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Formative Assessment

1: IT Systems

Management 1

(HISM100-1)

1.1. An information system is a set of interconnected parts that gather, use, safely put away and distribute information and provide response to meet goals. There are multiple components in an information system. Input is the method of collecting and apprehending data for example clicking on an icon with the computers mouse which tells the computer what we want to do. Processing means to turn the input into useable outputs for example a search engine on the internet which uses your input to display results depending on what was entered into the search bar. Processing also includes making sums and differentiating data, using other methods and keeping data safely for future use. Output is the results of the input and process which occurred before. Output includes showing information in the shape of documents and reports or accounts. An example of output would be the search results that show up after the process of input and processing is complete. The results of the output would be influenced by the input. The output can also become a new input. Feedback is the information derived from the system which is used to make alterations to the input or processing activities. An example of feedback would be when an error occurs in a sound of a mic and a set of speakers and the mics output is very loud. This would tell the system that something is wrong and the system would try to correct it.

1.2. Information systems are a necessity to the business industry as it provides a business the chance to perform an analysis, manage and access very important data which is needed to make decisions. Information systems have changed how businesses operate and how they work alongside shareholders, suppliers and customers. Some businesses employ

information systems that are specially made to suit it. Information systems also help employees achieve their goals and by increasing overall efficiency in the business. Information systems also simplifies a process by tenfold for example in the past a letter needed to be sent, nowadays businesses use email to communicate with each other and negotiate business deals. Information systems also helped businesses do commerce online which has increased their annual revenue, Businesses will continue to depend on information systems in order to survive and excel in the market.

2.1. The rivalry among existing competitors, the threat of replacement products and services, the threat of new entrants, the bargaining power of supplies and the bargaining power of buyers.

2.2. There are various strategies a business could use to gain a competitive advantage in its market. Namely cost leadership, differentiation, having a niche strategy, altering the industry structure, creating new products and services and lastly improving existing product lines and services.

Cost leadership is a method to dispatch the lowest possible products and services cost. It is usually achieved by lowering the prices of raw materials with aggressive negotiations with suppliers, achieving more efficiency with the producing and manufacturing process along with lowering storage and delivery costs. Some establishments will use subcontracting to reduce costs of production or completing services.

The reason differentiation is used as a strategy is to offer different products and services. This leads to the production of various products or producing better quality products and services giving customers more options to choose from but mainly to the customers needs. A perfect example of this would be camera companies like Sony or Canon who offers multiple different models of cameras depending on their sensor type. They both offer mirrorless in the form of APS-C or full frame where APS-C is to suit beginners and full frame to suit professionals.

A niche strategy is when a company only makes products to suit a small specific market. A few great examples of these types of companies include Lamborghini, Ferrari and Maserati who don't produce regular economical cars but instead produce expensive cars for the rich which have high performance and luxury quality.

Altering the industry is when a company will change the industry to better suit the company for example offering a lower price than the business's competitors'. Companies can also create strategic alliances which will also change the industry's structure. A strategic alliance is an accord between two or more companies that implicates them to join together with the production and distribution of goods and services.

Companies can also reveal new products and services at intervals or frequently as part of their plan. This will in turn help the company to gain a better advantage over rivals in the industry. If a company can not introduce new products , it will stay still and not make progress, lose value in the market as market shares decline. Companies which excel consistently make new products and services to stay on top of their industry and other competitive businesses.

Lastly companies can improve existing product lines and services. An example of this would be car companies giving their existing cars facelifts or new year models. Other ways are being first to market, offering personalised products and services and hiring well talented staff. Businesses can also combine one or various strategies together to better suit their needs.

3.1. The CPU or Central Processing Unit is the practically the "brain" of the computer. Each CPU has three components which are the arithmetic or logic unit which initiates mathematical calculation to make logical comparisons, the control unit which gains entrances to program instructions back-to-back, decodes them and controls the wave of data in and out of the arithmetic or logic unit. Registers are storage districts that are high velocity and used to hold miniature units of data of program instructions and data units directly before, during and after the execution by the CPU for the time being.

Processing characteristics and functions of the CPU include machine cycle time, clock speed and the physical characteristics of the CPU. Machine cycle time is the time it takes to complete a cycle of instruction executions. It is measured in nanoseconds. MIPS means millions of instructions per second which is another form of measuring speed in a computer system.

Clock speed is the multiple amounts of electronic pulses at a fixed rate which influences machine cycle time. The control unit initiates direction in line with the electronic cycle of the CPU 'clock'. Every instruction takes at minimum the exact amount of time as the break between pulses, the shorter the break the faster every can be executed. Clock speed is

measured in megahertz or gigahertz. The faster the clock speed the more cooling is needed to release heat so that the CPU does not overheat and corrupting the data and instructions.

The physical components of the CPU are clusters of digital circuits imprinted on silicon wafers or chips with every one being no larger than the tip of an eraser. Electrical current must flow through a medium from point A to point B in order to turn a digital circuit on or off. The currents speed can be increased as it travels between points by reducing the distance or resistance of the medium to the electric current.

3.2. Grid computing is when multiple computers are used to solve a common problem. It is a cheaper option to using parallel computing. The computers would run collectively to solve excessively big processing issues. The success of grid computing comes down to the central server which performs as a grid leader and monitors traffic. The central or leading server will break up the tasks and assign them to a specified computer which have extra processing power. The leading server also keeps an eye on processing in case one task fails on a grid member then it will then restart or gives the same task to it again. When all assigned tasks are complete, the main server will stitch the results together and move on to the next task until the entire task is completed.

4. The client is experiencing software bugs. A software bug is an issue, defect or glitch in the program that prevents what the program was made for. Some bugs will immediately allow the program to crash without notice. Other bugs are more docile and manage to allow errors enter your work. No matter the amount of time of development, how perfect a program is or the skill behind it, there will always be a bug on the first release of the software.

There are multiple ways to fix these issues. A client can register the software so the bugs can be fixed with updates which have patches and fixes. The client can also check the booklet or the read-me files for ways to fix a common problem. Another way is to contact support via the developer's website for more information on patches. A client can also always install the latest updates which should contain patches to the issues that they are facing. Remake the bug conditions to allow it to occur again before reporting it. After recreation the client can make a call to the developers and walk them through on how it occurs. Lastly a client can always wait for a later version so that most bugs and glitches can be discovered by the developers and resolved. Most institutions wait for the first major patch update so that there are less bugs on first use.

5. I would have to first scope out the database needs and attributes. The information requirements of the company or organization will influence the type of data that is gathered and the type of database management system that will be used. Main characteristics that I would need would be database size which will be the amount of documents or files in the database, the cost of a database when buying or leasing which is known as database cost, the amount of people who will be needing to use the database simultaneously which is the concurrent users, the performance of the database and how quickly it can update records or documents, the potential to be fused with other databases and applications called integration and lastly the name, reputation and financial stability of the databases vendor.

6. There are multiple uses of the internet of things which organisations can use. Assets can be monitored, it can be used in construction, agriculture, manufacturing and retailing along with predictive maintenance.

Food and drug manufacturers will use asset monitoring to monitor shipping storage containers to notify them if the temperature conditions change which can result in a reduced quality of product. These monitoring systems are powered by cheap sensors which are battery powered and use 4G LTE for connection.

SK solutions is an example of a construction company in Dubai that uses technology to stop cranes from moving into each other on an overcrowded site of construction. The system which is connected to the internet will collect data from sensors on the crane and other construction equipment to perceive if two or more cranes are moving in close proximity to each other. The system will then stop them from moving closer to each other.

In agriculture farmers can implement the ability of using the internet of things to monitor and gather data about the moisture of water and nitrogen levels so that they can produce a better yield all while preserving water which in this case is a precious source.

In a manufacturing factory, the internet of things sensors on the factory floor can alert workers about problems or errors with equipment which can hinder production. The data collected from the sensors can allow engineers or technicians to percept probable errors or can again send out resources which will be more optimal.

Sensors are used in the utilities industry for preventative maintenance a lot to express operational data to attain a 24/7 time period. The data is then analysed carefully to perceive when vital components of equipment or power lines are about to fail in order for quick and awaiting the correct method which takes place before any failure.

Lastly in retailing , retailers can use sensors inside the store to perceive the performance and better the shopping experience for customers to increase income and the market share. The data is streamed from sensors to be examined with some other information to send personalised deals as the consumer is in the process of deciding to make the purchase.