

An Analyzing on Statistical Data Analysis Skill Needs Among Graduates

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ABSTRACT

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The skill of analyzing statistical data is a skill that uses quantitative or numerical methods. The need for a systematic research process usually requires a foundation of quantitative skills even if little other than its importance in the realm of future employment and important knowledge for every student, especially for those who conduct research scientifically. Creative arts students are students who venture into the field of arts and creative studies who mostly use qualitative methods in their research. Yet is there a need for systematic statistical data analysis skills in the scope of their study? Therefore, to answer this question, this study examines the need for data analysis skills among creative arts students. A total of 102 sets of questionnaires were distributed to undergraduate students from various programs of the Faculty of Applied and Creative Arts UNIMAS. Descriptive analysis was used to analyze the questionnaire data using Statistical Package for the Social Science (SPSS) version 26.0. Overall finding showed that statistical data analysis skills are very necessary among creative arts students.

Contribution/Originality: This study is one of very few studies which have investigated in creative Arts Industry. Some of the previous empirical studies just focused on creative arts industry as a whole while this study focus on the needs of statistical data analysis used among creative arts students.

1. Introduction

In the study of [Gerardo Pérez López et al. \(2006\)](#), graduates in education and sociology were asked about the main causes of their difficulties in studying statistics and quantitative methods. It was found that students expressed their difficulties as they were unable to relate theory and practice in the study and were unfamiliar with related concepts and content. Apart from that, they are also unable to describe the comprehensive information to understand it and the negative attitude towards the content. Statistics has become part of the curriculum of primary, secondary and higher education. These skills are very useful to students to cultivate their intellectual development in handling information, processing and predicting data. As such, each instructional content will be directly related to statistical skills and most countries have implemented this in their curriculum plans ([Gerardo Pérez López et al., 2006](#)). The teaching of statistics at the university level needs to be given exposure even if only partially in the framed academic structure. This is because with the knowledge of statistics, they can apply it even if it is only basic in the field of employment after graduation. Graduates who have entered the world of work play an important role in the current academic structuring. Their experience in the employment industry is able to provide feedback on the need for statistical skills in the workplace ([Harraway & Barker, 2005](#)). With the importance of statistics and the diversity of its uses in various fields of theoretical knowledge and application, statistics is included as a compulsory subject for most faculty students as part of their program of study ([Schmit, 2010](#)).

1.1. Problem Statement

If the teaching of statistics begins in higher education, students will have difficulty learning all the content, and they will memorize facts in addition to understanding them. Such learning cannot be applied in the world of professional work ([Batanero, 2000](#)). Among the weaknesses of students when they use statistical skills are inability to understand the meaning of concepts ([Batanero, 1998](#)), difficulties in interpreting and understanding charts and graphics ([Batanero et al., 1994](#)). Apart from that, the scope of teaching and learning in the field of creative arts only encourages students to use qualitative methods as opposed to quantitative methods. This is because, the academic structuring of creative arts students is more likely in the production of an art product, understanding and observation of the process of an art product and appreciation of the aesthetic value of an art product. This situation tends to encourage students in using qualitative methods as opposed to quantitative methods which mostly apply statistical analysis data skills.

Therefore, this study is to examine the need for statistical data analysis skills for students in the field of creative arts. The needs considered in this study are from the perspective of creative arts students. This aims to get a comprehensive view from the students so that the needs of the study can be more significant.

1.2. Significance of study

This study is very important to the faculty in order to make this research as a guide in designing an academic planning structure that takes into account the implementation of creating a course that is based on statistical data analysis skills. Apart from the faculty, it is also important for creative arts students to know the need for these skills in the world of work by looking from the perspective of the industry.

2. Literature Review

Based on the study of [Gerardo Pérez López et al. \(2006\)](#) who studied the use of statistics in graduate students for the field of Educational Psychology at the National Pedagogical University can assist them in obtaining professional qualifications. The findings of the study show that, in general students need to use statistical analysis in conducting research however, they have difficulty in making statistical test choices appropriate to their research objectives and difficulty in interpreting the data. In addition, students also have difficulty in making study design choices that are consistent with its objectives, difficulty in understanding the meaning of some statistical concepts and problems in decision making using charts or graphs.

There are also several studies related to the creative arts industry that use statistical analysis methods and skills. [Amaran and Lau \(2018\)](#) study use the method of factor analysis in obtaining research findings related to the factors of youth involvement in the creative arts industry. Hence, some of the study also used a statistical approach in analyzing the involvement of creative arts graduates in the field of entrepreneurship ([Amaran et al., 2020](#); [Mohd Fahmi et al., 2018](#)). This shows that although not many studies have conducted studies related to the use of statistical analysis skills among creative arts graduates, but there are few researchers in the field of creative arts apply statistical analysis as tools in their research methodology ([R. Keith Sawyer, 2018](#)).

In [Amaran \(2016\)](#) book stated that the use of statistical knowledge is very important among creative arts graduates to produce more quality graduates with diverse skills. This is also stated in the [Amaran \(2018\)](#) book, in the context of understanding the knowledge of marketing in the creative arts industry, graduates need basic statistical skills. According to [Amaran et al. \(2022\)](#) feedback received from the alumni, academics and the industry stated that statistical data analysis skills are very necessary among creative arts students. Apart from only providing exposure in qualitative analysis skills, quantitative analysis is also very important in ensuring that students gain knowledge of data analysis skills as a whole.

[Batanero \(2000\)](#) states that if the teaching of statistics begins in higher education, students will have difficulty learning all the content, and they will memorize facts in addition to understanding them. Such learning cannot be applied in the world of professional work. Among the weaknesses of students when they use statistical skills are inability to understand the meaning of concepts ([Batanero, 1998](#)), difficulties in interpreting and understanding charts and graphics ([Batanero et al., 1994](#)).

Overall not many studies have been conducted to assess the needs of graduates in the field of creative arts on statistical data analysis skills. Based on the related literature, recognize that creative arts students are students who venture into the field of arts and creative studies who mostly use qualitative methods in their research. So the research question arises is there a need for creative arts students to deepen the skills of statistical data analysis?

3. Research Methodology

This study involved 102 sets of questionnaires distributed to undergraduate students from various programs of the Faculty of Applied and Creative Arts UNIMAS. As for the analysis method, this study uses quantitative method. Descriptive analysis was used to

analyze the questionnaire data using Statistical Package for the Social Science (SPSS) version 26.0. Survey method was used in this study to obtain a clearer and more reliable response (Mohd Tobi, 2016). According to Chua (2016) quantitative method is very significant in analyzing the findings accurately, therefore this study uses a quantitative approach in producing research findings.

4. Findings

4.1. Respondent Demographic Background

Table 1 shows that from the total of 102 creative arts students who distributed the questionnaire, a total of 72.5 percent were female students and 27.5 percent were male students. Most were from the Art Management program (54.9 per cent), followed by the Fine Arts program (30.4 per cent), the Design Art Technology program (10.8 per cent) and the Cinematography program (3.9 per cent). While almost half of the respondents are year 1 students which is 48 percent, followed by year 3 students which is 34.3 percent and year 2 and 4 students with 14.7 percent and 2.9 percent respectively.

Table 1: Demographics of Creative Arts Students

Respondent Demographics		Frequency	Percentage (%)
Gender	Man	28	27.5
	Women	74	72.5
Education program	Art Management	56	54.9
	Fine Arts	31	30.4
	Design Art Technology	11	10.8
	Cinematography	4	3.9
Years of study	Year 1	49	48
	Year 2	15	14.7
	Year 3	35	34.3
	Year 4 and above	3	2.9
Number of Respondents		102	100

Table 2 shows the respondents by year of study and program of study. For year 1 students, most of them are from the Arts Management program, which is 75.5 percent of the 49 students.

Table 2: Years of Study by Program of Study

Years of study	Program of Study				Total
	Art Management	Fine Arts	Design Art Technology	Cinematography	
Year 1	37 (75.5%)	8 (16.3%)	0	4 (8.2%)	49 (100%)
Year 2	15 (100%)	0	0	0	15 (100%)
Year 3	3 (8.6%)	21 (60%)	11 (31.4%)	0	35 (100%)
Year 4 and above	1 (33.3%)	2 (66.7%)	0	0	3 (100%)
Number of Respondents	56 (54.9%)	31 (30.4%)	11 (10.8%)	4 (3.9%)	102 (100%)

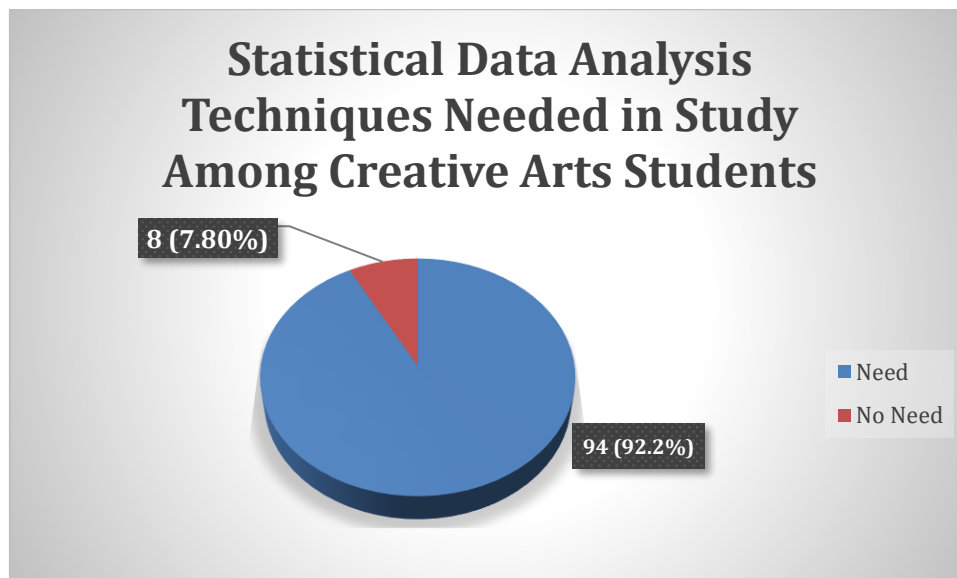
Year 2 students are all students from the Arts Management program. Year 3 students mostly comprise the Fine Arts program which is 60 percent of the 35 students. While students in year 4 and above consist of the Fine Arts program (2 people) and the Arts Management program (1 person).

4.2 Data analysis skills needed

To answer the questions and objectives of the study, the need for statistical data skills is seen using creative arts students as a sample to ensure that the objectives of the study can be achieved comprehensively.

Figure 1 shows, a total of 102 creative arts students who provided feedback through the distribution of this questionnaire, 92.2 percent stated that statistical analysis data techniques are necessary in their studies and instead only 7.8 percent stated not necessary in their field of study.

Figure 1: Statistical Data Analysis Techniques Needed in Study Among Creative Arts Students



The preparation of a questionnaire that gave students the opportunity to mark more than one answer was very helpful in conducting this study. As shown in Table 3, out of 108 total responses received from 94 students who stated the need for this skill, 48.1 percent stated that they need this skill because to gain exposure to the knowledge of statistical analysis data. Followed by 16.7 percent stated because these skills can help facilitate them to implement final year projects. While 15.7 percent each stated that these skills are necessary because they are useful in the world of work and want to master various fields in addition to art skills that they have acquired. Only 3.7 percent said they needed statistical skills to be more creative.

Table 3: Why statistical analysis data techniques are necessary

Necessary because:	Frequency	Percentage (%)
Facilitate creating Final Year Projects	18	16.70%
Exposed to the knowledge of statistical analysis data	*52	*48.10%
Industrial needs and useful in the world of work.	17	15.70%
Mastery of various fields in addition to artistic skills possessed.	17	15.70%
Be more creative.	4	3.70%
Number of Responses	108	100.00%

Table 4 shows, out of 8 people who stated that they do not need this skill because for them this skill is not suitable for art studies, has nothing to do with the field they are studying and thinks students will face difficulties because they have no foundation.

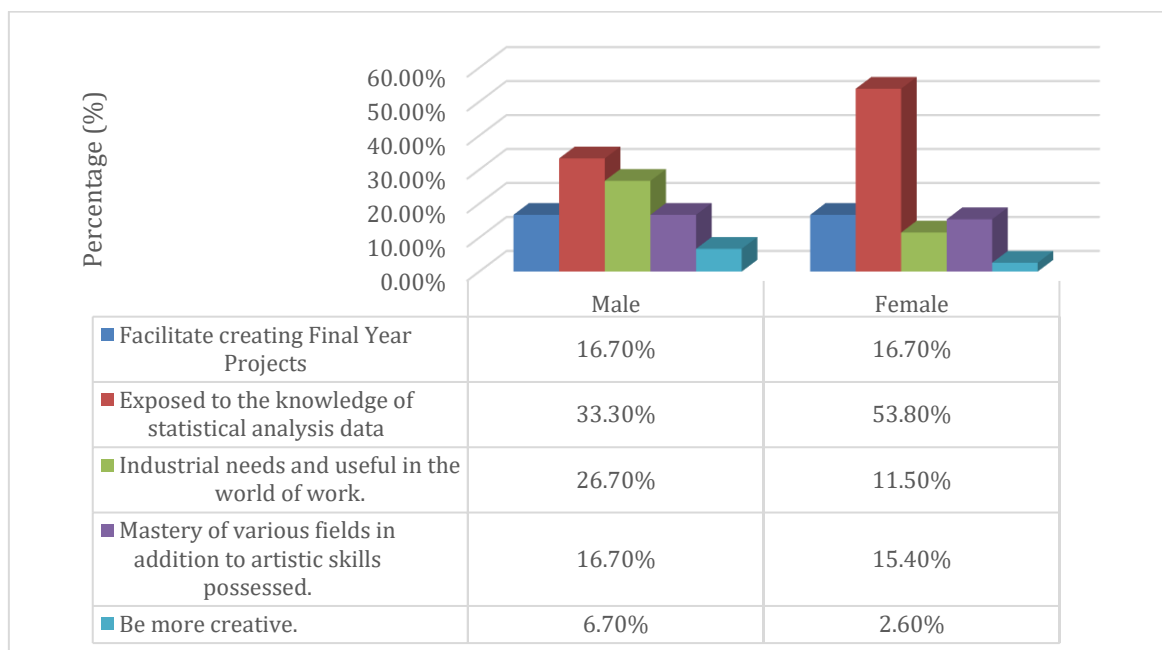
Table 4: Why statistical analysis data techniques are not necessary

Not necessary because:	Frequency	Percentage (%)
These skills are not suitable in the field of Art studies	5	62.50%
These skills have nothing to do with the field of art studies.	1	12.50%
These skills are difficult for students to understand and students have no foundation	2	25.00%
Number of Responses	8	100.00%

4.2.1. Statistical analysis data technique skills are necessary in the study of creative arts students by Gender

Figure 2 clearly shows the comparison of statistical skills requirements by gender, that is, out of 108 responses received, for both genders, most expressed their desire to get exposure related to statistical analysis data skills.

Figure 2: Statistical analysis data technique requirements by Gender

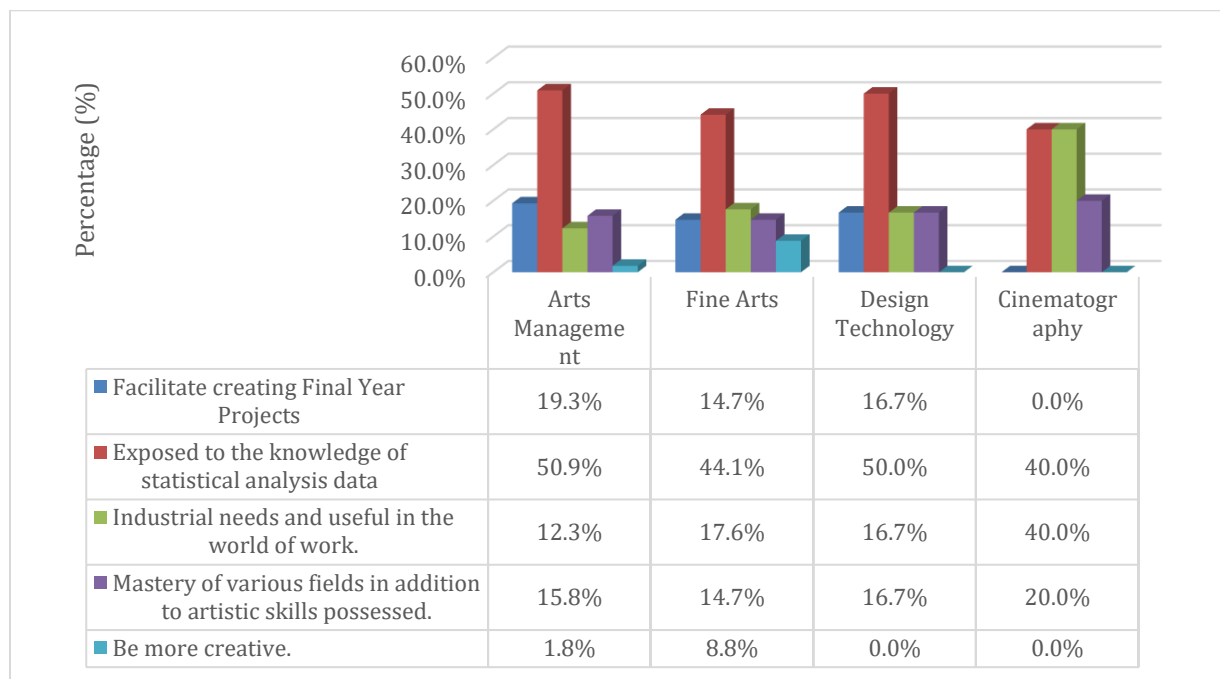


Next for male students, among the main needs they need this skill is because of the desire in the world of work that tends to use this skill which is 26.7 percent. Meanwhile, for female students, one of their main needs is to make it easier for them to implement their final year projects, which is 16.7 percent.

4.2.2. Statistical analysis data technique skills are necessary in the study of creative arts students according to the program of study

Figure 3 shows a comparison of statistical skills requirements according to the study program. All students from all programs place the need because they want to be exposed to the knowledge of statistical analysis data as the most important need. Students of the Arts management program stated it was easy for them to undertake final year projects as among the key requirements. Students of the Fine Arts program stated that they need this skill because it is very useful in the world of work later. Students of the Art Design technology program agreed with other programs and recorded the same percentage of 16.7 percent, including wanting to master various other fields in addition to their art skills.

Figure 3: Requirements for statistical analysis data techniques according to the Program of Study



4.2.3 Statistical analysis data technique skills are necessary in the study of creative arts students according to the year of study

Figure 4 shows a comparison of statistical skills requirements by year of study. Year 1 and year 3 students mostly stated that they want to be exposed to these skills as the main requirement which is 52.1 percent and 48.6 percent respectively, while for year 2 students most want to facilitate them to carry out final year projects as the main requirement which is 47.4 percent.

Figure 4: Statistical analysis data technique requirements by Year of Study

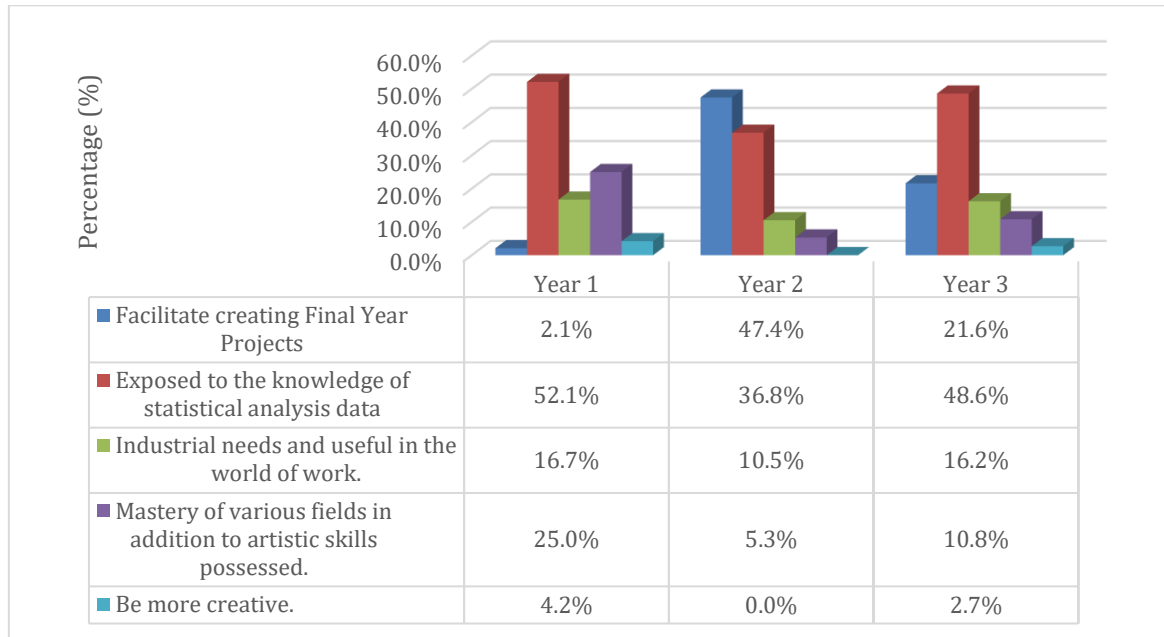


Figure 4 also shows only 2.1 percent of year 1 students who stated the need to implement a final year project. This is because year 1 students have just started their studies and they have not yet been exposed to final year project research methods. Meanwhile, students in years 2 and 3 put the need to be more creative as the last need, ie each with no respondents only 2.7 percent.

5. Conclusion

Overall, creative arts students need exposure to the knowledge of statistical analysis data to facilitate the writing of their Final Year Project as well as the needs in the world of work later.

As such, it is clear that these skills provide more benefits than the other way around. The results of the feedback received from the questionnaire to students stated that statistical data analysis skills are very necessary among creative arts students. Apart from only providing exposure in quantitative analysis skill is very important in ensuring that students gain knowledge of data analysis skills as a whole.

It is hoped that with the results of this research, the faculty to implement structuring in the academic structure can hold a course that is based on statistical data analysis skills. At the same time can encourage research activities that use instruments and quantitative research among academics and creative arts students.

While the recommendation for future researchers may be able to increase the number of respondents for former students, academics and the industry to get a more comprehensive perspective either in the form of questionnaires or interviews. Due to time constraints, the researcher was only able to take a few people from the sample in addition to the limited amount of feedback received.

Ethics Approval and Consent to Participate

The researchers used the research ethics provided by the UNIMAS Research, Innovation and Enterprise Centre (RIEC) Ethics Committee. All procedures performed in this study involving human participants were conducted in accordance with the ethical standards of the institutional research committee. Informed consent was obtained from all participants according to the Declaration of Helsinki.

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Conflict of Interests

The authors declare no conflict of interest in this study.

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