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# HEIS QUALITY IMPROVEMENT THROUGH STUDENTS AND ACADEMIC STAFF'S PERCEPTION: DATA ANALYSIS AND ROBUSTNESS OF THE RESULTS

*Abstract: This research is applied in private HEIs to study and evaluate the level of satisfaction, and to estimate the level of participation and engagement of students and academic staff. Two surveys for students and academic staff were used and administrated in 40 HEIs. The sample was drawn from the target population and divided into sub-stratified random samples for each HEI. Student and academic staff satisfaction and student and academic staff participation and engagement were estimated and provided significant signs to HEIs. The demographic variables of participants (students and academic staff) in this project were studied and demonstrated. In order to check the precision and robustness of the final results of this paper, several statistical tests were applied. Conclusions, recommendations, limitations and future research directions were discussed.*

*Keywords: Satisfaction; Participation and Engagement; Quality Improvement; Service Quality; Precision and Robustness; Statistical Significance*

## 1. Introduction

### 1.1. Background and motivation

It is well known that the higher education sector in the global economy is a prime operator in the areas of economic development, competition and expansion. In addition, the students and graduates of the higher education sector compose the human capital and the future labor force in the world.

One of the significant crises that ensued and affected the developing countries is "unsatisfied demand of people in higher education". For the purpose of satisfying the demand of HEIs in Oman, the number of HEIs increased to 68 in 2016. Accordingly, HEIs in Oman need to demonstrate their accountability procedures, quality assessment/assurance methods and the quality of their outcomes.

In order to improve "critical thinking", "complex reasoning", "planning skills", "organizing skills", "judging skills" and "employability skills" of graduates, developing HEIs in any country must meet some institutional conditions and requirements. There need to be broad goals, specific objectives and action plans that clearly demonstrate how to achieve the development and the improvement of the

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above skills since these developments will positively affect the economy and society of any country.

Moreover, supporting and enhancing the quality of teaching and learning in HEIs is one of the main issues of higher education. It is well known that the quality of teaching and learning is impacted by multi-level directions/factors. Indeed, many important international debates initiated by the United Nations Educational Scientific and Cultural Organization (UNESCO), Organization of Economic Co-operation and Development (OECD) and leading HEIs; have been designed to improve the quality of teaching, processes, policies and practices in HEIs. Also, national bodies, such as ministries of higher education, quality assurance agencies and accreditation institutions all stress the subject of quality of HEIs with regard to input, processes and output.

The quality of teaching and learning in HEIs may be investigated by applying a number of different measures. The satisfaction, participation and engagement of students and academic staff are the most important measures of the quality of teaching and learning. In this regard, many international institutions, in order to incorporate the opinions of academic staff, students and graduates regarding the quality of teaching and learning in their institutions, the surveys have been conducted yearly and the results have been published.

### 1.2. Overview

The purpose of this research was to study the level of satisfaction, participation and engagement of students and academic staff of private HEIs in Oman. Two surveys proposed by Al-Hemyari and Al-Sarmi (2016a) were implemented in this study and analysed.

A sample of 4571 (3689 students and 882 academic staff) was drawn from the population of private HEIs and who participated in the surveys. The data was collected and analysed. The results were checked and observations, conclusions and limitations were presented.

The layout of this paper is as follows: The literature is reviewed in Section 2. The research aims are stated in Section 3. The concepts of satisfaction and engagement and subjects of engagement are discussed in Section 4. In Section 5, the process of implementing the surveys is discussed. In Section 6, the sample and demographic variables are explained. In Section 7, the practical results of student and academic staff surveys are given. Several statistical procedures are applied to investigate the precision and robustness of the results which are discussed in Section 8. The conclusions and recommendations, limitations and future studies are demonstrated in Sections 9, 10 and 11 respectively.

## 2. Review of literature

It is really difficult to review the huge international literature on student and academic staff opinions, satisfaction, participation and engagement. In this section, we reviewed different papers related to the issues of this research.

Researchers and HEIs have concentrated on student satisfaction practices "to put in place systematic student feedback processes covering the quality of both the teaching and learning environment and other support services provided for students" (HEA, 2014). Also, researchers focused on academic staff satisfaction because of the "faculty members play a vital role in contributing to student satisfaction, many hypothesize that one of the best ways to affect student satisfaction is to increase job satisfaction among the university's faculty members" (Kroncke, 2006).

Indeed, student and academic staff satisfaction and engagement surveys have received an increased attention from HEIs and have become vital, valued and significant approaches in HEIs. Many HEIs

use some mechanisms to determine the quality of teaching, learning, supervision, support facilities, physical infrastructure, leisure and extra-curricular activities and so forth.

In addition, obtaining and disseminating information regarding student and academic staff satisfaction and engagement have become necessary events and routine practices in most of HEIs as means by which society may be informed and students' and academic staff's opinions gathered in the process of decision making and utilised as one of the principles of internal and external assessments.

Students want to be admitted in HEIs which employ excellent academic staff, have a good reputation and strong teaching facilities and resources. The only way to help students in their choices is by the dissemination of the results of student and academic staff satisfaction. Regarding this issue, it is really interesting to observe that many institutions in the developing countries have rated and disseminated the satisfaction of HEIs to the public.

In fact, student and academic staff satisfaction and engagement constitute many and very important indicators related to the quality of teaching and learning. In addition, satisfaction, participation and engagement surveys help HEIs and provide many indicators of student interaction, student experience and the level of student involvement in institutional activities and extra-curriculum activities (Kuh, 2009).

Moreover, engagement of employees in HEIs "can affect employees' attitudes, absence and turnover levels. Various studies have demonstrated links with productivity, increasingly pointing to a high correlation with individual, group and organizational performance, a success measured through the quality of customer experience and customer loyalty" (Robertson-Smith and Markwick, 2009).

A great deal of literature on the effectiveness of the opinion, survey, satisfaction and engagement as tools to study the "impact of the scholarship in teaching and learning", "education goals" and "educational experiences" through student and academic staff satisfaction have been published. One of these studies, is the paper of Douglas et al. (2006) which explained the importance of surveys as a tool in measuring educational experiences and the level of satisfaction, determining probable areas for enhancement and studying perceived teaching expectations at Liverpool John University.

Chaney et al. (2007) developed an instrument to study student perspectives of distance education programs through 14 qualitative dimensions. Artino (2008) in his study has surveyed 646 students to "investigate the relations between students' motivational beliefs, their perceptions of the learning environment and their satisfaction with a self-paced, online course".

Hutchings et al. (2011) distributed 103 surveys by emails focusing on the impact of the scholarship in teaching and learning and opinion of institutions regarding the suggested areas in the scholarship of teaching and learning. These areas are "the ways in which faculty go about their teaching"; "how professional development is understood and organized"; "the relationship between the scholarship of teaching and learning and institutional assessment"; and "how the work of teaching is valued and evaluated".

Strydom, et al. (2012) proposed a framework to foster teaching and learning based on student engagement for the Council on Higher Education (CHE) in South Africa. Kuo et al. (2013) investigated the level of contribution of some important factors like "Interaction, Internet self-efficacy, self-regulation and student background variables" in his study of student satisfaction in an online education program in a western university. Mbwesa (2014) explored the perceived learner satisfaction of 168 students in three implemented distance experiences.

It may be worth mentioning that there are

numerous papers which have been produced in respect to student and academic staff satisfaction, such that Harvey (1995), Hill (1995), Navarro et al. (2005), Douglas et al. (2006), Billups (2008), Delaney et al. (2010), Adenike (2011), Machada et al. (2011), Dužević et al. (2014) and Duque (2014).

In recent years, several studies have proposed guidelines for improving and strengthening student teaching and learning (see, for example Hightower, et al., 2011; Strydom (2011), Kashif and Basharat, 2014; Al-Hemyari and Al-Sarmi, 2016 a and b, 2015 b; and Al-Sarmi and Al-Hemyari, 2015, 2014a, b and c).

## 3. Research aims

Al-Hemyari and Al-Sarmi (2016a) designed the surveys of satisfaction, participation and engagement of students and academic staff and studied the validity and reliability of the surveys. This paper is destined to complete the study of Al-Hemyari and Al-Sarmi (2016a), i.e. to implement the surveys in private institutions and study the level of satisfaction and engagement of students and academic staff. The data of student survey and academic staff survey were thoroughly collected and analysed in this paper. The numerical results as standard values were presented and discussed. The following aims were planned for this paper to:

1) study the concepts and subjects of satisfaction and engagement,
2) examine the job satisfaction level of academic staff of private HEIs,
3) investigate the engagement and participation level of academic staff of private HEIs,
4) observe the student satisfaction level of private HEIs,
5) estimate the engagement and participation level of students of private HEIs,
6) discuss the demographic and general information,
7) recognize the relevance between academic staff satisfaction and engagement and student satisfaction and engagement,
8) investigate the precision and robustness of the results, and
9) explain the limitations and future research directions.

## 4. Concepts and subjects of satisfaction and engagement

In academic circles, student satisfaction may be defined "as students' assessments of the services provided by universities and colleges" (Wiers -Jenssen et al., 2002). In addition to the above, student satisfaction has been defined in a more precise manner "as the extent to which students are satisfied with a number of college-related issues, such as advising, quality of instruction, course availability, and class size" (Tessema et al., 2012).

The well cited definition of student engagement is constituted of two components. The first is "the amount of time and effort students spend on academic activities and other activities that lead to the experiences and outcomes that constitute student success". The second is the ways in which institutions allocate resources and organize learning opportunities and services to induce students to participate in and benefit from such activities" (Strydom et al., 2012). It may be worth mentioning that in some other settings, student engagement may be called the total student experience which "refers to all aspects of the engagement of students with higher education" (http://www.qualityresearch international.com/glossary/totalstudentexperi ence.htm).

The concept of job satisfaction of academic staff is not defined in such a conjoined and similar form. In the literature, that there are many definitions for this term because it is a complex and multidimensional concept so a variety of national and international

educational bodies define it differently. However, for the purpose of this research, the following definition seems to be acceptable. Job satisfaction may be defined as "the sense of achievement and success that is experienced by an employee at the place of employment, which constitutes the main component in the attainments of goals set by the employee" (Strydom et al., 2012).

It may be worth mentioning that the definition of academic staff engagement is not unified either and some definitions cover many areas (see Macey and Schneider, 2008), whereas other definitions concentrate on a specific area. A common definition of engagement is "an engaged employee extends themselves to meet the organization's needs, takes initiative, is proactive, reinforces and supports the organization's culture and values, is in the flow, shares the values of the organization, stays focused and vigilant and believes he/she can make a difference".

In fact, items concerned with the level of satisfaction of students and academic staff are related to the quality of academic support from institution, college, department, IT center, registration center, library and other units.

It may be noted here that in this paper the academic staff survey is confined/ constrained by nine subjects and the general information with many items. These subjects are: interaction between students, interaction between students and academic staff; teaching and learning; evaluation of the educational experience; overall satisfaction and agreement; the university's teacher education training; load; research; internationalization and general information (name of institution; university; college; departments; program, degree, position, part time/full time).

In addition, the student questionnaire is also confined by nine areas as well as the general information and several items related to interaction between students; interaction between students and academic staff;

teaching and learning; evaluation of the educational experience; academic advising; personal development; society involvement registration; overall satisfaction and agreement and the general information (name of institution; university; college; departments; program, degree, nationality, residential area, year of study).

## 5. Implementation of survey and data collection

As it was mentioned earlier, the student and academic staff surveys were developed and extended in Al-Hemyari and Al-Sarmi (2016a). The research aims were explained in the last section. In this section, the process of the implementation of the survey and data collection went through the following stages:

1) Applying the surveys:
   - A homepage of the surveys in the Statistical Systems of the Ministry of Higher Education was designed and launched.
   - In order to reduce the misunderstanding of the respondents, HEIs were offered a one day workshop to explain the importance of the surveys and to discuss the mechanisms of the implementation.
   - In order to get a high collaboration from HEIs, an email of the survey team was assigned for "asked questions", and a telephone number was given for urgent issues.
   - A stratified random sampling plan was designed and drawn.
   - The mechanisms and processes of collecting data, dividing the total sample to each HEI, dividing each sample of individual HEIs into sub-samples (stratified random samples) to its departments or programs and the instruction of random sampling have been distributed to all HEIs. It may be worth mentioning that the

ratio of the sample from the population was about 11%.

Remark 1: The sampling error can be decreased by increasing the random sample size (Madsen, 2011).

- The passwords to access the surveys were prepared and distributed.
- The issues of "confidentiality" and/or "anonymity" in all surveys were addressed and HEIs, academic staff and students were informed.
- The online surveys were opened for fifty days from 1st October 2012 and were closed on 19th November 2012.

2) Data Cleaning:

It is well known that the process of data cleaning is an essential step in data analysis. The process of data cleaning is summarized as follows:

- In order to minimize the response and non-response errors, the surveys were discussed and institutions provided with full details of the surveys, instructions on how these were to be distributed and how the units of the surveys were to be selected (see, Madsen, 2011),
- Reputation of similar responses of surveys and aanomalous values (extremely high or low responses) were investigated, discovered and omitted.

Remark 2: It may be remarked here that the measures of Cronbach's alpha reliability, split-half reliability Cronbach's alpha if item deleted and inter-item correlation coefficients of student and academic staff survey were demonstrated and studied in Al-Hemyari and Al-Sarmi (2016a). These results had shown that the scale of the surveys had excellent internal consistency.

# 6. The sample size, demographic and general information

The demographic variables of participants (students and academic staff) in this paper are studied and demonstrated in the following sub- sections.

## 6.1. Demographic and general information of student sample

Seven demographic variables (general information) of student sample were included in the survey and are given in Table 1.

Table 1 indicated that the majority of the student sample was female (70.7%), bachelors (66.6%), seniors (third year or above) {61.6%}). Table 1, outlined the numbers and ratios of all degrees and fields of study (majors).The majority of participants in accordance to the fields of study were as follows: Commerce and Administration (25.9%), Engineering Sciences (20.2%), IT (18.2%) and Culture and Society (11.4%).

## 6.2. Demographic and general information of academic staff sample

Also, seven demographic variables (general information) of academic staff samples were included in the survey. Some of them are given in Table 2. Table 2 indicated that the majority of the academic staff sample was female (63.3%), qualification (MSc. holders) (53.5%), academic level (lecturer) (48.9%) employment type (full time) (96.8) and employment level (academic staff) (.724%). Also, Table 10 outlined the numbers and ratios of all fields of teaching (majors). The majority of participants in accordance to the fields of teaching were as follows: Commerce and Administration (20.9%), Engineering Sciences (17.2%), and IT (20.4%).

**Table 1.** Demographic Variables of Student Sample (total numbers {TN}, percentages {%})

| Variable | TN | % | Variable | TN | % |
|---|---|---|---|---|---|
| Gender | | | Bachelors | 2458 | .666 |
| Females | 2606 | .707 | Total | 3689 | |
| Males | 1083 | .293 | A Doctor of General Medicine | 79 | .021 |
| Total | 3689 | | | | |
| Majors (Field of study) | | | B.Sc. in Nursing | 100 | .027 |
| Mathematical and Physical Sciences | 53 | .014 | BSc. of Health Sciences/ Optics | 15 | .004 |
| IT | 670 | .182 | B.Sc. in Pharmacy | 78 | .021 |
| Engineering Sciences | 745 | .202 | B.Sc. in Arts and Sciences | 2152 | .583 |
| Construction and Architecture | 94 | .025 | B.Sc. in Medicine & Dental Surgery | 34 | .009 |
| Health Sciences | 305 | .083 | Year of study | | |
| Education | 197 | .053 | First year | 471 | .128 |
| Commerce and Administration | 955 | .259 | Second year | 946 | .256 |
| | | | Third year | 995 | .270 |
| Culture and Society | 419 | .114 | Fourth year | 821 | .223 |
| Fine Arts | 210 | .057 | Fifth year | 390 | .106 |
| Personal Affairs | 41 | .011 | Sixth year | 50 | .014 |
| Degree of study | | | Seventh year | 14 | .004 |
| Diploma (2 years) | 919 | .249 | Eighth year | 2 | .001 |
| Advance Diploma (3 years) | 312 | .085 | Total | 3689 | |

**Table 2.** Demographic Variables of Academic staff (total numbers {TN}), percentages ({%})

| Variable | TN | % | Variable | TN | % |
|---|---|---|---|---|---|
| Gender | | | Culture & Society | 109 | .124 |
| Females | 324 | .367 | Fine Arts | 50 | .057 |
| Males | 558 | .633 | Personal Affairs | 16 | .018 |
| Total | 882 | | Academic levels | | |
| Qualifications | | | Professor | 43 | .049 |
| Ph.D. | 318 | .361 | Assoc. Prof | 84 | .095 |
| M.Sc. | 472 | .535 | Ass. Prof | 241 | .273 |
| Higher Diploma | 9 | .010 | Lecturer | 431 | .489 |
| Bachelor | 83 | .094 | Ass. Lecturer | 83 | .094 |
| Total | 882 | | Total | 882 | |
| Fields of Teaching | | | Employment Levels | | |
| Mathematical and Physical Sciences | 26 | .041 | Dean | 22 | .025 |
| | | | Assistant Dean | 41 | .046 |
| IT | 180 | .204 | Head of Dept. | 118 | .133 |
| Engineering Sciences | 152 | .172 | Head of Section | 41 | .046 |
| | | | Academic staff | 639 | .724 |
| Construction and Architecture | 40 | .045 | others | 21 | .024 |
| | | | Total | 883 | |
| Health Sciences | 85 | .096 | Employment Types | | |
| Education | 40 | .045 | Part Time | 28 | .032 |
| Commerce and Administration | 184 | .209 | Full time | 854 | .968 |
| | | | Total | 882 | |

# 7. Practical results

Academic staff and students were asked to evaluate their satisfaction and their opinions regarding the satisfaction, participation and engagement in their HEIs. The results of student satisfaction, participation and engagement, and the academic staff satisfaction, participation and engagement and the pooled participation and engagement were estimated and discussed in this section. The data was collected and analyzed by the statistical package SPSS (IBM 22). The actual values and the average of each activity

of HEIs are given as numerical values in Tables 11-15. The participating institutions are denoted by $HEI_i$, $i = 1, 2, \ldots, 40$.

## 7.1. Academic staff satisfaction (ASS)

The academic staff satisfaction was assessed by an academic staff survey through seven questions, where five marks were assigned for each question. The results of HEIs were based on the questions related to academic staff satisfaction and its average (national standard) are given in Table 3.

**Table 3.** Academic Staff Satisfaction (ASS)

| HEIs | ASS | HEIs | ASS | HEIs | ASS | HEIs | ASS |
|------|------|------|------|------|------|------|------|
| HEI1 | 29.5521 | HEI11 | 31.2 | HEI21 | 26.5 | HEI31 | 26.9231 |
| HEI2 | 24 | HEI12 | 19.5 | HEI22 | 26.3125 | HEI32 | 26.9545 |
| HEI3 | 23.5 | HEI13 | 29 | HEI23 | 26.0645 | HEI33 | 27 |
| HEI4 | 24.5 | HEI14 | 25.5714 | HEI24 | 25.65 | HEI34 | 25.0952 |
| HEI5 | 29.3529 | HEI15 | 25.4286 | HEI25 | 27.463 | HEI35 | 22.6667 |
| HEI6 | 23.5455 | HEI16 | 25.4286 | HEI26 | 25.625 | HEI36 | 28.1719 |
| HEI7 | 26.04 | HEI17 | 27.5833 | HEI27 | 23.4634 | HEI37 | 28.2188 |
| HEI8 | 30.75 | HEI18 | 22.6061 | HEI28 | 24.4688 | HEI38 | 25.8889 |
| HEI9 | 23 | HEI19 | 22 | HEI29 | 25.431 | HEI39 | 27.8205 |
| HEI10 | 26.6667 | HEI20 | 22 | HEI30 | 28.8571 | HEI40 | 25.449 |
| Average | | | | 25.88123 | | | |

The numerical average of this indicator is 73.928 % and the results of academic staff satisfaction of HEIs range from 62.857 % to 84.43%. It is really interesting to observe from Table 3 that the HEIs based on the estimated results of academic staff satisfaction (ASS) are classified in the following groups. The first group: (below average): {HEIs: 2, 3, 4, 6, 9, 12, 18, 19, 20, 27, 28, 35}, the second group: (were average and above average): {HEIs: 7, 10, 14, 15, 16, 24, 29, 34, 38, 40} and the third group: (good):{HEIs: 1, 5, 8, 11, 13, 17, 21, 22, 23, 25, 26, 30, 31, 32, 33, 36, 37, 39}.

## 7.2. Academic staff participation and engagement (ASPE)

The research has attempted to study the problem of estimating the participation and engagement of academic staff through nine subjects given in section 3; whereas each subject/dimension was split into several items/questions and each item/question was given a weight of five marks. For space consideration, the averages of all subjects as the participation and engagement (ASPE) are computed for each HEI are given in Table 4.

The numerical average of this indicator is 64.728% (as a national standard) and the results of academic staff satisfaction of HEIs

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range from 62.857 5% to 72.9%. To be more specific, the numerical results indicate that the HEIs, based on the estimated results of academic staff participation and engagement, may be categorized into the following groups. The first group: (below average): {HEIs: 4, 6, 9, 11, 14, 16, 18, 19, 20, 24, 25, 27, 28, 29, 31, 33, 34, 35, 38, 40}, the second group: (were average and above average): {HEIs: 7} and the third group: (good):{ HEIs: 1, 2, 3, 5, 8, 10, 12, 13, 15, 17, 21, 22, 23, 26, 30, 32, 36, 37, 39}.

**Table 4.** Academic staff participation and engagement (ASPE)

| HEIs | ASPE | HEIs | ASPE | HEIs | ASPE | HEIs | ASPE |
|------|------|------|------|------|------|------|------|
| HEI1 | 244.215 | HEI11 | 211.497 | HEI21 | 219.053 | HEI31 | 215.989 |
| HEI2 | 225.567 | HEI12 | 223.333 | HEI22 | 225.776 | HEI32 | 225.871 |
| HEI3 | 221.1 | HEI13 | 194.067 | HEI23 | 223.387 | HEI33 | 209.324 |
| HEI4 | 203.233 | HEI14 | 203.871 | HEI24 | 214.177 | HEI34 | 202.648 |
| HEI5 | 238.77 | HEI15 | 233.064 | HEI25 | 207.948 | HEI35 | 210.603 |
| HEI6 | 194.554 | HEI16 | 204.563 | HEI26 | 225.148 | HEI36 | 228.306 |
| HEI7 | 217.303 | HEI17 | 226.032 | HEI27 | 200.292 | HEI37 | 227.367 |
| HEI8 | 220.821 | HEI18 | 195.214 | HEI28 | 201.384 | HEI38 | 213.614 |
| HEI9 | 166.942 | HEI19 | 212.306 | HEI29 | 213.996 | HEI39 | 227.829 |
| HEI10 | 224.078 | HEI20 | 212.306 | HEI30 | 236.693 | HEI40 | 213.534 |
| Average | | | | 219.0194 | | | |

### 7.3. Student satisfaction (SS)

One of the purposes of this project was to appraise the student satisfaction through a few items directed to students. Seven items were proposed where the weight of five marks was assigned to each item. The survey outcomes of student satisfaction (SS) are given in Table 5.

**Table 5.** Student satisfaction (SS)

| HEIs | SS | HEIs | SS | HEIs | SS | HEIs | SS |
|------|------|------|------|------|------|------|------|
| HEI1 | 28.5417 | HEI11 | 17.8 | HEI21 | 21.9172 | HEI31 | 23.4327 |
| HEI2 | 20.7857 | HEI12 | 21 | HEI22 | 20.9714 | HEI32 | 24.0377 |
| HEI3 | 21.6875 | HEI13 | 15.6 | HEI23 | 24.9903 | HEI33 | 25.7647 |
| HEI4 | 22.6327 | HEI14 | 22.459 | HEI24 | 19.967 | HEI34 | 20.8507 |
| HEI5 | 26.7973 | HEI15 | 23 | HEI25 | 24.0885 | HEI35 | 23.8286 |
| HEI6 | 19.1558 | HEI16 | 23.4248 | HEI26 | 22.6739 | HEI36 | 25.9529 |
| HEI7 | 22.1806 | HEI17 | 25.2411 | HEI27 | 22.2906 | HEI37 | 25.7261 |
| HEI8 | 21.2857 | HEI18 | 23.8476 | HEI28 | 23.7568 | HEI38 | 21.6198 |
| HEI9 | 16.3421 | HEI19 | 24.8043 | HEI29 | 22.5895 | HEI39 | 25.7264 |
| HEI10 | 21.375 | HEI20 | 22.3776 | HEI30 | 22.9744 | HEI40 | 23.0658 |
| Average | | | | 22.664 | | | |

The average of student satisfaction is equal to 64.755 % (national standard) and estimations of student satisfaction of private HEIs range from 57.048 % to 81.548 % . To be more specific, Table 13 shows that the student satisfaction of HEI may be divided to three divisions. They are: the first division: (below average): {HEIs: 2, 3, 6, 7, 8, 9, 10, 11, 12, 13, 21, 22, 24, 27, 34, 38}, the second division: (were average and above average) : { HEIs: 4, 14, 15, 16, 18, 20, 26, 28, 29, 30, 31, 35, 40} and the third division: (good) :{HEIs: 1, 5, 17, 19, 23, 25, 32, 33, 26, 37, 39}.

## 7.4. Student participation and engagement (SPE)

The research has aimed to assess the student satisfaction through nine subjects/dimensions and many items (most of the items are positive and some of them are negative) directed to students.

Again to save space, the averages of all subjects of the participation and engagement of students (SPE) are computed for each HEI and are given in Table 6.

**Table 6.** Student participation and engagement (SPE)

| HEIs | SPE | HEIs | SPE | HEIs | SPE | HEIs | SPE |
|------|-----|------|-----|------|-----|------|-----|
| HEI1 | 211.625 | 164.5 | 17.8 | HEI21 | 202.4586 | HEI31 | 200.5769 |
| HEI2 | 184.5 | 190.5556 | 21 | HEI22 | 201.9714 | HEI32 | 200.4057 |
| HEI3 | 182.6875 | 165.2 | 15.6 | HEI23 | 204.7839 | HEI33 | 214.4706 |
| HEI4 | 185.7755 | 189.6721 | 22.459 | HEI24 | 195.1538 | HEI34 | 189.5075 |
| HEI5 | 201.0676 | 200.3214 | 23 | HEI25 | 200.1609 | HEI35 | 201.7714 |
| HEI6 | 182.2857 | 188.8889 | 23.4248 | HEI26 | 200.2609 | HEI36 | 203.1993 |
| HEI7 | 200.9583 | 202.1518 | 25.2411 | HEI27 | 193.8325 | HEI37 | 204.0114 |
| HEI8 | 187.7143 | 190.9524 | 23.8476 | HEI28 | 194.2973 | HEI38 | 186.5702 |
| HEI9 | 165.6842 | 193.1739 | 24.8043 | HEI29 | 188.8341 | HEI39 | 203.9472 |
| HEI10 | 186.0625 | 198.5 | 22.3776 | HEI30 | 192.6026 | HEI40 | 193.9459 |
| Average | | | | 193.626 | | | |

The overall average is equal to 57.799 % (national standard) and estimations of students participation and engagement for their institutions range from 49.254% to 64.021% . For more details, Table 14 shows that the student satisfaction of HEI may be divided into three categories. The categories are: the first category: (below average): {HEIs: 2, 3, 4, 6, 8, 9, 10, 11, 12, 13, 14, 16, 18, 29, 30, 34, 38}, the second category:

(were average and above average): {HEIs: 19, 27, 28, 40} and the third category: (good):{ HEIs: 1, 5, 7, 15, 17, 20, 21, 22, 23, 24, 25, 26, 31, 32, 33, 35, 36, 37, 39}.

It is good to look at the overall participation and engagement of private HEIs, i.e. the estimation should be based on both opinions of academic staff and students. The survey outcomes of pooled opinions (PPE) are given in Table 7.

**Table 7.** Pooled participation and engagement (PPE)

| HEIs | PPE | HEIs | PPE | HEIs | PPE | HEIs | PPE |
|------|-----|------|-----|------|-----|------|-----|
| HEI1 | 227.92 | 164.5 | 187.998 | HEI21 | 210.756 | HEI31 | 208.283 |
| HEI2 | 205.033 | 190.5556 | 206.944 | HEI22 | 213.874 | HEI32 | 213.138 |
| HEI3 | 201.894 | 165.2 | 205.133 | HEI23 | 214.086 | HEI33 | 211.897 |
| HEI4 | 194.504 | 189.6721 | 196.772 | HEI24 | 204.665 | HEI34 | 196.078 |
| HEI5 | 219.919 | 200.3214 | 216.693 | HEI25 | 204.055 | HEI35 | 206.187 |
| HEI6 | 188.42 | 188.8889 | 196.726 | HEI26 | 212.704 | HEI36 | 215.753 |
| HEI7 | 209.131 | 202.1518 | 214.092 | HEI27 | 197.062 | HEI37 | 215.689 |
| HEI8 | 204.268 | 190.9524 | 193.083 | HEI28 | 197.841 | HEI38 | 200.092 |
| HEI9 | 166.313 | 193.1739 | 202.74 | HEI29 | 201.415 | HEI39 | 215.888 |
| HEI10 | 205.07 | 198.5 | 205.403 | HEI30 | 214.648 | HEI40 | 203.74 |
| Average | | | | 205.3227 | | | |

The overall average is equal to 61.290% (standard value) and joint estimations based on students and academic staff opinions range from 49.646 % to 68.646% .

In order to understand the real level of pooled participation and engagement, the actual results of HEIs may be divided into three categories. The categories are: the first category: (below average): {HEIs: 3, 4, 6, 9, 11, 14, 16, 18, 19, 27, 28, 29, 34, 38, 40}, the second category: (were average and above average): {HEIs: 2, 8, 10, 20, 24, 25} and the third category: (good) :{ HEIs: 1, 5, 7, 12, 13, 15, 17, 21, 22, 23, 26, 30, 31, 32, 33, 35, 36, 37, 39}.

# 8. Precision and robustness of the results

It may be necessary to address a serious question which is: how robust are the findings of this paper? In this section, checking the results of student and academic staff surveys is explained to show its precision and robustness (see, Al-Sarmi and Al-Hemyari, 2013, 2014 b and c, 2015, 2016b).

In order to check the precision and robustness of the final results of Section 8, many statistical tests were applied. The relevance between the dimensions of the student survey, and between the dimensions of academic staff survey, together with comparing the results of student participation and engagement and academic staff participation and engagements and the relation between the results of both surveys were demonstrated in this section.

## 8.1. The relevance between the dimensions of SPE

It is well known that the correlation coefficients are very well-known measures for investigating the relationships between variables (Al-Sarmi et al., 2015). In order to study the relevance and the strength of the relationship between the dimensions of the student survey (SPE) and the overall result of participation and engagement and assessing, the Pearson correlation coefficient is calculated and the following hypothesis is tested, $H_0 : \tau_{is} = 0$, against

$H_1 : \tau_{is} \neq 0$, $i = 1, 2, \dots , 9$, where $\tau_{is}$ represents the correlation coefficient between the values of $i^{th}$ subject/dimension in all HEIs and the whole results of the survey of student participation and engagement (SPE).

Table 8 presents the estimates of the Pearson correlation coefficients $(\tau_{is})$ and the

significance levels $(p)$ of testing the above hypothesis of the seventeen dimensions.

**Table 8.** Values of $\tau_{is}$ and $p$ for each Dimension (D)

| D | SPE | D | SPE |
|------|----------|------|----------|
| Var1 | .690(**) | N | 40 |
| $p$ | .000 | Var6 | .620(**) |
| N | 40 | $p$ | .000 |
| Var2 | .718(**) | N | 40 |
| $p$ | .000 | Var7 | .713(**) |
| N | 40 | $p$ | .000 |
| Var3 | .839(**) | N | 40 |
| $p$ | .000 | Var8 | .883(**) |
| N | 40 | $p$ | .000 |
| Var4 | .605(**) | N | 40 |
| $p$ | .000 | Var 9 | .870(**) |
| N | 40 | $p$ | .000 |
| Var5 | .565(**) | N | 40 |
| $p$ | .000 | | |

As Table 8 indicated, it is really interesting to observe that the values of $\tau_{is}$ were high, positive and all the significant levels $(p)$ were very small ($\leq 0.000$). Moreover, Table 16 shows that there were one or two stars in braces conjugated with all correlation coefficient values, i.e. there was either a significant (*) or highly a significant (**) positive relationship between each dimension and the survey. It may be noted that N represents the total number of institutions. It may be noted that this observation is in line with the theoretical properties of student participation and engagement.

**8.2. The relevance between the dimensions of ASPE**

Again, the Pearson correlation coefficient is applied to study the relevance and the strength of the relationship between the dimensions of the academic staff survey and the overall result of participation and engagement. For the purpose of assessing the academic staff survey the following hypothesis is also tested, $H_0 : \tau_{is} = 0$, against

$H_1 : \tau_{is} \neq 0$, $i = 1,2, \ldots ,9$, where $\tau_{is}$ represents the correlation coefficient of $i^{th}$ subject/dimension in all HEIs and the whole results of the survey of academic staff participation and engagement (ASPE).

Table 9 presents the estimates of the Pearson correlation coefficient $(\tau_{is})$ and the significance levels $(p)$ of testing the above hypothesis of the nine dimensions.

**Table 9.** Values of $\tau_{is}$ and $p$ for each Dimension (D)

| D | ASPE | D | ASPE |
|------|----------|------|----------|
| Var1 | .727(**) | N | 40 |
| $p$ | .000 | Var6 | .475(**) |
| N | 40 | $p$ | .002 |
| Var2 | .511(**) | N | 40 |
| Sig. | .001 | Var7 | .524(**) |
| N | 40 | $p$ | .001 |
| Var3 | .793(**) | N | 40 |
| $p$ | .000 | Var8 | .580(**) |
| N | 40 | $p$ | .000 |
| Var4 | .579(**) | N | 40 |
| $p$ | .000 | Var9 | .547(**) |
| N | 40 | $p$ | .000 |
| Var5 | .602(**) | N | 40 |
| $p$ | .000 | | |

It is also observed from Table 9 above, that the values of $\tau_{is}$ were high, positive and that all the significant levels $(p)$ were very small ($\leq 0.000$). Moreover, Table 9 shows that the above hypotheses were rejected, i.e. there was either a significant (*) or highly a significant (**) positive relationship between each dimension and the survey. Also, this

observation is in line with the theoretical properties of academic staff participation and engagement.

## 8.3. Differences between the theoretical and actual values of the surveys

In order to investigate the accuracy of the estimated values of student and academic staff surveys, the one-sample t-test is used to test the differences between the estimated values of student evaluations/academic staff evaluations and theoretical values. The following hypotheses of each survey are developed and tested:

$H_0 : \mu = 360,$ against $H_1 : \mu \neq 360,$ where $\mu$ represents the mean of student survey, and $H_0 : \mu = 300,$ against $H_1 : \mu \neq 300,$ where $\mu$ represents the mean of academic staff survey.

It is also interesting to observe from Tables 10 and 11 that both of the above hypotheses are rejected since the significance levels of the tests ($p$) of the above hypotheses is equal to 0.000. This means that the evaluations/ratings of student and academic staff surveys are highly significant at 0.05 which is different than are the test values.

**Table 10.** T-Test and $p$ value for student survey

| Participation and Engagement (students) | Test Value = 360 | | | | | |
|---|---|---|---|---|---|---|
| | t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
| | | | | | Lower | Upper |
| | -79.725 | 39 | .000 | -141.37403 | -144.9608 | -137.7873 |

**Table 11.** T-Test and $p$ value for academic staff survey

| Participation and Engagement (academic staff) | Test Value = 300 | | | | | |
|---|---|---|---|---|---|---|
| | | | | Mean Difference | 95% Confidence Interval of the Difference | |
| | t | df | Sig. (2-tailed) | | Lower | Upper |
| | -47.674 | 39 | .000 | -105.65428 | -110.1369 | -101.1716 |

## 8.4. The relationship between student survey and academic staff surveys

In order to investigate the relationship and the strength of the relationship between the results of student survey and the academic staff survey, the Pearson correlation coefficient is applied and the following hypothesis is demonstrated,

$H_0 : \tau_{S \times AC} = 0,$ against $H_1 : \tau_{S \times AC} \neq 0,$

where $\tau_{S \times AC}$ represents the correlation coefficient of the survey of student participation and the engagement (SPE) and the survey of academic staff participation and engagement (ASPE) . Table 12 presents the estimate of the Pearson correlation

coefficient ($\tau_{S \times AC}$) and the significance level ($p$) of testing the above hypothesis.

**Table 12.** Pearson correlation coefficient ($\tau_{S \times AC}$) and $p$ value

| | | ASPE |
|---|---|---|
| SPE | Pearson Correlation | .587** |
| | Sig. (2-tailed) | .000 |
| | N | 40 |

As shown in Table 12, the value of $\tau_{S \times AC}$ was good, positive and that $p = 0.000$. This observation indicates that there was a highly significant, positive relationship between the results of the student survey and the

academic staff survey. Practically, this observation means that there is a high consistency and agreement between student opinions and academic staff opinions. It may be worth mentioning that this result aggresses with the existing theory of student and academic staff surveys which confirmed a positive and significant correlation between them (Kroncke, 2006, Chaney et al., 2007 and Tessema et al., 2012).

### 8.5. Comparing the differences between SPE and ASPE

The paired sample T-Test is applied to find

any differences between the results of student participation and engagement and academic participation and engagement; from these, the following hypothesis is developed,

$H_0 : \mu_1 - \mu_2 = 0$, against

$H_1 : \mu_1 - \mu_2 \neq 0$, where $\mu_1$ and $\mu_2$ are represent the means

Of student survey and academic staff survey respectively. Table 13 presents the paired T-Test and the significance level ($p$) of testing the above hypothesis.

**Table 13.** Paired T-Test and $p$ value

| Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|---|
| | | | Lower | Upper | | | |
| 21.824 | 12.199 | 1.953 | 17.869 | 25.779 | 11.172 | 38 | .000 |

Table 13 shows that the above hypothesis is rejected since the significance level of the test ($p$) is equal to 0.000. This indicates that there was a highly significant difference between the results of the student survey and the academic staff survey.

## 9. Concluding remarks and recommendations

The purpose of this paper was to study the students' and academic staff's satisfaction, participation and engagement in private HEIs in Oman. The instruments of this research were extended and the internal consistency or the stability of the scale was tested.

In fact, the policy of data collection was identified, the stratified random sample was drawn from the HEIs and the demographic variables (general information) of the sample of students and the academic staff sample were studied, the data were collected and the measures of satisfaction, participation and

engagement were estimated.

The findings of this paper have shown that the proposed factors of engagement and satisfaction (students and academic staff) were important and significant. One of the important observations of this study is that the level of pooled engagement and participation of HEIs were average. Generally, the results of the academic staff are higher than that of the students.

Comprehensive statistical analyses for the scales of measurement and numerical results of students and academic staff based on nine tests were performed to check the precision and robustness of the surveys and the final results.

Moreover, this paper has summarized the findings and advantages of applying students' and academic staff's satisfaction, engagement and participation in each private HEI and for the whole sector of private HEIs. In addition, the findings of the study may be considered as a base for future improvement in the private sector and for national and international comparisons.

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The importance of the theoretical side of students' and academic staff's perceptions was to help HEIs realize the effect of satisfaction, participation and engagement on teaching and learning.

Indeed, one of the most important recommendations and practical implications of this paper is that the stakeholders, executives, service centers, managers and others in private HEIs should pay more attention to satisfaction of students and academic staff and focus on how to improve the participation and engagement of students and academic staff through the dimensions given in section 4.

Finally, it is observed that the issues of student and academic staff satisfaction, participation and engagement are highly necessary and important as the grounds of "educational service quality excellence" highly affect both teaching and learning. In order to achieve "educational service quality excellence", databases for student and academic staff satisfaction, participation and engagement in HEIs in Oman have to be established, controlled and assessed and provided with systematic collection and analysis of student and academic staff data.

## 10. Limitations and dilemmas

In this research, the following specific limitations can be highlighted.

One significant problem area related to the practical assessment of HEIs is in the gathering of the opinions concerned with the satisfaction, participation and engagement of academic staff and students. For the purpose of getting accurate results related to satisfaction, participation and engagement, care should be taken by the respondents that their approach be balanced, neutral and impartial, otherwise, their results will be liable to non-sampling errors. As we know that the satisfaction, participation and engagement are common types of qualitative indicator, they are only as fair and as sound as the opinions. Moreover, the data

collection strategy and the way of drawing the samples are the other factors which affect the accuracy of responses by the sampling error.

In fact, the differences of numerical results between HEIs and the variations between students and academic staff in each HEI or in general are natural statistical phenomena. In addition, the developed test for differences (section 9.5) indicates that there were highly significant differences between the results of the student survey and the academic staff survey.

It is observed that few HEIs have drawn the sub-samples in a way that may not have represented their entire population completely. Thus, the findings provided in this paper, like any findings of conceptual models, are "indicative and not definitive".

## 11. Future studies

Here are some of the suggested research directions.

Implementing both surveys and scale of measurements in future experiments in private and government HEIs, to assert and enhance the surveys and scale of measurements, to generalize the opinions, and to verify "whether the same findings would be achieved or not".

There is a significant gap between the levels of students' satisfaction and academic staff's satisfaction and the levels of engagement. Furthermore, the differences in these results between students and academic staff need additional assessment.

Some other topics may be included in students' surveys like the level of satisfaction with the curriculum; the validity of academic staff and the academic staff quality.

In order to utilize the students' feedback effectively by HEIs and academic staff and to utilize academic staff feedback by HEIs, a mechanism which can utilize the data and results of students' satisfaction and academic

staff's satisfaction for fostering the quality of teaching and learning and for transparent decision making processes of HEIs in Oman should be studied and developed.

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