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Determinants of Business Resilience: Investigating the roles of business agility,  
digitalization and environmental hostility during the COVID-19 pandemic

By

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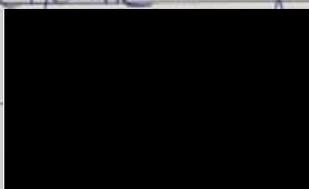
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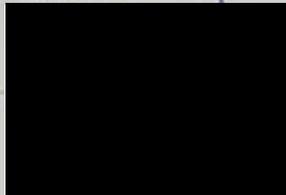
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Determinants of Business Resilience: Investigating the roles of business agility, digitalization and environmental hostility during the COVID-19 pandemic

Lynn Chahine

ABSTRACT

Dynamic capabilities research has clearly demonstrated that businesses must adapt to change to survive. The Covid-19 pandemic has put the resilience of businesses at test. The present study uses dynamic capabilities theoretical framework to shed light on the determinants of business resilience. Results from a sample of 243 full-time managers and business owners demonstrate that businesses who are more agile are more likely to be resilient. In addition, environmental hostility positively moderates the positive relationship between agility and resilience such that this relationship is stronger when environmental hostility is high. Digitalization also showed a positive relationship with resilience. Finally, the hypothesis that digitalization moderates the positive relationship between agility and resilience such that this relationship is stronger when engagement is high was not supported due to the burnout effect of digitalization. Implications and future research opportunities of this research are offered.

**Key words:** Agility, Resilience, Environmental hostility, COVID-19, Sustainability

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# **Chapter One**

## **Determinants of Business Resilience**

### **1.1 Introduction**

Turbulence and change in the external environment affect businesses all around the world. Whether they come in the form of: environmental crises, such as earthquakes, floods, hurricanes, diseases, or financial crises resulting from recessions and inflation, these calamities may adversely affect businesses and their sustainability (Agenor, 2002; Jameson, 2009; Pollock, 2011; Samantha, 2018; Zhang, Lindell, & Prater, 2009). On March 11, 2020, the World Health Organization (WHO) declared the outbreak of the coronavirus (COVID-19) a pandemic (WHO, 2020). This meant that the most recent crisis facing the world today has quickly turned into the worst global disaster of our lifetime (ECOSOC, 2020). The latest numbers, based on the update of November 13, 2020, show the reported number of confirmed cases was an alarming estimate of around 53 million worldwide, and the number of confirmed deaths was estimated around 1,300,576 (Weekly Operational Update on COVID-19, 2020). With the distressing figures, the world had to take drastic measures.

#### **1.1.1 Changes in the Business Environment due to COVID-19**

Since concern for human well-being was the main priority given the current situation, authority figures had to act fast (Verma & Gustaffson, 2020) and attempt to contain the number of infected individuals (Michie, 2020). While specifics on the taken measures were different for countries of diverse regions, the majority of cities went through lockdowns, constraints on employee mobility, closed borders, and travel

prohibitions (Shafi, Liu, & Ren, 2020). With the new quarantine and work-from-home regulations, businesses and their operations were bound to be affected. In order to mitigate the impact of these protocols, companies started by shifting their logistics and operations to online and digital platforms in order for the work to resume (Oldekop et al., 2020), which led to the speeding up of the digitalization process in many companies (Oldekop et al., 2020).

Moreover, connectedness during these times, whether in the personal or professional sense, depended on digitalization as well as available and new digital resources (Verma & Gustaffson, 2020). According to Wenzel, Stanske, and Lieberman (2020), the effects of this pandemic on worldwide businesses will be long lasting and not easily overcome. Not all businesses were able to show resilience and adapt in the same manner or speed; however, while the majority of companies were not prepared for what had hit them, some businesses were faring better than others.

### **1.1.2 Effects of COVID-19 on Businesses**

From this perspective, a study by Shafi, Liu, and Ren (2020) claims that while all businesses were affected by COVID-19, the ones that faced the most challenges were those of small and medium size, because they did not have enough resources to handle the disruptions that were caused by the pandemic, whether financially or operationally. Adding to that, these businesses depended, to a great deal, on their regular stream of income which is maintained by their daily operations (Shafi, Liu, & Ren, 2020). The lack of support by the government, or governmental agencies, might have also driven small and medium-sized businesses into financial deterioration and, in some cases, bankruptcy (Shafi, Liu, & Ren, 2020).

Moreover, the sudden implementation of the work-from-home and the social-distancing guidelines made it no easy feat for businesses to adapt (Elliot, Swartz, & Herbane, 2010; Gomez et al., 2020; Verma & Gustafsson, 2020). With the dwindling revenues, and the elevated level of uncertainty, companies were struggling to make ends meet (Brammer, Branicki, & Linnenluecke, 2020; Verma & Gustaffson, 2020). As the pandemic is not yet over, unemployment rates are still increasing as companies are reducing their workforce. According to ILO Monitor (2020), around 3.3 billion workers have been affected by the corona crisis. While some employees lost their jobs completely due to mass business layoffs, others had reduced wages or decreased working hours (ILO Monitor, 2020). Results from a U.S.-based study show that companies started closing down and laying off employees a few weeks after the pandemic started (Bartik et al., 2020). These layoffs come as a consequence of reduced production and decreased demand, as well as a means to attempt and keep the business afloat during these strenuous times (Bofinger et al., 2020). These courses of action were a necessity due to the financial fragility of the firms, especially the small and medium sized. Because of their reliance on a relatively small, but also steady stream of income, these firms were unable to sustain their status quo once the pandemic began (Bartik et al., 2020).

By that, we build on the dynamic capabilities theoretical framework, which highlights how an organization is able to react to changes within its environment and adapt its resources accordingly. We propose that businesses who are more resilient than others are so because of their agility, which enables them to make necessary changes in a timely manner, in addition to the moderating effect of digitalization. Lastly, we propose that environmental hostility will moderate the relationship as well. Given the importance

of resilience in ensuring the sustainability of businesses, the aim of this paper is to examine the determinants of this resilience by studying its relationship with agility, taking into consideration the moderating roles of environmental hostility and digitalization. Our study will build on extant theories to address these relationships in the light of the recent pandemic and economic downturn, both of which have created a recent gap in the literature.

### **1.1.3 The Context of Lebanon**

Previous studies on business failures found that some of the main reasons contributing to the demise of organizations were rapid changes in technology, economic recessions, as well as environmental and external instability (Silverman, Nickerson, & Freeman, 1997). The case in Lebanon brings forth a combination of at least three of the aforementioned factors: an economic collapse, environmental uncertainty and external unpredictability.

October 17, 2019 marked the beginning of an unprecedented uprising in Lebanon; whereby, the people took to the streets to protest against the corrupt political system (Fakih et al., 2020). This chaos and political strife added to the dire economic situation that already existed, and led to the fall of the banking sector (Nuwayhid & Zurayk, 2019). While businesses were busy struggling with the problems the country was already facing, February 21, 2020 brought forth the first reported case of COVID-19 in Lebanon (MOPH, 2020). From then onwards, the reported cases of infected individuals started to increase as the disease proliferated through the community. By June 2020, reports by the head of the Beirut Traders Association stated that “25% of private sector businesses already closed this year in Beirut alone, with even more closures outside of the capital” (Zawya,

2020). Predictions also estimated that there is a possibility of an additional equivalent number of business closures before the end of the year (Zawya, 2020).

While businesses were already struggling to keep up with the numerous problems, August 4 brought with it a new catastrophe - the Beirut explosion. Valuations done by the Lebanese army estimate that around 19,000 businesses were damaged by the calamity that hit the port (Lebanon to compensate for Beirut blast lost homes, businesses, 2020). Small, medium, and large businesses were all affected, as well as businesses from many, if not all, industries. However, the difference between these businesses was in the degree of damage that had been inflicted, and the losses that had been incurred.

## **1.2 Theoretical Framework and Hypotheses Development**

### **1.2.1 Resilience**

Despite all that has been going on in the Lebanese community, there are businesses that are still up and running. According to Ates and Bititci (2011), resilience is defined as a company's ability to persist, acclimatize, and endure the changes brought forth by turbulence. Organizational resilience is the culmination of several activities, including being aware, perceiving or anticipating a problem, planning ahead, and ensuring the necessary capabilities are available when needed (Florio, 2013; Herbane, 2019).

Additionally, Ates and Bititci (2011) claim that resilience is enforced when companies engage in routine yet innovative improvements of their systems. Weick, Sutcliffe, and Obstfeld (1999) state that resilience should not be considered as the end product towards which organizations aim, but rather as means which enable the organization to achieve its end goals during changing times. Additionally, the resilience of an organization, which is reflected by its strategic preparedness to face unexpected occurrences, could be in the form of having formal tactics set to manage crises as they arise. If these formal processes are lacking, this could indicate an inability of the firm to bounce back after a disaster (Herbane, 2019). In order to survive, businesses need to manage these changes in a proactive rather than reactive way. This is accomplished by allowing employees to feel empowered and able to make decisions as needed, providing a clear vision and solid leadership, as well as accumulating and deploying the necessary resources for sustainability (Ates & Bititci, 2011). Furthermore, Pal, Torstenson, and

Mattila (2014) suggested that for small or medium-sized enterprises, their tangible and intangible resources, as well as their competitiveness in a dynamic manner, and their learning culture might all be proponents of their resilience.

### **1.2.2 Dynamic Capabilities**

Defined, dynamic capabilities are the practices through which the business is able to gain new resources, whether administrative or strategic, when faced with changing external markets (Eisenhardt & Martin, 2000). Some of the strategic changes which highlight the dynamic capabilities of a firm include re-developing products, recognizing and partnering with key allies in the surrounding environment, as well as deploying the resources at hand to make better use of them (Seetharaman, 2020).

As implied by the name, dynamic capabilities are dependent on the level of vitality found in the external environment. Accordingly, companies are expected to adjust and implement different routine systems based on the level of market volatility (Eisenhardt & Martin, 2000). For example, when markets are relatively stable, dynamic capabilities tend to be more complex, rigid, detailed, and reliant on established knowledge. However, when markets are volatile, dynamic capabilities tend to be more rapid, less structured, and more experimental (Eisenhardt & Martin, 2000). This is because organizations usually benefit from environmental stability to develop the specifics of their dynamic capabilities, an option that is unavailable in high-velocity markets.

Since dynamic capabilities enable the acquisition of new resources, or the deployment of existing ones by the business in order to be able to cope with arising

changes in a more efficient and effective way, it therefore contributes towards creating a more agile business.

### **1.2.3 Agility**

According to Ashrafi et al. (2005), agility is one of the components that are critical to a firm's ability to flourish during troubled times. Early literature defined agility as the capacity of a firm to detect changes in the external milieu, and react to these changes in an efficient manner (Ashrafi et al., 2005). However, studies that are more recent added a component to this definition to show that reacting to changes involves restructuring processes, deploying resources, and forming tactical alliances in order to drive this implementation phase. While both statements contribute to our current understanding of the term, it is also important to note that without timeliness and the element of surprise, the implementation of the aforementioned techniques would seem inefficient as well as counterintuitive (Sambamurthy, Bharadwaj, & Grover, 2003). According to Seetharaman (2020), agile firms are better able to make the most of the current situation, as they would be more ready to digitize their operations than less-agile businesses.

Sambamurthy et al. (2003) claim that under the broad term 'agility' are three sub-dimensions: customer, partnering, and operational agility. Customer agility relates to detecting customer needs and acting accordingly in order to satisfy these needs and increase market share. On the other hand, partnering agility involves forming new, mutually beneficial relations with stakeholders, where key competencies can be shared. And lastly, operational agility pertains to adjusting business processes to remain effective, yet become more efficient (Sambamurthy et al., 2003). Therefore, businesses that are able

to leverage their dynamic capabilities in order to become more agile display more resilience in the face of turbulence, and have higher chances of sustainability.

*Hypothesis 1:* Agility is positively related to the resilience of businesses.

#### **1.2.4 Digitalization**

Being able to shift to online operations and to digitalize the business processes is one of the dynamic capabilities boosting the sustainability of businesses in the light of current events (Seetharaman, 2020). Because working in close proximity to other employees or to customers is currently not a feasible option due to COVID-19 safety measures, proper digitalization ensures that the pre-established lines of connection do not falter given the added physical distance. Raj, Sundararajan, and You (2020) show how digitalization may have contributed to the sustainability of many businesses, taking as an example the restaurant industry. With lockdown protocols, customers were no longer able to go out, thus leading to a decrease in revenues.

The National Restaurant Association in the U.S reported a 78% decrease in revenues over the first few days of April 2020 alone. This drove restaurant owners to utilize online platforms, such as Uber Eats, in order to maintain the livelihood of their businesses; thus, reflecting on the importance of digitalization as a dynamic capability. Another online platform that has approximately doubled its revenue between the first and second quarter of the pandemic is Shopify (Pacheco, 2020). Recording an increase of 71% in newly founded online stores, Shopify has become one of the few available online resources for small merchants and businesses seeking to stay in touch with clients during the pandemic (Pacheco, 2020). The authors of this paper argue that one type of dynamic

capabilities that is contributing to the resilience of businesses given the current situation is digitalization, by positively moderating the relationship between agility and resilience.

*Hypothesis 2:* Digitalization is positively related to the resilience of businesses.

*Hypothesis 3:* Digitalization moderates the positive relationship between Agility and Resilience such that this relationship is stronger when digitalization is higher and this relationship is weaker when digitalization is lower.

### **1.2.5 Environmental Hostility**

While dynamic capabilities provide businesses with tools that can be leveraged internally in order to cope with the arising changes, it is also important to account for changes in the external environment when assessing the resilience of a business. One such indicator of environmental change is environmental hostility. Environmental hostility is defined as a set of unfavorable conditions, which are undesirable and ambiguous, yet impact a firm or business without it having any control over them (Miles, Arnold, & Thompson, 1993). When the environment is hostile, companies are obliged to make decisions that are less promising in terms of economic return, and more uncertain in terms of success (Khandwalla, 1976). According to Calantone, Schmidt, and Benedetto (1997), the chances of a firm's success are threatened by the hostility it faces from the environment, suggesting that the most successful businesses are the ones that identify and acclimatize to this hostility. This hostility could be the result of intense and vigorous competition, rapid and multiple unexpected changes (Khandwalla, 1976), or inability to obtain information in a timely manner (Bourgeois & Eisenhardt, 1988). In addition to rapid changes, environmental hostility could also result from discontinuous change,

characterized by dropping one form of product or service due to its obsolescence in the face of another (Sutton, Eisenhardt, & Jucker, 1986).

Werner, Brouters, and Brouters (1996) add that environmental hostility can also stem from fundamental changes imposed on industries in which organizations operate, such as firm regulatory procedures. In order to deal with these alterations, firms must deploy rare resources that would boost their resilience and increase their chances of survival (Zahra, 1993). This means that companies have to try their best to minimize the risk of failure in an environment that fosters a high potential for it (Miller & Friesen, 1983; Covin & Slevin, 1989).

*Hypothesis 4:* Environmental hostility is positively related to the resilience of businesses.

*Hypothesis 5:* Environmental hostility moderates the positive relationship between Agility and Resilience such that this relationship is stronger when hostility is higher and this relationship is weaker when hostility is lower.

## **1.3 Methodology**

### **1.3.1 Sample**

In order to test the aforementioned hypotheses, a total of 243 individuals were asked to take part in this study. Participants were recruited using multiple techniques, such as referral sampling and virtual snowball sampling, which have been implemented successfully in several previous studies (Baltar & Brunet, 2012; Welch, 1975). The inclusion criteria for participants to have received this survey was their position at work. Individuals who were eligible to participate had either to hold a minimum position of middle manager, or to be the owner of a business.

All participants (N= 243) received an invitation with a link to fill out the survey, either through social media platforms such as LinkedIn, Facebook, Instagram, and Whatsapp, or via their personal or professional email. Participants asked to take part in this study were free to either accept or decline the invitation, and were given no incentive to choose one option over the other. After reading the informed consent at the beginning of the questionnaire, individuals who elected to continue and answer the survey were clearly required to indicate their choice by either answering 'yes' or 'no' when asked "do you agree to participate in this study?" Since our participants were recruited by referral sampling, this could explain why all participants choose to answer 'yes' and complete the survey.

Moreover, all individuals who elected to fill out the survey completed it fully, resulting in a final sample that consisted of 243 participants (36.6 %) females and (63.4 %) males, with ages ranging between 18 and 70 years old. The age distribution showed

that 11.5% of participants were between the ages 18 to 30 years, 24.7% between 31 and 40 years, 26.3% between 51 and 60 years, and 3.8% between 61 and 70 years. Participants were also from different nationalities, including Lebanese, American, German, Armenian, among others. As for their distribution across educational levels, 2.5% had High School Diplomas, 35.8% had Bachelor degrees, 55.6% had a Master's degree, and 6.1% had a doctorate. Moreover, the participant distributions across positions showed that 18.5% of the participants were middle managers, 27.6% senior managers, 21.8% executive managers, 4.9% board members, and 27.2% were owners of the business.

As for the characteristics of the companies in which the participants work, 30.4% of the enterprises were small-sized (1 - 49 employees), 21% were medium-sized (50 - 249 employees), and 48.6% were large-sized (250 or more employees). Moreover, 41.6% were family-owned businesses, while the rest were not. Additionally, participants worked in or owned businesses across different countries, such as Lebanon, the MENA region, America, and Europe, and across different industries, such as food and beverage, wholesale and retail, among others. As for company age, it varied between 1 and 200 years, with the average age being 38.09 years. Finally, the revenue of the businesses showed that 9.1% of the companies generated a revenue of \$50,000 or less per year, 6.5% between \$51,000 and \$100,000 per year, 17.3% between \$101,000 and \$500,000 per year, and 67.1% more than \$500,000 yearly.

### **1.3.2 Measures**

A complete survey of 47 items was distributed to the participants. The survey included a series of demographic questions relating to the participant's age, nationality, position, job title, tenure, and educational level, as well as a set of questions about the

organization and its history, such as country of operation, size, age, industry, annual revenue, and whether it is a family business or not. After that, four scales were included to assess agility, environmental hostility, resilience, and digitalization respectively.

#### Independent variable

Using a scale that was devised by Tallon and Pinsonneault (2011), agility was assessed based on a set of eight items. After asking the participants to assess how rapidly and easily can their business adapt to external cues and change its strategy, eight actions were provided, whereby each item was rated on a seven-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree), based on the strength of the participant's agreement with each statement. An example of these actions would be "Respond to changes in aggregate consumer demand" or "introduce new pricing schedules in response to changes in competitors' prices." The psychometric properties of this tool were shown to be satisfactory in other studies, such as Ravichandran (2018). Additionally, the reliability (Cronbach's alpha) of the 8-item scale was found to be 0.781.

#### Dependent variable

We used the short version (BRT-13b) of the long version Benchmark Resilience Tool (BRT-53) developed by Whitman et al. (2013) in order to assess firm resilience. Based on the evidence provided by the developers of the tool, while the short version had 13 items instead of 53, the BRT-13b and BRT-53 had similar reliability and validity results, showing satisfactory psychometric properties. Moreover, the BRT-13b was recommended over the longer version as it would be easier for the participants to fill out; thus, decreasing survey fatigue. The items were evaluated based on a 4-point Likert scale,

ranging from 1 (strongly disagree) to 4 (strongly agree), and included statements such as “we are mindful of how a crisis could affect us”. The reliability of this scale was also determined to be satisfactory at 0.840.

#### Moderators

Using a 6-item scale developed by Miller and Friesen (1978), environmental hostility was measured in order to assess how aggressive and competitive the external environment of the firm was, as well as how much of a threat it creates for business sustainability. The items, such as “dwindling markets for products”, were evaluated using a 7-point Likert scale, with 1 being “this is not a great threat” and 7 being “this is a very substantial threat”. The psychometric properties of these tools were proven in other studies, such as Miller and Friesen (1983), and the Cronbach’s alpha of 0.717 added to the reliability of this instrument’s use in this study.

Moreover, with respect to digitalization, a six-item scale was conceptualized for the purpose of this study in order to measure the efficiency and easiness of the digitalization process that firms are undergoing or have underwent. Items, such as ‘our company has made a smooth transition onto online platforms’, were measured on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Moreover, the Cronbach’s alpha of 0.893 showed that this scale was also reliable.

## 1.4 Results

Descriptive statistics, including the means and standard deviations of the key variables used in the analyses of this study are shown in Table 1, along with the Pearson correlation matrix.

*Insert Table 1 around here*

Using SPSS version 26, we conducted two hierarchical moderated regressions to assess the effect of digitalization and environmental hostility as moderators of the relationship between business agility and resilience, in order to test *Hypotheses 3 and 5*.

Starting with Digitalization, Model 1 in Table 2 shows that two control variables, the age of participants and the age of the organization, displayed significance when introduced.

In Model 2, and upon the introduction of the independent variable, agility, participant age became more significant, while the company age maintained its significance. Participant nationality showed significance as well.

Digitalization, the moderating variable, was introduced in Model 3, followed by the addition of the interaction between agility and digitalization in Model 4. Results of the 4<sup>th</sup> Model show that agility was positively and significantly related to resilience ( $\beta = .121, p < 0.001$ ), thus confirming *Hypothesis 1*. Digitalization was also positively and significantly related to resilience ( $\beta = .161, p < 0.001$ ), thus supporting *Hypothesis 2*.

However, the interaction between agility and digitalization was found to be insignificant ( $\beta = -.013, p > 0.05$ ). Thus, *Hypothesis 3* was not supported.

*Insert Table 2 around here*

Applying the same technique to test for the moderating effect of environmental hostility, Model 1 from Table 3 introduces the control variables. Again, company age and participant age are the two that show significance at this stage.

Model 2 then introduces the independent variable, agility. Results show that participant age increased in significance upon this introduction, while their nationality also became significant. Additionally, company age maintained its significance.

Upon the introduction of Environmental Hostility, the moderator in Model 3, participant nationality increased in significance.

Finally, Model 4 highlights the interaction between agility and environmental hostility. Results show that agility was positively and significantly related to resilience ( $\beta = .227, p < 0.001$ ); thus, supporting *Hypothesis 1*. Additionally, *Hypothesis 4* was supported, showing that environmental hostility was significantly related to resilience ( $\beta = -.081, p < 0.005$ ). Finally, the interaction between agility and environmental hostility was also found to be significant ( $\beta = .098, p < 0.001$ ), thus supporting *Hypothesis 5*, and showing that environmental hostility is a positive moderator of the relationship between agility and business resilience.

*Insert Table 3 around here*

Based on the determined significance, an Andrew Hayes Process was conducted in order to give a more direct result. We tested the effect of environmental hostility as a moderator of the relationship between business agility and resilience to construct a regression equation with agility as the independent variable, resilience as the dependent variable, and environmental hostility as the moderator.

The result of the process output gave the following equation  $F(14, 228) = 5.4233$ ,  $p < 0.001$ ,  $R^2 = .2680$ . Moreover, the significance of agility was shown given  $b = .2270$ ,  $t(228) = 5.9695$ ,  $p < 0.001$ . For environmental hostility, its significance was shown given  $b = -.0812$ ,  $t(228) = -3.3402$ ,  $p < 0.001$ . As for the interaction relationship it was shown to be significant given  $b = .097$ ,  $t(228) = 4.3522$ ,  $p < 0.001$ , which supports the previous findings of the hierarchical regression, considering the confidence interval does not include 0.

In order to be certain that there was conformity between the aforementioned significant interaction and the established theory, a graph was constructed using one standard deviation above (+1 SD) and one standard deviation below (-1SD) the means (Stone & Hollenbeck, 1989). This graph is represented in Figure 1.

*Insert Figure 1 around here*

## 1.5 Discussion

This study aims to investigate the determinants of business resilience. Specifically, it builds on the dynamic capabilities theoretical framework to study the relationship between the agility of a business and its resilience, as well as the role of digitalization and environmental hostility in moderating this relationship. Business agility and resilience have become topics of increasing interest, especially in the light of the COVID-19 pandemic, as this crisis has redefined and reshaped the status quo of business operations (Goglio-Primard et al., 2020). Based on the findings of the ample studies conducted before the outbreak of this pandemic (Ashrafi et al., 2005; Camarinha-Matos, 2014; Ivory & Brooks, 2018; & Seetharaman, 2020), agility was shown to be a contributor to business sustainability, as it enabled businesses to be more adaptive and timely when dealing with external changes. In turn, this made businesses more resilient in the face of crises (Cole, 2015; DesJardine & Bansal, 2013; Munteanu et al., 2020; & Singh & Vinodh, 2017).

Given the context of the pandemic that the whole world is currently facing, we hypothesized that agility was positively related to business resilience (*Hypothesis 1*). The results of this study concur with our hypothesis, and show that agility is positively related to business resilience, even during these dire circumstances. Thus, based on these findings, we conclude that the more agile a business is, the more it would be able to face changing situations in a timely, efficient, and effective manner. This, in turn, would add and contribute to the resilience of the business, enabling it to withstand these turbulent times. By that, the business would more likely to sustain itself and maneuver these challenges as needed, in order to ensure its survival.

Additionally, due to the COVID-19 restrictions requiring people to work from home during lockdown, businesses have been driven to change their mode of operation and to operate remotely. In order to accomplish that, they have been forced to shift their operations onto digital platforms in order to continue working. Based on that, we hypothesized that the ability to digitalize their operations was positively related to the resilience of businesses (Hypothesis 2). Our claim was also supported by the findings of this study. This could be due to the fact that when businesses had no other option, they were forced to either shift to digital and remote operations or to shut down (Heisterberg & Verma, 2014; Orvos & SpringerLink, 2019; & Ronzon, Buck, & Eckstein, 2019). Therefore, digitalization was considered one of the few, if not the only means of survival for corporations and small businesses.

However, despite that, our claim that digitalization was a positive moderator of the relationship between agility and business resilience (*Hypothesis 3*) was not supported. Since nearly 47% of our sample constituted of businesses operating in Lebanon, this might explain this discrepancy between our hypothesis and finding. While agility and digitalization separately impact resilience, their interaction was found to be insignificant, perhaps due to the overwhelming amount of change that people are experiencing. While many countries have been suffering economically due to the pandemic, Lebanon, specifically, has been subjected to an economic crisis, an explosion, and a pandemic, all within the span of a year (Abouzeid et al., 2020; Devi, 2020; & Makdissi & Seif Edine, 2020).

These unfortunate events may have caused business owners and managers to experience burnout, resulting in their inability to acclimatize as efficiently to changing

circumstances. Burnout is mental tiredness that manifest itself through emotional exhaustion or decreased individual achievement (Maslach & Leiter, 2008). This burnout could be the result of having to constantly deal with constantly arising problems (Omrane, Kammoun, & Seaman, 2018), and to tackle them in a creative and innovative manner, so as to ensure that the business survives. Moreover, the lack of essential resources and a deficit in the necessary skills required for efficient business operation increases the possibility of experiencing burnout (Hamrouni & Akkari, 2012; Khelil & Khiari, 2013). Additionally, the frequency of having to change strategy and procedure, such as going digital, might have resulted in a decrease in the efficiency of these changes.

With respect to environmental hostility, and based on the extant literature (Covin & Slevin, 1991; Kreiser et al., 2019; & Lee et al., 2020), we hypothesized that, just as digitalization, environmental hostility was positively related to business resilience (*Hypothesis 4*). The results of this study align with our claim, and support our hypothesis. This could be interpreted by considering hostility in the environment as a proponent of resilience for businesses, as hostility is often characterized by disparaging circumstances that are undesirable for the company, thus driving it to counteract their effect in order to sustain itself (Miles, Arnold, & Thompson, 1993). In other words, when the environment in which a business exists changes, the business is then forced to act accordingly, and adapt to these changes, in order to survive. This shows how during uncertain times, both environmental hostility and business resilience play a role in keeping a company afloat.

Finally, our claim that environmental hostility is a positive moderator of the relationship between business agility and resilience (*Hypothesis 5*) also showed supporting results which align with the previous findings in the literature. This could be

explained by considering the role that environmental hostility plays: when the external surrounding of a business is changing constantly, businesses become more agile in order to be able to adapt, which in turn leads them to be more resilient and increases their chances of survival. By acclimatizing to these fluctuations, the business would therefore be displaying resilience by succeeding to prosper during these turbulent times; thus, explaining the moderating effect of environmental hostility.

## **1.6 Limitations and Future Research**

Despite the multiple insights this study has revealed, it must also be considered in the light of some limitations. For one, we had to rely on referral and snowball sampling instead of random sampling. While this ensured that our target sample stemmed from geographic regions of interest, it might have limited the generalizability of our results. Furthermore, around half of our sample consisted of businesses operating in Lebanon, which might also affect our results' generalizability. Finally, the data collected was all self-reported, so we had to take the responses of participants at face value. Concerning opportunities for future research, this study sets the foundation for potential papers to build on. One suggestion might be to explore more variables that could explain business resilience, such as governmental support. Another direction might be to look at mediators or mechanisms that could underlie the relationships examined in this paper. A final suggestion would be to explore other moderators than digitalization and environmental hostility, such as environmental dynamism for example, or to expand the geographic scope of this study in order to obtain results that are more generalizable.

## **1.7 Practical Implications**

There are multiple practical implications for this study that managers and business owners could leverage when experiencing turbulence or crises in their external environment. For one, it is important to realize the importance of digitalization in our world today. Despite the fact that our findings show digitalization as an insignificant moderator of the relationship between agility and resilience, it was in fact found to be positively related to resilience. This means that managers should aim to incorporate digitalization into their daily work practices, and allocate adequate time and resources for employees to feel comfortable with this integration, in order to benefit from it as much as possible. Additionally, managers and business owners should be aware of how environmental hostility, while seemingly negative, might increase the resilience of their business, and should account for possible turbulences and uncertainties in their long-term as well as short-term strategies.

## **1.8 Conclusion**

In conclusion, the aim of this study was to examine predictors of business resilience within the context of the COVID-19 world pandemic as it has added more strain on organizations striving to survive. Moreover, within the specific context on Lebanon, businesses faced additional pressures due to the economic crisis the country is experiencing as well as the Beirut blast of August 4, 2020. In order to figure out how businesses were able to maneuver these challenging times, we aimed to test the relationship between business agility and resilience, and the moderating role of environmental hostility and digitalization. Our findings show that agility was positively related to resilience; however, while environmental hostility was a positive moderator of this relationship, the interaction effect of digitalization and agility was insignificant. Our paper highlights the importance of accounting for these moderating variables, and suggests practical implications that managers can adopt to overcome these tough times.

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## Appendix

| Variable                   | 1       | 2      | 3      | 4     | 5       | 6       | 7       | 8       | 9      | 10    | 11      | 12     | 13     | 14     | 15   |
|----------------------------|---------|--------|--------|-------|---------|---------|---------|---------|--------|-------|---------|--------|--------|--------|------|
| 1 Gender                   | 1.00    |        |        |       |         |         |         |         |        |       |         |        |        |        |      |
| 2 Age                      | -.185** | 1.00   |        |       |         |         |         |         |        |       |         |        |        |        |      |
| 3 Nationality              | -.072   | .213** | 1.00   |       |         |         |         |         |        |       |         |        |        |        |      |
| 4 Educational Level        | .159*   | .176** | .004   | 1.00  |         |         |         |         |        |       |         |        |        |        |      |
| 5 Position                 | -.234** | .245** | -.013  | .021  | 1.00    |         |         |         |        |       |         |        |        |        |      |
| 6 Job Tenure               | -.190** | .534** | .095   | -.058 | .251**  | 1.00    |         |         |        |       |         |        |        |        |      |
| 7 Industry                 | -.060   | .034   | .028   | .056  | .083    | .020    | 1.00    |         |        |       |         |        |        |        |      |
| 8 Company Size             | .068    | .076   | .102   | .046  | -.438** | -.178** | -.105   | 1.00    |        |       |         |        |        |        |      |
| 9 Company Age              | .037    | .182** | .021   | .044  | -.340** | .173**  | .005    | .434**  | 1.00   |       |         |        |        |        |      |
| 10 Company Annual Rev.     | -.184** | .268** | .162*  | .046  | -.003   | .034    | -.088   | .389**  | .152*  | 1.00  |         |        |        |        |      |
| 11 Family-owned Business   | -.104   | .053   | -.155* | -.107 | .280**  | .198**  | -.200** | -.262** | -.086  | -.028 | 1.00    |        |        |        |      |
| 12 Agility                 | .047    | .036   | .118   | .027  | .031    | .077    | -.025   | -.023   | .008   | .009  | .032    | 1.00   |        |        |      |
| 13 Digitalization          | .108    | .055   | .095   | .133* | -.219** | -.146*  | .032    | .138*   | .068   | .029  | -.223** | .278** | 1.00   |        |      |
| 14 Environmental Hostility | .093    | .068   | -.117  | .081  | .161*   | -.061   | -.051   | .031    | -.114  | -.017 | -.056   | .271** | -.001  | 1.00   |      |
| 15 Resilience              | .010    | .091   | -.041  | -.065 | .092    | .058    | -.034   | -.069   | -.133* | .025  | .096    | .391** | .472** | .032   | 1.00 |
| Mean                       | 1.37    | 2.86   | 2.19   | 3.65  | 2.72    | 9.756   | 5.15    | 2.18    | 38.09  | 2.75  | 1.42    | 5.5098 | 5.2160 | 4.6564 | 3.29 |
| Standard Deviation         | .483    | 1.061  | 2.822  | .633  | 1.190   | 8.1939  | 2.066   | .872    | 33.538 | .607  | .494    | .92631 | 1.1314 | 1.097  | .442 |

**Table 1.** Descriptive Statistics and Pearson Correlation Matrix of key variables

Note: \* $p < 0.05$ , \*\* $p < 0.01$

**Table 2.** Hierarchical Moderated Regression for Digitalization

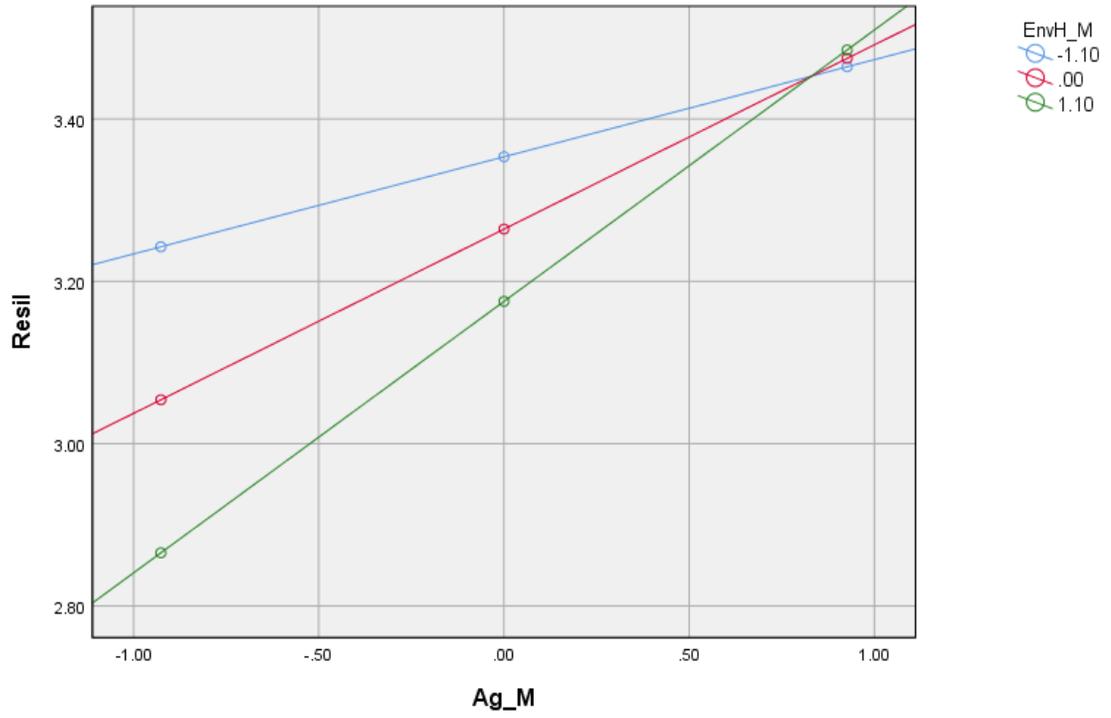
|                          | Dependent Variable: Business Resilience |          |           |           |
|--------------------------|---|----------|-----------|-----------|
|                          | Model 1                                 | Model 2  | Model 3   | Model 4   |
| Gender                   | .061                                    | .035     | .024      | .021      |
| Age                      | .060*                                   | .066**   | .026      | .028      |
| Nationality              | -.009                                   | -.018*   | -.019**   | -.019**   |
| Educational Level        | -.061                                   | -.070    | -.092**   | -.091**   |
| Position                 | .000                                    | -.004    | .032      | .028      |
| Job Tenure               | .000                                    | -.001    | .004      | .004      |
| Industry                 | -.003                                   | -.001    | -.003     | -.003     |
| Company Size             | -.003                                   | .000     | .006      | .008      |
| Company Age              | -.002**                                 | -.002**  | -.002**   | -.002**   |
| Company Annual Revenue   | .028                                    | .025     | .030      | .026      |
| Family-owned business    | .052                                    | .040     | .101*     | .103**    |
| Agility                  |   | .192***  | .124***   | .121***   |
| Digitalization           |   |          | .163***   | .161***   |
| Agility X Digitalization |   |          |           | -.013     |
| F                        | 1.117                                   | 5.011*** | 11.445*** | 10.670*** |
| $\Delta R^2$             | .051                                    | .157***  | .187***   | .002      |
| N                        | 243                                     | 243      | 243       | 243       |

Note: \*  $p \leq 0.1$ , \*\*  $p \leq 0.05$ , \*\*\*  $p \leq 0.001$ .

**Table 3.** Hierarchical Moderated Regression for Environmental Hostility

|                                   | Dependent Variable: Business Resilience |          |          |          |
|-----------------------------------|---|----------|----------|----------|
|                                   | Model 1                                 | Model 2  | Model 3  | Model 4  |
| Gender                            | .061                                    | .035     | .046     | .026     |
| Age                               | .060*                                   | .066**   | .075**   | .077**   |
| Nationality                       | -.009                                   | -.018*   | -.021**  | -.020**  |
| Educational Level                 | -.061                                   | -.070    | -.068    | -.087**  |
| Position                          | .000                                    | -.004    | .008     | .001     |
| Job Tenure                        | .000                                    | -.001    | -.002    | -.001    |
| Industry                          | -.003                                   | -.001    | -.003    | .000     |
| Company Size                      | -.003                                   | .000     | .011     | .001     |
| Company Age                       | -.002**                                 | -.002**  | -.002**  | -.002**  |
| Company Annual Revenue            | .028                                    | .025     | .019     | .027     |
| Family-owned business             | .052                                    | .040     | .026     | -.002    |
| Agility                           |   | .192***  | .211***  | .227***  |
| Environmental Hostility           |   |          | -.056**  | -.081**  |
| Agility X Environmental Hostility |   |          |          | .098***  |
| F                                 | 1.117                                   | 5.011*** | 5.045*** | 5.963*** |
| $\Delta R^2$                      | .051                                    | .157***  | .015**   | .045***  |
| N                                 | 243                                     | 243      | 243      | 243      |

Note: \*  $p \leq 0.1$ , \*\*  $p \leq 0.05$ , \*\*\*  $p \leq 0.001$ .



**Figure 2.** Graph of the interaction between business resilience and agility as moderated by environmental hostility