

DEVELOPING HUMAN RESOURCE FOR AVIATION SECTOR: ROLE OF AVIATION UNIVERSITY OF BANGLADESH AIR FORCE

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Introduction

Human resource is the most valuable resource of any nation. If human resource is at the heart of a nation, our colleges and universities are its circulatory system, pumping knowledge and wealth and well-being around the country, sustaining and maintaining its health and ensuring a living, productive nation. Investment in education will accrue return through better job and better income. New colleges and universities play a critical role in country's economic growth through the production of skilled human resource in important occupations. As the country progresses towards achieving Sustainable Development Goals, we will need new professionals across all sectors including Aviation.

Bangladesh since 2007 has had more people of working age than non-working, known as demographic dividend. By 2040, this opportunity to accelerate economic growth would reduce (Liton & Molla, 2017). Despite having this demographic advantage, Bangladesh could not exploit the potential fully as she could not create enough job for this working-age population. The academics have suggested to take various measures including large-scale investments in education sector. Many Asian countries have invested significantly in human resource development, especially in education and health sector, to achieve higher economic growth rate during their time of demographic dividend. Bangladesh added 4 million jobs between 2010 and 2013, but the trend declined and only added 1.4 million jobs between 2013 and 2015 (Liton & Molla, 2017). Government of Bangladesh (GOB) has also identified education being the main source of human resource development to reap the benefit of demographic

dividend. Aviation sector is identified globally as one of the growing sectors and the prospect of growth is even higher in Asia-Pacific region. This growth prospect is indicative of increased global employment opportunity. Bangladesh is in appropriate position to capitalize this opportunity.

International Civil Aviation Organization (ICAO) forecasted that the growth of global passenger would be doubled by 2030 than that of 2013. Such global trend of aviation will definitely create ample opportunities on the aviation sector of Bangladesh being located in a strategic aviation hub at the cross road between Europe, Middle East and Asia Pacific. Asia Pacific region is expected to become largest air transport market of the world within next 10 years' time. It is therefore felt that the country should develop her human resource in aviation sector. GOB has already planned to establish Aviation University to function as the apex institute in organizing, synchronizing and developing adequate human resource to meet the global need.

Overview of Aviation Sector

Global Air Travel Demand: In 2012, the worldwide air traffic was more than 5.7 billion passengers, which was 4.4 percent higher from previous year. In 2013, it increased to 6.3 billion. In 2013, airport traffic grew at 8.7% in developing economies while it was 1.8% in advanced countries. In 2013, highest air passenger movement was through Asia-Pacific region. In the same year, Asia-Pacific region handled the largest amount of air cargo (Ahsan & Hassan, 2015). Aviation's global economic impact (direct, indirect, induced and catalytic) is estimated at US\$ 2.2 trillion, equivalent to 3.5% of world Gross Domestic Product (GDP). The air transport industry generates a total of 57 million jobs globally (Airbus, 2014). Such global trend of aviation will definitely create ample opportunities on the aviation sector of Bangladesh.

Air Travel Demand in Bangladesh: Bangladesh is a small country where the distances between major cities are not large enough for air

transportation to be very effective. But highly congested and accident-prone roadway and inefficient and slow railway and water ways as well as imbalanced socio-political conditions of the country, people are now becoming interested towards air travel. According to official statistics about 10.08 million Bangladeshis are living and working abroad. They are also the element of growing passenger movements (Haque, 2018). Again due to economic and business growth, Bangladeshis are also travelling to international destinations in great numbers. At present, aggregate global growth in passenger movement is 4.4% and in Asia Pacific region it is 8.7%. But for Bangladesh the growth rate is 9.9% which is almost double in comparison to global growth. In the cargo movements also similar trend is observed. Global annual growth for cargo movement is 0.9%, Asia-Pacific region is 2.1%. But for Bangladesh it is 7.4%. Accordingly, the aircraft growth rate is 2.9% where the global aircraft growth is only 0.6% (Ahsan & Hassan, 2015).

Aviation Growth Trend in Bangladesh: Bangladesh has huge air transportation potential. By 2032, Dhaka will be the 90th aviation megacity of the world. Airbus global market forecast 2014 projects 7% growth of overseas and domestic passengers to and from Bangladesh by 10 years (Airbus, 2014). 90% of Bangladesh Aviation Market is orientated towards International. It also highlighted that the air traffic will be double in next 15 years (Lange, Bob; Airbus, 2014). The country has some inherent advantage over other countries. Large population base, more than ten million people working outside the country and more than one million people visit Saudi Arabia for performing hajj and umrah every year (Haque, 2018). This has made Bangladesh a lucrative destination for many foreign airlines. According to CAAB, the combined annual market size of 2014 was worth US Dollar (USD) 440 million, with 5.8 million passengers and 2.3 lakh tons of cargo (Kabir, 2018).

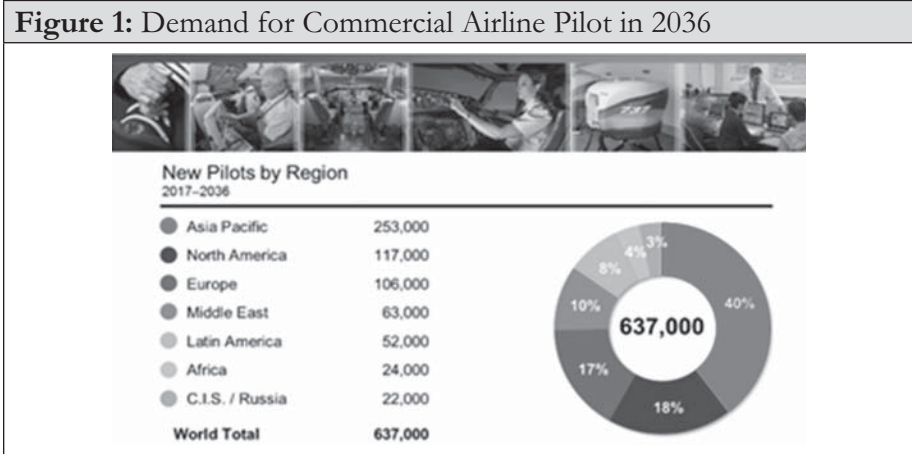
Prospect for Skilled Human Resource in Bangladesh Aviation Sector

Bangladesh has witnessed an average GDP growth rate higher than 6% for last 10 years (World Bank, 2018). Moreover, per capita Gross National Income (GNI) has reached to 1465 USD in 2015-16 (BBS, 2015-16). Such development has fueled a rise in aviation sector. In about 10 years, Asia-Pacific region is likely to become the largest air transport market in the world. All these suggest that aviation sector of Bangladesh has significant prospect in future. Some of the prospects are elaborated below.

Developing Highly Skilled Manpower for International Market.

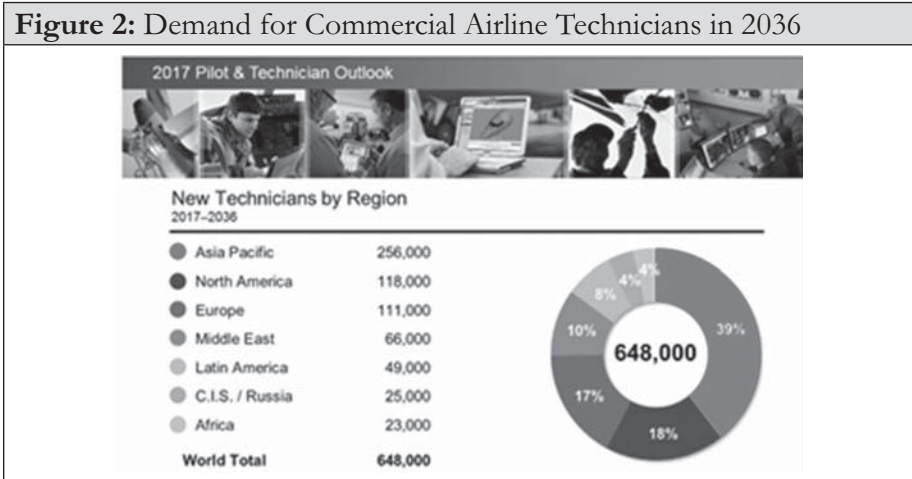
ICAO long-term air traffic assessment predicts that by 2040 the airline passenger movement will grow to about 10 billion from 3.8 billion carried in 2016. Asia-Pacific remained the largest region with 33 per cent of world traffic with 10.2 per cent growth in 2016 (ICAO, 2018). This phenomenal growth will require 6,37,000 commercial pilots globally and 2,53,000 in the Asia-Pacific alone. (Boeing, 2017). Boeing forecasts that there would be requirement of 6,48,000 commercial airline technician, out of which Asia-Pacific would need 2,56,000 alone. (Boeing, 2017). The aviation sector of Bangladesh has good prospects due to three important reason. Bangladesh is located at close proximity of the market (Asia-Pacific region), the medium of teaching is english, and the skilled manpower of this region is happy with comparatively lower wages (Bakaul, 2016).

Figure 1: Demand for Commercial Airline Pilot in 2036



Source: 2017 Pilot and Technician Outlook, (Boeing, 2017)

Figure 2: Demand for Commercial Airline Technicians in 2036



Source: 2017 Pilot and Technician Outlook, (Boeing, 2017)

Providing Skilled Manpower for Domestic Civil Aviation Sector. The passenger and cargo movement in aviation sector of Bangladesh is forecasted to increase from 5.8 million and 2,30,000 metric tons in 2013 to 10.2 million and 3,60,000 metric tons in 2020 (Siddique, 2016). From 2010 to 2013, Bangladesh’s growth in passenger carrier has been 8% against global growth rate of 6% while growth in cargo sector was phenomenal; 13% against global growth rate of 7%. All these suggest that many aviation professionals would be required just to meet the domestic requirement in future.

Aviation Training in Bangladesh

Aviation sector in Bangladesh has high prospect. In the next two decades, the need for professionals in this field will continue to rise exponentially. Despite its huge prospect, very few institutes conduct aviation related training in Bangladesh. These are: (Pandit, 2018)

- BAF Academy.
- Military Institute of Science and Technology (MIST).
- Bangladesh Airlines Training Centre (BATC).
- Civil Aviation Training Centre (CATC).
- Bangladesh Flying Academy and General Aviation Limited.
- BAF Flying Instructors School.
- Other Private Flying Schools.
- BAF Flight Safety Institute.
- BAF Officers Training School.
- Private Local Aeronautical Engineering Institutes.

BAF Academy: BAF Academy started functioning since 1973 to train air force officers. The training primarily focused on military training along with military aviation related training. Till date, BAF Academy remains one of the premium Human Resource Development (HRD) institute in aviation sector of Bangladesh including commercial pilot and engineers. Many of them after retirement from service continues to serve in the commercial private aviation both at home and abroad. So far a total of 1931 trainees including 34 foreigners have been trained in this academy. (Hossain, 2018).

Aeronautical Engineering Program of MIST: Aeronautical engineering program of MIST started its maiden voyage on 1st February 2009 with only undergraduate program. Undergraduate program is a 4 year curriculum, which has two major disciplines namely ‘Aerospace’

and 'Avionics'. The students need to successfully complete 161.5 credit hours to earn a B. Sc. in Aeronautical Engineering degree. (Bakaul, 2016). Graduate level curriculum (Masters) started from 2016 and post graduate level is scheduled to commence soon (Salam, 2018). The institute has also received approval from its Governing Body to start PhD in Aeronautical Engineering (Salam, 2018).

Bangladesh Airline Training Center (BATC) (Pandit, 2018): BATC was set up in 1972, as Ground Training Center (GTC) and re-named as BATC in 1988. The aim was to establish this facility as a regional training center for Aircraft Maintenance Engineering (AME). At this moment Aerospace and Avionics engineering faculties of BATC fulfill the basic and type training requirements of Biman, as well as other local and foreign airlines. It is an approved Maintenance Training Organization of CAAB and European Aviation Safety Agency (EASA) Part 147. It regularly conducts three year long course on AME (Aerospace) and AME (Avionics) course.

Civil Aviation Training Center (CATC): CATC was established in 1975 with the support and assistance from ICAO/ United Nations Development Program (UNDP) as official training center of CAAB. It used to primarily teach on Air Traffic Services and Communication Engineering subjects. Other training on aviation security is also recently conducted. (Kabir, 2018).

Flight Safety Institute, BAF: Flight safety and regulations are very sensitive and delicate avenue in aviation sector. BAF therefore was pioneer in establishing such institute in 1990. Till date, it is the only institute of its kind in the country. It has already received recognition from CAAB. A good number of foreign participants also attend this course on a regular basis. The institute already has different world class training facilities including crash laboratory. (Hossain, 2018)

Bangladesh Flying Academy and General Aviation Limited: Bangladesh Flying Academy and General Aviation limited was established in 1948. For last 70 years, the Academy is training and producing pilots for

the commercial aviation sector single handedly. Around 800 commercial pilots have been produced so far from this Academy. Many of them are at present serving proudly in various domestic and international airlines including Qatar Airways and Etihad Airways.

BAF Flying Instructors' School: Flying Instructor's School is one of the premium flying training institutes in BAF. It was established in 1976. So far it has conducted 51 courses and have made 432 "Qualified Flying Instructor" including 7 foreign officers, 3 from Bangladesh Army and 2 from Bangladesh Navy. Recently, qualified officers are awarded with "Post Graduate Diploma in Flying" under BUP on completion of six month long course. (Hossain, 2018).

Other Private Flying Schools: To meet the growing demand of pilot in the commercial sector, there were different private flying institutes at different times. At present, Arirang Flying School and Galaxy Flying Academy are two established and CAAB authorized flying training school in Bangladesh. They have set up world class training facilities including residential arrangement and simulator facilities (Rahman, 2018).

Officers Training School, BAF: Officers Training School (OTS) was established in 1980 to train ground branch officers of BAF in their respective branch. Initially it was limited to basic training to technical branch officers. In 1985, full-fledged curriculum was established for the officers of all branches. OTS is reach with different laboratory and training facilities including Air Traffic Control (ATC) simulator. The School has already trained 819 officers including 7 officers from friendly foreign country. (Hossain, 2018).

Private Local Aeronautical Engineering Institutes: A good number of other private institutes are also associated with imparting knowledge in the field of aeronautics. These include: United College of Aviation, Aeronautical Institute of Bangladesh, College of Aviation Technology, National Institute of Engineering and Technology and Cambrian International College of Aviation. However, none of these institutes offer full-fledged engineering

program, rather they are mainly focused on diploma level courses. Some of them are trying to start split program with some foreign universities to impart undergraduate level education. (Bakaul, 2016)

Assessment on Existing Aviation Training Facilities: There are very few facilities available in Bangladesh to develop skilled aviation personnel. They are providing isolated and limited training in aviation specific subjects. These facilities were primarily built for limited output including meeting the need of some of the individual organization. Very little central coordination and standardization effort was made to regulate and facilitate these institutes. It is thus felt that the institutes discussed above to be brought under the larger frame work of BAF Aviation University and provide them with strategic guidance to get the world class output. Additionally, few other new institutes may be established to conduct specific curriculum and program.

Expertise Required for Bangladesh Aviation Sector

Shortage of Pilot and AME: The biggest problem of our aviation sector is lack of qualified personnel. Airlines has to spend huge amount for hiring pilot and AME from abroad. The demand of aircraft is increasing but availability of qualified pilots, AME, technicians and other flight and ground crews are not increasing proportionately. (Rahman, 2018)

Lack of Aviation Safety, Security and Regulations Expert: Most of the airlines lack in manpower with sufficient knowledge on aviation rules and regulations. Many airlines cannot fulfill the requirements demanded by regulatory authority of civil aviation. (Rahman, 2018). Qualified personnel on civil aviation rules, regulations and standards are particularly essential for an airline to run efficiently.

Shortage of Aviation Management Staff: At present there are no aviation management qualified personnel in any of the commercial airline in Bangladesh. Most of them are working based on their experience and

qualification on general management. Some of the organizations are even dependent on foreign specialists (Rahman, 2018). In order to produce qualified aviation management staff for the aviation sector of Bangladesh, there is a requirement to educate personnel on this specialized area.

Shortage of Qualified Operational Manager: Absence of qualified operational manager was observed both in commercial and state owned aviation establishments. On the contrary, there are many aviation specific operational management courses conducted globally by various aviation training institutes. In Bangladesh, this shortage of qualified operational managers are filled by aviation experienced personnel. (Rahman, 2018).

Lack of Air Cargo Manager: Air Cargo flights are another avenue of commercial aviation. Bangladesh commercial aviation has not yet ventured beyond domestic in this area. However, globally there is huge opportunity and the trend is on the rise. Bangladesh at present does not have much satisfactory impression on the standard of air cargo handling. It is thus felt that, the country is unable to capitalize much benefit in this area. Appropriately educated and trained personnel on air cargo management can be of great enabler in enhancing economic activities (Rahman, 2018).

Lack of Search and Rescue Management Expert: Search and Rescue is an integral element of any aviation venture. Nationwide responsibility of search rescue in the airspace of a nation lies with that countries civil aviation authority. However, in Bangladesh there are no formal training on this area and not to mention the management part of it. As the aviation activities continue to increase there will be requirement of Search and Rescue management experts by aviation regulating bodies and also private aviation organizations (Kabir, 2018).

Lack of Aviation Medicine Specialist: Aviation being a different environment, the crew and passengers are subjected to the peculiarity at various times. Often cabin crews need to provide essential medical services onboard, while the crews have to remain aware of altitude flying and other physiological effects of flying. In Bangladesh except BAF there

is no education to develop aviation medicine specialist. Each and every aviation organization is expected to have aero medicine specialist while the regulatory authority will have more than one. There is serious scarcity of expertise in this field (Kabir, 2018).

Lack of Air Space and Traffic Manager: At present there are only two institutes where professional training of ATC is carried out. CATC and BAF train newly recruited personnel and prepare them as ATC and assistant both at military and civil airports. Globally, there are many aviation institutes available which provide an opportunity to pursue higher studies in this field to contribute further and allows individual to take on higher responsibilities with better opportunities. (Kabir, 2018).

Compliance Requirement in Aviation Education

To keep up with the growing passenger traffic, requires knowledgeable employees qualified through quality academic programs. These aviation training is to be given by training organizations, in compliance with ICAO, EASA, FAA and CAAB. The basic requirement of an Aircraft Maintenance Training Organization is found in its ANO/ (AW) Chapter C3. CAAB issues training organization's approval on the basis of ANO (AW) C3. This approval is renewed every year through quality audit system conducted by CAAB. (Pandit, 2018). Any training arrangement made to enhance and develop skill in aviation sector has to be conducted in a CAAB approved training institute. In this regard the training establishment must meet the requirements of ANO/ (AW) Chapter C3 and regulations of EASA part 147 (Kabir, 2018) (Dormoy, 2018). In Bangladesh, only BATC is EASA part-147 approved maintenance training organization for AME licensing since 2012. (Pandit, 2018).

Structure and Curriculum for BAF Aviation University

Vision and Mission of Proposed Aviation University: Suggested vision of the University can be "To become a leading national university in the field of

aviation through excellence”. With this vision, the mission of the University can be “To transform people into Aviation professional and enthusiast by providing world class education”. Some of the main programs, faculties and ideas under academic wing are highlighted subsequently.

Broad Academic Outline: Proposed BAF Aviation University will be mandated to conduct various graduate and post graduate programs in aviation related subjects. Some of the key programs that may be conducted are mentioned below.

Bachelor’s Degree Program

- Bachelor of Science (B. Sc) in Aviation (Flying)
- B.Sc. in Aviation (Flight Dispatch)
- Bachelor of Aviation Management
- B.Sc. in Aviation Science (Air Traffic Management-ATM)
- B.Sc. in Electrical and Electronics Engineering.
- B.Sc.in Mechanical Engineering.
- B.Sc. in Aeronautical Engineering (Aerospace).
- B.Sc. in Aeronautical Engineering (Avionics).
- B.Sc. in Aircraft Maintenance Management.
- B.Sc. in Aero Information and Communication Engineering.
- Bachelor of Aviation Medicine
- Bachelor of Airport Management

Master’s Program

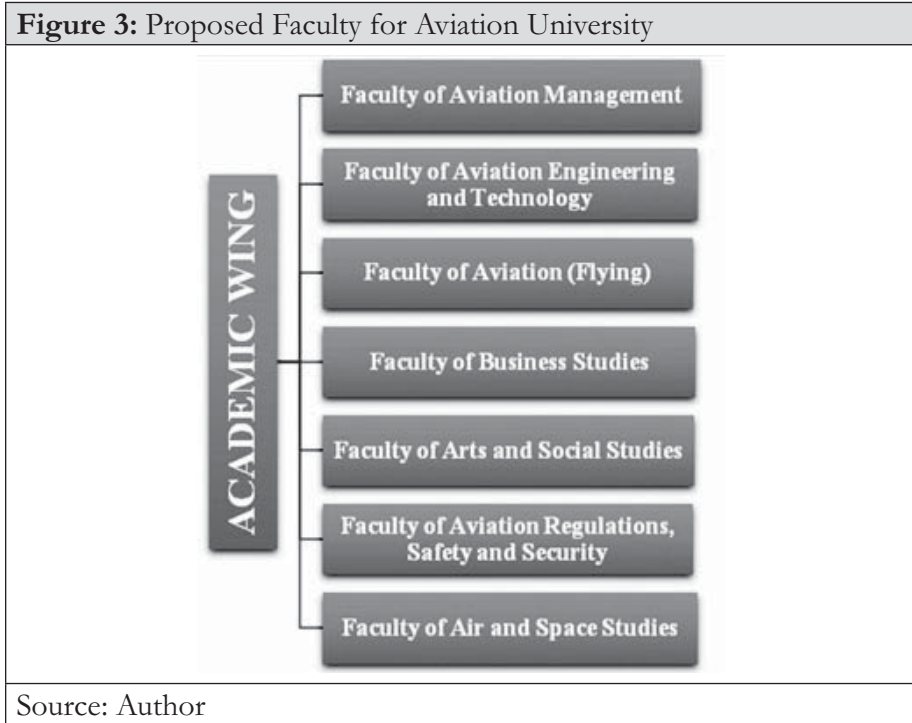
- Masters in Airworthiness.
- Masters in Aviation (Flying).
- Masters in Aviation Management.

- Masters in Aircraft Maintenance Management.
- Masters in Aeronautical Engineering.
- Masters in Aeronautics & Space Science and Technology
- Masters in Safety Management System(SMS) in Aviation
- Masters in Aviation Safety.
- Masters in Aviation/Aerospace Medicine.
- Master of Science in Airport Management
- LL.M in Advanced Studies In Air and Space Law
- Masters in Aviation Law
- Masters in Safety and Accident Investigation
- Masters in Safety and Human Factors in Aviation

Doctor of Philosophy (PhD) Degree: Ph.D. in Aviation degree will be designed to educate students and professionals in conducting essential research in all areas of this important field of study, extending the aviation body of knowledge from national prospective.

Proposed Faculties: In the proposed model of Aviation University for Bangladesh, each faculty will help coordinate and lead current and new efforts to improve the learning experience of students, and help position the University for National Leadership in Aviation and Aerospace. Academic, discipline-based faculties are the primary units for carrying out the University's mission. Based on the research and sharing valuable experience from various senior officers of BAF and Aviation Industry, studying the suggestions from different aviation organizations, different faculties and departments for Aviation University is proposed. (Haque, 2018). Name of different faculties are placed below as Figure 3 for ease of reference.

Figure 3: Proposed Faculty for Aviation University



Source: Author

Proposed Institutes: Academic institutions are the true source of guaranteeing growth in a sustained manner. Such institutions are able to take state aspirations towards higher heights of professional excellence through proper care and attention. Listed below are some of the institutes that are primarily identified to serve the interests of different faculty by producing highest quality scholarly work and quality curriculum.

- Institute/Centre of Air and Space Studies (New)
- Institute of Aviation Management (New)
- Institute of Aviation Maintenance (New)
- Institute of Aviation safety and Regulations (renaming FSI, BAF)
- Institute of Aviation (Flying) (renaming Bangladesh Flying Academy)

Affiliated Institutes: Proposed University model intends to bring concerned geographically dispersed aviation institutes under one umbrella.

Existing institutes of BAF, Biman, and Civil Aviation will be used to form foundation of proposed Aviation University.

- BAF Academy.
- Bangladesh Flying Academy.
- Biman Airline Training Center (BATC).
- Civil Aviation Training Center (CATC).
- Command and Staff Training Institute (CSTI), BAF.
- Flight Safety Institute (FSI), BAF.
- Training Wing, BAF.
- Officers' Training School (OTS), BAF.
- ATC School, BAF.
- Aero Medical Institute (AMI), BAF.
- Private Flying Clubs.
- Private Aviation Universities/Colleges

Recommendations

Based on the research work conducted, following recommendations may be implemented to develop appropriate Human Resource in aviation sector of Bangladesh:

- GOB to finalize and publish “BAF Aviation University Act 2018” at the earliest.
- UGC to allot necessary budget and assistance to establish BAF Aviation University.
- BAF to designate important appointment holders and committees at the earliest to establish various facilities for BAF Aviation University and develop course contents.

- Develop different curriculum and course contents in compliance to EASA 147 and CAR 84 regulations.
- The University should establish seven faculty along with their departments.
- The University is to affiliate all listed training institutes and facilities mentioned earlier.

Conclusion

Aviation sector is identified as the future thrust sector. Dhaka is expected to be one of the 90 megacities of the world in the aviation terms. The rise in passenger and cargo movement by 2030 is expected to be double. The trend of growth is more phenomenal in South Asia and specifically in Bangladesh. Particularly in Asia, aviation industry is booming. The growth in this sector relates to increase in job opportunities. Due to lack of appropriate farsightedness and concerted effort Bangladesh has not so far developed skilled manpower in aviation sector. There lies acute shortage of skilled manpower in aviation sector of Bangladesh.

Propelled by the rising economy, Geo-strategic location, favorable demographics, substantial progress in aerospace industry, rising domestic and international market are showing a bright future. So far the country could not capitalize in aviation sector due to lack of skilled manpower. At present there is not a single academic institute to support highly demanding aviation industry.

Meanwhile, Bangladesh is going through demographic dividend phase. GOB has duly felt the necessity to invest in education sector in order to develop human resource for better economic growth. This happy synchronization between job opportunity and available work force can better be tapped through appropriate skill development. GOB has planned to establish Aviation University under the supervision of BAF and it is thus essential to identify which all are the focus areas that should be incorporated in this specialized University.

This paper has identified number of existing training facilities of BAF, Biman, CAAB and private organizations which can be affiliated for the conduct of various graduate and post graduate programs in aviation sector. There are also requirements to establish few new Institutes.

The research has also identified that compliance to the needs of aviation regulatory authorities like CAAB, EASA and FAA is very essential to international recognition of different courses. Bangladesh Aviation University will have to comply with the requirements of these regulations.

Bangladesh needs to grab the opportunity that is evident in the aviation sector at the earliest. Establishment of Bangladesh Aviation University under direct supervision of BAF is the right approach. BAF needs to take the lead and prepare all essential elements. At this stage, the objective of BAF may be to commence first Academic session from January 2020.

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