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Applying Theory of Planned Behavior to Understand Pro-Environmental Intention and Behavior of Students

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Abstract

The study aims to use the theory of planned behavior to examine the pro-environmental intention and behavior of the students of Jordanian universities and higher education institutes. Students participated in the study were selected based on non-probability purposive sampling technique. Using five-point Likert scale questionnaire, the study has gathered 319 responses. PLS-SEM using SmartPLS version 3.2.8 has been employed in the study for data analysis. The results of the study showed that attitude, subjective norm, and perceived behavioral control have significant effect on intention towards environmental responsible behavior of students while environmental awareness, perceived behavioral control, and intention have significant effect on pro-environmental behavior of students in Jordan. Our findings are beneficial for workplace recruiting and incentive-related companies. For instance, the intention-behavior result suggests that companies with influential environmental agendas will implement in-depth evaluation of specific environmental perceptions and motivation throughout the procurement phase.

Keywords

Theory of planned behavior, environmental awareness, pro-environmental behavior, Jordan

1. Introduction

Corporates emphasize that environmental sustainability, a mitigating harm to the atmosphere (e.g. carbon control, pollutants, waste and natural resource conservation), is a growing business trying to meet consumers' demand, conform to policy legislation, and enhance public profile (Morelli, 2011). Sustainable environment programs may offer significant financial savings. However, it was argued that "generating ecologically sustainable results can be considered a key component of organizational efficiency, just as profitability and employee satisfaction are" (Montiel et al., 2018). Nonetheless, the task of infusing sustainability within the education sector has been a major challenge because of the complex nature of sustainability. The central concept behind this mission is the suggested description of 'sustainable development education' (Ralph & Stubbs, 2014). Sustainable development education is an instrument that encourages citizens to build awareness, beliefs and skills to partake in behaviors that can enhance the quality of life today without damaging the future (Cheang et al., 2017). In light of this point of view, it is suggested that a person should possess the expertise, abilities, attitudes and values needed for sustainable living and functioning (Stevenson, 2007). The values and expectations of individuals may inevitably affect their actions and eventually lead them to struggle to achieve organizational targets relevant to an ambiguous and/or divisive problem such as environmental sustainability (Christie et al, 2013). It was argued that these qualities which form the basis of education for sustainable development may help academics build a foundation to consistently infuse sustainability within the educational institutions (Effeney & Davis, 2013). Environmental sustainability raises important market issues that need to be discussed in higher education with the overall objective of protection instruction centered on letting students understand how to make successful business choices with respect to corporate environmental aspirations (James & Card, 2012). Business instructors ought to be mindful of differing personal sustainability experiences in educating the next generation of market leaders and also recognize the effects (e.g. disposition, subjective norm, and behavioral control) on individual sustainability purpose and actions (Christie et al., 2015). To put it another way, teaching environmental sustainability market issues will be counterproductive if we do not grasp and help form the scope of personal sustainability behaviors, purpose, and actions of the students (Aleksejeva, 2016). Jordanian schools are operated by either government or the private sector (Zulfikar, 2010). Jordan's environmental challenges are related to the country's growing population and increasing industrialization, which was given a lower priority owing to high rates of deprivation and under-resourced government (Naylor et al., 2019). A 2019 study commissioned by YouGov and Cambridge University found that Middle East has "the highest number of climate deniers, led by Saudi Arabia (16 percent) and the United States (13 percent)" at 18 percent overall (Husin & Tegnan, 2017). The individual behavioral dimensions of sustainability decision making need to be shed some light on as they are scarcely studied (Martínez et al.,

2019). The mission of this study is to help business educators think more about environmental conservation and train students to make educated decisions regarding environmental and economic goals of corporations (Cheng, 2019).

This study is structured according to the following: review of the literature on the complexities of teaching sustainability in higher education which culminates in concrete questions regarding students' expectations of the validity of sustainability aspirations; the development of the test hypotheses and the application of the theory of planned behavior (TPB); the methods including the production of surveys, data collection, and applying structural equation modeling to test the assumptions; finally, the model's findings in relation to the pedagogical methods developed from current study to improve the environmental sustainability education's effectiveness.

2. Literature Review

The TPB is a fitting tool for tackling these challenges. According to the TPB, intention is the amount of energy people intend to expend to execute an action (Paul et al., 2016). The TPB believes the desire to conduct an action is affected by three constructs: the disposition of the individual to behave favorably, their inclination to cooperate with interference from outside channels of authority (subjective norm), and perceived behavioral competence (their perceived capacity to actively participate in behavior) (Liobikienė et al., 2016). In effect, intention coupled with assumed behavioral influence directly influences actions. The TPB was commonly used in corporate ethics work for many environmental protection implementations (Maichum et al., 2016). Using the TPB, we are taking on the challenge of pursuing environmental training where attitudes are translated into sustainability behavior (De Leeuw et al., 2015). For this study, the theory's basic intention represents a student's desire to participate in ecologically sound behaviors in their everyday lives that is affected by mood, subjective standard and perceived behavioral regulation (Mancha & Yoder, 2015).

Attitude reflects the emotional attitude of a student on the well-being of the community: from extreme pessimism (i.e. not supportive) to extreme optimism (i.e. supportive) (Niaura, 2013). The TPB's correlation between a favorable attitude and intention is supported by consumer-based studies that have shown positive results of environmental conservation attitude on the purchase of green products, waste paper recycling and domestic waste (Paul et al., 2016). Studies further validate the positive connection between perceptions towards environmental protection and the intention to both reduce industrial emissions and invest in sustainable manufacturing technologies (Yadav & Pathak, 2016). The following hypotheses are in line with the TPB relationship between attitude and intention and extensions from existing studies:

H1: Attitude has a significant effect on intention.

Subjective norm applies to the student's desire to comply by the environmental protection values of referent communities (e.g., academics, industry members, media, etc.) (Shin et al., 2018). The TPB assumes that behavioral intent has a favorable effect on the subjective standard. Environmental sustainability work has connected family, colleagues and neighbors to compost as classes of comparison (Chen, 2016). Subjective norm has also affected the intention to purchase environmentally friendly goods and food as well as implement toxic waste water treatment (Shin & Hancer, 2016). Thus, we hypothesized:

H2: Subjective norm has a significant effect on intention.

Perceived behavioral control involves the student's perception that they have the capability (i.e. awareness, capacity, power) to effectively enforce healthy environment operations (Scalco et al., 2017). Sustainability work has established a clear correlation between perceived behavioral regulation and household waste management goal, purchasing green goods, and embracing sustainable production technology (Tan et al., 2017). The TPB suggests that if he or she believes that he or she has the necessary resources or capabilities to enact the behavior; it is more likely that he or she intends to perform the behavior and later does so (Mancha & Yoder, 2015). Therefore, we proposed:

H3: Perceived behavioral control has a significant effect on intention.

The TPB also predicts that, unlike disposition and subjective standard, perceived behavioral influence will explicitly affect behavior. This happens when the perception of the ability to act is high in individuals (Greaves et al., 2013). A substantially assumed behavioral management road to actions in this study may indicate that students have high individual capacity to enforce environmentally friendly conduct in the workplace (Veronese & Kensler, 2013). More applicable to sustainability studies, household waste management has shown a correlation between assumed behavioral influence and real behavior (Tan et al., 2017). Hence, we proposed:

H4: Perceived behavioral control has a significant effect on pro-environmental behavior.

Environmental awareness relates to the degree of environmental understanding of an employee, the potential to create a meaningful difference in community by modifying its pro-environmental actions and recognizing and triggering environmental concerns (Kumar, 2012). Several reports have shown that while workers become conscious of environmental problems, environmental depletion, the value of environmentally sustainable activities and perceived

behavioral regulation, they are more likely to display pro-environmental behavior (Swaim et al., 2014). Therefore, we proposed:

H5: Environmental awareness has a significant effect on pro-environmental behavior.

The role of behavioral intention on actual behaviors is well established. Since intention captures the motivational factors that affect behavior, the prediction of actual behavior is central conduct (Fujii, 2006). Although the existence of intention does not automatically guarantee actions, in meta-analysis the intention-action direction in the TPB has been discussed; there is a path from intention to behavior in recycling and the reduction of household waste (Chin et al., 2018). Hence, we hypothesized:

H6: Intention has a significant effect on pro-environmental behavior.

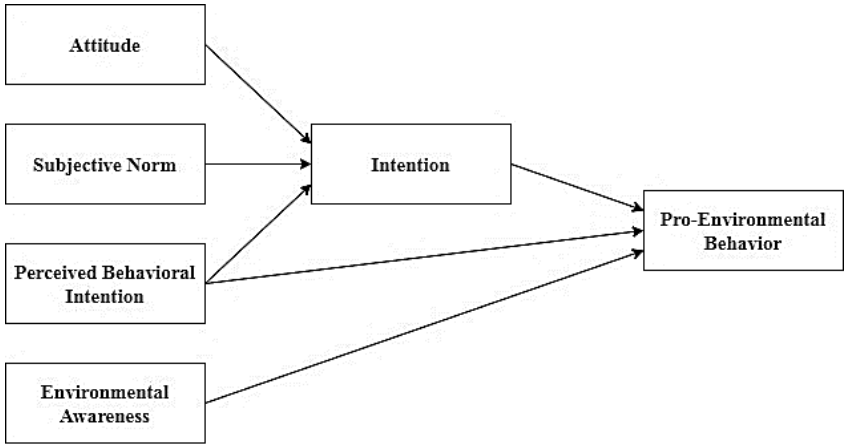

Figure 1: Conceptual Framework

3. Methodology

Different methods and procedures were administered for data collection. For current study, the quantitative approach was implemented as it is commonly used in business researches (Newman et al., 1998) as well as for its time efficiency. The quantitative approach refers to collecting only numerical data using statistical tools. The results of this approach can be viewed in the form of graphs and numbers (non-descriptive) (Welman & Kruger, 2001).

In addition, explanatory purpose is a research purpose or type of investigation which refers to properly examining the objective and providing full stretched information. It explains the research phenomena in a detailed way so that the researcher gets a comprehensive understanding (Saunders et al., 2007). It also helps in identifying the reasons of why and how different things happen (Creswell, 2002).

Thus, this study has used explanatory purpose so that it could provide thorough understanding.

Moreover, research design is of different types known as experimental and non-experimental. The non-experimental causal design is when the researcher examines the cause and effect (Blessing & Chakrabarti, 2009). This design is conducted in a non-experimented environment where there cannot be manipulations. This design helps in knowing about different reasons that were caused by various processes (van Wyk, 2014). Therefore, this study has used causal design as it helps in providing high level of internal validity.

The convenience sampling is a type of non-probability and refers to the gathering of data with easily available people (Vehovar et al., 2016). The current study has used convenience sampling because it gathers generalized information from the targeted population. This technique is also helpful as it is cost and time effective as compared to the other techniques (Cochran, 2007).

Table 1: Demographic Profile (n=319)

		Frequency	Percent
Gender	Male	226	70.8
	Female	93	29.2
Age Group	Less than 20	92	28.8
	20 to 29	152	47.6
	30 to 40	75	23.5
Education	Undergraduate	19	6.0
	Graduate	111	34.8
	Post -Graduate	189	59.2

The PLS-SEM technique helps in getting consistent analysis which provides in-depth and reliable findings. This technique is based on two different models known as measurement and structural model (Hair Jr et al., 2011). The PLS-SEM is a far greater technique as opposed to CB-SEM as it provides higher variance and consistency by using Cronbach's alpha and it also gives more effective mediation results (Hair Jr et al., 2012). Hence, this study has decided to use PLS-SEM technique for analysis.

4. Data Analysis

4.1. Measurement model

The table 2 shows results of measurement model that includes factor loadings, CR and AVE.

Table 2: Measurement Model

Constructs	Items	Loadings	Alpha	CR	AVE
Attitude	AT1	0.875	0.898	0.936	0.829
	AT2	0.923			
	AT4	0.932			

Environmental Awareness	EA1	0.744	0.864	0.905	0.705
	EA2	0.835			
	EA3	0.893			
	EA4	0.879			
Intention	IN1	0.861	0.838	0.892	0.674
	IN2	0.728			
	IN3	0.827			
	IN4	0.859			
Perceived Behavioral Control	PBI1	0.929	0.862	0.926	0.757
	PBI2	0.856			
	PBI3	0.804			
	PBI5	0.888			
Pro-Environmental Behavior	PEB1	0.92	0.862	0.915	0.783
	PEB3	0.863			
	PEB5	0.87			
Subjective Norm	SN1	0.793	0.865	0.907	0.711
	SN2	0.857			
	SN3	0.892			
	SN5	0.827			

The above table has factor loadings which have to be higher than 0.70 in order to be absolutely retained and if these values are below 0.40, it should be deleted. However, values ranged from 0.40 to 0.70 can be retained (Ratner, 2009). The above table has also included CR which values should be higher than 0.70 and AVE which values should be higher than 0.50 (Hair et al., 2014). Hence, this table has achieved measurement model as all values are according to the recommendations.

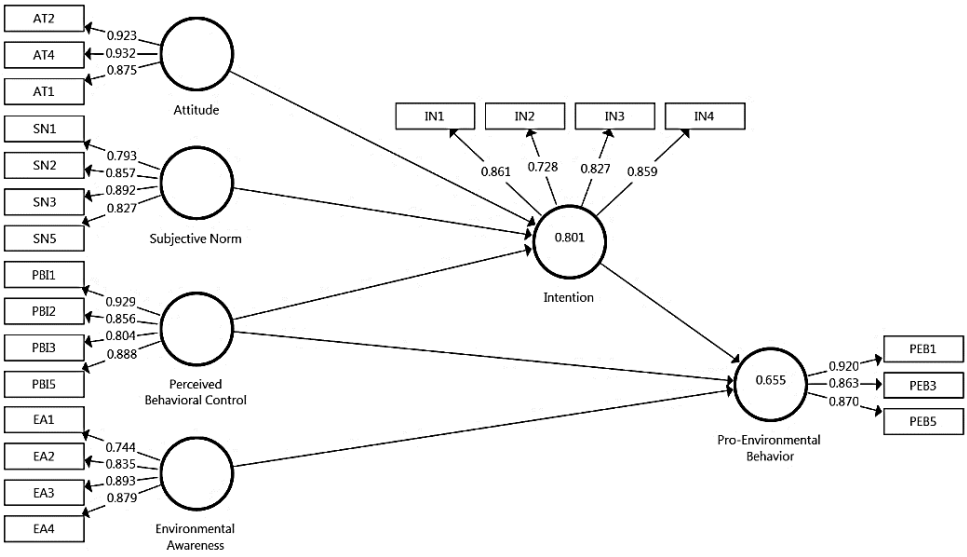

Figure 2: PLS Algorithm using SmartPLS

4.2. Discriminant validity

The table 3 shows result of Fornell & Larcker (1981) criterion.

Table 3: Fornell & Larcker Criterion

	ATT	EA	INT	PBC	BEH	SN
Attitude	0.910					
Environmental Awareness	0.244	0.840				
Intention	0.667	0.419	0.821			
Perceived Behavioral Control	0.619	0.564	0.879	0.870		
Pro-Environmental Behavior	0.652	0.483	0.775	0.785	0.885	
Subjective Norm	-0.763	-0.473	-0.828	-0.918	-0.703	0.843

The above table has values that are bold and diagonal and for acceptance in discriminant validity these values must be higher than the values of other constructs both horizontally and vertically (Fornell & Larcker, 1981). Therefore, this table has helped in achieving discriminant validity by using Fornell & Larcker (1981) criterion. The table 4 has results of cross loadings.

Table 4: Crossloadings

	ATT	EA	INT	PBC	BEH	SN
AT2	0.923	0.271	0.682	0.630	0.624	-0.745
AT4	0.932	0.202	0.620	0.603	0.512	-0.771
EA1	0.158	0.744	0.171	0.318	0.216	-0.349
EA2	0.226	0.835	0.423	0.563	0.448	-0.409
EA3	0.105	0.893	0.413	0.480	0.366	-0.380
EA4	0.289	0.879	0.335	0.475	0.495	-0.436
IN1	0.592	0.570	0.861	0.745	0.603	-0.736
IN2	0.549	0.495	0.728	0.616	0.531	-0.688
IN3	0.437	0.175	0.827	0.688	0.608	-0.619
IN4	0.603	0.182	0.859	0.815	0.772	-0.682
PBI1	0.621	0.464	0.853	0.929	0.794	-0.872
PBI2	0.518	0.583	0.716	0.856	0.566	-0.798
PBI3	0.352	0.513	0.642	0.804	0.529	-0.702
PBI5	0.619	0.438	0.820	0.888	0.789	-0.810
PEB1	0.581	0.356	0.698	0.627	0.920	-0.552
PEB3	0.423	0.609	0.552	0.623	0.863	-0.558
PEB5	0.694	0.343	0.780	0.807	0.870	-0.730
SN1	-0.667	-0.291	-0.498	-0.665	-0.419	0.793
SN2	-0.721	-0.279	-0.737	-0.726	-0.475	0.857
SN3	-0.462	-0.499	-0.781	-0.855	-0.588	0.892
SN5	-0.757	-0.495	-0.718	-0.824	-0.850	0.827
AT1	0.875	0.183	0.494	0.428	0.660	-0.538

The above table has values that are bold and for acceptance in discriminant validity these values must be higher in their respective constructs than the values in other constructs (Hair Jr et al., 2011). Therefore, as this table has fulfilled the

recommendation, discriminant validity has been successfully achieved via cross loadings.

4.3. Structural Model

The following table shows the result of hypothesis-testing using path analysis at subsample 5000 and 5 percent statistical significance in PLS-SEM bootstrapping technique.

Table 5: Path Analysis

	Estimate	Prob.
Attitude -> Intention	0.258	0.000
Perceived Behavioral Control -> Intention	0.892	0.000
Subjective Norm -> Intention	0.188	0.004
Intention -> Pro-Environmental Behavior	0.412	0.000
Perceived Behavioral Control -> Pro-Environmental Behavior	0.363	0.000
Environmental Awareness -> Pro-Environmental Behavior	0.106	0.003

The results of the study showed that attitude ($\beta = 0.258$, $p < 0.05$), subjective norm ($\beta = 0.188$, $p < 0.05$), and perceived behavioral control ($\beta = 0.892$, $p < 0.05$) have a significant effect on intention towards environmental responsible behavior of students while environmental awareness ($\beta = 0.106$, $p < 0.05$), perceived behavioral control ($\beta = 0.363$, $p < 0.05$), and intention ($\beta = 0.412$, $p < 0.05$) have a significant effect on pro-environmental behavior of students in Jordan.

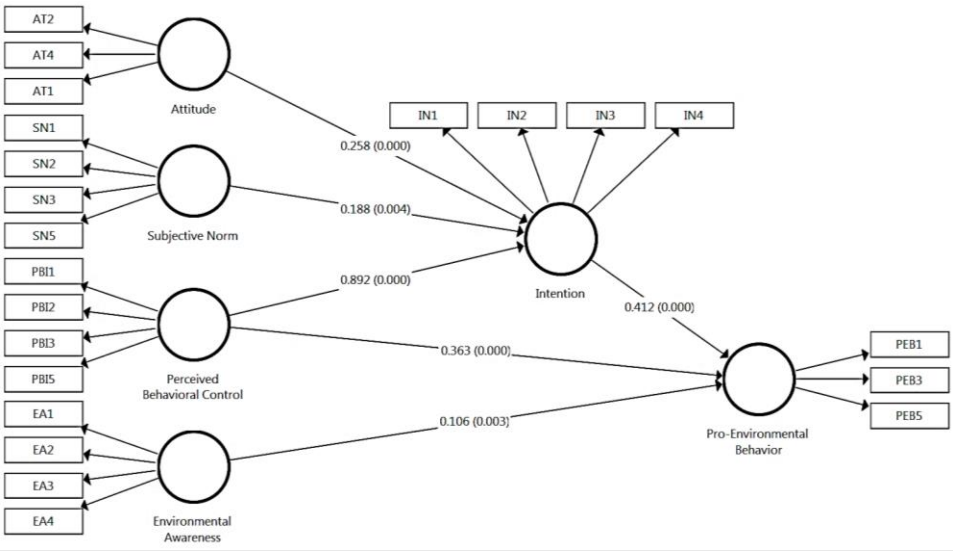

Figure 3: PLS Bootstrapping using SmartPLS

5. Discussion

The result of intention – behavior shows an incentive to influence organizational actions by purposing to exercise everyday personal sustainability conduct, which is a term the students can respond to more readily. The findings are supported by (Prati et al., 2017). The perceived control behavior and intention results represent situations where students assume, they can participate in environmental harm reduction practices only if they later experience barriers or restrictions which prevent action. The results are supported by (Guerin, 2017). Furthermore, the positive link between subjective norm and intention provides the educators with interesting insights. Professors therefore can inspire the students' intention towards environmental sustainability and reinforce the belief that sustainability can be taught successfully in higher education. The results are aligned with (Utami, 2017). Attitude demonstrated the greatest effect. Therefore, students' attitude is crucial to the teaching of environmental sustainability. For this reason, it is important for educators to evaluate attitudes of students as part of the sustainability training. This finding is also constant with (Ertz et al., 2016; Sabzehei et al., 2016). In fact, a greater level of environmental awareness was observed to affirm the connection between the ethos of the institute and the respect for the environment. Both, in turn, intrinsic motivation and passion for the environment increase students' display of pro-environmental behavior. This outcome is consistent with (Afsar et al., 2016).

6. Conclusion

Environment protection continues to grow in value across organizational priorities with companies continually valuing workers who are willing to promote sustainable efforts effectively. With middle managers' role in strategic intervention at the firm-level, business educators need to determine how best to prepare the next generation of executives and administrators to accomplish corporate environmental goals. Personal expectations of students on the value of environmental protection face a crucial obstacle to successful sustainable education. Specific perspectives on the perceived importance of corporate environmental priorities can vary considerably, causing educators to struggle to change students' diverse environmental mindsets. The significance of reaching the participants in sustainability training highlights the need for educators to understand the factors that influence students' commitment and actions toward sustainability. While there are numerous ideas that can be tended to with respect to sustainability; for example, environmental change and vitality and asset shortage, we recommend our examination speaks to an underlying advance toward tending to these more significant level ideas (either separately or collectively) by using the TPB to inspect the effects of attitude, subjective norm and assumed behavioral influence regarding environmental management goal and resulting actions in the workplace. The findings show that students' environmental attitude has a strong impact on their

commitment to sustainability, which in turn influences actions. This synchronizes with claims that pro-environmental behavior is key to encourage resilience within the citizens concerning the environment.

Finally, our work findings are beneficial for workplace recruiting and incentive-related companies. For instance, the intention – behavior result suggests that companies with influential environmental agendas will implement in-depth evaluation of specific environmental perceptions and motivation throughout the procurement phase. Without adequate preparation, it is doubtful that new hires who personally underestimate environmental sustainability would value the environmental initiatives of the organization. Furthermore, organizations should evaluate employee behaviors, perceived behavioral influence, subjective norm, and everyday sustainability behavioral purpose to allow senior management to understand the need for planning, communication, and encouragement to increase the efficacy of environmental initiatives.

For potential study, researchers could attempt to capture real activity through studies or student journaling about sustainability behaviors utilizing various approaches. These experiments, as well as capturing sample responses at different time periods, will help isolate the independent, mediator, and contingent variables minimizing the probability of widespread variation in methodology. As an addition to our work, we suggest that our study be repeated at other schools with varying degrees in incorporation of environmental sustainability to explore how curriculum programming (i.e., sustainability through intra and interdisciplinary courses) influences the ties within the model. Future study may also explore the influence of student variables such as gender, age, and ethnicity as well as contextual knowledge such as personality and values.

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