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A proposed research protocol for investigating the beneficial effects of green office buildings on their workers, with the use of data analysis

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Background: In recent years, the usefulness of Green Technology along with the implementation of advanced wireless technologies led scientists towards investigating the effects of this advanced Green Technology to Human Resources. A large number of surveys have investigated the impact, of working conditions inside conventional buildings, on health, productivity, and job satisfaction. This research “stream” have led to the green revolution. Insufficient Indoor Environmental Quality (IEQ) has been shown to be the cause or the burden of a pre-existing physical illness such as a respiratory problem (asthma, infections and allergic rhinitis), musculoskeletal problems, and tendency towards psychological effects (cognitive impairment, depression, anxiety, vocal disorders) [1–3]. Labor absence and productivity decrease are related to the aforementioned problems, while the lack of job satisfaction is often referred to as a consequence. Consequently this research is intended to discover the beneficial effects to Greek Human Resources from utilizing Green Office Buildings.

Materials and methods: The following proposed research protocol is comprised of 30 employees working in a conventional building located in a Greek area. The sample does not include people such as smokers, asthmatics, people with known depression or anxiety disorder, and people with chronic illnesses. The first phase of the survey will be conducted by studying the employees during their work hours in a conventional building for a period of 3 weeks, while in the second phase, the workers will move in a green building to work for the same number of weeks. The following tools will be used such as demographics acquisition which will be filled in through a new questionnaire (applicable only in the first stage), the physical condition of employees that will be assessed using the Sick Building Syndrome (SBS) questions, the psychological condition with the use of Warwick-Edinburgh Mental Well-Being Scale (WEMWBS), the job satisfaction with the Minnesota Satisfaction Questionnaire-MSQ and the Occupational Stress Inventory-Revised/OSI-R. Employees’ productivity will be measured with the use of produced reports by their supervisors in both stages of the survey. In addition, it is proposed to use a sensor package including a Netatmo Weather Station and a portable measuring device such as Smart Watch. The measurement will include at least skin temperature and conductance, heart pulse, acceleration and oxygen saturation, while the Netatmo will measure temperature, humidity, CO2 concentrations and sound levels in dB on a regular basis.

Results: The methods that will be used will include probably t-tests in order to examine differences inside the worker’ group of Green Building and the control group (working in a typical building). As the sample will be of small size, Kruskal–Wallis tests will be employed as they are the most appropriate for these occasions. Additionally, Mann–Whitney U tests will compare the two groups relevant to a same collection data type. It is expected that employees working in a green building will exhibit increased productivity, reduced work-absences, and at the same time they will improve any physical problems or eliminate psychological problems which emerge from the working conditions inside a conventional building.

Conclusions: Alteration of working environmental conditions can affect positively the physical and psychological health of workers. The later has been shown by various surveys which they have compared the green buildings with conventional buildings. This study wants to confirm the aforementioned in the case of our already developed protocol named as Reduced Ecological Footprints of Modern Facilities (REFF) [4].

References

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Ethics Approval: The study was approved by the Ethical Committee of Department of Speech Language Therapy (School of Health and Welfare Professions) TEI of Epirus

Consent to publish: Informed consent to publish has been obtained from each participant.