Understanding Blood Donor Intention: Towards Sustainable Blood Supply in Malaysia

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Abstract

Malaysia is facing a shortage of blood supply despite blood donation campaigns and drives; the number of donors remains low. Understanding donors and potential donors will provide a basis to develop effective approaches of reaching them. Therefore, this study was conducted to identify specific socio-demographic characteristics and factors influencing the intention to donate blood among working adults in Malaysia. Driven by positivist approach and based on the Theory of Planned Behaviour, data were collected from 295 working adults. The data was analysed using Partial Least Square Structural Equation Modelling (PLS-SEM) approach. The findings indicated that attitude, subjective norms and perceived behavioural control are the predictors for working adult's intention to donate blood. The results revealed are believed to be valuable for the National Blood Centre to develop strategies to motivate, recruit and sustain sufficient number of blood donors. It is suggested that future studies should explore donor's perception and expectation to identify factors that have positive or negative effects on their motivation or have already deterred them from donating blood.

Keywords: blood donation, intention to donate blood, theory of planned behaviour

Introduction

Blood is a vital health care resource used in a broad range of clinical services. Donated blood is an essential component of health care that contributes to saving millions of lives each year in both routine and emergency situations. It also helps in complex medical and surgical interventions and dramatically improves the life expectancy and quality of life of patients with a variety of acute and chronic conditions (World Health Organization (WHO, 2010). Global Database on Blood Safety (GBDS) estimated that a total collection of 112.5 million blood donations were made in 180 countries and more than half of the blood are collected in high income countries (WHO, 2017). It is further reported that chronic blood shortage are common in developing countries, due to low donation rates (WHO, 2016).

The provision of sufficient supply and the quality as well as safety of blood is the responsibility of the government and should be an integral part of each country's national healthcare policy and healthcare infrastructure. Blood management in Malaysia is under the governance of Malaysian National Blood Centre, or *Pusat Darah Negara* (PDN). They are responsible in collecting, processing and supplying blood and blood products for patients in government and private hospitals. Blood procurement in Malaysia primarily focuses on voluntary non-remunerated sources (Ministry of Health Malaysia, 2006). WHO (2010) defined voluntary non-remunerated blood donor as individuals who give blood, plasma or cellular components on his or her own free will and receives no payment, either in the form of cash or in kind which could be considered a substitute for money. Most countries urgently need a

substantial increase in the number of people who are willing and eligible to donate blood in order to ensure a stable supply of safe blood and blood products that are sufficient to meet national requirements (WHO, 2010).

There were few initiatives implemented by the Malaysian government to create awareness, interest and willingness among the public to be involved in blood donation programs such as intensive advertising, establishment of donation suites in shopping malls, providing incentives to blood donors and collaborations with other government institutions for blood donation campaigns (Nur Hairani, Muhammad Asri & Mohammed Farhan, 2018). The initiatives have resulted in positive signs in meeting the needs of patients, in which there is an increase in the number of donors from 180,052 in 2016 to 180,651 in 2017 (Malay Mail, 2018). Despite the increase number of donors, Malaysia is still considered facing a critical blood shortage (Seong, Raffeal & Ayob, 2014; Bernama, 2015) due to several reasons such as the rising of population number and clinical demand (Seong et al., 2014; Nur Hairani, Muhammad Asri & Mohammed Farhan, 2018) and much of the growth in donor numbers are due to repeat donors instead of new donors (Ling, Hui, Tan & Ling, 2018).

Given the blood shortage in Malaysia, it is crucial to understand the determinants of blood donation intention among Malaysians. Understanding the influencing and motivating factors towards the intention and willingness to donate blood is crucial (Stoker & Mosley, 2010) and central for policy making. Additionally, a better understanding of the factors influencing blood donor intention will assist the government in developing communication strategies and materials to build a sustainable blood supply. Thus, this study is conducted to investigate blood donor intention among working adults in Malaysia, guided by the Theory of Planned Behaviour.

Review Of Literature

Given the blood shortage in Malaysia, it is crucial to understand the determinants of blood donation intention among Malaysians. Understanding the influencing and motivating factors towards the intention and willingness to donate blood is crucial (Stoker & Mosley, 2010) and central for policy making. Additionally, a better understanding of the factors influencing blood donor intention will assist the government in developing communication strategies and materials to build a sustainable blood supply. Guided by Theory of Planned Behaviour (TPB) developed by Ajzen (1991), there are three factors that influence behavioural intention namely, attitude, subjective norm and perceived behavioural control (PBC).

Intention of Blood Donation

Blood donation is a symbol of unselfish act and a strong desire for helping. Helping behaviour is explained as behaviour or actions to provide help or benefit that can enhance the welfare of needy people without expecting any reward in return (Charsetad, 2016). Psychological states such as altruism, cognitive attitude and high level of anxiety and previous blood donation experiences have high probability of influencing individuals' intention to becoming a blood donor (Gazibara et al., 2015). Certain socio-demographic factors have the potential to create a certain amount of conscious effort in the individual which lead to behavioural intentions. Individual's education level also influences the intention and willingness to donate blood (Hamid, Basiruddin, & Hassan, 2013). Moreover, individual will probably engage with the intention and the actual behaviour to donate blood in the future because people who have a high intention have a strong feeling of commitment to donate their blood and few researchers have found that individuals who have donated their blood were found to have greater intention to donate blood compared to those who have never donated (Hamid, Basiruddin, & Hassan, 2013).

Attitude

Previous study agree that social attitudes control human behaviour (Ajzen & Fishbein, 1956). Attitudes can result in both positive and negative outcomes (Gao & Wang, 2017). According to Kirchmaier,

Prüfer and Trautmann (2018), positive attitudes were found to positively influence blood donation intention and behaviour among the respondents. Past studies have shown that altruism, cognitive attitude, high self- efficacy, lower anxiety levels, and previous blood donations are associated with a higher likelihood of becoming a blood donor (Gazibara et al., 2015). Moreover, the attitude, beliefs, and level of knowledge related to blood donation can influence the disposition of potential blood donors (Nwogoh, Aigberadion, & Nwannadi, 2013). However, according to Kim & Chung (2011), several studies have shown that a person may have a positive attitude towards a certain behavior but he or she might not have the intention to perform the behaviour. A person's positive attitude on blood donation may not always lead to the intention to donate blood (Kim & Chung, 2011).

Subjective Norm

Subjective norm is defined as an individual's perception of social pressure and thus reflects the beliefs about the normative expectations of others (Ajzen & Fishbein, 1980; Ajzen, 2002). It can also be defined as any social influence that may determine whether or not an individual performs the behaviour (Ajzen, 1991; Ajzen, Brown, & Carvajal, 2004). For instance, a person will be easily influenced by someone who is close to him or her to perform certain behaviour such as donating blood when the other person has a positive intention towards donating blood. In this case, the person is using information about others in order to adjust his or her own behaviour and as a result, he or she will perform the same behaviour and perceive it as a common behaviour in the group. The elements in subjective norms that may influence people to donate blood include colleague (London & Hemphill, 2013), family (Faqah, Moiz, Shahid, Ibrahim, & Raheem, 2015) and media (Woo, 2015).

Perceived Behavioural Control

Perceived behavioural control is an individual's conception of the existence of the opportunities and resources that are needed to perform the behaviour (Charsetad, 2016). According to France et al. (2014), perceived behavioural control contains self-efficacy and controllability to differentiate between individual's confidence to perform the behaviour against the perception of the extent to which the behaviour is under individual's control. Perceived control is the respondents' evaluation on how the factors outside of their control are influencing their decisions to donate blood (Charsetad, 2016). According to (Ajzen, 1991), perceived behavioural control is people's belief on how easy or difficult to perform the intended behaviour. This is where an individual control belief will influence his or her actual behaviour. When an individual has a perception of something that commonly exists which can facilitate the performance of the authentic behaviour, then this person is said to have the perceived behaviour control. In other words, perceived behavioural control plays an important role in affecting the intention to donate blood, where a person's level of control over behaviour is whether to perform or not. Therefore, based on the theory of planned behaviour, it is assumed that the intention to donate blood is rational to the perceived behavioural control.

Intention and perceived behavioural control are posited to have direct effects on an individual to donate blood. Ajzen, Netemeyer and Ryn (1991) reported that intentions are the sign of how difficult people are eager to attempt and of how sufficient the attempt they tend to apply in order to perform the intended behaviour. The TPB claims that the higher an individual feel of the perceived behavioural control, the higher would be the likelihood to donate blood (Ajzen, 1991). Perceived behaviour control will aid the expectation for individuals' intention to perform because there are many factors that may influence their decision (Hamid et al., 2013). For example, when a person is confident with his ability to survive from the blood donation, he is said to have a high willingness towards blood donation. Meanwhile, for the people who are feeling that blood donation is beyond their control, they will tend not to engage with the actual behaviour. According to Charsetad (2016), it is rational to think that perceived behavioural control would predict the intention to donate blood. So, the more the behavioural control someone feels, the higher would be the likelihood to donate blood.

Methodology

A positivist approach was used to explore the relationship between the variables. The study was primarily conducted using a survey among working adults in Kuala Lumpur and Selangor through purposive sampling from September to November 2018. Based on the extensive literature review, variables were operationalised, and certain measures were developed. The questionnaire, which consists of five sections measuring demographic profile, attitude, subjective norms, perceived behavioural control and intention towards blood donation, was used to collect the data. Items on attitude, subjective norms and intention towards blood donation were adapted from a study conducted by Jalalian, Latiff, Syed Tajuddin, Hanachi and Othman (2010) while items for subjective norms were adapted from Charsetad (2016). Respondents were asked to indicate their responses using 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree).

A reliability test was conducted prior to the actual data collection to ensure the consistency of the measures. Based on the pilot test on 30 respondents, the internal consistency value for 20 items was 0.861 which met the minimum requirement of 0.7. As the data of independent and dependent variables of this study were collected from judgement of individuals at one point in time, there was a potential for common method bias. A common method bias is defined as variance that is attributable to the measurement method rather than to the constructs the measure represents (Podsakoff, MacKenzie, Lee & Podsakoff, 2003). Common method bias is a critical problem for the measurement validity in self-report research. Harman's single-factor test (Podsakoff & Organ, 1986) in which all items are loaded into one common factor, was employed to address the issue of common method bias. An exploratory factor analysis (EFA) was conducted and the result revealed that there was no common factor loading on all measures, where the total variance for a single factor was 30.3 per cent, which is less than the suggested cut off point of 50 per cent (Podsakoff & Organ, 1986). Therefore, it can be concluded than common method bias is not present in this research. The respondents were given 10-15 minutes to complete the questionnaires, and the questionnaires were collected instantly after they were distributed. The data was analysed using PLS-SEM (SmartPLS 3.0) to evaluate the structural model of the study.

Results and Findings

Table 1 shows the demographic profile of the respondents. The sample comprises of 41.4 per cent female respondents and 58.6 per cent male respondents. Majority of the respondents are less than 30 years old, and more than 50 per cent of the respondents are single and have less than three years of working experience.

Table 1 Demographic Profile of the Respondents

	Frequency	Percentage
Gender		
Male	122	41.4
Female	173	58.6
Status		
Single	154	52.2
Married	141	47.8
Age		
21 years old and below	33	11.2
22-26 years old	92	31.2
27-31 years old	74	25.1
32-36 years old	56	19.0
37 years old and above	40	13.6
No of year working		
< 3 years	152	51.5
4-7 years	72	24.4
> 8 years	71	24.1

Measurement Model

SmartPLS 3.0 was used to empirically analyse the conceptual model. In order to confirm the validity and reliability of the data in the study, the assessment of measurement model needs to be conducted. As shown in Table 1, the outer loadings, Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE) were evaluated to examine the measurement model. Besides, all the loadings exceeded the minimum threshold value of 0.60 for the exploratory study, which can be seen in Table 2 (Ramayah, Cheah, Franchis Chua, Hiram Ting, & Memon, 2016). The measurement of internal consistency reliability of the Cronbach's Alpha also exceeded the minimum threshold level of 0.70. Based on the CR values, all the constructs possessed high levels of internal consistency reliability. Furthermore, the AVE values (convergent validity) were greater than the recommended value of 0.50; hence, they constituted convergent validity for all constructs. Due to low loading and in order to increase the AVE value, items A1, A3, PBC3 and PCB4 were deleted. All constructs comprising attitude, subjective norms, perceived behavioural control and intention to donate blood met the minimum value of the threshold requirement and after the deletion process, the CR< 0.7 and AVEs were greater than 0.5 (Hair 2014).

Table 2: Internal Consistency and Convergent Validity

Construct	Items	Outer Loading	CR	AVE
Attitude	I think blood donation is pleasant	0.769	0.773	0.537
	If I donate blood, I will save patients' lives	0.583		
	If I donate blood, I know it will not affect my health	0.824		
Subjective Norms	People who are important to me think that I should donate blood	0.690		
	I have complete control over whether I discuss my blood donation decision with family members	0.519	0.852	0.541
	I am expected to donate blood	0.774		
	My family thinks I should donate blood	0.885		
	My co-worker thinks I should donate blood	0.760		
Perceived Behavioural Control	I view blood donation as a benefit to the community	0.844		
	I support the idea of blood donation for transfusion purpose	0.603	0.774	0.537
	In general, I think blood donation is a good act	0.732		
Intention to Donate Blood	I have the intention and are willing to donate blood	0.840		
	I plan to become a blood donor	0.866		
	I want to donate blood in the future	0.871	0.913	0.679
	I will donate my blood to a stranger who needs it	0.807		
	Given the chance, I would consider donating my blood in the future	0.728		

Next, discriminant validity was conducted to discover the difference between a particular construct and the other constructs in the study (Lowry & Gaskin, 2014), which resulted from the adoption of different theories in this study (Hair, 2014). Three methods that could be employed to measure discriminant validity include cross loading, Fornell and Larcker's criterion, and heterotrait-monotrait ratio (HTMT) techniques. HTMT criterion was used in this study because according to Henseler, Ringle, and Sarstedt (2015), the insufficiency of discriminant validity in common research situations is unable to be reliably detected by Fornell-Larcker's criterion. As depicted in Table 3, all values met the criterion of HTMTof 0.90 by Gold, Malhotra and Segars (2001), which denoted that discriminant validity has been

established. In addition, it has also been revealed that none of the confidence interval included the value of 1 on any of the construct based on the result of HTMT inference tests, hence suggesting that there were no discriminant issues and all the variables were empirically distinguishable (Henseler et al., 2015; Ramayah et al., 2018). Overall, the sufficiency of both convergent and discriminant validity exists as can be seen through the evaluation of the measurement model; hence, the researchers found it appropriate to proceed with the evaluation of the structural model.

Table 3: $HTMT^{0.90}$ Criterion

	Attitude	**Intention**	**PBC**	**SN**
Attitude				
Intention	0.835			
Perceived Behavioural Control (PBC)	0.477	0.64		
Subjective Norm (SN)	0.505	0.586	0.395	

Structural Model

Structural Model measurement was conducted after all the requirements of measurement model were fulfilled. Firstly, it is important to address collinearity issue as the existence of multicollinearity does not contribute to a good regression model (Pallant, 2011). Based on the basic principles, predictor which has VIF value of more than 5.00 can be considered as problematic and need to be reviewed by removing, merging or creating high order construct (Hair, Hult, Ringle & Sarstedt, 2016; Wong, 2013). By using PLS algorithm, the values of all the constructs meet the requirement (not more than 5.00) ranging from 1.129 to 1.870. Therefore, it can be concluded that there is no issue of multicollinearity in this study.

Hypothesis testing was conducted using bootstrapping resampling technique on 1000 sub-samples to ensure the accuracy of the PLS estimates (Hair et al., 2014). The results are shown in Table 4, comprising of all the constructs. Attitude, subjective norms, perceive behavioural control and intention to donate were found to be significant at 99% confidence interval (Attitude -> blood donation intention $\beta = 0.428$, $p < 0.000$; Perceived behavioural control -> blood donation intention, $\beta = 0.283$, $p < 0.000$; subjective norm -> blood donation intention, $\beta = 0.274$, $p < 0.000$). In the same table, the values of lower limit (LL) and upper Limit (UL) of the confidence interval for attitude perceived behavioural control and subjective norm towards intention to donate are within the requirement of no zero between the LL and UL. Thus, it can be concluded that all hypothesised relationships in this study are supported.

Table 4: Path Coefficient Assessment

	Relationship	**Path Coefficient**	**Std error**	**T value**	**Decision**
H_1	Attitude -> Intention	0.428	0.045	9.47	Supported
H_2	PBC -> Intention	0.283	0.045	6.284	Supported
H_3	SN -> Intention	0.274	0.044	6.244	Supported

**p < 0.01, *p < 0.05

After disclosing the significant relationships between dependent and independent variables, the results for the values of coefficient of determination (R^2), predictive relevance (Q^2) and effect size (f^2) were revealed and presented in Table 5. The R^2 values showed the amount of variance in the endogenous construct (donation intention) that can be explained by all the exogenous constructs (attitude, perceived behavioural control and subjective norm) linking to it (Astrachan, Patel, & Wanzenried, 2014). Therefore, the result of the R^2 value of 0.533 suggest that the exogenous constructs in this study explain 53.3% of variances in blood donation intention and according to Chin, Peterson, and Brown (2008), the R^2 value of 0.533 can be classified as moderate. Then, the blindfolding procedure was conducted to obtain the predictive capability of the model by using Q^2 (Hair, Hult, Ringle, & Sarstedt, 2016). Based on the results, the Q^2 values for blood donation intention was 0.336. Thus, it can be

concluded that the attitude, perceived behavioural control and subjective norm possess predictive relevance over the blood donation intention as the Q^2 values were all above zero (Hair et al., 2016). The f^2 value represents the effect size of attitude, perceived behavioural control and subjective norm on blood donation intention. According to the results in Table 4, the effect size of attitude, perceived behavioural control and subjective norm are 0.328 (medium), 0.152 (small) and 0.152 (small), respectively, based on the guidelines provided by Cohen (1988).

Table 5: Determination of Coefficient (R^2), Predictive relevance (Q^2) and Effect Size (f^2)

Construct	R^2	Q^2	f^2	Size of effect	VIF
Attitude			0.328	Medium	1.199
Perceived Behavioral Control	0.533	0.336	0.152	Small	1.129
Subjective Norm			0.152	Small	1.87

Discussion and Conclusion

The findings of this study provide a number of valuable insights that can help blood banks to better understand their donors. Based on the results, all constructs that have been investigated are essential and should be considered by National Blood Centre in developing strategies to build and maintain a sustainable blood supply.

The first result in this study shows that most of is the respondents are female (173, 58.6%) and age between 22-26 years old (31.2%). These findings are quite different compared to those reported by Majdabadi, Kahouei, Taslimi and Langari (2018) and Montazeri, Eslami, and Mazidi (2016) which showed that the percentage of female blood donors was significantly lower than the percentage of male blood donors. Moreover, most of the donors are between 22 and 26 years of age, which is within the range of the largest age group (18-30 years old) that donated blood in Malaysia (Choo, 2014). Furthermore, the population of the respondents might contribute to this result, whereby most of the respondents are from urban areas, who are relatively more exposed to the knowledge about blood donation; and this is also attested by Choo (2014). In addition, according to Lim (2010), the awareness about blood donation is increasing year by year.

Interestingly, in this study, of all the three determinants, attitude contributes more on effect size (medium). Therefore, it shows that in the overall model, attitude is the most strongly related to the intention to donate blood. Meanwhile, the other determinants (subjective norms and perceived behavioural control) contribute to small effect size. The finding from this study differs from several previous studies due to a few reasons. Firstly, although the number and type of scale items that are used to define perceived behavioural control, attitude, and subjective norm varied significantly across existing studies, the understanding among correspondents might be different. Secondly, there is good evidence that the relationship between factors in the model and donation intention may vary as a function of donor gender (Majdabadi et al., 2018; Montazeri et al., 2016), marital status (Ling, Hui, Tan & Ling 2018) and concern about their own health with regards to anaemia (a particularly important factor for young women who are often temporarily deferred because of a mild anaemia, as emphasised in other studies) (Halperin, Beatens & Newman 1998), a possible pregnancy, low body weight or a previous history of deferral for these same reasons (Moore, 1991).

The result also clearly shows that respondents anticipate that donating blood can save lives and give new hope; this can be related to the Malaysian culture of helping other people. According to the National Blood Bank of Malaysia, many donors come forward because of their genuine desire to help others. This is also supported by a statement in MyHealth portal (2019) which strongly agrees that most Malaysians who donate blood have positive attitude, the feeling of wanting to help patients in need that may include friends and relatives or are being persuaded by friends and relatives. In addition, all the donors are aware that blood is an important part of medical treatment. It should also be noted that, like many previous studies, this study did not test the full Theory of Planned Behaviour model

because it did not assess donation behaviour. Overall, the results of this study provide additional support for the applicability of the measurements of all determinants among blood donors. More importantly, the findings provide an idea for the National blood Council to advertise or promote the advantageous of blood donation for donor recruitment.

The present study has several limitations. One of the limitations of the study is the lack of generalisability of the findings as this study focused on working adults in Kuala Lumpur and Selangor. Another limitation is that the constructs, namely, attitude, subjective norm and perceived behaviour control only account for 53.3% variation in the intention to donate blood. There are other possible factors that could influence the blood donation intention among Malaysians. It is recommended that future studies should investigate the socio-demographic factors and lifestyle factors associated with blood donation status. Understanding the donors and potential donors provides a basis for defining approaches and messages for different audiences and selecting the most effective means of reaching them. Secondly, further research can focus on simple knowledge, attitude and practice to identify the specific characteristics, values, beliefs and behaviours of the general population or specific target donors' population that may influence the attitude towards blood donation. Finally, it is recommended that future research may consider using qualitative methodology to gain deeper insight on the issue.

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