

**MASTER EDUCATION INSTITUTE
AFFILIATE OF BANASTHALI UNIVERSITY**

**ANALYSIS OF 3D/4D ULTRASOUND SCANNING MARKET IN
UAE**

By

GAMAL KARAM A. AZIZ

**A MARKET ANALYSIS OF 3D/4D ULTRASOUND SCANNING IN
UNITED ARAB EMIRATES**

**Submitted to the
UNIVERSITY**

**In partial fulfillment
of the requirements for the degree of
MASTER OF BUSINESS ADMINISTRATION**

**Degree Awarded
SPRING, 2007**

The members of the Committee approve the ANALYSIS OF THE 3D/4D
ULATRSOUND SCANNING IN UAE MARKET of GAMAL KARAM A. AZIZ
defended on MAY 2007.

Mr. LEWIS FERNADIS
Academic Officer

Mr. DEEPAK KARLA
Marketing and MIS

Mrs. LAKSHMI
Quality Management

Approved:

Mr. LEWIS FERNANDIS, Academic Officer, MASTER EDUCATION
INSTITUTE

The Office of Graduate Studies has verified and approved the above
named committee members.

To My Father

**The man who did everything and still doing a lot for me
Without his kind support I would not be able to proceed for MBA
or start this research.**

ACKNOWLEDGEMENTS

To Mr. Lewis Fernandez

The man who supported me in all steps of this research

To Mr. Deepak Karla

**The teacher who taught me everything in marketing and helped
me to plan for this research**

To Mrs. Lakshimi

The teacher who started with me the first steps in this research

Table of Contents

Subject	Page No.
LIST OF TABLES	7
LIST OF FIGURES	9
ABSTRACTS	11
INTRODUCTION	13
CHAPTER 1 Introduction to UAE (United Arab Emirates)	16
UAE Area	16
UAE Population	17
UAE National Income	18
 CHAPTER 2 The medical equipment market in UAE	 20
Introduction	20
Number of hospitals and clinics in UAE	21
Medical professions in UAE	23
 CHAPTER 3 Introduction about ultrasound scanning methods	 26
Introduction	26
What is 3D scanning	27
What is real time 3D scanning	28
What is live 3D	29
What is 4D	30
 CHAPTER 4 Data collection about 3D/4D ultrasound in UAE market	 31
Data collection method :	31
Questionnaires	32
Summary of comparative information collected from prospects	36
Sampling technique	40
Population surveyed	40
 CHAPTER 4 Data analysis and results	 41
Specialty	41
Willingness to use The 3D/4D ultrasound	41
Awareness of the 3D/4D ultrasound	43
Benefits added by using volume scanning	44
 CHAPTER 6 Survey of 3D/4D Ultrasound systems in UAE market	 57
Which brand/model they are currently using	57

	Since how long they are using you system?	58
	Customer satisfaction of the currently used system	59
	Are they willing to change the current system?	65
CHAPTER 7	Comparison of 3D/4D Ultrasound systems in UAE market	70
	Introduction	70
	Comparison of volume scanning machines from the general point of view	72
	Comparison of volume scanning machines regarding the computerization and hard ware configuration	75
	Number of active probe ports	77
	Monitor and image	78
	Price and after sales service	80
	3D functions	82
	3D probe types	89
	Overall grading according to comparison	92
CHAPTER 8	Proposals and suggestions	95
REFERENCES		98
BIOGRAPHICAL SKETCH		99

LIST OF TABLES

Table No.	Table title	Page No.
1	UAE population	17
2	UAE area	18
3	GDP in UAE, 2005 (in Million Dirhams)	18
4	GDP in UAE, 2005 (in Million US\$)	19
5	No. of hospitals in UAE	21
6	No of clinics in UAE	22
7	Medical professions in UAE	23-25
8	Classification of Ultrasound end users by specialty	41
9	Classification of ultrasound users (2D : 3D/4D users)	41
10	3D ultrasound systems sold in UAE	57
11	How long they are using 3D ultrasound?	59
12	Are they satisfied with the current system?	60
13	Brand name satisfaction	61
14	Durability satisfaction	61
15	Performance satisfaction	62
16	Price satisfaction	63
17	After sales service satisfaction	63
18	Overall satisfaction	64
19	Overall satisfaction, summary	65
20	Willingness of satisfied customers to change the current system	65
21	Change the current system, brand factor	66
22	Change the current system, technology factor	67
23	Change the current system, performance factor	67
24	Change the current system, After sales service factor	68
25	Change the current system, overall factors	69
26	Comparison of 3D ultrasound - General	73
27	Comparison of 3D ultrasound – General (cont.)	74
28	Comparison of 3D ultrasound – General (cont.)	75
29	Comparison of 3D ultrasound – computerization and H/W configuration	76
30	Comparison of 3D ultrasound – computerization and H/W configuration (cont.)	76
31	Comparison of 3D ultrasound – computerization and H/W configuration (cont.)	77
32	Comparison of 3D ultrasound – No. of probe ports	78
33	Comparison of 3D ultrasound – No. of probe ports (cont.)	78
34	Comparison of 3D ultrasound – No. of probe ports (cont.)	78
35	Comparison of 3D ultrasound – monitor & image	79
36	Comparison of 3D ultrasound – monitor & image (cont.)	79
37	Comparison of 3D ultrasound – monitor & image (cont.)	80
38	Comparison of 3D ultrasound – Price, Training & after sales service	81

Table No.	Table title	Page No.
39	Comparison of 3D ultrasound – Price, Training & after sales service	81
40	Comparison of 3D ultrasound – Price, Training & after sales service	81
41	Comparison of 3D ultrasound – 3D functions	87
42	Comparison of 3D ultrasound – 3D functions (cont)	88
43	Comparison of 3D ultrasound – 3D functions (cont)	89
44	Comparison of 3D ultrasound – Probe volume & weight	90
45	Comparison of 3D ultrasound – Probe volume & weight (cont)	90
46	Comparison of 3D ultrasound – Probe volume & weight (cont.)	91
47	Overall grading according to comprehensive comparison	92
48	Overall grading according to comprehensive comparison (cont)	92
49	Overall grading according to comprehensive comparison (cont)	93

LIST OF FIGURES

Figure No.	Title	Page No.
1	UAE map	16
2	UAE area	17
3	UAE Population	18
4	GDP in UAE, 2005 (in Million US\$)	19
5	Number of centers/clinics in UAE	21
6	No. of clinics in UAE	22
7	No. of medical professions in UAE	25
8	Voluson 530 ultrasound system	26
9	How a volume probe does the scanning in 3 planes	27
10	Pictures of the 3 planes and volume image	28
11	Willingness to have 3D/4D ultrasound system	42
12	Causes of non-willingness of using volume scanning	43
13	Awareness of Volume scanning	43
14	The three orthogonal planes	45
15	3D view with deferent rendering modes	47
16	Bilateral cleft lip	48
17	Achnodroplasia	48
18	Absent radius and ulna	49
19	Exophthalmos	49
20	Clenched fist in trisomy	49
21	Polydactyly	49
22	Foetal scoliosis	50
23	Coronal view of uterus showing the triangular shape of normal endometrium.	50
24	Septate uterus	50
25	Intestinal T.B.	51
26	Intestinal Typhoid	51
27	Multiple gall bladder stones	51
28	Carotid arteries images of different cases showing different grade of stenosis and occlusion	53
29	3D power Doppler	55
30	3D ultrasound systems sold in UAE	58
31	How long they are using 3D ultrasound?	59
32	Are they satisfied with the current system?	60
33	Brand name satisfaction	61
34	Durability satisfaction	62
35	Performance satisfaction	63
36	Price satisfaction	63
37	After sales service satisfaction	64

Figure No.	Title	Page No.
38	Overall satisfaction	64
39	Overall satisfaction, summary	65
40	Willingness of satisfied customers to change the current system	66
41	Change the current system, brand factor	66
42	Change the current system, technology factor	67
43	Change the current system, performance factor	68
44	Change the current system, After sales service factor	68
45	Change the current system, overall factors	69
46	Types of key board	71
47	Volume CT view, different views	82
48	VOCAL	83
49	Multi-Slice View	84
50	Magnetic Resonance (MR)	85
51	Foetal legs before and after use of cutting mode to remove overlying structures	86
52	Image of different kinds of 3D probes	91
53	Overall grading according to comprehensive comparison	94

ABSTRACT

This research was made as a step for analysis of the volume ultrasound scanning market in UAE. Until 2006 there was no scientific study for this market although it is a growing and promising market.

As a start I made a brief introduction about the market place; UAE. Then I moved to more details about the population and economy which shows high economic standards with high economic growth rate. Usually the normal economic growth rate it is 2-4% per year. But in UAE is it 8-10 % per year which is the highest rate in the world. Also, UAE shows the highest per capita in the world; US\$ 19200.

Going deeper, I made a special chapter for the health sector in UAE showing number of hospitals, clinic, doctors, nurses and medical technicians. Data in this chapter had been collected from Ministry of Health, Chambers of commerce and Ministry of Planning in UAE. This would give a clear idea about the size of the health sector market for all companies working in the related industries such as medical equipment, instruments, health insurance...

This chapter shows clearly that there is a remarkable growth in the sector of health services in UAE and shows a promising market for the related industries, mainly the marketing and sales of medical equipment.

Then I followed this by – using the knowledge of my medical qualification - giving a brief idea about the different methods of ultrasound scanning including 2D, 3D and 4D as well, explaining the differences between these scanning methods a very simple manner so that a non-medical persons or any person working in the medical equipment industry can understand what is volume scanning.

Once we have got relatively clear information about the market place and the product which would like to study in this market, I moved to data collection and analysis of the volume scanning market in UAE which is the main subject of this

research. I have visited all governmental hospitals in UAE and most of the private hospitals as well as many private clinics. The total number of the customers in this research was 475 persons including doctors, and ultrasound technicians. During the first two weeks of the survey and data collection, the questionnaire had been revised and amended more than once. I spent more four months to meet these customers and to collect the information.

In data analysis I have presented good information about the different benefits of the volume scanning for different medical specialties. Also, this chapter shows high promising market for the Volume scanning ultrasound systems.

In the last chapter I made suggestions and proposals that may help having a wide and strong base for the volume ultrasound market in UAE and to it increase this market in a good manner.

I hope that this research might add some benefits to companies that have some interest in this market.

Introduction

Do you have a 3D ultrasound?

In 1996 I visited a gynaecologist clinic in Abu Dhabi to offer him some medical equipment. An Egyptian pregnant lady came to the clinic for routine check up. After few minutes she asked the doctor do you have a 3D ultrasound system. Doctor said no. The patient replied : I am coming from Cairo and I have been examined by 3D machine and I have wonderful 3D images for my first baby while he was a foetus. The doctor carried out his job and made 2D ultrasound scanning and the patient was not enough satisfied.

Doctor (who knows already I am an Egyptian with medical degree and I moved recently from Cairo to Abu Dhabi) allowed me to enter his office and introduced me to the patient. I shared them their conversation. I explained to him that in Egypt, there are some 3D ultrasound systems in (mainly in Cairo) and many doctors know about this new technology and are willing to have it in their clinics and hospitals. But in United Arab Emirates, no any 3D machine is available. Patient understand the situation and was convinced, especially when she notified that this doctor had been recommended by her trustable friend as one of the best gynaecologists in UAE. She understood that this new technology in not available yet in this country.

When the patient left the clinic, the doctor had a long conversation and discussion with me about the 3D ultrasound. Fortunately I had some 3D images in my brief case (although I was not working in this field of medical equipment in UAE yet, but I was keeping these images from my previous job in Cairo). On the first sight, the doctor was astonished and did not believe the quality of such images.

He did not believe that the ultrasound can give such images.

Delma Al-Redwan Trading (the exclusive distributor for Medison company – South Korea) launched the 3D ultrasound system (Voluson 530D – Medison – Kretz) in UAE on 1998 (Arab Health Exhibition 1998).

The market showed a very tough resistance to this new era. Majority of ultrasound end users were not accepting this new technology. Few of them showed an interest to know something in this new field of ultrasound scanning. Very few doctors showed some interest to understand this scanning technique. Some trials had been done in some hospitals and clinics. Although the results of were amazing, but the resistance was very tough.

Delma Al-Redwan spent many years promoting the 3D ultrasound in UAE market and succeeded to build a small market for this new technology and became the leader in this market.

Later, other competitors appeared in UAE market but Medison Company - Korea is still the market leader and has the best market share in this market.

Up till the end of 2005 and the beginning of 2006, no scientific study or research had been made about the 3D/4D ultrasound market in UAE.

So, I decided to start the first step and proceed a primary research for 3D/4D ultrasound market in UAE to discover if it is a promising market for this new technology.

In this research I started by introduction about UAE giving a brief about the country, population economy Also I added information about the health service in UAE including private and governmental sectors.

UAE country is a very rich country with very high growth in varieties of industries. The health industry is one of the most significant industries which showed great

changes in the last few years. There is establishing of new governmental hospitals and clinics as well as great extensive development of the private health sector. For example, Dubai Health City in Dubai, SKMC (Shaikh Khalifa Medical Center) in Abu Dhabi and so many big private hospitals all over the seven Emirates, mainly Dubai, Abu Dhabi and Sharjah.

Moreover, in the last few years this market showed expansion due to legal factors (banning of the free health services in governmental sector from the non-local residents, studying of applying new rules and regulation for the health insurance in private sector), and planning of the compulsory health insurance for all UAE residents (Local & foreigners), Demographic factors (the population of the UAE had increased more tremendously in 2005 and 2006, increased personal income in governmental sector as well as private sector)