Professional Rail Freight and Logistics Training Programme: A Case Study of Energy and Petrochemical Company in Bangkok, Thailand

Kaushik Mysore, Mayurachat Watcharejyothin and Marin Marinov

Abstract An intensive training course on rail freight and logistics was delivered in English to employees from the energy and petrochemical industry in Thailand in 2017. It was organized with the purpose of helping their staff gain knowledge and understanding of principles for effectively managing rail freight and logistics systems. This training course discussed the potential for economic growth and readiness of Thailand to become the logistics rail-based hub for ASEAN. Participants had less experience in rail freight and logistics; hence they wished to improve their knowledge of the subject area for potential management of rail freight and logistics projects across Thailand and its neighbouring countries. After the five-day training course, feedback from participants has been collected; the analysis showed positive views. The participants found the course helpful as it met their expectations. They also provided constructive criticism and useful recommendations for the future delivery of this course.

Keywords Rail freight · Logistics · Training · Feedback

1 Introduction

Rail freight network operations in Thailand were established in 1890 and have been progressively improved since then. However, during World War II Thailand encountered a financial crisis, and its railway network and operations were interrupted. The country changed its direction and chose a lower cost system, using roads. As a result, Thailand started to focus on using trucks to transport goods and passengers. Consequently, domestic freight in Thailand became truck-based holding an 80% market

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share in total and only four percent of its freight was transported by rail (NESDB 2016a, b).

Recently, the Thai government launched a new plan for the country's logistics strategy, aiming to become a "Logistics Hub of ASEAN" using the rail-based multimodal logistics. A budget of 425,000 million Thai Baht is to be spent on a double rail tracks project and logistics facilities (OTP 2017a, b). It is anticipated that the investment will increase the country's rail freight capacity by five times of the current capacity before 2026.

Through this significant transition, Thailand faces many new challenges. In addition to sourcing hardware facilities, locomotives, bogies, and logistics equipment, Thailand needs to increase its manpower capacity and train people for efficient rail freight operations. Currently, there are 15,000 employees working for the State Railways of Thailand. It is estimated that an extension of rail freight development could involve around 150,000 staff employed in the rail freight and logistics industry in 2026. This estimation is calculated based on the number of staff working in the rail industry per rail distance in kilometres (50 staff per kilometre) and multiplied by railway track expansion from 300 to 3000 kilometres (SRT 2018). In Thailand, the ratio is much higher than the case of other well-developed railway systems in countries such as Germany (4.6 staff per kilometre), UK (10 staff per kilometre) and India (19.4 staff per kilometre) (Thairailtech 2017; Indian Railways 2017) because Thailand still uses a lot of labour-intensive railway technology (SET 2017).

With a foreseeable high demand of manpower in rail freight operations, Thailand may face a shortage of labour supply soon. Therefore, in seeking an alternative platform for staff training on rail freight and logistics, a five-day intensive training course has been organised and delivered to employees from an energy and petrochemical industry in Thailand. The course aimed at providing knowledge and understanding of basic principles and operations management of rail freight and logistics. A five-day intensive training course of rail freight transportation and logistics for staff in selected industries was held in Bangkok, Thailand for the first time during 22–24 November 2017. The course contents included freight fundamentals, rail economic management and planning, urban freight by rail, rail freight current challenges and prospective, freight and logistics services and rail freight interchanges. The rest of the paper is organized as follows: Section two provides examples of training initiatives for skills development and rail freight and logistics, Section three presents the methodology, discusses the feedback data and analyses the results and a discussion of key messages is presented in section four, followed by conclusions and recommendations in the last section.

2 Training Initiatives in Rail Fright and Logistics

Skills development in rail freight and logistics have been facilitated by university courses, intensive programmes and workshops. Readers can refer to the following publications outlined further in this section.

Several MSc programmes, developed to train potential rail workers, are available within Europe. These courses are based around rail freight and logistics, as well as infrastructure and railway systems engineering. They also offer some research modules which are almost like a research apprenticeship, helping students to learn in the rail work environment. University courses have been discussed by Marinov et al. (2013), Marinov and Fraszczyk (2014), Fraszczyk et al. (2016), Tsykhmistro et al. (2014), Lautala et al. (2011), Marinov and Fraszczyk (2013a, b). The rail freight and logistics is a booming sector which cannot be sustained without education and training. Global logistics have contributed significantly to the growth and revitalisation of rail freight. In combination, rail freight serves many of our social needs without causing severe damage to the environment (Woroniuk et al. 2013; Marinov et al. 2010a, b, 2011a, b; Marinov and Viegas 2011). Education through university courses helps improve the strategic and tactical management of rail freight and logistics service providers as it increases theoretical knowledge of personnel involved and their ability to solve complex operational problems.

Intensive programmes delivered over a short period are another tool for skills development. These programmes involve academic learning over a short period. They can be attended by undergraduate students. Since professors working with the rail industry are delivering these courses, the quality is likely to be high. Some of these programmes are discussed in Drobisher et al. (2016), Fraszczyk et al. (2012, 2015), Marinov and Ricci (2012).

Workshops provide another method for bridging the gap in any particular area of skills development in the rail freight and logistics industry. A workshop would typically include a series of lectures and discussions on various topics to enhance theoretical knowledge of attendees. Group exercises may then follow to test practical skills learned. Workshops are usually organised with the aim to discuss common problems faced in the whole industry. Workshop participants include employees, stakeholders, final year undergraduate students and graduates. The benefits of attending workshops include exposure to deferent experience, learned better practices, practical skills development and increased technical knowledge. Examples of organising and running successful workshops include Fraszczyk et al. (2012), Dawson et al. (2017), Fraszczyk et al. (2015a), Marinov and Fraszczyk (2013a, b).

3 Methodology

The staff from Energy and Petrochemical Industries (EPI) in Thailand who attended the training course handle products such as crude oil and petroleum petrochemical products in liquid tank and containers, using rail freight transport. Therefore EPI staff from the same organisation, with less experience in logistics were invited to attend the course.

On the last day of the training, course participants were provided with feedback forms (Fraszczyk et al. 2016) to investigate participants' views on the course. The feedback form consisted of 11 questions. It was designed to allow the participants

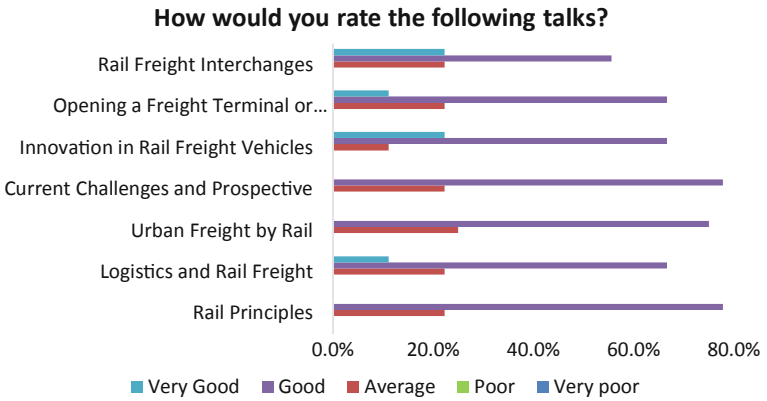

Fig. 1 Percentage of rating of talks

to include their thoughts and opinions about the course in a descriptive manner. Questions in the feedback form were quantitative, qualitative and a mixture of both. The rating system in the form ranged from Very poor/negative to Very good/positive. Data (answers) was processed into tables and graphs using Microsoft Excel for comparisons and analysis.

4 Questions and Answers

Question One: Rate talks

Participants were asked to rate seven talks (1. rail principles, 2. rail freight and logistics, 3. urban freight by rail, 4. current challenges and prospective, 5. innovation in rail freight vehicles, 6. opening a freight terminal, 7. rail freight interchanges), using the following scale: Very poor, Poor, Average, Good and Very Good. The lowest rating given for all the talks was Average. "Urban freight by rail" had the lowest rating: 25% of participants rated the talk as Average, and 75% participants rated the talk as Good. "Innovation in Rail freight vehicles" had the highest rating: 22% participants rated the talk as Very Good, 67% participants rated the talk as Good, and around 11% participants rated the talk as Average. Figure 1 is the graphical representation of the rating of talks by the participants. Urban freight by rail is not a priority area for the Thai government at the moment, which could explain why this talk was given the lowest rating. As for innovation in rail freight vehicles, the current rolling stock in Thailand is old and outdated. Hence the participants were very interested in updating their knowledge on rail freight vehicles and built up plans for what might be a suitable rolling stock for the Thai rail network in the near future.

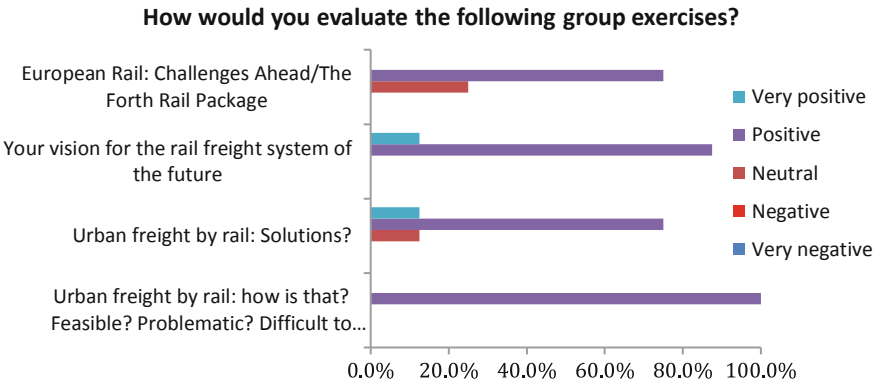

Fig. 2 Group exercise evaluation

Question Two: Rate group exercises and experiences

Participants were asked to rate specific group exercises (European Rail, Urban Freight by Rail—how is that?,—Solutions?, Rail freight system of the future) and their experience of those exercises. The rating was done using a "one to five" scale. The lowest rating given for any group exercise and experience was *three*. The group exercise on "European Rail: Challenges Ahead/The Fourth Rail Package" had the lowest rating: 25% of participants rated this exercise as Neutral, and 75% of participants rated the exercise as Positive. "Your vision for the rail freight system of the future" had the highest rating: 87.5% participants rated this exercise as Positive, and 12.5% participants rated the exercise as Very Positive. Figure 2 shows the graphical representation of the rating of group exercises. Although the participants found the group exercise on "European rail—forth package" quite interesting, this group exercise was rated the lowest. It is because the political rail framework in Europe is not suitable for the current regulatory system in Thailand, and as a result, this group exercise was not given a serious thought.

On the contrary, due to its nature, timeliness and importance for rail freight developments in Thailand, the group excercise on "…rail freight system of the future" was given the highest rating.

For the experiences, "Group discussions helped me improve communication skills" had the lowest rating: 50% participants rated this experience as Neutral, 37.5% participants rated the experience as Positive, and just 12.5% participants rated the experience as Very Positive. Group discussions "improved knowledge in rail freight and logistics" and "happy with the support from other participants" had the highest rating: 25% participants rated the experiences as Very Positive, 62.5% participants rated the experiences as Positive, and 12.5% participants rated these experiences as Neutral. Figure 3 shows the rating of the graphical representation of experience, followed by Figure 4 which compares group excersise and experience.

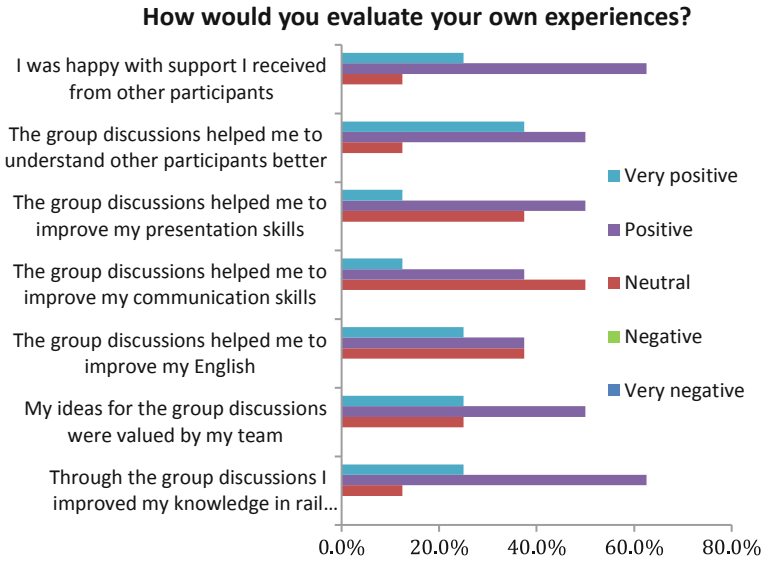

Fig. 3 Experience evaluated

Question Three: Favourite talk(s) with reasons

This was the first descriptive question asking the participants about their favourite talk/topic along with a reason to support their answer. Participants indicated they liked these talks/topics the most with: "Rail freight interchanges", "Vision for the rail freight system" and "Rail freight system in the UK" rating highly. Even though the participants liked the same talk/topic the reasons given were entirely different and unique. This information is illustrated in Table 1. Three participants did not respond to this question.

Question Four: Language barrier—Yes or No

Participants were asked if English language was a barrier in understanding the talks. Furthermore, they were asked to support their answer with a reason. The majority of the participants voted No—55.6% while the rest voted Yes—44.4%. Figure 5 shows the graphical representation of participants who voted Yes and No.

37.5% of participants voted No due to unknown technical terms. 12.5% of participants voted No due to unclear instructions and lack of railway background. The rest had unique reasons for voting their respective options. Figure 6 shows the graphical percentage distribution of participants' reasons for voting Yes or No.

Question Five: Recommend course to others—Yes or No

Participants were asked if they would recommend this training course to other delegates. Similar to question five, they were to choose Yes or No and support their answer with a reason. 71.4% of participants voted Yes while the remaining 28.6%

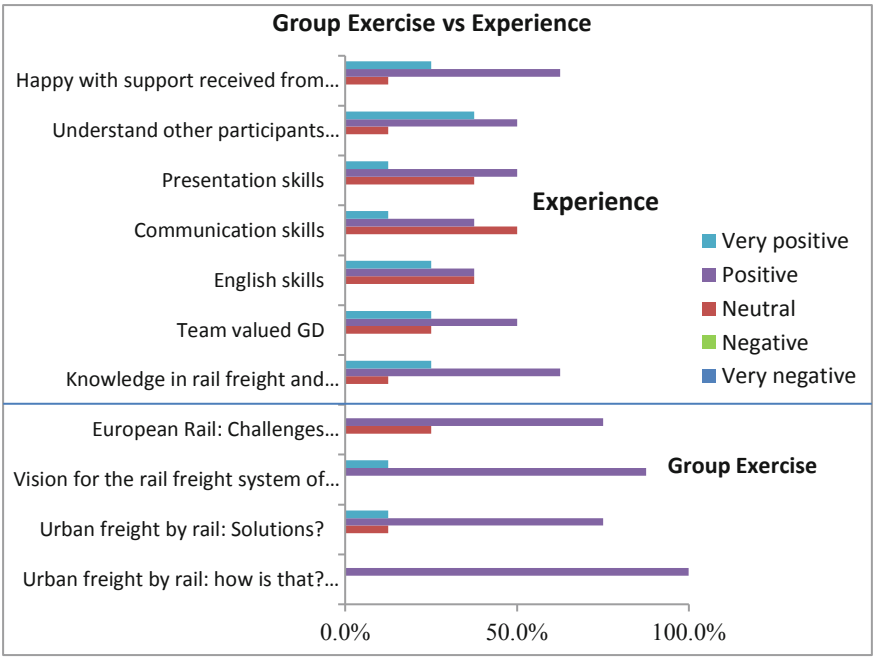

Fig. 4 Comparison of group exercise and experience

Table 1 Favourite talk/topic and why

Which talk/topic on Rail Freight & Logistics during the course did you enjoy best?		
	Talk/topic	Reason
1	i. Rail freight interchanges ii. Opening freight terminal sidings iii. Innovation in rail freight vehicles	Both issues link directly with my new project
2	i. Rail freight system in the UK and the development ii. Rail interface	
3	i. Rail industry in the UK ii. Software designed to improve rail operations	Possibility to apply them to Thailand railway system
4	i. The vision for the rail freight system ii. Urban freight by rail	Used problem-solving skill to answer relevant questions. Made us think out of the box
5	The vision for the rail freight system of the future	Creative and out of the box thinking to generate ideas without considering reality. Can increase the participation of group members
6	Group discussion—European Commission	Fun to exchange ideas through what we read

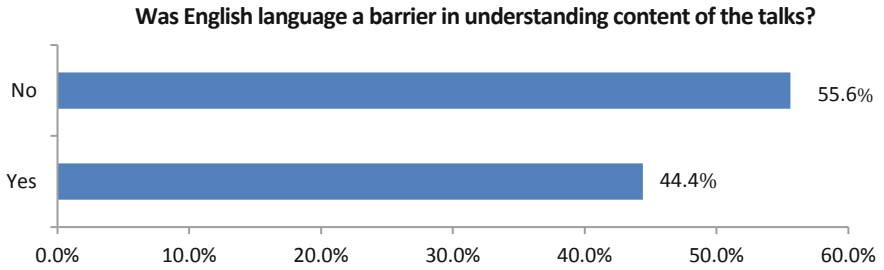

Fig. 5 Language barrier

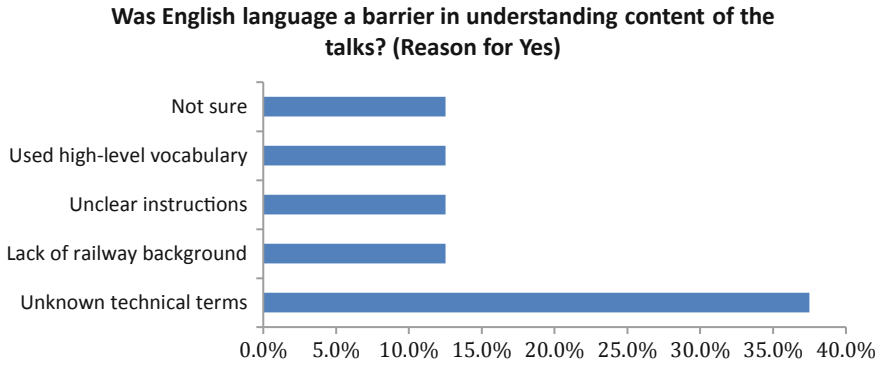

Fig. 6 Reasons for the language barrier

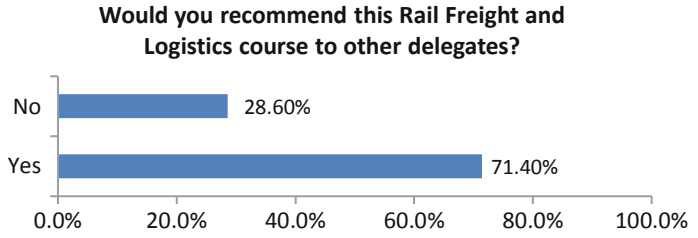

Fig. 7 Percentage of participants voting Yes or No

voted No. Figure 7 shows the graphical percentage distribution of participants voting Yes or a No.

Some of the common reasons for voting Yes were the quality of content in the talks, the participants could learn about the recent innovations in rail freight and logistics. Common reasons for voting *No* were the difficulties in understanding the English language and lack of railway knowledge by participants.

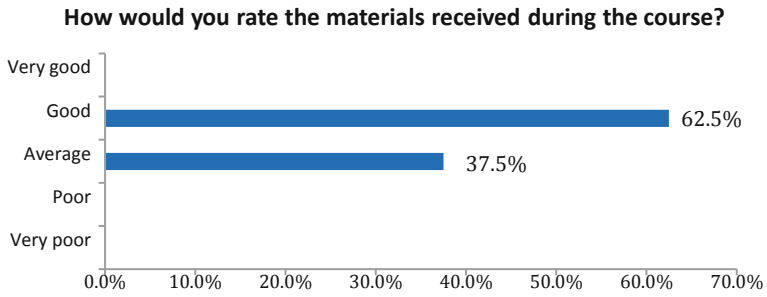

Fig. 8 Participants rating on the materials provided

Question Six: Rate materials received

Here participants were asked to rate the learning materials received during the course. The rating ranged from Very poor to Very good. The majority of the participants rated the materials as Good—62.5% while the rest rated the materials as Average—37.5%. Figure 8 shows the graphical percentage distribution of participants rating the materials provided. Specific improvements suggested by the participants are discussed later on in question 10. It is a common practice for training courses in Thailand for the participants to receive the learning material, lectures included, before the course start date. It was argued that such a practice does not always lead to a positive learning outcome and therefore it was changed. Learning material was distributed after the lectures and for each group exercise. As the participants were not accustomed to such a practice, they thought, the learning material would be of no significant use after the lectures have been given.

Question Seven: Best feature of the course

Participants were asked what they felt was the best part of the training course. This was a descriptive question. Most participants liked the fact that they were learning something new in rail freight and logistics. The lectures gave an excellent overview of how the rail freight system operates within the scope of international logistics. The group also enjoyed learning about techniques applicable to the current situation with Thai railways and rail management in the country. Table 2 shows the answers given by every participant. All participants responded to this question.

Question Eight: Worst feature of the course

Participants were asked what they felt was the worst part of this course. Similar to question 8, this too is a descriptive question. According to the feedback forms, they felt that they could not completely make use of the course due to the language barrier, lack of rail freight and logistics knowledge. Apart from this, they feel the lecturers did not explain concepts using simple words.

Moreover, their instructions during the group exercises were unclear. Table 3 shows the answers by each participant. No response from one participant.

Table 2 Participants' most liked component of the course

	Overall, what was good about this course?
1	Learning a new field
2	More pictures and clear concept
3	The lecturer explained clearly, and lecturer is kind
4	Group discussions
5	Learnt more about rail freight, some techniques could be applied to Thailand railway system
6	Learning rail management, problems in EU and improvement plan, UK rail regulation
7	Overall picture and process to operate the rail system
8	The theory is good and More knowledge about transportation

Question Nine: Suggested improvements

Here participants were asked their opinion on how this training course could be improved. Options were given, and they had to choose either Yes or No. Furthermore, they suggested methods which were not included in the options provided. Most participants felt the organisers of the course could include more online material, lectures, and group discussions, besides organising workshops. They suggested to avoid promotional materials, include technical visits and give time for research activities. Apart from this, the participants would like to see more pictures/videos while learning about new concepts and mechanisms of equipment. A glossary sheet including key terms and definitions is also suggested by the participants. A list of abbreviations should also be developed and distributed before the course start date. Both the glossary and the list of abbreviations would be of significant importance for participants to familiarise themselves with the technical terms and the jargon used during the course. This would help participants overcame any barriers to technical language, engage more easily and benefit from all learning activates involved. Figure 9 shows the graphical percentage distribution of options they would like to be implemented in this course.

Question Ten: Influence on career plans

In the last question, participants were asked if this course influenced their career paths. It was a Yes/No question; they had to give reasons to support their answer. 50% of participants felt it would influence their career plans, while the remaining 50% felt it would not influence their career plans. Figure 10 shows the graphical percentage distribution of participants voting Yes or No.

Common reasons were given by participants for Yes: career path involves the railway industry (37.5%) and believes Thailand is improving the railway system (12.5%). Common reasons for voting No: career path does not involve the railway industry (25%) and feels Thailand uses fewer railways for import and export of goods

Table 3 Participants' least liked part of the course

	Overall, what was bad about this course?
1	Cannot participate all course
2	Too many texts
3	Lengthy course and need to do work together
4	Basic knowledge not provided
5	No proper introduction to rail freight (difficult for participants with little knowledge to understand)
6	Presentation slides hard to understand (use simple words to explain), lack of pictures/video clips used while explaining
7	Need more clarity with examples, videos involving movement (e.g. hump, terminal, interchange)
8	Lack of simplified explanations with videos for proper understanding

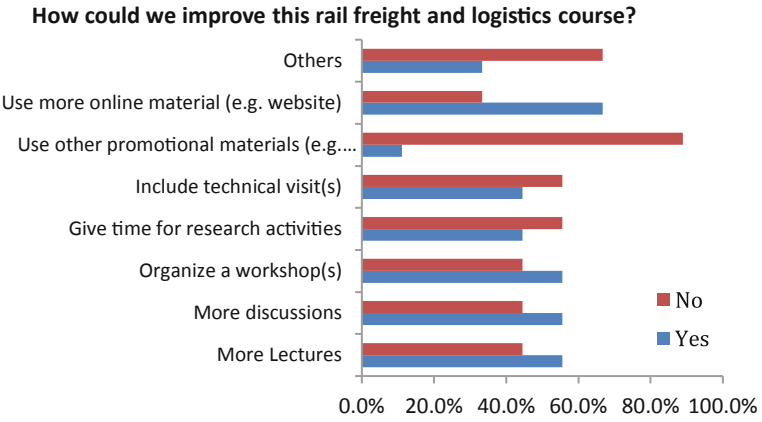

Fig. 9 Percentage distribution of preferable methods to use for improvement

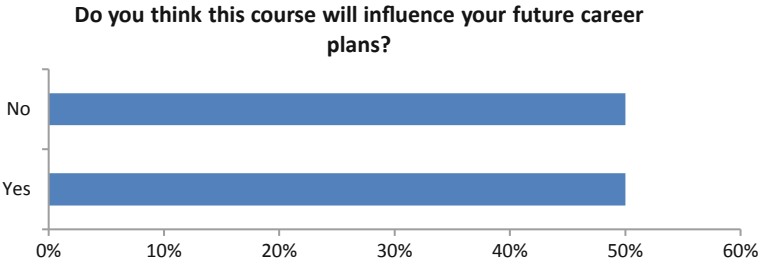

Fig. 10 Percentage of participants voting a Yes or No

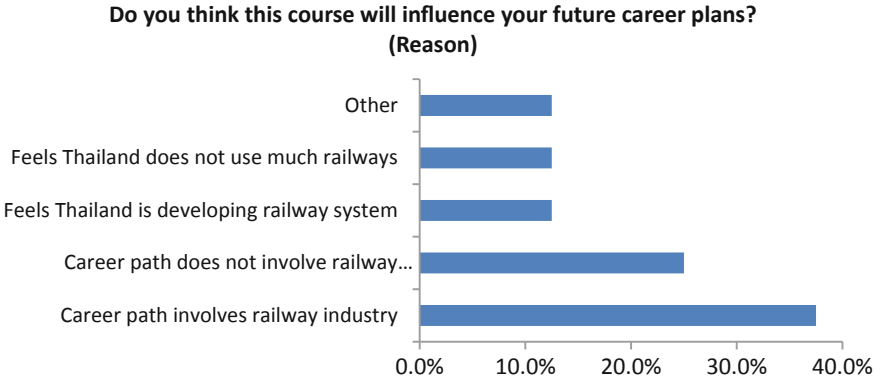

Fig. 11 Percentage distribution of reasons for voting Yes or No

(12.5%). Figure 11 shows the graphical percentage of reasons provided for voting a Yes or a No.

5 Conclusions and Recommendations

After the five-day training course, an analysis of participants' feedback showed a positive view of the training course. The participants found the course helpful and meeting their expectations. Participants provided constructive criticism and useful recommendations for future courses as follows:

- Participants were keen to learn about the innovations made in the Rail freight and Logistics industry.
- Active participation was observed in most group exercises. Participants enjoyed the exercises involving the vision for future rail freight system.
- Language barriers of participants restricted them from having a better experience during the course.
- Participants had difficulty in understanding highly technical terms.
- Communication between participants enabled them to understand course concepts in their native language and should be encouraged.
- Most of the participants would recommend this training course to other delegates.
- Participants felt this course could be improved by adding more lectures, discussions and using more online materials.

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References

Dawson A, Braz L, Blauensteiner B, Isler C, Dias A, Asaff Y, Marinov M (2017) Evaluation of a rail-orientated researcher links workshop. In: Rail Exchange, vol 2, 2017, Sustainable Rail Transport. Springer

Fraszczyk A, Marinov M, Woroniuk C. (2012) Innovative forms of education in rail freight and logistics. In: 4th International scientific conference on transport problems, 2012, Politechnika Slaska, Katowice-Slemien, Poland

Fraszczyk A, Dungworth J, Marinov M (2015) Analysis of benefits to young rail enthusiasts of participating in extracurricular academic activities. Soc Sci 4(4):967–986

Fraszczyk A, Dungworth J, Marinov M. (2015a) An evaluation of a successful structure and organisation of an intensive programme in rail and logistics. In: The 3rd UIC world congress on rail training, 2015, Lisbon, Portugal

Fraszczyk A, Drobisher D, Marinov M (2016) Statistical analyses of motivations to participate in a rail-focused extra-curricular activity and its short terms personal impacts. In: 7th International conference on operations and supply chain management, Phuket, 2016. The Laboratory of Logistics and Supply Chain Management, Phuket, Thailand

Fraszczyk A, Weerawat W, and Marinov M (2017), Exchange of higher education teaching and learning practices between the United Kingdom and Thailand: a case study of RailExchange courses. In: Sustainable rail transport, pp 241–256. https://doi.org/10.1007/978-3-319-78544-8_13

Indian Railways (2017) Annual report, 2016

Lautala P, Edwards R, Rosario M, Pachl J, Marinov M. (2011) Universities in Europe and the united states collaborate to develop future railway engineers. In: WCRR - the 9th world congress on railway research, 2011, Lille, France

Marinov M, Fraszczyk A (2013a) Workshop on rail education: academia, industry, research, engagement, promotion, co-operation. In: 4th World conference on learning teaching and educational leadership (WCLTA-2013)

Marinov M, Fraszczyk A (2013b) Valorisation of an MSc programme. In: 4th World conference on learning teaching and educational leadership (WCLTA-2013)

Marinov M, Fraszczyk A (2014) Curriculum development and design for university programmes 301 in rail freight and logistics. Procedia Soc Behav Sci 141:1166–1170

Marinov M, Ricci S (2012) Organization and management of an innovative intensive programme in rail logistics. Procedia Soc Behav J 46:4813–4816

Marinov M, Viegas J (2011) Tactical management of rail freight transportation services: evaluation of yard performance. Transp Plan Technol 34(4):363–387

Marinov M, Zunder T, Islam D (2010a) Concepts, models and methods for rail freight and logistics performances: an inception paper. In: Proceedings media of the 12th world conference on transport research, 2010. World Conference on Transport Research, Lisbon, Portugal

Marinov M, Zunder T, Schlingensiepen J, Ricci S, Karagyozov K, Razmov T, Dzhaleva-Chonkova A (2010b) Innovative concepts for knowledge exchange, mobility and expertise in rail freight and logistics. In: Highlight 2010: sustainable development in logistics (ICLEEE) international conference of logistics, economics and environmental engineering, 2010, Vocational College of Traffic and Transport, Maribor, Slovenia

Marinov M, Pachl J, Lautala P, Macario R, Reis V, Edwards R (2011a) Policy-oriented measures for tuning and intensifying rail higher education on both sides of the Atlantic. In: 4th International seminar on railway operations modelling and analysis (IAROR), 2011. International Association of Railway Operations Research, Rome, Italy

Marinov M, Mortimer P, Zunder T, Islam D (2011b) Short haul rail freight services. RELIT - Revista de Literatura dos Transportes 5(1):136–153

Marinov M, Fraszczyk A, Zunder T, Rizzetto L, Ricci S, Todorova M, Dzhaleva A, Karagyozov K, Trendafilov Z, Schlingensiepen J (2013) A supply-demand study of practice in rail logistics higher education. J Transp Lit 7(2):338–351

Office of the National Economic and Social Development Board (2016a) Macroeconomic indicators
Office of the National Economic and Social Development Board (2016b) Thailand logistics report
Office of Transport and Traffic Policy and Planning (2017a) Action Plan for Transportation Development in Thailand
Office of Transport and Traffic Policy and Planning (2017b) Action Plan for Transportation Development in Thailand
Tsykhmistro S, Cheptsov M, Cheklov V, Marinov M (2014) Euro-Asian co-operation in rail education and research. Transp Prob: Int Sci J 9(1):103–110
Woroniuk C, Marinov M, Zunder T, Mortimer P (2013) Time series analysis of rail freight services by the private sector in Europe. Transp Policy 25:81–93

E-Sources

SRT (2018) Retrieved from http://www.railway.co.th. Accessed on 22nd Aug 2018
ThaiRailTech (2017) Retrieved from www.thairailtech.or.th. Accessed 22nd Aug 2018
SET (2017) Retrieved from www.set.or.th. Accessed on 22nd Aug 2018