



**PLANNING OF INFORMATION AND COMMUNICATION TECHNOLOGIES TRAINING PROJECT
AND ITS IMPACT: A CASE STUDY OF BANGLADESH**

<p>MD. MAHFUZUL ISLAM SHAMIM Ph.D. researcher Department of Project Management Faculty of Science, Technology, Engineering and Mathematics International University of Malaya– Wales (IUMW), Kuala Lumpur, myshamim2006@gmail.com</p>	<p>DR. KAMRAN SHAVAREBI Associate Professor Department of Project Management Faculty of Science, Technology, Engineering and Mathematics International University of Malaya– Wales (IUMW), Kuala Lumpur, kamran56@iumw.edu.bd</p>	<p>MST. GUL RAIHAN Assistant Project Manager BGD e-Gov CERT Project, Bangladesh Computer Council, Dhaka-1207, Bangladesh. its1.lict@lict.gov.bd</p>
--	--	--

ABSTRACT

This article explores the Planning of Information and Communication Technologies Training Project and Its Impact on the development of Bangladesh. The current study was done based on one of the big-budget projects of Bangladesh government known as Leveraging ICT for Growth, Employment, and Governance (LICT). The progress of five years' timeframe was studied to understand the impact on the development of the country. A pilot study was on 378 respondents who participated in the survey following the stratified random sampling method. The questionnaire included open-ended questions to understand the impact of the project. The results show that this project was a huge success with a very positive impact and but yet Bangladesh has a long way to go to develop its ICT-based economy, more projects of such kind are needed to keep the skills development of the young generation updated.

Keywords: Planning, Information and Communication Technologies (ICT), Training Project, Project Management, Impact, IT training project, Bangladesh Project Management.

INTRODUCTION

Researchers and audiences from multiple disciplines, such as sociology, finance, economics, and management science, agree that a transformation has occurred in the society, and knowledge is always at its center stage (Easterby-Smith, Thorpe, & Jackson,

2012; Starkey & Madan, 2001). Knowledge transfer or training is realistic but uncountable information which is combined with experience, context, interpretation, and reflection, it can be considered as an asset for a country's development (Davenport, De Long, & Beers, 1998; Easterby-Smith et al.,

2012). Given importance to such asset, it is not surprising that government organizations are paying attention to different training project for achieving more effective and productive goals that can play a contributive role in one's country's economic development. Based on such sound conceptual foundations, yet developed to meet practical concerns, information and communication technologies (ICT) training-based projects and its successful management have become recognized as a standard job to improve the skill of the trainees by means of advance and updated learning process. This is because it is difficult, and maybe even impossible, to imagine future learning environments that are not supported, in one way or another, by ICT (Punie, Zinnbauer, & Cabrera, 2006). Hence, these projects will be both technical (e.g., new materials and more effective processes) and management-related.

According to Kerzner (2017) and Samset and Volden (2016), in general, project management is the process of forecasting, forming, and outlining responsibility for the completion of a desired goals of an organization (Kerzner, 2017; Samset & Volden, 2016). The macroeconomic steadiness and greater foreign competition of highly-skilled professionals are promoting the intensification of the use of project management in job industry. Simultaneously, there is a big need for raising the bar in project managers' skills and preparation, as project management is big responsibility (Meredith, Mantel Jr., & Shafer, 2017). Moreover, when the project is training-based, it is highly important for the project managers to be well-trained and highly-skilled with

specific knowledge, as project management involve the effective allocation of resources to deliver outcomes in the most efficient and most effective manner (Kerzner, 2017; Steinmueller, 2001).

Noticeably, in the current digitization era, the business environment is composite and necessitates faster decisions, better distribution of scarce resources, and a clearer focus. Faithfulness to time, scope, and cost requirements in projects may provide a company with increased income and value for the near future (Ahmad & Yazrina, 2016; Latif et al., 2018). As a result, the integration of ICT (Information and Communication Technologies) into project management has become almost an obligation for every organization (Ahmad & Yazrina, 2016; Pihir, Čalopa, & Brodar, 2008). Consequently, stakeholders expect ICT project management is a new and effective management method, which consists of more coordination of persons, capital, objects, rapid information transfer, real time information, strong flexibility, making decisions rapidly and process of project implementation quickly (Bygstad & Lanestedt, 2009; Pihir et al., 2008).

The growth of information and communication technologies and bangladeshi information and communication technologies training project

With the acceleration and adoption of ICT around the globe, Bangladesh is also raising its bar slow and steady (Fahad & Rashedur, 2017; Khan & Taher, 2017). Today, developing countries such as Bangladesh have been one of the most striking targets for foreign organizations for several years

because of their ICT industry (Ahmed & Azim, 2016; Sakil, 2018).

According to an article published in Daily Star by Helal and Rahman (2016), it was found that, prevailing big companies such as Microsoft, Apple, and Samsung are making massive investments in Asian countries to utilize the cost advantage. Bangladesh is also one of the potentials, with its huge underutilized manpower which is inexpensive in comparison to India, Malaysia, and China. Thus, it creates an established foreign investment platform with a nationwide ICT infrastructure and skilled manpower.

However, to fully capitalize on the prospects offered by the international ICT development, Bangladesh is expected to thrush heavily towards further training in the ICT sector to draw the attention of foreign investors competing with other technologically advanced and well financed Asian countries. Moreover, in the recent few years, the government of Bangladesh has played a major role in promoting the ICT sector as the next growth engine for Bangladesh. At the same time, the young entrepreneurs are encouraged to launch ICT companies in Bangladesh. Both these efforts would create a huge number of jobs and, consequently, help Bangladesh become a middle-income country by 2021 (Khan & Taher, 2017).

Moreover, considerable achievements in the ICT sector have already been made over several years towards building a digital Bangladesh, and more initiatives are being planned. In this era of information technology, ICT play a significant role for everybody and cannot be omitted from any of

the jobs that are required for human development. As a result, the support of ICT is important for both literate and illiterate people. From the viewpoint of the environment, the majority of Bangladeshis are still illiterate. Bangladesh had an increasing adult literacy rate of 72.76% in 2016, whereas it was 47.08% in 2011. Therefore, it is visible that a significant percentage may be remaining behind the screen of ICT (Ahmed & Azim, 2016; Khan & Taher, 2017).

Although, the literacy rate of this country has to be more increased, the development of the ICT sector will encourage the youth to seek better education emphasizing more ICT training and generating higher income (Ahmad, Robabe, & Mohammad, 2015; Fahad & Rashedur, 2017). Bangladesh is also obtaining enormous remittances from exporting ICT manpower around the globe and has set an export target to earn USD 5 billion in the ICT sector by 2021. Henceforth, the traditional knowledge-based skills need to be enhanced with a competency in ICT. Information professionals must be flexible and adapt traditional skills to incorporate the requirements of technological advances, so that they can contribute towards the country's economy more and more. Keeping such huge evaluations in mind, many international organizations (e.g., the World Bank) provide billions of U.S. dollars for planning and implementing ICT training projects as a part of their lending programs and grant assistance to various countries (World Bank, 2003). One of such big budget project is *Leveraging ICT for Growth, Employment, and Governance* (LICT), which was considered as case study for this research, in

order to understand its planning procedure and its impact on the trainers. The project is described in brief below.

The LICT Project and Its Management

In line with its Vision 2021, the government is committed to build Digital Bangladesh. Thus, LICT project was launched in February 2013, aiming to develop a vibrant and healthy ICT industry in five years by identifying the strategies, programs, and investments. The Bangladesh Computer Council is the implementing agency of the project, worth about 5724800000 Taka. The World Bank is providing \$70 million U.S. dollars of the total amount, and the government of Bangladesh funded the rest. This project ended officially in June 2019 but the main training program ended in August 2018. The skills development program was one of the key components of the LICT project, which was designed to develop 20,000 units of skilled manpower. This training project has played a significant role in terms of building skilled human resources and creating employment opportunities, and thus resulting to increase revenue capital for the country's development. The main objective was essentially the development of young engineers with updated skills to perform in the future job market, especially in information technology, as highly-skilled professionals are in demand in every country, which widens their job opportunities. Therefore, this study attempts to fill this gap in project management literature to achieve a greater understanding of this project plan as an ICT training project and the impact of this project on the socioeconomic development of Bangladesh.

Past researches show that substantial gaps exist between the areas of skill development training being received and the areas of training desired. The ICT industry in Bangladesh requires skilled manpower for its growth (Ahmed & Azim, 2016; Fahad & Rashedur, 2017; Khan & Taher, 2017). The skill development projects and program was initiated in the Government as well as the private sector since 2015 to create industry-ready ICT personnel have not been much effective. It was found in a research that, analysis of the skill gap in ICT-related professions is not straight forward and requires a multidimensional approach (Ahmad et al., 2015).

Moreover, the skill sets required for success in the workplace have changed dramatically in the past few years. Employers insist on a better prepared workforce that is more adaptable, responsible, and teachable to help meet the competitive realities of a global economy (Pant & Baroudi, 2008). Furthermore, the project managers of a successful project generally target the best assignment of team members and formal roles taking the informal roles, which emerge in a team under consideration (Belbin, 2012). Keeping this in mind, the LICT project management team came up with a big plan and set out an international tender in the global market. A company called Earnest Young got the tender. This company took the responsibility of executing the project training. Its staff trained 30,000 students from both public and private universities everywhere in Bangladesh. The company provided these training sessions in three steps, namely basic, mid-level, and advanced

training, based on each student's merit and capability. The role of the project managers on behalf of the LICT project was to monitor and evaluate the project managers of Earnest Young and to evaluate the university students at the end of the training, in order to understand how much they had learnt. Moreover, the LICT team also helped to introduce these students to the employer companies by keeping means of opening a portal called bdskills.gov.bd. Besides, they prepared the project status report, which conveyed essential information about the project and included: An overall summary of the progress of the project as per the plan the team had made; the milestones they had scheduled for achievement since the previous meeting and performance against these; the milestones they had scheduled for achievement over the next reporting period; general information; a budget report; a risk management statement specifying any changes to major risks, their likelihood and seriousness, and plan for modification; an issues report including specific problems and concerns; recommendations to the LICT project management committee. Subsequently, the above discussion highlighted the LICT project plan and the project management cycle in brief.

Though traditional project management proficiencies are critical for project success, communication between team members and the entire network is vital to support a shared understanding of the project and its goals (Ruuska & Vartiainen, 2003). Moreover, responsibility for ICT can lie with an ICT piloting team. Greater efficiency is achieved where a person has responsibility for ICT training within an institution and where

his/her role is clearly defined. Managing projects successfully, therefore, requires an extremely good strategic planning with a mixture of skills including interpersonal ability, technical capabilities, and cognitive capacity, along with the capability to understand the situation and people, and then energetically integrate appropriate leadership behaviors (Pinkowska, 2011).

The LICT is such a project, which continued for five years with a successful project management. It was possible because it was well planned before execution. Theoretically, the ICT training project (LICT) was expected to be a huge success as well. The project plan included the following steps:

- Coordinating the fabrication and development of the project plan in the ICT training project.
- Identifying training needs and facilitating training as per necessity.
- Developing policies for the combination of ICT throughout the training curriculum.
- Maintaining liaison with the senior management of ICT Ministry and at the same time advising on ICT training strategies.
- Evaluating the use of ICT among the students and encouraging greater use by trainers and trainees.
- Developing and maintaining a job searching platform and website.
- Developing strategies for evaluating the impact of ICT training at different levels of the trainees, so that the management committee may assess its influence on training and learning ICT.

Addressing the above discussion, the most relevant question is how effective the project management planning of ICT training project

(i.e., the LICT project) was, and the second question is what is the impact of LICT training project in the economic development of Bangladesh?

METHODOLOGY

Sampling

In this study, the researcher used a mixed method approach to find out the results. The sampling method was a stratified random sampling. The participants, who took part in different trainings under the LICT project, were 378 employees and employers of the ICT industry and trainees and trainers of relevant enlisted companies. These companies were enlisted within three associations that is BASIS, BACCO and e-CAB. The list of registered member companies of each association served as the sample frame for the respective stratum. The researcher selected them because they had direct and practical experience in facing the impact of the LICT project. The researcher chose to adopt stratified random sampling because the target population was significantly diverse (Neyman, 1934), and to give every subgroup (i.e., strata) equivalent chance to be carefully chosen randomly and thus have equivalent proportion symbolizing each stratum (Neyman, 1934; Rahi, 2017). The participants, who responded to the self-constructed questionnaire, were from the ICT sector of Bangladesh and were affiliated with the LICT project. Furthermore, these 378 respondents were asked open-ended questions in relation to the first research question. The researcher collected and analyzed the data by SPSS 20.0 version using the frequency distribution (e.g., ratio, percentage, and diagram). It is noteworthy to

mention that the findings of this paper are the result of a pilot study. Table 1 helps us to understand the number of respondents from the three associations.

FINDINGS AND DISCUSSION

With the aim of answering the first research question, the researcher asked the following open-ended questions:

What difference did the use of a proper project management team make to the LICT project? The respondents stated that project management had made a difference in terms of teamwork, communication, and proficiency. Some of the responses were: “Acknowledged and eased lively attitudes of communication, assessment, and instant decision” and “simplified interaction with others, finding solution to any problem faster, and some upcoming issues were foreseen and stopped beforehand.” It also “maintained the formation and preservation of teamwork where associate members had a clear view on expectations and on their role;” “the project permitted for proficiency within the team to be applied and strained very carefully,” and “allowed to develop a good grade of professionalism among the project management team.” “When a person gets a new project, normally he/she is always alluring to rush off and start undertaking the job to make the plan work, hence a strong project management team is high priority to execute everything on time as per plan.” Hence, it can be said that, “a project management team is considered as a backend support to upsurge the efficiency and effectiveness of the project.” It enabled the project to be run according to a defined plan

and finish on scheduled time, and allowed efficiency.

What did you learn about project planning from what did not work well? The respondents had very few comments about what did not work well. Most of the respondents provided positive answers. For example, one of them said, “I could not find anything of such kind, I think this project was rather helpful to me in upgrading my skills.” Another respondent stated, “there seemed to be a terrible reading process;” another conveyed anxiety that “distribution of jobs among stakeholders actually has not happened.” Others were not certain about project management: “The difficulty for me was the plan as a whole of this project; the training could be more productive, if there plan was more systematic;” “not sure if I could do it myself, even without this training project; I didn’t find anything out of the box in the training session.” Some of them also wrote that “the committee programs were less flexible and there could have been some heightened involvement by project members in the root level by means of a stronger project plan.”

Would you recommend this type of project planning for future projects? A huge number of respondents consistently agreed that they would recommend this type of project management for similar future training projects and thought it was a “worthwhile model that could be adopted by all projects.” One of them also stated that it would be “problematic to be involved in a training that does not have such an effective project management structure, after being part of this project; this project has met almost every expectations, so it is a pioneer

example for a lot of future projects ahead.” Another respondent said, “Training and being involved in this huge ICT training project management has been one of the utmost subjective outcomes for me.” Others affirmed that “project management will now be a part of my participation in any future lessons and thus learning about its effective planning is a must” and that “I already use it with my research students as a demonstration of how a project should be planned.” One researcher stated, “I don’t think that I would recommend all of the elements that were used for small projects or small project management process; a lot of them have to be excluded from the plan, when it comes to small size projects.” The majority of the respondents agreed that the project management plan of the LICT project had achieved its purpose, and would recommend this type of project management for future projects, with some already starting to use it. The majority agreed that the project met their expectations in terms of determination, time, and assurance. They found that the use of project management helped in the development of communication and integration of the project work across multiple organizations and professions, in clarifying and agreeing goals, in assisting in the delivery of defined project outcomes as per the plan, and in ensuring answerability for consequences and performance. Hence, it can be said that the current project management plan worked well because it “provided a sound foundation for managing the project,” it also increased the “efficiency and effectiveness of the project,” and made a difference to communication, teamwork, and

presentation of the interdisciplinary group of investigators' proficiency.

In your opinion, how impactful was the project? The majority of the respondents denoted the LICT project as highly impactful. For example: "This project was of huge success." Besides, "this project has broaden the impact of the activities of the team members of the LICT project by supporting the extended knowledge transfer across the country," and "the project had a huge impact in convincing the stakeholders for future employment of skill manpower as per demand." "This project was a big job of five years; not only it was completed on time, but it was also well planned, so having a huge positive impact is a must."

The LICT project was initiated in 2013 and its implementation began in 2014 and as mentioned earlier this training programs lasted until the year 2018. Hence, the researcher considered a period of five years, from 2014 to 2018, to observe its impact. The researcher conducted the calculation also following the mentioned time range. If we look at the table below we can see the local market revenue was increasing every year and thus it can be assumed that the training program had a positive impact in the economic development of Bangladesh. In the open-ended part, some of the respondents agreed to such hike and mentioned that the number of registered companies were growing higher in the course of time. Table 2 presents the growth of the local market revenue of the ICT companies within the three associations (BASIS, BACCO and e-CAB) which visibly presents the positive change in the revenue index of Bangladeshi economy.

Table 2 for growth of local market revenue index also highlights that every year more than 100 new ICT affiliated local companies were being registered by the three associations respectively within these last five years, i.e from the year 2014 until the year 2018. In addition, it is forecasted that, if this growth continues, then, by the end of the digital Bangladesh vision year 2021, the number of ICT companies will increase to more than five times on average that of year 2014. Moreover, the grand mean (i.e., overall ICT industry) local market revenue index of ICT industry of Bangladesh was 106 in 2014, 126 in 2015, 141 in 2016, 194 in 2017, and 268 in 2018. This portrays that the local market revenue increased 2.68 times compared to the revenue of the ICT industry in 2013. It is expected to have an index of 563 in 2021, which is more than double the current revenue. If divided by the stratum, it is revealed that every stratum experienced a growth in the local market revenue. Among all the companies, those which are BASIS members only experienced the highest growth of local market revenue over the years. From 2017 onwards, companies under BASIS started to experience a greater rate of revenue. In 2018, the revenue was 8.75 times more than local market revenue they earned in 2013. The slowest growth was experienced by the companies under e-CAB, which had a revenue index of 113 in 2018. In the Figure below, the visualization of the growth of the grand mean of the ICT industry's local market revenue index allows to have a clear perception of its increase.

The trend in Figure 1 highlights that the average growth of the local market revenue

increased from 2013 to 2016. From 2016 to 2018, the graph of the growth of the local market revenue was steeper, meaning that the growth of the local market revenue was higher during this time-period compared to that of 2013-2016. The ICT industry of Bangladesh expects a far greater local market revenue growth by the year 2021, which is visualized by the steepest part of the graph. Not only shows the local revenue index the hype, but the average international export revenue index has also shown higher growth in its trend. The following Table 3 shows the growth of the average international export revenue index more closely visualized with its overall grand mean.

Table 3 also presents the number of registered companies in each of the associations responsible for international export. The grand mean (i.e., overall ICT industry) export market revenue index of the ICT industry of Bangladesh was 127 in 2014, 154 in 2015, 195 in 2016, 219 in 2017, and 251 in 2018. This portrays that the export market revenue increased 2.51 times compared to the revenue of the ICT industry in 2013. It is expected to have an index of 429 in 2021. If divided by the stratum, it is revealed that almost every stratum experienced a growth in the generation of the export market revenue, except for companies that are e-CAB members. Among all the companies, BASIS members experienced the highest growth of export market revenue over the years. The revenue index of the companies that are members of BASIS only is 164 in 2014, 279 in 2015, 416 in 2016, 534 in 2017, and 756 in 2018, and is expected to be 987 in 2021. In 2018, the revenue was 7.56

times as the export market revenue they earned in 2013. The slowest growth was experienced by the companies that are members of e-CAB, which had a revenue index of 113 in 2018. The companies that are e-CAB members faced a decline in the export revenue from 2016 till 2018, where their index was 170, 150, and 112 respectively. Figure 2 shows the average export revenue index.

The trend chart in Figure 2 shows that the overall growth of export market revenue increased from 2013 to 2018 at a steady rate. The ICT industry of Bangladesh expects a greater export market revenue growth to fulfill the vision of 2021, which is visualized by a steep rise of the graph. Additionally, for more in-depth information, a bar diagram has been visualized to show the exact number of companies involved in export as per year (Figure 3). In 2014, there were around 55 companies that exported products or services. They were 60 in 2015, around 70 in 2016, around 75 in 2017, and around 85 in 2018. This shows a gradual increase in the number of exporting companies over the years. It is expected that the number will increase to around 120 by the year 2021. In comparison with the local market, the export market should be higher to create the scope of faster economic development in Bangladesh

CONCLUSION

This paper pointed that although LICT project had a huge positive impact on the economic development of Bangladesh, clearly she has a long way to go to develop its ICT-based economy. The country's ICT industry development and circulation stream are way far behind in comparison with those

of the developed countries. However, the swiftness of progress is in good condition. In the era of the new economy, there is no doubt that the ICT industry is becoming the most dynamic sector, surpassing traditional industries. Few researchers agreed that, with the integration of the world market, it is obvious that developed nations will outsource more and more of their labor-intensive products and service production to the developing countries (Berger & Frey, 2016; Kamel, Rateb, & El-Tawil, 2009; Meng & Li, 2002). Hence, being Bangladesh a developing country, these circumstances may lessen its concern over the displacement effect of ICT acceptance. In order to participate in these markets, however, Bangladeshi enterprises will need to develop ICT connections to integrate themselves into the supply links being created for these activities.

REFERENCES

- [1]. Ahmad, J. S., Robabe, B. L., & Mohammad, H. J. S. (2015). ICT & economic growth: A comparison between developed & developing countries. *International Journal of Life Science and Engineering Economics*, 1(1), 26-32.
- [2]. Ahmad, K. S. H., & Yazrina Yahya. (2016). ICT project management framework using business process management approach in public sector Malaysia. *International Journal of Current Research*, 8(08), 36895-36905.
- [3]. Ahmed, A., & Azim, M. (2016). Employment scenario in Bangladesh: A study on the gap between expectations of employers and the quality of graduates. *The International Journal of Entrepreneurship & Development Studies*, 4(2), 175-195.
- [4]. Belbin, R. M. (2012). *Team roles at work*: 2nd Ed. London. Routledge.
- [5]. Berger, T., & Frey, C. B. (2016). Digitalization, jobs, and convergence in Europe: Strategies for closing the skills gap. *Brüssel: Bericht im Auftrag der Europäischen Kommission*. Retrieved from <https://www.oxfordmartin.ox.ac.uk/publications/digitalisation-jobs-and-convergence-in-europe-strategies-for-closing-the-skills-gap/>
- [6]. Bygstad, B., & Lanestedt, G. (2009). ICT based service innovation—A challenge for project management. *International Journal of Project Management*, 27(3), 234-242.
- [7]. Davenport, T. H., De Long, D. W., & Beers, M. C. (1998). Successful knowledge management projects. *Sloan Management Review*, 39(2), 43-57.
- [8]. Easterby-Smith, M., Thorpe, R., & Jackson, P. R. (2012). *Management Research*. Thousand Oaks, CA: SAGE.
- [9]. Fahad, M. H., & Rashedur, M. R. (2017). *An analysis of ICT industry in context of global and Bangladesh*. Retrieved from https://www.slideshare.net/fahad00008/analysis-of-ict-industry-in-context-global-and-bangladeshi-company-full-document?from_action=save
- [10]. Faisal, A. A. (2013). Value-Driven Approach for Project Success and Change Management in Malaysian Institutions of Higher Learning (IHL). *International Journal of Informatics and Communication Technology (IJ-ICT)*, 2(2). doi: 10.11591/ij-ict.v2i2.3351
- [11]. Helal, M. & Rahman, M. (2016, December 3). Bangladesh's IT Industry. *The*

Daily Star. Retrieved from <https://www.thedailystar.net/op-ed/bangladeshs-it-industry-1324174>

[12]. Khan, M. R., & Taher, F. (2017, February 23). ICT opens up new prospects for Bangladesh. Retrieved from <https://www.thedailystar.net/drivers-economy/ict-opens-new-prospects-bangladesh-1364893>

[13]. Kamel, S., Rateb, D., & El-Tawil, M. (2009). The impact of ICT investments on economic development in Egypt. *The Electronic Journal of Information Systems in Developing Countries*, 36(1), 1-21.

[14]. Kerzner, H. R. (2017). *Project management a systems approach to planning, scheduling, and controlling*. New Jersey: John Wiley & Sons.

[15]. Latif, Z., Latif, S., Ximei, L., Pathan, Z. H., Salam, S., & Jianqiu, Z. (2018). The dynamics of ICT, foreign direct investment, globalization, and economic growth: Panel estimation robust to heterogeneity and cross-sectional dependence. *Telematics and Informatics*, 35(2), 318-328.

[16]. Meng, Q., & Li, M. (2002). New economy and ICT development in China. *Information Economics and Policy*, 14(2), 275-295.

[17]. Meredith, J. R., Mantel Jr., S. J., & Shafer, S. M. (2017). *Project management: A managerial approach*. 10th Ed. John Wiley & Sons, Inc.

[18]. Neyman, J. (1934). On the two different aspects of the representative method: The method of stratified sampling and the method of purposive selection. *Journal of the Royal Statistical Society*, 97(4), 558-625.

[19]. Pant, I., & Baroudi, B. (2008). Project management education: The human skills imperative. *International Journal of Project Management*, 26(2), 124-128.

[20]. Pihir, I., Čalopa, M. K., & Brodar, K. (2008). *Impact of project management education and ICT usage on project success*. Paper presented at the Mednarodna konferenca o razvoju organizacijskih znanosti Znanje za trajnostni razvoj, (27; 2008). Portorož, Slovenija.

[21]. Pinkowska, M., & Lent, B. (2011). Evaluation of Scientific and Practice Approaches to Soft Skills Requirements in the ICT Project Management. *IBIMA Business Review Journal*, 1–12. doi: 10.5171/2011.318867

[22]. Punie, Y., Zinnbauer, D., & Cabrera, M. (2006). A review of the impact of ICT on learning. *Joint Research Commission 47246*, European Communities. Luxembourg.

[23]. Rahi, S. (2017). Research design and methods: A systematic review of research paradigms, sampling issues and instruments development. *International Journal of Economics & Management Sciences*, 6(2), 1-5.

[24]. Ruuska, I., & Vartiainen, I. (2003). Critical project competences—a case study. *Journal of Workplace Learning*, 15(7/8), 307-312.

[25]. Sakil, A. H. (2018). ICT, youth, and urban governance in developing countries: Bangladesh perspective. *International Journal of Adolescence and Youth*, 23(2), 219-234.

[26]. Samset, K., & Volden, G. H. (2016). Front-end definition of projects: Ten paradoxes and some reflections regarding project management and project governance.

International Journal of Project Management, 34(2), 297-313.

[27]. Starkey, K., & Madan, P. (2001). Bridging the relevance gap: Aligning stakeholders in the future of management

research. *British Journal of Management*, 12, S3-S26.

[28]. Steinmueller, W. E. (2001). ICTs and the possibilities for leapfrogging by developing countries. *International Labour Review*, 140(2), 193-210.

Figures and Tables

Table 1. Number of respondents

Associations	Respondents
BASIS	242
BACCO	37
e-CAB	99

Table 2. Growth of market local revenue index (2014-2018)

Stratum	2014	2015	2016	2017	2018	2021 (Forecast)
BASIS	103	210	289	456	875	1200
BACCO	119	120	110	134	149	286
e-CAB	110	102	102	105	113	289
Overall ICT Industry (m)	106	126	141	194	268	563

Table 3. Growth of market export revenue index (2014-2018)

Stratum	2014	2015	2016	2017	2018	2021 (Forecast)
BASIS	164	279	416	534	756	987
BACCO	110	142	176	180	206	234
e-CAB	130	150	170	150	112	269
Overall ICT Industry (m)	127	154	195	219	251	429

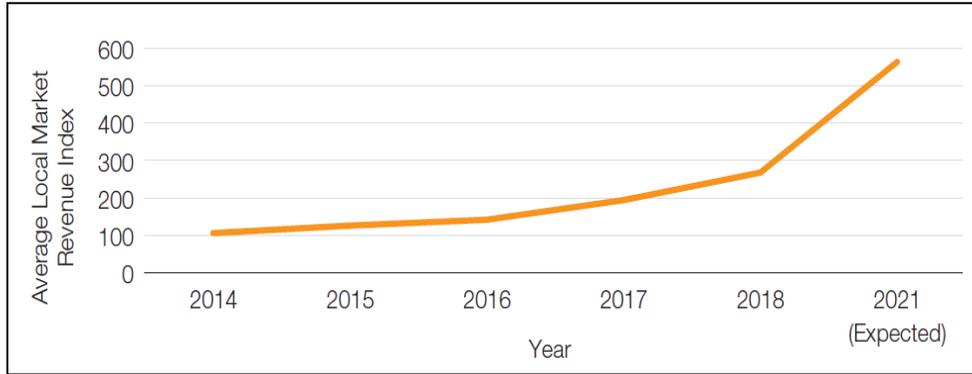


Figure 1: ICT industry's average local revenue index (2014-2018)

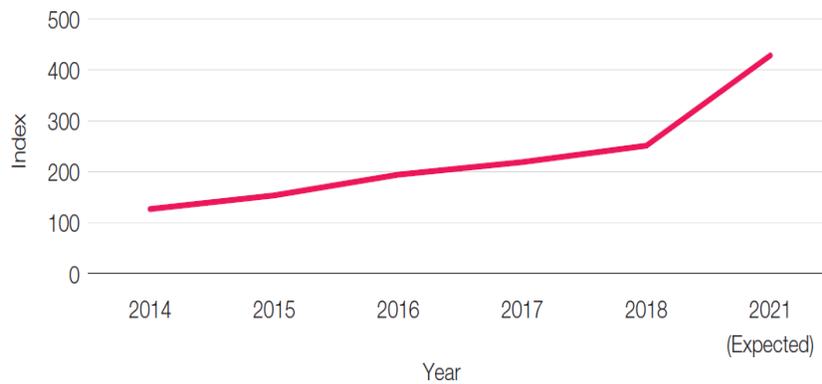


Figure 2: Overall ICT industry's export revenue index (2014-2018)

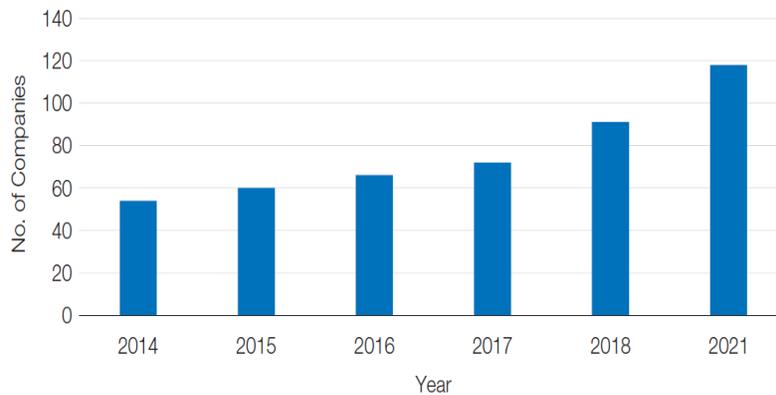


Figure 3: Number of exporting companies (2014-2018)