

# Electronic Counsellor System for Omani Secondary Schools

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## Abstract

With the emergence of a vocational guidance service in the Sultanate of Oman, this study seeks to help secondary school students to recognize their professional orientation and their level in decision-making and vocational maturity. It helps the students to choose the right profession as well as discover themselves. The proposed vocational guidance model built based on qualitative research methods. Researchers did a comprehensive review and deep investigations for related works, Psychological and educational scales, and vocational guidance theories. In addition, an interview survey with specializes people in this area supports the process of building the proposed conceptual model. The final model contains shortlisted measurements and scales that suit the scope of this study, which it is Omani secondary schools. Expert people from Ministry for Higher education and Omani Schools evaluated the final model. Researchers validated the proposed model by building Electronic Vocational Counsellor System (EVCS) for Omani secondary school. EVCS maps all scales in the proposed model. Different students from various schools in Oman tested EVCS and then by using survey method, users respond positively to their satisfaction for using EVCS.

**Keywords:** Vocational guidance, professional orientation, vocational maturity. Decision-making, Electronic Vocational Counsellor

## I. INTRODUCTION

In face of the unprecedented pace of worldwide changes with the advent of information technology and hazardous development of information, education sectors need to improve students' knowledge, creativity, inventiveness and adaptability and learning capabilities. Many research papers around the world evaluate a positive effect of Information technology on the education and its program. In [1], they mentioned that technologies cannot function as a solution in isolation, but there are key ingredients that increasing the possibility for schools to address core educational challenges.

Through a project which had done by director of EduTraC (Higher Education, Training & Career Expo) in Oman [2]; she announced "In the 8th Five Year Plan 2011 - 2015, 34% of the total current expenditure had been allotted to improve the quality of learning, research and development and manpower training". Different efforts also have done by Ministry of Education in Oman for supporting the continuous developments in various fields of education for the period from 2002 until nowadays. The Ministry organized an educational conference with UNESCO entitled "Secondary Education for a Better Future". The development of secondary education in the schools was the most important part of this educational

event, [3]. Through a plan for last five years, Ministry of education in Oman concentrated on reinforce the cooperation between public and private sector educational institutions in order to improve vocational guidance and counselling in secondary schools. The Ministry plan is contained a various future aims as: raise student time on meaningful learning, increase involvement of parents and community in education, develop an adequate supply of teachers, address issues of teacher deployment, focus in-service continuing professional development on teaching and learning, strengthen links among education system, higher education institutions (HEI) and employers, increase flexibility within the education system, and improve vocational guidance and counselling in secondary schools, [4].

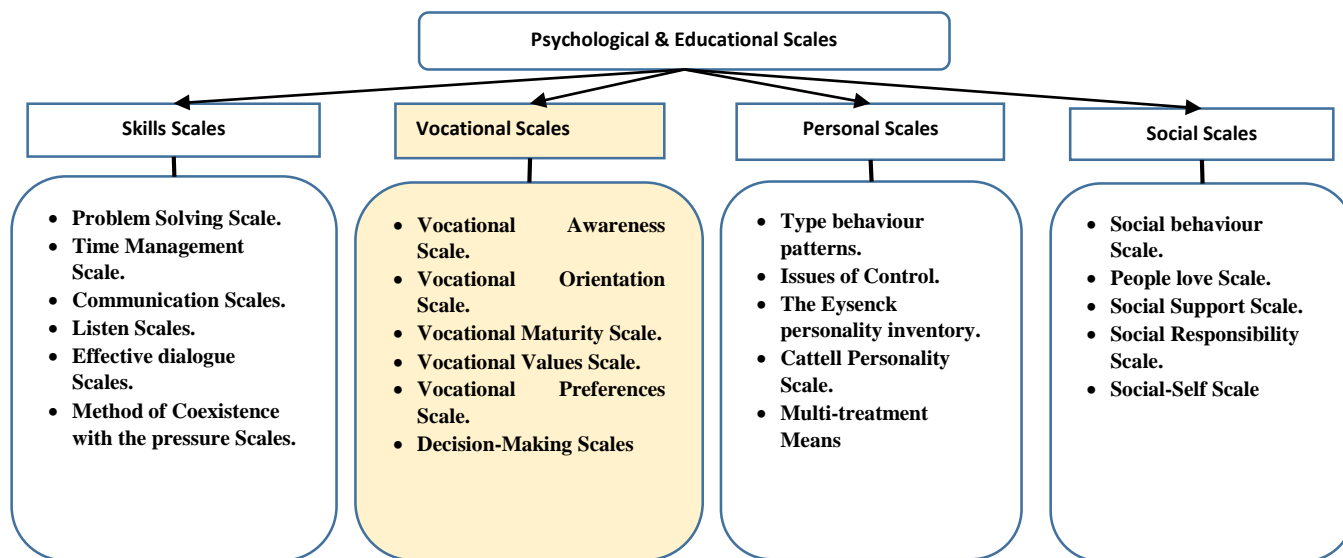
Ministry of higher Education (MHE) in Oman announced that "External and internal scholarships contribute in a significant way to the Sultanate's economic growth. A major aim of the Oman government is to ensure that students take programs in areas relevant to the Sultanate's job market. One way to reach this objective is by offering internal and external scholarships that enable students to pursue higher studies in certain specializations, albeit at different degree levels, in Higher Education Institutions (HEIs) within and outside Oman", [5]. In 2016/2017 MHE provided around ten (10) thousands internal scholarship and two (2) thousands external scholarship for students whom are graduated from secondary school in Sultanate's, [6]. Did these scholarships distribute for all specializations equally? Did MHE do any method to determine the suit course that could match student maturity, orientation, or his/her education level? Does the scholarships distribution consider the industry path and career opportunities? Can the student make his/her own decision in the right way?

Vocational guidance is promises area for develop the education in Oman. National Careers Guidance Centre (NCGC) of Oman aims to help the students for choosing the accurate specializing that built based on scientific criteria whenever the students graduate from school. The absence of scientific evidence and accurate information will cause the overlap of several factors through choosing the right specialization. Family, friends, university, habits and rules of some misconceptions leads to vaguer student decision to choose the right course. [7]. The outputs of this work have solid impacts for decision makers and specialist career guidance in order to enhance the vocation maturity of Omani secondary school students. The proposed model is going to be as a base for electronic vocational counsellor system that facilitate the work of school consular and provide the students with accurate advices and results.

## II. VOCATIONAL GUIDANCE MEASUREMENTS

Many previous studies ([8], [9], and [10]) have shown interest in career counselling programs and its impact on the professional maturity, decision-making and professional orientation on different age groups, but still fair number of studies concern about computerized programs on vocational guidance and how it effective in helping certain categories of individuals.

There are different types of Psychological and educational scales as skills scales, vocational scales, personal scales and social scales [11], [12], [13], and [14]. Through this work, the main objective is to proposed vocational guidance model for Omani secondary school in order to develop EVCS that replace the traditional vocational guidance in the schools nowadays. Researchers review all related measurements and factors that affecting vocational scales then finalize the most affect and suitable measurements that suite Omani secondary schools. See figure 1 below.



**Figure 1:** Psychological and educational scales

Many psychological and educational studies as: [15] and [16] clarified that if the right person is suited his/her study field or work place, many psychological, economic and health benefits is satisfied. As an example of this benefits; failure and wastage rates for students schools is reduced; individual's sense of satisfaction and happiness is increased which reflects positively on individual career, family, social relationship and psychological. All of that leads to improved production, whether in quantity and quality ways which maximum the expectation to meet the needs of local markets, reducing unemployment, protect society and individuals from the harmful effects of unemployment, and also reducing rates of workers absent from work where the employee feels complacent towards the job. Otherwise; bad vocational guidance leads to maltreatment to an individual [17], such as certain illnesses and deformities; and affect negatively society, organizations, employments, and productivity for individuals and business. Vocational scales consists of several scales such as vocational awareness scale, vocational

orientation scale, vocational maturity scale, vocational values scale, vocational preferences scale, and decision-making scale. These scales are affected by several factors that determine the value for each of them. After researchers do comprehensive review process for all Vocational scales, table 1 clarifies all these scales, its affected factors, and the related work for each of them. According to report by [27], European Centre for the Development of Vocational Training (Cedefop) presented a research about the benefit of vocational guidance in 21 European countries; the period of research was for five years. Many countries contribute in this research, including plus Norway, Hungary, Spain, Czech Republic, Italy, Australia, Denmark, Portugal, the UK, Finland, Germany, Slovenia, Romania, Sweden, Italy and Netherlands. The results of this research reports that vocational guidance affects positively in two main categories: economically; where economic growth and labour market outcomes are increased, and socially; where individual motivation and life satisfaction are going to achieve and improve, [28].

**Table 1:** Vocational Scales

No	Vocational Scales	Factors	Reference
1.	Vocational awareness	<ol style="list-style-type: none"> <li>1. Knowledge factors</li> <li>2. motivation factors</li> <li>3. beliefs factors</li> <li>4. family factors</li> <li>5. Social factor</li> </ol>	[18] [19]
2.	Professional Orientation	<ol style="list-style-type: none"> <li>1. Genetics</li> <li>2. Personal experiences</li> <li>3. Social experiences</li> <li>4. Upbringing</li> <li>5. economic pressures</li> </ol>	[18] [20] [21]
3.	Vocational maturity	<ol style="list-style-type: none"> <li>1. Bio psychosocial.</li> <li>1. Personal factors.</li> <li>2. Academic achievement.</li> <li>3. Family income.</li> </ol>	[22]
4.	Vocational values	<ol style="list-style-type: none"> <li>1. working with other</li> <li>2. Self-Expression</li> <li>3. Extrinsic Rewards</li> </ol>	[23]
5.	decision-making	<ol style="list-style-type: none"> <li>1. Personal Demographic.</li> <li>2. Personal Psychographics.</li> <li>3. Social factor.</li> <li>4. Psychological factor.</li> </ol>	[22] [24]
6.	Vocational stress	<ol style="list-style-type: none"> <li>1. Personal Vulnerability to Stress</li> <li>2. Job Demand</li> <li>3. Organizational Climate</li> <li>4. Interaction between Worker and Job</li> <li>5. Organizational Culture and Socialization</li> <li>6. Role of Appraisal and Perception</li> <li>7. HR management practice</li> </ol>	[25]
7.	Vocational satisfaction	<ol style="list-style-type: none"> <li>1. Working Conditions</li> <li>2. Opportunity for Advancement</li> <li>3. Financial Rewards</li> <li>4. Relationship with Supervisors</li> <li>5. Respect from Co-Workers</li> <li>6. Workload and Stress Level</li> <li>8. Opportunity for Advancement</li> </ol>	[26]

### III. VOCATIONAL GUIDANCE MEASUREMENTS FOR OMANI SCHOOLS

Secondary school is the bridge between the school stage and higher education stage (colleges and universities); it is the base of career life of a student. Students can choose their specialization and their future profession from there, but the students have difficulty to make the academic choices. Secondary students pass through uncertain and unfamiliar emotional and physical changes. So young students need necessary help from a counsellor in the school to guide them to choose the appropriate profession without pressure or effected

from their parents and friend. [29]. Through this study, researchers did several interviews with expert people from ministry of higher education in Oman and many specialists career guidance in different institutes. The aim of this interview survey is to evaluate the current situation for vocational guidance in Omani schools and draw the objectives of this research in order to propose valuable solution and find the suits scales that affecting vocational guidance process in Omani secondary schools. The interviews for the specialist's career guidance in different educational institutes are reported in table 2,

**Table 2:** Interview with specialist career guidance in in different educational institutes

No	Name of Experts	Career awareness	Professional orientation	vocational maturity	Career values	decision-making	Career stress	Career satisfaction
1.	Dr. Mohammed AL-Ajami		×	×		×		
2.	Dr. Abdullah Al-Shibli		×	×		×		
3.	Dr. Saud Albadri		×	×		×		
4.	Dr. Ali Mahdi Kazem		×	×		×		
5.	Dr. Ali Alzamel	×	×			×		
6.	Dr. Bakar Suliman Bakar	×	×			×		
7.	Dr. Munther Alothamn		×	×		×		
8.	Dr. kadimal Adli		×	×		×		
9.	Dr. Fatma Mohammed		×	×		×		
10.	Dr. Noor Alrmadi	×	×			×		
11.	Dr. Wali Abdulrahman		×	×		×		
12.	Dr. Abdelmoemen Mohammed		×	×		×		
13.	Dr.Aisha Hussain		×	×		×		
14.	Dr.Rashed Al.Bakushi	×	×			×		
15.	Dr.Abdulrahman Al.Balushi		×	×		×		
16.	Fatma Al.Abri		×	×		×		
17.	Fatma.Saqr	×	×			×		
18.	Mohammed Al.Kindi		×	×		×		
19.	Miss.Nazek Al.asfour		×	×		×		

Table 2 shows that all interviewer completely selected professional orientation scale and career decision-making scale as a main scales that could affect vocational guidance. 74% of the interviewer selected vocational maturity scale, 26 % chose career awareness, and none of them consider career values, career stress and career satisfaction as a significant scales for vocational guidance. The experts from Omani ministry and different educational institutes were declared that the scales:

career values, career stress, career satisfaction can use only to test the opinion of employees after working, while professional orientation, decision-making and vocational maturity scales are selected as a suitable scales for the secondary school students. These three selected scales help students to know their level in career maturity and career decision making so if the student got high mark in this two scales he/she then can start the professional orientation test. The current traditional way for

counsellors in Omani schools is following one scale, which it is professional orientation. Researchers reviewed different references, and interviewed with many expert people and vocational guidance specialists; all of them mentioned that there is a need for Omani secondary school students to know their vocational maturity and their level in decision-making in addition to professional orientation. These three scales will help them to have a useful vocational guidance system and, better higher education choice, which lead to find a suite career for them.

• **Vocational Maturity**

Vocational maturity is the ability to make proper professional choices that fit the occupational interests, occupational preferences and subject's abilities. Vocational maturity is the range to which people are able to create career choices independently [22]. It is mostly accepted as include both effective components and cognitive. In [30], researchers clarified the factors that effect on vocational maturity such as Age, race, gender, socio-economic status, opinions of parents, educational level, psychological identity, academic achievement, and professional ambition, place of residence. [31] Moreover [32]. In addition, they pointed to a number of factors that effect on professional maturity which are Bio psychosocial factors (IQ and age), personal factors (psychological level of ambition and identity), Academic achievement (academic level of the individual) and Family income (the amount of monthly income level of professional parents).

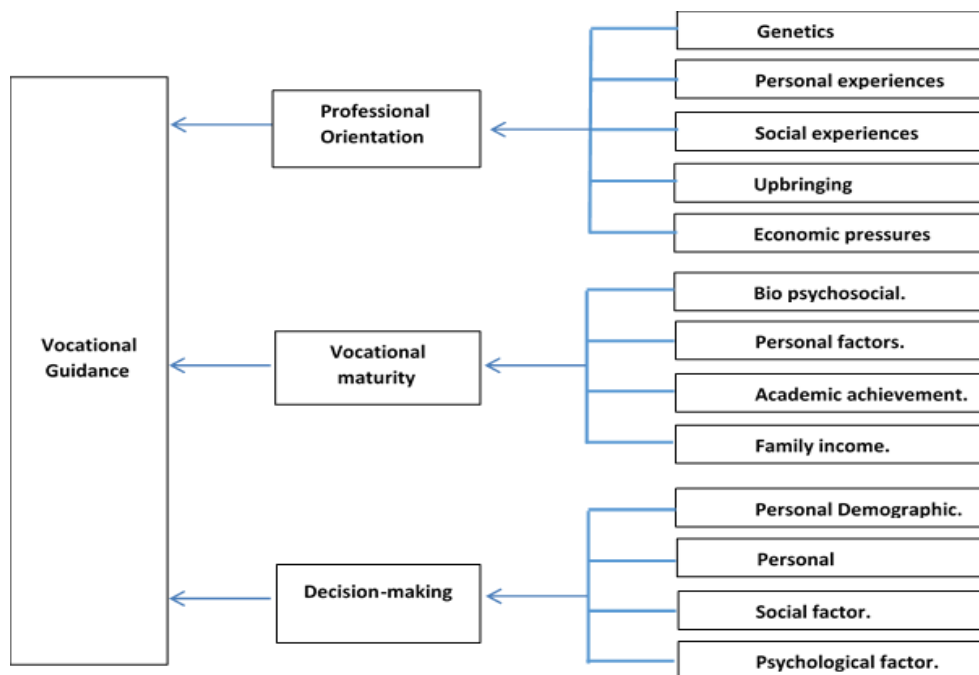
• **Vocational Decision Making**

Decision-making was introduced by Frank Parsons in 1909, [33]. Vocational decision-making is the process that used to

describe or explain the choices that an individual could create through choosing his/her specific profession. It also assists to define the several factors that are needed for individual's career decision making and it offers better way to understand the factors that affect his/her career decisions [22]. [34] Moreover [35] defined many factors that affect individual decision-making. These factors such as: personal demographic factors (gender, occupation, age, economic position, stages in life cycle, education and education), personal psychographics factors (beliefs, lifestyle, value system, attitude, about status and self-concept), cultural factors (values, taboos, religion, social behaviour, religion), social factors (friends, family ,relatives and close colleagues), and psychological factors (memory process, motivation, perception , learning process, Fear and confusion, anxiety and hesitation, caution and, haste and stress).

• **Professional Orientation**

Professional orientation scale helps the students to choose appropriates a profession, and the appropriate specialization. Professional Orientation test aims to identify the individual tendencies, and preferences of subjects, hobbies, activities and work. Some psychologists such as John Holland, Cooder and Strong [36] prepared professional orientation test. Professional Orientation test reflect five factors, which are genetics, personal experiences, social experiences, upbringing, and economic pressures. These factors measure the personality from different directions. The student should get high percentage in both scales Vocational Maturity and Decision Making to start Professional Orientation test. Figure 2 below shows the proposed vocational guidance model for Omani secondary schools where it has the three main scales and all sub factors that support these chosen scales.



**Figure 2:** Vocational guidance Model for Omani secondary schools

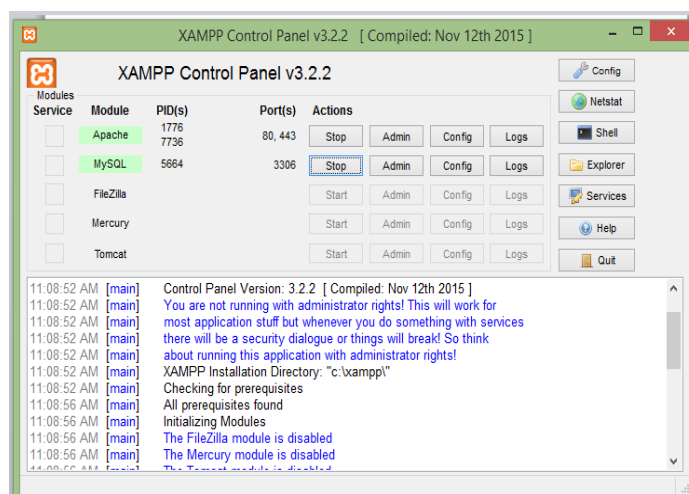
Expert people from ministry of higher education in Oman evaluated the proposed model. The results of the interview with the experts are summarized in Table 3 below.

**Table 3:** Interview with expert people from ministry of higher education in Oman

Interviewed Persons	Affiliate	Interview Summary
Mohammed Al.Ajmi	Head of professional orientation department in NCGC in Muscat	The model helps to determine which scales that should follow by school counselor in order to help student to choose their right direction. The model leads school consular for better understanding for vocational guidance processes and steps. The proposed model is well summarized and it is applicable in sultanate Oman schools. It is reflect the related works and the specialists' career guidance whom interviewed.
Amna AL-Mazroui	Specialist guidance in Shinas Secondary School	Omani secondary students needs for an electronic program that helps students to find out the level of decision-making, which they have at the stage of registration in the Higher Education Admission Center. This model will help researchers to develop online vocational guidance system for Omani schools. The three scales profession orientation, vocational maturity, and decision making in the model are very important and related strongly with student choices.
Fatima Al Kaabi	Specialist guidance in Shinas Secondary School	Al-Kaabi recommended the importance of the availability of an electronic program for students in the tenth grade to help the students to know the level for decision making and level of vocational maturity at the stage of selecting subjects. In addition, it will facilitate the school consular job and make it more precise.
Aisha Al-Quidde	Specialist guidance in The-Qar School	She declared the need of an electronic program in vocational guidance to facilitate the job of vocational guidance specialist in raising awareness about the choices of professional and specialized in the future when register in the Higher Education Admission Center which help students to discover themselves. Aisha highlights two main scales: professional orientation, and decision-making.

#### IV. ELECTRONIC VOCATIONAL COUNSELLOR SYSTEM

In order to validate the proposed vocational guidance model for Omani secondary schools. Researchers developed Electronic Vocational Counsellor System (EVCS) that mapping all scales in the proposed model. EVCS uses XAMP server, which support light and small Apache distributions, including technologies of web development, PhpMyAdmin, MySQL Server and text editor in one package. XAMPP is an abbreviation for "X" Cross Platform ", "Apache" , "MySQL" , "PHP" and" Perl" (Dvorski, 2007) see figure 3.



**Figure 3:** XAMPP Server

EVCS supports both languages Arabic and English where these are the used languages in Sultanate of Oman. EVCS consists of three types of testing that mapping the main scales in the proposed model in this study. Career maturity test (CMT) to map Vocational maturity scale, Career decision-making test (CDMT) to map Vocational decision-making scale and professional orientation test (POT) which map professional orientation scale in the proposed model. CMT is consisted of 45 multiple-choice question, CDMT is consisted of 37 multiple-choice questions and Professional orientation test consists of 144 statements that distributed between activity, future profession, and appropriate specialization sections. All question in EVCS are adopted from deep review processes for related literature studies [37], [38] [39] [40]0, [41], and expert people in this field. Users should register in the home page of EVCS and provide their personal information then they can start the tests. Figure 4 and 5 show EVCS tests types and example for each type.

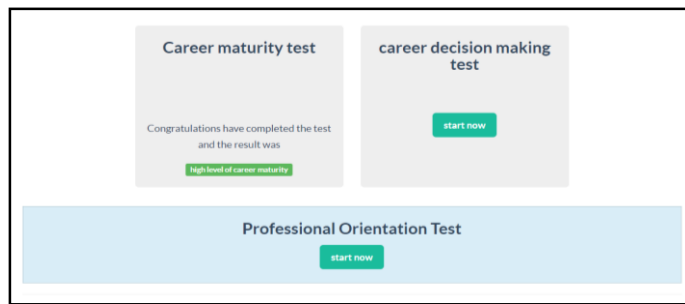


Figure 4: EVCS tests

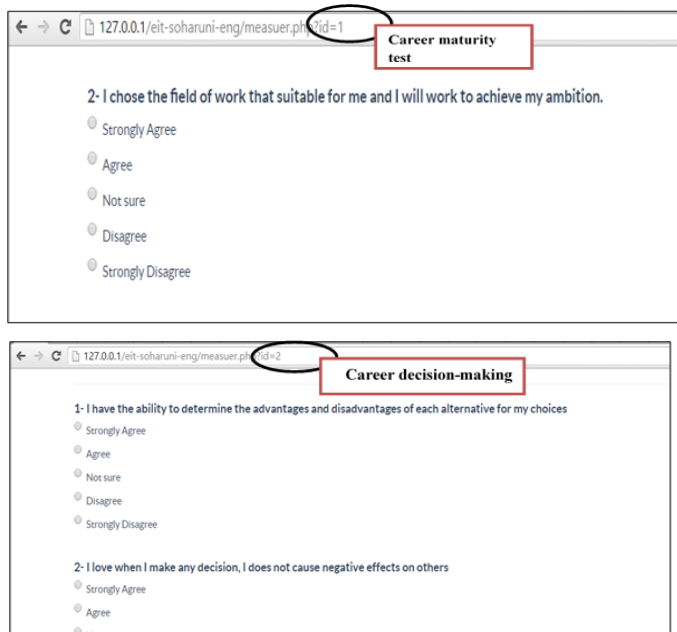


Figure 5: Example for CM and CDM tests questions

CMT and CDMT questions are divided into positive questions and negative questions (Reverse Questions). The Likert point for positive questions as (“strongly agree =5”, “agree = 4”, “not sure = 3”, “disagree = 2” and “strongly disagree = 1”), and for

negative questions as (“strongly agree =1”, “agree = 2”, “not sure = 3”, “disagree = 4” and “strongly disagree = 5 [42], ”), [43], [44], and [45]. According to [46] and [47], tables 4 & 5 show the positive questions for CMT and CDMT out of 45 and 37 questions respectively.

Table 4: Positive Questions for CMT

<b>Positive Questions</b>	2, 5, 8, 10, 13, 15, 16, 17, 19, 20, 21, 23, 25, 27, 31, 36, 41, 42, 43
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Table 5: Positive Questions for CDMT

<b>Positive Questions</b>	2,3, 7, 8,10,12,14,15,17,18,22, 23, 26, 27, 30, 31, 32, 33, 34, 36, 37
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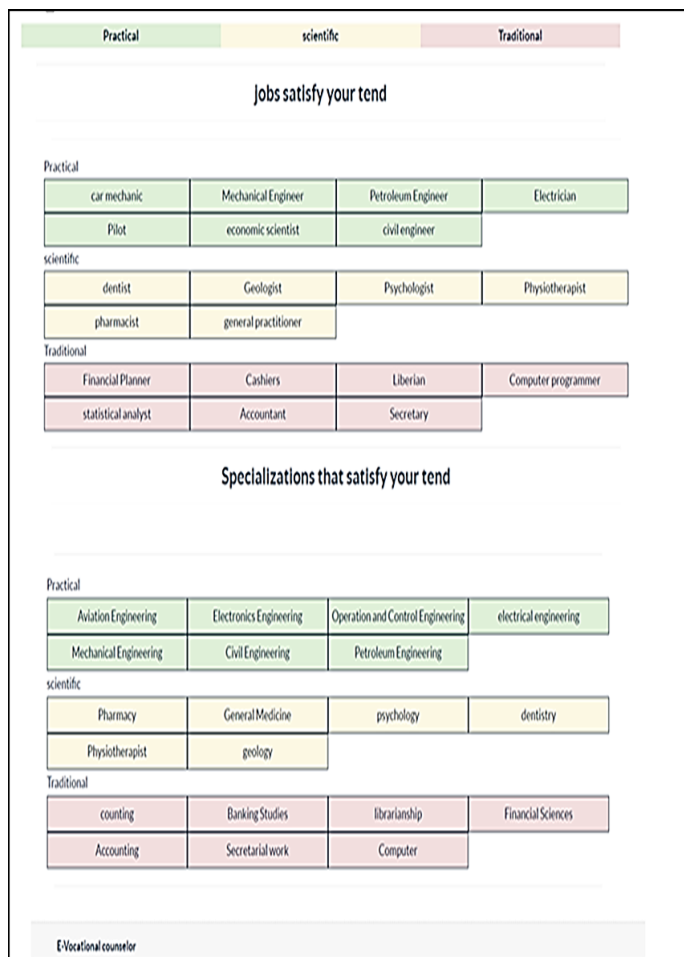
In CMT, the scores of the negative and positive questions are calculated and the result represents career maturity level for the student. The lowest score that could be gained on the scale is 45, the highest score is 225. The user who got score less than 45, he/she needs help from vocational guidance specialist. Between 46 and 96 shows weak level of career maturity, from 91 to 135 shows average level of career maturity, 136 to 180 shows high level of career maturity, and above 180 shows that user have a very high level of career maturity, [48].

The minimum score in CDMT is 37 and the maximum score is 185. If the student obtains score between 38 and 74 shows a weak level of career decision making, from 75 to 111 shows average level of career decision making, 112 to 136 shows high level of career decision making, and from 137 to 185 shows very high level of career decision making. After Student finish CMT, CDMT, with good scores, he/she needs to go further to POT. POT contains three parts, which are Future profession that consists of 48 questions (from question number 1 to 48), Future academic specialization that consists of 48 questions (from 49 to 96), and Favourite activity which consists of 48 questions (from 97 to 144). Total questions for the three parts classified to seven personality types these types are shown in table 6.

Table 6: Personality types for professional orientation Test

Personal Types	No of Questions	Questions
Cellular	21	6,9, 14,16,24, 36,42, 63, 77, 80,82, 88, 92,97, 102, 103, 117, 119, 140, & 144
Realistic	21	1,3,4,15, 17,34,46,51,69,70,71,73,74,76,107, 108,109, 118,126, 129, &134
Investigative	18	19,22,25,28,31,32,55,61,65,72,83,95,106,110, 131,133,138, &143
Artistic	24	2,8,2,172,27,30,40,43,47,53,54,57,59,67,84,90,93, 105, 112,114,121, 123, 127, 135, & 141
Enterprising	18	13, 18,29,33,38,44,52,75,78,86,94,96,104,116,124, 125,132, &139
Conventional	21	12, 13, 20, 23,35,37, 45, 48,49, 58, 64,66,68, 85, 87,98,99, 113, 115, 120, 128
Social	21	5,7,10,11,26, 39,41, 50, 56, 60, 62,79, 89,91, 100, 101, 111, 122, 130, 137, 142

POT helps the student to know their personality, suitable specialization and job in the future. Therefore, as a result students whom get high level of career maturity and high level in decision-making, they proceed forward to know their personality, their future specialization and job. Figure 6 shows the results of POT as got by EVCS. The results of the suitable specialization and job for the students are given with the respect for practical, scientific and traditional maturation.



**Figure 6:** Results of POT

The researchers prepared the survey to check the validity and effectiveness of EVCS from the perspective of students who used the system by counting the arithmetic means and standard deviations. The survey was distributed to 60 students who used EVCS. 43 students out of 60 answered the survey. Survey questionnaire contained 12 questions that adopted from ([49], [50], and [51]). As shown in table 7, Likert's scale (Likert) was used to classify of survey scores.

**Table 7:** Classification of Survey Scores

Very low	Moderate	High
0 - 1.49	1.5 - 2.49	2.5 - 3

76.7% of students respond that EVCS shows the most important professions that fit to student's tendencies. 79.1% of students also feel a comfortable about using EVCS instead of

manual system in vocational guidance, and they admit that EVCS meets the needs of 12 grade students at the stage of registration in the Higher Education Admission Centre. 69.8% of students agree that EVCS lists the most important specializations in universities and colleges that fit their professional tendencies. 70% of student have high impression that EVCS shows a profile for a professional orientation, the level of career decision-making and the level of professional maturity. 67.4% of students respond that EVCS helps to identify the activities, which they tend to it, and reveals their profession in the future. Finally, 58.1% of the student respond that EVCS highly contributes to self-understanding. Therefore, EVCS has achieved its purpose from the perspective of the researchers, and confirms as recommended by the need to work on the integration of technology in the field of vocational guidance, and provide electronic program in the field of vocational guidance, which used in schools and universities. This result is consistent with the result of ([52]).

## V. CONCLUSION

There is a lack of studies in vocational guidance for third world countries. This study is considered as one of the less studies in the field of vocational guidance in Middle East. The proposed model aims to help psychologists in their psychological assessment accounts for individuals. Vocational model built upon a deep review for related works and interview with expert people from ministry of higher education and vocational guidance specialists. The proposed model investigates three main scales from seven vocational guidance scales that conclude from literature review. These scales are vocational decision-making, vocational maturity and professional orientation. Each scale had been discussed and its factors were defined. EVCS was developed for evaluating the proposed model. EVCS was tested by 60 students and evaluation survey questionnaire were answered by 43 of them. The results of EVCS effectiveness survey declares that responds answers were ranged between 2.7442- 2.5349 for each question. All the questions got high scores, and there was no questions got medium or weak scores. Since that, EVCS considers as a high effectiveness online system from student perspective.

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