

**Navigating Sustainability: Investigating the Impact of Mimetic Pressure on SMEs'
Adoption of Solar Panels**

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Abstract

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Julie Assaf Bou Saba

This study examines the impact of mimetic pressure on the adoption of sustainable strategies, specifically solar panels, for SMEs in Lebanon. Based on the institutional theory and resource-based view, the study hypothesizes that mimetic pressure would positively influence top management awareness of sustainable practices and the adoption of sustainable strategies, with financial benefits playing a moderating role. The study surveyed 52 SMEs and found that mimetic pressure positively affects both top management awareness and the adoption of sustainable strategies. Additionally, the study found that top management awareness partially mediates the relationship between mimetic pressure and the adoption of sustainable strategies. However, the results indicated that perceived financial benefits do not play a moderating role. Overall, the study highlights the importance of mimetic pressure and top management awareness in driving the adoption of solar panels in SMEs in developing countries.

Key words: Mimetic Pressure, Top Management Awareness, Adoption of Sustainable Strategies, Solar Panels, SME

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Table of Content

List of Figures.....	VII
List of Tables	VIII
Introduction.....	1
Literature Review and Hypotheses Development.....	8
Mimetic Pressure, Top Management Awareness and Adoption of sustainable strategies.....	9
Top Management awareness and Adoption of Sustainable Strategy	10
Perceived Financial Benefits.....	12
Methodology	14
Design and Participants.....	14
Measures.....	14
Results	17
Testing for Mediation.....	21
Testing for Moderated Mediation	23
General Discussion.....	25
Summary of Results	25
Theoretical Implications.....	26
Managerial Implications.....	27
Limitations and Future Research.....	28
Conclusion.....	30

References.....	31
Appendix A.....	42

List of Figures

Figure 1: Framework of the Mediating Effects of Top Management Awareness

Figure 2: Framework of the Moderating Effects of Perceived Financial Benefits

Figure 3: The Interactive Effect of Top Management Awareness and Perceived Benefits on the Adoption of Solar Panels

Figure 4: The Interactive Effect of Mimetic Pressure and Perceived Benefits on the Adoption of Solar Panels

List of Tables

Table 1: Participants Demographics

Table 2: Firm Characteristics

Table 3: Correlation Matrix

Table 4: Mediation Analysis Summary

Introduction

In order to achieve the Paris Agreement's goal of keeping the increase in global temperature to 2°C, fossil fuels must be gradually phased out and replaced with energy sources that emit fewer carbon emissions. To mitigate the effects of climate change, organizations all around the world must embrace sustainable practices. To achieve the world's climate goals, increased electricity output from renewable energy sources, such as solar panels, is particularly important. Understanding the elements that affect the adoption of solar panels is important, especially since current market developments indicate that solar energy will be quickly adopted in both developed and emerging markets.

SMEs are dominating the world's economy and constitute around 99% of all firms (OECD,2022) and they are responsible for the consumption of a large portion of the resources. Given that they make up a sizable fraction of the entire economy, SMEs are accountable for over 70% of industrial waste pollution worldwide (Revell et al., 2009). Therefore, sustainability in the context of SMEs is pertinent since the characteristics of SMEs suggest that they would operate differently toward sustainability (Moore and Manring, 2009). The collective actions and results of small businesses, which make up a large portion of economies worldwide, can have a substantial impact on a global scale.

SMEs play a critical role in the development of a country's economy, particularly in developing nations. In addition to their importance for the economy, SMEs are crucial for promoting environmental sustainability. In developed countries, sustainability is commonly recognized as a fundamental value of contemporary business. However, the situation in developing and undeveloped regions of the world is significantly different. Many developing nations face challenges in balancing social and economic progress with the need to protect the environment (Muller and Kolk, 2009). Moreover, Hong et al. (2018) argues that institutional factors such as the influence of industry norms have a higher impact on the adoption of sustainable initiatives by enterprises in developing nations since these practices are still in a relatively early stage of development in these regions. Without external pressure, most SMEs are reluctant to participate in environmental activities, according to research by Studer (2006).

In this sense, competition from successful competitors who have embraced sustainable strategies methods is essential in encouraging enterprises to do the same (Mani et al., 201; Dai et al., 2015). When companies are under pressure, they may become more aware of the need to address sustainability, and this increased awareness may help them construct their strategy and decision-making processes. More importantly, the development and execution of a strategy, as well as the provision of financial resources to support social and environmental initiatives within an organization and in its supply chain, all depend on top management support (Dubey et al., 2017; Kor, 2006). This increased understanding at the top management level may lead to a stronger commitment to sustainability and more resources being allocated to developing and implementing sustainable initiatives. Therefore, the increased top management team awareness brought on by these forces has the potential to have a substantial impact on how sustainable firms' function.

SMEs are encouraged to follow sustainable practices in order to retain their competitiveness, however, putting these practices into practice can be difficult due to financial limitations, particularly when it comes to the expense of adopting environmentally sustainable technologies. Many studies have found that cost constraints are one of the most significant barriers to implementing environmentally sustainable technologies (Bhanot et al., 2017). According to Johnstone and Labonne (2009), smaller organizations financial benefits factors as being the most important consideration, and financial support and profitability are key variables in determining whether SMEs implement sustainability practices. The relationship between financial risk attitude and success in the SME sector has been the subject of much empirical research (Rauch and Frese, 2000; Goswami et al., 2017), and was found to have a positive impact on the sustainability of SMEs (Krauss et al., 2005).

Resource Based View theory (RBV) suggests that organizations acquire specific resources employed to raise their performance in a competitive environment (Halley and Beaulieu, 2009). Physical capital, human capital, and organizational capital were the three categories of resources outlined by Barney (1991). Later, Grant (1991) broadened this categorization to include other forms of resources like financial capital, technological capital, and reputational capital. According to RBV, the resources need to be valuable, rare, inimitable, and non-substitutable to create a competitive advantage (Barney and Griffin, 1991). A firm's behavior is influenced by its internal resources and capabilities, external environment, and combinations of these elements, according

to the strategic choice method (Child, 1997). Many research studies used RBV to analyze the adoption of sustainable strategies by organizations (Touboulic and Walker 2015, Bowen et al. 2009). Moreover, it can assist SMEs in understanding how to successfully develop their resources and skills, which can support sustainability and profitability over the long run. It is crucial for top management to be aware of the potential advantages of resource capability building and the role it plays in the economic side of the business in the context of small and medium-sized companies (SMEs) in developing countries. The RBV logic can be a useful tool to describe how assets and capabilities are created and successfully used, helping to ensure the long-term viability and profitability of SMEs. RBV can therefore be a helpful conceptual framework for SMEs to adopt when they think about the economic aspect of environmental sustainability performance.

Resource Based View theory (RBV) suggests that organizations acquire specific resources employed to raise their performance in a competitive environment (Halley and Beaulieu, 2009). Physical capital, human capital, and organizational capital were the three categories of resources outlined by Barney (1991). Later, Grant (1991) broadened this categorization to include other forms of resources like financial capital, technological capital, and reputational capital. According to RBV, the resources need to be valuable, rare, inimitable, and non-substitutable to create a competitive advantage (Barney and Griffin, 1991). A firm's behavior is influenced by its internal resources and capabilities, external environment, and combinations of these elements, according to the strategic choice method (Child, 1997). Many research studies used RBV to analyze the adoption of sustainable strategies by organizations (Touboulic and Walker 2015, Bowen et al. 2009). Moreover, it can assist SMEs in understanding how to successfully develop their resources and skills, which can support sustainability and profitability over the long run. It is crucial for top management to be aware of the potential advantages of resource capability building and the role it plays in the economic side of the business in the context of small and medium-sized companies (SMEs) in developing countries. The RBV logic can be a useful tool to describe how assets and capabilities are created and successfully used, helping to ensure the long-term viability and profitability of SMEs. RBV can therefore be a helpful conceptual framework for SMEs to adopt when they think about the economic aspect of environmental sustainability performance.

Oliver (1997) argues that the RBV approach had neglected to take into account the social context which embeds decisions regarding resource selection. He offered a theoretical model that

blends RBV and institutional theory to address these flaws. Also, Sarkis (2012) suggested the importance of institutional theory and RBV together to understand the relationships and performance of organizations.

In organizational research, the institutional theory is a common framework that is used to describe how organizations react to challenges from their external environment. Institutional theory has been used as a reliable theoretical lens for analyzing the influences that drive organizations to pursue legitimacy (DiMaggio and Powell 1983), including the motives behind the adoption of corporate environmental management practices. The mechanisms that organizations use to maintain legitimacy can therefore be examined through the lens of institutional theory. Isomorphism is one of these mechanisms, which explains how and why organizations become more similar to one another. As organizations may feel pressure to comply with environmental standards in order to maintain legitimacy, isomorphism is especially pertinent to the study of corporate environmental management. Looking at the isomorphic pressures that organizations face helps better understand how organizations react to environmental challenges and the factors that affect their behavior.

According to institutional theory, organizations are exposed to normative, mimetic, and coercive isomorphic pressures, and these three factors are the key mechanisms of isomorphism (DiMaggio and Powell, 1983). SMEs in developing nations face challenges while implementing sustainable practices. This is due to the possibility that there is a lack of knowledge and comprehension of sustainable practices, which could prevent the development of social standards and principles based on sustainable behaviors. Furthermore, it may be challenging to impose environmental norms through normative pressure because SMEs could be embedded in regional social networks that value relationships and trust over formal legislation. Additionally, SMEs may find it difficult to adhere to rules and norms that are enforced externally due to lack of resources, poor governance, and corruption, which pushes them to prefer adopting practices that their peers are using. In such context, mimetic pressure could play a more significant role than coercive and normative pressure. Mimetic isomorphic pressure occurs when organizations model themselves on other successful organizations in response to uncertainty. Mimetic pressure can have a significant impact on organizational behavior, particularly in an ambiguous environment (Caldera et al., 2019; Khoja et al., 2022; Shubin et al., 2020). In the context of SMEs, where resources are

frequently in limited availability, adopting sustainable strategies can be done cost-effectively by imitating the sustainable practices of other firms. Moreover, mimetic pressure arises when organizations are unsure about how to function in an unfamiliar setting, and it plays a crucial role when SMEs face uncertainty about the implementation of sustainable strategies effectively. In a developing country, where there is a lack of institutional support for adopting sustainable environmental practices, mimetic pressure could be a significant driver for sustainability for SMEs.

While RBV can assist in identifying the unique assets and capabilities of SMEs that enable them to adopt environmentally sustainable strategies, institutional theory can be used to better understand the external influences that affect top management's views toward sustainability. Furthermore, Greenwood and Hinings (1996) have also argued that institutional theory solely does examine how institutional pressures are translated into the selection of strategic resources in order to achieve sustainable performance. Hence, this study combines RBV and institutional theory to determine the main motivators and obstacles for SMEs in a developing country to implement sustainable practices.

Previous studies on corporate social responsibility were mainly conducted in developed countries (Schlegelmilch and Szöcs,2020; Golob and Barlett,2007), and the results of the studies in developing countries were debatable (Zou et al.,2021). Recent studies such as Khoja et al. (2022), examined the relationship between the relational motives and internal environmental strategies of SMEs. However, this study was limited to the SMEs in the Houston metro region. Also, Caldera (2019) studied the potential of institutional drivers to influence SMEs to adopt sustainable business practices in Australia. Jabbour et al. (2020) analyzed internal and external factors that influence the environmental, social, and financial performance of SMEs in Asia. Ketata et al. (2015) found that institutional pressure significantly improves engagement in sustainable innovation and the sample was limited to Germany.

In the past few years, several studies have examined the factors that prevent the adoption of energy efficiency practices (Trianni et al., 2016; Trianni et al., 2013; Rohdin, et al., 2007; Schleich and Gruber 2008). Many of the studies on solar photovoltaics were concentrated on the residential sector (Kwan, 2012; Davidson et al., 2015; De Groote et al., 2016). Moreover, the

studies incorporating firms' adoption of solar photovoltaics were mainly in developed countries (Crago and Koegler, 2018; Frey and Mojtahedi, 2018; Cohen et al., 2020). However, less attention has been paid to the factors that promote renewable energy at the firm level, particularly in SME firms (Costa-Campi et al., 2015; Horbach et al., 2012). Further research needs to address environmental management practices within SMEs in comparison to large industries (Brammer et al., 2012). Moreover, few studies have examined the factors impacting SMEs' adoption of renewable energy, and further studies are required to comprehend the adoption process (Rahbauer et al., 2016b).

Previous studies have therefore explored the sustainable practices of SMEs, but some have overlooked the context of developing nations and renewable energy. The approach that has been introduced aims to analyze the drivers behind sustainable practices and how they affect the adoption of sustainable strategies, particularly, solar panels, while taking the influence of substantial barriers into account. The study aims to bridge the gap and contributes to the literature on renewable energy. First, the research draws on institutional theory and RBV to explain how top management awareness, under mimetic pressure, can explain the adoption of sustainable practices for SMEs. Second, it looks at the individual level of SMEs' decision makers and the perception regarding the integration of sustainable energy into their ecosystem. Third, the paper studies SMEs' adoption of renewable energy, particularly solar panels, in an emerging economy.

This study claims that competition pressures, which are external pressures, will promote the growth of sustainable capabilities, which are internal resources, within the organization and will have an impact on the adoption of environmentally sustainable initiatives. The framework brings together the findings of past studies to provide a comprehensive understanding of the relationship between the mimetic pressure, top management attitude, financial benefits, and the adoption of sustainable strategies (solar panels) by SMEs. This study seeks to close the knowledge gap on the influence of institutional pressure on the sustainable strategies made by SMEs in a developing nation. It addresses the gap by exploring the adoption of sustainable strategies among Lebanese SMEs and aims to incorporate solar energy into the decision-making process of ensuring sustainable energy resource availability. The term, adoption of sustainable strategies, is used in this study to refer specifically to the implementation of solar panels.

Embedding sustainability into Lebanon's ecosystem is crucial to improve economic, environmental, and social performance. Organizations in Lebanon are facing many problems such as scarcity of foreign currency, lack of funding, and electricity crisis. SMEs are highly impacted by the difficult situation as it has many negative implications for the continuity of their businesses. Generators have traditionally been the most often used alternate source of electricity in Lebanon. Yet, using diesel generators has become more expensive as a result of the nation's financial position. Furthermore, the significant decrease in solar panel costs over the past ten years is one important aspect that is also influencing the use of solar panels as a source of electricity. The economies of scale brought about by greater production and competition in the solar panel industry are responsible for this decrease in cost. In certain cases, solar panels could have become a more affordable alternative to diesel generators, which have gotten more and more expensive as a result of Lebanon's lack of access to foreign money. Therefore, using solar panels as a backup source of electricity has become more and more common in recent years.

However, given that sustainability management is associated with a significant financial commitment (Walley and Whitehead, 1994) and investing in solar panels could require good financial capabilities, SMEs in Lebanon might decide to prioritize other activities over sustainability. Therefore, implementing appropriate internal sustainable strategies could save SMEs costs for the long term, improve their operations and optimize the use of their resources. The findings of this study have significant practical implications for SMEs' leaders and policymakers. SMEs that are under competitive pressures might perceive environmental sustainability strategies (e.g., adopting solar panels) as an essential success factor for being legitimate competitors. This research provides managers and policymakers who are interested in encouraging the adoption of sustainable strategies in SMEs with a realistic and empirically supported point of view. Implementing efficient internal sustainable practices can increase long-term cost savings, maximize resource utilization, and enhance overall environmental performance.

The remaining sections of this study are structured as follows. The next section includes a review of the literature as well as the conceptual framework and hypotheses. The third section presents the methodology, the sample from which the data was collected, and the measures for all the variables. The results are then described and include a summary of the main conclusions.

Finally, the last section outlines the theoretical and managerial implications of the findings, identifies the limitations, and suggestions for future studies.

Literature Review and Hypotheses Development

Corporate social responsibility was defined as "the obligation of businessmen to pursue those policies, to make those decisions, or to follow those lines of action which are desirable in terms of the objectives and values of our society" (Bowen, 1953, p.6). Moreover, Sustainability is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987, p.43). In industries where sustainability is a major concern, especially for SMEs, it can enhance their reputation and customer appeal. Customers are increasingly looking for products and services that are socially and environmentally conscious (Peattie and Crane, 2005), thus companies that can prove their dedication to sustainability are more likely to retain their loyalty (Carree and Thurik, 2005).

SME is defined in this study as independent companies with 100 to 250 employees and \$20 million or less in annual sales (Baird et al., 1994; D'Ambrose and Muldowney 1988; Ayyagari et al., 2007). SMEs are keen to invest in sustainable practices as they will be able to position themselves better strategically in the market. In particular, in sectors where sustainability is a top priority, SMEs stand to gain from sustainability efforts as it can enhance their brand reputation and appeal to consumers.

Past research showed the importance of the role of SMEs in sustainability as they are able to transmit and proliferate their practices to their value chain and stakeholders. For instance, SMEs could be effective transmitters between their customers and suppliers of environmental constraints regardless of their limited resources and power (Ayuso et al., 2013; Acosta et al., 2014). In addition, SMEs are able to adapt more easily to a dynamic environment since they have a flatter hierarchy, and less formal managerial structures (Levy and Powell, 2000). However, SMEs face obstacles such as the lack of resources and knowledge (Barney,2001).

Previous studies suggested that a company's sustainability priorities are influenced by the institutions in its home country (Campbell, 2007; Matten and Moon, 2008). According to Szabó

and Petrosyan (2007) and Aterido et al. (2009), SMEs face challenges, particularly in developing nations, because of their liability to scale, short-term perspective, and lack of financial resources. Many developing nations experience conflict between social growth and environmental protection (Muller and Kolk, 2009). Institutional influences have a higher impact on the adoption of sustainable initiatives by firms in developing nations since sustainable practices are still in a relatively early stage of development in these countries (Hong et al., 2018).

Mimetic Pressure, Top Management Awareness and Adoption of sustainable strategies

External pressure is crucial for implementing sustainable practices, as observed by Diabat and Govindan (2011) and Lee (2008), and it has been proposed that this kind of pressure is rapidly taking control. Without external pressure, most SMEs are reluctant to participate in environmental activities, according to research by Studer (2006).

Dai et al. (2015) and Mani et al. (2015) found that environmentally sustainable strategies are driven by a competitive environment. Competition is thought to be a key factor pushing SMEs in the direction of sustainability. To stay competitive in the market, SMEs must implement sustainable practices (Shields and Shelleman, 2015). Organizations are under pressure to establish an environmental management system, as shown by Large and Thomsen (2011), and Zhu et al. (2007). If its competitors are adopting sustainable business practices, this may put pressure on the firm to follow suit. It may be driven by several factors, such as a desire to keep market share or to prevent falling behind in sustainability initiatives. In such circumstances, implementing sustainable strategies may be viewed as essential for the business to remain competitive. Due to the imitation pressure put on them by peers who have already adopted such tactics, SMEs may feel compelled to do so. Mimetic pressure in this study refers to the external pressure that occurs when organizations imitate the actions of their peers in the hope that doing so will give them advantages or benefits in response to uncertainty. Thus, mimetic pressure plays an important role in the adoption of sustainable strategies.

In order for these pressures to have a positive impact on the adoption of sustainable strategies, internal resources, and necessary knowledge is also required. Liang et al. (2007) argued that competitive pressure leads to more top management participation. When top management

perceives more pressure from regulators, consumers, and rivals to adopt sustainable practices, they may devote more time and resources for implementing a sustainable strategy (Zhu et al., 2007). Here mimetic pressure is defined as the pressure developed by the most successful competitors in the market. Liang et al. (2007) argue that a high level of mimetic pressure leads to more top management participation. Mimetic pressure also has a favorable impact on top managers' attitudes and perceptions, which in turn determine how much they participate in adopting sustainable plans (Chen and Chang, 2013; Gholami et al. 2013).

When decision-makers and managers recognize the benefits of adopting sustainable practices from their competitors, they might be encouraged to follow the same strategies. These advantages could include lower energy costs, a more favorable public image, and improved stakeholder engagement. External pressure and the development of internal capabilities are important for green practices adoption. When companies are under pressure, they may become more aware of the need to address sustainability, and this increased awareness may help them construct their strategy and decision-making processes. This increased understanding at the top management level may lead to a stronger commitment to sustainability and more resources being allocated to developing and implementing sustainable initiatives. Mimetic pressure can work as a motivator for firms to recognize the importance of sustainability and to take proactive steps to incorporate sustainable practices into their business models. Therefore, by witnessing successful competitors adopting solar panels, businesses are more likely to be influenced by mimetic pressure and implement the strategy. Hence, the following hypotheses are proposed:

H1: Mimetic pressure has a positive relationship with the adoption of sustainable strategies.

H2: Mimetic pressure has a positive relationship with top management awareness.

Top Management awareness and Adoption of Sustainable Strategy

The top management team is the informational and decisional entity generating competitive moves (Hambrick et al., 1996). Greenwood and Hinings (1996) discussed the importance of internal dynamics within organizations. The experiences, values, and personalities have a significant impact on the decisions made by the top executive teams (Hambrick, 2007). The upper echelons theory highlights the importance of analyzing top executives to understand the reasons behind the performance and the actions of an organization.

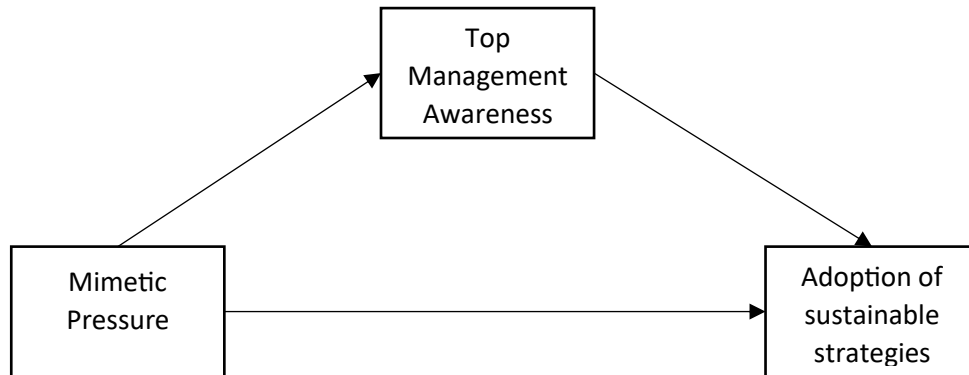
Adoption of a sustainable strategy refers to whether they adopted or are willing to adopt a sustainable strategy such as solar panels. The key variables that impact investment decisions in technology connected to an organization's sustainability practices are management interest and involvement (Nidumolu et al. 2013). By adopting sustainable strategies, SMEs can reduce their dependence on traditional energy sources, which are often unreliable in Lebanon, and address the electricity crisis. The adoption of solar panels is likely to have a significant impact on the environment and therefore could contribute to broader efforts toward sustainability. Adopting sustainable strategies can not only protect the environment but also enhance SMEs' reputations and provide long-term financial benefits, surpassing other solutions.

Top management awareness refers to the extent to which senior managers understand the importance of environmental protection (Vargas et al., 2018), and solar panels in this context. Top management's beliefs and behaviors influence organizational culture and values, which guides firms' behaviors (Carter and Jennings, 2004; Yuan et al., 2020). Pagell and Wu (2009) found that top management plays a key role in integrating sustainability goals, practices, and cognition. Top management may put more effort into establishing a sustainable development culture and policies and have more incentives to use resources to promote sustainable strategies when they feel more pressure from regulators, consumers, and competitors to develop sustainable practices (Zhu and Sarkis, 2007). Top management attitude is one of the critical factors that decide the strategy and the sustainability adoption level at an organization's operational level (Ageron et al. 2012, Klassen, 2009). Dai et al. (2021) found that the interactions of top management leadership with mimetic pressures positively affect the pursuit of sustainable practices. SMEs in Lebanon may become more conscious of the need for addressing sustainability when they are under these pressures, and this enhanced consciousness might play a mediating role in forming their strategies and decision-making procedures. Mimetic pressure would lead to an increased awareness of the benefits of integrating sustainable practices into the company's strategies, and to the adoption of solar panels consequently. Therefore, decision-makers are more likely to adopt sustainable practices for reasons other than simple imitation when they are aware of the significance of sustainability and strongly committed to it. Therefore, the following hypothesis is proposed:

H3: Top Management awareness mediates the relationship between mimetic pressure and the adoption of sustainable strategies.

Figure 1

Framework of the Mediating Effects of Top Management Awareness



Perceived Financial Benefits

Past studies have identified many barriers to SMEs' sustainability including conflict between business-related practices and environmental goals (Fernandez-Vine et al., 2013), lack of financial resources (Bhanot et al., 2017; Cagno et al., 2017), lack of awareness of the environmental sustainability of the firm (Ammenberg and Hjelm, 2003; Simpson et al., 2004), and lack of managerial importance for sustainability practices (Cagno et al., 2017).

SMEs might not have the time or resources to think about environmental issues, and top managers might think that their environmental impact is below regulatory standards or that proactive environmental management is not financially advantageous. (Preuss, 2005; Simpson et al., 2004). Moreover, SME access to financial sources like banks, capital markets, or other credit providers is more challenging than it is for larger organizations (Ahlstrom et al., 2018), especially in developing nations.

Perceived financial expense refers to the perceived financial sacrifices necessary to implement solar panels (Voss et al., 1998). For SMEs, which are typically more sensitive than large businesses to any additional costs coming from operating sustainably, the value of upfront costs, the indirect costs, and the estimated payback period is particularly crucial (Rademaekers et al.,

2011). It was found that the financial risk attitude of SMEs is associated with and an important predictor of the firm's performance (Earle and Sakova, 2000). However, when the return on investment is low, leaders are discouraged from investing in sustainable technology due to the high initial costs. (Mathiyazhagan et al., 2013).

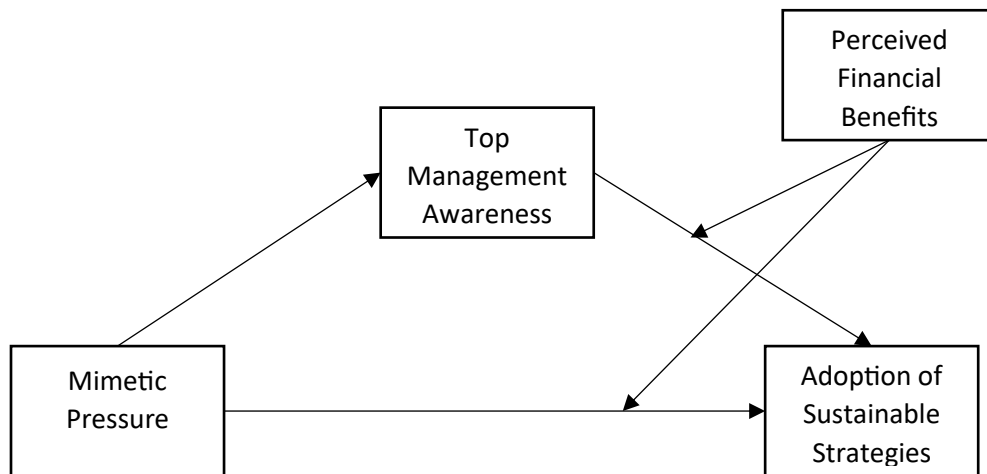
This study examines current obstacles to the deployment of sustainable strategies, particularly the perceived financial benefits of integrating solar panels into their strategies, which presents a problem for nations with less developed financial systems. For instance, SMEs that perceive the cost of implementing sustainable practices to be higher than the cost of traditional practices may hesitate to invest in sustainable initiatives, even if they recognize the environmental benefits. If decision-makers of companies consider sustainable practices to be prohibitively expensive, they might prioritize and rely more heavily on alternative traditional solutions as they perceive them as cost-saving measures. Thus, SME leaders' perceptions of financial benefits can be a crucial factor that shapes their investment decisions in sustainability initiatives.

H4: The perceived financial benefits moderate the relationship between top management awareness and the adoption of sustainable strategies.

H5: The perceived financial benefits moderate the relationship between mimetic pressure and the adoption of sustainable strategies.

Figure 2

Framework of the Moderating Effects of Perceived Financial Benefits



Methodology

Design and Participants

This study adopts a quantitative research design implemented through an online self-assessment survey research targeting a member of the top management team as decision-makers of SMEs in Lebanon. The respondents were informed that the survey aimed to examine the adoption of solar panels by their organizations, and they were assured of the confidentiality of the data and were asked to complete a web survey anonymously. The questionnaire was structured to include six components. The first component was targeted at gathering demographic features of firms' managers/decision-makers and is presented in Table 1. The second component was targeted at gathering information about the firm, presented in Table 2. The third component measured the adoption of sustainable energy. The fourth component measured the aspect of competitive pressure. The top management awareness was evaluated in the fifth component. Lastly, the perceived financial benefits of the sustainable practice was measured in the sixth component.

Measures

A survey instrument was developed by identifying appropriate measurements after a thorough literature review. Modifications were made to the scales in order to match the context. The independent variable, the dependent variable, the mediator, and the moderator, were created by averaging participants' answers to the corresponding items.

Mimetic Pressure as competitive pressure measured the extent to which the member perceived that competitors have benefited from solar panels. The variable was evaluated by adapting the items used in Liang et al. (2007) measure based on the scale suggested by Teo et al. (2003). The items were altered to represent the perceived mimetic pressure regarding the advantages of implementing solar panels. Three items were used on a 5-point Likert-type scale (1= strongly disagree, 5= strongly agree). A sample item is "Our main competitors who have adopted solar panels have greatly benefitted". The scale's reliability was 0.849.

Top management awareness represents the perceived environmental advantages of solar panels. The variable was evaluated by adapting the items used in Qamar et al. (2022) and Zeithaml (1988). The items were adapted to match the context of the study. Three items were used on a 5-point Likert-type scale (1= strongly disagree, 5= strongly agree). A sample item is “To what extent do you agree or disagree that solar panels are less depleting to natural resources than traditional energy sources?”. The scale’s reliability was 0.837.

Adoption of sustainable strategies refers to the implementation of solar panels into the origination’s strategy at the corporate level. The variable was evaluated by adapting the items from Banerjee's (2002) measure. The items were altered to represent the adoption and willingness to incorporate solar panels into the organization’s strategy. Five items were used on a 5-point Likert-type scale (1= strongly disagree, 5= strongly agree). A sample item is “The adoption of solar panels is considered when we develop potential projects”. The scale’s reliability was 0.879.

Perceived financial benefits refer to the perceived financial advantages of implementing solar panels. The variable was evaluated by adapting the items from Voss et al. (1998) and Sripalawat et al. (2015) measures. In developing countries such as Lebanon, when power outages occur, businesses that rely solely on electricity from the government or generators may experience disruptions, leading to delays, productivity loss, and even damage to equipment. Some SMEs are using a combination of solar energy, generators, and government electricity, while others might choose to opt for one or two of these sources to address the electrical shortage. However, the decision of implementing and relying on solar panels depends on the perceived financial benefits of the top management members. In this study, the three main concerns taken into consideration are (1) the upfront investment required (2) the cost-effectiveness of relying on solar panels over generators (3) the potential revenue benefits of using solar panels during power outages compared to their cost.

The items were altered to represent the appropriate context and the perceived financial benefits of solar panels regarding the upfront investment, the less reliance on generators, and the benefits of using them during power outages. Three items were used on a 5-point Likert-type scale (1= strongly disagree, 5= strongly agree). A sample item is “The financial expense of solar panels

to resume business operations during power outages is minimal compared to the generated revenue". The scale's reliability was 0.911.

To investigate potential covariates that may influence the relationship between mimetic pressure and the adoption of sustainable strategies, two categories of variables were included in this study, at the top management (individual) level and the firm level.

At the individual level, education, age, gender, and years of experience in the field were controlled. According to the Upper Echelons Theory, the firm's strategic decisions are influenced by the individual characteristics of the top management. Age, gender, and education of members of the top management team are key aspects for the effective adoption and integration of environmentally sustainable practices (Naranjo-Gil, 2016, Wiengarten et al., 2017). Moreover, the level of experience also plays a role in the sustainable orientation of the decision-makers of SMEs, (Kor, 2003).

At the firm level, firm age, industry, and size (number of employees and annual revenues) were controlled as they play a role in the sustainability performance of a firm (Johnstone and Labonne, 2009; Zhu et al., 2007; Shi et al., 2021). The size of the firm has an impact on the level of engagement in sustainability. Smaller firms could experience higher consequences to the implementation of new practices whereas bigger firms have the capacity to better survive and cover more losses. In order to capture the size of the SMEs, two measures were taken into consideration: revenues and the number of employees. For instance, when revenues are higher, the perceived financial benefits of the implementation of environmentally sustainable strategies might be perceived as lower. As for the age of the company, younger companies were founded in a time when sustainability was valued more than it was in the past and could be more invested in implementing sustainable practices. Older businesses, on the other hand, could have more resources and experience, but they might also be more resistant to change and firmly rooted in less sustainable practices.

Moreover, the industry was also controlled in this study, since it could have a high impact on investment decisions. For instance, manufacturing firms would need to make substantial investments in solar panels to shift towards renewable energies, whereas firms in professional

services industries require less power to conduct their basic operations. Consequently, the latter may realize a higher return on investment compared to manufacturing companies.

Results

In order to recruit participants for the study, a list of subject matter experts (SMEs) in Lebanon was compiled. To solicit participation, a LinkedIn outreach strategy was employed, whereby potential participants were contacted and asked to complete a questionnaire. A total of 170 questionnaires were circulated by surveying one individual from the top management team in each organization, out of which 75 valid and appropriately filled questionnaires were collected for analysis. It constituted a response rate of 44.11%, which is greater than the minimum benchmark of 20%, and thus appropriate to continue analysis (Luthra et al. 2015). In order to ensure the validity of the data, a screening process was conducted prior to data analysis. First, responses who did not qualify were removed resulting in the exclusion of 23 (31% of the entire sample).

Responses were excluded based on three criteria: revenues more than \$20 million, number of employees more than 250, not a member of the top management team within the organization, the completion rate of the survey, and technical difficulties. Finally, 52 questionnaires were suitable for the final quantitative analysis. Thus, the final sample consisted of 81% male and 19% female respondents; see table 1 and table 2 for additional demographics and firms' characteristics.

Table 1

Participants demographics

Education Background	Percentage
Completed Secondary	7.7%
Some University but no degree	11.5%

University bachelor's degree	40.4%
Graduate Degree	40.4%

Age	Percentage
18-24 years old	1.9%
25-34 years old	9.6%
35-44 years old	28.8%
45-54 years old	36.5%
55-64 years old	23%

Years of Experience	Percentage
1-3 years	1.9%
4-6 years	7.7%
7-10 years	26.9%
More than 10 years	63.5%

Position	Percentage
CEO	15.4%
CFO	17.3%

CTO	9.6%
COO	13.5%
Owner	26.9%
Another Management Team Member	17.3%

Table 2

Firm Characteristics

Employee Number	Percentage
Less than 50	48%
50-100	27%
100-250	25%

Industry	Percentage
Agriculture and Mining	3.8%
Construction and Manufacturing	34.6%
Information and Communication Technologies	25%
Financial and Insurance Activities	7.7%
Wholesale and Retail Trade	15.4%

Professional, Scientific, and Technical Services	5.8%
Other	7.7%

Revenues	Percentage
Less than \$1 million	21.1%
\$1 million to \$5 million	46.1%
\$5 million to \$20 million	32.7%

Company Age	Percentage
1-5 years	11.5%
6-10 years	5.8%
11-20 years	51.9%
More than 20 years	30.8%

A correlation matrix was constructed to examine the relationships among the adoption of sustainable strategies (Adop_Int), mimetic pressure (Mim_Pres), top management awareness (Mna_Awar), and perceived benefits (Perc_Exp) and the rest of the control variables. As shown in Table 1, Pearson correlations were calculated, and the independent variable dependent variable, moderator, and mediator were found to be significant at the 0.01 level (2-tailed). Adoption of sustainable strategies was positively correlated with the perceived benefits ($r = .70, p < .01$) and mimetic pressure ($r = .68, p < .01$). Mimetic pressure was also positively correlated with top

management awareness ($r = .45, p < .01$) and perceived benefits ($r = .45, p < .01$). Finally, top management awareness was positively correlated with the perceived benefits ($r = .50, p < .01$). The correlation matrix suggests that there are strong positive relationships between the adoption of sustainable strategies and mimetic pressure, top management awareness, and perceived benefits, and moderate positive relationships between mimetic pressure and perceived efficacy, and top management awareness and percentage of experience. These results are shown in Table 3.

Table 3

Correlation Matrix

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1 Edu												
2 Age	.46**											
3 Gender	.11	-.09										
4 Exp	-.21	.47**	-.35*									
5 Emp_num	.14	.05	.31*	-.02								
6 Industry	.15	-.30*	.16	-.21	-.04							
7 Org_age	-.14	.22	.15	-.04	.42**	-.09						
8 Revenues	-.06	.26	.33*	-.04	.72**	-.09	.52**					
9 Adop_Int	.12	-.04	.30*	-.16	.32*	.1	.18	.23				
10 Mim_Pres	.07	-.03	.17	-.05	.16	-.07	-.13	.1	.68**			
11 Mna_Awar	.29*	.03	.36**	-.15	.21	-.17	-.09	.12	.54**	.45**		
12 Perc_Exp	.39**	-.32*	.31*	-.19	.30*	.27*	.02	.13	.70**	.45**	.50**	

Note. $N = 52$. ** Correlation is significant at the 0.01 level. * Correlation is significant at the 0.05 level.

Testing for Mediation

The first study aimed to test Hypothesis 1, which investigates the impact of mimetic pressure on the adoption of sustainable strategies, and Hypothesis 2, which investigates the impact of mimetic pressure on top management awareness. Additionally, the study aimed to test Hypothesis 3, which explores the mediating role of top management awareness in the relationship between mimetic pressure and the adoption of sustainable strategies. The study specifically aimed to determine if witnessing successful competitors implementing solar panels, would result in more

awareness about the environmental benefits of the practice and would consequently lead to the integration of solar panels into their ecosystem. To test whether perceived authenticity is a mediator in the proposed model, three separate analyses were conducted with PROCESS using Model 4 proposed by Hayes (2022).

The results indicate that mimetic pressure has a significant positive effect on top management awareness ($b = .29$, $SE = .10$, $t(42) = 2.83$, $p = .007$), providing support for H2. Top management awareness was found to have a significant positive effect on the adoption of sustainable strategies ($b = .49$, $SE = .17$, $t(41) = 2.97$, $p = .005$), providing support for H3. Additionally, the direct effect of mimetic pressure on the adoption of sustainable strategies was significant ($b = .63$, $SE = .12$, $t(41) = 5.32$, $p < .001$), providing support for H1. The indirect effect of mimetic pressure on Adop_Int through top management awareness was also significant ($b = .14$, $SE = .11$, 95% percentile CI [.0033, .4249]). Therefore, with both the direct and indirect significant, the results indicate that top management awareness partially mediates the relationship between mimetic pressure and the adoption of sustainable strategies.

Overall, the results provide support for the hypotheses that mimetic pressure has a positive effect on both top management awareness and the adoption of sustainable strategies, and that top management awareness partially mediates the relationship between mimetic pressure and the adoption of sustainable strategies.

Table 4

Mediation Analysis Summary

Relationship	Total Effect	Direct Effect	Indirect Effect	Confidence Interval		t- statistics	Conclusion
				Lower Bound	Upper Bound		
Mimetic Pressure -> Top management awareness	.78	.63	.14	.01	.41	1.27	Partial Mediation
->Adoption of sustainable strategies	(.00)	(.00)					

Note. The values in parentheses represent the p-values.

Testing for Moderated Mediation

To test whether variable top management awareness mediates the relationship between mimetic pressure, and the adoption of sustainable strategies, while the perceived benefits moderates the relationship between top management awareness and the adoption of sustainable strategies (Hypothesis 4) and the relationship between mimetic pressure and the adoption of sustainable strategies (Hypothesis 5), a moderated mediation analysis using Model 15 in the PROCESS macro for SPSS was conducted (Hayes, 2022).

The data showed a significant a-path from mimetic pressure to top management awareness ($b = .29$, $SE = .10$, $t(42) = 2.83$, $p = .01$). However, there was no significant interaction between top management awareness and the perceived benefits for the b-path ($b = -.06$, $SE = .19$, $t(42) = -.30$, $p = .77$) with $\Delta R^2 = 0.00$. The direct effect c' from mimetic pressure to the adoption of sustainable strategies wasn't moderated by perceived benefits either ($b = .02$, $SE = .20$, $t(42) = .11$, $p = .92$), with $\Delta R^2 = 0.00$. The index of moderated mediation was not significant ($b = -.02$, $SE = .10$, $t(42) = -.23$, 95% percentile CI $[-.22, .13]$). Thus, we found no evidence for a moderated mediation.

Overall, the results do not support H4 and H5, as there were no significant interactions between the moderator variable, perceived benefits, and the independent variable, mimetic pressure, or the mediator, top management awareness, in predicting the dependent variable, the adoption of sustainable strategies.

To further examine the conditional effect of perceived benefits on the relationship between mimetic pressure and the adoption of sustainable strategies, and top management awareness and the adoption of sustainable strategies, visual aids were generated. The scatterplot of top management awareness and the adoption of sustainable strategies with perceived benefits as a moderator indicated no significant difference in the relationship between top management awareness and the adoption of sustainable strategies across the levels of perceived benefits. Similarly, the scatterplot of mimetic pressure and the adoption of sustainable strategies with perceived benefits as a moderator showed that the relationship between mimetic pressure and the adoption of sustainable strategies was not affected when perceived benefits varied.

Figure 3

The Interactive Effect of Top Management Awareness and Perceived Benefits on the Adoption of Sustainable Strategies

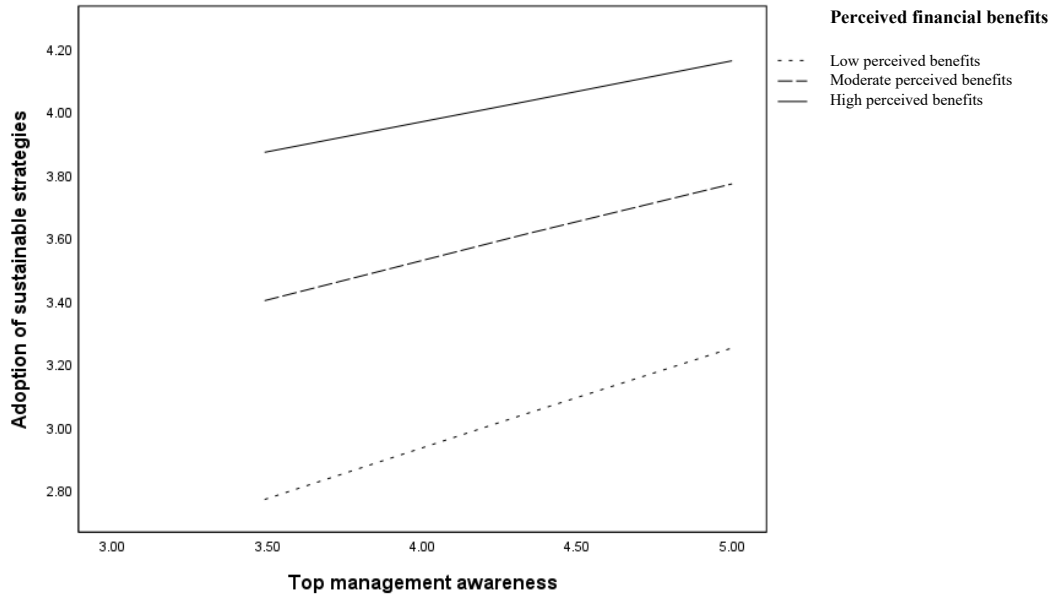
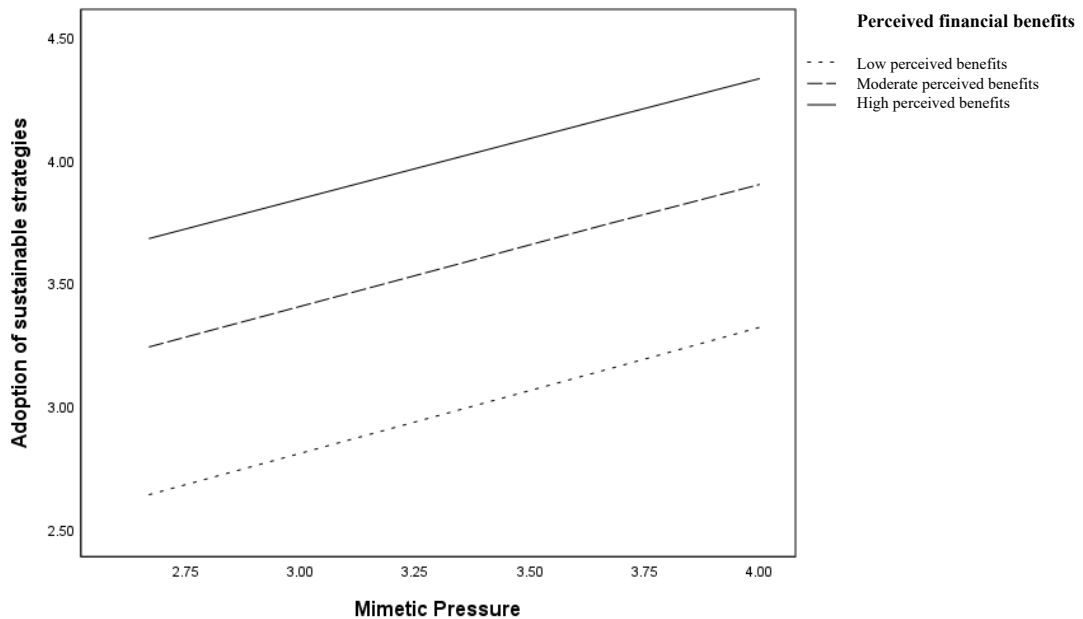


Figure 4

The Interactive Effect of Mimetic Pressure and Perceived Benefits on the Adoption of Sustainable Strategies



General Discussion

Summary of Results

This study aimed to explore the impact of mimetic pressure on the adoption of sustainable strategies, specifically solar panels, for SMEs in a developing country. The study examined the mediating effect of top management awareness and the moderating role of perceived financial benefits. The results of the study provided support for both Hypothesis 1 and Hypothesis 2. The results showed that mimetic pressure has a positive effect on both top management awareness and the adoption of sustainable strategies. In this case, it suggests that organizations are more likely to adopt sustainable strategies, such as solar panels, if they perceive that their competitors are doing the same. This finding is consistent with previous research suggesting that mimetic pressure can be a significant driver of organizational behavior.

As for Hypothesis 3, the results show that top management awareness partially mediates the relationship between mimetic pressure and the adoption of sustainable strategies. The study found that when companies face mimetic pressure, they are more likely to adopt sustainable strategies when top management is aware of the importance of the technology. This suggests that top management awareness plays a role in explaining why some companies are more likely to adopt sustainable strategies than others when facing mimetic pressure. There may be other factors involved as well.

Based on the existing literature, it was hypothesized that the perceived financial benefits would play a moderating role. However, the results of the study did not support Hypotheses 4 and 5. There were no significant interactions between the moderator variable, perceived benefits, and the independent variable, mimetic pressure, or the mediator, top management awareness, in predicting the dependent variable, the adoption of sustainable strategies. This means that the perceived benefits of sustainable strategies did not significantly impact the relationship between mimetic pressure, top management awareness, and the adoption of sustainable strategies. This suggests that SMEs in developing countries may not be significantly deterred from adopting sustainable strategies because of the perceived financial benefits associated with their implementation. Nonetheless, it is important to note that the study only considered the financial

benefits related to the adoption of solar panels, and there may be other sustainable strategies that entail different perceived financial benefits.

Theoretical Implications

First, we have combined institutional theory and RBV in accordance with Oliver's (1997) arguments to explain how top management, under the effect of institutional isomorphic pressures, might explain the implementation of sustainable practices. This study integrates the two distinct theories to analyze how resources under the effect of outside factors affect the sustainability of a company. RBV in this context helps explain how external pressures because SMEs to acquire dynamic capabilities, which improves the sustainability of the firm. Also, institutional theory in this research provides a valuable lens to examine the enablers (external pressure) and barriers (top management perception of financial benefits) to better understand the influence on decision makers in integrating sustainable technologies.

Moreover, as stated by Bolton (1971), SMEs usually exhibit the characteristics of the entrepreneur or "owner-manager," as they frequently have a customized style of management and lack formal management structures with specialized personnel. These characteristics, which vary considerably depending on individual personalities and ownership arrangements, will impact how the business approaches sustainability. There is still a lack of study on the barriers to establishing sustainable business practices in SMEs and the role of green thinking in enabling these practices (Klewitz and Hansen, 2014). Thus, another contribution of this study is the focus on the decision-makers within SMEs and examining their perception of integrating sustainable energy into their business model. This helps to provide a more comprehensive understanding of the drivers behind the adoption of sustainable strategies.

The study adds to the expanding body of research on sustainable business practices in developing nations by conducting a study on SMEs in emerging countries. While limited studies have looked at this issue, they frequently lack clarity and fail to adequately take into account the unique difficulties and obstacles that SMEs in developing nations may encounter. We examined the adoption of renewable energy, specifically solar panels, in an emerging economy, which contributes to the literature on renewable energy adoption in developing nations. Importantly, this

approach also considers the substantial obstacles that SMEs can run into when aiming to embrace environmentally sustainable practices.

Managerial Implications

The results of this study have several managerial implications for SMEs in emerging nations like Lebanon. First, the study emphasizes the importance of mimetic pressure in encouraging the adoption of sustainable methods. When choosing environmentally friendly approaches, SMEs should take into account what their competitors and other practitioners in the field are pursuing.

This study also highlights the important role that top management awareness plays in the implementation of sustainable solutions. It is shown that businesses are more likely to embrace sustainable strategies when top management awareness is higher. Organizations should ensure that their top management team understands the benefits of sustainable strategies and is motivated to adopt them. Therefore, SMEs should concentrate on fostering a culture of sustainability within their businesses by offering managers and decision makers training and tools and encouraging them to engage in sustainable practices.

Furthermore, it is crucial for businesses to incorporate sustainable practices into their strategy in light of the electrical issue in Lebanon. In order to cope with the electricity crisis, organizations cannot depend on the government to provide electricity, since it is unreliable, and cut-offs occur for several hours during the day. Power outages are common and can persist for several hours or even days. This can be particularly difficult for companies that depend on reliable electrical power to function. Adopting sustainable techniques, like solar panels, is a better long-term investment due to the current economic crisis and growing fuel prices. SMEs in Lebanon should concentrate on informing their senior management and staff about the significance of sustainable practices and think about implementing solar panels as an appropriate solution to the electricity issue. Moreover, institutional investors can offer many opportunities for growth for SMEs as they become exposed to a more competitive market and the opportunity to expand their network. By adopting environmental practices, stakeholders would perceive them as more legitimate with a higher brand value. Implementing sustainable strategies in this context

contributes to the legitimacy perceived by stakeholders since organizations adhere to the rules and norms with suitable practices (DiMaggio and Powell, 1983).

Limitations and Future Research

Several limitations of this study provide opportunities for future research. One of the limitations of this study is that it only focuses on one developing country and the results might not be generalizable to other developing countries. Therefore, future research could explore the applicability of this model to other contexts and could take the role of culture and other contextual factors that could have an impact on the implementation of sustainable strategies by SMEs in a developing country. In addition, Investigating the underlying mechanisms and contextual variables that affect the adoption of sustainable solutions in SMEs can be done using qualitative research techniques like interviews or case studies. Moreover, comparative studies might also examine how SMEs in developed and developing nations implement sustainable business practices to gain insights on the variations in the influences that affect SMEs' adoption of sustainable practices in various contexts. For instance, developed nations may have better established marketplaces for sustainable goods and services, more accessible resources, or more developed institutional structures. On the other hand, emerging nations could experience more severe difficulties whether it comes to funding, gaining access to technology, or building infrastructure.

The study was also focused on few antecedents since it was driven by institutional theory and RBV. Therefore, future research might examine the value of adding new components to the model, such as how the firm's flexibility orientation or absorptive capacity may affect how institutional demands for sustainability affect the adoption of such practices. Furthermore, the importance of stakeholders in the adoption of sustainable methods was not taken into account by the study. SMEs may increase support for environmentally friendly initiatives and make sure they are in line with the demands and expectations of their stakeholders by interacting with them. The effect of stakeholder participation on the adoption of sustainable strategies in SMEs could be the subject of future research. Future studies might also look at how industry associations and social networks affect how SMEs adopt sustainable practices, as these networks may offer resources, information, or social legitimacy for sustainable efforts.

Because of the cross-sectional design of this study as the study has gathered data at one point in time, causality cannot be proven. The correlations between mimetic pressure, top management awareness, perceived financial benefits, and the adoption of sustainable methods may be explained by additional factors not taken into account in this study. Longitudinal study design may be used in the future to examine how the relationships between mimetic pressure, top management awareness, and the adoption of sustainable strategies change over time. This would provide a better understanding of the causal relationships between the variables. The sample size was relatively small, with only 52 questionnaires in the final quantitative analysis. Future research should aim to replicate these findings on a larger and more diverse sample from multiple countries, and participants from diverse backgrounds.

In addition, it is important to note that while financial difficulties continue to be a key obstacle for SMEs in Lebanon to embrace sustainable practises, several other variables, including the decline in price, the electrical crisis, environmental awareness, and government incentives, are currently driving the adoption of solar panels. Future studies can explore different barriers and their role in affecting the adoption of such practices. Also, the study takes a limited scope of sustainable strategies as it only considers the adoption of solar panels as a source of renewable energy source. Solar panel adoption is merely one example of a sustainability strategy that companies can use. It is crucial to understand that sustainability is a large and complicated subject, and there are other different practices that companies may implement to lessen their environmental effect and positively benefit society. SMEs might use alternative sustainable technologies or practices, and the financial benefits of these strategies might not be perceived the same way as the same as the costs of solar panels. Future studies might take a wider variety of sustainable strategies into account such as energy-efficient lighting or waste reduction and explore the moderating role of financial benefits.

Another limitation of this study would be the reliance on self-reported data, which could be subject to bias. Answers may not have truly reflected respondents' opinions and behaviors, but rather what they thought was socially acceptable. More objective indicators of the adoption of sustainable strategies, such as statistics on energy use and financial reports, could be included in future study.

Finally, one respondent from each firm may not adequately represent the range of viewpoints and opinions present inside the company. The adoption of sustainable strategies may be viewed differently by various members of the top management team. Future research might take into account interviewing several members of the top management team to address this constraint and provide a more thorough grasp of the organization's thoughts and opinions on the adoption of sustainable methods. Future studies may also examine any potential differences in viewpoints among the senior management team members of the same organization. This might shed light on potential conflicts and difficulties organizations might have while trying to adopt sustainable practices, as well as how to deal with them.

Conclusion

In conclusion, this study suggests that mimetic pressure is a significant driver of the adoption of sustainable strategies, specifically solar panels, for SMEs in a developing country. Top management awareness plays a partial mediating role in this relationship, indicating that companies are more likely to adopt sustainable strategies when top management is aware of their importance. However, perceived financial benefits did not play a significant moderating role, suggesting that SMEs in developing countries may not be significantly deterred from adopting sustainable strategies due to low perceived financial benefits. Future studies could further explore the effect of perceived financial benefits as a barrier to the integration of sustainable practices. These findings provide insights into the factors that influence the adoption of sustainable strategies in SMEs and can guide policymakers and organizations in promoting sustainability in developing countries.

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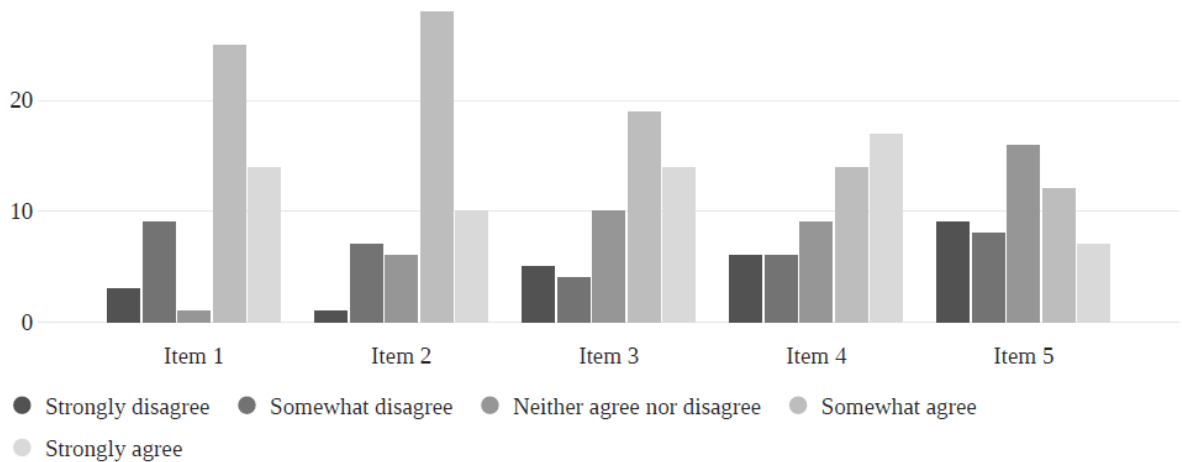
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Appendix A

Adoption of Solar Panels

Indicate your agreements on these items according to your perception

Items	Mean
1- Our company has integrated the adoption of solar panels into our strategic planning process	3.73
2- The adoption of solar panels is considered when we develop potential projects	3.75
3- At our company, we link the adoption of solar panels with our corporate goals	3.63
4- Our company is engaged in developing products and processes that utilize solar panels	3.58
5- In our company, investment decisions are influenced by the current or potential use	3.00



Mimetic Pressure

Our main competitors who have adopted solar panels

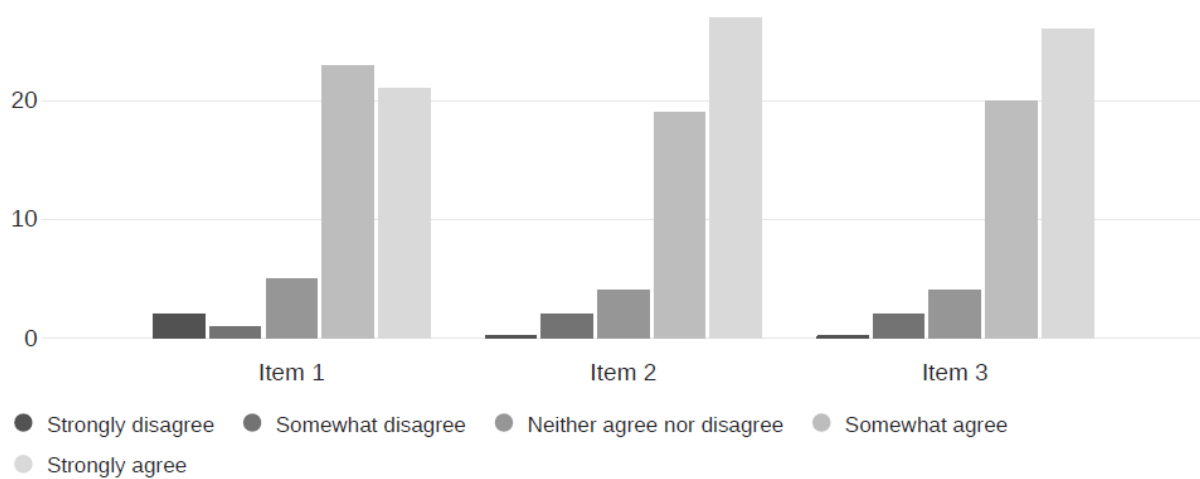
Items	Mean
1- Have greatly benefitted	3.40
2- Are favorably perceived by others in the same industry	3.40
3- Are favorably perceived by their suppliers and customers	3.29



Top Management Awareness

Indicate your agreements on these items according to your perception

Items	Mean
1- To what extent do you agree or disagree that solar panels do not produce environmental pollution?	4.15
2- How much do you agree or disagree that solar panels contribute to a cleaner environment?	4.37
3- To what extent do you agree or disagree that solar panels are less depleting to natural resources than traditional energy sources?	4.35



Perceived Financial Benefits

Indicate your agreements on these items according to your perception

Items	Mean
1- The upfront investment for installing solar panels leads to a positive return on investment for our company	3.96
2- How much do you agree or disagree that solar panels contribute to a cleaner environment?	4.00
3- To what extent do you agree or disagree that solar panels are less depleting to natural resources than traditional energy sources?	3.73

