



Exploring TVET Institution Directors' Barriers in Managing Malaysian TVET Institutions-Industry Partnership

Norazlinda Mohamad¹, Haryanti Mohd Affandi¹, Nurul Eizzaty Sohimi¹, Mohd Firdaus Mustaffa Kamal², Lazaro Moreno Herrera³, Rabihah Munirah Zulkifli², Nor Haslinda Abas⁴

¹Faculty of Engineering and Built Environment,
The National University of Malaysia, MALAYSIA

²Faculty of Technical and Vocational,
Sultan Idris Education University Malaysia, MALAYSIA

³Stockholm University, Stockholm, SWEDEN

⁴Faculty of Civil Engineering and Built Environment,
Universiti Tun Hussein Onn Malaysia, MALAYSIA

*Corresponding Author

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Abstract: For developing nations to meet the demand for skills in the twenty-first century, TVET is essential. The TVET institution actively creates a skilled workforce to meet the needs of the nation's labour market to meet those demands. As a result, efforts are being made to improve the existing TVET institutions. This study looked into the difficulties faced by TVET institution managers when handling their relationships with collaboration. The quantitative approach used in this study was the survey design approach. The right respondents are chosen for this study using purposeful sampling techniques. A total of 53 directors of TVET institutions in Malaysia and 30 representatives from industry were chosen as respondents for this study. The Rasch measurement model was used to analyze the data. This study identified managerial skills and common barriers as the two main obstacles to the collaboration between Malaysian TVET institutions and industries. Technical, human, and conceptual skills are the three categories used to categorize managerial skill barriers. Technically, directors are unable to put knowledge into practice because they lack computer proficiency, managerial knowledge and experience, and methods and techniques for performance monitoring tools. Conceptually, directors struggle to plan long-term objectives, articulate strategies and comprehend the organizational structure of their industry. Finally, directors lack the ability to manage relationships between organizations and the drive to launch partnerships with the sector. While this was going on, the common TVET institution-industry collaboration barriers were grouped into four categories: governance issues, funding and financial issues, management issues in collaboration, and industry-institution culture issues.

Keywords: Public-private partnership, industrial collaboration, TVET management

1. Introduction

To meet the demand for skills in the twenty-first century, developing countries must invest in technical vocational education and training (TVET). Malaysia, one of the developing nations, is actively working to produce a skilled workforce to meet the demands of the domestic labor market. To supply the industry with skilled workers, TVET institutions must also keep up with industry technology and foster student innovation. As a result, TVET institutions need to be well-connected to the industry, possess solid industry-based knowledge, and generate income.

Promoting lifelong learning in TVET requires the involvement of the business community. However, limited accessibility brought on by a lack of information, promotion, and industry involvement has decreased young people's desire to continue their TVET studies (ILMIA 2018). Lower student performance on tests like TIMSS and PISA, which relate to TVET, can be attributed to this. The lack of uniform performance data among TVET institutions was also a result of poor coordination and a fragmented TVET system. Additionally, the Malaysian government's lack of recognition made the TVET system's industries reluctant to collaborate. As a result, the Malaysian TVET system's issues and problems are primarily caused by the industry's lack of participation and collaboration in the TVET ecosystem. As a result, industries, government TVET-related, and TVET institutions are working in a silo and have caused issues in the labour market comprising (ILMIA 2018):

- i) Skill gap and lack of high-paying jobs for skilled worker
- ii) Unemployment and dropout among youth and graduates are high
- iii) Dependency on low-skilled foreign labour
- iv) Issues on equality and salary gaps
- v) Labour market regulation lowers industrial engagement and focuses on ease of doing

The concerns raised by the ILMIA (2018) cannot be ignored. A suitable strategy is required to ensure the issues can be resolved with an investigation to be made in answering what are the barriers in managing TVET institutions-industry partnership. Thus, this study takes the initiative to explore the managerial skills and common barriers faced by Malaysian TVET institutions and industries.

2. Methodology

This study adopted a survey design quantitative method. A set of Likert Scale questionnaire surveys was developed and distributed to the TVET institution director and industries player (which have MoU with the TVET institution). The Likert Scale questionnaire survey was developed to explore managerial skill barriers in managing institution-industries partnerships. TVET institution directors' managerial skills have been determined by adapting Katz's managerial skills, 1979 model.

2.1 Instruments

The items were developed based on Katz's managerial skills theory. There were three constructs according to the model, which a technical skill, human skill, and conceptual skill totalling 78 items. The details of each construct are as follows:

- i) Technical Skills (Managerial knowledge and experience; Computer skill; Ability to implement knowledge; Methods and techniques, performance monitoring tools; Employee vocational training)
- ii) Human Skills (Inter-organizational relations; Communication skills; Individual work)
- iii) Conceptual Skills (Identification of the organizational structure; Comprehensive planning; Articulation of strategy; Strategic and long-term goals; Innovative methods)

Instruments undergo a pilot test before being distributed to the respondents. Based on the reliability analysis using Rasch Measurement Model, the person reliability value is 0.98. This value means that the probability of repeated individual response results when the same test is performed is high. Also, the person separation index is 8.47. This means that the Item produced a significant Person Separation. The person separation index values indicate an acceptable level of separation, distinguishing five strata of participation ability in the sample: high participation and low participation. So, this indicates that the test can statistically distinguish between high and low performers. Meanwhile, the item reliability value is 0.80. This means that the adequacy of the item to measure the thing to be measured is fair. The item separation index is 1.99, indicating a slight separation between a most agreed item and a less agreed item.

2.2 Sampling and Populations

This study adopted the purposive sampling method. The respondents were the directors of TVET institutions in Malaysia and the industry that has an MoU with TVET institutions. A total of 53 from 87 TVET institution directors and 30 respondents from the industry have been purposively selected to participate in this research. The number of respondents was adequate to represent the TVET institutions and industry.

2.3 Data Collection and Analysis

The questionnaire was distributed to the respondents via Google Forms via email. The data from the survey were analyzed using item measures and person measures in Rasch Measurement Model. The item measure analysis can be used to identify whether any items from the same construct measured the item's difficulty level at the same value or calibration (redundant item) (Azrilah et al. 2013) and person measure is used to analyze a person's ability in answering the survey and the scores make sense based on their understanding of the construct being measured.

3. Finding and Discussion

This study identified the challenges to partnerships from the viewpoints of academia and industries. This study identified two categories of barriers to managing partnerships between industries and institutions: common barriers and managerial skills barriers. Common obstacles are those that are external and have an impact on partnerships between institutions and industries. In the meantime, the TVET institution director's internal factor in managing industry-institution partnerships is a lack of managerial skills.

3.1 Managerial Skills Barriers Among TVET Institution Directors in Managing Institution-Industries Partnership

This part comprises organizational skill barriers in managing TVET institutions among TVET institution directors based on TVET institution directors, and industry collaboration or MoU with the TVET institution. TVET institution directors' managerial skills have been determined by adapting Katz's managerial skills; the 1979 model comprises three primary constructs: technical skills, human skills, and conceptual skills.

3.1.1 Managerial Skills Barriers

Figure 1 displayed the Person map based on the managerial skills barriers faced by the director of a TVET institution when managing an industrial-led TVET institution. Figure 1 shows the division of the level of the agreement into three categories: low, medium, and high. The person known only as "i25" has a strong consensus regarding the obstacles to managing an institution of industrial-led TVET (Figure 1). P23's consensus on the challenges faced by Industrial-Led TVET institutions in managing managerial skills is low. In addition, the person map in Figure 1 demonstrates that the majority of TVET institution directors concur that there is a medium-level barrier to managerial skills among TVET institution directors.

Person value measures are additionally based on the construct of managerial skills barriers in addition to the person map (Table 1). There were three constructs, which are technical skills, human skills, and conceptual skills. Technical skill involves special knowledge, the analytical ability within that speciality, and the facility using specific discipline tools and techniques (Katz 1991; Robbins & Decenzo 1998; Mirsepassi 1991) while human skill is the manager's ability to work effectively as a group member and build adequate understanding and cooperative effort in the team he leads (Katz 1991; Ahmadi 2011; Robbins & Decenzo 1998; Mirsepassi 1991). The third construct was conceptual skills, also referred to as cognitive, perceptual, analytical, and skill-based on general understanding skills. The ability to view an institution or unity is a skill based on general understanding (Katz 1991; Robbins & Decenzo 1998; Mirsepassi 1991).

This person measure reveals respondents' consensus regarding the directors of TVET institutions' lack of managerial skills when managing TVET institutions with an industrial focus. The findings indicate that the managerial skill barriers faced by TVET institution directors when managing Industrial-Led TVET institutions are on a medium level. The conceptual skills subcategories "comprehensive planning" and "innovative method" had the highest means, 2.97 and 2.72, respectively. The director is given a lot of responsibility when the environment shifts from a vocational school to a TVET institution. Additionally, the study by Afshari et al. (2013) demonstrates that organizations have had to adapt to their environment to survive, grow, and develop due to the increase in environmental changes like the development of technology, increase in the intensity of competition throughout the entire business chains, and incremental changes in customer and beneficiary expectations.

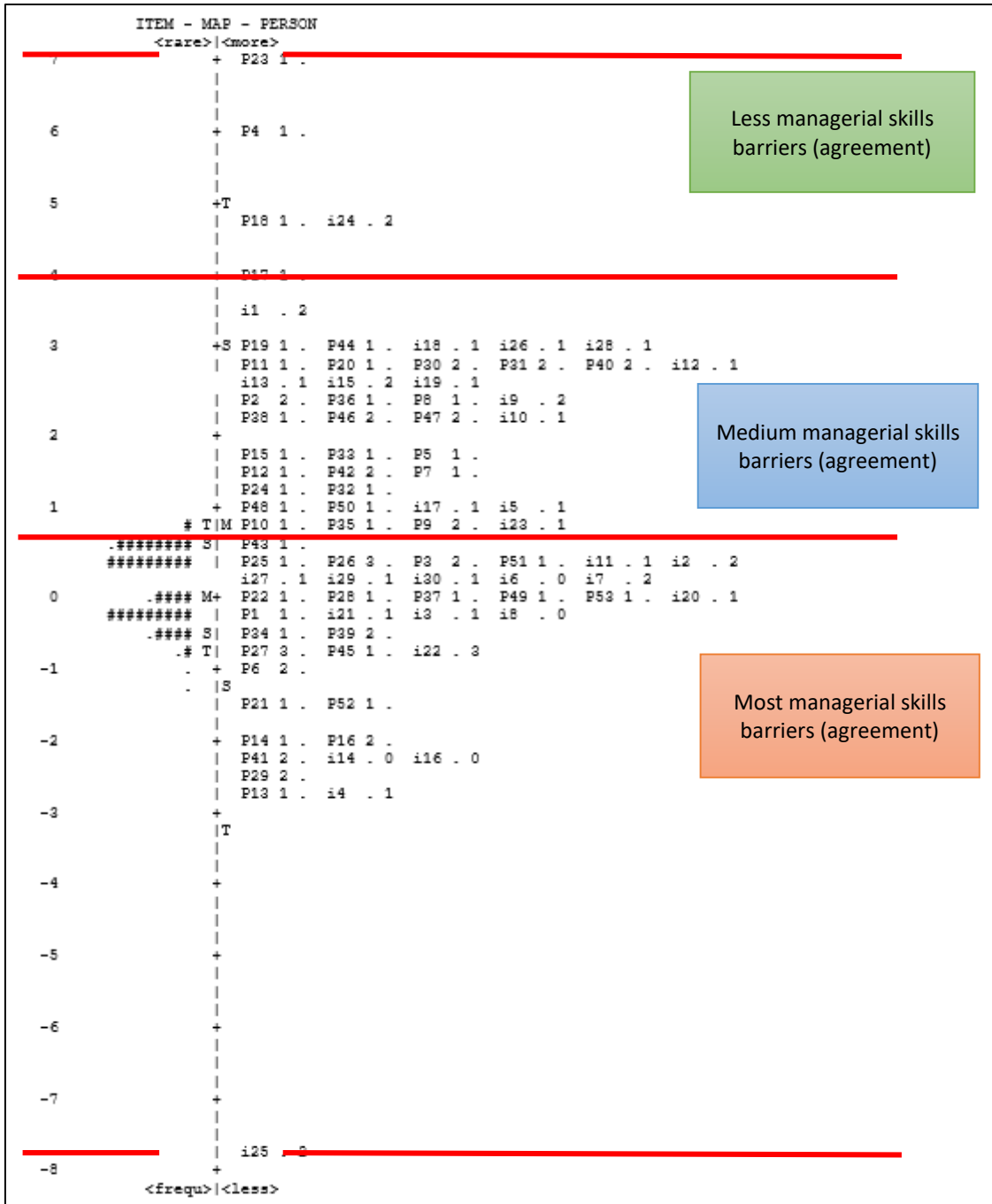


Fig. 1 - Person map-based managerial skills barriers

Table 1 - Person value measure based on the construct of managerial skills barriers

Construct / Element	Sub construct / Sub Element	Person (mean)	Indicator
Technical Skills	Managerial Knowledge and Experience	0.49	Medium
	Computer Skill	0.96	Medium
	Ability to implement knowledge	0.82	Medium
	Methods and techniques, performance monitoring tools	1.75	Medium
	Employee vocational training	0.82	Medium
Human Skills	Inter-Organizational Relations	1.11	Medium
	Communication Skills	0.69	Medium
	Individual Work	2.54	Medium
	Identification of Organizational Structure	1.79	Medium
Conceptual Skills	Comprehensive Planning	2.97	Medium
	Articulation of Strategy	-0.15	Medium
	Strategic and long-term goals	1.96	Medium
	Innovative methods	2.72	Medium

In addition to the person map and person measure, the item map is also covered in this study. Figure 2 illustrates the item map that explains the indication of managerial skills barriers among directors of TVET institutions managing institution-industry partnerships.

By applying managerial knowledge to managerial functions, a manager can achieve the goals of the industries-institution partnership and effectively carry out the management duties required of them (Peterson & Van Fleet, 2004). Three distinct managerial skill sets are required to be an effective manager: technical, human, and conceptual (Nizarudin Wajdi 2017). Based on the analysis, it was found that the main obstacle for TVET institution directors managing the industries-institution partnership is a lack of technical skills. According to Kartz (1974), lower management levels place a greater emphasis on technical skills.

The Malaysian educational system has two levels of governance: macro level and micro level. The head of a TVET institution engages in high management level and micro governance. In Malaysia, it is customary for directors of TVET institutions to be promoted to managerial positions after demonstrating their technical proficiency. TVET institution directors must have technical skills to train, supervise, and evaluate staff members who are performing specialized tasks, even though they have high management skill levels in the micromanagement governance level (Peterson & Van Fleet, 2004).

The response rate for item DHS2, "Incapable of handling bureaucracy," was 0.78 logits in Figure 1. The majority of TVET institutions in Malaysia were governed using a statist framework (ILMIA 2018). As a result, to function, TVET institutions must deal with a variety of hierarchical structures. This highly controlled bureaucratic system frequently prevented the institution from making significant improvements. The least acknowledged managerial skills barrier is item DHS14, "Lack of commitment from TVET institution," with a -1.29 logit. The majority of TVET institutions are working to improve their institutions to meet the demands of Malaysia's 4th IR. As a result, TVET institutions must put forth more effort to ensure that they satisfy the demands of the sector.

According to the metaphor of knowledge moving from the hands to the brain, turning into knowledge, and then into works or a predetermined output with added value, organizations in the 21st century must decide to be knowledge-oriented. (Mehrra et al. 2012). The ability to put knowledge into practice, computer proficiency, employee vocational training, managerial knowledge and experience and methods and techniques, and performance monitoring tools were the five main technical barriers among TVET institute directors. Additionally, computer skills are a necessity for daily life in the current generation because, without them, it would be impossible to conduct business, access the internet, provide educational services, or work in many other fields or professions (Sharma 2019). As a result, an administrator must be technologically savvy to simplify interactions with and transactions with staff members, apply knowledge, and gain practical experience (Ibay & Pa-alisbo 2020). For any reason, technical managerial skills are necessary. Therefore, to increase task effectiveness, authority to perform tasks should be delegated to subordinates, and special attention should be given to the division of labor (Seyedinejat et al. 2014). Being a manager in a learning environment can help you lead and solve problems in a variety of challenging and simple situations (Ibay & Pa-alisbo 2020).

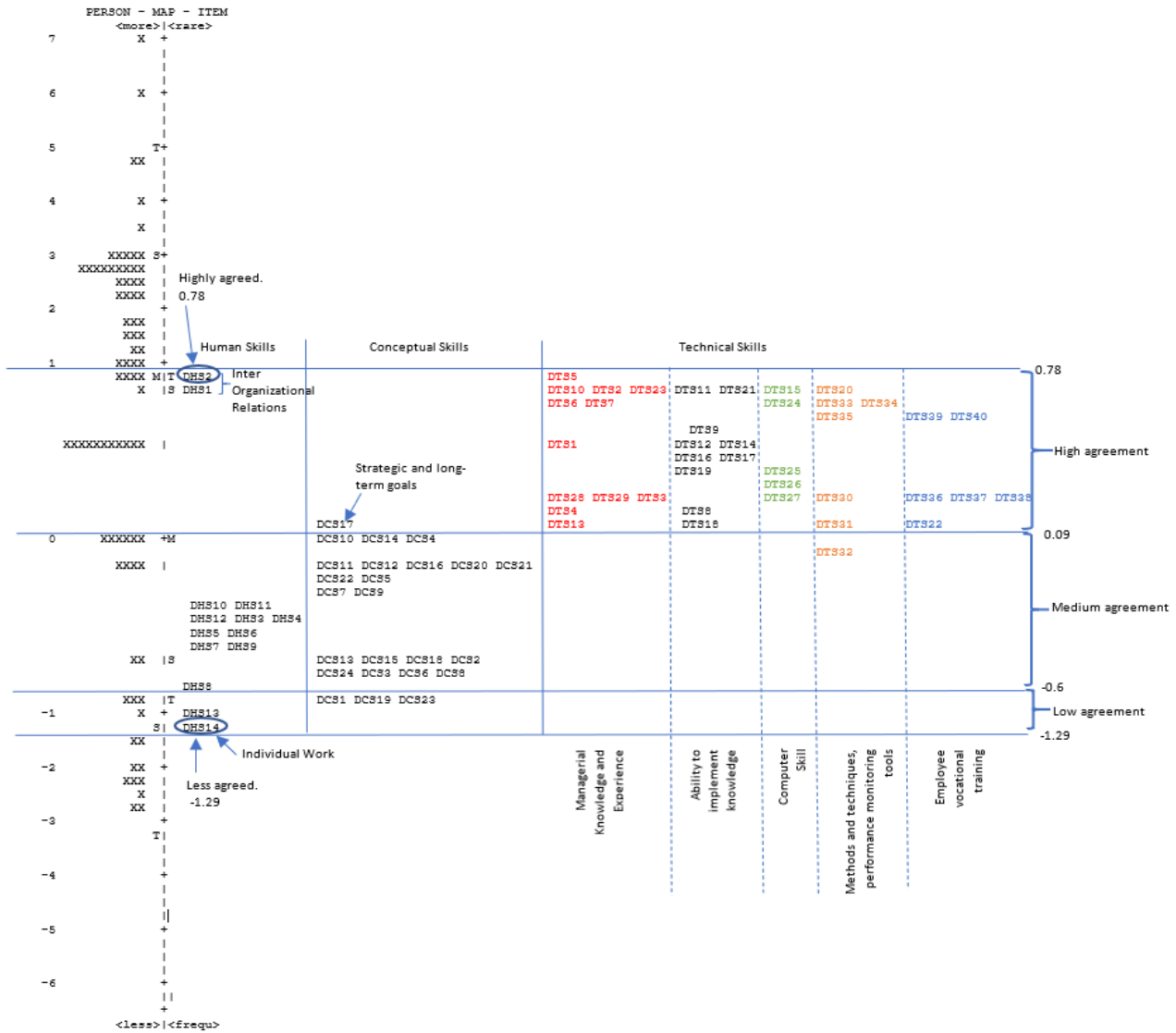


Fig. 2 - Item map on managerial skills barriers

The conceptual skills of TVET institutional directors are found to have barriers to long-term and strategic goals. Therefore, it seems crucial that the parties create a common understanding of the goals, settle on realistic project goals, and create a precise strategic plan throughout the entire collaboration (Hong et al. 2010). Additionally, incompatibility can make it more difficult to get the results you want (Henderson et al. 2006).

Inter-organizational relationships were also noted as a hindrance to human skills. Interorganizational connections strengthen the mutually beneficial nature of the industry and academic cooperation. Relationships between organizations help partners share knowledge more easily (Howard et al. 2014). It implies that two organizational characteristics—the organizational form and the combinative capabilities—play a significant role in a company's capacity to absorb knowledge. The director of a TVET institution who has lost motivation may result in incompetent in managing the relationships between organizations. TVET will not be successful without the commitment of its key stakeholders. (UTHM et al. 2017).

3.2 Common Barriers Faced by The TVET Institution Directors in Managing Institution-Industries Partnership

This part investigates barriers in TVET institution and industry collaboration from the perspective of TVET institution directors and the industries that have a collaboration or MoU with the TVET institution, which have four sub-constructs, comprises:

- i) Industry-institutions culture issues
- ii) Management issues in collaboration

- iii) Funding and financial issues
- iv) Governance issues

Figure 3 depicts the person map based on the obstacles to industry and TVET institution collaboration. According to Figure 3, the person with the code name P39 has a low level of agreement regarding the obstacles to the collaboration between TVET institutions and the industry, whereas the person with the code name P4 has a high level of agreement. The TVET institution directors and industries were generally at medium and low agreements on the barriers to TVET institution-industry collaboration, according to Figure 3's person map.

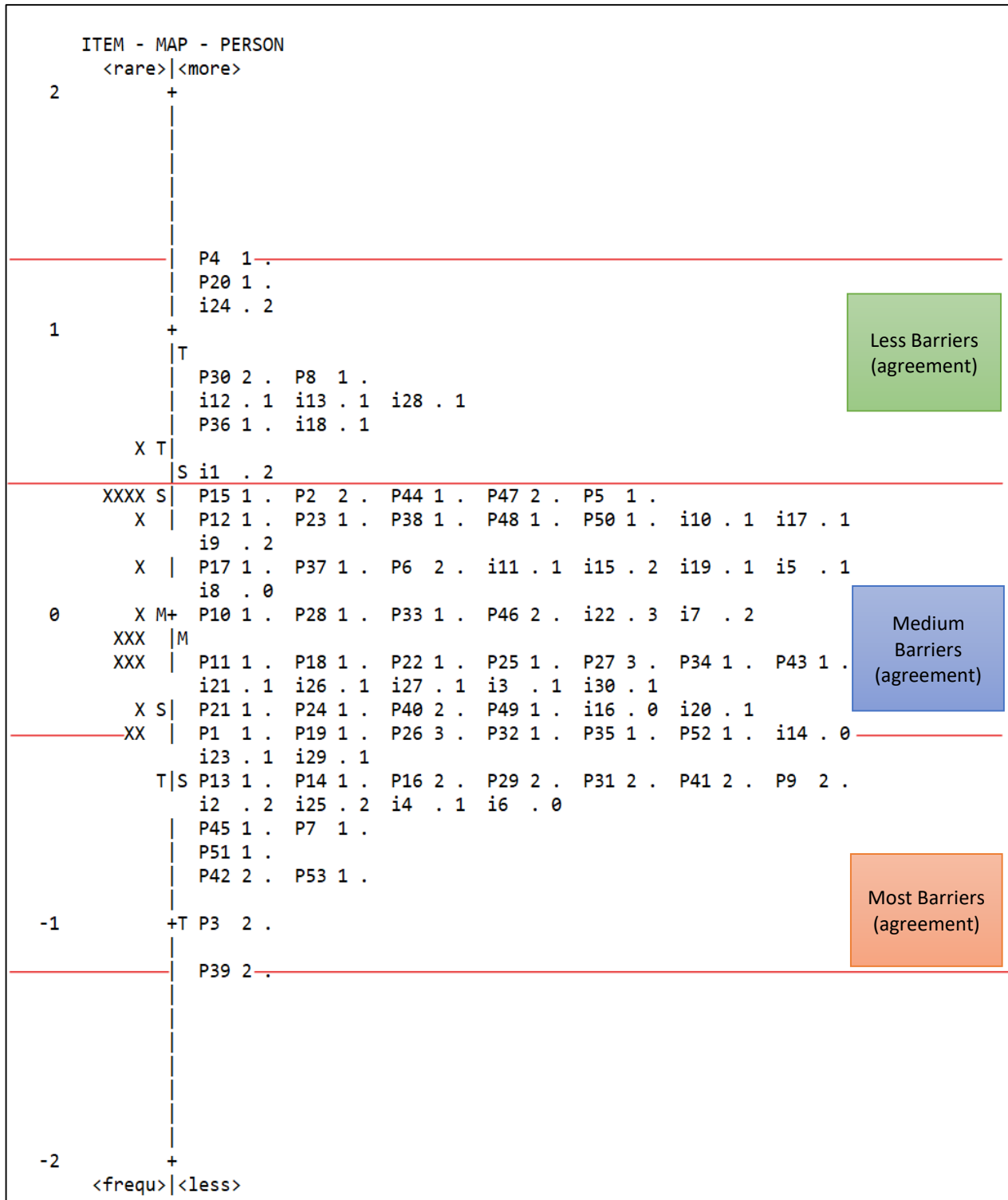


Fig. 3 - Person map on barriers in TVET institution and industry collaboration

Table 2 displays the person value measure based on the construct of barriers to industry and TVET institution collaboration. This indicator of agreement between TVET institution directors and businesses that have a Memorandum of Understanding (MoU) with a TVET institution regarding the obstacles to industry collaboration. The findings in Table 3 demonstrate the obstacles to industry and TVET institution collaboration. According to Table 2, two constructs have a high person mean value: funding and financial issues and management issues in collaboration, both of which have person mean values of -0.98. These findings demonstrate that most directors of TVET institutions and businesses generally agree that barriers to collaboration between TVET institutions and businesses include issues with management, funding, and finances. While this was happening, the governance and industry-institution culture barriers were at a medium level.

Table 2 - Person value measure based on the construct of barriers in TVET institution and industry collaboration

Construct/ Element	Subconstruct/SubElement	Person (mean)	Indicator
Barriers to collaboration between industry and institution	Industry-institutions Culture Issues	0.05	Medium
	Management issues in collaboration	-0.38	High
	Funding and Financial Issues	-0.98	High
	Governance Issues	-0.09	Medium

Additionally, Figure 4 displays the item map that explains the indication of agreement in barriers among directors of TVET institutions when managing institution-industries partnerships. The analysis identified managing institution-industry relationships as having major funding and financial issue. The TVET institution (government) in Malaysia is reliant on public funding. However, the difficulty in establishing institution-industries collaboration was due to the loss of government funding, the absence of a suitable reward system for the industry, and the lack of funding from the government to industry and institutions in conducting collaborations. As a comparison, Mohamad Faizal et al. (2014) also state that barriers such as governance and financial issues influence the respective collaboration's success.

Additionally, item EB16, "Differences in focus and goals between industry and TVET institution," was found to be the least agreed-upon item as a barrier in institution-industries partnerships with a -0.45 logit (Table 3). Business and academic institutions have very different primary objectives: while the former is primarily focused on making money, the latter is primarily concerned with producing knowledge (Martin 2012). The belief that industries and institutions share the same perspective and objectives in sharing knowledge and expertise means that this is not a barrier to managing institution-industry partnerships. Nowadays, the majority of industry professionals are happy to share their expertise with students as part of a service-learning project. The most frequently mentioned obstacle to institution-industry collaboration was item EB15, "Lack of funding from the government to industry and TVET institution in conducting collaborations," with 0.49 logit (Table 3). The majority of institutional and industry collaboration involves expenses, like sharing facilities and funding for research. Certain institutions' outdated equipment and technology contribute to the cost. To introduce their students to new technology, the institution must ask the industries to share facilities.

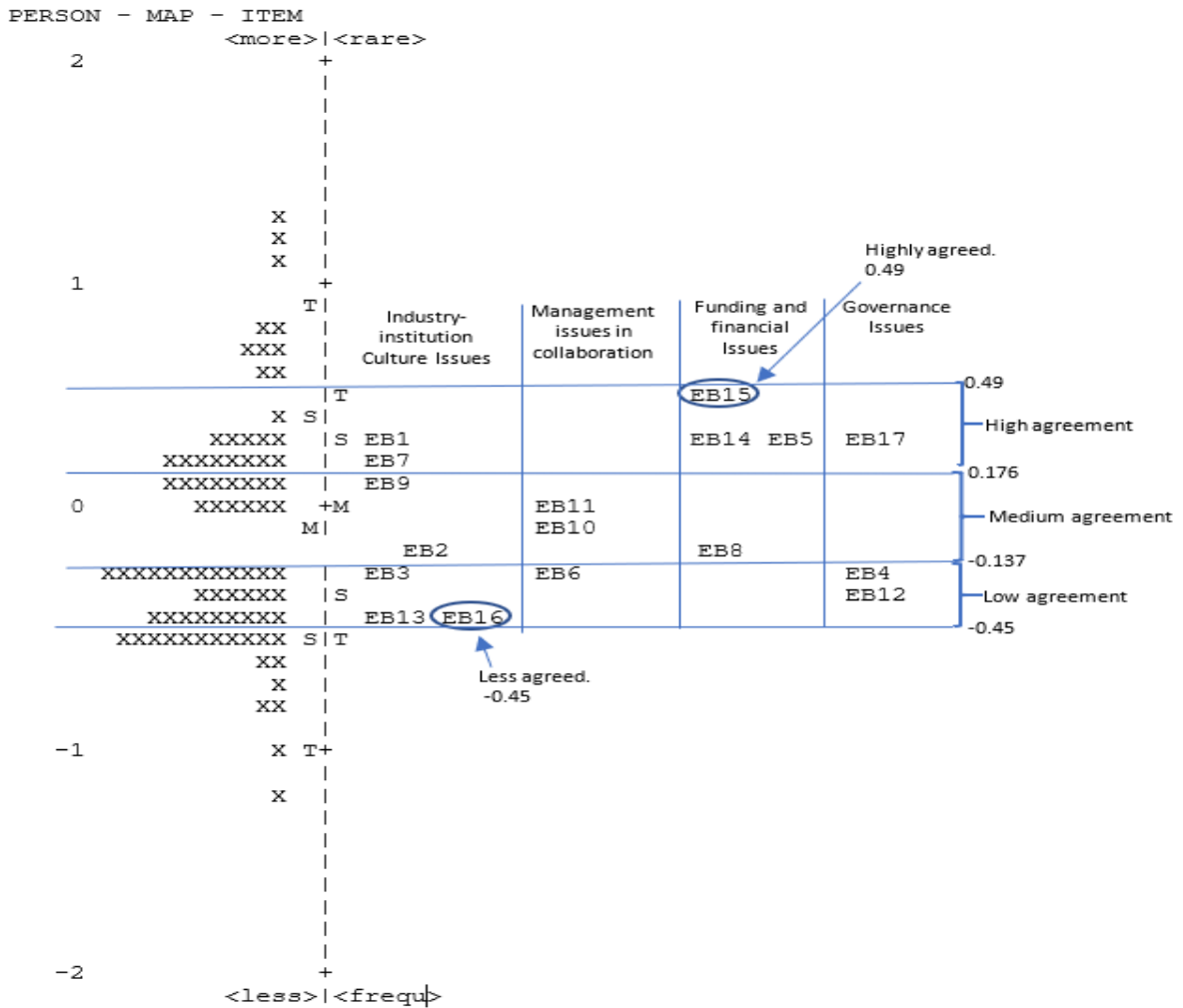


Fig. 4 - Item measure on barriers in collaboration

Table 3 - Item measure on barriers in collaboration

ITEM STATISTICS: MEASURE ORDER

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL S. E.	IN FIT MNSQ	OUT FIT ZSTD	PT-MEASURE MNSQ	EXACT MATCH ZSTD	CORR.	EXP.	OBS%	EXP%	ITEM
15	203	83	.49	.13	.87	-.9	.84	-1.0	.79	.40	50.6	43.5	EB15
14	212	83	.35	.12	.64	-2.8	.64	-2.7	.80	.40	54.2	42.4	EB14
1	215	83	.30	.12	.87	-.9	.87	-.8	.56	.41	54.2	42.2	EB1
17	215	83	.30	.12	.63	-2.9	.63	-2.8	.73	.41	55.4	42.2	EB17
5	218	83	.26	.12	.67	-2.6	.68	-2.4	.80	.41	56.6	41.0	EB5
7	223	83	.19	.12	.69	-2.3	.69	-2.4	.78	.41	49.4	39.8	EB7
9	228	83	.12	.12	.75	-1.9	.77	-1.7	.73	.41	49.4	38.8	EB9
11	237	83	-.01	.12	.53	-4.0	.55	-3.8	.85	.41	54.2	37.4	EB11
10	241	83	-.06	.12	.51	-4.3	.53	-4.1	.84	.41	50.6	35.7	EB10
2	244	83	-.10	.12	.67	-2.7	.66	-2.7	.64	.41	36.1	35.9	EB2
8	246	83	-.13	.12	.69	-2.5	.71	-2.3	.74	.41	45.8	35.6	EB8
6	248	83	-.16	.12	.57	-3.7	.59	-3.5	.74	.41	38.6	35.7	EB6
3	253	83	-.22	.12	.61	-3.3	.62	-3.2	.68	.41	39.8	35.8	EB3
4	253	83	-.22	.12	1.83	5.0	1.99	5.8	-.53	.41	30.1	35.8	EB4
12	258	83	-.29	.12	2.02	6.0	2.28	7.1	-.75	.41	37.3	35.8	EB12
13	264	83	-.37	.12	2.35	7.5	2.61	8.5	-.67	.41	28.9	35.7	EB13
16	270	83	-.45	.12	1.94	5.6	2.27	7.1	-.65	.40	27.7	35.9	EB16
MEAN	236.9	83.0	.00	.12	.99	-.6	1.06	-.3			44.6	38.2	
S. D.	19.4	.0	.27	.00	.59	3.8	.70	4.2			9.7	2.9	

4. Conclusion

To understand the barriers in the institution-industry partnership, this paper offers insight into how businesses and TVET institution directors perceive them. To ensure that TVET institutions can produce a quality workforce to meet the nation's demand, barriers in institution-industry partnerships for TVET programs must be removed. Two main obstacles to the institution-industry partnership have been identified and discussed in this paper. They are common obstacles to collaboration between TVET institutions and industry, and barriers to managers' skills among directors of TVET institutions.

The barriers to managerial skills have been classified into technical, human, and conceptual skills, and from the findings, these three aspects have significantly contributed to the barriers. Technically, directors cannot implement knowledge, are deficient in computer skills, cannot understand employee vocational training, managerial knowledge, and experience, and lack methods and techniques for performance monitoring tools. Conceptually, directors are poor in strategic and long-term goals planning, poor in articulating strategy, and poorly understand the industry's organizational structure. Finally, directors lack in managing the inter-organizational relationship and lack the motivation to instigate partnerships with the industry. The common TVET institution-industry collaboration barriers can be clustered into four categories which are governance issues, funding and financial issues, management issues in collaboration, and industry-institutions culture issues

The implication is that the authoritative body's strategies in designing the career pathway of the directors so that once appointed to the position, the barriers identified can be subdued and collaboration initiative can be treated as a routine than additional work. On the other hand, in tackling the common barriers found within the industry-institution collaboration initiatives, different measures need to be taken since it covers a broad area in managing the effort and involves different stakeholders in the process. Therefore, further discussion with the government bodies related to finance, policy, curriculum accreditor, and the related industry and the institution needs to be carried out to achieve a common consensus and ultimately improve collaboration initiatives. This effort hopes that the differences between stakeholders can be overcome to achieve common goals and aims.

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