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# Student Orientations towards Course and its Impact: An Empirical Study on Pharmacy Student

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***Abstract:*** Purpose- Pharmacy education service quality is influenced by gap between students' expectation and actual realization of the service. The student orientation also greatly influences their service expectation, but unfortunately, researches hardly found that have been carried out to identify the stated orientation. Present research has been executed to mitigate this gap in theorization. Also, researchers of the present one identified the possible relationship between students' career planning and their orientation towards the course they are studying.

Method & Outcome- With the help of expert and on the basis of literature review, the authors have identified some useful statements in relation to the requirement of pharmacy students from a bachelor degree pharmacy course. A questionnaire has been developed using these statements and carried out a survey among 138 randomly selected students of three pharmacy colleges in Asansol and Durgapur region of West Bengal. Further authors have employed the data reduction technique like PCA (Principal component Analysis) and identified three orientations of the pharmacy students. Moreover, the importance of these orientations has also been examined. There was a provision in the questionnaire to know about the career plan of these student respondents. Based on this, the authors have tried to understand the influence of the same on orientation.

Contribution- This research possibly contributes the pharmacy service quality literature and as a result of this the industry will be benefited greatly.

***Keywords:*** Pharmaceutical Education, Curriculum Design, Course orientation, Pharmacy education quality, factor analysis.

## CONCEPTUAL FRAMEWORK

The recent development of the medical science in developing nations has dramatically changed the role of the pharmacy students. They are developed from a practicing pharmacist to a professional person and this is with an objective of sustainable development of pharmaceutical industry (Ali *et al.*, 2014). The government and different authorities of developing countries have started providing the pharmaceutical education by changing different inventing various types of courses, which range from the diploma to Ph.D. research. Globally, at the beginning, the content of pharmaceutical education was limited to the quality control mechanism only, but now it has been enhanced with more fragment of industrial dimensions, for example, formulation, dispensing and improvement of packaging, etc. Later on, as the result of this revolution in the developed nations, this education provides highly skilled individuals who enhance the quality level of working in the pharmaceutical industry. Thus, Zelenitsky *et al.* (2014) have observed that pharmacy education has an important role in transforming a student towards a patient-centred professional who will work for the society in the future.

Now, if we change our perspective from the industry to academics, we understand that to become a successful pharmacist, a pharmacy student should acquire some important qualities along with technical skills. For the best use of technical skill, social skills such as communication skill and teamwork are highly required. The students who have acquired these skills are working effectively and efficiently with the other health care professionals in managing pharmaceutical as well as the healthcare industry. Consequently, the pharmacy education should not confine only with technical knowledge rather technical knowledge along with social and behavioral skills help the up-gradation of the performance of pass-out pharmacy students (Alama & Al-amin, 2014). As in the case of other courses, academic performance is considered as an important parameter for successful performance of a pharmacy pass-out student in his/her career. Moreover, the personality has also been found effective in students' academic performance (Alama & Al-amin, 2014). Subsequently, the academicians could use these traits to improve pharmacy students' academic performance. Overall, it can be said that various facets of skills simultaneously required for the successful pharmacy career and if so, it results in the development of industry performance with the pace of time (Alama & Al-amin, 2014).

Finally, whatever is the academic performance, actual skills acquired by pharmacy students and if these skills useful for the industry operations are creating perfect industrial and academic partnership. Hence, the concept of industry ready students has been emerged. For making the students' industry ready, the assessment of the pharmacy education in micro institute level has been recognized. For the purpose of assessment of the academic program and others academic facilities, various approaches have been proposed (Abdullah, 2006; Mahapatra & Khan, 2007; Senthikumar & Arulraj, 2011; Banerjee & Mandal 2012; Gupta & Mandal, 2016). One of the relevant approaches is considered the students as a customer and the learning that they have received is considered as a service received hence, the quality of service is evaluated (Plaza *et al.*, 2017). In addition, this process also refers to the evaluation of all the components that are included in the students learning process such as assessment process, practical assignments, theory classes, teaching method and so on. This process also guides the governing body to assess the quality of the pharmacy institutes along with their students (Plaza *et al.*, 2017). According to various service- quality gap models (Carman, 1990; Cronin & Taylor, 1992; Buttle, 1996), the service quality is considered satisfactory when it meets the expectation levels of the customers. Before joining the pharmacy course the students have

developed his own expectation about the course and if during the course when a student has been receiving different services, including facilities received by him exactly match or more compared to their initial expectation level, then they completely satisfied, if it is not happening then they are dissatisfied with the received service quality. These experiencial learning of the students' helps the Institute either by positively or negatively in terms of the words of mouth promotion. According to Harden and others (Harden, 2001; Teevan *et al.*, 2011, Shuck & Phillips, 1999; John *et al.*, 2016), they have identified the academic gaps as major functions relevant to the service quality in the professional education. In medical and pharmacy literature in the medical literature, several curriculum design studies have been reported around the world for the inclusion of different allied components of the medical education. Whereas, this process in pharmacy education has been used to find out the potential deficiencies in the current curriculum, identify the potential allied subject could be incorporated and developed the different models of the assessment process to guide the government controlling agencies (Plaza *et al.*, 2017).

Therefore, the pharmacy education service quality depends upon the pharmacy students' expectation and it is obvious to say the pharmacy students' expectation depends upon the pharmacy curriculum orientation (Britton *et al.*, 2008; Zelenitsky *et al.*, 2014). Moreover, it is also important that no such literature is found that have identified the orientation of various pharmacy students empirically as well as no such research has been found that measure empirically the students' orientation and future career planning. Therefore, this present research has been carried out to identify these questions and the mitigate literature gap in this direction.

## LITERATURE REVIEW

The quality assessment in the education sector has observed since the early 1990s (Karathanos, 1999). This assessment process includes the development of the education service quality measurement model for higher education institutes, evaluation of the learning process and the review of the course curriculum structure (Plaza *et al.*, 2017). As we discussed, many of researcher have been introduced general higher education measurement models by considering the students as a 'primary customer' for the education service provider (Higher education institutes) like Higher Education Performance model (HEdPREF) by Abdullah (2005, 2006), technical education quality measurement scale (EduQUAL) by Mahapatra & Khan (2007), service quality measurement in higher education in India (SQM-HEI) model for the Indian higher education system by Senthikumar & Arulraj (2011) and others (Gupta & Mandal, 2016). Meanwhile, evaluation of learning process has been considered by many researchers. According to them, the variation in the personality of the teachers' results to the variation in learning styles and by applying their students' preferred learning style, the faculty can improve their students' attitudes toward the courses and as a result a better academic performance **(**Romanelli *et al.*, 2009; Teevan *et al.*, 2011, Shuck & Phillips, 1999; John *et al.*, 2016). The curriculum review efforts were designed to complete the two basic objectives. The initial one is the transparent designing of the curriculum for all stakeholders like faculty, students and industrialists and the second one is the linking of all the basic elements of the curriculum. This transparency is required to realize the gaps in academic program content, as well as to improve the communication among the faculty and other stakeholders (Zelenitsky *et al.*, 2014). In addition, four major information such as *'what is taught? How is to taught? When it is taught? and What dimensions are applied to understand the degree of students' learning outcomes?'* are served the faculty efforts to connect all the elements of the curriculum together

within an academic program (Britton *et al.*, 2008). However, In reviewing the literature, it is revealed that the previous studies are highly concerned about the measurements of higher education quality but ignore the pharmaceutical education quality. Moreover, they also ignored one of the most important dimensions of pharmaceutical education that is the academic curriculum designing or, more precisely curriculum mapping, which is a crucial aspect for standardized the quality of pharmaceutical education. In general practice, it is observed that most of the time, the policymakers have mainly considered academicians views' while designing the curriculum of the higher educational program, but the perspective of students' is overlooked. Hence, the objectives of this study are to identify the perspective of the pharmacy students' about the academic program of pharmaceutical education empirically. In addition, identify the optimal structure of the curriculum for pharmacy program with the combination of core pharmacy science subjects with industry driven orientation. This study also reveals the students' expectation from the pharmacy curriculum according to their tentative career plan after an undergraduate degree. Consequently, this study can improve the students' focus towards the pharmacy course, and as a result, a better career planning can be made. Moreover, our study may provide a direction to the policyholders of developing nations for further development in the pharmaceutical education.

## RESEARCH MATERIALS AND METHODS OF ANALYSIS

This research work opts for a structured questionnaire and a multistage cluster random sampling frame to realize the research objective. The Questionnaire contains two parts, the initial part relates to the demographic and career plan information of pharmacy students, the second part which is a rating part, has 23 items that are presented as statement to which students responded with their agreement or disagreement on a five-point continuous scale from 1= strongly disagree to 5= strongly agree about their expectation from the undergraduate pharmacy course offering by the pharmacy institutes (Gupta & Mandal, 2016). These items of our instrument are extracted from original 30 items that are searched in the literature of higher education teaching model (Ali *et al.*, 2014; Plaza *et al.*, 2017; Basak, 2010; Alama & Al-amin, 2014). Besides, these sought 30 items were reviewed by 10 senior academician and 10 pharmaceutical industry specialists of the country. They have acknowledged only 19 items from the original 30 items and in the interim, they likewise recommended 4 new items in the regards to pharmaceutical course orientation in India.

In our multistage cluster base random sampling process, in the first step, the state of West Bengal of eastern India has been selected for sampling. The West Bengal state having the representative character of the eastern educational population and having 13 colleges of pharmacy course (B.Pharm). These Institutes with undergraduate course have enlisted roughly 1200 under study students (AICTE Dashboard, 2017). In next-step, three out of thirteen colleges are selected by the random selection method. The Principal or Director of these three selected colleges has been requested with the appropriate cover letter or mail for carrying out the survey in their premises and for providing a list of students' names of the second-year and third-year students. Now, the two clusters are framed by the enlisted second-year and third-year undergraduate students' name with contact details then, 200 students are reached for the responses. Overall, total 164 students have taken an interest in our survey process, however, among them, 26 students do not respond to all the items hence 138 survey responses considered in our study. The data have been gathered in the three-month, period between January-March 2017 and in a recess time of the students between two classroom

sessions or laboratory session with a congenial environment of friendly discussion to avoid the students' understanding error.

The collected data have been then analyzed using the appropriate Statistical Software for Social Science. Exploratory factor analysis (EFA) is a generally utilized technique for data reduction in social science research. In addition, EFA is utilized to discover the patterns amongst the variables and empower the lessening of the variables into factors that consolidated from these variables. In the initial step, we have carried out a descriptive test to decide the weather data is proper for exploratory factor analysis (EFA) or not. We have found that five items are not appropriate for further thought as these items have very high Standard Deviation (SD) that is more than half of their Mean value. In this manner, EFA has been carried out with 18 variables by applying a principal component analysis method, with the orthogonal Varimax rotation to obtain an optimal simple structure which may have as use as a minimum number of factors with as much as higher loading on each one (Tabachnick & Fidell, 2009 pp-635-643). In this process, the calculated communality values of seven variables are found less than 0.5, so they have been discarded from the analysis since it is mandatory for the factor analysis method (Hair *et al.*, 2009). At last, we are having 11 items are proceeding for the factor analysis. Where, the Bartlett test of Sphericity, which is an authentic indicator of the suitability of data for factor analysis, has found significant at the five percent level of significance ($\chi^2$= 238.19, df=55, p<0.000) and the Kaiser–Meyer-Olkin (KMO), indexes for the sample adequacy of factor analysis, is 0.707 (See the table 2). These primary results have confirmed the data are suitable for further analysis and a linear dependence between the variables forecast the calculation of EFA.

The exploratory factor analysis yields three dimensions with eigenvalues above one (Kaiser Criterion), these three factors are explaining 57 percent of total variance. Moreover, the scree plot also confirms the presence of three dimensions (factors) in principal component analysis (PCA) process. All 11 items have been loaded significantly with minimum criteria of loading at 0.50 (Tabachnick & Fidell, 2009 pp-635-643). Now, the reliability and validation test of the measurement instrument is examined by Cronbach's alpha reliability test and composite reliability (CR) test (Nunnally, 1978). Both the tests provide a satisfactory result that is more than the obligatory value of 0.60 especially, in the case of studies related to educational service (See the table 3).

## THE PHARMACY CURRICULUM ORIENTATION

In our analysis, Factor-1 is a collection of four items which are broadly discussed about interaction as learning directly from the industry since students know it very well that they would like to get absorbed by industry only, they want to make themselves ready for industry. Hence, we may term the factor-1 as "Requirement of exposure and learning from industry".

Similarly, another set of items which is generated as factor-2 directs the requirement of learning of manufacturing practices and then understanding of technical subjects are highly valued. These also states the requirement for learning from industry experts on manufacturing or technical issue. Thus, we feel this factor may be named as "Requirement of pharmaceutical manufacturing/ technical exposure".

The third group of items tells the necessity of pharmacy graduate by expanding their potential for a market in the field of marketing. Here, the factor states for practical exposure on marketing rather than manufacturing. So, we have termed this factor as "Requirement of pharmaceutical marketing learning exposure".

To summarize, EFA suggests the three orientations are important in the design of the pharmacy curriculum, namely, "Requirement of exposure and learning from industry", "Requirement of pharmaceutical manufacturing/ technical exposure", and "Requirement of pharmaceutical marketing learning exposure" (See the table 3).

The "Requirement of exposure and learning from industry" consists of four items with loading ranging from 0.785 to 0.554, this factor explains 28 percent variance in students' responses to the curriculum orientation. These four items have a 0.686 Cronbach's alpha value and CR value 0.777. This factor refers to the industry experts' involvement in the education process with notable interactive sessions. Students required standard and significant industrial training program. This factor also describes the requirement of greater practical session for formulative skill development for the students to prepare them to work in the pharmaceutical manufacturing sector.

The second one is "Requirement of pharmaceutical manufacturing/ technical exposure" consists of four items with loading ranging from 0.759 to 0.520, this factor explains 17 percent variance in students' responses. The alpha value and CR value are 0.607 and 0.745 respectively. This factor acquires the items related to the dispensing training to the students. The respondents assimilate the knowledge in clinical and basic pharmaceutical science to develop pharmacist skill to serve the society. Moreover, it also advocates the importance of technical education towards the industrial practices.

Lastly, the third factor "Requirement of pharmaceutical marketing learning exposure" accounts for almost 13 percent variance and consists of three items collected information about the students approach towards the pharmaceutical marketing subjects. Particularly, students are demanding more focus on the marketing subjects to develop the selling skills and more practical orientation in the personality and attitude. These subjects, mainly focus on the pharmaceutical marketing approaches and the latest updates in the industry. The alpha value and CR value for this factor are 0.604 and 0.692 respectively.

## COMPARATIVE STUDY OF IMPORTANCE OF THESE THREE ORIENTATIONS OF THE PHARMACY CURRICULUM

Now, by applying the importance component matrix, we compare the importance of each curriculum orientation according to the students' future career plan. We divide our respondents into two groups, Group-1, the students willing to join corporate jobs after graduation. Here, corporate jobs mean in any industrial department, such as manufacturing, quality control, or marketing, etc. Group-2, the students willing for higher studies such as M.Pharm, MBA, or Ph.D. after completion of their undergraduate degree course. In our survey, 58 percent respondents belong to group-1 and 48 percent belongs to group-2. However, 2 percent respondents did not respond to the survey (See the table-1). To examine the comparative importance of each orientation, we first examine the actual importance of each orientation on percentage and we have found that statistically, the first orientation is 36 percent important, the second one is 34 percent important, and the third approach is 30 percent important. Moreover, the group comparative study also supports the same result statistically that means the students' attitude towards the pharmacy curriculum is not significant differs with their future career plan.

## CONCLUSION

We are interested to measure the importances of three orientations of the pharmacy undergraduate students'. It is found that the importance of all three factors is almost equal. But, if we rank after ignoring the small differences in the factor importances, we get the "Requirement of industrial exposure" is the top priority and following this we may receive the " Requirement of the manufacturing/technical exposure" as the next the important factor hence, we can conclude that students who join the pharmacy undergraduate course for getting job in the pharmaceutical industry as a manufacturing expert and that is why the industrial exposure and exposure on the manufacturing is highly important compared to the marketing. We can also conclude that the marketing job practically the least in choice and choice as no other option left.

But, the marketing is an important function of the industry and these functions require the motivated and highly skilled professionals. Thus, we considered it as a gap in the overall program designing of the graduate degree and suggest that to enrich the course with marketing papers and the counsel the students about the requirement of marketing in the industry is required. Our result shows that students orientation in terms of career planning having no role in their perceived importance of the factors. This is not changing their attitude towards the course. Thus we suggest the proper counselling of the students, which guide them in career planning correctly.

**Table 1**
**Demographic Profile of Respondents (N=138)**

| *Demographics* | *Variables* | *Percent of respondents* |
|---|---|---|
| Gender of Students | Male | 73% |
| | Female | 27% |
| Future tentative plan | Corporate Job | 58% |
| after B.PHARM | Higher Study | 40% |
| | Unanswered | 02% |

**Table 2**
**KMO and Bartlett's Test values**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin | Measure of Sampling Adequacy | 0.707 |
| | Approx. Chi-Square | 238.185 |
| Bartlett's Test of Sphericity | Degree of freedom | 55 |
| | Significance level of test | 0.000 |

**Table 3**
**Three Pharmacy Curriculum Orientation**

| *Course Orientation Dimension (% variance; eigenvalue)* | *Items details* | *Factor loading* | *Cronbach's alpha (α)* | *Composite reliability (CR)* |
|---|---|---|---|---|
| **"Requirement of exposure and learning from industry" (27.60%;2.266)** | Every month, there should be an interactive session with an industry expert. | 0.785 | | |
| | One year industrial training should be incorporated into the course. | 0.701 | 0.686 | 0.777 |

*contd. table 3*

| *Course Orientation Dimension (% variance; eigenvalue)* | *Items details* | *Factor loading* | *Cronbach's alpha (α)* | *Composite reliability (CR)* |
|---|---|---|---|---|
| | Industry experts should visit the campus every fortnight (after 15 days) for an interactive session to develop industrial skills. | 0.681 | | |
| | 70 percent credits and time should be devoted towards the practice session than classroom lectures. | 0.554 | | |
| **"Requirement of pharmaceutical manufacturing/ technical exposure" (16.77%;1.844)** | The pharma manufacturing has a better prospect than the pharma marketing. | 0.759 | 0.607 | 0.745 |
| | Importance should be given to pharmacy technical subjects rather than the marketing subjects. | 0.710 | | |
| | At least one semester should be devoted towards industrial learning practice. | 0.598 | | |
| | The lectures of industry experts are needed in our course. | 0.520 | | |
| **"Requirement of pharmaceutical marketing learning exposure" (12.86%;1.414)** | I will prefer to choose marketing jobs rather than technical jobs. | 0.765 | | |
| | The course should incorporate more subjects related to the pharmaceutical marketing. | 0.640 | 0.604 | 0.692 |
| | Practical exposure is more important than theory classes. | 0.551 | | |
| | Total (57.23%) | 0.619 | 0.715 | |

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.a. Rotation converged in 5 iterations.

Cronbach (1951) established a measure of scale reliability by computing the correlation coefficient for two halves of the data that is commonly known as Cronbach's alpha (α). This alpha is calculated by dividing the number of items (N) squared multiplied by the average covariance between items with the sum of all the item variances and item covariances (Field, 2001 pp- 673-676).

Composite reliability (CR) is calculated by dividing the multiple of the number of items (N) with the reliability of the unit test by the sum of one and a multiple of the reliability of unit test with (N-1) (Feldt 2004).

**Table 4**
**Importance component Matrix**

| *Factor No* | *Orientation* | *Statistics (Avg. Factor correlation/ all factor Avg. Correlation)* | *Importance (In percent)* |
|---|---|---|---|
| 1 | "Requirement of exposure and learning from industry" | 0.749/2.083 | 36% |
| 2 | "Requirement of pharmaceutical manufacturing/ technical exposure" | 0.714/2.083 | 34% |
| 3 | "Requirement of pharmaceutical marketing learning exposure" | 0.620/2.083 | 30 % |

**Table 5**
**Comparative importance matrix**

| *Factor No* | *Orientation* | *Group-1 (Students willing to join corporate job after B.Pharm)* | | *Group-2 (Students willing to go for higher studies after B.Pharm)* | |
|---|---|---|---|---|---|
| | | *Statistics (Factor Mean/ all factor Mean)* | *Importance (In percent)* | *Statistics (Factor Mean/ all factor Mean)* | *Importance (In percent)* |
| 1 | "Requirement of exposure and learning from industry" | 3.779/10.876 | 35% | 3.950/11.141 | 36% |
| 2 | "Requirement of pharmaceutical manufacturing/ technical exposure" | 3.772/10.876 | 35% | 3.760/11.141 | 34% |
| 3 | "Requirement of pharmaceutical marketing learning exposure" | 3.325/10.876 | 30 % | 3.325/11.141 | 30% |

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