THE ENGAGEMENT WITH BIG DATA ANALYTICS IN BUSINESS: A PREPARATION

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This study presented the different challenges business school or higher education institution are facing due to the emergence of big data in business companies. Students should be trained in college to the multidisciplinary facet of data analytics in business. Their curriculum should include among others predictive modeling, multivariate methods, business analytics, quantitative methods and computer programming language. They should be taught on how to use R or Python to process big data. As revealed by the survey done, students had a positive attitude towards their Statistics subject and the percentage of students who passed Statistics was so high. Faculty's preparations and the support of the university's administration based on the assessment concluded a promise that big data analytics in business will prosper in the university.

INTRODUCTION

In this data driven era, graduates of business program must be proficient in data analytics in order to cope with the demand of business companies that handle big data. The challenge lies in business schools and higher education institutions to produce graduates that can cope with the demands of the time. They have to develop program pedagogy with competence in data science aside from the domain of expertise.

Data analytics in business involve finances, people and things with the goals of minimizing costs, maximizing revenue, improving services, minimizing risks, improving product quality or developing new products. Business companies, nowadays, deal with huge volume of data since it gives much closer accuracy of results that lead to a much improved decision making. Data volumes greater than 100 terabytes, consisting of two or more sources and/or arriving at high velocity is highly recommendable to make better decisions.

Big organizations like Ayala, IBM, Microsoft and Oracle are utilizing big data analytics for their business needs. QuinStreet Inc. revealed that the trend of implementing big data analytics is given a high priority by U.S. businesses (Gopinath, 2015). Companies that do not use analytics are said to be losing competition to those companies who already embraced it (Steiner, 2016).

There is a global gap between the demand for big data analytics and the supply of analytic talent in the business world. There is also a global questioning on the nature and structure of business education nowadays. They have been slow to acknowledge that future managers also need to prepare for the new data-driven business era. Jumping into this massive digitalization in the business world should prompt the higher educational institutions and make a revamp in their curricular programs. This paper would like to address on how to deal with the said gap

METHOD

A survey was done to a total of 148 BS Management students through self-administered 5-Likert scaled questionnaire. Modal responses were obtained to determine the preparedness of the students. Secondary data through the use of the newly revised curriculum of the BS Management program was obtained. It identified readiness of the curriculum to data analytics in business. More information were collected through informal interviews to some concerned faculty. It assessed faculty's engagement to big data analytics in business.

RESULTS AND DISCUSSION

Challenges are in the curriculum development or revisions to cope with the companies demand on doing data analytics in business, the multiple modes or sources of students' learning and their preparedness, the faculty development programs on the rapidly changing education trends and the support of the administration to digital transformation in the educational system.

The Current State of the Curriculum

The BS Management curriculum is newly revised as a result of the recent introduction of the K-12 curriculum in the country and the digitalization in business companies. Elementary Statistics (Stat 101) where introductory concepts on statistics such as descriptive, probability and inferential statistics are discussed is maintained in the curriculum. Predictive statistics and statistics for market segmentation is an added subject. Business Analytics is newly offered. A computer programming course CMSC 101 (Introduction to Information Systems) is required but it does not teach a computer programming language such as Java or C^{++} that can be used for big data analytics.

The Elementary Statistics and Predictive Statistics have laboratory component where they can do hands-on exercises on the concepts taught in the lecture classes. Statistical softwares such as R, Python, RapidMiner and IBM SPSS are made available in the statistics laboratory.

The curriculum offers Management Science which exposes the students to different quantitative methods for business such as probability and probability distributions, decision analysis, time series analysis, linear and nonlinear mathematical programming, neural networks and Project Scheduling (the PERT/CPM).

Aside from the traditional way of teaching based on textbooks, there must be collaborations with industry and government agencies that will provide students with real-world big data and problems. Such collaboration can also provide good training to students through internships/practicum. Students after graduation can be hired by the companies that they have worked with during the internship. University can also receive funding and can be shared with more advanced digital resources of these companies through the said collaborations.

The Students Readiness

Success to deal with big data analytics depends on the high capability and positive behavior of the would-be manager scientists. It, of course, starts at the college level where they get their subjects in statistics, computer science and business management. Survey done in this study was limited only to statistics subject.

Results of the survey to Business Management (BM) students of UP Cebu revealed that about 39% of them got grades higher than 80% but about 94% of the BM students passed their introductory statistics subject.

Modal response of about 44% of the students strongly agreed that learning Statistics requires discipline. About 41% of the students agreed that they had to attend classes on time and listen attentively to their professor every meeting.

Modal response of about 47% disagreed that Statistics was an easy course. About 89% of the students said that the exams were so challenging. About 35% disagreed that they had confidence when asked to solve problems. They further disagreed (about 36%) that they had good analytical/critical thinking in solving problems in Statistics and about 36% also disagreed that they had logical mind to solve problems in Statistics.

The modal responses of about 36% of the students disagreed that their teacher was terror. About 39% disagreed that it was easy to understand how their professor taught the course.

Being lax was also a problem as revealed by the modal responses of about 46% of the students who said that they knew Statistics from high school and so did not bother to study it in college. Modal responses of about 39% of the students said that they were forced to take the course because it is part of their BS Business Management curriculum.

The other problem of the students as revealed by the survey is that students (modal responses of about 35%) had a hard time studying Statistics due to the requirements of their other courses. For them, they are easier to do than studying Statistics. About 43% said that they took a long time to understand most of the concepts, thus, they gave priority to other subjects than Statistics. In fact, they (about 48%) disagreed that they studied Statistics almost everyday.

About 32% disagreed that their personal problems got in the way of their studying and the same modal percentage of students disagreed that they were distracted while studying Statistics.

Despite all problems/difficulties in learning Statistics, students remained positive. At least 55% of the students felt frustrated whenever they failed in the exams and thus they knew that they

have to strive harder. Modal responses of about 36% agreed that they strove for excellence in their Statistics course. About 36% agreed that they had memorized formulas in Statistics. Modal responses of about 43% of the students agreed that they studied with friends and their friends helped them understand the concepts. Another good thing, based on the modal responses of the students, were the agreement to the following: 1) They had interest in learning Statistics (about 47%); 2) They had positive attitudes toward Statistics (about 48%); 3) They liked attending the class every meeting (about 36%); 4) They understood the use of Statistics in their program of study which is BS Business Management (about 53%).

The Faculty's Continuing Education on Data Analytics

Data analytics in business need collaborations with multiple departments. Courses should be taught by faculty from other departments or could be team-teach by faculty from the different departments. For instance, predictive statistics and statistics for market segmentation must be taught by statistics faculty. Management Science is better taught by a faculty who knows applied mathematics (specifically Operations Research) and statistics with background in business management. Business Analytics is a multidisciplinary course that must be taught by the faculty of the School of Business, the Department of Computer Science and the Department of Statistics.

The University of the Philippines Cebu has faculty who are experts in the field of business management, applied mathematics, statistics and computer science. All of them are graduates of post baccalaureate programs (masters or doctorate degree). Though experts in their own field of specialization, continuing education of these faculty is a must due to rapid advancement in data analytics. They can enroll in Certificate programs on Business Analytics, Machine Learning, Data Visualization, R, Python and Data Analytics that are offered online by well-known universities worldwide being and can be completed in just less than a year. The Commission on Higher Education (CHED) and the University of the Philippines (UP) provide scholarship or funds for short and long-term training abroad. A faculty has availed the CHED's scholarship for six-month training in Machine Learning at the UCLA, Berkeley, USA. Some faculty used the Academic Program Improvement Funds for local trainings in Business Analytics and different Statistics topics. Some faculty attend both local and international conferences on big data for their research dissemination and learn from other researchers, too. That is made possible through Research Dissemination Grants.

The Administration's Support to the Faculty and Students

The university has statistics laboratories and computer science laboratories. They are being used by all Management students who enroll in Statistics and Computer Science subjects.

The university administrators send faculty to trainings locally and abroad. They provide funds for attendance to trainings and conferences. They give incentives to faculty to inspire more to work.

CONCLUSIONS

Too much effort has been done already by the university to cope with the current demand of manager data scientists. It started with the curriculum, to the massive training of the faculty, inspiring students to embrace data analytics in business and the support of the administration in the endeavor to make the curriculum relevant to the times and produce graduates that are ready for big data business analytics.

Based on the result of the survey, students have a positive attitude towards Statistics. With the very high percentage of passing in that subject, they are more likely prepared to take higher statistics such as predictive modeling, multivariate methods, management science and business analytics.

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