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Developing the patients’ loyalty model for medical tourism industry: the case of Malaysia

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Abstract: Medical tourism is nothing new for certain developing countries. This industry is a good money generator to help economic growth and balance of payment of a country. This paper will identify several issues faced by Malaysia in its quest to remain competitive in this industry. The study is aimed to determine which factor is the most importance in providing a high contribution towards medical tourism. This research work assessed four dimensions under human capital construct, and also four dimensions under the physical infrastructure construct. The study also included one mediator construct linking the relationship between each exogenous construct and the intended endogenous construct namely the behavioural loyalty. The study employed stratified sampling method to obtain random sample from foreign tourists seeking treatments in three cities namely Kuala Lumpur, Malacca and Penang. The study utilises partial least square path modelling (PLS-PM). Finally, the result revealed that human capital, high technology, physical infrastructure, and patient satisfaction have positive impact on patient loyalty. Furthermore, the human capital construct was seemed the most importance factor in contributing to the success of medical tourism.

Keywords: medical tourism; partial least square; structural equation modelling; measurement model; behavioural loyalty; importance-performance matrix analysis; IPMA; Malaysia.

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1 Introduction

Medical tourism is not a new phenomenon for the elite of developing and developed countries. Most of this system has been implemented in developing countries such as Singapore, Thailand, Japan, South Korean, Malaysia and so forth to generate the economy countries besides encourage the tourist to travel their country (Awang et al., 2015b). This system is deemed pivotal factors to empower the economy country at the higher level. In accordance of Pocock and Phua (2011), the medical tourism is introduced when most of the Asia region faced the difficulties economy in 1997. Thus, most countries had planned to provide an alternative approach to improve their economy. One of the prominent systems is medical tourism. In that time, medical tourism is also known as healthcare travel and thus brings the same concept to generate the income of country.

Malaysia is also one of the favourite foreign patients to travel in this particular country. This is because Malaysia has a few characteristic that meet their requirement to get the better treatment from this country. In contrast to Europe region, the cost of medical treatment is much higher than Malaysia due to their high value of currency even they provide a modern and high quality treatment. Moreover, the patient is more prone to obtain a better treatment without a tremendous regulation that has been implemented in some other countries.

In order to heighten the quality of the medical treatment, Ministry of Health had established Medical Healthcare Travel Council (MHTC) in 21st December 2009, which is one of the platform to promote and positioned Malaysia as the preferred destination for world-class healthcare services. Besides, this company also aimed to promote and facilitate the development of the Malaysian healthcare industry so as to penetrate the global market (MHTC website).

Today, Malaysia is rapidly becoming the preferred healthcare destination from across the world for many reasons such as affordable cost, wide range of specialist, more advanced technologies, high quality medical care, and shorter waiting period (lack of regulation). These factors, combined with diverse tourism products in the country manage to offer the perfect package for medical travellers.

In order to explore the behavioural loyalty of foreign patient towards medical tourism in Malaysia, this study is aimed to determine the influence of exogenous constructs namely quantity and quality labours, education and skill training, language in medicine research, brain drain and brain gain, high tech medicine, telecommunication, power supply, public transport, money and banking through patient satisfaction as mediator construct on behavioural loyalty. Thereby, behavioural loyalty is considered as a tools to measure the satisfaction of foreign patient. In addition, this study also interested to apply IPMA to identify which factors is the most importance and performance to benefit on
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medical tourism. The objective research is designed based on our literature reviews that need the hypothesis testing to strengthen our deduction towards medical tourism. There are some objective research that will be test in our findings using PLS-PM:

1. to evaluate the first order and second order constructs involved in the study
2. to assess the inter-relationship among the exogenous constructs namely human capital, patient satisfaction and the intended endogenous construct patient loyalty
3. to ascertain the effect of high tech medicine in the patient satisfaction model
4. to ascertain the effect of physical infrastructure on patient satisfaction and patient loyalty model
5. to determine the effect of patient satisfaction on patient loyalty model
6. to identify the most important construct among the exogenous effecting the endogenous construct in this study.

2 Literature review

One of the main objectives of any business organisation is to enhance and maintain customers or normally termed as customer loyalty (Dick and Basu, 1994). Many studies have proven customer loyalty has a positive effect on the growth survival of any business economically. Influencing this outcome variable, there are two predictor variables namely customer attitude and customer behaviour. These two constructs have already been discussed long time ago to understand the relationship among them. However, some researchers employ both variables in their study such as in brand performance (Chaudhuri and Holbrook, 2001), repeat purchase (Jacoby and Kyner, 1973), service loyalty (Gremler and Brown, 1996), mismanagement (Reinartz and Kumar, 2002) and customer loyalty (Rauyruen and Miller, 2007).

2.1 Human capital

In the discussion of human capital, there are two issues that have been raised in most developed and developing countries. The first issue is about the production of human capital and the second issue is about the retention of human capital. Indeed, the question regarding the training of workers has been discussed extensively in job industrial. This is because the effort to keep skilled labour in the country from leaving and contribute to competitor countries labour force is a prolonged issue and even been admitted is as unsolved problem. In the first place the government has to invest for their training while taking risk taking unskilled workers into the workforce prior to their graduation and become skilled workers. However, most of these skilled workers would leave for better remuneration elsewhere. This has caused the huge loses to the government.

According to Prestowitz (2005), “The Virtually endless supply labor, much of it skilled, in China and India, combined with the negation of time and distance by the internet and global air delivery will create a new challenging competitive environment for the countries, companies, and individuals”. Based on his view, education and skills are the most important factors to generate high quality products for the development of any
country (Luić and Galinec, 2015). For instance, education is compulsory to train unskilled workers to man high technology machines, train them the skill in handling major problems, and to comply with stipulated procedures. Their expertise can accommodate the necessity of quality labour to generate the economic growth of a country. Therefore, countries having good quality of human capital are enjoying good growth economically.

2.2 Quality and quantity of labour for medical tourism

In accordance of Bookman and Bookman (2007), the countries require both appropriate quality of labour as well as sufficient quantities of it to supply medical tourist services. Accordance of his view, a high number of skilled worked are needed to improve the growth of medical tourism in terms of develop in economy sectors. The quality of labour are comprised of an adequate education, skills, and training that capable to adapt a new environment and condition, willing to think creatively and beyond, keep follow the instructions, and quickly respond in various situation. Thus, the particular skills demanded by economy sectorial is tandem with the changing of demand of the economy (Hashim et al., 2016). In that time, the necessary of high skilled worker today are much stronger than the lower skills of workers based on their expertise.

However, the government have to face difficulties to possess a high skill worker in a short period in order to compete with the neighbour countries in medical tourism. The question is raised on how they want to train the workers in a short time. Alternatively, countries start opens their doors to obtain skilled immigrants. Nolan and Slater (2003) predicts that will be more labour mobility in this century because of the revolution in information and technologies have become actively get an attention to penetrate the market and management sectors. In other words, the high skill labours are necessary to sustain the growth of economy sectors and thus quantity of high skill labour is also needed.

2.3 Education and training of skills for medical tourism

Education is the most important basis for developing and developed countries. Truthfully, the higher level of education will contribute a higher level of productivity, even lower skill labour also contribute on services system (Bookman and Bookman, 2007). In other words, both of the high and lower skill labours are important to embody a better organisation including of medical tourism. For instances, the highly skilled physician will be contribute for the operationalising system in while the lower skill labour would contribute for improvement of condition rooms in order to satisfy the necessary of patient.

Moreover, the basic education need quite high literacy rates in order to contribute a high impact on economy sectors. Most of developing countries that practice the growth of medical tourism usually have a high literacy rates including Malaysia as presented in Table 1.

As noted in Table 1, all countries have literacy rates in the range between 85% and above. This result can be a proof to justify that literacy is an important part to influence of medical workers. Tertiary education is a pivotal subject to determine of what insofar strength and quality in education system applied from various countries. This is because tertiary education is crucial in medical tourism congruent of rapidly increasing
technology and information today. By inspecting through of each mathematics and science subjects, all countries obtained above 350 mean score. This seems indicate that indicator of tertiary education have an ability to compete in the global economy. Therefore, the requirement of country to obtain high skill labour in tertiary education gradually increasing every year.

Table 1 Indicators of human development

| Country     | Adult literacy 2012 (%) | Mean score of mathematics 2009 | Mean score of science 2009 |
|-------------|-------------------------|-------------------------------|----------------------------|
| Argentina   | 97.2                    | 388                           | 401                        |
| Chile       | 95.7                    | 421                           | 447                        |
| Costa Rica  | 94.9                    | 419                           | 416                        |
| Cuba        | 99.8                    | NA                            | NA                         |
| Singapore   | 92.5                    | 562                           | 542                        |
| Jordan      | 92.6                    | 405                           | 387                        |
| Malaysia    | 88.7                    | NA                            | NA                         |
| Philippines | 92.6                    | NA                            | NA                         |
| South Africa| 86.4                    | NA                            | NA                         |
| Thailand    | 92.6                    | 421                           | 419                        |
| Indonesia   | 90.4                    | 370                           | 383                        |

Source: CIA Factbook (2012) and Malik (2013)

2.4 The language medicine in medical tourism

English language is an international language that has been applied in most developing countries to encourage the tourist to travel their country. The domination of this particular language facilitates the tourist to communicate with the local people when they are in need. As a result, India and Philippines have an advantage over other countries as English is one of their official languages (Bookman and Bookman, 2007). Therefore, fluency in English along the high skill of labours enable of developing countries to growth rapidly in economy sectors especially medical tourism.

2.5 Brain drain and brain gain in medical tourism

The issues of brain drain and brain gain is not a new thing in medical tourism industry. Brain drain refers the high skill workers leave the country where they were trained in order to pursue opportunities abroad (Bookman and Bookman, 2007). This situation would harm the country that provides them a better training. This is because the cost incurred by government is very high to train them in order to sustain their workers to contribute in medical tourism industry. Consequently, most government now open up the possibility of brain gain of highly skilled workers. The high skill workers carries a high contribute towards the economy nation based on their productivity and revenue to government.

Therefore, Malaysia also show their eagerly movement to launch TalentCorporation which is aimed to return of Malaysian professionals from abroad to overcome the shortage of professional and technical expert in the country, towards creating a
world-class workforce in Malaysia, particularly in the context of driving the Economic Transformation Programme (ETP). Thus, there are several benefits to capture an attention of local professional abroad such as optional flat tax rate within 15%, tax exemption on personal effects, tax exemption on car, and permanent resident status for foreign spouse and children. All of these advantages are implement to facilitate the problems of professional abroad. Basically, Talent Corporation also serves other service for unemployment graduate in a variety field in order to achieve the objective of Malaysia becoming as a high income nation by 2020.

According to Boeri (2012), they suggest that sending professionals abroad can accelerate development at home via remittances and the return of new ideas and skills, so there can be a ‘brain gain via a brain drain’ for migrant-sending countries. Based on their view, sending professional abroad was a good way to contribute the economy sector of their origin country in double situation, in particular, they can learn the skills of productivity from other country and at the same time they can continuously send the information so that their country always up to date. This win-win situation can benefit to their country besides improve the skill of workers.

World Health Organization (WHO) suggests the doctor patient ratio is 1:600 as practice among developed countries (The Star, 27 May 2013). At present Malaysia was achieved at 1:800 which is expect with the 3,500 doctors that were produced annually. Therefore, Malaysia still requires more expertise workers in medical field to contribute in healthcare sectors.

Table 2 Brain Drain, 2014

| Country        | Retain talented (rank) |
|----------------|------------------------|
| Argentina      | 3.3 (79)               |
| Chile          | 4.8 (15)               |
| Costa Rica     | 4.8 (16)               |
| Singapore      | 5.2 (8)                |
| Jordan         | 3.9 (43)               |
| Malaysia       | 5.1 (9)                |
| Philippines    | 3.5 (60)               |
| South Africa   | 3.7 (50)               |
| Thailand       | 4.1 (33)               |
| Indonesia      | 4.2 (32)               |

Note: Values range between 1 and 7 (7 is the highest score), and country rank is in parentheses.

Source: World Economic Forum (2014), Table 5

2.6 Physical infrastructure

Extensive and efficient infrastructure is an important factor in determining location of economic activity are move in well condition. Well-developed infrastructures reduce the effect of distance between regions, integrating the national market and connecting it at low cost besides helping the workers to and from many places. The flow of the management sectors becoming more advance due to the complete of facilities provided.

For instance, the Thai Government wants to create a modern service-oriented economy to compete with other countries in global economy sectors. In order to achieve
its goal, Thailand is investing heavenly in infrastructure starting in 2005 approximately $41 billion (Bookman and Bookman, 2007). The better infrastructure is comprised of electricity, transportation, housing, irrigation, health and education. In other words, countries that have a well-developed structure are better positioned to promote and provide medical tourism in a world class level.

| **Country** | **Infrastructure (rank)** |
|-------------|---------------------------|
| Argentina   | 3.54 (89)                 |
| Chile       | 4.56 (49)                 |
| Costa Rica  | 4.08 (73)                 |
| Singapore   | 6.54 (2)                  |
| Jordan      | 4.11 (71)                 |
| Malaysia    | 5.46 (25)                 |
| Philippines | 3.49 (91)                 |
| South Africa| 4.29 (60)                 |
| Thailand    | 4.58 (48)                 |
| Indonesia   | 4.37 (56)                 |

*Note: Values range between 1 and 7 (7 is the highest score), and country rank is in parentheses.

Source: World Economic Forum (2014), Table 5

As an evident in Table 2, all of the countries that practice of medical tourism system have a good quality of infrastructure which is within top 100. This is seems infrastructure system is an important factors to provide causal effect on medical tourism. Logically, a good infrastructure would provide a good integration of works and thus affect the growth of economy countries.

Recently, Malaysia has faced extraordinary flood in east coast such as Kelantan, Terengganu, and Pahang in early December 2014 which is Kelantan is the worst situation (Utusan Online, 2014). Thus, Government of Malaysia suggests to builds highway water to launch the movement of water during heavy rain that causes the extraordinary flood (Utusan Online, 2014). This is seems the good quality is not only to accommodate and facilitate the flow of vehicles on the road but should be congruent for the movement of water.

For instances, when infrastructure applied is deficient and inadequate, then the whole system implemented are affected due to fail to transport the tourist to their location need; difficulties medical supply; financial institution cannot provide more clinics and hospitals, limited accommodations, lack of restaurant, public transport, inaccessibility of internet, telephone, and so forth. All of these ultimately dera il of economic growth since this factors is the most significant.

Therefore, if the government policy to promote and position the medical tourism in a high class level as well as goal of Malaysia, the quality of infrastructure should be stressed to reaching its potential as a first class in healthcare sector. The government should ensure that transport, power supply, and water are adequate to attract the foreign patient to travel this country. Therefore, the spending of government on infrastructure system is needed to provide a better service oriented for economic growth.
2.7 Telecommunication system

Today, telecommunication is recognised as a main communication that can help people to make a conversation and contact in a far distance even across the neighbour country. With the increases in telephone usage per capita, the ease with which international media has permeated the lives of distant communities, the growth of astonishing computers and internet as personal and business tools (Bookman and Bookman, 2007).

By these communication provided, the accessibility and mobility for personal business and company would be more advanced. In fact, the people lately use internet for doing their work, chat with their friends and family, business online, to get information and knowledge, articles, journals, video, YouTube, blogger, twitter and so forth. This seems indicate that telecommunication system should be extended to ascertain the people doing their work every time.

In Malaysia, telecommunication also rapidly increasing implemented for business and education system. For instances, Malaysia introduce 1Bestari.net that has been implemented in primary and secondary school to improve the quality of education besides assists the teachers doing their work.

| Country      | Internet users (rank) | Mobile telephone subscriptions (rank) | Fixed telephone lines (rank) |
|--------------|-----------------------|--------------------------------------|-----------------------------|
| Argentina    | 59.9 (53)             | 159.0 (14)                           | 23.3 (49)                   |
| Chile        | 66.5 (43)             | 134.3 (38)                           | 18.2 (64)                   |
| Costa Rica   | 46.0 (73)             | 146.0 (27)                           | 19.9 (56)                   |
| Singapore    | 73.0 (33)             | 155.6 (17)                           | 36.4 (31)                   |
| Jordan       | 44.2 (76)             | 141.8 (31)                           | 5.2 (105)                   |
| Malaysia     | 67.0 (41)             | 144.7 (30)                           | 15.3 (73)                   |
| Philippines  | 37.0 (91)             | 104.5 (86)                           | 3.2 (113)                   |
| South Africa | 48.9 (69)             | 147.5 (25)                           | 9.2 (90)                    |
| Thailand     | 28.9 (96)             | 138.0 (34)                           | 9.0 (91)                    |
| Indonesia    | 15.8 (112)            | 121.5 (54)                           | 16.1 (71)                   |

Note: Values range between 1 and 7 (7 is the highest score), and country rank is in parentheses.

Source: CIA Factbook (2012)

In addition, Telekom Malaysia Berhad (TMB) recently known as a leading national broadband will be able to broaden the range of services as well as domestics connection to meet the growing industry demand for the applications. TMB will build a new submarine cable system called Sistem Kabel Rakyat 1Malaysia (SKR1M). The SKR1M will span approximately 3,500 km with an initial capacity of 4 Tbps and enhance the submarine cable connectivity between Peninsular, Sabah and Sarawak (The Star, 2014).

2.8 Electrical supply in Malaysia

Electrical supply is not only important in medical tourism but also encompasses across all sectors for production, switch on machines, telecommunication, etc. Therefore, electrical power supply is crucial across the world that helps to create better workforce.
In medical tourism, the usage of power supply is important to provide medical treatment. For instances, if the hospitals faced the problems of blackout and brownouts in power systems, the hospital should have their independent generator for power supply to continue their operation services (Bookman and Bookman, 2007). According to Nation Master, as a country, Malaysia is ranked at 25th in the world in 2012. This rank shows that the power supply in Malaysia is adequate and this factor might be the source to affect the tourist interest towards Malaysia.

**Table 5** Quality of electricity supply

| Country       | Electricity supply (rank) |
|---------------|--------------------------|
| Argentina     | 2.6 (123)                |
| Chile         | 5.4 (54)                 |
| Costa Rica    | 5.6 (42)                 |
| Singapore     | 6.7 (6)                  |
| Jordan        | 5.4 (49)                 |
| Malaysia      | 5.7 (39)                 |
| Philippines   | 4.2 (87)                 |
| South Africa  | 3.6 (99)                 |
| Thailand      | 5.1 (58)                 |
| Indonesia     | 4.3 (84)                 |

Note: Values range between 1 and 7 (7 is the highest score), and country rank is in parentheses.

*Source:* World Economic Forum (2014), Table 5

**Table 6** Indicator of public transport rank

| Country       | Quality of roads (rank) |
|---------------|-------------------------|
| Argentina     | 3.0 (110)               |
| Chile         | 5.1 (31)                |
| Costa Rica    | 2.8 (119)               |
| Singapore     | 6.1 (6)                 |
| Jordan        | 4.1 (61)                |
| Malaysia      | 5.6 (6.9)               |
| Philippines   | 3.6 (87)                |
| South Africa  | 4.9 (37)                |
| Thailand      | 4.5 (50)                |
| Indonesia     | 3.9 (72)                |

Note: Values range between 1 and 7 (7 is the highest score), and country rank is in parentheses.

*Source:* World Economic Forum (2014), Table 2.02

### 2.9 Public transportation in Malaysia

Transportation system is crucial for economic development as they enable the movement of goods, services and resources across the country, and thereby enable the commercialisation to thrive (Bookman and Bookman, 2007). Malaysia serves several
public transportation that can assist the tourist to sight-seeing around the city especially in Kuala Lumpur. This transport is much safe and easy for tourist continuous their travel by Light Rail Transit (LRT), Commuter, Bus, Taxi and monorail.

2.10 Money and banking

The banking system ensures a safe store of assets. For medical tourists, banking system is crucial to facilitate them to draw cash, cheque deposit, and any transaction related to finance and banking. Therefore, the tourists need the conveniently located ATM from which he can easily get cash on demand (Bookman and Bookman, 2007). Besides, safety of customer at bank area should be prioritised in order to prevent them from being targeted by criminal.

Table 7 Indicator of country credit rating and ease of access to loans

| Country    | Country credit rating (rank) | Ease of access to loans (rank) |
|------------|-----------------------------|--------------------------------|
| Argentina  | 31.6 (104)                  | 1.7 (134)                      |
| Chile      | 80.6 (20)                   | 3.7 (20)                       |
| Costa Rica | 56.0 (58)                   | 2.2 (118)                      |
| Singapore | 90.9 (9)                    | 4.5 (4)                        |
| Jordan     | 42.0 (76)                   | 3.6 (925)                      |
| Malaysia   | 72.0 (32)                   | 4.8 (2)                        |
| Philippines| 55.5 (59)                   | 3.5 (30)                       |
| South Africa | 59.1 (51)               | 3.5 (32)                       |
| Thailand   | 63.5 (43)                   | 3.6 (23)                       |
| Indonesia  | 56.6 (57)                   | 3.9 (15)                       |

Note: Values range between 1 and 7 (7 is the highest score), and country rank is in parentheses.

Source: World Economic Forum (2014), Table 8.04

Recently, Malaysia is astonished by several incidences where the ATMs in certain areas in the city have suffered the break-ins. For instances, a Latin American gang exploited flaws in the authentication process to hack into at least 14 automated teller machines (ATM) in Selangor, Johor, and Malacca and got away with almost RM3mil (The Star, 30 September 2014). This situation can hamper the safety of customer whom use these services and thus would harm the banking trusting.

2.11 High tech medicine and traditional healing for medical tourism

Most developed countries spent some billions of dollars for healthcare service to obtain high tech medical equipment to capture an attention of tourist to get the better treatment from that country. For instances, Western region advanced their effort to improve the medicine machine at spa, public and private hospitals, and clinics. The machines used are more convenient and safe to handle for the health treatment.

However, traditional healing also suggested in some other countries such as India, China, Chile, Jordan and Thailand negating the high modern machine. These countries prefer to promote the healthcare service using traditional healing completely such as
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herbs medicine, Thai massage, medical therapies, yoga, tai chi, water spring, acupuncture and so forth (Bookman and Bookman, 2007).

In order to extend the market segment in healthcare sectors, some of the developing countries implement both of this technique and Malaysia is also including serve this technique. Malaysia is comprised of multi-racial such as Malay, Chinese, and India as major community since Independence Day in 1957. Therefore, Malaysia has diverse medicine using traditional healing and thus the tourist has opted to choose any technique that are appropriate to be treated.

2.12 Patient satisfaction towards medical tourism in Malaysia

Today, patient satisfaction factor is a prominent factor that will be tested to determine insofar of customer satisfaction towards the service provided. As aforementioned above, there are many factors contribute to patient satisfaction including of quality and quantity labours, education and skill training, language in medicine research, brain drain and brain gain, telecommunication, power supply, public transport, money banking, and high tech medicine. All of these factors would reflect the patient satisfaction towards the healthcare service implemented.

According to Myles et al. (2000), patient satisfaction is an important measure of quality of care that can contribute to a balanced evaluation of the structure, process, and outcome of services. Based on their view, this study is relevant to include patient satisfaction in a structural model.

2.13 Behavioural loyalty towards medical tourism

This study will use behavioural loyalty as an outcome factors to determine the loyalty measure was drawn from the extant services. Thus, the model would be created based on other exogenous construct to determine the medical treatment in Malaysia that has a potential to compete with neighbour countries. In this case, behavioural loyalty is suitable to measure the patient satisfaction in Malaysia. Moreover, this factor has a potential to determine the behaviour of patient whether they will be loyal to get this country or convert to other countries. This factor can make a prediction of behaviour of foreign patient.

3 Research methodology

The study employed stratified sampling technique, which is one of the probability sampling methods for data collection. There are three big cities that serve the patient tourist service, which is in Kuala Lumpur, Penang, and Melaka areas. These places are recognised as preferred destination for tourist that travels to Malaysia. According to Hair et al. (2010), the minimum sample size in statistical research suggested is to obtain a sample based on ten-to-one ratio. For instances, if the researcher has 57 items in their questionnaire designed, the minimum sample size suggested is $57 \times 10 = 570$ of sample size from its population. Plus, Hair et al. (2010) also contended that for any research that requires doing the factor analysis procedure to determine the dimensionality for the items employed, the sample size obtained should at least five times as many items to be analysed.
The questionnaire is designed based on our literature review that included all of the variables in order to achieve our objective research. Human capital consists of 25 items: Quality and quantity labour (8 items), Education and training (6 items), Language (5 items), and Brain drain (6 items). Physical infrastructure also consists of 25 items: telecommunication (7 items), power supply (5 items), public transport (8 items), and money and banking (5 items). Subsequently, main construct of high tech medicine and patient satisfaction consists of 6 and 7 items respectively. The outcome variable which is patient loyalty consists of 10 items that represent of attitudinal and behavioural loyalty. These items developed based on our discussion with the expert in this particular field. At the outset, we distribute the questionnaire with a small sample size for pilot study. In this stage, we adopt focus group interview with our respondent. This technique used is more reliable since the respondent can give their prompt feedback if they do not understand on some statements. After the pilot study is finished, we analyse the reliability of this datasets. Fortunately, our Cronbach alpha shows that our questionnaire is significant reliable which is about 0.954. To improve the statement in our questionnaire, we purify our questionnaire based on our view of respondents before proceed to distribute the questionnaire.

3.1 Theoretical framework for the study

![Theoretical framework for the study](see online version for colours)
3.2 Partial least square structural equation modelling

PLS-SEM is one of the composite modelling that gaining momentum recently to compete with other methods in marketing and management disciplines. Truthfully, PLS-SEM is an alternative method to CB-SEM for exploratory purpose which means the statistical method only relevant for the theory development as this study proposed (Awang et al., 2015a). Apart from that, PLS-SEM is a non-parametric technique with the integrating of bootstrap to handle a large datasets. This feature enables assessment and ultimately elimination of variable characterised by weak measurement (Chin et al., 2008).

The widespread application of PLS-SEM has led to numerous advances that extend the methods capabilities and even become a main choice of most of the researchers today. The non-parametric of PLS-SEM is suit with the non-normal data that has implemented by researcher to better understand the relationship of the factors involved in the study. To obtain data that meet fully requirement of parametric technique is not a simple task even they are interested to apply SEM. The bad conditions of their data enforce them to manipulate their data in order to execute the SEM approach. In fact, to obtain the normal data is very rare happen in a variety discipline since they have to face existence of outlier and missing value if they intend to apply normal technique. Therefore, this approach is acceptable for the exploratory study.

4 Finding

Using PLS algorithm in Smart PLS 2.0, the outer loadings for each manifest variable has to exceed 0.60 as recommended by Hair et al. (2010). This is to imply that the indicators are valid to be discussed in the subsequent analysis. In addition, the absolute value within each endogenous constructs has to be higher than 0.50. The value inside the latent construct represents the square of multiple correlation or $R^2$. This value determines the contribution of certain particular component to the study.

Specifically, the patient loyalty is the main outcome factor that reflects the strength of this study. In particular, patient loyalty revealed that 0.774 or 77.4% of total variation in patients’ loyalty can be explained by the constructs included in the structural model. In other words, there are 22.6% of the variation are influenced by other factors. However, high total variation is adequate to indicate that the finding is meaningful. In terms of patient loyalty construct, it comprises of two components namely attitudinal loyalty and behavioural loyalty. In previous study, these components are crucial in measuring the extent of loyalty among foreign medical tourists towards medical services in Malaysia. The PLS algorithm obtained the $R^2$ for attitudinal and behavioural to be 0.695 and 0.593 respectively. Based on these impressive results, it indicates that the factors included in the model for this study is meaningful.

Figure 2 presents the results of outer loadings for every latent construct. By inspecting these factor loadings, the study concludes that the factor loading for all manifest variables exceed the value 0.60. In the procedure, the study removes item having low factor loading from the measurement model. The low factor loading indicate the item is not meaningful to measure the respective latent construct and should not be included for the next analysis (Afthanorhan, 2013; Afthanorhan et al., 2014). High factor loading items in a construct would provide good measure for that particular latent constructs and subsequently give accurate result for the findings.
The assessment of correlation between latent constructs would be made once the unidimensionality problem is solved. In the reflective measurement model, several validity and reliability approaches are suggested for assessing measurement model. If the validity and reliability assessment fail to achieve the required level, the findings from the analysis would not be meaningful for the whole study. One element which is unfortunately not considered to be included in PLS-SEM is the goodness of fit (GoF) indexes, which indicate how good the proposed model to the data from the field is. Henseler and Sarstedt (2013) put forth that this approach has been challenged recently as a reason for not including a good of fit criterion in PLS-SEM since the fitness indexes are unable to make distinction between a valid models from an invalid model. In other words, this approach is not helpful to describe the whole quality of the factor involved in the study. In addition, the GoF is only appropriate to assess the structural model and not for the measurement model.

The next step is to obtain the discriminant validity index. The criterion of discriminant validity was initiated by Fornell and Larcker (1981) to assess the distinction between constructs in the model. In accordance of Hair et al. (2014), discriminant validity is the extent to which the indicators of a construct represent a unique construct and that construct indicators are distinct from other construct in the same model. In this study, the discriminant validity requirement was achieved, so the next step was to examine the structural model result dependent on the predictive relevance, $Q^2$ using blindfolding procedure. This procedure is applied to assess the fitness of structural model whether the factors involved are really relevance or irrelevance.
The reflective measurement model assessment in PLS analysis include composite reliability (CR) to evaluate the internal consistency among items in each construct, item loading, and the average variance extracted (AVE) as an assessment for convergent validity. Another element included is the Fornell and Larcker criterion to evaluate the discriminant validity among the research models involved in the study (Chin, 1998; Hair et al., 2006; Henseler et al., 2009). This assessment is only adequate for the reflective measurement model in SEM; the type of model involved in this study.

Table 8 presents the values of AVE, CR, square multiple correlation ($R^2$), and Cronbach alpha. These techniques represent the validity and reliability assessment of reflective measurement model. By inspecting through AVE, the first order and second order model are well defined since all AVE values are higher than 0.50. In accordance of Hair et al. (2010), AVE is well defined as the mean value of the squared item loadings associated with the construct and an AVE value of 0.50 or higher is adequate for each construct to explain more than half of its correspondent items or manifest variables. Therefore, the finding revealed all variables in structural model are acceptable as valid and reliable.

Table 8  Reliability and validity of a model

| Constructs   | AVE     | Composite reliability | R-square | Cronbachs alpha |
|--------------|---------|-----------------------|----------|-----------------|
| Attitude     | 0.758755| 0.926348              | 0.694974 | 0.894104        |
| Behavioural  | 0.727448| 0.914306              | 0.593238 | 0.875320        |
| Brain drain  | 0.522852| 0.810202              | 0.748792 | 0.683124        |
| Education    | 0.568303| 0.884933              | 0.806361 | 0.840508        |
| High-tech    | 0.731309| 0.942268              |          | 0.926427        |
| Human        | 0.865367| 0.912456              |          | 0.890564        |
| Language     | 0.530436| 0.847219              | 0.796342 | 0.771661        |
| Loyalty      | 0.610688| 0.861879              | 0.773622 | 0.786547        |
| Money        | 0.712356| 0.925240              | 0.792276 | 0.898882        |
| Physical     | 0.866754| 0.944321              |          | 0.923345        |
| Power        | 0.718655| 0.927157              | 0.730959 | 0.901154        |
| Public       | 0.594464| 0.921051              | 0.85432  | 0.901320        |
| Quality      | 0.612714| 0.926304              | 0.797731 | 0.908290        |
| Satisfaction | 0.588131| 0.908888              | 0.627418 | 0.882824        |
| Telecom      | 0.742321| 0.952729              | 0.827999 | 0.942037        |

In addition, CR, also presented in Table 8 indicates the reliability of indicators in every construct and component in structural model using PLS algorithm. Basically, CR values for the constructs were satisfactory since all values are higher than 0.70 (Nunnally and Bernstein, 1994; Afthanorhan and Ahmad, 2014; Awang, 2012, 2014). In this stage, the internal consistency among items in every construct is confirmed since all the constructs meet the requirement.

4.1 Discriminant validity

Table 9 present the result of discriminant validity between exogenous construct. The correlation between exogenous latent construct is below the threshold 0.85 as recommended by literature. Discriminant validity is the extent to which the indicators of
a constructs and the construct’s indicators are distinct from other constructs in the model. The results indicated that the model constructs were reliable and valid. So, the next step was to examine the structural model results as shown below.

Table 9   The discriminant validity index summary

| Construct                  | Human capital | High tech medicine | Physical infrastructure | Patient satisfaction |
|----------------------------|---------------|--------------------|-------------------------|---------------------|
| Human capital              | 0.930251      |                    |                         |                     |
| High tech medicine         | 0.544828      | 0.8552             |                         |                     |
| Physical infrastructure    | 0.806952      | 0.527911           | 0.930997                |                     |
| Patient satisfaction       | 0.537182      | 0.772350           | 0.556365                | 0.766896            |

4.2 Structural model analysis

PLS-SEM relies mostly on the bootstrapping technique to obtain the estimates for parameters and also the probability values to assess its significance. Indeed, the bootstrapping function is also in CB-SEM but this function is only used to estimate the direct and indirect effect for testing mediation, and not for normal parameter estimates. In the normal parameter estimates, the CB-SEM employs the best algorithm available namely the maximum likelihood estimator (MLE). The bootstrapping is only employed in CB-SEM for special cases where the data distribution departs heavily from normality. As opposed to CB-SEM, in PLS-SEM the bootstrap is executed to obtain not only the parameter estimates but also for estimating outer loadings as well.

Figure 3   Path coefficient of medical tourism (see online version for colours)

Structural Model Analysis
Hair et al. (2010) and Afthanorhan and Ahmad (2015) put forth that resampling using 5,000 samples is more appropriate to obtain the fixed standard error for the parameter estimates. Therefore, this study would apply the 5,000 bootstrap samples to obtain very parameter estimate together with its corresponding probability value. The result of bootstrap parameter estimate and its probability value for every path are presented in Table 10.

Previously, the study explained the effect of each factor under study to assess the quality of healthcare service in Malaysia and to determine the level of patient loyalty towards this particular service. In this case, there are three exogenous constructs involved namely human capital, high-tech medicine and physical infrastructure. Human capital and physical infrastructure constructs consists of four components respectively, while high-tech medicine is a first order construct. Furthermore, patient loyalty also constitutes two components namely attitudinal loyalty and behavioural loyalty. The study intends to measure the level of satisfaction and loyalty among foreign medical tourists towards medical service in Malaysia.

Table 10  Path coefficients for structural model

| Structural model                  | Original sample (O) | Sample mean (M) | Standard deviation (STDEV) | Standard error (STERR) | Probability |
|-----------------------------------|---------------------|-----------------|----------------------------|------------------------|-------------|
| Value (t-test)                    |                     |                 |                            |                        |             |
| High tech -> Satisfaction        | 0.661922            | 0.663793        | 0.023319                   | 0.023319               | 28.3855     |
| Human capital -> Brain drain      | 0.875893            | 0.876160        | 0.007827                   | 0.007827               | 111.9066    |
| Human capital -> Education        | 0.911390            | 0.911434        | 0.005389                   | 0.005389               | 169.1204    |
| Human capital -> Language         | 0.892380            | 0.892582        | 0.006681                   | 0.006681               | 133.5698    |
| Human capital -> Loyalty          | 0.413083            | 0.412883        | 0.055846                   | 0.055846               | 7.39682     |
| Human capital -> Satisfaction     | 0.025322            | 0.024508        | 0.043494                   | 0.043494               | 0.58219     |
| Human capital -> Quality          | 0.893158            | 0.893288        | 0.007964                   | 0.007964               | 112.149     |
| Patient loyalty -> Attitudinal    | 0.891163            | 0.891250        | 0.007024                   | 0.007024               | 126.874     |
| Patient loyalty -> Behavioural    | 0.877902            | 0.877953        | 0.009395                   | 0.009395               | 93.44353    |
| Patient satisfaction -> Loyalty   | 0.493164            | 0.493649        | 0.032087                   | 0.032087               | 15.3698     |
| Physical-> Money                  | 0.890099            | 0.890347        | 0.007572                   | 0.007572               | 117.5514    |
| Physical -> Loyalty              | -0.237241           | -0.237691       | 0.061354                   | 0.061354               | 3.8668      |
| Physical -> Satisfaction         | 0.185787            | 0.185236        | 0.042917                   | 0.042917               | 4.32898     |
| Physical-> Power supply           | 0.854961            | 0.854988        | 0.011667                   | 0.011667               | 73.2803     |
| Physical -> Public transport      | 0.940974            | 0.941104        | 0.004680                   | 0.004680               | 201.063     |
| Physical-> Telecom                | 0.909945            | 0.909882        | 0.008176                   | 0.008176               | 111.2946    |

Based on the results in Table 10, the output consist of five columns namely original sample, sample mean, standard deviation, standard error, and t-test respectively. In the t-test, the standard error can be treated as standard deviation which is contrary to that of z-test. Thus, the finding of standard error and standard deviation is similar. Almost all parameter estimates from exogenous constructs on endogenous constructs was positive causal except one exogenous construct namely physical infrastructure to patient loyalty.
The negative coefficient indicates that that exogenous construct relates negatively to patient loyalty.

By emphasising on the human capital construct, all sub-constructs namely quality and quantity labour, education and training, brain drain and language have significant influence on the main construct of human capital. This indicates that the sub construct that relies on human capital are fit to be tested in this study. By regarding on this latent constructs, education and training component was a primary latent construct that provide the higher effect on human capital whereas brain drain has the lowest effects on this particular construct.

Next, physical infrastructures also constitute four component likely human capital. In these instances, the four components are comprised of money and banking, power supply, telecommunication and public transport. Based on finding revealed, all of the components exhibited are fit to the physical infrastructure. Means that, the study that involving of these component in medical tourism case is reliable since all of the factors are significant different with physical infrastructure. In order to judge which factor is the most contribution, the beta coefficient was be considered. Basically, a high beta coefficient was carry a meaningful construct in the related study. In this case, public transport factor is the most important in physical infrastructure.

Then after, high tech medicine variable do not has component that can be fit with this particular factor compare to human capital and physical infrastructure. Based on the previous study, high tech medicine is suit for testing the patient satisfaction towards the medical tourism. Consequently, this study associates this factor on patient satisfaction that needs to be tested. In this stage, PLS-SEM suggests that the high tech medicine has a significant impact on patient satisfaction and thus can be considered that this variable might be tangible to affect the patient intention.

In most management and marketing research, patient satisfaction variable is compulsary to be included in their study to measure the level of satisfaction of customer so as well as in this study. Consequently, all of these exogenous construct namely human capital, high tech medicine and physical infrastructure impose on patient satisfaction. However, one of latent construct namely human capital is not significant impact on patient satisfaction since the t-test is less than 1.96. One can be conclude that, human capital construct is not an issue in medical service in Malaysia instead patient are concurs to state the physical infrastructure and high tech medicine are really important to affect their satisfaction.

Ultimately, patient loyalty constitutes of two components namely attitudinal and behavioural. Usually, the factor of attitudinal and behavioural would be tested separately to measure the customer satisfaction and loyalty in their research. However, this study includes both of these components in a same outcome variable (patient loyalty). The respondents agree to put forth that attitudinal and behavioural has significant different with their loyalty. Means that, attitudinal and behavioural are fit in patient loyalty. Plus, other exogenous latent constructs namely human capital, physical infrastructure and patient satisfaction are significant impact on patient loyalty. One can be conclude that, these exogenous constructs applied are significant in medical tourism. Previously, human capital do not has significant impact on satisfaction but this factor become provide a significant impact once impose on loyalty. Moreover, this factor is better compare to physical infrastructure since has less parameter estimates.

Even the parameter estimate was suggested to differentiate which factor is the most important in this study, but this approach is inadequate to reflect all the importance and
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performance of each factors involved in the study. Therefore, this study would be extended to subsequent approach namely importance-performance matrix analysis (IPMA). This approach was conducted at the next stage to really identify the most contribution factor that might be a main source in Medical tourism Malaysia. Thus, to complete the aimed of this research, the total effect results also needed to equip the IPMA approach at the next step. The result of total effect can be seen in Table 12 that looks likely the path coefficient table. Total effect is the sum total of direct effect and indirect effect once execute the bootstrap technique. This non-parameter technique considers much aspect to provide a true probability that can be used for managerial decision.

In order to assess the structural model of medical tourism, the Stone-Geisser’s Q² for endogenous constructs was conducted using Blindfolding procedure. Henseler and Sarstedt (2013) stated that the predictive relevance greater than zero are indicating acceptable in the study. Based on the result exhibited, all of the endogenous constructs applied are acceptable and therefore the study is valid to proceeds the bootstrap technique. In addition, the closer value of predictive relevance to absolute 1, the more relevance of that particular factor in the study. Overall, the factor developed in this study are supported based on the results obtained from the PLS analysis.

Table 11 Predictive relevance

| Constructs               | R-square | Predictive relevance (Q²) |
|--------------------------|----------|---------------------------|
| Attitudinal              | 0.694974 | 0.596606                  |
| Behavioural              | 0.593238 | 0.604799                  |
| Brain drain              | 0.748792 | 0.346934                  |
| Education training       | 0.830631 | 0.470522                  |
| Language                 | 0.796342 | 0.421392                  |
| Money and banking        | 0.773622 | 0.563837                  |
| Patient loyalty          | 0.792276 | 0.311802                  |
| Patient satisfaction     | 0.730959 | 0.365353                  |
| Power supply             | 0.885432 | 0.524310                  |
| Public transport         | 0.797731 | 0.520530                  |
| Quality and quantity     | 0.627418 | 0.487468                  |
| Telecommunication        | 0.827999 | 0.614205                  |

Table 12 illustrates the diagnostic value of importance and performance of each sub constructs and main constructs by obtaining from the PLS algorithm. This analysis builds on the PLS estimates for the relationship in the conceptual model (importance of each latent variables) and the latent variables average values (performance), which are available for PLS but not for CB-SEM approaches. In further explanation, the default report in SmartPLS indicates the LV index value as performance index. Specifically, our importance performance analysis of the main outcome variable, the outcome variable, patient loyalty, focuses on the importance of four drivers medical tourism depicted in Figure 1 and the performance of the research hypothesis on these four constructs. In order to facilitate interpretation of the performance values, we rescaled the indicators and unstandardised latent variable score to range from 0 to 100, before computing their averages as representations of the extensions performance (Ahmad and Afthanorhan,
2014). Plus, the score between this particular range facilitate the researchers to identify the rating of each variable involved in the study.

**Table 12 Importance-performance matrix analysis**

| Main constructs | Sub constructs | LV index values | Total effects |
|-----------------|----------------|----------------|---------------|
| Patient loyalty | Attitude       | 81.06274       | 0.8337        |
|                 | Behavioural    | 71.88976       | 0.7702        |
| Human capital   | Brain Drain    | 82.14323       | 0.8653        |
|                 | Education      | 80.88753       | 0.9114        |
|                 | Language       | 81.57228       | 0.8924        |
|                 | Quality        | 78.58172       | 0.8932        |
| Physical infrastructure | Money     | 80.90825       | 0.8901        |
|                 | Power          | 81.20414       | 0.855         |
|                 | Public         | 79.93734       | 0.941         |
|                 | Telecom        | 80.98598       | 0.9099        |

| Overall constructs to patient loyalty | Performance | Importance |
|--------------------------------------|-------------|------------|
| High tech medicine                   | NA          | 79.09726   | 0.1994     |
| Patient satisfaction                 | NA          | 80.28870   | 0.3027     |
| Patient loyalty                      | NA          | 78.71617   | NA         |
| Human capital                        | NA          | 79.78640   | 0.5784     |
| Physical infrastructure              | NA          | 80.6001    | 0.1808     |

Usually, the predictive relevance ($Q^2$) must be reported first to allow for data point predictions of the indicators in measurement model for the endogenous constructs as implemented in this study. Overall, our predictive relevance is achieved as depicted in Table 11. As aforementioned, human capital, physical infrastructure which is exogenous constructs has four components respectively. Based on the findings exhibited, brain drain achieves a relatively high performance value (82.14323) for the outcome patient loyalty which is a component for main construct of human capital. However, brain drain factor is classify as lowest importance in human capital. For respondent suggestion, education and training is the most importance factor in human capital. The high education level can facilitate the government to manage the variety of industry such as tourism, safety, human resources, education, healthy, and economy besides to heighten the image of our country. Therefore, the government should stress on the education system in Malaysia since this particular factor can generate a positive growth of medical tourism sector.

In physical infrastructure construct, power supply achieves a relatively high performance value (81.20414) for the medical tourism study. Means that, our country is better in providing of power supply that fulfil the patient needed. Thus, the managers should work maintain this performance level. However, the respondent opined that the public transport factor is the most importance in physical infrastructure. This factor should be highlight by government to provide more invest in public transportation system. In fact, this system also has been advance by most of the developing and developed country to compel the foreign patient towards our healthcare services.

Overall, our physical infrastructure thus far is a good performance since the findings claim that this exogenous construct is the best. However, there are still needs to be
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improve in physical infrastructure likely public transport since the respondent opined that this factor is the most importance. Moreover, respondent are likely to state that human capital construct is the main important in this study. By thorough research, we can conclude that this factor has been a long debated since early of 1990 to characterise that the discussion of human capital should be stressed. Plus, education component which is part of human capital is too really significant by respondent suggestion already robust on our decision that education still need be improvement. Therefore, one can be conclude that the importance factor is consider as important factor that might affect the medical tourism system whereas the performance value can be indicate as to what achievement of our country thus far.

5 Conclusions

In the first place, this study used medical tourism as a research subject to carry on the PLS-SEM approach in order to achieve the research hypothesis. Previously, the authors interest to apply CB-SEM to carry on the structural model since the sampling technique used is a probability sampling besides having the large datasets. However, during the confirmatory factor analysis conducted to assess the fitness of measurement model applied, the fitness of measurement model fail to meet the required level. Failing to meet the requirement of CB-SEM causes us to use an alternative SEM namely PLS-SEM. In accordance of Ringle et al. (2012), PLS-SEM can carry on the non-parametric and parametric technique since the bootstrap technique also integrated. He also states that the result of both of this approach should be almost similar if the researchers use the CB-SEM appropriately. So, we worth noting that PLS-SEM as our alternative approach to obtain the parameter estimation and standard error for hypothesis testing. Using the PLS algorithm, the outer loadings and factor loadings was exhibited with above 0.60. The high factor loading is perceived carry the meaningful means to reflect of our measurement model suggested. Items with below 0.60 will be removes and thus only high factor loading remain in the measurement model. To assess the reflective measurement model, the reliability and validity should be achieved. By using an appropriate technique, the Cronbach alpha, AVE, CR, and discriminant validity were success. Then after, the bootstrap techniques used to obtain the standard error and parameter estimation. The appropriate technique would lead us to obtain the true probability of estimation and thus the finding would be more meaningful.

Bootstrap technique well known as non-parametric technique but become helpful used when to handle the non-normal data (Byrne, 2013). To improve the robust relationship of parameter estimates and standard error, we use 5,000 resampling and 836 cases based on our datasets. Plus, Hair et al. (2010) prefers to use 5,000 resampling in order to let the bootstrap would converge at the right point of estimation and error. Then after, the result of parameter estimate is exhibited at each of the path estimate in structural model suggested. Using this particular technique, the PLS-SEM revealed that all of the components are significant impact with their own main construct respectively. By focuses on the main construct that impose on mediator variable, patient satisfaction, human capital construct do not has a significant impact on this mediator variable. However, respondent on this particular study agree that the human capital, high tech medicine, physical infrastructure and patient satisfaction has a significant impact on
patient loyalty. Means that, this exogenous constructs involved in this study are adequate to measure the patient loyalty model. In particular, human capital and physical infrastructure as exogenous constructs have four components respectively.

In order to conduct the research thoroughly, IPMA approach was conducted to extend the capability of structural model. This approach would facilitate the researchers to identify which construct can be considered as importance and performance variable. Importance variable will be measure on the basis to examine which variable is important in this study based on respondent feedback in associated of total effect of structural model. In a while, performance variable would be perceived by how much performance of our achievement in the related study. In this approach, we can relate of which factor has a high relatively importance and performance. We figure out that brain drain achieve a high relatively performance in human capital. Means that, our respondents opined that the brain drain and brain gain factor is strongly active in our country. In fact, respondent state that this factor is not the importance thing to be performed in this country. For instances, our educated and high skilled people would be dedicated to get the job from other countries that can offer them with a high paying of salary. This situation would waste of our country since their skill can facilitate the government to generate the economy sectors. In order to solve this issue, Malaysia Government enforces to recruit the foreign workers for development in a variety sectors. In order to settle this issue, Malaysia government establish TalentCorporation to promote and encourage the local people outside to give their service in their origin country. Therefore, respondent agree the performance of this factor and thus the manage should maintain this performance factor and attempt to focus on other important factor. In this approach, PLS algorithm suggest that education factor is the most important factor in human capital construct. Based on its performance, education is the second bottom and lowest performance is quality and quantity of labour. Logically, the education part is really associated with the quality of labour (lowest performance). For instances, a quality labour must be educated and high skill to provide a better service for the patient needed. If not, the patient will be unsatisfaction with healthcare service and thus impair the image of our country.

The second main construct is physical infrastructure. This factor also provides four components as well as human capital construct. Using the same approach, power supply achieve the most perform in physical infrastructure construct compare to other factor. This is seem our country is success to provide an equip of power supply for foreign patient. As previous literature review, some of them need the power supply to facilitate them to commit their work. Hence, Malaysia Government can focus on other factors that seem important. For respondent opinion, public transport is the most important factor that should be highlighted by Malaysia Government. Public transport is not only helping the foreign patient can get this service easily but also permit the local people to use this system. It is inevitable to state that public transport facilitates the people to and from other places besides prevent the traffic congestion. For instances, the public transport likely commuter, LRT, and monorel only exist at the Kuala Lumpur network. In fact, this accessibility and mobility should be expanded to other states so that the local people enjoy this service. Therefore, this factor is pivotal since associate in many aspects and this approach is success in determining the main issue.

Then after, this approach is preceded to the main constructs such as human capital, physical infrastructure, high tech medicine and patient satisfaction to patient loyalty model. In obtaining of path estimate by bootstrap technique, human capital construct is fails to meet the significant impact on patient loyalty. However, IPMA approach show
the distinct finding when human capital construct is seem the most important factor in this study. This differ result causes us gain momentum to explore more of the human capital construct in future research. This factor can be indicate that human capital may not provide a significant impact on patient loyalty but this is the important issue should be addressed. For performance measure, physical infrastructure is the most performance factor compare to other factor. In reality, Malaysia Government now aggressive to build a high technology of infrastructure for welfare citizens conformity of their targeted to become a high income nation by 2020. Therefore, the government effort is laudable in advancing the modern infrastructure but still need improvement especially of public transport.

5.1 Recommendation

Once the research hypothesis has been made, the recommendation is needed to guide the researcher take the action seriously. In this subtopic, the study intends to provide suggestion for the most importance factor that should be performed. There are two folds that will be discussed for improvement.

1. education and training
2. public transport.

Beginning on education system that has been implemented in our country:

1. Ministry of Education should review the syllabus for each important subject likely mathematics and science in all levels such as primary, secondary, and higher institutions.

2. The Malaysian Government target to improve the enrolment of vocational student to 40% by 2020. In fact, this target is still far and previous researches claims that the vocational students is only 10% of total student population.

3. The Ministry of Human Resource aimed to produce high quality of labour. However, the effort needs further improvement since certain agencies under this ministry still performing below expectation.

4. Most of the graduates are getting the job that do not match their expertise. Thus, the high learning institutions should consider this mismatch seriously.

5. Certain percentage of labour force still do not possess IT-literate. In some way, this handicap could impair the quality of works.

6. Multinational corporations require workforce having soft skills especially communication. Thus, the education system need to enhance their effort regarding this issue.

Next, the public transportation issue will also be discussed since the findings revealed the importance of this factor. Thus, there are several suggestions that might be useful for managerial implication:

1. The LRT network should be extended to cover all major cities in the country.
The public transportation should work at minimising delays since it would incur losses to the organisation due to delay arrivals of workforce.

The convenience of travelling to work would comfort workforce to their work places. Indirectly, this could improve their knowledge by reading while travelling.

5.2 Direction for future research

In providing amicable solution, the future researches should employ more variables into the patient loyalty model. In addition, the study should take into consideration the assumptions of parametric technique so that the parametric SEM namely CB-SEM could be employed for analysis. In accordance of Hair et al. (2010), if the data meet the assumption of parametric analysis, the CB-SEM is much preferred compared to PLS-SEM. To improve the validation of the measurement model, the future study needs to collaborate with more experts in the particular field in order to enhance the face and content validity of the measuring items. The study should employ probability sampling technique properly to ensure the randomness of the sample and the representativeness of its population. The randomness of the sample and representativeness of the population would produce accurate data and the parametric SEM (CB-SEM) could be employed. As opposed to exploratory results from PLS-SEM, the results from CB-SEM are confirmatory. Thus, the best patient loyalty model for medical tourism industry in the country.

Competing interest

The authors have declared that no competing interests exist.

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