The Salient Motives for Malaysia Aviation Industry Sustainability: An Explorative Study on Business, Management and Technology Components in Aviation Management Program in Malaysia

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***Abstract*— The purpose of this research is to develop a comprehensive evaluation framework of three important elements, namely business, management and technology embedded in the newly developed Master of Science program in aviation management. Focus group interview has been adopted in this study with the involvement of aviation management faculty members and also panel members from the Board of Studies (BOS). Two prominent aviation practitioners and two leading academicians with aviation background were called for a focus group discussion and the meeting held for six (6) hours. Alignments of the course offered need to be formed to link with aviation industry 4.0 and aviation industry 5.0. This study reveals the critical needs and issue at industry perspective and drives new area for an academician to focus on the syllabus and research. This study bridges the gap between industry and academician by keeping scholars and practitioners abreast of the timeliest industry-academician framework. It elevated the current thinking necessary for better performance of the industry, as well as the quality of the new proposed master program. This study clearly shows both academic and industry players related needs to establish a new program by consolidating both theoretical development and industry career. Recommendation to all academicians, practitioners and policymaker are also highlighted in this study.**

***Keywords*—** *Aviation management, sustainability, GIG economy, industry 4.0, industry 5.0, aviation industry, strategy*

1. Introduction

With the age of the digital nomad and facing gig economy as well as industry 5.0, it is a responsibility for universities to offer a quality program that could furnish the graduate with multi-level skills and knowledge. Several reports discussed the importance of technology knowledge in any organisation, including the universities. This is imperative to ensure graduates are equipped with certain knowledge and skills as well as a respectful attitude to prepare themselves to work in a challenging digital era. The knowledge of the worker is a strict and narrow principle to achieve company sustainability.

It is undeniable that the sustainability of industries or organisations do not solely depend on the product or services that they offered, but also from the workforce and technology that they have. Vaughter and Alsop [1] stress on the four types of sustainability that every organisation should focus on. They are sustainability as performance, sustainability as governance, sustainability as techno-efficiency and sustainability as community organising. All these four categories of sustainability are all important to all industries in both Western and Non-Western contexts [2].

Yet, it seems that technological advancements are critical in any industry, including the education industry. Haseeb [3] states that "the industrial revolution 4.0 (IR 4.0) has given a new impetus to educational transformation… In this context, it is vitally important to impart appropriate education to the future workforce". Considering this critical issue in producing quality and competent graduates to the industry, a narrow differing program and courses, differing skills and knowledge are required. Education industry should be ground-breaking in ensuring the students that they produce meets with the industry needs [4]. In this paper, the authors aimed to extend the understanding of new master program development in the aviation field, called aviation management. This study links the salient motives for organisation sustainability by connecting the content of program syllabus offered at university with an aviation industry national agenda which focusing on technology leadership and transformation. One university as a case study (Universiti Kuala Lumpur), one industry (aviation specific) and one new proposed master program in aviation management are chosen in this study as it is evident that this needs further examination. The

following will discuss further the context of the case study selected in this study.

1.1 Master of Science in Aviation Management at Universiti Kuala Lumpur, Malaysia as a case study

It is recognised that competing in the digital era among the tertiary education provider is challenging as they are the final producer that supply graduates to the industry. Using the industry as a model for a better learning experience in higher education is the best practice [5]. In Malaysia, there are 103 tertiary education providers in total. From 103, 20 are coming from government universities, 43 private universities, 31 private university colleges and nine foreign university branches. All of these higher institutions are offering a multi-program that covers many areas such as engineering, management, businesses, economics, science and technology, mathematics and many more. From 103 tertiary education provider, some of them are offering higher technical and vocational education and training or known as HTVET. In Malaysia, Universiti Kuala Lumpur is recognised as one of the leading universities in Malaysia that champion in offering HTVET education [6].

Universiti Kuala Lumpur (UniKL) has 12 campuses all over Malaysia with each campus is specialised in a specific field such as electrical and electronic engineering, information technology, medical, nursing, automotive, mechanical engineering, chemical engineering, logistics, business and entrepreneurship, marine and also aviation. Aviation campus or known as UniKL MIAT (Universiti Kuala Lumpur, Malaysian Institute of Aviation Technology) is one of the prominent aviation school in Malaysia that offering aviation-based education that covers both engineering technology, as well as aviation management. UniKL MIAT provides the workforce to the aviation industry locally and globally. Realising the shifting era to Industry 4.0 and Industry 5.0, these two types of courses (aviation engineering technology and aviation management) are critical to the industry. Internet of things (Industry 4.0) and internet of thought (Industry 5.0) are both the key drivers to Malaysia's economic growth. As a leading HTVET in Malaysia and as a key education provider in Malaysia for the aviation industry, it is important for UniKL MIAT to embrace technology element in their syllabus. This is linked to the Malaysian Aerospace Industry Blueprint (MAIB) which highlights the emergent of digital technologies that will give a significant impact to the aero manufacturing sub-sector, as well as other players including airports, cargos, and airlines [7].

Paradoxically, research communities in aviation industry engaged with other research fields such as the operation and supply chain issue, the strategy, customer experience as well as service quality [8]. This shows significant ignorant of the study in aviation that looks into the program and education perspective, specifically on aviation courses or syllabus. The objective of this paper is to look further on the new program syllabus developed at UniKL MIAT, namely Master of Science in Aviation Management (MSc Aviation Management). Engagement and facilitation discussion with industry and academician panel is the centre of this study. Simultaneously, this study will be among the earliest that encourage research contribution that builds on aviation established knowledge at the university level that relates to aviation organisation sustainability. This study reveals the critical needs and issue from the industry perspective; drives new compulsory area for an academician to focus on the syllabus, as well as research. Hence, alignment between the gap in the industry and graduate's knowledge could be achieved. It is in the realisation that inchoate development of knowledge database for higher education in preparing them for the upcoming IR 4.0 [9].

It is important to note that MSc Aviation Management chosen in this study as a case is a program developed with embedding three important elements: business, management and technology. These three elements are complementary and embedded in all courses offered in this program. It is a unique program designed specifically in aviation context that may differ from other postgraduate programs such as master's in business administration (MBA) or master's in management that are added-on or topped-up with aviation management discipline. This is likely to be exacerbated by the fact that add-on or top-up program may decrease the value of the aviation-specific program, and likely that this type of structure will not be heavily focusing on technology but more on business and management elements. The availability of this newly proposed MSc in Aviation Management will be a starting point in evoking profound new aviation-specific program at the postgraduate levels. In fact, with this new availability of MSc program also would help to establish institutional sustainability policies through the appropriate program via linking industry need and relevant monitoring on current technologies [10].

Underlying on this important need to further understand on how this program would be beneficial to both graduates and the industry, herein this case study research study aims to dig further on the suitability of the newly developed program by

exploring the issue with three main professional namely aviation academician, the consultant that link industry and government, and also aviation practitioner. With that, this study aims to get the feedback from all three experts on answering the central research questions posit in this paper, how course content structure in MSC AVM could fit in with current aviation industry needs?

The remaining of this paper is structured as follow. Next subsection will cover the research context of this study, namely aviation industry and followed by the literature review on the aviation education outlook. UniKL MIAT as a leading aviation education institution and a key provider for Higher Technical and Vocational Education and Training (HTVET) in Malaysia will also be introduced. The explanation on the definition of HTVET, aviation industry spectrum and where does aviation management take place, related aviation management program studies globally and locally, Malaysia education plan and also aviation industry outlook and master plan will also be discussed. The paper continues with justifying focus group discussion as a key strategy in exploring and developing evaluation framework of three elements (business, management and technology) embedded in the new developed Master of Science program in aviation management Content analysis was adopted in this study for analysing focus group discussion data. As a result, evaluation frameworks have been developed as a key finding to explain the content of courses structure that fit industry needs. This paper close with the conclusion, limitation and contribution highlights.

2. Literature Review

2.1 Aviation Industry in Malaysia

In facing GIG economy, industry 4.0 and future industry 5.0, the value of technology is highly emphasised in the aviation industry [11, 28]. Industry sectors in aerospace particularly are natural adopters of cutting-edge technologies apart from transportation, automotive, telecommunication, electrical and electronics. Technology has a ubiquitous presence in a day to day lives for both consumer and business organisations. While for aviation researcher, these new and emergent technologies present exciting opportunities to manage these exchanges through the ability to collect and access a large volume of data from the passengers, market and sales which far beyond the breadth of the traditional aviation market research for example. Yet, it is seemingly the only way aviation industry players can remain relevant and competitive. As emphasised by Ashworth and Free [12], there is serious concern by industry, including aviation players and higher education players regarding sustainability and technology implication to the society [13].

In Malaysia, the aviation industry is one of the key industries that boost Malaysian economic growth. It has a wide potential in the country's industrialisation and technological development program. To ensure consistent growth of the aviation industry, the second MAIB 2015-2030 was launched in March 2015 by the Prime Minister of Malaysia during the Langkawi International Maritime & Aerospace Exhibition 2015 (LIMA '15). One of the key focus of this blueprint is the development of future aviation personnel. Boeing Aircraft Company [14] also reported that there is a growing need, a very real urgent demand for new and competent aviation management personnel globally; in particular, Asia Pacific Region, including Malaysia. In fact, the blueprint has set a vision for Malaysia to be the leading aerospace nation in South East Asia and be an integral part of the global market by the year 2030 with annual revenue of RM55.2 billion and creating more than 32,000 high-income jobs. Additionally, the report also focusses on the five-entry point project (EPP as shown in Table 1), with highlighting no 5 and education issue as a key area that higher institution or aviation education provider should be aware.

Table 1. Malaysia Aerospace Industry Blueprint 2030 and Aviation Education Target Malaysia Aerospace Industry Blueprint 2030 and Aviation Education Target

Focus Area	Specific
1. MRO Subsector	To capture at least 5% of global market share
2. Aero Manufacturing Subsector	To become no 1 in South East Asia for aerospace component sourcing by targeting to be large assembly Tier 1 and Risk Sharing Partner. (RSP)
3. System Integration Sub Sector	Self-reliant at least 70% in integration and upgrading strategies of assets
4. Engineering and design services sub-sector	To capture at least 3.5% of the global market share
5. Education and Training sub-sector	To be no 1 in South East Asia (SEA) in supplying competent workforce

As highlighted in Table 1, item no 5 emphases on the education and training sub-sector in the aviation industry with the aim to become the leader in South East Asia in supplying the competent workforce. The potential of becoming a leader in supplying the workforce should be grounded at an earlier level, which at the university level. It is a responsibility for every higher education provider to continuously identify critical elements that need to be included in course syllabus to ensure what industry wants is align with what university produces, including the quality of the instructor [15, 16]. Furthermore, in a

blueprint also, it has stated that by the year 2030, the aviation industry would create more than 32,000 high-income jobs, including aviation management personnel. In recent Frost and Sullivan (2015) also, it indicates strong demand for various aviation personnel, including aviation management as the growth of aviation activity will be in the Asia Pacific. It is also expected that by the year 2029, Malaysia will become the hub for aviation activities.

Arguably, all this information come together in consideration of the future market for the growth of aviation personnel in Malaysia and also in neighbouring countries among South East Asia. Aviation education is seeming to be the agenda for most of the aviation companies. Besides experience, higher education degree is also important to the aviation workers to upgrade their position in the organisation and industry as a whole. This will help the workforce to move horizontally or vertically in the position structure.

It is acknowledged that the aviation industry spectrum is wide & diverse, highly regulated and very dynamic in nature. The spectrum includes Aviation Organisations in Design & Certification (DOA), Manufacturing (POA), Operations (AOC, ATC, Aerodrome), Maintenance & Repair (Part 145), Continuing Airworthiness (Part M) and providers of Education & Training (Part 147). These organisations within and outside of Malaysia lack competent management personnel at the various level of the hierarchy. The diversity of the industry is simplified, as shown in Figure 1. Each organisation has to be approved by their respective National Authority example Department Civil Aviation Malaysia (DCAM), European Aviation Safety Agency (EASA) and Federal Aviation Authority (FAA). Human resources requirements in each of these organisations will have to be qualified for that organisation type, and technical mobility across the organisation is restricted.

Figure 1 shows the management depth and management breath of the six types of an aviation organisation. The red dotted line shows possible vertical and horizontal movement for aviation personnel. The important highlights from Figure 1, by having higher qualification such as MSc in Aviation Management will help the aviation personnel to move further horizontally – ability to move their career within the industry from one type of aviation organisation to another. Traditionally, with a higher degree qualification, aviation personnel could also position themselves to higher management level within the organisation.

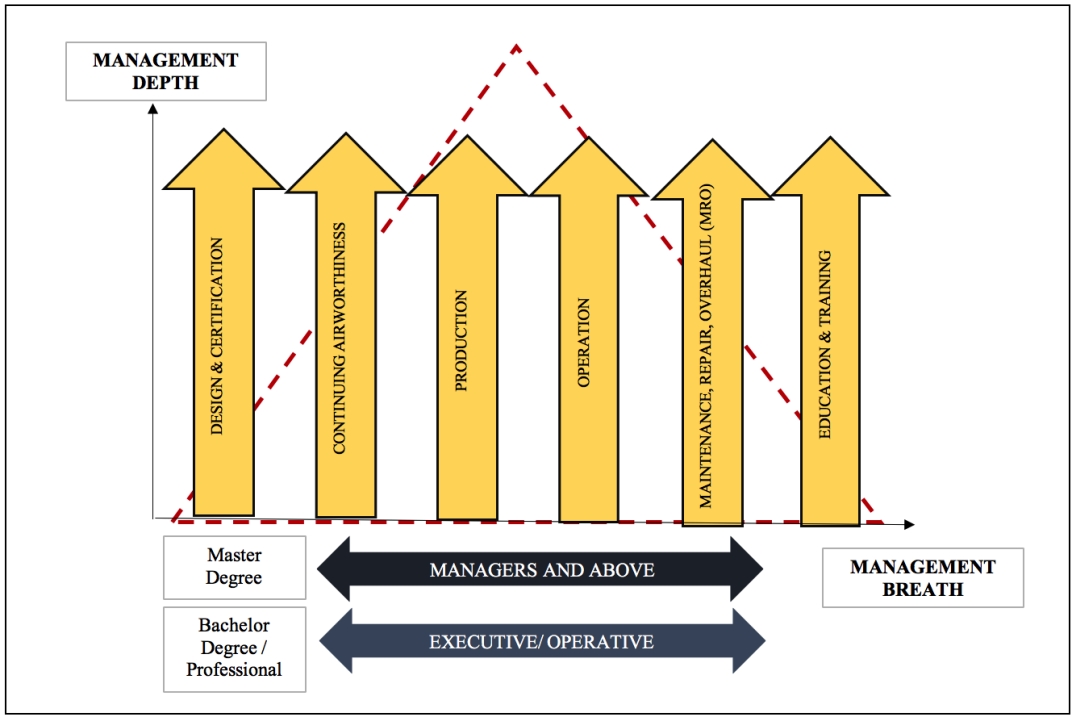

Figure 1. Vertical and Horizontal Position for Aviation Personnel with Degree.
(Develop by authors)

This proposed program MSc in Aviation Management integrates three disciplines: management, technology and business into the aviation core. The aviation core covers the requirements of approved organisations with respect to regulations & aviation laws,

management, business and technology. Having an in-depth exposure to these organisations, students will be equipped with each organisation's specific knowledge and competencies that will allow their mobility and ability to move horizontally across organisational boundaries. Further specialisation can be opted by selecting electives in the specific area of specialisation.

Additionally, those with extensive experience and professional ladder in aviation but without a bachelor's degree; for instance, pilots, license aircraft engineers, air traffic controller and ground handlers would benefit by enrolling in this program:

1. The academic rigour will complement their hands-on experience.

2. This program will enrich those in the above-mentioned category by alleviating their educational stature and in the process of affording them with the opportunity for a higher position in the organisation.

The program will be attracted not just for those who desire to move along the horizontal management pathway after having substantive time in their professional specialisation but also vertically. The master's qualification will definitely enhance the education standing and experience of the candidate and will differentiate the candidate from others in most employment interviews. As an aviation academy, UniKL MIAT is blessed with experienced personnel in the diverse aviation sectors who could impart not only aviation "know-how" but the insights of the industry.

Malaysia, through UniKL MIAT, to have unique education identity of providing HTVET education as it is has offered a specific program that caters to the aviation industry as a whole. This includes the whole spectrum of the aviation industry, namely airport, cargo, airline, general aviation, flight catering and also maintenance, repair and overhaul (MRO) company. As mentioned earlier above, UniKL MIAT is developing a new master program to cater graduates from aviation management program and working people from the aviation industry, as well as candidates that may come from the government, consultancy based, aviation-related companies and fresh university graduates. This has been illustrated in Figure 2.

In detail, Figure 2 explains the ecosystem of higher education in Malaysia with highlighting UniKL as the main provider for HTVET education in Malaysia. UniKL MIAT is recognised as a prominent aviation education provider in Malaysia. Programs offered at UniKL MIAT (engineering and management) supply workforce to the aviation industry locally and globally in various sector such as airport, airlines, MROs, general aviation, cargo provider, flight kitchen, ground handling and as a policymaker.

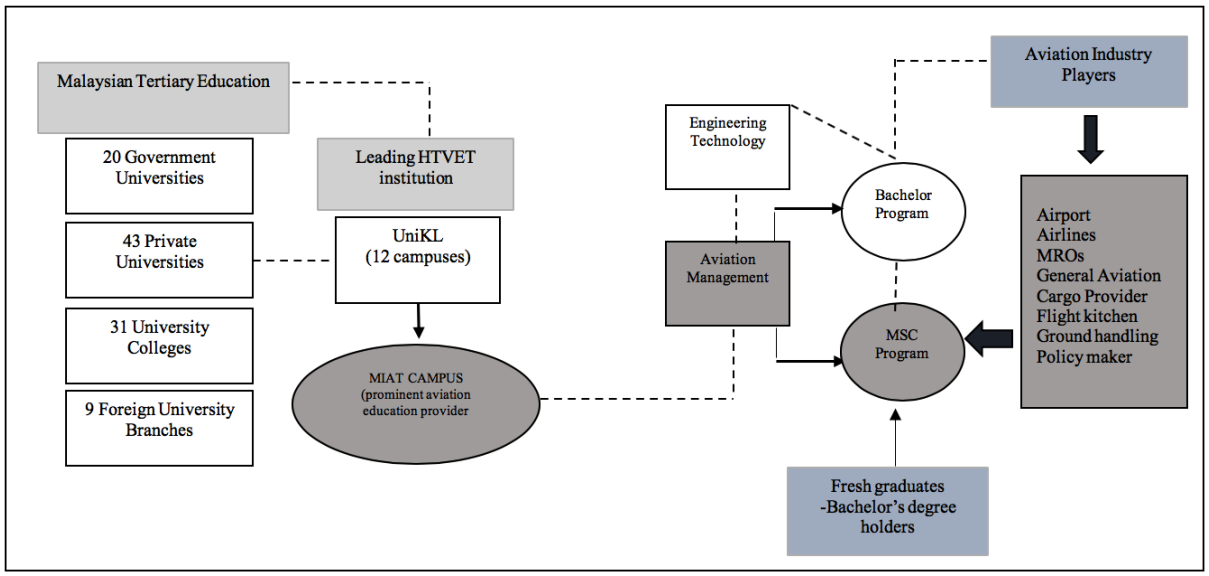

Figure 2. Higher education in Malaysia

2.2 Malaysia Education Context and Aviation Specific Program

It is important to note that this MSC in Aviation Management is a program developed with embedding three important elements in business, management and technology. It is unique, and its own value-added as it is a very specific program that caters for the aviation industry as a whole. This includes the whole spectrum of aviation context such as airport, cargo, airline, general aviation, flight catering and also maintenance, repair and overhaul (MRO) company.

Due to the demand for higher quality in aviation and aerospace engineering, the Malaysian Government, together with the Ministry of Education (MOE), continuously strives to improve HTVET standard and practice. The instructor plays a very significant role in ensuring future HTVET graduates (whom yet to be called as a technologist) achieved their competency level as required by the industry. Furthermore, the aviation industry is an important industry that boosts the Malaysian economy by supporting the tourism industry and other industries such as import and export activity via the freight industry.

The rapid growth in the aviation industry is connected with the development of aviation education in Malaysia. Higher education institution in Malaysia offering aviation-based education should be aware of every change in the industry and should integrate multi-concerted critical changes in the industry into the syllabus. It is significant to offer something that is critical for the industry to fit in with industry expectation.

The aviation management program is an education that integrates business management subjects into the aviation-specific industry. Managing the aviation industry could be explained as managing aviation-related companies. The aviation industry is known to have a long spectrum. It is not only about aircraft and flying; it is more than that. Aviation industry spectrum is wide & diverse, highly regulated and very dynamic in nature. The spectrum includes Aviation Organisations in Design & Certification (DOA), Manufacturing (POA), Operations (AOC, ATC, Aerodrome), Maintenance & Repair (Part 145), Continuing Airworthiness (Part M) and providers of Education & Training (Part 147). These organisations within and outside of Malaysia lack competent management personnel at the various level of the hierarchy. The diversity of the industry is simplified, as shown in Figure 3.

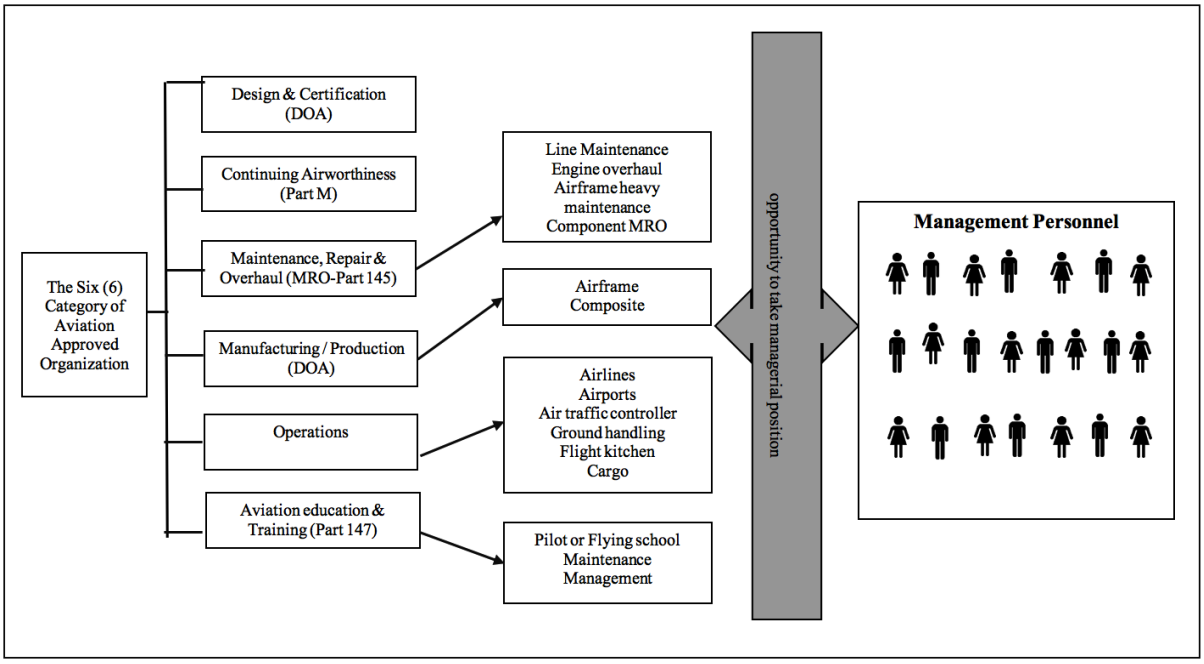

Figure 3. The aviation industry and aviation continuum (Developed by author)

3. Research Methodology

3.1 Case study research and focus group discussion

Researches in aviation management program development at the higher education level are still lacking that can be addressed by researchers. In order to offer a detailed description and explanation of the new program development, the exploratory research approach using a case study strategy was carried out. In this endeavour, we adopt the single

case study research of newly develop MSc in Aviation Management at UniKL MIAT as the study focus. As argued in previous qualitative studies, there is no perfect number of case studies since the aim of case study research is to explore one specific issue and allow the researcher to provide a clear and rich description about the issue investigated. In addition, generalisation is not the main purpose of qualitative case study research [17-21].

Focus group discussion is the best option to answer our research question posited earlier in this study. Therefore, a total of four panel members was involved in the focus group discussion. The respondents of the focus group discussion in this study are described in Table 2. The four panels involved are the expert in the aviation industry with more than 17 years' experience in the field. The other two respondents from a higher academic institution with related aviation background possessed 24 and 37 years' experience in academic. Vast experience background from all four respondents contributes to the significant information on the topic discussed.

Table 2. Respondents profile

Respondents	Experiences	Position
Panel A	21	Industry expert
Panel B	17	Industry expert
Panel C	24	Academician
Panel D	37	Academician

3.2 Semi-structured Interview

Focus group has been performed using a semi structured interview. A list of interview questions developed to ensure the data obtained are precise and reliable. The focus group discussion took about 5 hours, and it was recorded, transcribed and cross-checked. The data gathered from the focus group discussion were then discussed in the meeting with the faculty member for peer-reviewed debriefing to establish the issue and the themes identified. As recommended by Foster (2004, p.231), peer debriefing is vital in qualitative research "*to confirm interpretations and coding decisions, including the development of categories".* Findings from the focus group interview with four panel members in this study are repetitively discussed before the final conclusion was made. This is in line with the suggestion by Miles and Huberman [22] and Lewins and Silver [23].

3.3 Triangulation

Triangulation is substantial for both quantitative and qualitative researchers. According to Bryman and Bell [24], triangulation "entails using more than one method or source of data in the study of social phenomena". Additionally, Saunders et al. [25] stress that triangulation needs to be performed in any research to ensure the truthful of the data. As an interpretive researcher, triangulation was completed in this study to corroborate the findings from more than one sources [26]. Data from a semi-structured interview in focus group discussion, as well as observation and published report, has corroborated each other.

Peer debriefing is used in this research *"to confirm interpretations and coding decisions, including the development of the categories"* [27]. What is more, as discussed above, the process of coding and drawing conclusions from raw data involves a back and forth process [22, 23].

4. Key Findings

In this section, key findings on how course structure in MSC in aviation management would fit the current aviation industry needs is presented. The findings presentation was presented in three subsections: six key concern from Board of Studies (BOS); list of courses and the three embedded elements of business, management and technology and most importantly mapping of courses with the body of knowledge and career path. All these three contexts refer to the evaluation framework that contributes to both industry and academicians to establish further research in this area.

4.1 Six Key Concern of BOS

Both Table 3 and Figure 4 highlighted all six figures gained from focus group findings and detail explanations

Table 3. Main Concern from BOS and the response from UniKL MIAT (drawn by authors)

No.	Concerns	Steps taken/Response from Institute
1.	The manufacturing sector revenue surpassed MRO currently. Suggest inclusion of aircraft manufacturing management.	Included course on Aircraft Manufacturing Management (APG 61103)
2.	To include more science, technology and mathematics-related subjects.	The concern has been addressed in the developments of the subject to be in-line with the elements of industry 4.0, as suggested by BOS. The following are among the proposed subjects: • Business Analytics with Data. • Aircraft Manufacturing Management • Aviation Supply Chain

No.	Concerns	Steps taken/Response from Institute
		• Aviation information and communication technology • Airline Operations • Airport Operations
3.	Cater for different management perspective within the industry	Airlines, MRO & Aviation Supply Chain courses have been included, i.e., low-cost carriers and full-service models.
4.	To review the scope and depth of deliverables between bachelor's degree and master level.	All subject coverage is upgraded with regards to knowledge and level of management practice.
5.	To standardise on the assessment structure, i.e. full coursework with/without exam	The assessment follows the criteria set out by the Institute of Research and Postgraduate Studies (IRPS).
6.	Feedbacks on some selected subjects:	
	a. Islamic/Civilization Technology It is a good suggestion by the working committee to introduce foundation subject with students. However, the working committee needs to address the use of language (for international students) and the content for non-Muslim students.	Islamic Civilization has been replaced with Ethical Business Practices, and the course will be conducted in English.
	a. Research & methodology (RM) and Project 1 To combine the RM and Project 1 subject and to allocate the extra credit hours for other more specialised subjects.	Agreed for additional case study seminar course with extra credit hours (6).
	b. Aviation Information, Communication and Technology To include manufacturing elements to address the needs of the future requirement by manufacturing to local player.	One elective course will be offered (Aircraft Manufacturing Management).
	c. Project 2 To ensure real case project based on industry needs and the scope of the study to include governments as policymakers.	Agreed to incorporate the elements in case study & seminar course.
	d. Aviation Managerial Finance To include external elements, i.e. issues on obtaining financing.	One chapter has been added in the course syllabus.

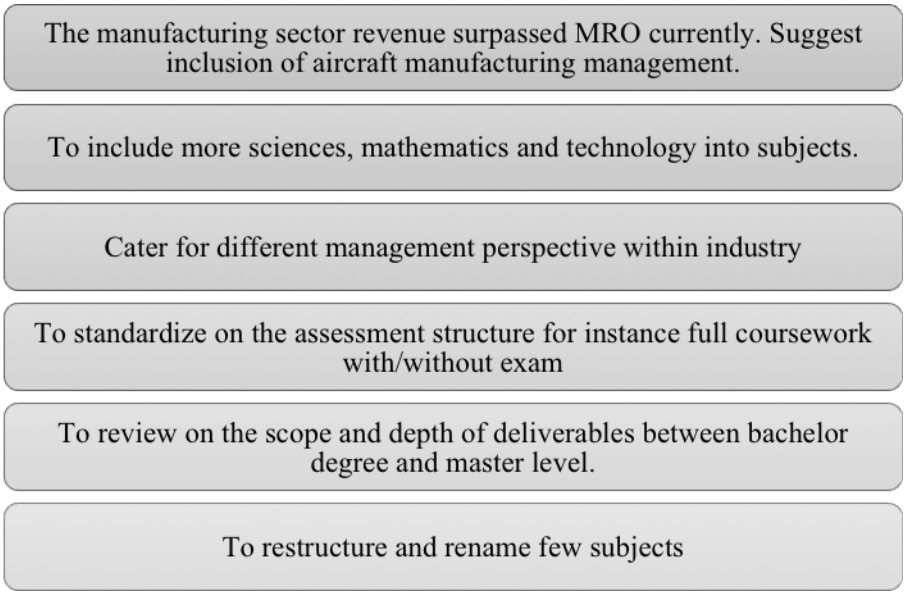

Figure 4. Six (6) main concern from BOS focus group discussion

Findings from focus group discussion with BOS panel members show a collective agreement that MSC in Aviation Management satisfies both academic and industry needs. From the focus group interview, there are 6 (six) main concerns highlighted by all four panels that need to be revised and focused in ensuring the proposed program exceed the expectation and fulfil the needs of industry in future.

4.2 Three Complementary Elements – Business, Management & Technology and Proposed Courses

In this new proposed program on aviation management, all four BOS members come to an agreement that in responding to the current digital era, program at a higher education level must be offering with current industry needs. Three elements of business, management and technology are also significantly influencing the capability of workforce produced at the university level at the higher-level degree with industry needs. One of the panel members mentions that:

"… *proposed master degree is not a top-up program, and it is also not a conversion program, it is an upgrading program… as such inclusion of elements technology in each of the offered courses are important to enhance their current knowledge from an earlier degree*."

All other three panel members show agreement with the statement. In addition, the other panel member added:

"…. the combination of business, management and technology issue in all courses offered will *embrace critical needs of the industry especially now as we are moving towards industry 5.0 as well as GIG economy is approaching..."*

In corresponding to the above comments, the authors agree that all proposed subject should be included with all three elements of business, management and technology. Table 4 below shows the list of relevance subjects with all three elements embedded and the synopsis. The verdicts from focus group discussion with BOS panel resulted in the deletion of three courses, and three newly added course as well as changes in the propose course syllabus. At the same time, three courses were renamed. Details of the list of courses offered in MSc in Aviation Management portrayed in Table 4.

Table 4: List of proposed courses before and after the Board of Studies focus group discussion (drawn by authors)

Earlier proposed courses	Status of the courses after BOS	New proposed / Rename	B	M	T	Core	Elective	Uni
Research methodology	Deleted and combine with project 1							
Innovation Technology and Entrepreneurship	Maintain	Nil	✓	✓	✓			✓
Aviation Regulations	combine with aviation safety and security							
Management of Aviation Organizations	Maintain	Nil	✓	✓	✓	✓		
Aviation Managerial Finance	Maintain	Nil	✓	✓	✓	✓		
Aviation Information System	Rename	Aviation Information Communication & Technology	✓	✓	✓	✓		
Aviation safety and security	Maintain	Nil	✓	✓	✓	✓		
Aviation supply chain	Maintain	Nil	✓	✓	✓	✓		
Aviation Business	Maintain	Nil	✓	✓	✓	✓		
Project 1	Rename	Research Project 1	✓	✓	✓	✓		
Project 2	Rename	Research Project 2	✓	✓	✓	✓		
Informed Decision with Data	Deleted	Business analytics with data	✓	✓	✓	✓		
Aircraft Maintenance Management	Maintain	Nil	✓	✓	✓		✓	
General Aviation	Deleted	Nil	✓	✓	✓			
Airport Operations	Maintain	Nil	✓	✓	✓		✓	
Airline Operations	Maintain	Nil	✓	✓	✓		✓	
	Newly added	Ethical business practices	✓	✓	✓	✓		
	Newly added	Aircraft Manufacturing Management	✓	✓	✓		✓	
	Newly added	Case study & seminar	✓	✓	✓	✓		

As shown in Table 4, there are significant differences be made before BOS focus group discussion and after; 3 courses deleted, three newly added courses, three rename and two combine courses were presented. There are 16 courses altogether will be offered with all sixteen have

embedded three core elements, namely business, management and technology (B, M, and T in Table 4) in the syllabus.

All panel members agreed that this program integrates the technology and business elements into the management of approved aviation organisation. The program addresses the requirements of global aviation authorities including DCAM, EASA and FAA. This further differentiates the program with the other local education provider offering. Most importantly, this program is surely specific and not a top-up program. As stated earlier, most top-up programs do not sufficiently address the approved organisation perspectives.

Subsequently, this program would achieve the target set reference made by Frost & Sullivan: Malaysia Aerospace Human Resource Market 2009-2029. From the report, it indicates strong demand for various aviation personnel, specifically in Aviation Management worldwide. From the report, forty percent (40%) of the world's aircraft will be in Asia, and the Asia Pacific region will be the hub of aviation activity. Equally, in line with MARA's aspiration to be the premier provider of Aerospace Human Capital, UniKL MIAT should seize this opportunity to prominently position UniKL as Asia's aerospace training provider in sync with WE4Asia initiative. This is also strongly supported aspiration by the Ministry of Education to achieve HTVET provider in Asia.

Given the above-depicted aviation landscape and cognition of UniKL vision to become a leader for HTVET education including in aviation field in Asia, its quest for a larger footprint in the HTVET space and its contribution to national aspiration of a high-income economy and GIG economy; the impact to the university vision, mission and strategic objective is direct and in full alignment. Below analysis mapped the course offered with courses offered and gaps from the industry strongly justify our findings.

4.3 Mapping of Courses, Job and Body of knowledge

There are many careers within aviation organisation that require the integration of aviation skills and technology, business & management and these organisations increasingly require the needs of people that will give a value-added. Career possibilities are very wide and not limited to traditional administrative jobs. The industry is becoming more complex and sophisticated. Consequently, organisations are looking for better-trained people in many employment situations with relevant industry knowledge and all-round capabilities. Figure 5 and Table 5 below shows the job prospects, course mapping, job and knowledge.

Essentially, industrial areas in the job market demands for the graduates of the proposed academic program were also discussed in the focus group discussion. There are fifteen related aviation management post can be served. At the same time, Table 5 shows job mapping of the industry with the body of knowledge created from MSc in Aviation Management. Since graduates of the program will be exposed to in-depth and integrated knowledge, they could definitely serve in a wide range of aviation design, manufacturing, maintenance, service and operations and in a related industry such as oil & gas, power generation, travel & trade, railway, consultancy and airline food industry.

Table 5. Mapping of Job Profiles, Body of Knowledge, Competencies and Courses/Modules

Job Profile	Body of Knowledge	Competency (*for the same competency, the levels need to be differentiated)	Course/Module
Airlines & Air Operators, Airports, & Logistics Companies: - Various Supervisory and Managerial Positions	• Aviation Quality Management Systems • Aviation Business & Finance • Aviation Operations • Aviation Regulatory Requirements • Aviation Human Factors	• Customer Service Orientation • Financial & Business Analysis • Communication & Interpersonal Skills • Teamwork • Cultural Sensitivity • Adaptability • Knowledge on efficiency & effectiveness • Real time decision making	• Airline Operation • Airport Operation • General Aviation • Aviation Regulation • Management of Approved Aviation Organizations • Aviation Safety & Security
Entrepreneurs: - Creating and developing business ideas and companies.	• Aviation Resources • Aviation Industry Network	• Work within a business framework • Recognise the related opportunities and constraints. • Analyse a situation involving multiple conflicting professional and ethical interests to determine an appropriate course of action considering human values.	• Aviation Supply Chain • Aviation Managerial Finance • Aviation Business • Research Method (Project 1) and Research Project 2

Job Profile	Body of Knowledge	Competency (*for the same competency, the levels need to be differentiated)	Course/Module
		• Innovative analysis • Innovative Thinking • Teamwork Skills • Creative Thinking	• Innovation Technology & Entrepreneurship
Aviation Manufacturers, Maintenance Repair Organization, Design Organization, Continuous Aviation Management Organization, Training Organisations Various Supervisory and Managerial Positions	• Aviation Quality Assurance • Airworthiness Requirements	• Technical Advisory and Consultancy Services • Design & Manufacturing Services • Aviation Total Fleet Maintenance Services • Continuous Airworthiness Services • Scenario Planning • Fast Data/Collaborative Decision Making • Conceptual Thinking	• Management of Aviation Organizations • Aircraft Manufacturing Management • Aircraft Maintenance Management • Aviation Information Communication &Technology
Business and Data Analysts, Industrial Revolution Requirements Various Supervisory and Managerial Positions	• Industry and Predictive Analysis • Business Growth and Sustainability	• Data Driven Analytical Thinking • Data Mining • Knowledge management skills • Analytical Skills • Scenario Planning • Visualisation Skills • Big Data driven Analytical Thinking, Big Data Management	• Business Analytics with Data • Aviation Information Communication &Technology • Case study • Project

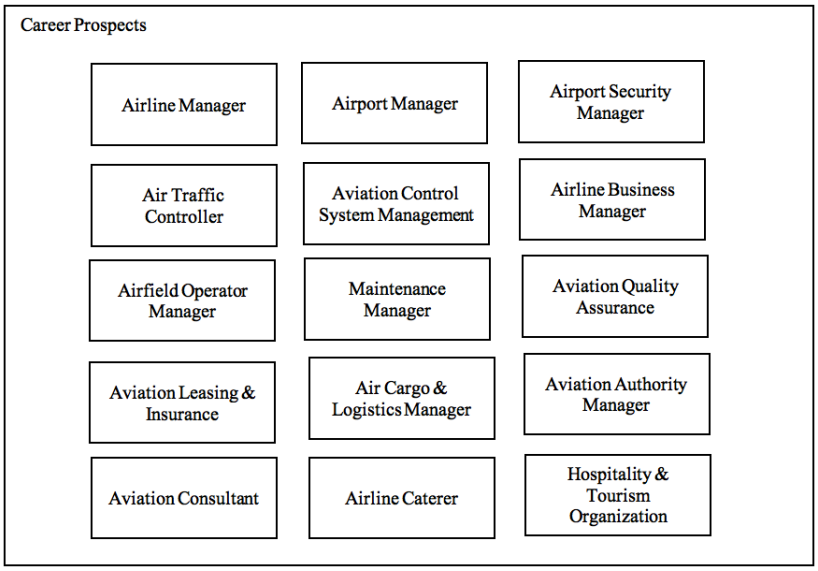

Figure 5. Aviation Management Career Prospects from the New Offered Program (drawn by authors)

5. Conclusion, Contribution and Recommendation

To conclude, linking program education at the higher-level institution with industry need study that provides the fruitful area of research, especially in its applicability perspectives. This study contributes to the area of research by providing three important tables in the area that needs to be established and proven. A novel contribution from this study is with the development of three main tables highlighted in this study, namely the table of job mapping, the concern of the BOS and career prospects in aviation management.

Subsequently, this study offers a significant area for further research recommendation. To date, there are not many studies focusing on new program development in the area of aviation management, as well as aviation technology. Realising the growth of aviation market and future industry produced by Boeing and Airbus (being the prominent aircraft manufacturer and trendsetter), this study could be used as a platform to further

research around the collaboration between industry and also higher education institution.

This study reveals the critical needs and issue from the industry perspective and drives a new focus area for academician in syllabus development and research. This study bridges the gap between industry and academician by keeping scholars and practitioners abreast of the timeliest industry-academician framework and current thinking necessary for better performance of the industry, as well as the quality of the new proposed master program. This is a key for sustainability for both the aviation industry as well as a higher academic institution. It clearly shows both academic and industry players related needs to open a new program with consolidating both theoretical development and industry career. Recommendation to all academicians, practitioners and policymaker is also highlighted in the study.

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