ABSTRACT

DEMAND SIDE RESPONSE MECHANISMS AND HOUSEHOLD CONSUMER BEHAVIOUR ON THE ELECTRICITY MARKET

Aleksandra Aziewicz

Electricity plays a significant role in the economy. It is crucial to ensure safe and reliable functioning of the power system. The electricity sector is facing major challenges, such as need to improve energy efficiency or reduce negative impact on the environment. Modern technologies make it possible to move away from passive network infrastructure and replace with an active one, capable of ensuring communication between all entities connected to the network. The implementation of modern technologies in the power sector is a challenge, which creates a new opportunity such as activation of energy resources on the demand side e.g. electricity consumer.

The aim of the dissertation is to get to know and understand consumer behaviour and preferences in the retail electricity market (households). Electricity consumer behaviour research is one of the most principal elements in the process of implementing new solution to the power system. The dissertation elaborates issues related to the functioning of the power sector, climate and energy policy, theory of the behavioural economics, demand side response mechanisms and the offer of energy products offered to households in Poland.

The main thesis of the dissertation assumes that discovering consumer behaviour and preferences in the electricity market is conducive to the effective use of demand side response mechanisms. Auxiliary theses were also formulated. The first one assuming that knowledge in the field of smart grids and mechanisms of demand side response among electricity consumers is limited. The second one assumed that the achievements of behavioural economics can be used to explain consumer behaviour in the electricity market. The confirmation of the auxiliary and the main thesis was preceded by a critical literature analysis and an empirical study, which was conducted via CAWI research method in the field of: knowledge of energy consumer in the field of smart grids and demand side response programs, electricity consumer behaviour and preferences and the last one cognitive bias in the electricity market.

The obtained results allowed for the formulation of the following conclusions. Demand side response mechanisms, such as power reduction programs, are effective and acceptable energy products. However, knowledge of new solutions implemented in the power sector is limited and electricity consumers are often succumbed to cognitive biases. Thus, the achievements of behavioural economics can be successfully used in the process of creating new energy products.

Key words: *smart grid, smart power grids, DSR, demand side response, behavioural economic, electricity sector*