld tax as a promoter or agent of a non resident performer, entertainer or sportsman, tax shall be paid to the commissioner within 5 days of the performance or by the day before the date the non resident leaves Uganda, which ever is earlier.

Failure to withhold tax

The agent who fails to withhold tax in accordance with the act will be personally liable to pay such tax to the commissioner but will be entitled to recover the amount from the payee.

Failure to remit tax withheld

The tax so withheld but not remitted will be treated as a debt to the government and collection & recovery procedures will apply.

Tax credit certificate

A withholding agent shall deliver to the payee a tax Credit certificate settling out the amount of payments made and tax withheld during the year. This is attached to tax returns made by payee.

Records of payment and tax withheld

These should be maintained and kept by the agent for inspection by the commissioner showing

payments made to a payee
tax withheld from those payments

These should be kept for 5 years following the year to which they relate.

Priority of tax withheld

Tax withheld is held in trust for the government and is not subject to attachment in respect of a debt or liability of the agent and in event of liquidation or bankruptcy of agent, the commissioner shall have a first claim before any distribution property is made.

Small business tax payer rates

Where the gross turn over of a resident tax payer for a year derived in carrying on a business or businesses is less than fifty million (50m) Shillings, the income tax payable shall be determined in accordance with the second schedule of the act, unless the tax payer elects by notice in writing to the commissioner.

The 2nd Schedule stipulates tax as follows :-

Gross turn over	Tax
1. X ≤ 20m p.a.	SHS. 100,000
2. 20M < X ≤ 30m	Shs. 250,000 or 1% of gross turn over whichever is the lower
3. 30m < X ≤ 40m	Shs. 350,000 or 1% of gross turnover, whichever is the lower
4. 40m < X ≤ 50m	Shs. 450,000 or 1% of gross turn over, whichever is the lower **and**

(a) the tax shall be final tax on the business income
(b) no deductions shall be allowed for expenditures or losses incurred in the production of the business income
(c) no tax credits allowed shall be used to reduce the tax payable as the business income except
any credit allowed for withholding tax paid in respect of amounts included in the gross turnover of the tax payer or
any credit allowed for provisional tax paid in respect of amounts included in the gross turn over of the tax payer.

International taxation

Income is derived from sources in Uganda to the extent to which it is
(a) derived from the sale of goods:-
in the case of goods manufactured, grown or mined by the seller, the goods were manufactured, grown or mined in Uganda or

in the case of goods purchased by the seller, the agreement for sale was made in Uganda, wherever such goods are to be delivered.

(b) derived by a resident person in carrying on a buz as owner or charterer of a vehicle, ship or aircraft whenever it may be operated.
(c) Derived from any employment exercised or services rendered in Uganda
(d) Derived in respect of any employment exercised or services rendered under a contract with the government of Uganda wherever exercised or rendered.
(e) Derived by a resident individual from any employment exercised or services rendered as a driver of a vehicle or an officer or member of a crew of any ship, vehicle or aircraft. Wherever operated.
(f) Derive from the rental of immovable property located in Uganda.
(g) Derive from the disposal of a share in a Company the property of which consists directly/indirectly of interest in such immovable property where interest or share is a business asset.

(h) Derived from the disposal of movable property other than goods, wherever the property is to be delivered.

(i) An amount

included in the business income of tax payer in respect of disposal of a depreciable asset used in Uganda.

(ii) treated as an income where the deduction was allowed for an expenditure, loss or bad debt in production of income in previous years and is now recovered.

(j) Royalty (i) arising from the use of or right to use in Uganda

A. any patent, design, trade mark or copying it, formula etc.,
B. any motion picture film
C. any video or audio material connected to broadcasting
D. any sound recording or advertising
E. any tangible movable property

arising from the importation of any scientyic, technical, industrial commercial.

Arising from he use of or the right to use or receive in Uganda any video/audio material by satellite, cable or similar tech for use in connection with television or radio broadcasting.

Arising from he disposal of industrial or intellectual property used in Uganda.

(k) interest where

(i) the debt obligation giving rise to the interest is secured by immovable property located or movable property used in Uganda.
(ii) The payer is a resident person
(iii) The borrowing relates to a buz carried in Uganda

.

(l) a dividend or director's fee paid by a resident company

(m) a pension or amnity where

(i) it is paid by the government of Uganda or by a resident person
(ii) It is paid in respect of an employment exercised/rendered in Uganda.

(n) natural resource payment in respect of a natural resource taken from Uganda.

(o) A foreign currency debt gain derived in relation to a buz debt which has arisen in the course of carrying on a business in Uganda.

(p) A contribution to a retirement fund made by a tax exempt employer in respect of an employee whose employment is exercised in Uganda.

(q) A management charge paid by a resident

(r) Attributable to any other activity which occurs in Uganda is conducted through a branch in Uganda.

<u>Foreign employment income</u>

Foreign source employment derived by a resident individual is exempt
From tax if the individual

Foreign tax credit

A resident tax payer is entitled to credit for any foreign income tax paid by the tax payer in respect of foreign source income included in the gross income of the payer. Such foreign tax credit shall not exceed the income tax payable in Uganda on the payer's foreign source income for the year, by calculating the average rate of Uganda income tax of the payer to tax payer's net foreign source for the year.

Calculation of the foreign tax credit of a tax payer for a year income is made separately for foreign source business income and other income derived from foreign sources by the tax payer .
N.B. average rate of Uganda income tax is the percentage that the Ugandan income tax before the foreign tax credit is of the chargeable income of the tax payer for the year and in the case of tax payer with both foreign source business income and other income derived from foreign sources, the aver rate of tax is to be calculated separately for both classes of income.

Taxation of branch profits.

A tax is imposed on every non resident company carrying on business in Uganda through a branch which has repartriated income for the year of income.
The rate applicable to the repatriated income is 15% i.e. the non resident rate.
The repatriated income of a branch is calculated as follows :-

A + (B – C) –D

Where A = total cost base of the assets net of liabilities of the branch at commencement of the year.
B = net profit of the branch for the year of income calculated in accordance with GAAP
C = Ugandan tax payable on the chargeable income of the branch for the year.
D = total cost base of the assets net of liabilities of the branch at the end of the year.

Tax on International payments.

A tax is imposed on every non resident person who derives any dividend, interest, royalty, natural resource payment or management charge from sources in Uganda.
A dividend derived by a non resident person is only treated as income dividend from sources in Uganda to the extent to which the dividend is paid out of profits sourced in Uganda.

Interests paid by a resident company in respect of debentures is exempt from tax where the foreign tax apply:-

debentures were issued by a Company outside Uganda for the purpose of raising a loan outside Uganda.
The debentures were issued for the purpose of raising funds for use by the Company in business carried outside Uganda.
The interest is paid outside Uganda

Tax on payments non resident public entertainment or sports person

A tax is imposed on every non resident person carrying on business of ship operation, charterers or air transport operator who derives income from the carriage of passengers who embark or cargo or mail which is embarked in Uganda. The rate is 15% on gross amount derived by the person from the carriage.

Where a non resident carries on the business of transmitting messages by cable, radio or satellite communication, the chargeable income of the person derived from transmission of messages whether or not such message originated in Uganda, is 5% of the gross amount derived by a person in respect of such transmission.

International agreements

The government of Uganda can enter into international agreements with another country where both countries can help each other in the collection of taxes. Where an exemption or a reduction is imposed by the Uganda Government, the benefit can only accrued to persons of other countries in the agreement only to the extent to which they are residents of that other country.

Depreciable Assets :- Sixth schedule of the Act.

A person is allowed a deduction for the depreciation of the person's depreciable assets, other than an asset of less than 5 currency points (100,000)

Depreciable assets are classified into 4 classes with depreciation rates applicable for each class.

CLASS	ASSETS INCLUDE	RATE
1.	Computers and Data handling equipment	40%
2.	Automobiles; buses and minibuses with a setting capacity of less than 30 passengers; good vehicles with a load capacity of less than 7 tones; construction and earth moving equipment	35%
3.	Buses with a seating capacity of 30 or more passengers; goods vehicles designed to carry or pull loads of more than 7 tones, specialized trucks; tractors; trailers and trailer mounted containers;	30%

	plant and machinery used in farming, manufacturing or mining operations.	
4.	Rail road cars, locomotives and equipment; vessels, barges, tugs and similar water transportation equipment; air craft; specialized public utility plant, equipment and machinery, office furniture fixtures and equipment, any depreciable asset not included in another class.	20%

A person's depreciable asset shall be placed into separate pools for each class of asset and the depreciation deduction for each pool is calculated according to the ff formula.

A X B

Where A = the written down value of the pool at end of the year of income

B = the depreciation rate applicable to the pool.

The written down value of a pool at the end of a year of income is the total of:-

(a) written down value of the pool at the end of the preceding year of income after allowing the deduction of depreciation and
(b) the cost base of the assets added to the pool during the year of income;
(c) reduced but not below zero, by the consideration received from disposal of assets in the pool during the year of income.

Where the amount of consideration received by a person from the disposal during a year of income of any asset or assets in a pool exceeds the written Down value of the pool, the excess is included in the business income of the person.

Where the written down value at the end of the year after allowing for the deduction of depreciation is less than 5 currency points, a deduction shall be allowed for the amount of that WDV.

Where all the assets in a pool are disposed of before the year end, a deduction is allowed for the amount of the WDV of the pool as at the end of that year.

Where a person has incurred non deductible expenditures in more than one year in respect of a depreciable asset, the expenditures are treated as if they were incurred for the acquisition of separate assets of the same class.

The cost base of the depreciable asset is added to a pool in the year of income in which the asset is placed in service.

Where a depreciable asset is only partly used during a year of income in the production of income included in gross income, the depreciation deduction is proportionately reduced.

The cost base of a road vehicle other than a commercial vehicle, is not to exceed 30,000,000=

Where the cost base of a road vehicle is limited, the person is treated as having acquired 2 assets.

1. a depreciable asset baring the road vehicle with cost base equal to 30,000,000
2. a business asset that is not a depreciable asset with a cost base equal to the difference between the cost base of the asset not taking into account the actual cost base.

Where a road vehicle to which the above applies is disposed of, the person is treated as having disposed of each of the assets and the consideration received on disposal is apportioned between the 2 assets based on the ratio of the cost base of each asset to the actual cost base of the asset.

i.e. if the actual (original) cost of the asset was 100m,
the max. allowable limit of the depreciable as is 30m
therefore the cost base of "the other business asset" is 70m
if the consideration on disposal is 80m, it is apportioned as follows :-

1. depreciable asset - $\frac{30}{100} \times 80 = 24m$

2. business asset - $\frac{70}{100} \times 80 = 56m$

In calculating the amount of any gain or loss arising on disposal of the asset termed "business asset", the cost base of the asset is determined by reducing the cost by the depreciation which would have been allowed to the person if the asset :-

(a) was a depreciable asset being a road vehicle
(b) the asset was the only asset in the pool

Commercial vehicle means

(a) a road vehicle designed to carry loads of more than half a tone or more than 13 passengers.
(b) A vehicle used in a transportation or vehicle rental business.

Initial allowance :- A person who places an item of eligible property into service for the first time during the year of income is allowed a deduction for that year of an amount equal to

(a) where the asset is placed in service outside Kampala, Entebbe, Namanve, Jinja, Njeru, 75% of the cost base of the property at the time it is placed in service or

(c) in any other case, 50% of the cost base of the property at the time it is placed in service.

The cost base of an asset is reduced by the amount of the deduction allowed under the Act.

N.B. Eligible property means Plant & machinery wholly used from production of income but does not include;

(i) goods and passenger transport vehicles
(ii) appliances of a kind ordinarily used for house hold purposes
(iii) office or household furniture and fitting.

Industrial Building :-

Where a person has incurred capital expenditure in any year of income on the construction of an industrial building and the building is used by the person during the year in the production of income included in gross income, the person is allowed a deduction for the depreciation of the during year as calculated according to the following formula.

A X B X C/D

Where

A -the depreciation rate applicable (5%)
B -the capital expenditure incurred in the construction of the building
C -the number of days in the year of income during which the asset was used or was available for use in the production of income included in gross income
D -the number of days in the year of income

Note

1. Where an industrial building is only partly used by a person during a year of income for prescribed uses, the amount of the depreciation deduction allowed shall be proportionately reduced.
2. Where an industrial building is only partly used by a person during the year for prescribed uses and the capital expenditure incurred in the construction of that part of the building used for other uses is more than 10% of the total capital expenditure incurred on the construction of the building, the building is treated as wholly used for prescribed uses.
3. where a person has incurred expenditure in making a capital improvement to an industrial building in a year, the expenditure is taken as capital expenditure incurred in that year in the construction of a separate industrial building.
4. Where an industrial building is purchased by a person, the person is deemed to have incurred capital expenditure incurred by the person who constructed the building.
5. The amount of the deduction allowed is not to exceed the amount which, apart from making the deduction, would be the residue of expenditure at the year end. (< O)
6. Where an industrial building has been disposed of by a person during the year, the cost base of the building is reduced by any deductions allowed to the person in respect of the building.

7. Where an industrial building is bought and sold together with land, the value of the land shall be the difference between the total consideration and the value of the building.
8. Where consideration is received on disposal of a building on which an extension was taken as separate capital expenditure, the consideration shall be reasonably apportioned among the separate buildings.

Relevant definitions

Capital expenditure does not include:-

(i) expenditure incurred in the acquisition of a depreciable asset installed in an industrial building.
(ii) Expenditure incurred in the acquisition of, or of any rights in or over any land.

Industrial Building means any building which is wholly or partly used or held ready for use by a person in
(a) manufacturing operations
(b) research and development into improvement or new methods of manufacture
(c) mining operations
(d) an approved hotel business
(e) an approved hospital

Residue of expenditure – capital expenditure less any allowable deductions and any amounts which would have been allowed as deductions if the building was solely used for prescribed uses since construction was completed.

Farming :-

This includes pastroral, agricultural, plantation, horticultural or other similar operation. Farm income, includes the business income derived from the carrying on of farming operations, chargeable farming income is the total farming income of a tax payer for a year of income reduced by any deductions allowed under the Act which relate to the production of such income e.g.

(i) expenditure of a capital nature on
  (a) the acquisition or establishment of a horticultural plant
  (b) the construction of a green house

shall be allowed on the income of a horticulturalist at the rate of 20% of the amount expenditure in the year of expenditure and in the following four years of income in which the plant or greenhouse is used. This shall include expenditure on draining or clearing land.

Farm works means any labor quarters and other immovable buildings necessary for the proper operation of a farm, fences, dips, drains, water and electricity supply

works, wind breaks and other works necessary for farming operations but does not include;

(a) farm houses or
(b) depreciable assets

Any “assessed farming loss” incurred shall be carried forward and allowed as a deduction in the following year of income. In cse the creditors of the farm allow a concession with the tax payer, the assessed farming loss should also be reduced in proportion to the concession.

Insurance Business

This is the business of or in relation to the issue of, or the undertaking of liability under life policies or to make good or indemnify the insured against loss or damage, including liability to pay damages or compensation contingent up the happening of a specified event.

Life insurance means

(i) effecting carrying out and issuing policies on human life
(ii) effecting carrying out and issuing policies on risk of a person sustaining injury or dying as a result of accident, disease etc, expressed to be for a period not less than 5 years except under special circumstances.
(iii) Effecting, carrying out and issuing policies whereby in return for premiums paid to insurer in the future.

Short term insurance business means any insurance business which is not a life insurance business.

Chargeable income arising from short term insurance business

This is determined by the following formula A – B
Where A = the total amount derived by the resident person for the year of income in carrying on a short term insurance business as determined by;

(a) the amount of gross premiums, including premiums on re-insurance derived by the person during the year of income in respect of any risk, other than premiums returned to the insured.
(b) The amount of any other income derived by a ‘person’ in a year including any commission or expense allowance derived from investments held in connection with such a business, any gains derived on disposal of assets of the business.

(c) The amount of any reserve deducted in the previous year in relation to un expired risk.

B= the total deductions allowed for the year of income in production of income from the carrying on of short terms insurance business being;

(a) the amount of claims admitted during the year in the less any amount recovered or recoverable under any contract or re-insurance, guarantee, indemnity
(b) amount of agency expenses incurred in the year.
(c) Amount of expenditures and losses incurred by the person which are allowable as deductions, other than expenditures or losses referred to above.
(d) The amount reserve or unexpired risks referable to such business at the percentage adopted by the Company at the year end.

Any loss incurred in any year of income shall be carried forward and offset against any income in the year of income following the one in consideration.

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Course Name	: Research Methods & Data Management

Course Description
This Course explores basic philosophy of research, its types and variables, its defines sampling design, research design, methods/tools of data collection, planning the survey as a tool of data collection, the structure of a research proposal , modes of analysis, interpretation and validation.

Course Objectives

- To provide students with descriptive and exploratory skills required in research.
- To help them develop writing skills in relation to research discoveries from different research studies undertaken.
- To provide students with a better analytical perspective on the findings acquired from the field.
- To expose students to the field experiences in attempts to collecting data.

Course content
Introduction

- Definition of research
- Different forms of research
- Distinguish between qualitative and quantitative variables
- Differences between qualitative and quantitative research
- Concepts that relate broadly to both quantitative and qualitative research

Sample Design

- Definition of sampling
- Different types of both random and non-random sampling

Research Design

- Meaning of a research design
- Types of research design i.e descriptive designs, co relational designs, case study designs
- How to design and conduct a case study

Methods of data collection

- Observation method
- Survey
- Group interviews (Focus Group Discussions)
- Questionnaires
- Advantages and disadvantages of each stated method/tool

Planning the survey as a data collection tool

- Hypotheses
- Determine the respondents
- Questionnaire, interview or telephone survey
- Format issues
- Rules for asking good questions
- Analyzing survey data

The structure of a research proposal

- Title
- Table of contents
- An abstract
- Chapter one: Background to the problem
- Chapter two: Literature review
- Chapter three: Methodology
- Chapter four: Results/findings of the study
- Chapter five: Discussion, conclusion and recommendations
- References
- Appendices

Assessment
Coursework 40%
Exams 60%
Total Mark 100%

Introduction

This module generally focuses on the various health research methods used in public health, with these methods various techniques are applied to identify issues. By the end of this module one should be in position to identify the various research methods and explain them efficiently as well as knowing their relevancies

Course work

a) Through proper explanations and illustrations briefly explain ten medical research methods used in public health.

b) What is the importance's of research to the profession of Public health and the health fraternity as a whole

What Are Health Services Research Methods? Why Are They Important?

In the 1960's, the field of health services research was created by combining several study sections at the National Institutes of Health to create the Health Services Research Study Section. The HSR study section sought to define HSR as a distinct field of scientific inquiry at the intersection of public health and medical care, informed by disciplinary perspectives. Since that time, the field has evolved to encompass multiple disciplinary perspectives, including methods from cognate disciplines such as economics, statistics, political science, sociology, and many other schools of thought. The field has also developed new models and techniques to address research questions in specialized areas of inquiry such as patient safety and access to care.

Due to the breadth of the field, two terms are critical to defining the scope of health services research methods. These are: 1) health services research, and 2) methodology.

The Academy Health definition of health services research, developed in 2000 by Kathleen Lohr and Don Steinwachs, is as follows:

Health services research is the multidisciplinary field of scientific investigation that studies how social factors, financing systems, organizational structures and processes, health technologies, and personal behaviours affect access to health care, the quality and cost of health care, and ultimately our health and well-being. Its research domains are individuals, families, organizations, institutions, communities, and populations.

An additional definition of health services research is provided by *Lexikon*:

Research concerned with the organization, financing, administration, effects, and other aspects of health services. Health services research is often concerned with the relationships among need, demand, supply, use, and outcomes of health services. Structure, process, and outcome of health services may be evaluated. Evaluation of structure is concerned with resources, facilities, and manpower; process, with matters, such as where, by whom, and how health care is provided; and outcome, with the results of the services (such as the degree to which individuals receiving health services actually experience measurable benefits).

Methodology is the collection or study of methods (practices, procedures, and rules) used by those who work in a discipline or engage in an inquiry, as in the methodology of measuring, assessing, and improving performance. Methodology addresses the full range of issues confronted by empirical work in health services research, including conceptualization, modelling, literature review, study design, sampling, data collection, measurement, and research ethics.

By combining the definitions above, it is apparent how wide the scope of methods employed by health services researchers is. HSR methods encompass a variety of study frameworks, designs, and analytic techniques. These include a spectrum of methods, from understanding of various epistemological perspectives on research, to study designs including focus groups and randomised controlled trials, to specific analytic techniques such as longitudinal data analysis.

To help organise the array of HSR methods, core and desired resources have been divided into 18 major topic areas, including:

Economics & Cost Effectiveness
Epidemiology
Ethics
Evaluation
Health Services Research Applied Methods
Information Technology
Management Sciences

Medicine
Outcomes Research
Policy
Psychology
Public Health
Qualitative Research
Quality and Safety
Sociology
Statistics, Biostatistics & Econometrics
Survey Research
Trials

Reviewing the topic areas above, it is apparent that HSR methods are not confined to disciplinary methods, but rather, are unique in their approach to medical and health care delivery questions because the field was developed to facilitate study of applied questions. These include:

- Who has access to health care?
- Do patients in large urban areas receive the same level of services as those in rural areas?
- At different levels of care, which patients have the best outcomes?

Many of these types of questions have policy implications. As a result, funding for health services research has often been linked to political interests. Yet, HSR studies are girded by the same methods as many other disciplines. As discussed above, econometric, epidemiological, survey research, and other widely accepted methods form the backbone of HSR.

A related challenge for health services researchers is that the types of questions of interest to the field rely on the ability to generalise from data to the population at large. In order to collect information that may be generalised to the population, it is often necessary to draw associations from existing sources of data such as claims databases or large population surveys - frequently referred to as observational data. Observational data is collected in situations when it would be unethical or impractical to randomize participants to one condition or another - such as having or not having health insurance. Because the data is not randomised, it is not possible to assume that an intervention causes a particular outcome; rather, researchers rely on statistical analyses to draw associations between factors in a study.

Despite concerns about the shortcomings of using non-randomised data in HSR studies, there are major benefits to studying the implications of care delivery or policy at the population level. The scope of HSR studies often allows for greater understanding of an intervention's effectiveness, or effect in a real-world population, as opposed to randomized controlled trials, which are better at assessing efficacy -- the outcome in an ideal, controlled population. In addition, HSR studies have always been closely linked to policy considerations, and as such, have the potential to enhance understanding of health care systems and impact care delivery for large numbers of individuals.

For librarians it is becoming increasingly important to create a collection of materials that address the types of applied questions that health services research addresses. This is a daunting task because of the breadth and depth of the disciplines and subjects encompassed by HSR. As the list of disciplines and topic areas relevant to HSR demonstrates, a wide array of disciplines are included in the health services research methodological 'toolkit'.

Librarians may wish to utilise the module by choosing specific content areas that will benefit their personal library needs. Likewise, faculty developing new courses may look to this list for suggested current textbooks in the field. The organisation of the list is intended to facilitate understanding of the array of options in different disciplines.

This list of resources is not intended to define the full range of HSR methods texts, rather, to provide a set of resources considered valuable by librarians and academics in the field of health services research.

The field of health services research is continually expanding and developing new methods to apply to health care and health care delivery questions. Due to the fact that the field is growing rapidly, we recommend that users of this list search for updated versions of the resources cited here in order to ensure the most recent information on methodological topics.

They are basically two main types of research methods which is quantitative and qualitative, which all the methods lie under

Research and experimental development (R&D) comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications." Thus research is a careful and systematic investigation in some field of knowledge such as culture of people, religion, etc (Neon 1995)

Variable: Variables are properties or characteristics of some event, object, or person that can take on different values or amounts (as opposed to constants which do not vary). When conducting research, experimenters often manipulate variables. For example, an experimenter might compare the effectiveness of four types of antidepressants. In this case, the variable is the "type of antidepressant" I.e. attributes which take on different values from time to time e.g.

- Height
- Weight
- Age etc

The following are the types of variables

1: Independent variable

When a variable is manipulated by an experimenter

2: Dependent variable

The experiment seeks to determine the effect of the independent variable on relief from depression. In this example, relief from depression is called a dependent variable.

In general the independent variable is manipulated by the experimenter and its effects on the dependent variable are measured.

Or

Dependent variable: a variable in a logical or mathematical expression whose value depends on the independent variable; "if f(x) =y, y is the dependent variable"

Consider age with beauty of an individual: beauty deterioration of an individual is caused by advancement in age .Age is an independent variable and beauty is the dependent variable.

3:Extraneous variable; this is the characteristics whose effects are not needed in the study like noise, for the case if one is studying the causes of lack of concentration in a given computer class or any other class.

4: Active variables characteristics that can be manipulated e.g. study environment or teaching methods etc

5; Assigned variables, certain characteristics assigned by nature and can not be changed or manipulated like height, sex of individual, age etc

Qualitative **and Quantitative Variables**

Qualitative variables: These are variables that express a qualitative attribute. Some examples of qualitative variables are hair color, eye color, religion, favorite movie, gender, and so on. The values of a qualitative variable do not imply a numerical ordering. Values of the variable "religion" differ qualitatively; no ordering of religions is implied. Qualitative variables are sometimes referred to as categorical variables. Values on qualitative variables do not imply order, they are simply categories

Quantitative variables: These are variables that are measured in terms of numbers, Some examples of quantitative variables are height, weight, and shoe size.

Discrete and Continuous Variables: *Variables such as number of children in a household are called discrete variable.*

Discrete variables: These are variable with possible scores of discrete points on the scale e.g a household could have three children or six children, but not 4.53 children. Other variables such as "time to respond to a question" are continuous variable

Continuous variable: These are variables where the scale is continuous and not made up of discrete steps e.g. The response time could be 1.64 seconds, or it could be 1.64237123922121 seconds. Of course, the practicalities of measurement preclude most measured variables from being truly continuous.

Random selection: is how you draw the sample of people for your study from a population.

Random assignment is how you assign the sample that you draw to different groups or treatments in your study. It is possible to have both random selection and assignment in a study. Let's say you drew a random sample of 100 clients from a population list of 1000 current clients of your organization. That is random sampling. Now, let's say you randomly assign 50 of these clients to get some new additional treatment and the other 50 to be controls. That's random assignment
.

Concepts that relate broadly to both quantitative and qualitative research

Association:

Sometimes there is a relationship between two variables but the relationship may not be causal i.e., neither variable is dependent upon the other. It may be seen that short men are more assertive than taller men but it does not follow that being short causes men to be assertive and we can not state that being assertive make a man short; there is no causal relationship

Bias:

Distortion of the findings resulting from an undesirable influence.

Causality / Causal relationship:

A relationship in which one action brings about (causes) a particular consequence. More correctly, (since research can only hope to disprove a theory rather than prove it), a relationship in which failure to do 'x' means that 'y' will not follow. E.G., We can be less certain that bathing in the sun for two hours around midday causes skin to burn, than we can know that keeping out of the sun for the two hours around midday is unlikely to cause skin to burn.

Hawthorn Effect:

A psychological response in which subjects alter their behaviour because they are aware of their participation in the study

Piloting:

A small-scale trial of the research method to ensure that the design is feasible, Although only a small number of subjects may be used, a variety of practical questions may be determined. E.g., can the subjects understand the questions they are being asked?

Population:

Literally means "all the people" and in research the term is most commonly used to refer to a specific group of people. However, in a research context, population refers to all the members or objects of any defined group which might be taken or about which information might be given. A research population refers to the entire group to which the research results apply e.g., a relevant age group, or equipment group such as syringes.

Sample:

Refers to the segment of the population that is selected for investigation (the subset of the population)

Sampling frame: it is the listing of all the units in the population from which the sample will be selected

Census: this is a complete enumeration of an entire population

Reliability:

Is concerned with the accuracy (consistency, stability and repeatability) of a measure in representing the true score of the subject being assessed on a particular dimension, the same results must be achieved, as far as possible, regardless of whom is doing the measuring. e.g., several nurses weighing the same patient on the same set of scales, in quick succession, should gain the same results. Reliability of measurement reduces influence or bias on the part of the person(s) doing the measurement, to a minimum.

Representative:

Refers to the extent to which a sample reflects the "truth" for the whole population in the study. The sampling technique should aim to ensure that the views of the population are reflected by the sample.

Validity:

Refers to whether a particular instrument actually measures the construct it is designed to assess. e.g., a cardiac monitor is not a valid tool for measuring the peripheral pulse. A cardiac monitor is a valid tool for measuring the electrical activity of the heart.

Internal validity:

The extent to which the effects detected in a study are a true reflection of what is real, e.g., if the detected effect is that better nutrition leads to greater height gain in infants, internal validity exists if the height gain can not be attributed to another factor. (NB this other factor may be referred to as a confounding or extraneous variable).

External validity:

"The extent to which study findings can be generalised beyond the sample used in the study" (Burns and Grove 1993) e.g., One study may find that better nutrition leads to increased height gain in infants but external validity exists only if this finding is found with other samples.

NB the concept "Variable" appeared on the glossary of the previous session

SAMPLE DESIGN

The way of selecting a sample from a population is known as sample design. It describes various sampling techniques and sample size. It refers to the technique or procedure the researcher would adopt in selecting items for the sample.

Sampling:

Sample; Sampling; method of selecting a certain number of units from a total population

(Macleod Clark J and Hockey L. 1981)

The way a sample is selected should be clearly demonstrated in a research report. The aim of a sample is that it should be as unbiased a cross section of the "parent"

population as possible, i.e., a sample of subjects needs to be as representative as possible of the population under study.
To obtain a cross section we need to devise a sampling frame to define the boundaries (limits) within the context of the study and to reflect the organization within which the sampling is taking place.
The larger the size of the sample, the lower is the likelihood of it failing to represent the population under study. However, the law of diminishing returns tells us that there is, for each study, a desirable sample size under which their may fail to be accuracy yet above which there is no better a reflection of the parent population.
Sampling may be

a) Random and non random sampling.
b) Non random: In a nonrandom sample, members are selected on the basis of a particular set of characteristics, rather than a random chance of being included and certainly it introduces bias.

Random- Random sampling is completely based on chance. For example, one might identify all members of a population, (n=250) write their names on separate pieces of paper, and then draw 25 names out of a hat to determine who is actually to be included in the study and every individual has a chance of being included in the study.
Types of random sampling
Systematic
Is a statistical method involving the selection of every k^{th} element from a sampling frame, where *k*, the sampling interval, is calculated as:
k = population size (*N*) / sample size (*n*)

- Stratified
- cluster sampling

Stratified sample
In a stratified sample the sampling frame is divided into non-overlapping groups or strata, e.g. geographical areas, age-groups, genders. A sample is taken from each stratum, and when this sample is a simple random sample it is referred to as stratified random sampling.
Where there is heterogeneity in the population this can be reflected in the strata, i.e., each stratum can be weighed to reflect the heterogeneity. In this way a proportional representation of the whole population can be gained.
Cluster sample
Best used where there is a wide geographical spread. Clusters may be chosen subjectively to be representative of the whole. The clusters can be further stratified. E.G., if we want to know about all A&E patients in the country we need to take a sample from a variety of A/E's. Each department can bring a number of patients into the sample according to whether they meet the stratification criteria and it is often used in marketing research
Multistage sampling
This is the use of sampling methods that are considerably more complex than these other methods. The most important principle here is that we can combine the simple methods described above in a variety of useful ways that help us address our sampling needs in the most efficient and effective manner possible. When we combine sampling methods, we call this multi-stage sampling.

Concepts strongly associated with quantitative research

Survey:
Involves the study of a large number of subjects drawn from a defined population

Randomisation:
A method for controlling possible extraneous variables involving assigning objects (subjects, treatments etc.,) to a group or condition in such a way that every object has an equal probability of being assigned to any particular condition. Randomisation can also be applied in other settings for research e.g., within a questionnaire there may be a sequence of questions, which, if reordered randomly, may evoke different responses because the previous question does not then influence the current question.

Control:
In order to increase the probability that findings accurately reflect the reality of the situation being studied, the study needs to be designed in such a way as to maximise the amount of control over the research situation and variables. Through control the influence of extraneous variables, variables which are not being studied but which could influence the results of the study by interfering with the action of the ones being studied, is reduced.

Manipulation:
Refers to the fact that we can create artificial divisions and circumstances in order that we can test a particular hypothesis, In experimental research the "causative" variable must be amenable to manipulation by the investigator; i.e., the researcher "does something" to subjects in the experimental condition. Subjects in the control group are not "manipulated" in the way that subjects in the "experimental group" are manipulated.

Treatment Group: The portion of a sample or population that is exposed to a manipulation of the independent variable is known as the treatment group. For example, youth who enroll and participate in recreation programs are the treatment group, and the group to which no recreation services are provided constitutes the control group

Confounding Errors
Errors: are conditions that may confuse the effect of the independent variable with that of some other variable(s).

1. Premeasurement and interaction errors
2. Maturation errors
3. History errors
4. Instrumentation errors
5. Selection bias errors
6. Mortality errors

Measurement (levels)
Nominal: Subjects of research are differentiated by possessing or not possessing a given characteristic, e.g., pass/fail, single/married, and divided into a number of

categories but the difference between the categories is not measurable in any real sense. This is the least sophisticated level of measurement.

Ordinal: Subjects are ranked in order from greatest to least or best to worst. Again there is no precisely measurable difference between the ranks.

Interval: Genuinely quantitative measurement such as that of temperature is measured at the interval level of measurement. Here the difference between 10 and 11 degrees centigrade is the same as the difference between 11 and 12degrees centigrade.

Ratio: In a scale of measurement where the difference between points on the scale is precise (as in the measurement of height and weight,) *and the scale starts at zero* the level of measurement is referred to as ratio. Height and weight start at zero. You can not weigh less than 0.00kg and cannot be less than 0.00mm in length/height; these are ratio scales. You can however record temperatures of the weather in terms of minus *x* degrees centigrade and this is why the scale is interval and not ratio.

Research Design

Research design can be thought of as the *structure* of research -- it is the "glue" that holds all of the elements in a research project together or plan for a study that guides the collection and analysis of the data

We often describe a design using a concise notation that enables us to summarize a complex design structure efficiently. What are the "elements" that a design includes?

Types of design:- Experimental design , Quasi-experimental design, Survey design, cross-sectional design, Case studies, comparative study etc

The research design:

(1) Is driven by there search problem

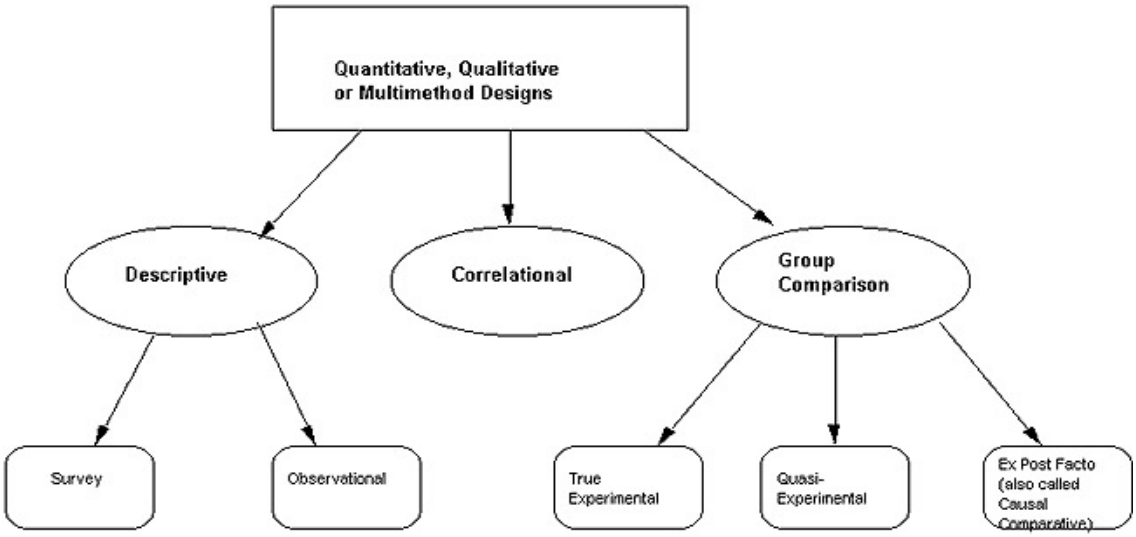
(2) Depends upon how much is known about the problem

Types of Research Design

For example, if you are doing a study where you will be *rating* students (numerically) on their performance of a sensory-motor skill AND also *interviewing* these students (data in words) to determine how they perceive their own skill levels (if one does that !), *then at least one "design methodology label" that would apply is "multimethod*."

Now, some design labels apply only to qualitative studies -- while others could apply to a study that's any of the of designs. We'll look at the qualitative labels in a future follow-up lesson. For now, let's look at the possibility: families of design methodology labels that could apply to any/all of the above 3 possibilities.

Figure 2.



Design Methodology
That Correspond To Quant/ Qual/ Multi method Studies

Most of these, as we'll see, "link" to certain "keywords" in the research question or problem statement!

I. **Descriptive Designs**

Example: This study is to *identify* the perceived barriers to successful implementation of the Career Ladder Teacher Incentive & Development Program in X School District.

"Identify"/"what is - what are" (the perceived barriers) - > Descriptive problem statement AND also descriptive research design methodology!

Two "sub-types" (add'l. design methodology labels that could apply to "descriptive designs):"

Survey - This label also applies to any study in which data or responses (be they quant/qual/both) are recorded via any form of what we think of as "survey instrumentation."

You've probably seen (more than you care to think about! if you've been 'approached' by a 'needy dissertation stage doctoral student' to participate in his/her study!) such surveys. They can take many forms:

A. Check-off items (e.g., gender, position);
B. Fill-in-the-blank items;
C. Likert-type scales (e.g., on a 5-point scale, say, from "strongly disagree" to "strongly agree," you're asked to circle or check your opinion regarding a statement such as, "The Career Ladder Teacher Incentive and Development Program provides ample opportunity for teacher advancement in my district")
D. Open-ended fill-in items (you're asked to give a response in your own words, using the back of the survey sheet or extra paper if necessary; something like "Please state the three main reasons you chose to apply for the Career Ladder Teacher Incentive and Development Program this year.")

Types of Survey Research

While often these surveys are paper-&-pencil in nature (e.g., you're handed one or receive it in the mail & asked to fill it out and return it to the researcher), they are

sometimes "administered" orally in a face-to-face or telephone interview (e.g., the researcher records your answers him/herself).

Some Guidelines for Interviews

There are other variations on survey-type questions; the above are just examples of the most common forms and scaling of such responses.

If the responses to our earlier example were collected in the form of a survey -- be it, say, Likert-scaled attitudinal items and/or open-ended questions where the teachers are asked to share the perceived barriers in their own words -- then the study would be characterized as a *descriptive survey design methodology*.

E. **Observational** - In these design methodologies, instead of administering a survey instrument, the researcher collects data by observing/tallying/recording the occurrence or incidence of some outcome -- perhaps with the aid of assistants.

He/she might want to identify the most frequently occurring type(s) of disruptive behavior in a particular classroom. With clear prior agreement on what constitutes such "disruptive behavior" (operational definitions of our variables are important, remember?! It becomes an issue of "reliability," or verifiability that "we saw what we saw" vs. "our own bias" of what constitutes this disruptive behavior!), the researcher could develop a listing of such behaviors and observe and record the number of times each one occured in a particular observation session in a classroom. (Again, he/she might wish to 'compare notes' with assistants in order to enhance reliability or verifiability -- e.g., as a cross-check for accuracy).

This type of research would warrant the design methodology label of not only "descriptive" (due to the 'identify/what is - what are [the most frequently occurring ...]?') but also "observational" due to the recording/tallying protocol.

(By the way, qualitative-type observations can also be recorded. They don't have to be strictly numeric tallies. Examples that come to mind include case notes of counselors, where they record their perceptions in words.)

II. Correlational Designs

We've seen these too! Just as in the case of "descriptive" designs, these "link" to the keywords of "association," "relationship," and/or "predictive ability" that we've come to associate with "correlational" research questions or problem statements!

Correlational Research

III. Group Comparisons

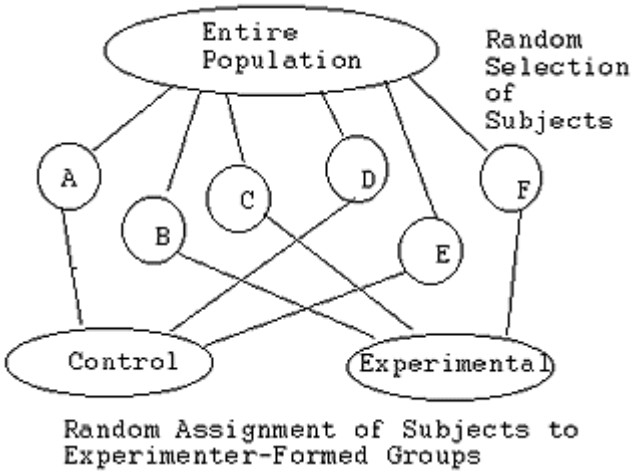
We've briefly talked about "experiments" generally, in terms of "key features" such as the following:

a. **tight control** (the researcher attempts to identify in advance as many possible 'contaminating' and/or confounding variables as possible and to control for them in his/her design -- by, say, building them in and balancing on them -- equal numbers of boys and girls to 'control for gender' -- or 'randomizing them away' by drawing a random sample of subjects and thereby 'getting a good mix' on them -- e.g., all levels of 'socioeconomic status')
b. because of the preceding control, the 'confidence' to **make 'cause/effect statements'**

That is, we begin to get the idea of ***2 or more groups, as balanced and equivalent as possible on all but one "thing:" our "treatment"*** (e.g., type of lesson, type of counseling). ***We measure them before and after this treatment and if we do find a difference in the group that 'got the treatment,' we hope to attribute that difference to the treatment only*** (because of this tight control, randomization, and so forth).

Now ... there are actually two "sub-types" of experimental designs. Plainly put, they have to do with how much 'control' or 'power' you as the researcher have to do the above randomization and grouping!

A. **True experimental** - If you can BOTH randomly draw (select) individuals for your study AND then randomly assign these individuals to 2 or more groups (e.g., 'you have the power to make the groups' yourself!), then you have what is known as a true experiment.'



In the preceding scenario, the researcher first:

1. Randomly selected subjects A through F from the larger population; AND
2. Then randomly assigned these individuals to (experimenter-formed) groups. In our example, by coin-flipping or some other random procedure, Subjects A, D & E "landed" in the control group (e.g., the class that will get the traditional lecture), while Subjects B, C, & F "landed" in the experimental or treatment group (e.g., the researcher-formed class that will get the hands-on science instruction, say).

The two levels of "randomization" help to ensure good control of those pesky contaminating or confounding variables, don't they?! You're more likely to get a "good mix" on all those other factors when you can randomly draw your subjects and also randomly assign them to groups that you as the researcher have the "power" to form!

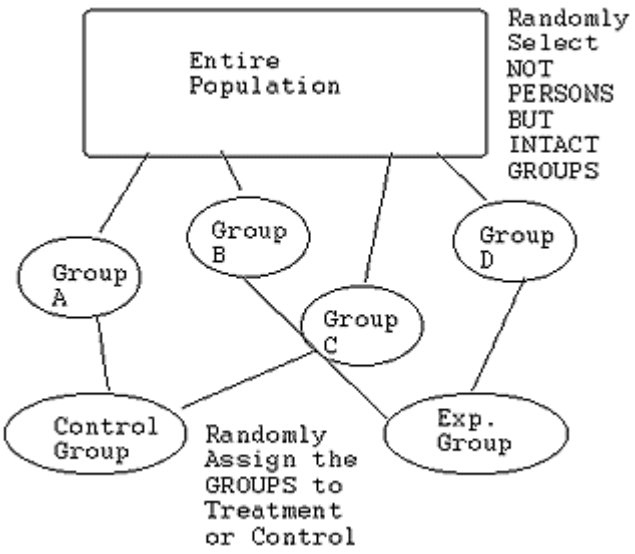
Ah...but ivory-tower research is one thing; real life quite another !

What if you get the OK to do your research within a school district, but the sup't. says, "Oh no! I can't let you be disrupting our bureaucratic organization here and "making your own 4th grade classrooms" for your study! That's way too disruptive! No, no, the best you can do is to randomly select INTACT existing 4th grade classrooms and then go ahead and use all the kids in those randomly drawn GROUPS instead!"

The True Experiment and Quasi-Experiment

Which brings us to the 2nd variant of "experimental designs:"

B. **Quasi-experimental - what you are 'randomly drawing' (selecting) is NOT INDIVIDUALS but INTACT (pre-existing) GROUPS**! These could be existing classrooms, clinics, vocational education centers, etc. In other words, you "lose" the power to "make your own groups" for your study!



Here (for the quasi-experiment), you randomly draw intact groups (e.g., from all the 4th grades in the district, you draw 4 of them at random) and then flip a coin or use some other random procedure to assign the pre-existing 4th grades to either the "treatment" or "control" conditions. (In our example Grades A and C "land" in the traditional lecture method (control), while Grades B and D end up in the hands-on science instruction (e.g., the "treatment" or the "experimental" group).

Do you see how this is different from the "true" experiment? In the "true" experiment, you selected the children themselves (subjects) at random and then "had the power" to in essence "form" your own "4th grades" by assigning the individual kids themselves randomly to either the control or the experimental conditions.

Here, though, the 'best you can do' (again, often for practical reasons such as access to sites, permission, etc.) is draw not individual kids but the GROUPS themselves (pre-existing 4th grade classrooms) at random and then in step # 2 assigning NOT the INDIVIDUAL KIDS but rather the WHOLE GROUPS to either the treatment or control conditions.

Quasi-Experimental Design

See how ***this one-step loss of randomization may mean a bit less control over those pesky contaminants***?! By forming your own groups you have a greater likelihood of "getting a good mix on all other stuff". But here, you've got to "live with the existing groups as is." And suppose that in the above scenario, 4th Grades B & D also happen (quite by accident, but welcome to 'real life!') to have a higher average I.Q. of 15 points than A & B! Now we've got a contaminant! Did the kids do better because of the hands-on science lesson -- or because of their inherently higher aptitude, intelligence or whatever?!

But at least we still have that last step: random assignment to either the experimental or control conditions!

Remember ... again...

1. For true experiments, we're randomly assigning individuals to treatment vs. control; and
2. For quasi-experiments, we're randomly assigning intact/pre-existing groups to treatment vs. control.

Well -- we lose that "random assignment" property in the 3rd "family" of group comparison design methodologies!

Ex post facto (also called "causal comparative") - really no 'random anything!' We identify some sort of outcome and wonder 'what makes it vary like that?' Could it be some pre-existing grouping? For instance, if we 'divided' or 'pile-sorted' the responses by gender, would that account for the difference we see?
Thus, there is no treatment either! Simply an attempt to see if a grouping that we had no prior control over seems to "make a difference" on some outcome(s)!
The keyword "difference" (by grouping) and no treatment would be the tip-off to an ex post facto or causal-comparative study design.
And -- regarding the grouping -- maybe this rather silly example will make the point! And help you to identify if you are in such a situation of "no-control-over-grouping:"
You wish to study whether preschoolers from single-parent homes are different in terms of emotional readiness for kindergarten than those of two-parent homes.
Now ... you couldn't go to prospective subjects' homes and say, "OK, now you've got to get divorced ... and YOU have to stay married ... 'cuz that's how you came up in the random assignment!"
I don't think so...!!! Same thing with "gender:" you took it "as is" (e.g., those subjects in essence 'self-selected into their gender grouping). You had no prior control over 'making' them 'be' one gender or the other but rather took those groups 'as is' and kind of pile-sorted some response(s) by gender to see if it 'made a difference' on some outcome! Indeed ... the ***literal Latin translation of "ex post facto" is "after the fact."*** This shows YOUR role in the 'grouping' process as the researcher! You didn't 'assign' them into any one group, randomly or otherwise. Instead, you came in "after the fact" and wished to see if that self-determined grouping made a difference on some outcome(s) that you are studying!
As you can imagine -- even bigger problems with contaminating variables! There is no randomization or control here!
Thus the name "causal comparative" is sort of a misnomer. You are indeed "comparing" two or more "pre-formed" groups on some outcome(s). But due to that *lack of randomization and control*, you can't really use this design to study "cause/effect" types of research questions or problem statements. There are generally *too many uncontrolled, unrandomized contaminating variables* that may have entered the picture to confidently make 'strong' cause/effect statements!
Nonetheless, given the circumstances, this type of design might be "the best you can do." Group differences on some outcome(s) might indeed be interesting to study even though you had little or no "control" in the situation.

To summarize, for the "group comparison" family of designs:

Kind of Study	**Method of Forming Groups**
Ex Post Facto (Causal Comparative)	Groups Formed
True Experiment	Random Assignment of Individual to "Researchr-Made" Groups
Quazi-Experiment	Random Assignment of Intact Groups

Case study design

It is a useful tool for investigating trends and specific situations in many scientific disciplines, especially social science, psychology, anthropology and ecology

Basically, a case study is an in depth study of a particular situation rather than a sweeping statistical survey. It is a method used to narrow down a very broad field of research into one easily researchable topic

Though it does not answer a question completely, it gives some indications and allows further elaboration and hypothesis creation on a subject.

The case study research design is also useful for testing whether scientific theories and models actually work in the real world. You may come out with a great computer model for describing how the ecosystem of a rock pool works but it is only by trying it out on a real life pool that you can see if it is a realistic simulation.

For psychologists, anthropologists and social scientists they have been regarded as a valid method of research for many years. Scientists are sometimes guilty of becoming bogged down in the general picture and it is sometimes important to understand specific cases and ensure a more holistic approach to research.

Its advantage, (case study research design) is that you can focus on specific and interesting cases. This may be an attempt to test a theory with a typical case or it can be a specific topic that is of interest. Research should be thorough and note taking should be meticulous and systematic. In a case study, you are deliberately trying to isolate a small study group, one individual case or one particular population.

For example, statistical analysis may have shown that birthrates in African countries are increasing. A case study on one or two specific countries becomes a powerful and focused tool for determining the social and economic pressures driving this

How To Design And Conduct A Case Study

It is best if you make yourself a short list of 4 or 5 bullet points that you are going to try and address during the study. If you make sure that all research refers back to these then you will not be far wrong.

With a case study, even more than a questionnaire or survey, it is important to be passive in your research. You are much more of an observer than an experimenter and you must remember that, even in a multi-subject case, each case must be treated individually and then cross case conclusions can be drawn

How To Analyze The Results

Analyzing results for a case study tends to be more opinion based than statistical methods. The usual idea is to try and collate your data into a manageable from and construct a narrative around it.

Use examples in your narrative whilst keeping things concise and interesting. It is useful to show some numerical data but remember that you are only trying to judge trends and not analyze every last piece of data. Constantly refer back to your bullet points so that you do not lose focus.

It is always a good idea to assume that a person reading your research may not possess a lot of knowledge of the subject so try to write accordingly.

In addition, unlike a scientific study which deals **with facts,** a case study is based on **opinion** and is very much designed to provoke reasoned debate. There really is no right or wrong answer in a case study.

Cross-sectional design

A research design where **subjects are assessed at a single time** in their lives, A cross sectional study is fast and can study a large number of patients at little cost or effort. Also, you don't have to worry about patients dropping out during the course of the study. This study is efficient at identifying association, but may have trouble deciding cause and effect. With data at only one time point, you don't know whether the chicken or the egg came first. Here are two examples of cross sectional designs
In Zureik et al (BMJ 2002 Aug 24;325(7361):411), a group of 1132 adults with asthma were given respiratory function tests to assess the severity of their asthma. They were also given skin prick tests to assess their sensitization to mold, pollen, dust mites, and cats. In this study, those patients with reactions to mold were much more likely to have severe asthma.

Types Of Research

Research can also be classified on the basis of its purpose its intended to achieve and examples of such researches include:

Evaluative research:

This is the study that focuses on whether an intervention was properly implemented and whether the intended outcomes of a given programme or project have been realized or not. (Mouton, 2001) Evaluation studies are both quantitative and qualitative in nature and it requires an understanding of the project objectives so that the performance of the project can be measured against the set objectives.

Predictive research

This type of research takes on several variables and tries to predict the likely outcome. It asks ‘what if questions. Thus it is based on predictions which themselves grow out of repeated actions and events which have been studied. It is based on probability and can be used to predict the likelihood of an event occurring (Wisker, 2001)

Historical research

These are studies which attempt to reconstruct the past and chronology of events (mouton 2001) and aim at arriving at an accurate account of the past so as to gain a better understanding of the present and fore cast what the future is likely to be.

Historical research is also referred to as analytical research. Common methodological characteristics include a research topic that addresses past events, review of primary and secondary data, techniques of criticism for historical searches and evaluation of the information, and synthesis and explanation of findings. Historical studies attempt to provide information and understanding of past historical, legal, and policy

Meta-Analysis

Meta-analysis combines the results of studies being reviewed. It utilizes statistical techniques to estimate the strength of a given set of findings across many different studies. This allows the creation of a context from which future research can emerge and determine the reliability of a finding by examining results from many different studies. Researchers analyze the methods used in previous studies, and collectively quantify the findings of the studies. Meta-analysis findings form a basis for establishing new theories, models and concepts.

Thomas and Nelson (1990) detail the steps to meta-analysis:

1. Identification of the research problem.
2. Conduct of a literature review of identified studies to determine inclusion or exclusion.
3. A careful reading and evaluation to identify and code important study characteristics.
4. Calculation of effect size. Effect size is the mean of the experimental group minus the mean of the control group, divided by the standard deviation of the control group. The notion is to calculate the effect size across a number of studies to determine the relevance of the test, treatment, or method.
5. Reporting of the findings and conclusions.

Exploratory research:

These are studies intended to carry out preliminary investigation into relatively unknown areas of research (Terre Blanch and Durrheim). They employ open, flexible and inductive approach to research as they attempt to look for new insights into phenomena. They generate speculative insights, new questions and hypothesis. They ask both 'what and why 'questions (Wiker, 2001, and Mbaaga, 1990) and this type of research is more flexible.

Descriptive research

Descriptive reseach are designed to gain more information about a particular characteristic within a particular field of study. A descriptive study may be used to, develop theory, identify problems with current practice, justify current practice, make judgements or identify what others in similar situations may be doing. There is no manipulation of variables and no attempt to establish causality. They are qualitative in nature and produce descriptive data i.e they use people's own written and spoken words as well as observable behaviour to describe a phenomenon or event so that it can be understood better.

- Descriptive research requires the clear specification of...
  WHO, ***WHAT***, ***WHEN***, ***WHERE***, ***WHY***, and ***HOW***

-- Before data collection can begin

- Exploratory research is very flexible; descriptive research is **MUCH** more rigid

Causal research

This is a type of research that tries to find out the cause and effect of phenomenon (Leedy, 1997). The possibility of causal inference derives from the use of randomization techniques, experimental and comparative groups and repeated measures over time. Thus it aims at establishing cause-effect relationships between the research variables.

Other classification of research

It may also be categorized into the following

- Quantitative versus qualitative research
- Basic versus applied research
- Empirical and non empirical research

Qualitative and Quantitative Research

Quantitative research is:
"a formal, objective, systematic process in which numerical data are utilized to obtain information about the world" (Burns and Grove cited by Cormack 1991 p 140). There is massive use of mathematics, statistical tools and the samples are comparatively large.
In general, qualitative research generates rich, detailed and valid (process) data that contribute to in-depth understanding of the context. Quantitative research generates reliable population based and gereralizable data and is well suited to establishing cause-and-effect relationships

Quantitative research is research involving the use of structured questions where the response options have been predetermined and a large number of respondents is involved.
By definition, measurement must be objective, quantitative and statistically valid. Simply put, it's about numbers, objective hard data.

The sample size for a survey is calculated by statisticians using formulas to determine how large a sample size will be needed from a given population in order to achieve findings with an acceptable degree of accuracy. Generally, researchers seek sample sizes which yield findings with at least 95% confidence interval (which means that if you repeat the survey 100 times, 95 times out of a hundred, you would get the same response) and plus/minus 5 percentage points margin error. Many surveys are designed to produce smaller margin of error.

Qualitative Research is collecting, analyzing, and interpreting data by observing what people do and say. Whereas, quantitative research refers to counts and measures of things, qualitative research refers to the meanings, concepts, definitions, characteristics, metaphors, symbols, and descriptions of things.

Qualitative research is much more subjective than quantitative research and uses very different methods of collecting information, mainly individual, in-depth interviews and focus groups. The nature of this type of research is exploratory and open-ended. Small numbers of people are interviewed in-depth and/or a relatively small number of focus groups are conducted.

Participants are asked to respond to general questions and the interviewer or group moderator probes and explores their responses to identify and define people's perceptions, opinions and feelings about the topic or idea being discussed and to determine the degree of agreement that exists in the group. The quality of the finding

from qualitative research is directly dependent upon the skills, experience and sensitive of the interviewer or group moderator.

This type of research is often less costly than surveys and is extremely effective in acquiring information about people's communications needs and their responses to and views about specific communications.

Basically, quantitative research is objective; qualitative is subjective. Quantitative research seeks explanatory laws; qualitative research aims at in-depth description. Qualitative research measures what it assumes to be a static reality in hopes of developing universal laws. Qualitative research is an exploration of what is assumed to be a dynamic reality. It does not claim that what is discovered in the process is universal, and thus, replicable. Common differences usually cited between these types of research include.

Characteristics of quantitative and qualitative research

Quantitative	**Qualitative**
Objective	Subjective
Research questions: How many? Strength of association?	Research questions: What? Why?
"Hard" science	"Soft" science
Literature review must be done early in study	Literature review may be done as study progresses or afterwards
Test theory	Develops theory
One reality: focus is concise and narrow	Multiple realities: focus is complex and broad
Facts are value-free and unbiased	Facts are value-laden and biased
Reduction, control, precision	Discovery, description, understanding, shared interpretation
Measurable	Interpretive
Mechanistic: parts equal the whole	Organismic: whole is greater than the parts
Report statistical analysis. Basic element of analysis is numbers	Report rich narrative, individual; interpretation. Basic element of analysis is words/ideas.
Researcher is separate	Researcher is part of process

Subjects	Participants
Context free	Context dependent
Hypothesis	Research questions
Reasoning is logistic and deductive	Reasoning is dialectic and inductive
Establishes relationships, causation	Describes meaning, discovery
Uses instruments	Uses communications and observation
Strives for generalization Generalizations leading to prediction, explanation, and understanding	Strives for uniqueness Patterns and theories developed for understanding
Highly controlled setting: experimental setting (outcome oriented)	Flexible approach: natural setting (process oriented)
Sample size: n	Sample size is not a concern; seeks "informal rich" sample
"Counts the beans"	Provides information as to "which beans are worth counting"

The decision of whether to choose a quantitative or a qualitative design is a philosophical question. Which methods to choose will depend on the nature of the project, the type of information needed the context of the study and the availability of recourses (time, money, and human).
It is important to keep in mind that these are two different philosophers, not necessarily polar opposites. In fact, elements of both designs can be used together in mixed-methods studies. Combining of qualitative and quantitative research is becoming more and more common.

Every method is different line of sight directed toward the same point, observing social and symbolic reality. The use of multiple lines of sight is called triangulation.
It is a combination of two types of research. It is also called pluralistic research.
Advantages of combining both types of research include:

1. research development (one approach is used to inform the other, such as using qualitative research to develop an instrument to be used in quantitative research)
2. Increased validity (confirmation of results by means of different data sources)
3. Complementarity (adding information, i.e. words to numbers and vice versa)
4. Creating new lines of thinking by the emergence of fresh perspectives and contradictions.

Barriers to integration include philosophical differences, cost, inadequate training and publication bias.

Qualitative data analysis

Qualitative analysis involves a continual interplay between theory and analysis. In analyzing qualitative data, we seek to discover patterns such as changes over time or possible causal links between variables.
Examples of approaches to discovery and explanations of such patterns are Grounded Theory Method (GTM), semiotics, and conversation analysis.
Qualitative researchers sometimes attempt to establish theories on a purely inductive basis. This approach begins with observations rather than hypothesis and seeks to discover patterns and develop theories.

Qualitative data Processing

The processing of qualitative data is as much art as science. Three key tools for preparing data for analysis *are coding, memoing*, and *concept mapping.*
Coding is classifying or categorizing individual pieces of data.
If you are testing hypothesis, then the codes could be suggested by the theory, in forms of variables. Open coding – codes are suggested by the researcher‘s examination and questioning of the data.
Example: 2 passages from Book Leviticus (Revised Standard version): religious bases for homophobia.
18:22 You shall not lie with male as with a woman, it is an abomination.
20:13 If a man lies with a male as with a woman, both of them have committed an abomination; they shall be put to death, their blood is upon them.
Homosexuality – key concept
Lying implies having sex
Male homosexuality
Prohibited behavior
Abomination
Put to Death
Male homosexuality is not the only abomination. Most of the abominations have to do with dietary rules and mishandling of ritual artifacts. **Thus, Dietary Rules and Ritual Artifacts are additional codes**.

Death penalty is broadly applied by Leviticus: everything from swearing to murder, including male homosexuality somewhere in between.
An extended analysis of prohibited behavior, short of abomination and death, and also turns up a lengthy list. Among them are slander, cursing the deaf, putting stumbling blocks in front of the blind people, and so forth.
Memoing writing memos or notes to yourself and others involved in the project.It is appropriate at several stages of data processing to capture code meaning, theoretical ideas, preliminary conclusions, and other thoughts that will be useful during analysis.
Concept mapping uses diagrams to explore relationships in the data graphically

Basic Research And Applied

Basic Research is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundation of phenomena and observable facts, without any particular application or use in view.
Applied research is also an original investigation undertaken to acquire new knowledge. It is, however, directed primarily towards a specific practical aim or objective.

Experimental development is systematic work, drawing on existing knowledge gained from research and/or practical experience that is directed to producing new materials, products or devices, to installing new processes, systems and services, or to improving substantially those already produced or installed."

Content In The Proposal

What follows is more information about what is required in the various sections of your evolving research proposal.
I. **The Problem**. You should begin by stating what the problem is that you are going to research. You should give the reader an idea of the project you intend to undertake.

II. **Importance to the Discipline**. Not every topic is worth researching. What should guide your choice of a topic is that it is important and relevant to the field in which you are engaged. You must convince the reader that your topic is important. It is here that you need to integrate some theory that supports the need to investigate your topic.

III. **Literature Review**. Your review should follow the introduction of the problem and should include a logically organized review of the relevant literature. You should give a summary of the theory that guides your work, as well as discuss what others have found who have done the same or similar research. If you are proposing to replicate someone else's work, you should say why. For example, do you wish to extend the generalizability of their findings, or are you hoping to improve on their methodology? Tell why. There is no need for you to rediscover the wheel; therefore, be careful in your search of the literature.

List Questions/Hypotheses. Your review of the literature should lead you to your research questions. In other words, these questions should be a natural outgrowth of your review of others' work. State these questions concisely. Be clear about what you are going to try to prove or disprove. If the reader cannot understand what you are proposing, then you are not making a strong argument
Hypothesis: A statement that specifies how two or more measurable variables are related. e.g
(H1): Women are more likely than men to make impulse purchases of our brand.
(H2): Decreasing price by 10% will increase unit sales by 30%.
(H3): Adoption of our new product will be greater in Northern states than in Southern States.

IV. **Method of Research**. While there are various methods by which one can approach social research, there are certain parameters which must be taken into consideration and addressed in your proposal. If the parameter does not appear to

be relevant to your proposed research, you must address why that may be the case. What follows below is a list of parameters which might be considered in the writing of a research proposal. During the course of the semester, we will address these and other components of a research proposal.

A. **Operationalization of the Variables**: If your question is "Is job security related to job satisfaction?" you must tell what you mean by both job security and job satisfaction, and be very specific. Will these concepts be measures by a response to a question? What is that specific question? If you are asking more than one question to capture a concept, will you form a scale measure? What kind of scale measure? Each variable must have specific operations (hence, operationalization) attached to is so that the reader knows exactly how the variable will be measured in the proposed research.

B. **Design**: Specify what research design your study will take, and why. Is it an experimental design? Will you look at one group once or on several different occasions? Will you look at more than one group? Will you
be comparing different groups? Why? Will you use a case study approach?

C**. Sample**: How will you draw your sample? What is the method(s) you will employ? How many will be in your sample? Why? Will you use probability sampling or non-probability sampling? Why?

D. **Data Gathering Method**: How will you actually gather the data that measures your variables? Will you use a survey? Will you interview people? you use existing data? Which data? If you are using specific instruments,include copies of them in an appendix to the proposal. Will you use focus groups?

E. **Ethical Considerations**: What impact might your study have on your "subjects?" What risk, if any, might you impose on the population you study by conducting the research? What are some different ways in which
the findings of your research might be utilized by others? Are there any possible political uses and what might be some implications of those uses? How your findings might be utilized differently from your research intentions?

F. **Political Considerations** : To what political ends might the findings of your research be used? It is important to be aware that one's findings,regardless of what was hypothesized, can be put to political use. If the costs of political use outweigh the benefits of the research (which is also true of ethical considerations), one must question whether to conduct the proposed research

G. **Validity and Reliability**: How will you know if you are measuring what you say you are measuring? How will you know if your data is valid? What checks for validity will you provide? Are your measuring tools reliable? How will you know if they are reliable? What will you do that will convince the reader that you have addressed validity and reliability?

H**. Limitations to the Proposed Study**: You should tell the reader some of the limitations you foresee for your study. If you are using a specific sample and this

limits generalizability, you should say so. If you are testing a group that might change the effectiveness of your measuring instrument, you need to address it. Anything that might limit the knowledge gained,in any way, should be mentioned. None of us cond uct the perfect research project; therefore, it is important the we address possible limitations.

V**. Data Analysis**: How do you propose to analyze the data you would collect from this proposed research? If you posit a relationship between some of the variables, how will you determine if there really is a relationship? What statistical techniques might you use? While you are not actually going to do any statistical analysis at this point, you must have an idea of what types of analyses would be appropriate for both your variables and your research questions.

VI. **Reference List**: Any of the studies you cite in the literature review, or any other relevant works that you use in the proposal, must be included in a proper reference list. (See Writing Guidelines) Note that a reference list should include only those items actually referenced in the body of the paper. If you do not use it in the body of the paper, you should not include it inthe reference list.

VII. **Appendices:** You should attach a copy of any relevant supplemental materials, such as questionnaires, interview schedules, scoring keys (code sheets),.

Grading Points for Proposal Papers
Consider the following criteria used in grading to increase your skills in project proposal writing

GRADING: Stage 1 is worth 120 points. Stage 2 is worth 280 points and the next pages detail the grading criteria for each paper.

RESEARCH PROPOSAL –
STAGE 1 – EVALUATION SHEET
MECHANICS (10%) – 12 POINTS
1. Grammatical and spelling errors (possible 8 points): Average number of errors per page: 0 = 8 pts;
1 = 6 pts;
2-3 = 4 pts;
4-5 = 2 pts;
6-7 = 1 pts;
8 or more = 0 pts. _____

2. Follows required writing guidelines, including spacing, margins, and citation of sources. (4 points) _____

ORGANIZATION (30%) – 36 POINTS
1. Presents critical thought on the topic; i.e., does not merely provide Descriptions or lists. (12 points) _____
2. Shows evidence of careful, logical planning and presentation, with use of appropriate headings throughout proposal. (12 points) _____

3. Shows evidence of careful writing, with clear articulate use of language. (12 points) _____

CONTENT (60%) – 72 POINTS

1. Statement of the problem that clearly describes the topic that is being proposed for research. (10 points) _____
2. Demonstrates the importance of the topic for research and for the respective discipline. (10 points) _____
3. Integrates scholarly material and own ideas in the development and discussion of the topic. (25 points) _____
4. Uses scholarly references and shows a clear link to the existing professional literature and relevant theory. (12 points) _____
5. Poses appropriate and clear research questions/hypotheses. (15 pts

The following are the methods of data collection

Observation method

Observational research is used for studying nonverbal behaviors (gestures, activities, social groupings, etc).

Sommer & Sommer (1986) developed the list shown below to assist in observation research.

1. Specify the question(s) of interest (reason for doing the study).
2. Are the observational categories clearly described? What is being observed and why?
3. Design the measurement instruments (checklists, categories, coding systems, etc.).
4. Is the study designed so that it will be 'Valid (i.e., does it measure what it is supposed to measure, and does it have some generalizability)?
5. Train observers in the use of the instruments and how to conduct observational research.
6. Do a pilot test to (a) test the actual observation procedure and (b) check the reliability of the categories of observation using at least two independent observers.
7. Revise the procedure and instruments in light of the pilot test results. If substantial changes are made to the instrument, run another pilot test to make sure changes will work under the field conditions.
8. Collect, compile, and analyze the data and interpret results.

Casual observation is normally done like unstructured interviews. During the early stages of a research project, casual observation allows the researcher(s) to observe subjects prior to designing questionnaires and/or interview formats.

Types of Observation Studies

Ethnographies which are observations of groups

Grounded theory which uses multi-staged data collection Phenomenological studies which studying subjects over a period of time through developing relationships with them and reporting findings based on research “experiences”.

Case studies which use various data to investigate the subject over time and by activity
Each research method has its strengths and weaknesses. When designing a research study it is important to decide what the outcome (data) the study will produce then select the best methodology to produce that desired information.

SURVEY: This is the method used to describe a method of gathering information from a sample of individuals in a population in order to learn something about the larger population from which the sample is drawn.

Types of surveys: descriptive statistics which is largely conducted by the government to obtain major descriptive information about the population and its density, the composition of the labor force, national health statistics etc.

Survey for social research: mainly used by social scientists to gather and a analyze information about the social and economic conditions of the population or segments of the population and leads to the better understanding of human beings in their social settings.

Market research survey: this is carried on by business in consumer market research to determine consumer needs and the effectiveness of marketing programs.

The Steps In A Survey Project

1. Establish the goals of the project or what you want to learn
2. Determine your sample –whom you will interview
3. Choose interviewing methodology-how you will interview
4. Create your questionnaire –what you ask
5. Pretest the questionnaire, if practical test the questions
6. conduct interviews and enter data
7. Analyse the data and produce the report

Interviews; this may be defined as a deliberate conversation between the interviewer and an informant conducted for the purpose of collecting information. It may take the form of face to face interview schedule or telephone survey by Mbaaga (Ibid.). it may be formal or informal interview

Formal interview: this type involves the pre determined list of questions that are asked to all the interviewees in the same order. They may be structured with standardized questions or semi-structured with some degree of flexibility and the more structured the interview, the easier it is to quantify the results.

Group Interview: (Focus Group Discussion) FGD

Richard Krueger (1988), describe the focus group as a special type of group in terms of purpose, size, composition, and procedures. A focus group is typically composed of seven to twelve participants who are unfamiliar with each other and conducted by

a trained interviewer. These participants are selected because they have certain characteristics in common that relate to the topic of the focus group.

The researcher creates a permissive environment in the focus group that nurtures different perceptions and points of view, without pressuring participants to vote, plan, or reach consensus. The group discussion is conducted several times with similar types of participants to identify trends and patterns in perceptions. Careful and systematic analyses of the discussions provide clues and insights as to how a product, service, or opportunity is perceived.

A focus group can be defined as a carefully planned discussion designed to obtain perceptions on a defined area of interest in a permissive, non threatening environment. It is conducted with approximately seven to twelve people by a skilled interviewer. The discussion is relaxed, comfortable, and often enjoyable for participants as they share their ideas and perceptions. Group members influence each other by responding to ideas and comments in the discussion.

Characteristics Of Focus Groups

Focus group interviews typically have four characteristics:

1. Identify the target market (people who possess certain characteristics);
2. Provide a short introduction and background on the issue to be discussed;
3. Have focus group members write their responses to the issue(s);
4. Facilitate group discussion;
5. Provide a summary of the focus group issues at the end of the meeting.

Other types of group processes used in human services (delphic, nominal, planning, therapeutic, sensitivity, or advisory) may have one or more of these features, but not in the same combination as those of focus group interviews.

Key Data Collection Techniques

Face to Face or personal interviews
Telephone interviews
Mail / postal interviews
E-mail interviews
Internet/ intranet (WEB PAGE)
How ever the above techniques may have advantages and disadvantages

The above techniques may be applied using a questionnaire,

Questionnaire: Is a predetermined written list of questions, which may be answered, by a subject or respondent.

The type of population, the nature of the research question and resources available determines the type of questionnaire to be used.

Planning the Survey

I. Hypotheses

- Descriptive hypotheses best answered by this method
- If you don't consider your hypotheses before writing your survey, you may be Overwhelmed with data and End up with data that doesn't address your concerns

- Good to go through several different scenarios of outcome from survey to see whether different outcomes would indeed have different implications for: Your hypotheses and What action you will take (if survey is to address applied issue)

II. After determining precisely what you want to find out, determine who you want to ask

A. Defining your population
B. Determining whether to use the population or to sample
C. Types of samples
1. Convenience samples
2. Quota samples
3. Random samples: Allow you to use inferential statistics to determine how closely your results reflect their population
4. Stratified random samples: The advantage of random samples, but with a smaller sample and/or greater accuracy

III. Questionnaire, Interview, or Telephone Survey?

A. Issues to consider
1. Cost
2. Response rate
3. Honesty of responses
4. Standardization
B. The case for the telephone survey

IV. Format issues:

A. Format of questions
1. Dichotomous versus continuous
2. Fixed versus open-ended

B. Format of survey
1. Structured
2. Semi-structured
3. Unstructured

C. Why a novice might be better off with fixed alternative questions and a structured survey:
1. Data is easily coded
2. Structure may reduce investigator bias: Data on hypothesis-confirming bias (Snyder, 1984, Snyder, 1981, Snyder and Cantor, 1979)

V. Rules for asking good questions

A. Use words a third-grader would understand
B. Use words that won't be misinterpreted
C. Avoid personal questions
D. Make sure your sample has the information you seek
E. Avoid leading questions
F. Avoid questions loaded with social-desirability
G. Avoid double-barreled questions negation
H. Keep questions short and concise

I. Avoid negations barrel
J. Avoid irrelevant questions
K. Pretest the questions

VI. Analyzing survey data
A. Summarizing data
B. Summarizing interval data
C. Summarizing ordinal or nominal data
D. Using inferential statistics
1. Parameter estimation with interval data
2. Hypothesis testing with interval data
a. Relationships among more than two variables
b. More complicated procedures
E. Using inferential statistics with nominal data
1. Estimating overall percentages in population
2. Relationships between variables

A. Literature review
1. To avoid doing a study that has already been done
2. To learn from others' mistakes and successes

B**. Ethical concerns**
1. Assessing potential gain:
- Is it a test of theory?
- Does it address a practical problem?
- Does it open up new lines of inquiry?
- Be sure you're **not** trying to prove the null hypothesis or unwittingly replicating a study that has been done before.
- Peer review

2. Assessing potential harm:
- Are ethical principles compromised?
- Peer review
- Review by professor
- Review by ethics committee
- Practical concerns

Should scientific principles be used to study humans and other animals?
Only if:
A. The potential benefits exceed the potential harm.
B. The potential for harm has been minimized
II. Maximizing benefits
A. Getting a good, useful idea to test.
B. Providing a valid test of that idea. The study should have at least one of the following three types of validity. The type or types needed depend on the research question.

Documentary Analysis

This is also known as the study of documents where documents are the materials which contain the information we wish to study. It is important to note that all studies begin by a review of related literature and certain documents; this may become a method of data collection if the research based on available documents.

Documents are divided into two broad categories namely primary (eye witness account written by people who experienced the particular event or behavior) and secondary documents (accounts written by those who were not present during the event but received the necessary information for compiling the documents by interviewing the eyewitnesses or reading the primary documents.

Primary documents may include things like letters, agendas, committee minutes, financial accounts and diaries. Secondary documents may include things like books, newspapers, journals articles etc.

Forms of documentary Analysis: Historical, Literature, Meta-Analysis Diaries and Content Analysis

Content Analysis

Content analysis systematically describes the form or content of written and/or spoken material. It is used to quantitatively studying mass media. The technique uses secondary data and is considered unobtrusive research.
The first step is to select the media to be studied and the research topic. Then develop a classification system to record the information. The techniques can use trained judges or a computer program can be used to sort the data to increase the reliability of the process.
Content analysis is a tedious process due to the requirement that each data source be analyzed along a number of dimensions. It may also be inductive (identifies themes and patterns) or deductive (quantifies frequencies of data). The results are descriptive, but will also indicate trends or issues of interest.

Experimental Designs

1. True Designs
2. Quasi Designs
3. Ex Post Facto Designs

True Designs - Five Basic Steps to Experimental Research Design

1. Survey the literature for current research related to your study.
2. Define the problem, formulate a hypothesis, define basic terms and variables, and operationalize variables.
3. Develop a research plan:
    a. Identify confounding/mediating variables that may contaminate the experiment, and develop methods to control or minimize them.
    b. Select a research design as seen already above
    c. Randomly select subjects and randomly assign them to groups.
    d. Validate all instruments used.
    e. Develop data collection procedures, conduct a pilot study, and refine the instrument.
    f. State the null and alternative hypotheses and set the statistical significance

level of the study.
4. Conduct the research experiment(s).
5. Analyze all data, conduct appropriate statistical tests and report results.

Quasi Designs

The primary difference between true designs and quasi designs is that quasi designs do not use random assignment into treatment or control groups since this design is used in existing naturally occurring settings.
Groups are given pretests, then one group is given a treatment and then both groups are given a post-test. This creates a continuous question of internal and external validity, since the subjects are self-selected. The steps used in a quasi design are the same as true designs.

Ex Post Facto Designs

An ex post facto design will determine which variables discriminate between subject groups.
Steps in an Ex Post Facto Design
1. Formulate the research problem including identification of factors that may influence dependent variable(s).
2. Identify alternate hypotheses that may explain the relationships.
3. Identify and select subject groups.
4. Collect and analyze data

Ex post facto studies cannot prove causation, but may provide insight into understanding of phenomenon.

Data Analysis

The data collected in a given research can be analyzed either qualitatively or quantitatively depending on the nature of the data collected. In analysing the data,you need to develop skills in finding patterns in the data and to have the ability to isolate critical facts and information from other information that is not so important. Although the analysis depends on the type of data collected, how the data collected depends on the type analysis anticipated.

Qualitative Data Analysis

Its normally analyzed continuously during and after data collection (Mbaaga 1990). The analysis involves a pure description of events, places, people or objects. This will enable the reader to know what happened, what it was like from the participant's activities etc. In most cases qualitative analysis does not go beyond the measure of central tendency and measure of dispersion (mean, mode, median, range, and standard deviation)

Thus the analysis takes place simultaneously during and after the data collection (Merrian et al 1995), this enables the researcher to make adjustments, restructure and if possible examine emerging concepts not originally in the study design.
How ever NVivo 8 is a software package for analysis of qualitative data, such as transcripts of in-depth interviews, focus groups and field notes.

Quantitative Data Analysis

This type of data can be analyzed by use of statistical procedures after the researcher has measured the relevant variables. The first step in quantitative data analysis is to prepare the raw data and transform them into a data set in machine readable format (in a form that can be read by a computer

Raw data is a collection of unprocessed measurements such as pile of completed questionnaires, strings of numerical codes applied to written texts etc these are then transformed into ordered data set before they can be analysed. The data preparation process involves three important tasks namely;

- Coding
- Entering and
- creating

Coding where the data is grouped into certain categories and assigned specific codes and process involves translating verbal responses into numerical codes that facilitates data manipulation. Then after the data is coded it is entered into computer for analysis using the appropriate statistical package. How ever before the analysis, data has to be cleaned i;e the information has to be edited or cross checked for errors if good results are to be expected and Following data entry, some data manipulation is usually needed to manipulate the entered ("raw") data into structures that are suitable for analysis. Typically, data manipulation tasks include

- *Copying data*
- *Selecting subsets of the data*
- *Restructuring the data to make analysis easier*
- *Transforming data*
- *Merging data at different levels*

Copying data

To avoid confusing the entry and the management, we suggest that you copy the raw data to a second sheet. This is easily done in Excel by creating a new worksheet (Insert => Worksheet), using Edit => Copy to copy the original data to the clipboard, and then Edit => Paste Special (rather than Paste) and clicking the Paste Link button. This ensures that the data in the new sheet are linked to the original data, so that any subsequent changes to the original are reflected automatically in the copy.

It is a good idea to get into the habit of naming sheets. In general your analysis will be simpler to follow if you use more sheets, rather than putting all your information together in a few sheets. But you then need to give them meaningful names so you can easily find them and retrieve the information that you want.
Also, you can take advantage of Excel's facility for naming cells or areas of cells (Insert => Name => Define). This makes it much easier to refer to your data, rather than using cell addresses.

Selecting subsets of the data

It is often useful to look at subsets of the cases (rows) in your data, for example to concentrate on female subjects, or on cases that show abnormally large values for a particular variable. Excel has some excellent filtering facilities for selecting rows of interest, in particular the automatic filter (Data => Filter => Autofilter). This allows you to display only those rows containing particular values of one or more variables. By using the Custom option, you can specify up to two specific criteria for each variable. All rows that do not meet the criteria are hidden from view (but are not deleted). More complex filtering can be achieved using the Advanced Filter facility (Data => Filter => Advanced Filter), but this is more difficult to use.

Restructuring data

It is often necessary to extract some of the data and convert them to a different structure. The most common requirement is to split a data column into several columns, one for each level of a factor (or combination of factors). For example, we may wish to separate data for males and females, so that we can process them separately or compare them.
We call this process "unstacking", since in list format the data for a variable are held in a single column for all levels of a factor (i.e. stacked on top of each other).

Transforming data

You will commonly need to perform some transformations of the original data (for example, taking logarithms or converting from grammes per plot to tonnes per hectare). This is easily achieved by adding a new column to a copy of the data, and using a suitable Excel formula to transform the data contained in an existing column. The need to add new columns to your data is one of the reasons that we recommend taking a copy of your original data.

Merging data at different levels

When you have data at multiple levels, you may wish to incorporate data about one level in the data at a more detailed level. For example, records about individuals may contain an indication of which household they belong to. You may wish to add some details about the households to the individual data.

This can be achieved using the Excel lookup function. For each column of household information that you want to incorporate, you should create a new column in the individual table and use lookup to extract the appropriate information from the household data for each individual.
The analysis can be done at three levels depending on the investigation of the study namely;

At univariate level of Analysis: frequency tables to provide an enumeration of activity of people that have pre-specified characteristic. Percentages can also be presented so as to show the distribution of people that have certain characteristics within the total population of the study.

Suitable aids to visualizing your data fall generally into the following categories:
Graphics, which give a picture of the structure of your data and the relationships within them

Tables, which enable you to compare values, frequency counts, etc between levels of factors. Other univariate descriptive statistics include measures central tendency (e.g. mean, median, mode),deciles, quartiles and measures of dispersion(e.g. ,range, mean deviation, standard deviation, coefficient of variation).

At The Bivariate this involves making contingency tables between the dependent variable and the independent (explanatory variables). In order to establish relationship between the independent and the dependent variable Pearson -chi square test statistics can be used to measure the degree of association.

At multivariate can be used to carry out further investigation to establish the relative importance of the dependent variable.

NB programs we teach most statistical packages used in analysis like SPSS, STATA

Difference Between Research Proposal And Project Proposal

A research proposal	A project proposal
Exclusively written by academics and students in institutions of higher learning	Not restricted to academics
Review of related literature is emphasized	Literature review section is absent
Focuses on collecting data on a problem which will be analyzed for drawing conclusion and making recommendation	Makes use of the recommendations of a study to solve the problems of a given community
Bibliography and references are a must	Bibliography and reference may not be necessary
May be written and presented in chapters	Written and presented in sections
Proposals especially written by students may not necessarily be presented to seek financial assistance	The primary aim is to seek financial assistance
May not need a follow up action	Emphasizes a follow up action
Evaluation plan not necessary	Evaluation plan a must

The structure of a research report

- **Title**
- **Table of content**
- **An abstract**
- **Chapter one: Background to the problem**
- **Chapter two: Literature review**
- **Chapter three: Methodology**
- **Chapter four : Results /findings of the study**
- **Chapter five: Discussion, Conclusion and Recommendations**
- **References**
- **Appendices**

    - Timetable
    - Budget
    - Research instruments

- Field photograps
- Introduction letters
- Any other important document

Appendix

WRITING UP RESEARCH

This is how method fits into your thesis:

	Introduction: introduction of research problem introduction of objectives introduction of how objectives will be achieved (methodology), optional introduction of main findings and conclusions, optional
	Literature review: review of previous work relating to research problem (to define, explain, justify) review of previous work relating to methodology (to define, explain, justify) review of previous work relating to results (particularly reliability, etc.) i.e identify weaknesses and success
	Method (how the results were achieved): explanation of how data was collected/generated · explanation of how data was analyzed explanation of methodological problems and their solutions or effects
	Results and discussion: presentation of results interpretation of results discussion of results (e.g. comparison with results in previous research, effects of methods used on the data obtained)
	Conclusions: has the research problem been "solved"? to what extent have the objectives been achieved? what has been learnt from the results? how can this knowledge be used? what are the shortcomings of the research, or the research methodology? etc.
	analysis: classes of data are collected and studies conducted to discern patterns and formulate principles that might guide future action
	Case study: the background, development, current conditions and environmental interactions of one or more individuals, groups, communities, businesses or institutions is observed, recorded and analyzed for stages of patterns in relation to internal and external influences.
	Comparison: two or more existing situations are studied to determine their similarities and differences.
	Correlation-prediction: statistically significant correlation coefficients between and among a number of factors are sought and interpreted.
	Evaluation: research to determine whether a program or project followed the prescribed procedures and achieved the stated outcomes.
	Design-demonstration: new systems or programs are constructed, tested and evaluated
	Experiment: one or more variables are manipulated and the results analyzed.
	Survey-questionnaire: behaviors, beliefs and observations of specific groups are identified, reported and interpreted.
	Status: a representative or selected sample of one or more phenomena is examined to determine its special characteristics.
	Theory construction: an attempt to find or describe principles that explain how things work the way they do.
	Trend analysis: predicting or forecasting the future direction of events

	Descriptive narration tells the story from beginning to end in chronological order, utilizing limited generalizations and synthesized facts.
	Interpretive analysis relates one event to another event. The event is studied and described within a broader con- text to add meaning and credibility to the data. For example, an examination of the development of a local jurisdiction's ability to dedicate land for parks may be related to the urbanization and loss of open space in our communities.
	Comparative analysis examines similarities and differences in events during different time periods-for example, the budget-cutting priorities and procedures of the Proposition 13 era of the early 1980s in parks and recreation as compared to the budget-cutting priorities and procedures of today
	Theoretical and philosophical analysis utilizes historical parallels, past trends, and sequences of events to suggest the past, present, and future of the topic being researched. Findings would be used to develop a theory . For example, an analysis of public recreation agency goals and objectives of previous eras can be used to describe the future in the context of social, political, economic, technological, and cultural changes in society.

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Course Name	**: Information Technology**
Course Code	**: APBSCH 301**
Course Level	**: Level 3**
Credit Unit	**: 4 CU**
Contact Hours	**: 60 Hrs**

Course Description
This Course is built on the previous acquired knowledge of Computer applications through theoretical lecturers and laboratory sessions. The course explores systems development life cycle (SDLC), describing the data processing cycle, data processing, security issues & concerns in systems protection of its information, office automation, data base management system (DBMS)

Course Objectives
· To expose students to practical knowledge of developing information and database system for organizations and business firms.
· To enable understand how information and data is processed through an automated cycle.
· To help them develop skills in data entry and retrieval within different computer systems.

Course Content
Systems Development Life cycle (SDLC)
· Stages involved in the SDLC include; Problem identification, feasibility study, systems investigation, systems analysis, systems implementation, systems implementation, review and maintenance

Data Processing Cycle
· The input function
· The processing function
· The output function
· The storage function

Data processing operations
· Batch processing
· Real-time processing
· Features of a storage and retrieval system

Security issues/ concerns
· Risks to the computer users
· Risks to hardware
· Physical Access control
· Risks to storage media
· Risks to data
· Best password practice(BPP)
· Telecommunications dangers

· Encryption and other safety measures on telecommunication

Data Base Management systems (DBMS)
· Definition of DBMS
· DBMS structures
· Application program
· Elements of a DBMS
· Facilities offered by database management systems
· Benefits of a DBMS
· Designing a database
· Verification and validation checks

Office Automation
· Spread sheet
· Features of spread sheets
· Word processing
· Microsoft Access
· Internet

Mode of delivery Face to face lectures
Assessment
Coursework 40%
Exams 60%
Total Mark 100%

CHAPTER FIVE

SYSTEMS DEVELOPMENT LIFE CYCLE (SDLC)

5:0 INTRODUCTION

Under this Chapter we shall look at the following:
- Feasibility study
- Systems investigation
- Systems analysis
- Systems design
- Systems implementation
- Review and maintenance

A company or an organisation of any sort will normally have a strategic plan.
This strategic plan could be probably increasing sales by say 30% in the next 5 years.

When such a plan is in place, departments in the organisation will also set their strategies, to ensure that they contribute as required to the overall strategic plan. These departments may include; Production, Marketing, Sales, IT, Human Resource, etc.

Definition
A strategy is a general statement of a business's long-term objectives and goals and the ways by which these will be achieved.

5:1 THE IT STRATEGY

This will always deal with the organisational needs from IT, the organisation's current use of IT and the potential opportunities that IT can bring.
During the evaluation of current use of IT in the organisation, Gaps (differences) can be identified. E.g. does the system meet the desired requirements, are users happy, is the system reliable, etc.

5:2 STAGES IN THE SYSTEMS DEVELOPMENT LIFE CYCLE

This is the cycle that any system, which can be used in an organisation, can be developed through. It is called a cycle because the stages involved in the development will always be continuous and repeat themselves in the same way.

The stages involved in the systems development life cycle include the following in their order
- Problem identification
- Feasibility study
- Systems investigation

- Systems analysis
- Systems design
- Systems implementation
- Review and maintenance

Definition
A system is a collection of activities and elements organised to accomplish a goal.

A computer information system (CIS) is a collection of hardware, software, people procedures and data that work together to provide information essential to running an organisation.
Life cycle -This implies t hat the system changes continually, in other words that, development of computer information system within an organisation is an ongoing activity.

PROBLEM IDENTIFICATION
The SDLC typically begins by identifying a problem or need. It involves a preliminary investigation of a proposed project to determine the need for a new information system.

An end user usually requests this or manger who wants something done that is not presently being done.

The exact problem or flow in the system should be known e.g. slowness resulting in the incompetence of the system, too heavy work than is manageable effectively by the system and areas of poor performance being identified by management which increase the level of indirect expenses.

Possible plans or suggestions with alternative arrangements to the present ones are then forwarded to management in a report - to decide whether to pursue the project further.

If so then management hands the terms of reference to the system analyst. Once the analyst get a go ahead, he conducts a feasibility study within the limits of the terms of reference.

FEASIBILITY STUDY
This is a forma study to decide what type of system can be developed which meets the needs of the organisation.

It involves a brief review of the existing system and the identification of a range of possible alternative solutions.

The systems analyst here will estimate the costs and benefits of the systems with greater accuracy.
The alternative that promises a significant return on the investment will be accepted.

Feasibility study comprises the following:

♦Technical feasibility
♦Operational feasibility
♦Financial feasibility
♦ Economic feasibility
♦Social feasibility or organisational feasibility

1. Technical feasibility
The requirements, as defined in the feasibility study, must be technically achievable. This means that any proposed solution must be capable of being implemented using available hard ware, soft ware and other equipment.

2. Financial feasibility
The certified public accountant will have an in depth role to play at this stage in proceedings. The economic contribution of the whole system must be assessed.

At this level, the cost-benefit analysis will be carried out on all the possible alternatives, to identify the one with best returns.

There are three principal methods of evaluating a capital project

i) **Payback Period**
This method of investment appraisal calculates the length of time a project will take to recoup the initial investment - that is, how long a project will take to pay for itself. The method is based on cash flows.

ii) **Accounting Rate of Return**
This method, also called return on investment, calculates the profits that will be earned by a project and expresses this as a percentage of the capital invested in the project. The higher the rate of return, the higher a project is ranked. This method is based on
accounting results rather than cash flows.

iii) **Discounted Cash Flow (DCF)**
This method can be sub divided into two

♦**Net Present Value (NPV)**
This considers all relevant cash flows associated with a project over the whole of its life and adjusts those occurring in future years to 'present value' by discounting at a rate called the 'cost of capital'.

♦ **Internal rate of return (IRR)**
This involves comparing the rate of return expected from the project calculated On a discounted cash flow basis with the rate used as the cost of capital. Projects with an IRR higher than the cost of capital are worth undertaking.

3. Organisational feasibility
The culture of the organisation, its structure, working practices, behavioural patterns and social systems need to be considered.

After the outlined project specifications are prepared these are presented to users who, with the assistance of technical staff will evaluate each option and make a final choice.

The results of this are included in a feasibility report.

SYSTEMS INVESTIGATION

The systems investigation is a detailed fact finding exercise about the area under consideration.

The following will be considered here by the project team;

♦Determine the inputs, outputs, processing methods and volumes of the current system

♦Examining controls, staffing and costs and also reviews the organisational structure.

♦Also considers the expected growth of the organisation and its future requirements.

The stages involved in this phase of systems development are as follows:

a) Fact finding by means of questionnaires, interviews, observation, reading handbooks, manuals, organisational charts.
b) Fact recording using flow charts, decision tables, narrative descriptions, etc.
c) Evaluation, assessing the strengths and weaknesses of the existing system.

Methods used in obtaining facts about the existing system:

♦Interviews

If interviews are conducted effectively, they allow the interviewer to provide information as well as obtain it. This method is the most appropriate for senior management, as other approaches may not be appropriate at executive levels.

♦Questionnaires

The use of questionnaires may be useful whenever a limited amount of information is required from a large number of individuals, or where the organisation is decentralised with many 'separate entity' locations. Questions are normally set in such a way that each one is equal to another and the evaluation is done by simply adding the number of 'yes' and 'no'.

♦Observation

Here the investigator simply observes/watches the procedures as they occur. The problem here is that people normally tend to behave abnormally especially if they know that they are being watched.

♦Document Review

The systems analyst must investigate the document that are used in the system., e.g. organisational charts, procedures mammals and standard operational forms.

The overriding risk is that staff do not follow documented policies and procedure or that these documents have not been properly updated, so this method is best used within other techniques.

SYSTEM ANALYSIS

At this phase, a full documentation of the current system, oftenly using data flow diagrams is done. The ways in which the system can be changed to improve it are then considered, and diagrams are redrawn to reflect the required system.

Definition

A data flow diagram is a recording of the ways in which data is processed, without bothering with the equipment used.

SYSTEMS DESIGN

This involves the detailed systems specification draw up.
The selection of the suitable hardware, software and any required human - computer interface is done at this level.

Hard ware

In general terms, the choice of computer hardware will depend on the following factors:

♦User requirements - will the hardware suite in with the user's requirements.
♦Power - the computer power should be sufficient for the current and future requirements.
♦Reliability - there should be a low expected 'break down' rate. Back-up facilities should be available.
♦Simplicity - simple systems are probably best for small organisations.
♦Ease of communication - the system (hard ware and soft ware) should be able to communicate well with the user.
♦Flexibility - the hardware should be able to meet new requirements as they emerge, especially more powerful CPUs.
♦Cost - it must be affordable.

Soft ware

There are several points to consider while choosing a suitable package. They include the following:

♦**User requirements**

Does the package fit the user's particular requirements? E.g. report production, anticipated volume of data, etc.

♦Processing times

Is the processing times fast enough?

♦Documentation

The documentation should be full and clear to the user e.g. the manuals should easily be understood.

♦Controls - what controls are included in the package e.g. pass words, data validation checks, spell checks, etc.

♦Compatibility - will the package run on the user's computer?
♦Support and maintenance - what support and maintenance services will the software supplier provide?
♦User friendliness
Is the package easy to use? E.g. with means and clear on-screen prompts for the Key board operator.
♦Cost
Comparative costs of different packages should be a low priority. The company Should obtain what it needs for efficient operation. Off-the-shelf packages are a little cheaper that tailor made packages (bespoke).

A key question regarding software is whether to develop a system specially or buy what is already available (off-the-shelf)

Bespoke Packages
These are designed and written either 'in-house' by the IS department or externally by a software house. They are normally developed according to the customer specifications.

Off-the shelf packages
These are packages that are developed and sold to lots of users and intended to handle the most common user requirements.

Advantages of bespoke packages include:
i) The company owns the software and may be able to sell it to other potential users.
ii) The company can be able to do things with its software that competitors cannot do with theirs.
iii) It is likely that the package will be able to do all that is required it to do both now and in the future.

Disadvantages
a) The soft ware may not work at all.
b) There may be long delay before the soft ware is ready.
c) The cost is relatively high compared to off-the-shelf packages.

Advantages of using off-the shelf packages
a) It is available now and ready for use.
b) It is almost certainly cheaper than a specially commissioned product.
c) Expected high quality because software specialist writes them.
d) The software manufacturer will continually update a successful package, and so the version that a customer buys should be up-to-date.
e) Other users will have used the package already, and a well established package should be error-free.
f) These packages (good) are usually well-documented with easy to follow user manuals.

Disadvantages

a) A computer user gets a standardised solution to a data processing task. This may not well suite in the individual user's particular needs.
b) The user is dependent on the supplier for maintenance of the package.

c) There is always no competitive advantage as the competitors can use the same package.

Systems prototypes are likely to be developed here.

Definition
A prototype is a diagrammatic representation of the actual proposed system. It includes the number of hardware required, its configuration, information flow, staff, etc.

SYSTEMS INSTALLATION AND IMPLEMENTATION

Under this phase, the following stages are normally followed;

a) Installation of hardware and software
b) Testing
c) Staff training and production of documentation
d) Conversion of files and database creation
e) Change over

The items/stages in the list above do not necessarily happen in a set chronological order, and some can be done at the same time - for example staff training and system testing can be part of the same operation.

Installation of equipment
Installing a mainframe computer or a large network is a major operation that is carried out by the manufacturer/supplier.

Installation of a PC and other peripheral equipment will need a little bit of planning.

♦They should not be put in small, hot rooms since they generate some heat.
♦Large desks may be advisable, to accommodate a screen and keyboard and leave some free desk space for the officer worker to use.
♦There should be plenty of power sockets-enough to meet future needs as t he system grows, not just immediate needs.
♦If noisy printers are being purchased, it may be advisable to locate these in a separate printer room to cut down the noise for office workers.
♦There should be a telephone near the computer, for communicating with the dealer that provides systems support and advice if there is a problem.
♦The cabling for network connections should consider possible future changes in office key out or in system requirements.

After the installation of hardware, then software can be installed too. The can be done very fast there days since software is available on CD-ROMs and DVDs.

Back up copies of the software may also be got.

Testing
Programs must be thoroughly tested as they are being written and the whole system should also be thoroughly checked before implementation, otherwise there is a danger that the new system will go live with faults that might prove costly.
'Test data' is normally used here.
Test data is fed into the computer/new system and the results from the new system are compared with the already existing/pre-determined results from the old system.
Any deviations can be used to make decisions as to whether the system has passed or failed the test.

Training and documentation
Staff training in the use of information technology is as important as the technology itself. There is no use in having it if people don't know hoe to use it. This can be done through, lectures, discussion meetings, handbooks, trials/tests, internal company magazines, courses, manuals, etc.

Conversion of files
This means converting existing files into a format suitable for the new system.
Large organisations may use conversion software to change over:

Once the new system has been fully and satisfactorily tested, the change over can be made. This may be according to one of four approaches.
- Direct change over
- Parallel running
- Pilot tests
- 'Phased' or 'Stayed' implementation

Direct change over
This is the method of changeover in which the old system is completely replaced by the new system in one move.

This may be unavoidable where the two systems are substantially different, or where extra staff to over seed parallel running are unobtainable.

It is very cheap, but very risky as well and it is best used in business slack periods e.g. Christmas, holidays, etc.

Parallel running
This is a form of changeover where by the old and new systems are run in parallel for a period of time, both processing current data and enabling cross checking to be done.

It is a bit safe (less risky), but if the two systems are different, then cross-checking may be hard or impossible. Also, there is a delay in the cultural implementation of the new system and also a need for more staff to run the two system - an indication of high expenses.

Pilot Operation
This may involve a complete logical part of the whole system being chosen and run as a unit on the new system. If that is shown to be working well, the remaining parts are then transferred.

Gradually the whole system can be transferred in this piece meal fashion.
This method is cheaper and easier to control than parallel running, and provides a greater degree of safety than does a direct change over.

Phased Implementation
This involves a parallel running or direct change over done to a system of a particular section, say a branch of a company.

This method is suitable for very large projects and/or those where distinct parts of the system are geographically dispersed.

At this phase/stage (systems installation) of the SDLC, the internal auditors role is usually very important, especially during the testing of the new system.

This is because the facts he obtains at the testing stage can be used in future evaluation of the system and any audits that may be carried out.

A reference can always be made to the facts generated by the auditor at the testing stage to ensure there are no illegal amendments to the system.

SYSTEMS MAINTENANCE AND REVIEW

Maintenance
This is geared towards keeping the system running smoothly and achieving the intended goals.

There are three types of maintenance activities,
- ♦Corrective maintenance
- ♦ Perfective maintenance
- ♦Adaptive maintenance

Corrective maintenance
Is carried out when there is a systems failure of some kind, for example in processing or in an implementation procedure. Its objective is to ensure that systems remain operational.

Perfective maintenance

Is carried out in order to perfect the software, or to improve software so that the processing inefficiencies are eliminated and performance is enhanced.

Adaptive maintenance

Is carried out to take account of anticipated changes in the processing environment. E.g. the new taxation legislation might require change to be made to payroll software.

Post Implementation Review

This is devoted to uncovering problems in the system so as they can be fine tuned. Also it reviews t he activities involving methods used in developing the system. It is of two steps:

♦**Development review**

Here the problems that arose during the development phases of the life cycle are analysed. Major discussions focus on expenditure and the period taken to complete the new system. Positive or negative variances in the expenditures are analysed. Mistakes resulting to negative variances are noted and are unlikely to be repeated in the future like wise positive variances.

Also mistakes that led to the delay are noted and avoided in the future.

♦**Implementation Review**

This step investigates the specific successes and problems of system operations. These activities take some time after systems implementation say 1½ years. It is intended to ensure that the system meets the desired goals it was implemented for.

In summary still, the systems development life cycle follows these stages and it is very examinable.

1. Problem identification
2. Feasibility study
3. Systems investigation - detailed
4. Systems analysis
5. Systems design
6. Systems implementation
7. Systems maintenance and review

Question:

a) In the SDLC, which stage go you think directly involves a certified public accountant like you, and what would you be required for?
b) Describe for methods of system change over.
c) Distinguish between off-the shelf and bespoke software.
d) What is feasibility study?

CHAPTER SIX

THE DATA PROCESSING CYCLE

6:0 INTRODUCTION

Under this Chapter we shall look at the following:

- ♦Processing cycle
- ♦ Processing operations
- ♦Storage and retrieval systems
- ♦Classification of files

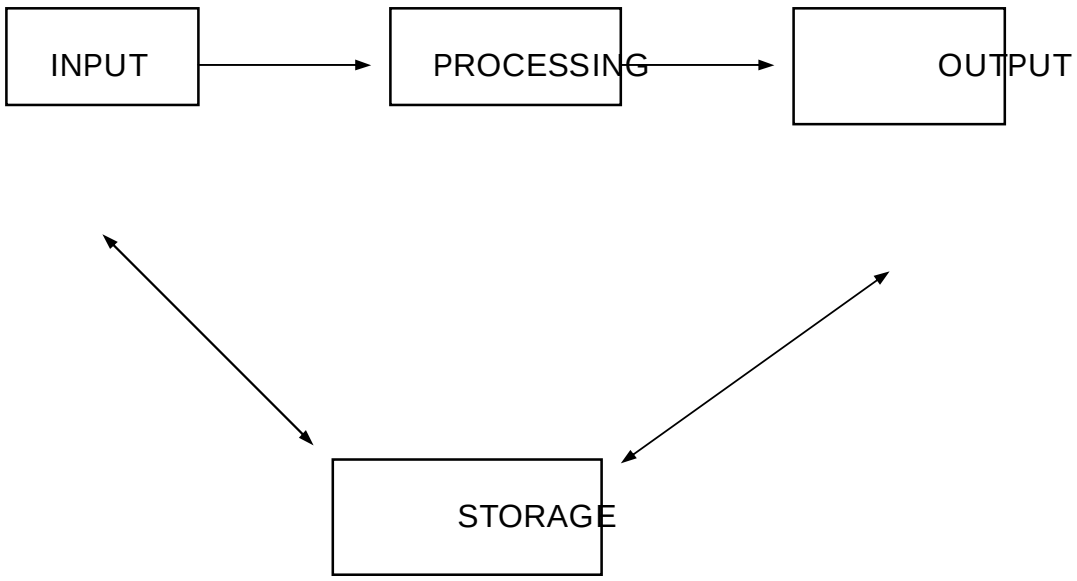
6:1 DATA PROCESSING CYCLE

Data processing, whether it is done manually or by computer, follows a cycle of input, process, output and storage.

Data processing is the acquisition, arrangement, storage and maintenance of data. The use of the computer is just to speed up and allow the use of complicated models compared to other methods.

A cycle refers to a sequence of activities performed in order, that produces expected dependable results.

The DP Cycle



The input function;

This involves gathering/collecting needed data items and entering the items into the information system for processing. This is done by the computer input devices.

Inputs can come from multiple sources. The quality, accuracy and completeness of data will affect the quality of the resulting information.

The processing function
This involves any method for using, handling, processing operations transforms transform data into meaningful information.

Processing creates new information which in turn is returned to files for updating and, or communicated to people.

The output information
Output delivers the results of processing i.e. information which can in turn be communicated to the people known as users of computers or information. This is normally done by the output devices.

The storage information
An information system needs a massive supply of data records and files. In this sense, storage is a vital part of an information system. The storage function also involves updating files to incorporate processed data. Storage can be done into the various types of storage peripherals that you already know.

6:2 DATA PROCESSING OPERATIONS

Files are used to store data and information that will be needed again in future or for the current use.
A file is a collection of records with similar characteristics.

The main types of data processing operations involving files are file updating, file maintenance and file enquiry or file interrogation.

Both manual and computer data processing can be divided into two broad types:
- ♦Batch processing
- ♦Real-time processing

Batch Processing
This is the processing as a group of a number of transactions of a similar kind which have been entered over a period of time to a computer system. Data is entered first, and then gets processed at a go as a group.

E.g. you may enter all the names into the system and then command it to arrange them in alphabetical order.

Transaction is any updating work on a database file. This can include entry of a new record, amending a record, deleting a record, etc.

Real-time processing
This is the continual receiving and rapid processing of data so as to be able or more less instantly to feed back the results of that input to the source of the data.

Real-time processing uses an 'on-line' computer system to interrogate or update files as requested rather than batching such requests together for subsequent processing.

On-line

On-line refers to a machine, which is under the direct control of the principal central processor for that hardware configuration.

Modern computers such as PCs are on-line by definition and likewise PCs in a network have permanent access to the server.

6:3 FEATURES OF A STORAGE AND RETRIEVAL SYSTEM

Whatever form documents and recorded information take, if they are to be of any use, they must be kept in a suitable way so that:

a) Authorised people can get to the information they require quickly and easily;
b) Information can be added to, updated and deleted as necessary;
c) Information is safe from fire loss or handling damage as long as it is required;
d) Accessibility, flexibility and security are achieved as cheaply as possible.

Classification of Files

Accessibility is a key point. When information is filed, it has to be filed in such a way that its users know where it is and how to retrieve it later when it is needed.

This means having different files for different types of information, and then holding each file in a particular order. Information might be divided into categories and then held in a particular order within each category.

There are various ways in which information can be grouped together, or classified.

a) By name (for example correspondence relating to a particular person)
b) By geography (for example all documents relating to a particular country, area or city).
c) By subject matter (for example all document relating to a particular contract, transaction or problem).
d) By date (for example all invoices for a certain month or year).
e) By department (for example profits or costs for each department or employee of each department).

Once broad classifications are established, the material can be put into a sequence which will make individual items easier to retrieve.

Again there are various systems for arranging files

a) Alphabetical order - for example customers listed in name order
b) Numerical order - for example invoices listed in numerical order of invoice numbers.
c) Alpha-numerical (A1, A2, A3, B1, B2, and so on).
d) Chronological order -f or example letters within a subject file listed by the date they were written.

SECURITY ISSUES

7:0 INTRODUCTION

Under this topic we shall look at the following,

- ♦Risks to the computer user
- ♦Risks to hardware
- ♦Physical access control
- ♦Controls over personnel
- ♦Risks to storage media
- ♦Risks to data
- ♦Back-up procedures
- ♦Telecommunication risks

A computer system consists not only of hardware, software, data and procedures but also of people.

Because of people, computer systems may be used for both good and bad purposes.

7:1 RISKS TO THE COMPUTER USER

If you have ever worked for long periods at a computer, you may have experienced some discomfort. This might have been caused by your use of the screen or the keyboard.

The VDU

If the screen is too bright, it can cause eyestrain. There are two ways of dealing with the problem. The first is to turn down the brightness; all monitors have a brightness and a contrast switch.
The second is to fit some kind of anti glare filter. All VDUs must have a swivel and tilt capability.

The physical health matters related to computer that have received the most attention recently are the following:-

1. Eye strain and headache

VDUs require using the eyes at close range for a long time, this can create eye strain, headaches and double vision.

And this is normally when the screen is too bright. To avoid this, take a 15 minute break every hour or two. Turn the brightness down.

Use of special anti-glare screen coatings and glare filters. Keep everything
You are
focusing on at about the same distance e.g. the screen, key board, document holder containing your work.

Clean the screen of dust from time to time.

2. Back on neck pain

Many people work at VDU screens and key boards that are in improper positions

resulting in back and neck pain.

To avoid such problems;

♦**Make sure the equipment is adjustable. Your chair should be adjustable for height and angle and should have good back support.**

♦The table on which the monitor stands should be adjustable.

♦The monitor should be detachable.

♦ Document holders should be adjustable.

3. Electro magnetic fields effects

Like many household appliances, VDUs generate invisible electro magnetic fields (EMF) emissions which can pass through the human body.

Recommendations include;

♦Use of low emission monitors.

♦Computer users should sit 2 feet or more from screens and at least 3 feet from neighbouring terminals, as the strongest fields are emitted from the sides and back sides of terminals.

♦Use of glare filters which also reduce the emissions getting to an individual from the screen.

Repetitive Strain Injury (RSI)

Data entry operators in some companies may make as many keystrokes a day as possible. Some have fallen victim to a disorder known as RSI. This name is given to this disorder, which results from fast repetitive work that can cause neck, wrist, hand and arm pains.

Avoidance of RSI includes;

♦Taking short rest breaks

♦Getting plenty of sleep and exercise

♦Loosing weight, sitting straight

♦ Learning stress management techniques

Other computer health risks include:

♦Injury from electric shock

7:2 RISKS TO HARDWARE

Threats to hardware security are computer crimes including virus, electronic break-ins and natural, etc. Keeping information private in part depends on keeping computer systems safe from criminal acts, natural hazards and other threats.

Physical Threats

Fire and Flood

Fire is the most serious hazard to computer systems. Destruction of data can be even more costly than the destruction of hardware.

A fire safety plan is an essential feature of security procedures. It includes;

♦Site preparation - appropriate building materials, fire doors, etc.
♦Detection - e.g. smoke detectors
♦Extinguishing - e.g. sprinklers
♦Training staff in observing fire safety procedures e.g. the smoking in computer rooms

Water is a serious hazard. Flooding and water damage are often encountered following fire fighting activities else where in a building.

This problem can be countered by water proof ceiling and floors together with provision of adequate drainage. In some areas, floods are a natural hazards and therefore basements are generally not regarded as appropriate sites for computers.

Weather
The weather may be a threat. Wind, rain and storms can all cause substantial damage to buildings. Lightning and electrical storms pose an additional threat, as they can play havoc with power supply, causing power failures and power surges.

One way of combating this is by the use of un interrupted (protected) power supplies (UPS) Power failure may be solved by obtaining a separate generator.

Theft
Office break-ins are common. This can be combated by use of burglar proof windows and doors, etc.

7:3 PHYSICAL ACCESS CONTROL
The way to minimise many of the risks discussed in the above section is to introduce a series of physical access controls, to prevent intruders getting near the computer equipment or storage media. Methods of controlling human access include:

♦ Personnel (Security guards)
♦Mechanical devices (e.g. keys, whose issues is recorded)
♦Electronic identification devices (e.g. card-swipe systems, where a card is passed through a reader.

Personal identification numbers (PINs)
In some systems, the user might have a special PIN, which identifies him or her to the system. According to what the user's PIN is, the user will be allowed access to certain data and parts of the system but forbidden access to other parts.

Door locks
Connectional door locks are of value in certain circumstances, particularly where users are only required to pass through the door a couple of times a day. If the number of people using the door increases and the frequency of use is high, it will be difficult to persuade staff to lock the door every time they pass through it.

The major difficulty with this is the fact of key control. And the solution would be installing a combination door lock. This is where a numbered keypad is located outside the door and access allowed only after the correct 'code', or sequence of digits has been entered.

This will be effective if users keep the combination secret and the combination is changed frequently.

Card Entry Systems
This is a more sophisticated means of control than the use of locks, as cards can be programmed to allow access to certain parts of a building only, between certain times.

Security guards
These can be deployed at each entrance in the building to restrict access as may be required.

Video Surveillance
These (video cameras) are normally placed in certain strategic areas say corners, corridors, inside the rooms, etc. to cover any moving object. They are normally connected to a certain surveillance room of several TVs and a person to see the moving objects on TV.

7:4 CONTROL OVER PERSONNEL

Personnel Selection
The personnel who are to operate in the IT departments need to be fully scrutinised at the recruitment state and after recruitment, they need to be managed properly.

Controls related to personnel include the following:
i) Checks and balances so that a security violation must pass through several steps before being implemented.
ii) Segregation of duties (division of responsibilities)
iii)Job rotation so that employees change jobs at random intervals.
iv) Enforced vocations
v) Access to information granted not on rank in the management hierarchy or precedent, but on a need-to-know basis.
vi)Careful selection of personnel especially those to work in the IT departments.

Fraud
Computer frauds come from disgruntled employees, organised crime and hackers.
Networks make certain types of fraud easier; this is because many people/employees can have access to the computer system.

Two types of fraud can be identified

i)Single large-scale funds - usually the stealing of large amounts of money.
ii)Small-scale, but long-term frauds.

Examples of methods of fraud are given below:
i) Creation of fictitious supplier accounts and submission of false invoices, usually for services rather than goods, so that payments are sent to the fictitious supplier.
ii) Corruption and bribery, particularly where individuals are in a position of authority as regards making decisions or suppliers or selecting between tenders.
iii) Misappropriation of incoming cheques from bonafide customers.
iv) Theft of portable fixed assets.
v) Giving unauthorised discounts to customers.
i) Fictitious staff on the pay roll.

These frauds do not all involve computers in the commission, but many could be detected by appropriate use of computer controls, perusal of exception reports, analysis of expenditure ratios and the like.

7:5 RISKS TO STORAGE MEDIA

Handling floppy disks, CDs and tapes

Floppy disks and CDs should be handled with care just as you would treat a valuable CD with care.

i)They break when you bend them or you run them over with the castors of your chair.
ii) Spilling hot drinks over them and leaving them on sunny windows sills will damage them.
i) CDs should particularly be protected from dust, scratches and finger prints.
ii) For floppies write on the label before you stick it on to the disk and write only with a felt tip pen, never a ball point.
iii) Floppies are affected by magnets sot hey should be kept far from magnets.

Tapes can be snipped with scissors, or get knotted up, and they can also be damaged by magnets and heat and liquid. Treat them with the same care you would give to your favourite audio/video tape.

7:6 RISKS TO DATA

Risks to data can be in the form of deliberate or accidental:
i))Destruction (or alteration)
ii)Theft
iii) Unauthorised disclosure

There are therefore two types of controls used to restrict access.

♦Physical access controls (analysed earlier)
♦Logical access control

Basically logical access control consists of a password system. Data destruction can be protected against by taking back-ups and the risk of alteration of data minimised by a variety of basic precautions.

Passwords
Passwords are a set of characters, which may be allocated to a person, a terminal or a facility, which are required to be keyed into the system before further access is permitted.

Passwords can be applied to data files, program files and parts of a program.

i) One password may be required to read a file, but another to write new data to it.
ii) The terminal user can be restricted to the use of certain files and programs
(e.g. in a banking system, junior grades of staff are only allowed to access certain routine programs).

In order to access a system the user needs first to enter a string of characters. If what is entered matches a password issued to an authorised user or valid for that particular terminal the system permits access. Otherwise the system shuts down and may record the attempted unauthorised access.

Disadvantages of passwords

i)By experimenting with possible passwords, an unauthorised person can gain access to a program or file by guessing the correct passwords. This can usually be easy especially where users pick on to use obvious password like their names, etc.
ii) Some one authorised to access a data or program file may fell an unauthorised person what the password is, perhaps through carelessness.
iii)Many password systems come with standard passwords as part of the system. It is always better not to use such standard systems.
i) Passwords can be left in the open and any one gains access to them.

7:7 BEST PASSWORD PRACTICE (BPP)
These are points that have to be observed by computer users to whom passwords have been allocated.

♦Keep your password secret - don't reveal it to anyone.
♦Do not write it down as any body may come across it.
♦Change your password regularly.
♦Change and use your password discretely - some body can watch the movement of fingers to determine the password.
♦Do not use obvious pass words e.g. your name, etc.
♦Change your password if you suspect that any one else knows it.

7:8 TELECOMMUNICATIONS DANGERS

When data is transmitted over a network or telecommunications link (especially the internet) there are numerous security dangers.

a) i)Corruptions such as viruses on or single computer can spread through the network to all of the organisation's computers.

b) Staff can do damage through their own computer to data stored on other computers. E.g. transferring a file of the same name to the colleague's which may cause an over write.
c) Disaffected employees have much greater potential to do deliberate damage to valuable corporate data or systems.
d) If the organisation is linked to an external network, persons outside the company (hackers) may be able to get into the company's internal network, either to steal data, or to damage the system.
   Systems can have firewalls - these are used to prevent a particular network from intrusion from any other network e.g. a company network and the Internet.
e) Employees may down load inaccurate information or imperfect or virus-ridden software from an external network.
f) Information transmitted from one part of an organisation to another may be intercepted.
   Data can be encrypted (scrambled) in an attempt to make it meaning less to those who are not entitled for it.
g) The communications link it self may break down or distort data.

Encryption and other safety measures on telecommunication

♦Encryption involves scrambling the data at one end of the line, transmitting the scrambled data, and unscrambling it at the receivers end to the line.

Authentication

This involves adding an extra field to a record, with the contents of this field Derived from the remainder of the record by applying an algorithm that has previously been agreed between the senders and recipients of data.

Dial-back security

This operates by requiring the person wanting access to the network to dial into it and identify themselves first. The system then dials the person back on their authorised number before allowing them access.

Hacking

A hacker is a person who attempts to invade the privacy of a system. There are normally skilled programmers, and have been known to crack system passwords with consummate ease.

CHAPTER EIGHT

DATA BASE MANAGEMENT SYSTEMS

8:0 INTRODUCTION

Under this Chapter we shall look at the following:
♦Data base management system (DBMS) structures
♦Designing a data base
♦Verification and validation checks

8:1 DBMS STRUCTURES

Data within databases (or most other computerised filing systems) is organised in a specific hierarchy. The aim of the organisation method is to provide generally accepted and workable method of storing and accessing data in computer files. The basic concepts to be understood are as follows.

♦**Database** -stores information about the organisation within individual files
♦**File** - information concerning one aspect of the organisation, such as details of debtors.
♦**Record** - all the detailed information about one person or item within a file. E.g. in a debtors file, there will be information about the debtor.
♦**Field** - one item of data e.g. within the debtor's record this could be the debtor name.
♦**Byte** - one character
♦**Bit** - the smallest unit of computer storage - one area of memory, which can hold the value 0 or 1.
♦**Entry set/type** – Group of similar objects of concern to an organisation for which it maintains data transactions, courses, employees, students, non academic staff etc.
Meta data – is data used to define other data

Attributes – Characteristics of object category.
Entity- Basic units used in modelling.
Modelling – Some basic common functions.
Database – Collection of related files
Key - Single attribute
Primary key – unique entity identifier
Supper Key – Additional attributes to a primary key
Candidate Key – 2 or more attributes uniquely identifying an entity set
Secondary Key- An attributes/combination of attributes that may not be candidate keys but classifies the entity set
Meta data – Using data to describe/define data
External View of data – Highest level of application
Global view of data – lowest level of actual data storage

Naïve user

♦Not aware of DB (Database systems)
♦Responds by processing a coded Key
♦Then operations are very limited

On-Line User

♦Communicate with database directly via a user interface and application programme
♦Aware of database system (DBS)
♦Use data manipulation language
♦Need additional help like merits

There are three basic database structures having different levels of sophistication hierarchical databases, network databases and relational databases.

As hierarchical and network data bases are rare these days, we shall confine on describing the relational model.

Relations Database

The concepts behind relational databases were developed by EF Codd of IBM.

The data is stored in tables, which are derived by a mathematical form of analysis on the sources of data for the system e.g. input screens, reports.
In a relational database, data is split between different two-dimensional tables, which are linked together via a set of unique keys

Commercially available relational databases include IBM's DB2 and Oracle. Ms Access is also a relational database.

APPLICATION PROGRAMME.

♦Are professional programmers
♦Develop application programme user interface utilised by
♦The naïve & online users
♦Are programme written in general purpose programming language e.g. Assembler, COBOL, Fortran, Pascal etc.

DATA BASE MANAGEMENT SYSTEMS

Definition:

A database is a file (or files) of data so structured that many applications can use the file and update it, but which do not themselves constrain the file design or its contents.

This is of major benefits to the organisation including data sharing between applications.

DBMS

This is specialist software used to create and maintain a database.

Organisations collect and use vast amounts of data. One method of storing and accessing this data is to place it within one large store and use a DBMS to effectively control that data.

The DBMS is normally located between the main database of the organisation and the different applications that want to access and use that data.

Elements of a DBMS
A DBMS comprises three separate sections i.e.

a) Data Definition Language (DDL)
b) Data Manipulation Language (DML)
c) Data Dictionary

DDL is used to specify the content and structure of the database. The DDL defines

the form of each item of data in the database so that the data can be accessed and

used by the various application programs accessing the database.

Entry set/Type – Group of similar objects of concerned to an organisation for which

it maintains e.g. data transactions, courses, employee, students, non-academic staff

etc.

♦Defines the conceptual scheme
♦Curves details how to implement the conceptual scheme and stores data

DML is a specialist language used to manipulate data within the database. The DML is a fourth generation language.
♦Involves retrieval of data from the database
♦Inserts raw data into the database

The Data Dictionary is a program used to store and organise the data in the database. The dictionary stores key information about the data, such as who uses the data, what the access rights to data are and who owns the data and is therefore responsible for updating it. Deletes and modifies existing data.

Facilities offered by database management systems

The DBMS will offer the following facilities:
a) The ability to add, amend and delete records
b) The ability to retrieve data
c) The ability to present data in different formats and combinations as required

d) The ability to control access to records by means of passwords and other security procedures
e) The ability to allow the database to evolve without requiring modification to applications programs
f) The ability to recover from systems break down and avoid data loss
g) The ability to record transactions and identify redundant data.

8:2 DATABASE ADMINISTRATORS (DBA)

Centralised control of data base under one controller that is sole administrator.
The DBA's work can be split into strategic and organisational activities.

a) Strategic Tasks

(i) Working with strategic management to help define the organisation's present and future needs.
(ii) Choosing suitable file structure for data storage.
(iii) Analysing the data required for each application.
(iv) Preparation of a data model.
(v) Preparation, modifying and maintenance of a data dictionary.
(vi) Defining hardware needs and plan for any change and internal levels.
(vii) Administrator of internal and external view of data (3 levels)
(viii) Specifies conceptual view of various users and applications
(ix) Defines and implements the internal level and storage structure
(x) Controls changes to external Global
(xi) Custodian and controller of database structure
(xii) Defines mapping between levels structures
(xiii) Okays users of the database and their dismissal.
(xiv) Fore sees the maintenance and preservation of the integrity of the database
(xv) Defines procedures to receive and recover the database system

b) Organisational Tasks

(i) Ensuring data integrity by implementing and controlling database procedures.
(ii) Production of operating manuals.
(iii) Provision of training for users and applications programmers on a regular basis.
(iv) Assessing the ongoing performance of the database.

Benefits/advantage of database filing systems

There are basically three major benefits from database filing system; i.e. integrity, independence and integration.

Integrity

Database integrity means that data is kept secure and that amendments are only made as effectively authorised by the DBMS.

Independence

The principle of independence relates the splitting of data away fro the programs that use that data.

Making this split ensures that;
♦Applications can be written and amended independently of the data they use, and

♦Amendments can be made to the data without having to amend all the different applications that use the data.

Integration
This refers to the maintenance of data in one location rather than spreading and possibly duplicating, that data around the organisation in separate individual databases.

8:3 BENEFITS OF A DATABASE MANAGEMENT SYSTEM (DBMS)

a) Integration of data needs
Data should be shared between the different applications using it. This can mean That different applications using the DBMS can access the same data at the same time.

b) Data security
Data should be accessible only to those authorised to see it, and should be capable of modification only under controlled conditions.

c) Flexibility
The DBMS should allow for different uses with a range of applications.

d) Minimum redundancy
Duplication of data should be kept to a minimum. This achieves the benefit of reduced space and avoids inconsistent data.

e) Evolutionary capability
The DBMS must be capable of evolving to adapt to changing organisational Needs without requiring extensive modifications to application programs.

8:4 DESIGNING A DATABASE

Where an organisation uses a central database, it is crucial that the database operates effectively. This requires adequate hard ware, software and personnel, but most importantly it needs a well-designed database.

The main stages in design and use of a database are as follows;
a) Analysis of information needs
b) Logical design of the database
c) Physical design and set up of the data base
d) Data entry and upkeep
e) Data retrieval and reporting
f) Monitoring and maintenance

Analysis of information needs
In order to identify the information needs of the organisation, a fundamental understanding of its objectives is necessary.

a) The business plans of the company provide the basis of this understanding, identifying the organisation's critical success factors (CFS) and the information that is needed for these factors to be achieved.
b) An information audit will be carried out to identify the needs of particular users and groups of users.

Logical design of the database

a) The information gathering process will help to determine the data required on the database for existing and foreseeable future applications. This list of data is recorded in the data dictionary.
b) The rules relating different items of data together are determined.
c) The analyst will then determine the rules relating particular application to items in the database.

Physical design and set up of the organisation

The rules that have been specified are then programmed to support the database management system. This procedure is so specialised that it may require a special Data Description Language (DDL).

Data entry and upkeep

a) Data is added (or appended) to the database. Its integrity is ensured by validation and verification checks.
b) Existing data may be changed (or amended). This process will also be subject to validation and verification (see later in next section).
c) Existing data may be deleted from the database. This is normally a two-stage process, i.e. making and then physically deleting - this ensures that only intended data is deleted.
d) A specialised language called a Data Manipulation Language (DML) may be used to carry out the processes of addition, amendment and deletion.

Data Retrieval and Reporting

Most database systems provide a wide variety of ways in which data may be accessed and analysed.

a) Individual records may be retrieved and inspected.
b) Items may be retrieved according to a set of specific parameters.
c) Data may be sorted or indexed on any field or combination of fields. This makes lists and other outputs easier to use.
d) Simple summarises and calculations can be carried out on the data contained in the database.
e) Report generators are supplied with many databases management packages. This enables users to summarise and report data quickly and in an easily digested format.
f) A specialised language called a Structured Query Language or SQL may be used to retrieval and report information.

8:5 VERIFICATION AND VALIDATION CHECKS

The verification and validation checks have been designed to deal with the common human errors as regards data entry. This is in databases, accounting systems, spreadsheets, etc. So this means that these checks do not only apply to databases but also to accounting systems, word processors, spreadsheets, etc.

Verification is the process of ensuring that the data that has been input is the same as the data on the source document.

Validation is the process of ensuring that the data that has been input has a value that is possible for that kind of data. For example there is no month with 33 days.

Data Verification

The most common method of verification is encouraging staff to look for errors e.g. if data is input using a key board, it will be shown on the screen and visual checks on the data can be made.

Validation Checks

When a validation check identifies an error, the record concerned will probably be rejected and processed no further without correction. Rejection reports or massages will be displayed on a VDU screen.

Some of the data validation checks are outlined below:

♦**Range Checks**

These are designed to ensure that the data in a certain record field lies within predetermined limits e.g. day of a month can be from 1 to 31 not 0 or beyond 31.

♦**Limit Checks**

These check that data is not above or below a certain value.

♦**Existence Checks**

These are checks to ensure that the data is valid within a particular system. E.g. Checking items in stock.

♦**Format Checks**

These help to ensure that the format (and size) of the data in a field is correct. E.g. check that the formal is all numeric or alphabetic, etc.

♦**Consistency checks**

These involves checking that data in one field is consistent with data in another field. For example, in a payroll system, there might be a check that if the employee is a Grade C worker, he or she must belong to department 5,6 or 9.

♦**Completeness Checks**

A check can be made to ensure that all records have been processed.

♦**Check digits**

This check is used to detect especially transposition errors.

Transposition errors are those that arise when correct digits in a figure, e.g. 123,907, are unintentionary interchanged, e.g. 132, 907.

CHAPTER NINE

OFFICE AUTOMATION

9:0 INTRODUCTION

Under this Chapter we shall look at the following:

- ♦Spreadsheet
- ♦Word Processing, DTP and Graphics
- ♦Communication
- ♦The Internet

Office automation tries to analyse the application programs that are normally used in offices and office communication.

9:1 SPREAD SHEET

A spreadsheet is a general-purpose software package for modelling. The name is derived from its likeness to a spreadsheet of paper divided into rows and columns.

♦A spreadsheet program can help you manage personal and business cash flow analysis and forecasting. General ledger, stock records, profit projections, sales projections, etc.

♦You can use the spreadsheet to perform calculations, analyse data and present information.

♦You can store large collections of information i.e. a mailing or product list.

♦Spreadsheets program include tools for organising, managing, storing and retrieving data-through a bigger control over a list stored on your computer would need a Database program.

Features of Spreadsheets

Cell is one box in a spreadsheet.

Column is a vertical line of boxes or cells. Each column is identified by a unique letter e.g. a,b,c, aa, ab, aaa, aab, etc).

Row is a horizontal lie of boxes of cells. Each row is identified by a different number (e.g. 1,2,3,11,12,13,111,112, etc).

Active cell (Current cell)

This identifies the location of each cell in a spreadsheet. It consists of a column letter followed by a row number.

Formula

In a spreadsheet, a formula helps you calculate and analyse data. When entering formulas cell references or cell addresses are used. E.g. [+D2+D4] instead of typing in the actual data whenever possible.

Calculations

Spreadsheet programs perform calculations using the following.

* - multiply, + - Add, - - Subtract, /- divide, / exponents.

Automatic Recalculation
Spreadsheets have a facility where by if you change a number used in a formula, all the other figures affected by the formula will change automatically displaying the new results.

This feature is so useful if you want to evaluate possible scenarios. E.g. how differently interest rates affect your mortgage payments.

Using parenthesis [ ]
In a formula, a spreadsheet program will calculate the data inside the parentheses then with those outside it. E .g. +A1 * [B6/B7] + A5.

Copying a Formula
After entering a formula in a spreadsheet, you can save time by copying a formula to other cells. The spreadsheet program will automatically change the cell references in the new formula for you.

Functions
A function is a ready-to-use formula that helps you to perform calculations e.g. sum, Average, Maximum, Minimum, etc.

Examples:
♦SUM [D1: D4] calculates the sum of the numbers in addresses D1 to D4.
♦AVERAGE [A6: A10] calculates the average value of the lists of numbers in addresses A6 to A10.
♦MAXIMUM[A2; A7] finds the largest value in the lists of numbers in addresses A2 to A7.

Facilities offered by a spreadsheet.

Editing
Data can easily be copied for moved from one part of the spread sheet to another using a mouse and cut and paste or drag and drop facilities.

♦Column width, row height can also be changed.
♦Rows and columns can be inserted and most operations can be reversed.

♦Modern spreadsheets can help you complete a series, e.g. type ‘Monday’ - it will type the rest up to Sunday.

Formatting a Spread sheet
This involves changing font (type style), number appearance, boarders, shading and colour. Data alignment centre left or right, etc. You can format the entire spreadsheet or a specified range of cells.

Charts and graphics

Most spreadsheets contain graphic and chart facilities which enable you illustrate data using a suitable chart type.

Sorting
Data can be sorted alphabetically or numerically.

File commands
Opening, naming, saving, printing and closing the spreadsheet file are the key tasks.

Potential problems/disadvantages of spreadsheets

Spreadsheets are immensely popular and can be used for a very wide range of modelling tasks. However, because they are essentially single - user packages and because each one is designed from scratch. There are risks in their use.

a) Although users are some times trained in how to use a spread sheet, they are rarely trained in spread sheet discipline or best practice. This means that spread sheets may be badly designed, increasing the risk of errors or inefficiency.

E.g. a user may put a second large table immediately below the first, rather than diagonally offset. If he or she then deletes a column of data from the first table, then data may be unintentionally lost from the second one as well.

b) Users are unlikely to document the workings of their spreadsheet, as they consider it 'obvious'. This makes it difficult for other staff to understand use or modify the model.

c) The lack of proper audit trail can be a disadvantage. Because the user works with a spreadsheet in memory (RAM), only saving it at certain intervals, it is unlikely that a record of the intermediate stages will be maintained, even if output from the intermediate stages is important.

9:2 WORD PROCESSING

WORD PROCESSORS

Word processing is the processing of text information. Typically word processing soft ware may be used for production of standard documents.

Features of a word processor
The following are some of the features of a typical word processor.

(i) Adding headers and footers
(ii) Inserting footnotes
(iii) Using different characters fonts in a variety of services.
(iv) Changing texts to bold italic, underlined, double underlined, etc.
(v) Spell checking - for spelling errors and in some programs checking for grammatical errors.

Some word processors especially modern one have additional features not available in older word processor e.g.
(i) Adding lines or boxes in a variety of width and style.
(ii) Inserting digitised photos and artwork.

(iii) Creating charts and tables with newly entered data or by linking to data that already exists in a data file.
(iv) Drug and drop editing.
(v) Creating a table of contents or index automatically.
(vi) Main merging - where automatic formats for different types of letter may exist.
(vii) Importing data from other -programs like spreadsheets.
(viii) Compatibility - where major packages are very similar and highly compatible e.g. a WordPerfect file may be opened, edited and saved in Ms Word.

9:3 DESK TOP PUBLISHING (DTP)

DTP is the use of office computers to implement computerised typesetting and composition systems. They can be used for producing master pages for a book, newspapers, leaflets, etc.

Graphics (Computer Graphics)

Another use of computers is the production of information in the form of pictures, diagrams or graphs. A widely used office package is corel draw.

9: 4MICROSOFT ACCESS

This is used to design data bases and create management reports.

9:5 COMMUNICATION

Under this topic, we shall see how telecommunication hardware is used in office work.

Telex

Telex is a service which enables users to transmit and receive printed message over a telephone line. Users have to be telex subscribers, with their own telex equipment and code number in order to send or receive messages.
Telex services started in the 1930's
Data transmission speeds are very slow with Telex as compared to other methods telecommunication and only restricted set of characters can be used in messages.

Fax (or Facsimile)

This involves the transmission of messages by a data link of exact duplicate copies of documents. The original is fed into the fax machine, which reads it and converts it into electronic form so it can be transmitted over the telephone.

It is printed by the recipient fax machine.
The latest fax machines can also be used to scan data into a PC, as printers for PC output and as photocopies.

Electronic Mail (E-mail)

The term 'electronic mail' or 'e-mail', is used to describe various systems of sending data or messages electronically via a telephone or data network and a central computer, without the need to post letters or place memos in pigeon-holes, etc.

E-mail has the following advantages

a) Speed E-mail is far faster than post or fax. It is a particular time saver when communicating with people over seas.

b) Economy (no need for stamps, envelopes, etc) it is far cheaper than fax or post.
c) Efficiency. Messages are prepared once but can be sent to thousands of employees at the touch of a button.
d) Security. Access can be restricted by the use of passwords.

Voice Mail
Voice mail systems enable the caller's message to be recorded at the recipient's voice mail box. It requires a telephone, and no keying or typing is necessary.
A voice mail message is basically a spoken memo.

THE INTERNET
The Internet is the name given to the technology that allows any computer with a telecommunications link to exchange information with any other suitably equipped computer.

Also Internet refers to the international network.

Web sites/page
As you are no doubt aware, most companies of any size now have a 'site' on the Net.
A site is a collection of screens providing information in multi media form (text, graphics and often sound and video), any of which can be viewed simply by clicking the appropriate button, word or image on the screen.

Internet Service Providers (ISPs)
Connection to the Internet is made via an Internet Service Provider (ISP). The user is registered as an Internet subscriber and pays a small monthly fee together with local telephone call charges. Examples of ISPs include American On-line (AOL), Spacenet in Uganda, Uganda Telecoms, etc.

Browsers and Search Engines
Browsers
These are programs that are used to run the internet. Example is Netscape Navigator.

Search Engine
These are used to guide the users surfing the net examples include, Yahoo! Aita Vista.

Uniform resource locator (Website address) (URL)

Each web page has a unique address called the uniform resource locator (URL)

All you need is type in the URL for the website you want to visit and enter.
An example of URL could be like http!//w.w.w.TBC.co.ug.

URL Element **Explanation**

http!/ /	Hyper text transfer protocol, the portico used on the world-wide web for the exchange of documents produced in what is known as 'hyper text mark-up language (HTML). The forward slashes after the colon introduce the 'host name' such as www.
www	This stands for World Wide Web. As noted before, to put it simply the web (via its use of HTML), is what makes the internet user-friendly.
TBC	This is the domain name of the organisation or individual whose site is located at this URL.
Co	This part of the VRL indicates the type of the organisation concerned. The Internet actually spans many different physical networks around the world including commercial (Com or Co), schools (ac or edu) and other research networks (org, net) military (mil) net works, and government networks.
Ug	As you can possibly guess, this indicates that the organisation is located in Uganda commercial use of the Internet.

Marketing

Organisations used the Internet to provide information about their own products and services. Customers simply log on to the appropriate website and get to know the latest products on the market and so many other things.

Sales

Interactive electronic purchasing is possible with the Internet, the customer simply provides details of her/his credit card on the internet along with the order. This facility is not yet very common here in Uganda but its very attractive in Europe and America.

Distribution

The Internet can be used to get certain products directly into people's homes. Any thing that can be converted into digital form can simply be up loaded on to the seller's site and then down loaded onto the customer's PC at home. The Internet thus offers huge opportunities to producers of text, graphics/video and sound-based products. Much computer soft ware is now distributed in this way.

Other uses of the Internet

Entertainment

A variety of quality games are available on the net.

Information

On the net you can have access to information of any subject imaginable e.g. newspapers, magazines, job listings, airline schedules, college prospectus, movies, etc.

Discussion group
You can join discussion groups on the net to meet people with similar interests. You can ask questions, discuss problems and read interesting stories.

E-mail
Exchanging email is the most popular feature on the Internet. You can exchange e-mail on computers around the world.

Problems with the Internet
Being owned by no one, there are no clear guidelines on how the internet should develop. Today you can find the good, bad and different items on the net e.g. Bible preaching and phonography.

Employees of an organisation may spend so much time on the net surfing useless sites - thus wasting the organisation's useful time.

Lack of security on the Internet is another problem. This is especially with the e-mails - information such as credit card details is not communicated comfortably.

Cost is another major problem. You need a relatively high quality PCs, which are expensive; in addition, connection fees, access time fee and web site designing fees are also high.

With much less powerful equipment e.g. a slow modern and a slow processor, gaining access to useful information becomes slow and quiet painful.

Getting connected to the Internet

You need specific equipment and program to connect to the Internet.

1. Computer - any type of computer, which is relatively strong.
2. Programs - you need special programs to use the Internet e.g. e-mail programs, etc.
3. Modems - you need a modem to connect to the Internet. A modem of at least 14,400 bps is recommended.
4. Telephone line.

Other forms of the Internet

Intranets
This is an internal Internet, available to individuals with in a specific organisation.

The intranet is used to provide a relatively quick and easy method of providing and information sharing system in an organisation.

Extranets
This is an extension of the intranet where some third party access is allowed to the internal web sites.

Uses and benefits of the intranets
Allowing access to databases, no matter where they are located with in the organisation.

This helps to support the obtaining and sharing of information between worker throughout an organisation as well as minimise the need to keep the data in more than one place.

An intranet will allow the creation of on-line catalogues, handbooks, and directories that can be accessed and up dated as necessary e.g. an internal telephone directory for an organisation of say 100,000 employees world wide will change on a daily basis as a new staff are hired and existing staff leave.

Intranet will save the organisation costs in terms of printing and distributing the paper based manuals and handbooks etc.

Some intranets can be linked to legacy system allowing older corporate data to be obtained and analysed along side more recent transaction data.

Information is provided in a more user-friendly format, which helps encourage the use of the internet.

Training costs are limited because users will already be familiar with browser technology from using the Internet.

Uses and Benefits of the Extranets
They provide on-line information for customers and suppliers provide 'added value' to the products and services provided by the organisation.

Allowing authorised buyers of the organisations' products access to information about those products to help them decide which product is appropriate for a specific use.

Linking with existing EDI (Electronic Data Interchange) applications to provide full stock control, procurement and payment systems.
Full Meanings of the words as applied in information technology/system

LIST OF ABBREVIATIONS

ABBREVIATION	ABBREVIATION IN FULL
4.GL	Fourth Generation Language

ALU	Arithmetic Logic Unit
AOL	America on Line
AS II	America National Standard Code for Inform date Interchange
ATM	Automated Teller Machine
BASIC	Beginners All Purpose Symbolic Codes
BIOS	Basic Input – Output System
BIT	Binary Digit
BTM	Business Teller Machine
CD	Compact Disk
CIS	Computer Information System
CLS	Clear Screen
COBOL	Common Business Oriented Language
CPU	Central Processing Unit
CU	Control Unit
DBMS	Database Management System
DDL	Data Definition Language
DEEP BLUE	Computers are modern computers that are an IBM computer programmed to play Chess with the world class champion, Garry Kasorok. Programmed to make 1 million moves in a second, which defected the world chess champion in the world.
DEL	Delete
Dir	Directory
Disk Drives	Media where computer programme files reside e.g., Hard disks, floppy Disks, CD-ROM, Magnetic tapes etc.
DML	Data Manipulation Language
DOS	Disk Operating System
DPC	Desktop Personal Computer
Drives	External storage medium storage capacity more than floppy and less then hard disk drive, designed with letters D...E.
DTP	Desk top Publishing
DVD	Digital Video Disk
E-mail	Electronic Mail
EMF	Electronic Magnetic Fields
EPOS	Electronic Point of Scale
EWN	Enterprise Wide Network – Any Private Network connects all of organization CPS no matter what they run or where they are located.
Expansion Slots	are access slots on the C.P.U where new computer cards can be fixed when upgrading (expanding) a computer. When adding another floppy drive, adding a CD ROM Drive a higher memory chip.
Floppy Disks Drives.	External storage medium, less storage capacity than Hard disks drive designed with letters

FORTAN	Formula Transaction
GB	Byte
GUI	Graphical User Interface - medium through user interacts with a CP
Hard Disk Drive	Internal Storage mechanism stores most computer applications. Capacity 100MB designed work letters
HLL	High Level Language
IBM	International Business Machine
ILL	Intermediate Level Language
INTERNET	International Network
IRR	Internal Rate of Return
ISP	Internet Service Provider – Provides Internet to users who register at 15 P using other dial to dedicated access.
IT	Information Technology
KB	Kilo Bytes
KIPS	Kilo Instructions Per Second - its Speed
KISS	Keep it small Simple
LAN	Local Area Network
LLL	Low Level Language
MAN	Metropolitan Area Net – Work
MB	Mega Byte
MICR	Magnetic Ink Character Recognition
MIPS	Millions Instructions per Second
MODEM	Modulation Demolecular
MS DOS	Micro Soft Disk Operating System
Ms Excel	Micro soft Excel
MULT	Multiply
NPV	Net Present Value
NT	Net Work
OCR	Optical character Recognition
OS	Operating System
OUR	Optical Work Reading
PC	Personal Computer
PIN	Personal Identification Number
Ports	Are connections (sockets) on the C.P.U which a computer components (Device) like a printer, mouse, modern etc. Can be connected.
RAM	Random Access Memory
ROM	Read only Memory
SAN	Storage Area Network
SDLC	System Development Life Cycle
SSDM	Special Standard System Development management maintenance
SSM	Special Standard System Management/maintenance
SQL	Structured Query Language
SUB	Subtract

TCP/IP	Transmission Control Protocol/internet Protocol system used to transfer information from one computer to another.
UPS	Uninterrupted Power Supply
URL	Uniform Resource Locater
VAN	Value Added Network
VDU	Visual Display Unit
W.W.W	World Wide Website
Web Server	Software that delivers web pages and contains of web sites.

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AFRICA POPULATION INSTITUTE
GLOBAL CHANGE AND SECURITY
PAPER CODES: **APDIR 301**

1. a) Explain the different ways through which food insecurity can be reduced as proposed by USAID.
b) To what extent has Food and agriculture organization (FAO) been able to promote global food and security?

2. a) Discuss the 4 core/basic principles of information security.
b) Describe all the 9 steps in the change management process.
c) Discuss the causes and effects of international migration to world peace and security.

3.a) Discuss the Five (5) major threats to global change and security.
b) How has African Union promoted world peace?
c) To what extent has the United Nations promoted world peace?

LOCAL GOVERNMENT ADMINISTRATION
PAPER CODES: **APDIR 302, APDPA 301**

1. a) Discuss the 5 core branches/ disciplines of public administration.
b) Discuss the key features of democratic constitutions.

2. a)Discuss at least 10 different types of governments.
b) Discuss at least 5 advantages and 5 disadvantages of decentralization in the development process.

3. a)Describe the three (3) major ways through which sovereignty may be distributed in the decentralization process.
b) Outline the issues that must be considered when forming a constitution for any country.

ELEMENTS OF TAXATION
PAPER CODES: **APDFA 301, APDIR 303, APDBA 301**

1. a) Explain the different sources of public finance.
b) Discuss the different types of taxes?

2. a) Discuss the objectives of fiscal policy.
b) Discuss the principles/ canons of taxation.

3. (a) With an illustration show and explain a regressive tax.
(b) Explain advantages and disadvantages of direct taxes.
(c) How can countries in Africa improve on their tax base?

RESEARCH METHODS

PAPER CODES: **APD(FA 303, PH 303, HR 302, IR 304, PA 304, LPS 303, SW 304, BA 303, PM 303)**

1. a) Research and experimental development comprise creative work undertaken on a systematic basis in order to increase the stock on knowledge;
Explain the different types of variables used in research.
b) Using relevant examples, explain the difference between discrete and continuous variables

2. a) Descriptive research are designed to gain more information about a particular characteristic within a particular field of study
b) Explain how it is different from exploratory research
c) What is the difference between a research proposal and a project proposal?

3. a) With some form of detail, illustrate the structure of a research report
b) Examine the different forms of experimental designs
c) Assess the different levels of data analysis

INFORMATION TECHNOLOGY

PAPER CODES: **APD --- 105**

1. Information technology always deals with organizational need
Examine the stages involved in the systems development life cycle

2. File are used to store data and information that will be needed again in future or for the current use
a) Explain the different data processing operation
b) What are the features of storage and retrieval systems?

3 a) With relevant examples, Analyse the different forms of security issues as used in information technology
b) A spread sheet is a general purpose software package for modelling
i) Explain the different applications of spread sheet
ii) What are features of a word processor?