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Strategic Information Systems Development

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INFORMATION SYSTEM STRATEGIC PLANNING

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MIS

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I. Executive Summary

The ISSP of Shinas VTC was developed as an initial move to help in the realization of the Centre's vision and goals. These goals in particular are in "achieving the excellence in administration in the work according to the regulations and ethical principles", "providing an excellent educational and training environment for students" and "providing quality services for students".

Covered also in this ISSP are the SWOT and PEST analysis that describe more clearly the organization's strengths and opportunities which this ISSP aims to improve

The GAP analysis presents the external factors that may affect the Centre performance and plans in achieving its goals.

In chapter six, recommendations and strategies were outlined to bridge the gap between its current and future state. These strategies are discussed in details on that chapter.

- The creation of IT/IS group
- Putting up a website and integrating a learning management system
- Putting up of a student information system
- Formulating IT policies like the Acceptable Use Policy
- Establishing help desk support

II. Introduction

Shinas Vocational Training Centre was inaugurated in 2008. It was financed partially by the private sector. The Centre is one of the seven vocational training centers across the Sultanate managed by the Ministry of Manpower.

The Shinas VTC is offering a three-year Vocational Diploma Program and short courses in the area of metal fabrication, welding, refrigeration and air conditioning, electrical, mechanical and electronics. The faculty was solely composed of expatriates coming from the nearby Arab countries, India and the Philippines. In 2013, the Centre started employing local Omani instructors.

The Centre aims to qualify graduates to certain occupational levels appropriate to the labor market needs. Distinguished graduates who are keen to pursue their training and education can move to the next level by joining any of the six (6) Colleges of Technology which are located across the Sultanate.

Being one of the recently established vocational training Centre, Shinas VTC has been provided with up-to-date information technology resources. It is equipped with servers, wireless access points, computers, printers and fax machines. The wireless network wasn't used much during the early years of its operation because there were no web-based systems installed or any other systems used for its day-to-day transactions with the trainees and it doesn't have an Internet connection yet. In short, the use of those IT resources was not maximized.

The institution has been using manual processes in most of its transactions like in enrollment, class scheduling, record keeping (students' marks/grades) and even the evaluation of instructors and continue to do so. This brings about volume of papers to be filed and processed, resulting to a sub-par efficiency. It would take like a week or so for a student just an official academic record. There is no way for students to track their updated records online as they are located on a spreadsheet from different PCs in the registrar.

Although the personnel assigned to work in scheduling classes and examinations uses spreadsheet application, the manner of preparing the schedule is still manual and if there would be some changes on one class, he has to trace manually all the classes that would be affected.

Recognizing the need and impact of the Internet in education and its day-to-day transactions, Shinas VTC connected to the Internet in 2012. But with great resources comes great responsibility. Lacking IT policies and formal IT group or department, IT resources were not managed well. Many are downloading gigabytes of software and movies during office peak hours and causing the network performance (speed) to go down affecting everyone, especially those who are using the IT resources for official transactions. Another thing is that anyone can just reformat and install any program to any computer; worst part is that many of that software were not acquired legally and potentially includes malware.

This is one of the reasons why planning is so important and developing an Information System Strategic Plan will not only answer those issues but will also help the Shinas VTC maximize the use of its IT resources and aid in improving the services it offer.

III. Overview of the Organization

Shinas Vocational Training Center is under the supervision of the Ministry of Manpower, Sultanate of Oman. Situated in the northern part of Oman, the North Al-Batinah governorate, it caters to the students from the municipalities of Sohar, Liwa, Shinas and Musandam. Students (trainees) of VTCs are those who were not able to complete their secondary education or were not able to qualify to proceed directly to college (technical colleges). Students are to proceed to secondary education after finishing class (grade) 10. Secondary education in Oman last for three years but students can leave and graduate at any time.

Training in Shinas VTC, like in all VTCs, lasts for three years. All trainees go to their Foundation Program in their first year. Here they will take intermediate and advanced courses in English, Math and Information Technology. They will be awarded a Vocational Education Diploma (Semi Skilled-Worker) after finishing this part of the training. Trainees with this certificate are able to join the public sector with a number of male trainees joining the army or the police.

Intermediate Training (year 2) follows. Trainees who successfully completed this part of the training will be awarded a Vocational Education Diploma (Skilled Worker). Vocational Education Diploma (Craftsman) is awarded to those will be able to complete Advanced Training (year 3) and they will be qualified for promotion when they join the government service.

Shinas VTC is a part of a system created by the Ministry of Manpower that links the vocational training with the technical (college) training to develop the national manpower. The process guarantees that

this system will secure the establishment of well-connected vocational and technical channels based on a unified education and training basis. On this system, graduates from the training Centers are provided opportunities to further their studies by enrolling to the technical colleges and earn themselves Technical Advance Diploma (year 4 in colleges).

The Mission

> "Provide the labour market with manpower that are able to compete in order to contribute in the economic and social development by offering a high quality professional programs."

This is the main purpose why Shinas VTC exists. Oman has a population of 4.15 million, 1.8 million of which are expatriates. In Muscat, the capital city, there were some 790 thousand expats and only 480 thousand were Omani nationals.

This somehow gives us a picture of preference when companies hire their employees. Many of the foreign workers applying for white-collar jobs are more qualified, if not as equally qualified, in terms of their education and years of experience compares to the nationals. Shinas VTC creates an opportunity for the Omani youth to become competitive and get that chance to land a decent job after graduating.

The Vision

> We aim to be the main foundation of educating, training and qualifying the national manpower in different professional fields according to the national and international standards.

The training program used in VTCs was developed in coordination with the International Labour Organization (ILO) and the Japan International Cooperation Agency (JICA) with the German Authority for Technical Cooperation (GTZ) and the Australian Agency for Training.

Recently, with the revision and upgrading of its program, the Vocational Diploma it issues to its graduates is now equivalent to a Technology Diploma issued by the Colleges of Technology. This goes to show that it is on track to becoming the main foundation in educating the national manpower.

The Goals

Shinas VTC goals are primarily focused on its clientele, the trainees. However, it doesn't undermine the importance of providing an excellent work environment and services for all its employees.

- Achieving the excellence in administration in the work according to the regulations and ethical principles.

- Offering educational and training programs with high level and quality in accordance with the approved occupational standards to meet the needs of the labour market. In addition, developing and approving these programs from the competent authorities.
- Provide the educational and training resources and also developing and updating these resources continuously
- Promoting and consolidating the productive relationship with the local community, institutes of public and privet sectors, graduates and with the related educational institutes
- Provide an excellent educational and training environment for students
- Provide quality services for students
- Provide qualified administrative, educational and training cadres, increase their competency and motivate them
- Provide an excellent work environment and services for all employees

IV. Shinas VTC Information System Group (ISG)

ISG Mission

Through its active and continuous upgrading of its staff and IT resources, the ISG mission is to provide a secured, reliable and responsibly-managed integrated IT environment.

ISG Vision

Inspiring other training centers in Oman, the ISG envisions an organization of committed and competent IT personnel providing quality IT support that advances the teaching, training and learning process in Shinas Vocational Training Centre.

ISG Goals

In support of the goals of SVTC, the ISG is focused on:

- Providing the staff (teaching and non-teaching) an integrated information system where student related information can be processed and managed effectively
- Enhancing the IT course offerings (for students) and IT trainings (for staff)

- Equipping the teaching staff with innovative learning tools to enhance the teaching process and
- Strengthening the communication channel between Shinas VTC and local community.

V. ISG Information Systems Objectives (Strategic Objectives)

The following are ways the ISG can help to achieve the mission and vision of Shinas VTC:

- Research and acquire needed information systems, teaching tools, application suites and services to meet SVTC's requirements
- Disseminate and implement the ISG strategic plan
- Provide timely technical IT support and up-to-date trainings to the community
- Collaborate with the teaching and non-teaching staff to find ways and means to improve efficiency on use of IT resources
- Manage effectively and responsively the organization-wide IT environment
- Provide leadership in strategic planning on the use of emerging technologies

VI. ISG Strategies

The following are required to achieve the major goals:

- Creating the Information System Group of Shinas VTC
- Qualify staff to become a member of the ISG
- Continuous upgrading and training the for the ISG team
- Documenting IT-related services provided to the community
- Logging services, repair, installation, configuration and maintenance done to IT resources especially on the servers, firewall, core switches, information systems, application suites and the likes
- Emphasizing work ethics that focuses on decisions that are just and promote the welfare of SVTC over the interest of a single group or a person
- Plan and implement periodical trainings that focus on developing IT skills of the Shinas VTC staff
- Formulating IT policies, like the AUP, to promote awareness and responsible use of IT resources
- Granting of autonomy to decide on organization-wide IT related situations

VII. Areas where the ISG could add value to Shinas VTC

1. Student Support Service
    - Provide system where student can have a secured, reliable on-demand access to their credentials and related training records
    - Provide relevant IT teaching tools that advances trainings provided to students
    - Put up an organizational website that enhances the link between home and the Centre

2. Employee Excellence
    - Conduct best practices training for employees (teaching and non-teaching) on available IT tools, systems, application suites and processes that improve their efficiency to carry out their day-to-day tasks
    - Provide an auditing system that manages training related information
    - Lead an awareness campaign on IT Acceptable Use Policy that maximizes the performance of the entire IT environment

3. Transaction Process
    - Provide or acquire customized systems that maximizes work efficiency and provides faster outputs
    - Provide standard operating procedures in addressing IT related issues

4. Economics
    - Utilize relevant and time-tested free and open-source software and systems whenever possible and applicable.
    - Conduct periodic check-up on IT devices

VIII. SWOT Analysis

SWOT Analysis is a useful technique for understanding your Strengths and Weaknesses, and for identifying both the Opportunities open to you and the Threats you face. (James Manktelow)

The SWOT analysis provides a clearer picture about an organization. It is a great tool that identifies factors that could greatly move the organization forward towards its goals.

Strengths

1. **Conducive working environment.** The teaching staff of Shinas VTC comes from different companies working together. Its non-teaching staff all comes from the Ministry of Manpower and are all local Omanis. The teaching staff is composed of instructors from different countries, from Africa, Middle East, including local Omanis, Central and Southeast Asia and of different religions. Diverse as it may be, respect and camaraderie among its staff are observed.

2. **Effective leadership.** The Centre has seen great and beneficial changes inspired and initiated by current leadership. Effective scheduling, faster transaction process, upgrading of facilities and trainings for staff, to name a few, are becoming more and more evident every term.

3. **Open communication channel.** Email system once only used in IT classes is now utilized in the work environment. This is an initiative of the leadership in Shinas VTC to properly document communications between staff and the administration. To speed communication, IP-phones were also installed earlier this year.

4. **Viable training programs.** The training programs provided by Shinas VTC are in line with the needs of the local community and the region. This increases the chances of the graduates to land a job in less time.

5. **Standardize training curriculum.** Shinas VTC implements curriculum that is current and, from time-to-time, updated by the Ministry of Manpower to elevate the quality standard.

6. **Linkage with the technical college.** Shinas VTC has a partnership with Shinas College of Technology. This enables select students of both institutes to advance their training by providing them access to human resources and facilities from both institutes.

7. **Executive council.** The Centre recently created a core council represented by heads of different departments. This makes communication from top management to the teaching and non-teaching staff more efficient.

8. **Student support service.** Students are provided free school supplies and use of quality school equipment. From free document printing to photocopying, document scanning, trainees are also provided free course materials, uniform, shoes plus a monthly stipend.

9. **Standardized English Program.** The English language program implemented in the Centre is based on the program used across technical colleges in Oman.

10. **Supportive Administration.** Although the administration has many things to focus to, its employees are never the last or the least. The administration makes it a point to listen and cater as much as it can to the needs of its employees.

Weaknesses

1. **Network infrastructure.** Without any formal IT organization or even organization-wide IT policy, connecting to the local network becomes difficult as it usually goes down at least once to twice a day recently.

2. **Information-drive campaign.** Information regarding the offerings of the Centre must be disseminated properly, to more people so that many would benefit from this initiative.

3. **Co-curricular activities.** Co-curricular activities have yet to be fully implemented at the Centre mainly because there is no provision to conduct it.

4. **Canteen.** Staff and trainees share the same old and small canteen. With the number of trainees increasing every semester, the Centre requires an expansion or a new and bigger canteen.

5. **Gymnasium.** Sports and cultural activities are difficult to conduct since there is no place to hold these activities.

Opportunities

1. **Responsive and effective administration**. The leaders of each department (non-teaching) are becoming more active than ever. Regular meetings are conducted assessing present and pressing issues in the Centre. In the future, this could result to a more productive working environment.

2. **Utilize other means for Information Campaign.** The creation of the website would likely result to a wider reach in its information dissemination campaign.

3. **Workshop Improvement.** Having been provided quality laboratories, equipment and tools, upgrading the workshop will not be that difficult, not to mention a fact that there are a number of companies willing and able to provide new and upgraded equipment and tools.

4. **Quality control committee.** Composed of heads from different departments (teaching and non-teaching) which was recently organized, this group will be able to implement and monitor standards across the Centre. This will ensure that its clientele will only receive quality training and services.

Threats

1. **Decreasing number of enrollees in welding and RAC.** Through the years, the number of enrollments in Welding and Metal Fabrication as well as in Refrigeration and Air Conditioning has been steadily going down. Most trainees prefer to enroll in Mechatronics program, followed by Electronics and Electrical.

2. **Bypassing higher education.** Many students who finish their class 10 prefer to go directly to enlist in the army or the police. Without higher education, they won't qualify for rank promotions.

3. **Limited budget.** With an increase in enrollment, the Centre requires an increase in funding to cater to its clientele.

4. **Underqualified staff.** There are still some staff members that were hired lacking proficiency in their assigned responsibilities.

IX. PEST Analysis

PEST stands for Political, Economic, Social and Technological. *This analysis is used to assess these four external factors in relation to your business situation. Basically, a PEST analysis helps you determine how these factors will affect the performance and activities of your business in the long-term.* (Makos, 2013)

Political

- Changes in academic term from semester to trimester initiated by the Ministry of Manpower
- Changes to curriculum with very short notice
- Shortening contact hours in classes

Economic

- Oil price plummeting
- Ministry funding decisions may affect the Centre's finances
- Cost of putting-up additional buildings, laboratories

Social

- *Low growth rate of 0.4 per cent* (Oman, Times of Oman, 2015)
- *High expat growth rate of 0.6 percent* (Oman, Times of Oman, 2015)
- Decreasing male enrollees
- Increasing female enrollees
- Social networking – blogs, Facebook, Twitter

Technological

- Computer viruses may affect the day-to-day transactions
- Using pirated software
- Slow and outdated network access points
- No organized IT groups
- Out of date computer hardware
- Lacking competent network administrator

X. GAP Analysis

A gap analysis is about finding the differences between the situation called 'where we want to be' and the situation called 'where we are now'. (NCTL)

Three future states were initially identified below. They were chosen as they would greatly impact change and catapult the Centre to innovate further. Upon completion and implementation of these programs/projects, succeeding programs/projects may be undertaken.

Future State 1 – Creation of an IT/IS Group

An organization that manages efficiently the Centre's IT resources will definitely show that the administration is focusd on providing quality IT services for all. With this organization, services request will be centralized, standardize and properly documented with all the staff aware of their rights and responsibilities in their use of IT resources.

Current Status

Shinas VTC does not have an organized formal or informal IT group yet. Although last year an IT specialist arrived, IT services provided in the Centre were given by just anyone who more or less knows a thing or two on the subject. The coordination between these people is close to none. Documentation is also an issue. It is difficult to track who last work on the server room, who made changes to the server, what changes were made and others.

People in the Centre expect a fast network (Internet) connection at all times without any restrictions at all. Some don't understanding that most files downloading application gathers huge bandwidth (some others know but just ignore the fact). Gigabytes of data are downloaded every day. Installing pirated software on individual PC is the responsibility of the owner but installing it on the Centre's PCs and laptops should be a different story. The Centre should never tolerate the use of this pirated software.

Bridging the Gap

To realize the above mentioned future state, the creation of IT/IS group is deemed necessary. This group should be directly under the Office of the Principal. In this way, the principal gets to have first-hand reports and updates necessary to run and manages the IT resource effectively.

The following are the suggested steps in creating the IT/IS group:

1. Qualifying personnel for the group
2. Identifying qualification and naming a head for the IT/IS group
3. Creating a strategic plan for the group
4. Formulating an Acceptable Use Policy

Future State 2 – Creation of an Organization Website

An organization web site will be put up. This site will provide access to essential information and announcement to staff and students. This site will also integrate existing learning management system so students may be able to access courseware anywhere, anytime.

Current Status

As of this writing, a learning management system (Moodle) is currently being utilized in the IT classes of the author. With this, my students are able to access learning materials such as slides, PDF, videos, actual and practice quizzes and access their grades. Students are updated with the announcement like assignment due dates. Those who are absent for one reason or another are able to go by themselves on the chapters they missed with only a minimal intervention from their instructor by referring to materials on the site. Submission requirements are also done here, giving the instructor a more efficient way to collect and rate it. This platform only runs in Centre's intranet.

Bridging the Gap

Putting up a website on the Internet and integrating a learning management system will surely enhance content delivery and learning on the part of the students. Providing timely and on-demand access to student related information will be a plus on the students as they would be aware about their class standing.

The following are the suggested steps in creating the IT/IS group:

1. Train a qualified IT/IS group staff in handling web server and web design
2. Create a committee to plan the content and design of the site
3. Acquire a lease line from Omantel, an ISP here in Oman
4. Train the teaching staff on the use of LMS

Future State 3 – Creation of an Information System in Student Registration

Putting up a system in student registration will speed-up and automate processes related to students. From assigning students their subjects for the current term, rooms, schedules and instructor to consolidating final grades from different departments, this system will surely provide ease of access to student related information faster and efficient.

Current Status

There are no automated systems used in the enrollment process and neither in the collation of marks/grades from different subjects. Student records are kept in office automation software like Word and Excel. Students coming into the Centre every year are assigned different ID number formats for clear reasons. This ID number is also used in creating a students network account (domain account) and because different batches have different number formats, it creates inconsistency also on the network/domain side.

Bridging the Gap

The student registration is primary process in gathering student related information. It must be consistent because all other systems will draw data from this system. And so careful planning must be conducted to make this plan work.

Below are the suggested steps in undertaking this plan.

1. Tap the IT/IS group to lead the planning for this project.
2. Put up the necessary hardware for this system
3. Regardless if this system will be developed in-house or be purchased outside; training the staff is of paramount importance.

4. Parallel system must be run on its implementing stage, using the old and the automated system together.
5. Once the system has been fully tested, the old system may be put to stop.

XI. Current IT Status

It is far more manageable to fill the gap to reach future goals if the current status is audited. On this section we are presented with the IT resources available in the Centre.

Software

The Centre uses mostly commercial software and a number of open-source software for its day-to-day operations.

Table 1 - Software Installed

Software	Name
Office Automation	Office 2010
Programming	Code:Blocks/C++, JAVA
Operating Systems	Windows 7, Ubuntu
Desktop Publishing	Publisher, Adobe CS2
Productivity	MS Expression Web, Expression Encoder, Chrome, Firefox, Adobe Reader
Learning Management System	Moodle
Finance	MoM Finance System

Computer Hardware

Computer LAB 1 & 2 are equipped with Dell OptiPlex 755 purchased in 2007 with Core 2 Duo processors, 1 GB RAM, 150 GB storage and an LCD monitors. Some PCs in the faculty rooms still have Dell 755 models but in the last two years newer models of the same brand started to replace the old ones. This year, HP MiniPC were acquired and installed in the faculty rooms replacing the old Dell models. The Multimedia LAB houses Fujitsu computers acquired in 2008. The Offices and the English Lab are equipped with Dell 760 & 780 computers. Ratio of computers to personnel is 1:1. The same is true to student's use of Computer and Multimedia LABs.

Table 2 - Number of PCs

Location	No. of Units	Internet Connected	No. of IP-Phones	Printers/Fax
ComLab 1	26	Yes	1	1
ComLab 2	26	Yes	1	1
English Lab	8	No	0	1
Multimedia Lab	22	No	1	1
Faculty 1	16	Yes	16	3
Faculty 2	16	Yes	16	2
Faculty 3	15	Yes	15	3
Offices	24	Yes	24	20/2
Library	24	Yes	1	3

Network Devices

The Centre's network infrastructure devices were all acquired in its early operation in 2007-2008. It has 3 Dell rack servers and 1 Fujitsu tower server and connected to HP switches. Wireless connection to the network is provided by the Aruba 2400 switch with its access points (a/b/g).

Table 3 - Network Devices

Device	No. of Units
Rack Server	3
Tower Server	1
Switch	6
Access Points	25

The network environment is powered by Windows Server 2008. Staff and students are provided domain user name and password. I created and managed these accounts until recently transferred to the official IT Specialist. The domain controller and the DHCP servers run on one dedicated Dell rack server. Another rack server is used for the firewall. The Fujitsu tower server houses the file, web and mail servers.

Table 4 - Server Applications

Applications	No. of Installations	Function
Server 2008	3	Domain Controller File Server DHCP Server Web Server
pfSense	1	Firewall
hMail	1	eMail server
Apache	2	Web Server

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