DECISION MAKING MODEL TO ENHANCE KNOWLEDGE ON CLIMATE CHANGE, SUSTAINABLE DESIGN AND ENERGY CONSERVATION

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DECLARATION

I declare that this is my own work and this thesis does not incorporate without acknowledgement any material previously submitted for a degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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The above candidate has carried out research for the MPhil thesis under my supervision.

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ABSTRACT

Incorporating sustainability into university education enhances the knowledge of the students to practice sustainability concepts in their professional life.This research was conducted to determine how the university curricular-based education on three parameters, i.e. climate change, sustainable design, and energy conservation (CC, SD & EC), influences the individual's factors and cognitive variables by developing decision-making models. Two complementary surveys were conducted; one for university students and another one for university lecturers. In the study conducted for university lecturers, a sample of 352 in the universities of Sri Lanka were considered. Their perceptions, current curricular contribution, their identification of issues and improvements, and their future intention to incorporate in curricula related to three parameters, i.e. CC, SD & EC were identified and their interactions were analyzed. Similarly, the influence of educational fields and social interactions on the considered variables were examined. The second study aimed at university students which comprised a sample of 586 from the universities of Sri Lanka and Russia. Cognitive variables such as Perceptions and personal factors such as Personal Interest and behavioral aspects related to three parameters, i.e. CC, SD & EC were analyzed. The influence of the university curriculum on the considered variables was examined. The data were statistically analyzed using SPSS version 25 and models were developed using Structural Equation modelling (SEM) conducted via IBM AMOS version 23. Developed models were validated through the goodness of fit indices. Out of two models, the model developed based on students' responses was subjected to multi-group analysis to compare variations among Sri Lankan and Russian students in similar contexts.

Results of the first study revealed that lecturers' perceptions and current curricular contributions have been influenced by their educational field and their social interactions related to CC, SD & EC. However, their identification of issues and improvements has only been significant with social interactions. The lecturer's future intention to incorporate in curricula has been significantly influenced by the identification of issues and improvements. Results of the second study in the Sri Lankan context explored variables such as field of study, learning from the university and practical application during the university have not influenced the perceptions of the students towards CC, SD & EC. However, their Personal Interest (which is a personal factor) has influenced their perceptions towards CC, SD & EC. Furthermore, it was determined that some of the positive perceptions towards CC, SD & EC have influenced the positive behavior of the students towards CC, SD & EC. Russian students' responses revealed that their perceptions on CC, SD & EC have been significantly influenced by their practical application, the field of study, and personal interest. However, learning from the university has not influenced their perceptions. Similarly, it was also identified that their positive perceptions are not necessarily depicted from their respective behavior related to CC, SD & EC. Furthermore, the goodness of fit indices validated and confirmed the reliability of the developed models. Overall, it was determined that universities as centers that generate knowledge, should try to fill the gap between objective knowledge and subjective knowledge, and therefore, it will permit students to make better-grounded decisions and also enhance their perceptions.

Key words: *Climate change, Energy conservation, Modelling, Sustainable designs, University curricular*

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LIST OF ABBREVIATIONS

BCM	**Behavior** in **climate** change **mitigation**
BEN	**Behavior** in **energy conservation**
BEC	**Behavior** in **environment** conservation
CC, SD & EC	Climate change, Sustainable design and Energy conservation
F	Lecturer's **future** intension to contribute on curricular related to climate change, sustainable designs and energy conservation
FS	Field of Study
GFI	Goodness-of-Fit Index
ID	**Identification** of issues and improvements regarding curricular on climate change, sustainable designs and energy conservation
LC	**Lecturer's contribution** on curricular related to climate change, sustainable designs and energy conservation
PA	**Practical Application** during university curricular
PCB	**Perception** of **consumer behavior** on climate change
PE	Lecturer's **perception** regarding curricular on climate change, sustainable designs and energy conservation
PEC	**Perception** on **energy conservation**
PI	Personal Interest
PMF	**Perception** on climate change **mitigation factors**
PNM	**Perception** on the **need** of climate change **mitigation**
SD	Sustainable Development
WCC	**Willingness** to integrate **climate change** mitigations in future professional work
WL	**Weather learned** in curricular
WSD	**Willingness** to integrate **sustainable designs** and energy conservation in future professional work