A Case Study on Perception of Stakeholders About Computer Training Institutes in West Bengal

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Abstract

In spite of being a leading IT destination in the world, India faces disparity in grooming competent computer professionals. The purpose of this study is to bridge the gap between courses taught in computer training institutes in West Bengal (India) and the industry expectations while analyzing issues relevant to IT faculty and students. The primary data was collected using simple random sampling. Statistical measures used are chi-square test for understanding the association of factors relevant to IT faculty and students. Prospective courses for the institutes were ranked using Thurstone Case V analysis. Managerial implications deal with issues related to course fee structure, duration of the course, suitable prospects to target for computer education, and state of remuneration for the faculty members employed in the institutes. The case study has highlighted programs essential for IT aspirants, course fee structure and duration to be considered while designing the course curriculum, significance of student qualification and age, and faculty skills and remuneration which would facilitate the computer training business.

Key words : **computer education, information technology (IT) skills, information and communication technologies (ICT), technology life cycle (TLC)**

JEL Classification : M15, M31, M53

Paper Submission Date : June 22, 2016 ; Paper sent back for Revision : September 3, 2016 ; Paper Acceptance Date : October 21, 2016

India has been considered as the fourth largest hub for startup IT-BPM (information technology-business process management) companies. Exports of IT-BPM contribute over 38% of the total services exports. The contribution of IT to national gross domestic product (GDP) is around 9.5%, which makes India a leading global sourcing destination with 55% market share. There has been a steady growth in Indian computer services industry with USD 32 billion added in 5 years. According to the National Association of Software and Services Companies (NASSCOM), IT services and software products are maintaining double digit growth owing to extensive application of SMAC and Internet of Things (IoT). Organizational change is happening due to IT and IT-enabled services where skill-biased technology contributes significantly (Bresnahan, Brynjolfsson, & Hitt, 2002). There is a huge demand for employees with social, mobility, analytics, and cloud (SMAC) skills. But hiring professionals is more expensive than hiring inexperienced people. So, the software firms are resorting to variable performance linked packages to manage costs.

The report of American National Research Council (NRC) published in 1999 has provided the basis for the development of programs that can contribute to computer fluency. It has specified three types of knowledge for computer fluency. They are ability to use available information and communication applications, knowledge of

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fundamental principles on which information technologies are based, and intellectual abilities for the use of information technologies for an organization problem-solving and understanding. The essential IT competency skills are search engine skills, agent technology skills, case based reasoning (CBR) skills, online analytical processing (OLAP) skills, and ERP skills which include SAP. The recent NRC reports about data analysis have reflected the rise of "Big Data" as systems which are routinely returning terabytes, petabytes, or more of information.

Indian companies are boosting investments in technology and services for better understanding of data (Mellody, 2014). A NASSCOM report stated that data analytics market in India is expected to reach USD 2.3 billion by 2017-2018, and the financial services sector is likely to contribute a large part of that growth (Mendonca, 2015). A study has interpreted the physical files in colleges and universities using multimedia and network technologies in sports archives. Information society is considered to be the product of full development and fusion of multimedia and network technology in the future (Yin, 2014). The Institute for Certification of Computer Professionals (ICCP) Education Foundation has provided grant to Applied Computer Science Department at Illinois State University to survey the qualifications and certifications held by IT College Faculty Community. The results showed diversity in faculty composition and qualification requirements (Duncan, 1992).

Technology Life Cycle

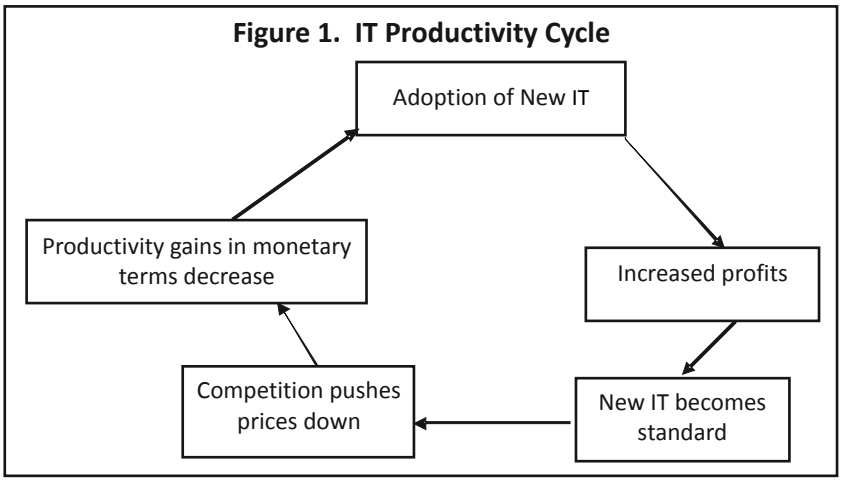
Technological processes are similar to biological processes in several aspects and are evolutionary in nature. The technology evolution is carried out through scientific research and developing of new products and services. In the age of industrial revolution, innovation has been the mantra for the survival and prosperity of any manufacturing unit (Garg & Garg, 2005). With the increased pace of life and the intense competition in global markets, another major trend is the decreasing product life cycle (PLC). Recent studies have shown a correlation between business success and a company's ability to innovate and bring new products to markets more quickly and at a faster rate with the help of IT, for example, Internet publishing, and use of media. In automobiles and trucks, for instance, major redesigns of engines, cars, and brakes used to be made earlier every 6 or 7 years or longer. Today, PLCs have decreased it to just 3 or 4 years in many of the industries. This has been possible due to the effective use of IT.

Communicating with an office by means of a PC and a modem has brought about a paradigm change in business operations worldwide. The information super highway has thin boundaries between countries, making the world a truly global village resulting in firms being able to talk to experts from any part of the world. Companies also save a lot on travel and related expenses because the employees can work from the comfort of their homes. The common thread joining business and manufacturing is data and we are progressing in the development of Relational Database Management Systems that inject more mathematical and logical rigor into the way we define, store, access, and manipulate data. Today, we are seeing the usage of total material handling systems by the companies and tomorrow, we would see the introduction of the application of artificial intelligence (AI) in manufacturing (Suda, Gupta, & Chadha, 2003). The Figure 1 illustrates the IT productivity cycle (Oz, 2005).

Phase 1 - Adoption of New IT : A firm can adopt a new piece of hardware or a software application. For example, adoption of e-banking in India (Chauhan, Choudhary, & Mathur, 2016). It enjoys productivity by manufacturing in bulk the new technology.

Phase 2 - Increased Profit : Some of the adopters of new technology may not yield productivity gains and profits because of difficulties in adjusting to it. However, companies experience increase in profit if the technology is proprietary and having high level of security and encryption for avoiding piracy. In the banking industry, first

Figure 1. IT Productivity Cycle



movers who invested in ATMs in 1972-1974 generated increased market share and increased income. However, banks that have invested afterwards in the same technology were not able to enjoy the benefits.

Phase 3 - New Becomes Standard : When a technology matures and the companies are comfortable using it because their employees are proficient in using and developing it, standardization is attained. The product or the service is widely available and indispensable to the users. In the banking industry, all banks adopted ATM technology. The technology has become standard and necessary since the late 1970s. The maturing technologies are supply chain management (SCM), enterprise resource planning (ERP), and radio frequency identification devices (RFID).

Phase 4 - Decreased Prices : With the increase in productivity and profitability, the firm starts thinking of lowering its prices because the cost per unit of production reduces. Once the technology has matured and becomes standard, the investment may not result in economic gains. But the firms who do not opt for technology find it difficult to sustain themselves in the market.

Phase 5 - Productivity Disappears : If a firm measures its productivity gains in monetary terms, it may not show a bright picture. The sales value would be lower than before IT adoption because of reduction in price per unit of production. However, productivity has increased. The firm now produces more than before IT implementation. Here lies the challenge of strategic investment in IT for maintaining stable productivity gains generated out of standard software or hardware.

The above productivity cycle reveals that IT has a strategic value. The impact of IT would increase the profits and thereby requires continuous thinking for bringing out innovative strategies for developing new technologies, which can reduce cost without affecting the productivity gains or the profit margins of the firms spending on technology (Brunner, Staats, Iansiti, & Favaloro, 2006). A study about the United States pharmaceutical industry has formulated a model for firm's IT investment in moderating the organizational learning processes in knowledge alliances and networks (Dong & Yang, 2015). The researchers identified in a study that the major challenge in forming a clear and coherent strategy in IT research lies in the fact that there are multiple stakeholders with differing goals and objectives. Thereby, a reciprocal relationship is needed in which practice informs research and research informs practice with support and guidance from policymakers (Cox, Niederhauser, Castillo, McDougall, Sakamoto, & Roesvik, 2013).

Business organizations have experienced shortage of qualified workforce owing to demand for updated

knowledge and new technology skills. Higher education institutions revise their course curriculum to ensure that students are offered degrees in competitive fields of work (Recker & Alter, 2012). The changes in course curriculum reflect growing concern for IT and computer-related technologies (Miliszewska, Venables, & Tan, 2010).

A study on legal parameters for faculty employment focuses on real or potential conflicts between legal and economic requirements and academic values. It concentrates on economic crisis, programmatic shifts within the college as encountered by the academicians. It has also attempted to shape its aging faculty members in order to fit to the new course curriculum (Lee & Olswang, 1985). Research on teachers' perceptions of ICT in schools has brought about interesting findings like lessons are time-intensive, time allocated in the timetable for understanding is insufficient, and usage of ICT is not essential in national examinations (Chee et al., 2010). Advanced computer knowledge can develop the innovative capacity of the students dealing with 21st century technologies (Oh, Ahn, & Kim, 2003). Therefore, the case study here attempts to bridge the gap between courses taught in computer training institutes in India and industry expectation from IT aspirants.

Emerging Trends in Application of Database Management System

Information technology is widely being used in computer based information systems. It has already become a pivotal tool for decision making, management structures, and work activities in companies around the world. Advanced personal computing, hardware and software packages, telecommunications, database processing, office automation systems, decision support systems, and executive information systems have been responsible for such a rapid development. Reputed companies have opted for tailor-made information systems in order to fulfill the organizational and staffing arrangements pertinent to the business activities (Vijayalakshmi, 2008). A case study has been developed through interactive learning activity to enable students to experience news literacy through a fictionalized story. Entire activity has been conducted in social media. Java Enterprise Edition (JEE) has been built to handle a large number of simultaneous users. A MySQL database has been used to store the data including user accounts, encrypted passwords, vote data, comment data, weekly post / video data, and many more (Spikes & Haque, 2014).

Emerging Trends in Application of Digital Communication

In any company, there is a bunch of information such as records of customer purchases, sales records of representatives last month, past marketing plans, and availability of stock. But the said information is not of any use until unless the manager gets it on time. A computer network helps in instant access to such information. An organization keeps thinking of a link between manager's needs, real needs of the company, and economic feasibility in meeting those needs in ensuring a sound marketing information system (Maleki & Anand, 2007).

Radio Frequency Interactive Technology Devices (RFID) have evolved as a major enabler with many promising real-life business applications. The technology has been used by the British to recognize fighter planes approaching the nation. The main function of this wireless technology is product traceability and has been universally used in pharmacy and healthcare applications. Wal-Mart, United States Department of Defense (DoD), Metro Group of Germany, Marks & Spencer, and Tesco of UK are the major users of RFID (Madhani, 2007). Search engines have become an important medium of advertising and marketing for a business. Top ranking search engines like Google, Yahoo, and MSN are driving more new sales prospects to a website than a full-page advertisement in a leading newspaper or a magazine and that too at a minimal charge.

Search engines are improving the visibility of the company website and thereby increasing the sales leads of the organization (Jain Banda, 2007). In the competitive environment today, almost all the banks are dependent on their customers directly through CRM. The banks are providing the CRM services such as online self help, mail,

chat, phone, e-mail to bring their customers closer and assisting them to interact frequently with the banks (Lopoyetum & Selvan, 2008). Banking institutions in Japan have offered e-banking services to their customers in an attempt to cut operating costs. The introduction of such services has allowed the financial institutions to involve more employees in dealing with other financial products (Arnold, 1997). Padachi, Rojid, and Seetanah (2008) found out that there are higher chances of e-banking adoption by educated consumers. The ubiquity, acceptability, and accessibility of mobile phones have proved to be the central technology for tomorrow's higher education.

Njoku (2015) mentioned in his study that cloud computing would make information cheaper and produce positive implications for use of information and communication technologies (ICT) in higher education institutions (HEIs). As per the European Internet Foundation, the key for learning is to redesign education as participative with digitally enabled collaboration within and beyond the individual educational institution. Several emerging technologies like open source technologies, cloud computing, and mobile technology would enable a seamless education continuum for the students. The digital economy would be requiring a flexible and skilled workforce with capacity to adapt to the continuous change of technology (Melinte, 2012).

IT in Entertainment and Animation

The animation industry has been mainly classified into two ways, that is, 2D animation and 3D animation.2D animation is mostly computer-aided and increases the productivity of artists by six-fold or more. 3D animation involves a great deal of advanced computer software and processing power. From the commercial point of view, the animation industry can be classified into two categories, that is, films and TV serials. The industry has been performing impressively since the 1990s when Disney launched few blockbusters like *The Lion King* and *The Beauty and The Beast*. The various stages of animation production include conceptualization, pre-production, production, post-production, and development of software tools for next generation animated features (Tschang & Goldstein, 2004).

Among the various interactive and innovative applications in the entertainment industry, Wide Angle Entertainment (WAE) e-Ticketing system has become popular among the movie-lovers. It allows the viewers to virtually see their seat allocation and the viewing angle towards a theatre screen (Gautam & Shi, 2007). Some of the latest technologies, which supported the entertainment industry to reach the masses, are Internet radio (also known as e-Radio), IPTV (internet protocol television), and Mobile TV where movies are captured and transmitted in cellular mobile telephones (Garg, Gupta, & Dikshit, 2008; Paul, 2008). A method has been proposed for face tracking using support vector machines (SVM) and radial basis function (RBF) network. In this method, a single face is tracked in a video sequence under varying illumination, scale, and poses (Geetha, Ramlingam, & Palanivel, 2008).

Objectives of the Study

The objectives of the study include the following:

(i) Analyze the issues relevant to stakeholders, that is, students and faculty with respect to operational aspects of IT education services.

(ii) Evaluation of the domain areas that can be considered by the computer training institutes for catering to the needs of the IT industry.

Table 1. Number of Student-Respondents

Sl.	Location of the Institutes	No. of Respondents
1	Kalighat	4
2	A.J.C. Bose Road	25
3	Park Street	27
4	Chowringhee	28
5	Sealdah	19
6	Lake Market	10
7	Salt Lake	2
8	Central Kolkata	10
9	Moulali	17
10	Gariahat	10
11	Ultadanga	2
12	Little Russel Street	10
13	Hazra	13
14	Camac Street	20
15	CIT Road	10

Table 2. Number of Faculty-Respondents

Sl.	Location of the Institutes	No. of Respondents
1	Kalighat	2
2	A.J.C. Bose Road	10
3	Park Street	12
4	Chowringhee	8
5	Sealdah	6
6	Lake Market	2
7	Salt Lake	1
8	Central Kolkata	1
9	Moulali	4
10	Gariahat	1
11	Ultadanga	2
12	Little Russel Street	4
13	Hazra	4
14	Camac Street	7
15	CIT Road	2

Research Design

The research approach has been primarily descriptive in nature focusing on quantitative data analysis. The primary data was collected using simple random sampling from various IT Training Institutes in Kolkata (West Bengal) and suburban areas offering computer education. Primary data was collected from students and faculty members separately (irrespective of gender) through the questionnaire method. Secondary data sources included books, journals, and newspapers from notable publishers in India and abroad. The time period of the study that has been considered here is January 2005 to December 2015. The statistical tools used here are chi-square test and Thurstone Case V Analysis (Mazumdar, 2005; Malhotra, 2006). Out of 120 institutes considered in the study based on availability of annual accounts, 20%, that is, 24 institutes are considered to be the sample size.

The Table 1 shows the number of student-respondents of selected institutes at different locations in Kolkata. The sample size is representing 10% of the population studying in the institute/branch visited and drawn at random. Thus, the total sample size of the student-respondents is 207.

The Table 2 shows the number of faculty-respondents of selected institutes at different locations in Kolkata. The total number of respondents is 66 comprising of 25% of the faculty members employed in a particular discipline in the computer training institutes at various locations in Kolkata and were selected randomly.

Analysis and Results

↳ **H1.** There is a significant relationship between courses opted for and course fees paid by students.

It is inferred from the Table 3 that χ^2 (calculated) = 205.700 > χ^2 (tabulated) = 55.76 which signifies that H1 is accepted. This means that there exists a significant relationship between course opted for and course fees paid. The Phi value (0.997) and Cramer's V value (0.498) (Table 4) indicates that the strength of existence of the relationship is very strong.

Table 3. Chi-Square Test Between Courses Opted for and Course Fees

	Value	*Df*	Sig. (2-sided)
Pearson Chi-Square	205.700	40	0.000

Table 4. Symmetric Measures Between Courses Opted for and Course Fees

	Value	Sig.
Phi	0.997	0.000
Cramer's V	0.498	0.000

It was observed that students opting for Multimedia and Animation Programs were paying a high course fees. This is followed by Computer Programming, System Networking, and Financial Accounting, where the fees fixed by the institutes is comparatively less. Thereby, it can be inferred that students specializing in a particular domain are paying standard course fees and the IT training institutes are adhering to certain fee slab for every training program as can be inferred from the Table 3 and Table 4.

↳ **H2.** There is a significant relationship between course fees and course duration.

Table 5. Chi-Square Test Between Course Fees and Course Duration

	Value	*Df*	Sig. (2-sided)
Pearson Chi-Square	122.229	12	0.000

Table 6. Symmetric Measures Between Course Fees and Course Duration

	Value	Sig.
Phi	0.768	0.000
Cramer's V	0.444	0.000

It is observed from Table 5 that χ^2 (calculated) = 122.229 > χ^2 (tabulated) = 21.03, which signifies that H2 is accepted. This means that there exists a significant relationship between course fees and course duration. The Phi value (0.768) and Cramer's V value (0.444) (Table 6) suggest that the strength of existence of the relationship is strong.

From the results, we can confirm that high value courses usually take a longer duration to complete. It indicates that enhancing the learning hours for a student in an institute can lead to proper understanding of the topics being covered and further one-to-one interaction with the faculty leads to clearing of doubts and other problems.

↳ **H3.** There is a significant relationship between student qualification and course opted for.

Table 7. Chi-Square Test Between Student Qualification and Course Opted for

	Value	*Df*	Sig. (2-sided)
Pearson Chi-Square	75.298	20	0.000

Table 8. Symmetric Measures Between Student Qualification and Course Opted for

	Value	Sig.
Phi	0.603	0.000
Cramer's V	0.426	0.000

It is inferred from the Table 7 that χ^2 (calculated) = 75.298 > χ^2 (tabulated) = 31.41 which indicates that H3 is accepted. This means that there exists a significant relationship between student qualification and course opted for. The Phi value (0.603) and Cramer's V value (0.426) (Table 8) signify that the strength of existence of the relationship is reasonably strong.

The results justify that majority of the students opting for a computer course are graduates followed by under-

graduates and post-graduates. In System Networking, Multimedia, Financial Accounting, and Computer Programming, there is a huge pool of graduates who are looking for a career in IT. Computer Education is treated as a professional qualification, which enables a graduate student to learn the applications of IT in business and its utilities. Many graduates feel that IT education can fulfill their career goals in their respective field of study.

↳ **H4.** There is a significant relationship between students' age and course opted for.

Table 9. Chi-Square Test Between Student Age and Course Opted for

	Value	*Df*	Sig. (2-sided)
Pearson Chi-Square	22.254	20	0.327

Table 10. Symmetric Measures Between Students' Age and Course Opted for

	Value	Sig.
Phi	0.328	0.327
Cramer's V	0.232	0.327

It can be inferred from the Table 9 that χ^2 (calculated) = 22.254 < χ^2 (tabulated) = 31.41 which means H4 is rejected. This indicates that there exists no significant relationship between students' age and course opted for. Phi value (0.328) and Cramer's V value (0.232) from the Table 10 signify that the strength of non-existence of the relationship is not very strong.

The result proves that people from all age groups undergo computer courses in various disciplines. However, majority of the students fell under the age category between 18 and 25 years pursuing computer courses in the institutes. So, the entrepreneurs doing computer training business should focus more on the programs fitting to the needs of the students doing graduation and graduates opting for a career in IT.

↳ **H5.** There is a significant relationship between faculty skills and remuneration.

Table 11. Chi-Square Test Between Faculty Skills and Remuneration

	Value	*Df*	Sig. (2-sided)
Pearson Chi-Square	17.714	16	0.341

Table 12. Symmetric Measures Between Faculty Skills and Remuneration

	Value	Sig.
Phi	0.518	0.341
Cramer's V	0.366	0.341

It is inferred from the Table 11 that χ^2 (calculated) = 17.714 < χ^2 (tabulated) = 26.30 which means H5 is rejected. This indicates that there exists no significant relationship between faculty skills and remuneration. Phi value (0.518) and Cramer's V value (0.366) (Table 12) signify that the strength of non-existence of the relationship is reasonably strong.

It can be inferred from Table 11 and Table 12 that faculty members in computer institutes are paid below their expectations. The poor pay scale in the midst of high inflationary situation really affects the performance of a faculty member. Faculty members are not duly valued as per their skill-sets. There is no fixed remuneration structure based on faculty members' knowledge about various hardware and software tools essential for grooming the future IT professionals.

From the Table 13, we can derive that Database Management System (DBMS), primarily focusing on Big Data, Cloud Computing, and Enterprise Resource Planning (ERP) is considered to be the most preferred course

Table 13. Thurstone Case V Analysis for Prospective Courses

Courses	A	B	C	D	E	F	G	H	I
Adjusted *R** (Value +0.46)	0.79	0	0.18	0.66	0.21	1	0.25	0.28	0.77
Rank	2	9	8	4	7	1	6	5	3

Note: The total number of faculty-respondents is 66

A: Mobile Communication B: Robotics C: Games Programming D: Chip-Level Development
E: Expert System F: Database Management System G: Embedded System
H: Biotechnology I: Multimedia & Animation

among the faculty members. The next three prospective courses are Mobile Communication, Multimedia & Animation, and Chip-level development. The subsequent courses least preferred by academicians are Biotechnology, Embedded System, Expert System, Games Programming and Robotics. Mostly, the courses are designed for small business management, but there are very few colleges that offer a course of IT for small businesses. IT solution services meant for small business are not included in the course curriculum (Wang & Wang, 2015). The existing study gives us an idea about the courses that would be beneficial for the small and medium scale business enterprises (SMEs).

Managerial Implications

The research study is conducted keeping in mind the operational aspects of private computer training institutes in West Bengal, India. The stakeholders considered here for the study are students and faculty members of the institutes. The managerial implications that have been derived out of the case study dealing with 24 institutions are the following:

(i) In computer education, there is not much variation in course fee structure irrespective of the computer training institutes (Tables 3 and 4).

(ii) The longer duration of a course can help the students in sharpening their IT skills, and frequent interaction with the faculty guides them for overall understanding (Tables 5 and 6).

(iii) Courses can be designed by the management keeping in view the demand of the graduate and final year under-graduate learners. Aspirants opting for computer courses mostly belonged to the graduate category (Tables 7, 8, 9, and 10).

(iv) Most of the private computer training institutes pay low remuneration to their staff and faculty members and there exists no significant relationship between skills acquired and remuneration (Table 11 and 12). The study highlights that the teachers' competencies to integrate ICT in their instructional tasks can facilitate the desired changes to the maximum level. There is an increasing demand for the inclusion of pedagogy and substantial content knowledge based use of ICT in teachers' professional development (Khan, 2014).

(v) From the Table 13, we can interpret that Database Management System (DBMS) is considered to be the most preferred course that can be offered by the computer training institutes. It is essential because data maintenance and security are the key aspects of any business today. Big data analytics have emerged as a disruptive technology

that would reshape the marketing intelligence that traditionally relied on surveys to understand consumer behavior and product design (Zhao, Fan, & Hu, 2014). Enterprise Resource Planning (ERP) has helped to integrate data related to transactions and business processes throughout the organization. The world's largest organizations have already implemented ERP and many mid-size companies are deciding to opt for ERP (Léger, Charland, Feldstein, Robert, Babin, & Lyle, 2011).

The next most prospective courses are Mobile Communication, Multimedia, & Animation. The intensely competitive mobile phone market requires highly competent technically sound persons for repairing and maintenance of this unique indispensable device. There has been a fast implementation of 4G networks and development of communication infrastructure. According to a report by Frost & Sullivan, the use of mobile Internet by consumers is expected to bring a significant cumulative aggregate growth rate (CAGR) of 14.7 % in the voice over internet protocol (VoIP) market during the years 2014-2020. A research study showed the transition towards mobile learning, which is complementary to e-learning (Ion, 2012). Multimedia and Animation is considered to be a high value program with attractive job offers in digital economy. The application areas in multimedia are web-page designing, graphic designing, and digital image editing. Chip-level development is also penetrating computer education owing to complexity in designing integrated chips with the advent of nanotechnology and requires high-level understanding of system tools.

Conclusion

Advances in information technology are among the most powerful forces influencing an economy (Castells, 2011). This case study has dealt with the issues concerning the stakeholders, primarily students and faculty members of private computer training institutes like NIIT, CMC, Brainware, Arena Multimedia, Webel Informatics, and SQL Star International. The present digital economy would be requiring huge influx of trained IT professionals. The result of a conjoint analysis revealed that students, faculty, and recruiters prefer six computer skills, that is, accounting software, databases, Internet, programming, spreadsheets, and word processing for entry-level jobs (Baker, 2013).

Limitations of the Study and Scope for Further Research

Although the study has attempted to cover the IT scenario in global and domestic market with due emphasis on the computer education sector at certificate and diploma levels, certain limitations were observed while executing the research work. They are :

(i) Majority of the surveyed institutes did not disclose their annual reports neither at the branch nor at their websites; most of the annual reports of reputed computer-training institutes were searched for and were derived from the Internet.

(ii) Most of the institutes visited are having their branches/franchises at Kolkata. Due to paucity of time and money, survey in other areas, including rural segments in the state of West Bengal, could not be carried out.

(iii) As the research has been conducted in the state of West Bengal, especially in Kolkata, the results may lack in generalization as India is a multi-cultural and multi-lingual nation with diverse economic and political structure.

The scope for further research about computer education is bright. According to Gartner, there have been 4.4 million jobs created by 2015 to support big data (Pence, 2014-2015). In the present context, it has become highly

important to focus on the professional development of both IT aspirants and faculty members looking for a career in different sectors like Retailing, Consumer Electronics, Pharmaceutical, Sports, Entertainment, and Banking. The outcome of this study would provide valuable information to the society in relation to student age and qualification for admission in IT courses, decision-making with respect to course duration and fees, faculty remuneration, and prospective courses to be taught in the computer training institutes. Thus, it can act as a guideline for entrepreneurs, human resource consultants, and managers investing in present and future digital education.

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