

THE LEVEL OF PERCEPTION, AWARENESS, AND BEHAVIOR ON INTELLECTUAL PROPERTY PROTECTION: A STUDY OF THE EMERGING COUNTRY

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Abstract

How to cite this paper: Tam, L. T. T., Thai, H. D., Hai, P. T. T., Tuan, T. D., & Thanh, T. C. (2021). The level of perception, awareness, and behavior on intellectual property protection: A study of the emerging country. *Journal of Governance & Regulation*, 10(1), 29-34.

<https://doi.org/10.22495/jgrv10i1art3>

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ISSN Print: 2220-9352

ISSN Online: 2306-6784

Received: 05.11.2020

Accepted: 25.01.2021

JEL Classification: C91, I20, K11, K33, O34, P36

DOI: 10.22495/jgrv10i1art3

Emerging economies are facing problems in the administration and compliance with intellectual property protection in their countries. The IP term is now much more familiar to the public, but it is not well understood completely in a lawful way. The public is misinformed (or, at best, under-informed) about IP leading to higher levels of infringement as well as reducing the use and value of IP. Our study aimed to determine the level of perceptions, awareness, and behavior (PAB) on IP Protection of the medical technology students with the cross-sectional on-line survey on 795 students by electronic European Union Intellectual Property Office (EUIPO) questionnaire. The overall level of PAB was very high, greater than three quarters. The demographic factors related significantly to right PAB on IP protection were sex (female higher than male) and residency (other cities higher than Ho Chi Minh City). Only the awareness had the covariance with the behavior in structural equation modeling (SEM) model with a significant coefficient of 0.55. We should focus on an education program to increase the right awareness, then it would improve the right behavior on intellectual property protection in students who are living in the emerging countries.

Keywords: Awareness, Behavior, Intellectual Property, Perception, Medical Technology Students, Vietnam

Authors' individual contribution: Conceptualization - L.T.T.T.; Methodology - L.T.T.T. and T.C.T.; Data Curation - L.T.T.T. and H.D.T.; Resources - L.T.T.T.; Writing - Original Draft - L.T.T.T.; Writing - Review & editing - T.C.T.; Supervision - T.C.T., T.D.T., and P.T.T.H.

Declaration of conflicting interests: The Authors declare that there is no conflict of interest.

1. INTRODUCTION

Intellectual property (IP) protection encourages organizations (research institutions, universities) to do research with the aim of creating knowledge or technologies for superior competitive advantages. The benefits of IP protection can be enhanced

through the creation of an environment that favors economic growth.

Vietnam, one of the emerging countries, has participated in the World Trade Organization (WTO) protocol since 2007. And general IP protection is one of these articles and it plays an important role in creating new knowledge, broad sharing of knowledge, and promoting economic growth.

Emerging economies are facing problems in the administration and compliance with intellectual property protection in their countries. The IP term is now much more familiar to the public, but it is not well understood completely in a lawful way. The public is misinformed (or, at best, under-informed) about IP leading to higher levels of infringement as well as reducing the use and value of IP.

Educational programs are considered as the best solution to improve respect for IP, for example, a pharmacy student who needs to know how patents can protect their new pharmaceutical innovations or a small business owner who can leverage a trademark to start earning licensing revenues. Thus, universities need to do a better job at preparing their graduates to be productive citizens of the innovation economy, and that includes giving more attention to IP education. The University of Medicine and Pharmacy at Ho Chi Minh City (UMP) has not implemented the "IP Basics" course as obligatory. Our study aimed to determine the level of perception, awareness, and behavior (PAB) on IP protection of the medical technology students based on their responses to the general questionnaire regarding their demographic structure such as age, gender, level of education, and residency. The study results provided scientific evidence for the need for "IP Basic" course as the major intervention in increasing IP protection compliance in students, the human resources for the economy in the very near future.

2. LITERATURE REVIEW

As in World Intellectual Property Organization (WIPO) guidelines, IP covers four different fields – literary, scientific, artistic, and industrial arenas. Countries have laws to protect intellectual property for two main purposes: 1) to give statutory expression to the moral and economic rights of creators in their creations and the rights of the public in access to those creations; 2) to promote the creativity and the dissemination and application of its results and to encourage fair trading which would contribute to economic and social development (WIPO, 2004).

Developing or emerging countries are growing rapidly in the economy and knowledge-intensive flows, such as China's knowledge-intensive flows is the world's second-largest. Their world share of R&D expenditure increased more than two times (12% in 1992; 26% in 2010) and their patent application grew by 10.4% annually from 1992 to 2011. WIPO reported that IP offices in Asia received a huge of world IP filings (for industrial designs, patents, trademarks, and utility models) in 2015, especially China had almost 1.5 million patents in 2014, for example, Huawei Technologies of China was the top Patent Cooperation Treaty applicant, with 3,898 applications published (Ezell & Cory, 2019).

Good understanding and right awareness of IPs will increase people's appreciation of the existence of IPs and protect the rightful use of IPs. In fact, IP rights reduce the cost of monitoring and punishing those who do not. The active participation of the national IP office and related governmental organizations, the private sector, and institutions or universities in upholding IP are crucial, particularly in teaching the IP laws to the younger generation on

how to protect their own IP and respecting others' as well (Ong, Yoong, & Sivasubramaniam, 2012).

Obviously, IP education program is the key to increase IP awareness among students, who will be the future leaders of the nation, about acknowledging and respecting others' intellectual work which is considered as the right behavior to IP (Ong, Yoong, & Sivasubramaniam, 2012). According to previous studies on people's PAB on IP, there is a low correlation between levels of education on IP-specific matters and an understanding of IP, especially low levels of understanding of important IP topics among graduate engineering students were tied to a lack of education in relevant coursework (Villasenor, 2012). Age is a factor that affects the understanding of IP rights as important to economies. Younger European citizens violate the IP by obtaining counterfeit or pirated goods more than their elders (aged 15-24 with 15%; 25-39 with 9%) (EUIPO, 2017). Both education levels and age have a significant impact on an individual's understanding of IP. This seems to suggest that educational efforts to reach young people with IP subject matter may be more successful than IP awareness programs that are developed for the general public. The proposed solution with an educational approach is all universities requiring students to participate in a short, interactive, web-based training session on "IP Basics" at the beginning of their first year of study (Brachmann, 2019).

3. RESEARCH METHODOLOGY

A cross-sectional online survey was done with an electronic EUIPO questionnaire (EUIPO, 2017).

Medical technology students at UMP, Vietnam was target population. The inclusive criteria were 1) student from 1st to 4th year; 2) age from 19 to 23 years old; 3) agreed to join the survey.

The survey took one week (15-19 September, 2020). The questionnaire comprises 57 questions/items in total, therefore the minimum sample size is 570 followed by the formula:

$$n = 10 * m \quad (1)$$

where, n is the sample size; m is a number of questions.

Descriptive analysis was conducted for study demographic data. Fisher test, Chi-square test, Cronbach's alpha, and SEM builder were used to test for the correlation of the relevant components or factors.

4. RESEARCH RESULTS

Demographic description

We recruited higher than the expected number 570. There were 851 students who answered the questionnaire. Only 795 students were chosen for analysis after excluding 56 cases (6.5%) due to uncompleted or unclear data. Most of the students in our study were female (82.1%) and 99% were from the 2nd year. They assessed their own knowledge of IP from "very good" to "fair" with a very high percentage of 91.6% (very good 2.26%; good 51.7% and fair 37.6%). The students' demographic data are described in Table 1.

Table 1. Medical technology students' demographic description

<i>Characteristics (n = 795)</i>	<i>n</i>	<i>(% or average)</i>
<i>Sex:</i>		
Male	142	17.9
Female	653	82.1
<i>Age average (min-max)</i>	19.98 ± 0.93 (19 -23)	
<i>Residency:</i>		
Ho Chi Minh City (HCMC)	175	22
other city	620	78
<i>Level of education:</i>		
1st-year student	8	1
2nd-year student	336	42.3
3rd-year student	257	32.3
4th-year student	194	24.4
<i>Knowledge of IP (self-assessment):</i>		
Known	728	91.6
Unknown	67	8.4

The PAB on IP protection

1) Summary of PAB on IP protection:
The EUIPO questionnaire (daily life experiences) was shortened or discarded some questions that were not well answered due to cultural aspects or

different levels of civilization between Europe and Asia in general, validated by Cronbach's alpha. The summary of PAB on IP protection is described in Table 2.

Table 2. The percentage of the right PAB on IP protection

<i>Perception</i> <i>(average percentage: 69.8% vs. 30.2%)</i>	<i>Protect IP (%)</i>	<i>Not protect IP (%)</i>
1. It is acceptable to purchase counterfeit products when the price for the original and authentic product is too high.	65.7	34.3
2. It is acceptable to buy counterfeit products when the original product is not or not yet available where you live.	66.9	33.1
3. It is acceptable to buy counterfeit products when the quality of the product does not matter.	67.9	32.1
4. It is acceptable to buy counterfeit products when it concerns luxury products.	63.8	36.2
5. It is acceptable to obtain content illegally from the internet when there is no immediately available legal alternative.	77.2	22.8
6. It is acceptable to obtain content illegally from the internet when it is for my personal use.	77	23
<i>Awareness</i> <i>(average percentage: 83.4% vs. 16.6%)</i>	<i>Correct (%)</i>	<i>Not correct (%)</i>
1. Protecting IP is important so no one can claim to be the creator of a piece of art or the inventor of something when in reality this is not the case.	86	14
2. Protecting IP is important because it contributes to improving and guaranteeing the quality of products and services.	88.9	11.1
3. If there was no longer any IP protection, there would be economic chaos.	85.2	14.8
4. It is important that inventors, creators, and performing artists can protect their rights and be paid for their work.	86.9	13.1
5. Companies that create a lot of IP (that hold patents, trademarks, designs, copyrights, trade secrets) contribute significantly more than the others to the creation of jobs/growth.	69.9	30.1
<i>Behavior</i> <i>(average percentage: 72.3% vs. 27.7%)</i>	<i>Protect IP (%)</i>	<i>Not protect IP (%)</i>
1. The quality of content offered by lawful services is better than what can be found through illegal solutions.	75.6	24.4
2. The diversity of content offered by lawful services is better than what can be found through illegal offers.	71.3	28.7
3. Whenever there is an affordable legal option I prefer to access/download/stream content through authorized platforms and do not access/download/stream illegally.	70.1	29.9
Average percentage (for 3 sessions)	75.2	24.8

2) Level of PAB on IP protection:

We scored the appropriate answers by 10 points and the inappropriate ones by 0 points, then we calculated the average of each part. The cut-off of 50% score (5 points) was considered as the standard

score to determine the percentage of each level of PAB on IP protection. The overall percentage of score equal and higher 5 points was very high, greater than 75% in three domains. The details are given in Table 3.

Table 3. The percentage of the standard level of PAB on IP protection

<i>Average score</i>	<i>< 5 points</i>	<i>> = 5 points</i>
Perception	161 (20.3%)	634 (79.7%)
Awareness	90 (11.3%)	705 (88.7%)
Behavior	198 (24.9%)	597 (75.1%)

We compared the awareness self-assessment to the awareness score (91.6% vs. 88.7%) with a one-sample test of proportion. The result found that the awareness score was lower than the self-assessment significantly ($p = 0.002$).

3) Demographic factors related to a standard level of PAB on IP protection:

The demographic factors related to right PAB on IP protection significantly ($p < 0.05$) were sex and residency with *OR* reported in Table 4.

Table 4. Demographic factors related to the standard level of PAB on IP protection

Factors	p-value (OR)		
	Perception	Awareness	Behavior
Sex (female > male)	0.03 (0.62)	0.04 (0.59)	0.73
Residency (other city > HCMC)	0.002 (0.54)	0.38	0.06
Education level (1/2/3/4 student year)	0.73	0.12	0.27

The correlation of PAB on IP protection

1) The correlation of PAB in pairs:
Fisher test was used to determine the correlation in pairs with a cut-off of 5 points and the three

components had a significant correlation with $p < 0.05$ (see Table 5).

Table 5. The correlation in pairs of PAB on IP protection

Fisher test	Perception	Awareness	Behavior
Perception	1		
Awareness	0.01	1	
Behavior	0.01	<0.001	1

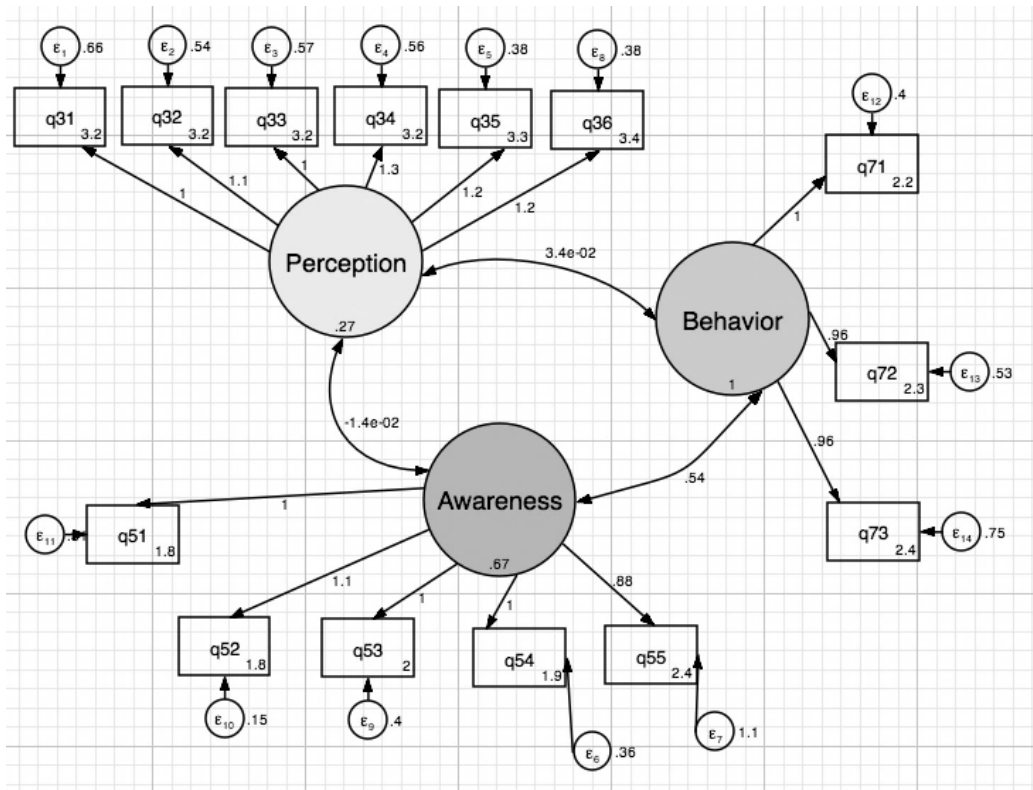
2) The correlation of PAB in SEM builder:
SEM builder was used to checking for the correlation in all three components P-A-B and the Linkert scale data were used to check for the

covariance. The awareness had the covariance with the behavior in the SEM model and the others had no significant covariance. (see Table 6 and Figure 1).

Table 6. Covariance of PAB in SEM builder

Covariance	Coefficient	p-value
Perception		
Awareness	-0.014	0.42
Behavior	0.03	0.13
Awareness		
Behavior	0.55	< 0.001

Figure 1. SEM builder of PAB on IP protection



Note: (q = question, q31 = question 31).

5. DISCUSSION

The medical technology students' over-self assessment the understanding on IP in students

The medical technology students assessed themselves about their understanding of IP with 91.6% from the “fair” level to the “very good” level, only 8.4% was “bad” and “very bad”. The one-way test for proportion was done to verify the situation. It was true that their right awareness percentage was lower than their self-assessment significantly (91.6% vs. 88.7%, $p = 0.002$). It means that they overestimated their understanding due to the lack of IP knowledge. This psychological phenomenon is well explained that when being asked to do the self-assessment, people are motivated to obtain a highly accurate evaluation of the self. To accomplish this objective, people try to seek the self-relevant information and the diagnostic information regardless of its positive or negative implications for the self and regardless of whether it affirms or challenges existing self-conceptions (EUIPO, 2017). The inconsistency of IP teaching made most students possess an unrealistic understanding of IP knowledge. Despite expressing high levels of confidence in performing IP tasks and an awareness of the need to protect their IP rights, few students showed an understanding of the basic practicalities involved in dealing with the scenarios posed (Sedikides & Strube, 1997).

The medical technology students' demographic factors associated with the standard PAB on IP protection

In our study, we found that two factors (sex and residency) associated with perception and one factor (sex) associated with awareness significantly. For perception, female students had a higher percentage of standard level with $OR = 0.62$, and students whose hometowns are other cities had good perception with $OR = 0.54$. For awareness, female students also had better awareness with $OR = 0.59$. There were no factors associated with behavior in our study. The demographic factors associated are very diverse due to the difference in many aspects, such as study population, culture, etc. For example, age is a factor that impacted the understanding of IP rights as important to economies. The survey in Europe found that younger European citizens violated the IP more than their elders (aged 15-24 with 15%; 25-39 with 9%) by buying counterfeit products (EUIPO, 2017). The education levels and age both impact an individual's understanding of IP significantly (Brachmann, 2019).

The correlation of PAB on IP protection of the medical technology students

The PAB correlated closely and significantly in pairs ($p < 0.05$), but it is really hard to provide intervention in pairs when they interacted with each other in the model of three components. We performed SEM builder to check for their real correlation and we found that only awareness and behavior interacted significantly. Good awareness led the good behavior and vice versa. It means that the perception was weak in this model of interaction and had no impact on awareness and behavior. It would be explained that the questions content or

the real IP knowledge of students would affect the real correlation, but it was a representative and typical characteristic of our study population. According to psychology studies, the three components closely interact. The perception is surveying an individual's impression towards something and daily life experiences and it reflects the individual's behavior (French et al., 2015). The awareness reflects the knowledge obtained through self-perception and underlies of feelings or emotion which motive the behavior (Craig, 2011). The planned behavior is developed by Ajzen (1991) to explain what influences an individual's intended and actual behavior. The intended behavior is seen as conceptually distinct from real behavior. Although intention would not be actual behavior, it is a strong predictor (Ajzen, 1991).

The proposed intervention strategy to increase the medical technology students' PAB on IP knowledge

The high PAB was found in our study, but it only focused on daily experience as the primary baseline data supporting to develop of the appropriate intervention strategy as the IP program for all students, especially medical technology students who would have many innovations, patents in their future career. We found that the awareness closely correlates the behavior in multi-interaction of PAB and three components correlate in pairs as well. So the proposed intervention is to provide knowledge as the very step of information receiving of the perception, then it impacts on the awareness and finally, in the real environment, it helps in building the good behaviors or practice in complying IP rights. Currently, at our university, the IP course is still optional for the last-year students. It would be too late to assure the outcomes. We agreed with the solution with the educational approach is all universities requiring students to participate in a short, interactive training session on “IP Basics” in the first year of study (Brachmann, 2019). In the future, we should collect more data on the intervention to assess the intervention efficacy.

6. CONCLUSION

The level of perception, awareness, and behavior on intellectual property protection (daily life experiences) in medical technology students was high with the significant correlation in pairs, and the real correlation between awareness and behavior in terms of interaction three domains was determined by SEM builder. In the future, we should focus on IP education programs to increase the right awareness then it would improve the right behavior on intellectual property protection in students who are living in emerging countries.

The data collection was done via electronic forms, then we did not have a chance to check or verify data from uncompleted forms. We had to discard 56 cases (6.5%) due to uncompleted or unclear data. Some daily life experience questions are not suitable to Vietnamese culture validated by Cronbach's alpha. In the future, we should modify some daily life experience questions in regards to each country's culture.

REFERENCES

1. Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
2. Brachmann, S. (2019). *IP awareness and attitude: A summary of research and data* (Report for the Center of IP Understanding). Retrieved from <https://www.understandingip.org/wp-content/uploads/2019/11/IP-Awareness-and-Attitudes.pdf>
3. Craig, A. D. (2011). Significance of the insula for the evolution of human awareness of feelings from the body. *Annals of the New York Academy of Sciences*, 1225(1), 72-82. <https://doi.org/10.1111/j.1749-6632.2011.05990.x>
4. European Union Intellectual Property Office (EUIPO). (2017) *European citizens and intellectual property: Perception, awareness, and behavior*. Retrieved from https://euiipo.europa.eu/tunnel-web/secure/webdav/guest/document_library/observatory/documents/IPContributionStudy/2017/european_public_opinion_study_web.pdf
5. Ezell, S., & Cory, N. (2019, April 25). The way forward for intellectual property internationally. *Information Technology & Innovation Foundation*. Retrieved from <https://itif.org/publications/2019/04/25/way-forward-intellectual-property-internationally>
6. French, R., Rayner, C., Rees, G., Rumbles, S., Schermerhorn, J., Hunt, J., & Osborn, R. (2015). *Organizational behavior*. (3rd ed.). Glasgow, UK: Bell & Bin Ltd.
7. National Union of Students (NUS), Intellectual Property Office (IPO), & Intellectual Property Awareness Network (IPAN). (2012). *Student attitudes towards intellectual property*. Retrieved from <http://ipaware.org/wp-content/uploads/2016/10/20121012-IP-report.pdf>
8. Ong, H.-O., Yoong, Y.-J., & Sivasubramaniam, B. (2012). Intellectual property rights (IPR) awareness among undergraduate students. *Corporate Ownership & Control*, 10(1-7), 711-714. <https://doi.org/10.22495/cocv10i1c7art7>
9. Sedikides, C., & Strube, M. J. (1997). Self-evaluation: To thine own self be good, to thine own self be sure, to thine own self be true, and to thine own self be better. *Advances in Experimental Social Psychology*, 29, 209-269. [https://doi.org/10.1016/S0065-2601\(08\)60018-0](https://doi.org/10.1016/S0065-2601(08)60018-0)
10. Villasenor, J. (2012, November 27). Intellectual property awareness at universities: Why ignorance is not bliss. *Brookings Institution*. Retrieved from <https://www.brookings.edu/opinions/intellectual-property-awareness-at-universities-why-ignorance-is-not-bliss/>
11. World Intellectual Property Organization (WIPO). (2004). *WIPO intellectual property handbook: Policy, law and use* (WIPO Publication No. 489). Retrieved from https://www.wipo.int/edocs/pubdocs/en/intproperty/489/wipo_pub_489.pdf