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From “Fairly Good” to “Optimal” Energy Efficiency Practices within the Moroccan Manufacturing Sector: Are Financial Resources Sufficient?

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ABSTRACT

Climate change urgency requires a fast transition to a low carbon society which implies broad-scale changes at all levels, hence the need of an energy transition based on enhancing energy efficiency and renewable energy. Energy efficiency is pivotal to combat climate change, it is the most affordable and readily accessible resource, and the most profitable path to sustainability. Manufacturing companies are increasingly adopting energy efficiency practices (EEP) as they become more knowledgeable about the central role energy efficiency plays in their companies' competitiveness and the planet's sustainability. However, the severity of climate change requires the adoption of “optimal” EEP rather than “fairly good” ones. Companies' satisficing behavior occurs when they do not operate as profit-maximisers, but as satisfactory solutions-seekers. This study explores avenues to address companies' satisficing behavior regarding EEP. Our research model was empirically tested through survey data collected from 193 manufacturing companies in Morocco. Results show that satisficing negatively affects EEP. Financial slack and governments' incentives have a positive direct effect on EEP without attenuating the negative relationship between satisfying and EEP. Mimetic pressure attenuates the negative relationship between satisfying and EEP. Based on our findings, policy implications are discussed.

Keywords: Behavioral Barriers to Energy Efficiency, Satisficing, Financial Slack, Incentive instruments, Mimetic pressure

JEL Classifications: D22; Q48

1. INTRODUCTION

The severity and the magnitude of climate change induced disasters is considered by scientists to be frightening (Charney and Hauke, 2020). A swift transition to a climate-resilient, a low carbon society is then a pressing need but also a necessity for enhancing economic sustainability and prosperity, public health, and social equity (Rooney-Varga et al., 2020). A transition to a low carbon society requires a crystal-clear scientific imperative, and has been formalized by the international community, which is the limitation of global warming to considerably below 2°C (Ramirez-Tovar et al., 2021).

However, countries' commitments are meeting the urgency of climate change (Jiang et al., 2019), and current policies are

inadequate to accomplish promised greenhouse gas emission reductions (Saiymova et al., 2020).

Climate challenges require fast and broad-scale changes regarding our decision-making at all echelons of society (Kasem and Alawin, 2019). Hence the need of an energy transition based on enhancing energy efficiency and using renewable energy as a substitute of fossil fuel (Gabteni and Bami, 2018).

Energy efficiency should be the priority for countries and companies since energy efficiency is the cheapest and the most readily available resource (Selcuk and Durusoy, 2019), which makes energy efficiency the most profitable path to sustainability (Bensouda and Benali, 2022a). From this perspective, energy efficiency is considered as a “win-win” solution due to its

undeniable environmental, economic, and social benefits (Fawcett and Killip, 2019).

Reducing energy demand through energy efficiency requires efforts from companies operating in all sectors. In this aspect, most sectors are confronted with rigorous requirements in terms of energy consumption (Bouzarovski et al., 2021), particularly the manufacturing sector that has a central role in decreasing the energy efficiency gap (Bensouda and Benali, 2022c).

Over the past few decades, the debate on the promotion of energy efficiency practices within companies has been primarily driven by a technological approach which focuses on innovation and cost savings (Della Valle and Bertoldi, 2022). In this approach, governments play a big role in the promotion of energy efficiency within companies through coercive pressure (Yue et al., 2022).

In addition, financial resources were considered as the ultimate catalyst for energy practices within companies (Abdmouleh et al., 2015). Companies’ financial resources are referred to as “financial slack” which is the sum of available cash and untapped debt potential (Bensouda and Benali, 2022c). In this regard, a low level of financial slack is regarded as a strong barrier to energy efficiency within companies (Jalo et al., 2021). However, the human behavior has been considered as a factor of a lesser importance (Jaelani, 2020), and behavioral barriers to energy efficiency have been neglected (Stankuniene et al., 2020).

Increasingly, with the rise of behavioral economics, the human factor has started to be integrated into energy efficiency policies (Della Valle and Bertoldi, 2022). Behavioral sciences have determined the behavioral barriers to energy efficiency and factors to reduce their intensity (Bensouda and Benali, 2022b). In this regard, energy efficiency policies have benefited greatly from the inclusion of sociological perspectives (Della Valle and Bertoldi, 2022).

The “Satisficing heuristic” is one of the main behavioral barriers to energy efficiency (Hesselink and Chappin, 2019). It is related to how companies economize on cognitive efforts regarding processing information, which results in satisficing decisions rather than optimal ones (Venmans, 2014). The satisficing behavior occurs when companies do not operate as profit-maximisers, but as satisfactory solutions-seekers (Simon, 1955; Knobloch and Mercure, 2016).

However, climate change urgency makes the choice of the satisfactory/fairly good options insufficient and compels us to opt for the ideal/optimal choices that will benefit both the sustainability of our planet and the competitiveness of our companies (Atwoli et al., 2022).

In this research, we examine the negative effect of the satisficing heuristic on energy efficiency practices within the Moroccan manufacturing sector, and we explore potential avenues to cope with this behavioral barrier.

After a literature review on energy efficiency drivers, financial slack is regarded as an important enabler for the adoption of new practices with companies, particularly those that require a high

investment expenditure (Teirlinck et al., 2022). Financial slack testifies to companies’ financial competence (Tran et al., 2018). Companies with a high level of financial slack tend to take more risks (Wieczorek-Kosmala and Błach, 2019), and innovate more (Lu and Wong, 2019), including innovations related to energy efficiency (Modi and Cantor, 2021). However, for a part of the literature suggest that a high level of financial slack could increase risk aversion (Bensouda and Benali, 2022d) and inefficiencies (Xiao et al., 2021). We believe that companies with a high level of financial slack would not be content with “good enough” energy efficiency practices, but “optimal” ones instead, as they reduce more utility costs.

In addition, we found that incentives instruments could play a big factor in promoting energy efficiency practices within companies (Yue et al., 2022). Governments provide incentive instruments through financial and economic programs (Bensouda and Benali, 2022b). These instruments include energy taxes, tax deduction, subsidies, rebates, etc. (Safarzadeh et al., 2020). Incentive instruments encourage companies to adopt positive energy behaviors (Zhang et al., 2018). Incentive instruments could reduce the intensity of energy efficiency barriers within companies (Cattaneo, 2019). We believe that companies that perceive a high level of incentive instruments are more likely to adopt the best/optimal energy efficiency practices rather than being content with the “fairly good” ones.

Furthermore, we found that mimetic pressure is intimately related to organizational behaviors (Xie et al., 2021). Mimetic pressure results from positive feedback from pioneers regarding the effectiveness of a practice, which influences other companies to replicate the same successful practice (Islam, 2020). Mimetic pressure could increase sustainable practices within companies (Ji, 2020), including energy efficiency practices (Bensouda and Benali, 2022c). In this aspect, we believe that mimetic pressure could reduce the intensity of companies’ satisficing behavior regarding energy efficiency practices.

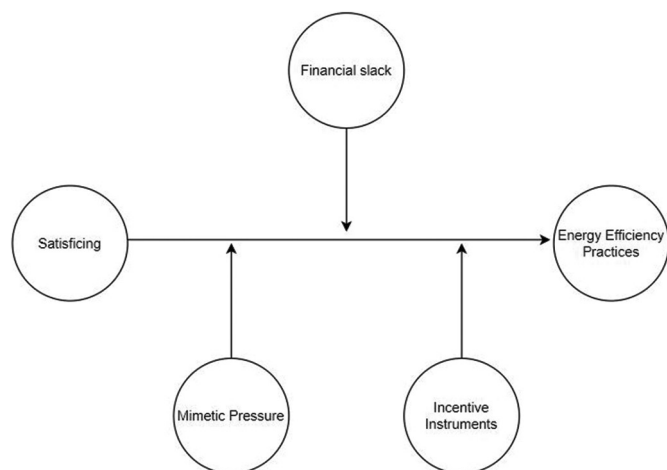
In our study, we build a research model that integrates the satisficing behavior of companies as a potential barrier to energy efficiency, and financial slack, incentives instruments and mimetic pressure as factors that reduce the intensity of companies’ satisficing behavior regarding energy efficiency practices.

In the first section, we present our research model, the theoretical background and our hypotheses. In the second section, we explain the process of data collection and data analysis method. Then, in the third section, we present our results. Subsequently, in the fourth section, we discuss the findings of the study. Finally, in the fifth section, we elaborate on the policy implications of our study.

2. THEORETICAL BACKGROUND AND RESEARCH HYPOTHESES

Based on Figure 1, our research model aims to:

- Examine the effect of companies’ satisficing on the implementation of energy efficiency practices
- Explore the moderating effect of mimetic pressure, incentive

Figure 1: Research model

instruments, and financial slack on the relationship between satisficing and energy efficiency practices.

2.1. Satisficing

The concept of “satisficing” is arguably the Herbert Simon’s biggest contribution to decision making theory (Brown, 2004). Simon’s concept was formed following his thought that managers “satisfice” rather than “maximize” (Simon, 1955).

Companies could be satisficed when their decisions suffice for the purpose. Thus, a satisfactory sufficiency emerges and leads to decisions that are good enough but not optimal or ideal, decisions that are sufficient to satisfy requirements (Brown, 2004).

The satisficing behavior is related to how companies make less cognitive efforts regarding processing information, which results in satisficing decisions rather than optimal ones (Venmans, 2014). The satisficing behavior occurs when companies do not operate as profit-maximisers, but as satisfactory solutions-seekers (Simon, 1955; Knobloch and Mercure, 2016).

The satisficing behavior affects companies regarding the adoption of new and innovative practices (Currie et al., 2022; Geisler and Turchetti, 2022), including energy efficiency practices (Lützen et al., 2017).

The satisficing heuristic is a major behavioral barrier to energy efficiency (Hesselink and Chappin, 2019). Companies might adopt energy efficiency practices until a specific threshold is reached (Abrardi, 2019). Companies might be content with a “fairly good” choice rather than engaging cognitive effort to achieve the “ideal” options that maximizes companies’ productivity and reduces their greenhouse gas emissions to the lowest level possible. Therefore, we propose the following hypothesis:

Hypothesis 1: Companies’ satisficing behavior has a negative direct effect on energy efficiency practices.

2.2. Financial Slack

Slack resources are defined as the actual and potential resources that enable an organization to successfully respond to signals from both

its internal and external environment (Agusti-Perez et al., 2020). Slack resources can be separated in the following categories: Organizational slack, human resource slack, operational slack, and financial slack (Nguyen et al., 2019; Sun et al., 2020).

Financial slack is the sum of available cash and untapped debt potential (Bensouda and Benali, 2022c). Financial slack is the easiest category of slack resources to be transformed into other categories of slack (De Jong et al., 2021). Therefore, financial slack is proven to be the most flexible slack resource since companies’ liquidity could be used to hire performing employees, to purchase materials, and to enhance the overall performance (Xiao et al., 2021).

The literature is inconsistent on how financial slack affects companies’ behaviors (Zhang et al., 2018). For a first group of researchers, financial slack is vital for enhancing companies’ innovative practices (Wu and Hu 2020; Jermias and Yigit, 2022). For a second group of researchers, a high level of financial slack results in a rise in organizational inefficiencies (Hailu et al., 2020). For a third group of researchers, there is a U-shaped relationship between financial slack and innovative practices (Yoo et al., 2022; Yang et al., 2021).

Companies’ financial competence could be crucial to implement energy efficiency practices, as many of them require a significant investment expenditure and maintenance expenses (Schleich et al., 2021). Conversely, a low level of financial slack would reduce companies’ capability of adopting energy efficiency practices, which would make energy issues of lesser importance. In addition, a high level of financial slack decreases the intensity of energy efficiency barriers (Vakili et al., 2022). We suggest that financial slack moderates the negative relationship between companies’ satisficing and energy efficiency practices.

Hypothesis 2: Financial slack attenuates the negative relationship between companies’ satisficing behavior and energy efficiency practices.

2.3. Incentive Instruments

According to institutional theory, external pressure leads to uniformity in organizational behaviors (Struckell et al., 2022). This push factor is referred to as institutional pressure (Khassawneh and Elrehail, 2022). Institutional pressure has the following three dimensions: Coercive pressure, normative pressure, and mimetic pressure (Fany, 2022).

Coercive pressure is one of the three dimensions of the institutional pressure. Due to the increasing importance of energy efficiency, governments are compelled to enhance energy efficiency practices within companies, namely through coercive pressure (Yue et al., 2022). Governments’ coercive pressure could materialize into either command-and-control instrument (Liang et al., 2007), or incentive instruments (Zhang et al., 2018). Therefore, coercive pressure could be considered as a force “command-and-control instruments,” but also as a persuasion “incentive instruments” (Liu et al., 2014).

Incentive instruments encourage companies to adopt positive energy behaviors (Zhang et al., 2018). Incentive instruments

include preferential tax policies, subsidies, rebates, etc. (Bensouda and Benali, 2022b).

Incentive instruments are becoming one of the major instruments used by government to promote energy efficiency practices within companies (Safarzadeh et al., 2020). According to several studies, incentive instruments reduce the intensity of energy efficiency barriers (Zhang and Wang, 2013; Timilsina et al., 2016; Snow et al., 2021). Therefore, we believe that incentive instruments reduce the intensity of companies’ satisficing regarding energy efficiency practices.

Hypothesis 3: Governments’ incentives attenuate the negative relationship between companies’ satisficing and energy efficiency practices.

2.4. Mimetic Pressure

Mimetic pressure is one of the three dimensions of the institutional theory. Mimetic pressure provides an explanation on how practices arise and persist over time within companies (Amoako et al., 2021). Mimetic pressure is exerted by companies’ peers affect companies’ behaviors (Chaudhry and Amir, 2020). Mimetic pressure refers to a pressure to benchmark other companies’ practices, this pressure is exerted by leading companies in each sector (Yang and Kang, 2020).

Positive feedback from pioneers regarding the effectiveness of a practice influences other companies to replicate the same successful practice (Cubilla-Montilla et al., 2020). Therefore, organizational behaviors’ popularization within companies is intimately related to mimetic pressure (Xie et al., 2021).

Ambiguity regarding the use of new practices and technologies (Alsaad and Taamneh 2019), and uncertainty regarding their outcome (Lutfi, 2020) could lead companies to emulate leading companies’ that have addressed similar challenges (Yang and Kang, 2020).

Several studies found that mimetic pressure increases sustainable practices within companies (Rudyanto, 2019; Ji, 2020), including energy efficiency practices (Yee et al., 2020; Preziosi et al., 2022). In addition, mimetic pressure reduces the intensity of energy efficiency barriers (Mahmood et al., 2019). Therefore, we believe that mimetic pressure reduces the intensity of “satisficing” regarding energy efficiency practices.

Hypothesis 4: Mimetic pressure attenuates the negative relationship between companies’ satisficing behavior and energy efficiency practices.

Figure 2 shows our research model with research hypotheses.

3. METHODS

3.1. Measurement Development

Survey-based research necessitate a carefully designed questionnaire. Several measures were applied to ascertain the quality of the questionnaire. The measurements of constructs were developed on the basis of prior research (Zhang et al., 2018; Bensouda and Benali, 2022) (Appendix 1). We chose simple, precise, and concise wordings, eliminating language that may be regarded as objectionable. Subsequently, we initiated the pretest phase. We selected 15 respondents during this phase, the purpose

was to collect answers from respondents that are likely to have the same characteristics as the final version of the questionnaire’s respondents (different companies, sectors, and regions, etc.). Following respondents’ feedback, minimal refinements were made resulting in the final version of the questionnaire.

3.2. Data Collection

Data was collected over a four-month period, from May to August 2022. Questionnaires were administrated to employees in industrial companies in Morocco. Respondents’ companies are based in four regions: “Fes-Meknes,” “Tanger-Tétouan-Al Hoceïma,” “Casablanca-Settat,” and “Rabat-Salé-Kénitra.” The “Fes-Meknes” region was selected for the sake of convenience, whereas the three other regions were selected as they comprise the main industrial cities of Morocco.

93 workable questionnaires were retrieved. Table 1 indicates respondents’ characteristics. The majority of the questionnaire’s

Figure 2: Research model with hypotheses

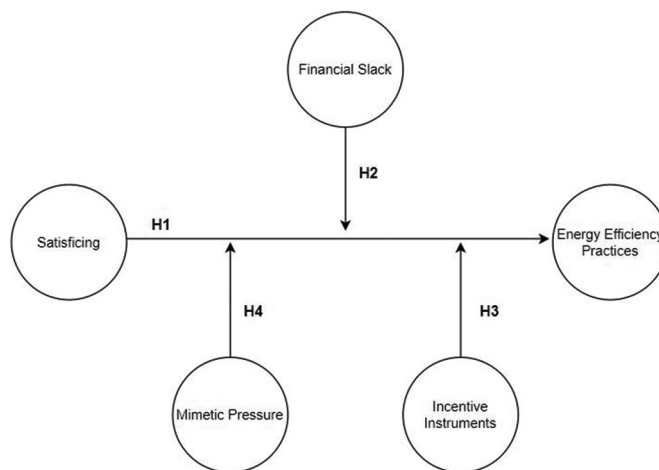


Table 1: Sampling characteristics

Department	Number	Percentage
Finance	68	35
Production	42	22
Technical	39	20
Top management	34	18
Others (e.g., logistics, quality)	8	4
Nationality		
Moroccan Companies	104	54
Multinational Corporations	89	46
Industry		
Textiles	42	22
Food processing	32	17
Automotive	29	15
Chemicals and para-chemicals	27	14
Energy	18	9
Aircraft parts	13	7
Leather goods	11	6
Others (e.g., metal fabrication)	21	11
Location		
Fès-Meknès	60	31
Tanger-Tétouan-Al Hoceïma	52	27
Rabat-Salé-Kénitra	41	21
Casablanca-Settat	40	21

respondents are allegedly capable of reporting adequate answers regarding energy efficiency within their companies since they belong to departments such as finance, production, etc. (Zhang et al., 2018; Bensouda and Benali, 2022).

Based on information presented in Table 1, the 193 companies forming our sample are composed of Moroccan companies (54%) and multinational corporations (46%). The nationality of companies could be relevant to our study since the existence of a mimetic pressure exerted by multinational corporations on Moroccan companies (Peng et al., 2022). In addition, the companies forming our sampling operate in various sectors including the most polluting industrial sectors that might be eligible to incentive instruments for reducing their greenhouse gas emissions (Zheng and Shi, 2017). Furthermore, our sampling is composed of companies from sectors that are well-recognized for the financial slack they generate (Ashwin et al., 2016).

3.3. Data Analysis Method

To analyze our data, to assess our model and to test our research hypotheses, we selected the partial least square (PLS) method and the SMARTPLS 3 software. The Partial least square was selected for its practicality and convenience regarding the assessment of relationships among constructs/latent variables, including the moderation relationships (Nguyen-Phuoc et al., 2021).

The partial least squares regression is constituted from the measurement model and the structural model (Abdurrahman et al., 2022). The measurement model treats the relationship between constructs/latent variables and their related items/measures. The structural model explores the relationship between the constructs/latent variables.

In our study, we used the software SMARTPLS to examine the relationship between our five constructs/latent variables and their corresponding items/measures with the aims of determining the extent to which our questionnaire’s questions explain the various constructs/latent variables. Moreover, we used SMARTPLS to explore the direct effect, which is the effect of the independent variables “satisficing” on the dependent variable “energy efficiency practices”. In addition, we used SMARTPLS to examine the indirect moderating effects of “mimetic pressure,” “incentive instruments” and “financial slack” on the relationship between “satisficing” and “energy efficiency practices”.

4. RESULTS

4.1. Measurement Model

4.1.1. Convergent validity

We first start our analysis by assessing the convergent validity of the measurement model. The convergent validity analysis follows three phases: First, determining factor loadings. Second, performing Cronbach’s alpha and composite reliability. Third, conducting the Average Variance Extracted (AVE) (Fornell and Larcker, 1981; Shevlin and Miles, 1998; Cascardi et al., 1999; Hair et al., 2014; Streiner, 2003; Afthanorhan, 2013; Bonett and Wright, 2015; Dos Santos and Cirillo, 2021).

We first measured factor loadings (Cascardi et al., 1999; Hair et al., 2014). As recommended, items/indicators with a value below 0.7 were dropped from the analysis when this led to greater composite reliability’s and AVE’s values (Shevlin and Miles, 1998). As a result, three items/indicators were not analyzed, namely (EEP6, EEP7, and EEP8). Table 2 shows the retained factor loadings (Hair et al., 2014). Following the first phase, our items/indicators are significantly correlated to their respective constructs/latent variables.

The second phase aims to assess the reliability of our constructs/latent variables. This was accomplished using both Cronbach’s alpha and composite reliability. All our constructs/latent variables have a Cronbach’s alpha exceeding the 0.7 threshold (Bonett and Wright, 2015). In addition, all our constructs/latent variables have a composite reliability above the recommended value of 0.7 (Lenny and Kridanto 2019). Following the second phase, all our constructs/latent variables are internally consistent (Streiner, 2003).

The third phase consists of assessing the Average Variance Extracted (AVE). All our constructs/latent variables have an AVE’s value greater than the recommended value of 0,5 (Fornell and Larcker, 1981). Thus, our constructs/latent variables explain their items/indicators (Afthanorhan, 2013; Dos Santos and Cirillo, 2021).

Therefore, our measurement model’s convergent validity is established.

4.1.2. Discriminant validity

After assessing the convergent validity of our measurement model, we proceed to the assessment of the discriminant validity of our measurement model. For this purpose, we performed both Fornell and Larcker criterion and the heterotrait-monotrait ratio of correlations (HTMT) (Henseler et al., 2015; Rasoolimanesh, 2022; Afthanorhan et al., 2021).

Table 2: Results of measurement model - convergent validity

Constructs	Items	Loadings	Cronbach’s Alpha	CR	AVE
Incentive Instruments	II1	0.947	0.898	0.938	0.835
	II2	0.961			
	II3	0.827			
Energy Efficiency Practices	EEP1	0.797	0.934	0.950	0.793
	EEP2	0.848			
	EEP3	0.938			
	EEP4	0.946			
	EEP5	0.915			
Financial Slack	FS1	0.873	0.877	0.921	0.796
	FS2	0.887			
	FS3	0.917			
Satisficing	SAT1	0.920	0.923	0.951	0.867
	SAT2	0.944			
	SAT3	0.929			
Mimetic Pressure	MP1	0.901	0.896	0.935	0.828
	MP2	0.873			
	MP3	0.955			

To fulfill the Fornell and Larcker criterion, the diagonal values should be greater than the inter-construct correlations. Table 3 indicates that all our constructs/latent variables explain the variance of their items/indicators better than the variance of other constructs/latent variables.

To assess the discriminant validity of our measurement model, we also performed the HTMT ratio to measure the degree of similarity between constructs/latent variables (Kline, 2011; Henseler et al., 2015). Table 4 shows the results of the HTMT ratio, all values are under the 0.85 threshold (Jermsittiparsert et al., 2020).

After conducting the Fornell and Larcker criterion and the HTMT ratio, the discriminant validity of our measurement model is then established.

4.2. Structural Model

4.2.1. Direct effect

PLS-SEM is a two-stage analysis (Sarstedt et al., 2019). After assessing the measurement model, we proceed to the assessment of the structural model of our structural model. This phase aims to explore the different direct and indirect relationship among the constructs/latent variables.

We start our structural model analyses by calculating R², Q², and the standardized root mean squared residual (SRMR).

The R-Squared indicates the percentage of variation in the dependent variables that could be attributed to the independent variables (Hair et al., 2011). Based on Table 5, R² value for our dependent variable which is energy efficiency practices is greater than the 0.1 threshold. Therefore, our independent variables which are financial slack, incentive instruments and mimetic pressure, explain 63.1% of the dependent variable energy efficiency practices.

The Q-Squared value indicates the predictive relevance of the dependent variables. The predictive relevance of the model is established when Q² is above zero (Abd Rashid et al., 2016). Table 5 shows that energy efficiency practices’ Q² value is well above 0. The predictive relevance of the structural model is then established.

The standardized root mean squared residual (SRMR) aims to indicate the model fit (Yew et al., 2022). Table 6 indicates that our SRMR index equals to 0.073, which is within the recommended range for SRMR (between 0 and 0.08) (Hu and Bentler, 1999), showing acceptable model fit.

After performing the R-Squared, the R-Squared, and the SRMR, we proceed to hypotheses testing.

We start with the direct effect. From Table 7, satisficing negatively influences energy efficiency practices ($\beta = -0.486$, $t = 9.587$, $P < 0.001$), hypothesis 1 is then supported.

Table 3: Fornell and Larcker criterion - Discriminant validity

	EEP	FS	II	MP	SAT
Energy Efficiency Practices	0.891				
Financial Slack	0.632	0.892			
Incentive Instruments	0.647	0.469	0.914		
Mimetic Pressure	0.517	0.362	0.755	0.910	
Satisficing	-0.613	-0.461	-0.415	-0.318	0.931

Table 4: HTMT ratio- Discriminant validity

	EEP	FS	II	MP	SAT
Energy Efficiency Practices					
Financial Slack	0.664				
Incentives	0.707	0.507			
Mimetic Pressure	0.562	0.392	0.837		
Satisficing	0.657	0.488	0.456	0.344	

Table 5: R square and Q square of the model

	R Square	Q Square
Energy Efficiency Practices	0.631	0.490

Table 6: The model fit using SRMR

	Saturated Model	Estimated Model
SRMR	0.073	0.073

4.2.2. Indirect moderating effect

After assessing the direct effect, we proceed to the testing of moderation hypotheses.

Moderation analysis was conducted to assess the moderation role of the following constructs/latent variables: Mimetic pressure, incentive instruments and financial slack. The purpose is to determine whether the above-mentioned constructs/latent variables dampen the negative relationship between satisficing and energy efficiency practices.

Based on Table 8, hypotheses 2 and 3 are not supported. Hypothesis 3 which posits that incentive instruments dampen the negative relationship between satisficing and energy efficiency practices, is not supported ($\beta = 0.057$, $t = 1.724$, $P > 0.05$). Hypothesis 2 which suggests that financial slack dampens the negative relationship between satisficing and energy efficiency practices, is not supported as well ($\beta = 0.076$, $t = 1.809$, $P > 0.05$).

Conversely, hypothesis 4 which states that mimetic pressure dampens the negative relationship between satisficing and energy efficiency practices, is confirmed ($\beta = 0.403$, $t = 7.639$, $P < 0.001$).

Results of the structural model’s analysis are presented in Figure 3.

5. DISCUSSION

5.1. Discussion on Expected Results

Our research is centered on factors that might decrease the strength of companies’ satisficing behavior regarding energy efficiency

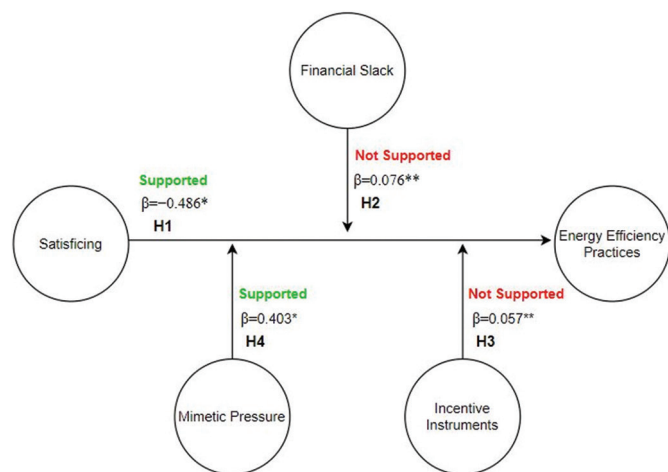
Table 7: Path coefficient of the Research Hypotheses

Hypotheses	β	STDEV	T Values	P Values	2.5%	97.5%	Decision
H1 SAT -> EEP	-0.486	0.045	9.587	0.000	-0.509	-0.295	Supported

Table 8: Indirect moderating effect

Hypotheses	B	STDEV	T Values	P Values	2.5%	97.5%	Decision
H2 SAT*FS -> EEP	0.076	0.045	1.809	0.092	0.074	0.161	Not Supported
H3 SAT*II -> EEP	0.057	0.051	1.724	0.076	0.069	0.125	Not Supported
H4 SAT*MP -> EEP	0.403	0.041	7.639	0.000	0.312	0.482	Supported

Figure 3: Results of PLS analysis, with ** P > 0.05; * P < 0.001



practices. Our research model was empirically tested, and the findings were as follows:

Hypotheses 1 and 4 are consistent with both our previous expectations and the previous literature (Hesselink and Chappin, 2019; Zhu and Chertow, 2019; Yee et al., 2020; Preziosi et al., 2022).

The satisficing barrier is negatively related to energy efficiency practices. Companies are less likely to adopt energy efficiency practices when they consider the practices already adopted as satisfying enough and sufficing enough, even if these practices are not ideal and optimal. One possible explanation is that companies develop a satisfactory sufficiency that makes them complacent and prevents them from seeking optimal energy efficiency practices which maximize energy-savings.

Mimetic pressure is positively related to energy efficiency practices. Companies are more likely to implement energy efficiency practices when their competitors adopt the same energy efficiency practices and benefit from them. One possible explanation is that companies’ priority is to maintain their competitive position within their sector, and they only adopt energy efficiency practices when their survival is at stake. In addition, companies adopt energy efficiency practices when it is established that other companies have benefited from them, which could be explained by companies’ risk aversion regarding the adoption of energy efficiency practices (Bensouda and Benali, 2022c).

5.2. Discussion on Unexpected Results

However, hypotheses 3 and 4 are inconsistent with both our previous expectations and the previous literature (Högberg et al., 2009; Liang et al., 2014; Ameli et al., 2020).

Incentive instruments do not dampen the negative relationship between satisficing and energy efficiency practices. Companies are less likely to adopt energy efficiency practices once they reach an “acceptable” threshold, even if they benefit from governments’ incentives. To have more depth, we complemented our findings by directly connecting governments’ incentives to energy efficiency practices. We found that governments’ incentives positively affect companies’ energy efficiency practices (beta value equals to 0.311, T-value equals to 5.752, And P value is null). Thus, incentive instruments do not sustain energy efficiency practices within companies after reaching a satisficing threshold. One plausible explanation is that often, companies’ response to incentive instruments tends to be short-lived and do not constitute a long-term motivation (Ferrari and Beccali, 2017). Governments’ incentives should then be complemented by long term motivation that would sustain energy efficiency practices within companies. Hence, the role of industries’ leading companies in sustaining a healthy competition within their sectors. A memetic pressure would lead other companies to be in a constant replication of the best available energy efficiency practices.

Financial slack does not dampen the negative relationship between satisficing and energy efficiency practices. Our findings show that companies are less likely to adopt energy efficiency practices once they reach an “acceptable” threshold, even if they have the required financial competence to adopt more energy efficiency practices. We wanted to complement our findings by directly connecting financial slack to energy efficiency practices. We found that financial slack has a positive direct effect on companies’ energy efficiency practices (beta value equals to 0.374, T-value equals to 6.426, And P value is null). Therefore, companies’ financial resources lead them to adopt energy efficiency practices. However, when a satisficing threshold is reached, financial slack is not sufficient to incentivize companies to adopt optimal energy efficiency practices. One possible explanation is that once the satisficing threshold is reached, financial slack should be complemented by other capabilities, allowing companies to detect and effectively integrate the “optimal” energy efficiency practices. In this aspect, companies’ satisficing behavior could be explained by a lack of other internal capabilities (Meyers and

VanGronigen, 2019). From this perspective, internal capabilities such as organizational/managerial capabilities could be a solution to tackle behavioral companies within companies.

From what precedes, complementing governments’ incentives by internal capabilities and financial slack by internal capabilities, could lead companies to enhance their energy efficiency practices.

6. CONCLUSION AND POLICY IMPLICATIONS

This study aims to determine ways to decrease the intensity of companies’ satisficing behavior regarding energy efficiency practices. After collecting data from 193 companies from the Moroccan industrial sector, we used the Partial Least Squares regression (PLS) method to test our research model and our research hypotheses. Subsequently, the following results were obtained:

- Companies’ satisficing behavior hinders the implementation of energy efficiency practices (direct effect)
- Financial slack has a positive direct effect on energy efficiency practices. However, financial slack does not attenuate the negative relationship between companies’ satisficing behavior and energy efficiency practices
- Incentives instruments has a positive direct effect on energy efficiency practices. However, incentive instruments do not attenuate the negative relationship between satisficing and energy efficiency practices (moderation effect)
- Mimetic pressure attenuates the negative relationship between satisficing and energy efficiency practices (moderation effect).

Following the findings, our study’s policy implications are as follows:

Our results indicate that mimetic pressure is crucial for reducing the intensity of companies’ satisficing behavior regarding energy efficiency practices. From this perspective, governments could:

- Promote through the media industries’ leading companies that have built a competitive advantage by implementing energy efficiency practices (Zhang et al., 2022)
- Introduce an award system rewarding the most performing companies in terms of energy efficiency (Ning et al., 2019)
- Encourage multinational corporations to locate in Morocco due to the mimetic pressure they could exert on domestic companies (Peng et al., 2022).

However, governments should ensure that mimetic pressure does not overwhelm small and medium companies that may not have the capability to emulate bigger companies’ energy efficiency practices. From this perspective, governments should determine the most adequate energy efficiency practices for small and medium companies and provide them with technical support. Governments’ technical support would be also helpful to build and develop companies’ internal capabilities.

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APPENDIX

Appendix 1: Items/measures’ wordings.

Variable	Code	Wording
Energy	EEP1	Your company establishes regular routines with respect to EE (air conditioning, lighting, etc.).
	EEP2	Your company traces the energy usage of its factories.
Efficiency	EEP3	Your company acquires new equipment and installations to decrease its energy expenditure.
Practices	EEP4	Your company deploys environmentally friendly energy sources (solar panels, etc.) to decrease energy usage.
	EEP5	Your company undertakes self-initiated energy audits to determine EE opportunities.
Satisficing	SAT1	You consider energy efficiency practices within your company as enough and sufficing.
	SAT2	You consider your energy efficiency practices within your company as not optimal.
	SAT3	Your company is content with its “satisficing” energy efficiency practices even if they are not optimal.
Mimetic	MP1	The industry’s leading companies have already implemented EEP.
	MP2	The industry’s leading companies that have implemented EEP are positively regarded by companies within the industry.
Pressure	MP3	The industry’s leading companies have built a competitive advantage by implementing EEP.
Incentive	II1	The authorities provide subsidies to encourage you company to adopt EEP (in auditing, etc.).
Instruments	II2	The authorities provide preferential tax to encourage you company to adopt EEP.
	II3	The authorities provide Energy-saving loan support to encourage you company to adopt EEP.
Financial	FS1	Your company’s financial situation is satisfactory.
Slack	FS2	Your company has internal financial resources to fund upcoming investments.
	FS3	Your company could receive outside financing for upcoming investments.