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## Article

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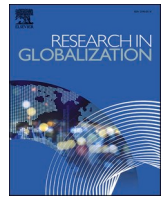
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# Female Entrepreneurial Activity and Institutions: Empirical Evidence from Saudi Arabia

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## ABSTRACT

This study investigates the role of institutions on female entrepreneurial activity in Saudi Arabia, using institutional economics as the theoretical framework for developing the hypotheses. Primary data were collected and used to analyse the role that institutions play and continue to exercise in developing entrepreneurial activity among female citizens. The findings indicate that the most significant barriers to involvement in entrepreneurial activities for Saudi women are a fear of failure and intervention policies, while their perception of existing female business owners and the support they receive from their families mediates their ability to become entrepreneurs. The study also investigated female perceptions of lifting driving banning, though it showed no significant impact on their probability of becoming entrepreneurs. The results will aid policy makers and future research seeking the institutions' effect on female entrepreneurship in the Middle East and Gulf regions.

## Introduction

Women have dramatically altered the playing field in entrepreneurship (Aljarodi et al., 2022; Dilli & Westerhuis, 2018). Since 2014, female contribution to entrepreneurship has increased each year, reaching an estimated 274 million women starting and running established businesses across the globe, and narrowing the gender gap in entrepreneurship by 5 % (GEM, 2021). Nonetheless, the rate of female entrepreneurship remains lower than that of men globally, which suggests that there is currently untapped potential to enhance female entrepreneurship, and thus the opportunity to release more economic growth (Aljarodi et al., 2022; Gimenez-Jimenez et al., 2020; Mostafiz & Goh, 2018).

Although female involvement in entrepreneurial activity continues to evolve rapidly in the Western world, over the last few years in the Middle East, there is an increasing percentage of women involved in entrepreneurial activity when compared to men (Aljarodi et al., 2022; Alshebami & Seraj, 2022a). Based on the previous studies about women in the Middle East and North Africa (Alhammad et al., 2021; Bank, 2013), this paper identifies three major underlying reasons for this lack of female engagement in entrepreneurial activity in the Middle East over the years: i) the attractiveness of public sector employment, which

provides a stable and sufficient monthly income, compounded with a lack of private sector jobs that are of a high quality and that generate sufficient monthly income, ii) the lack of an entrepreneurial environment, resulting from government dependence on natural resources exploited by massive firms, disincentivising the creation of private and small business, iii) failure to empower women by creating opportunities in formal employment that is adequate to their professions. Though there is an increasing amount of research on female entrepreneurial activity; however, they tend to focus on the West and does not examine different cultural and institutional factors found in non-Western regions such as the Middle East (Aljarodi et al., 2022). Thus, this research is intended to fill this gap by analyzing the influence of institutional environment factors on Saudi Arabian female entrepreneurs.

While the objective of this study is to analyse the influence of institutional factors on women to becoming entrepreneurs in a Saudi context, it is essential to identify the theoretical framework in order to identify and conceptualise these factors. Using institutional economics as a theoretical framework in entrepreneurship research helps to explain the important effects of the political system on social interactions (Escandon-Barbosa et al., 2019; Urbano et al., 2019). North (1990), North (2005) divided institutions into two types: formal institutions, such as the government, and informal institutions that regulate cultural

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interaction of society. Scholars have debated which institutions hinder women in business creation: whether formal or informal (Aljarodi et al., 2022; Escandon-Barbosa et al., 2019). For example, female entrepreneurial activity is adversely affected by inefficient bureaucracies, lack of supportive programmes and services, and the instability of laws and regulations (Mehtap et al., 2017). These are formal institutions which negatively impact the view of entrepreneurship for women. Based on the literature, informal institutions create an image that entrepreneurship is male dominated and this also negatively affects women's attitudes towards business creation (Aljarodi et al., 2022). Overall, the media bias and laws favouring men create an unsupportive environment for women, and thus hindering their engagement in entrepreneurial activity (Alshebami & Seraj, 2022b; Eikhof et al., 2013; Kleinert & Mochkabadi, 2021). In this context, this study explores women's perceptions of entrepreneurship by seeking the effect of formal factors (the intervention policies and permitting driving) and informal factors (fear of failure, female role models and family support).

This study extends the literature on female entrepreneurial activity and institutions in several ways. To start with, this is one of the first studies that examines the impact of the recent reforms of Saudi institutions and their relationship between institutional dimensions and female entrepreneurship. Second, it highlights the importance of the increasing opportunity in the Saudi Arabian market for women to become involved in entrepreneurial activity while analysing the influence of institutional factors that may hinder or support them. With this focus on the recent context this study offers improved, and more recent, estimates of female entrepreneurial behavioural responses to the development of the institutional dimensions. The research entails a primary survey across various cities in Saudi Arabia and including women with a range of educational backgrounds, work statuses and age. This study is also unique since it considers how the collected sample responds to the new changes in formal institutions for women such as urban driving, or new government policies. This also extends to informal institutional factors, such as women's perceptions towards entrepreneurial activity when they know of another recent female entrepreneur; how women's fear of failure affects their perception towards business creation, and what family factors are supportive of women becoming entrepreneurs. However, the Saudi context is pivotal to this study, given that there are changes in the institutional environment aiming specifically to enhance women's entrepreneurial activity. In that regard, this study's specific focus on understanding women's involvement in entrepreneurial activity contributes to Vision 2030 (Saudi Council of Economic and Development Affairs (2016)). There is also a wider contribution to the literature, however, since a detailed analysis of women's participation in the economic development of the country through their entrepreneurial contribution can yield lessons for the wider Gulf region that may also be generalisable to the Middle East and North Africa (MENA) as a whole.

The remainder of the paper proceeds as follows. The next section describes the view of the existing literature on factors influencing the probability of women becoming entrepreneurs, and development of associated hypotheses. The third section describes the data and sample, and the fourth section explores the regression analysis results. The fifth section presents our discussion and policy implications of the results, and the sixth section provides the concluding remarks, limitations and directions for future research.

## Theoretical framework and hypotheses development

There has been an increase in the use of institutional economics as a framework for analysing the influence of institutional environment factors on entrepreneurial activity (Alwakid et al., 2020; Gimenez-Jimenez et al., 2020; Noguera et al., 2013; Thornton et al., 2011; Welsh et al., 2017). In institutional economics institutions are seen as being created to shape, organise and reduce the uncertainty of human business transactions (North, 1990; 2005). Given that, in North's view,

institutions are divided into two kinds: formal institutions that arise from government laws, regulations and policies, and informal institutions that arise from cultural values, beliefs, standards or customs (North, 1990; 2005). In other words, the institutions main role is to reduce uncertainty, which reduces the cost of transactions in terms of spreading the risk, increasing the mobility of capital, and lowering the cost of information (North, 1990; 2005). If they are to assist human exchange and transaction costs, formal institutions need to be flexible and proficient, which may result in changes to a society's cultural values in the perception of, or acting towards, an objective (Alkhalidi et al., 2018; Urbano & Alvarez, 2014). This study employs institutional economics (North, 1990; 2005) as framed to understand entrepreneurial activity by demonstrating the perception of females regarding formal and informal institutions, therefore, demonstrating their perception of the efficiency of the country's institutional system.

Many previous papers have sought to shed light on the relationship between entrepreneurial activity and the institutional environment (Alhammad et al., 2021; Alwakid et al., 2020; Bruton et al., 2010; Terjesen & Amorós, 2010), and the role of formal and informal institutions in creating an efficient institutional framework for women to become entrepreneurs (Escandon-Barbosa et al., 2019; Noguera et al., 2015; Terjesen & Amorós, 2010). In this research, the formal institutional factors that have been examined in relation to entrepreneurial activity include regulations and policies, while the informal institutional factors include fear of failure, role models and family support (Caliendo et al., 2009; Knörr et al., 2013; Noguera et al., 2013; Shinnar et al., 2012; Urbano et al., 2017). Each of these are set out in the context of this study in the paragraphs below and were depicted in Fig. 1.

In respect to formal institutions, regulations and policies are the main tools hindering or supporting entrepreneurial activity. According to Urbano et al. (2019), the role of formal institutions is to generate an attractive ecosystem for entrepreneurial activity, but they need to be explicit to fully understand its effects on entrepreneurship. For instance, Choukir et al. (2019) and Gnyawali and Fogel (1994) suggested that the formal institutional dimension is connected to entrepreneurship; therefore, the government should limit such policies and rules that hinder individuals in the pursuit of business start-up and creation. Several other studies have presented the value of formal institutions to measure the rate of entrepreneurial activity (Alhammad et al., 2021; Dilli & Westerhuis, 2018; Welsh et al., 2014). Welsh et al. (2014), for example, found that Saudi female entrepreneurs faced several obstacles that are not limited to informal institutions. According to them, the ambiguous regulations played a pivotal role in hindering females' involvement in entrepreneurial activity. Moreover, the empirical evidence has shown that changing policies in terms of government regulations results in individuals being able to access funds more quickly, which creates an entrepreneurial friendly atmosphere at the national level (Bruton et al., 2010). Thus, formal institutions can deliver policies and procedures that are supportive of entrepreneurial activities (Aparicio et al., 2016). Ram et al. (2017) found that in Scandinavian countries, the highly formal nature of institutional laws and regulations had a positive impact on entrepreneurial performance.

The fundamental element of formal institutions is policies and regulations which are created to control the social behaviour of the business environment. These rules and policies may affect business creation positively (Van Stel et al., 2007) or negatively, as perceived by potential entrepreneurs (Gnyawali and Fogel, 1994). For example, rules or policies such as ease steps of register the business for a start-up venture, motivates individuals to engage in entrepreneurial activity, while complex tax and labour force regulations have a negative effect (Alhammad et al., 2021; Van Stel et al., 2007). Formal institutions can therefore have a role in increasing the entrepreneurial activity rate by changing policies, regulations or procedures.

The stability of formal institutions reflects positively on social groups' performance. This suggests that the promotion of policies is a critical support to entrepreneurial activity (Alhammad et al., 2021;

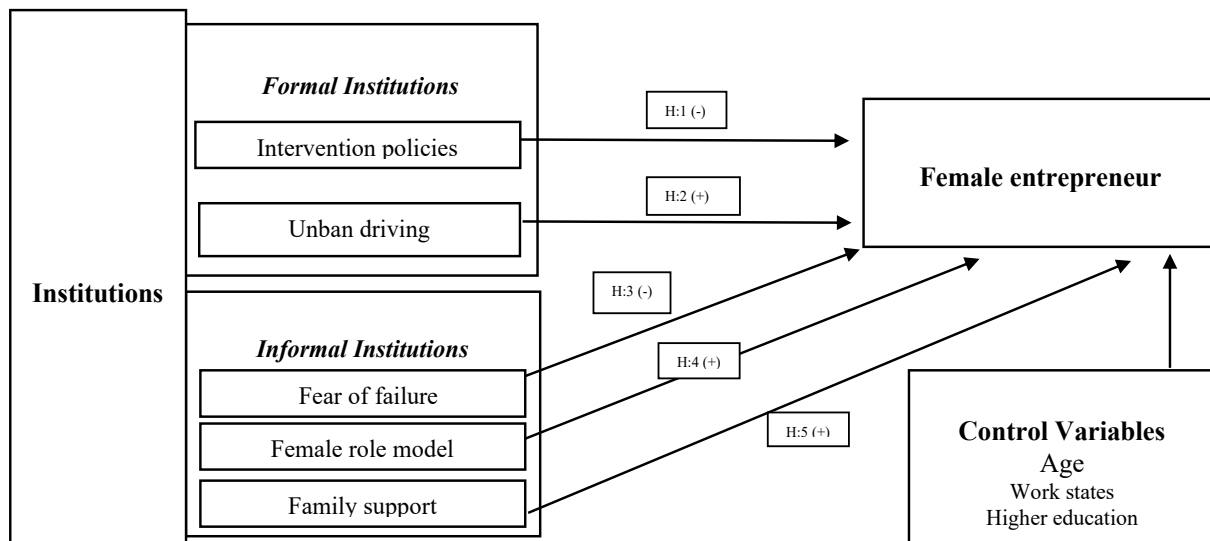


Fig. 1. A model of institutions.

Urbano et al., 2019), while in contrast decreased attention to important and inflexible policies presents a negative relationship to entrepreneurial activity (Aljarodi et al., 2022; Stephen et al., 2009). Accordingly, policies and rules that stimulate entrepreneurial activity are fundamental. Therefore, since early 2016, the government of Saudi Arabia has set about re-establishing and reforming previous policies and rules to increase the entrepreneurial activity rate (SCEDA, 2016). Throughout the Gulf region, and specifically in Saudi Arabia, governments have tended to intervene in the market for perceived economic and political benefits (Alshebami, 2022; Sadi & Al-Ghazali, 2010). The main goal is to control the market by increasing its dynamism and creating efficient transaction processes. Such a changes, as obtaining licence easily online are assumed to particularly motivate women towards entrepreneurial activity (SCEDA, 2016). We argue, however, that these policies do not appear to do well in supporting women who wish to become entrepreneurs due to their instability (SCEDA, 2016). Reflecting on the previously discussed research, this study proposes the following hypothesis:

Hypothesis 1 Intervention policies have a negative effect on the probability of women engaging in entrepreneurial activity.

Shedding light on the reconstruction of policies and rules as a consequence of the country 2030 Vision, in June 2018, the revocation of the law that previously banned Saudi females from driving was the biggest turning point of the era for the country (SCEDA, 2016). The law which banned women from driving represented a barrier to women's involvement in entrepreneurial activity over the years (Zamberi Ahmad, 2011). Saudi Arabia was the only country that banned women's from driving. Saudi women had to depend on male relatives to travel around, even for small distances. In more challenging cases, such as in urban areas, Saudi women find it extremely difficult to access public transportation and to find a male relative to drive them around. The government's changes to these laws are attempting to support women to increase their contribution to the country's economic well-being (SCEDA, 2016). This move is therefore one step in a series of sweeping reforms to the policies and rules for social and economic well-being, referred to as Vision 2030. The assumption, therefore, is that this change in institutions will lead to an increase in Saudi women engaging in entrepreneurial activity.

Faisal et al. (2017) stated the importance and crucial role of academic investigations into the impact of formal institutions on female entrepreneurial activity. One example they cited was the tendency for women to focus on careers in the public sector, rather than owning their own businesses, because they found it hard to deal with the regulations and policies in place for starting up a business (Faisal et al., 2017).

Compounding the above issue are several others such as the cost of transportation, the inconvenience of moving around, or even being prohibited to have someone who is not an immediate relative drive them around. Allowing women to drive is beneficial in two ways: it will help increase their participation in the labour market, given that access to public transportation is currently limited, and it will help them to save the wages they would have paid for a private driver. Since these reasons are expected to reflect positively on women, we expect this to also reflect in their behaviours towards entrepreneurial activity. Consequently, we proposed this hypothesis:

Hypothesis 2 Unbanning driving has a positive effect on the probability of women engaging in entrepreneurial activity.

Informal institutions also have an impact on entrepreneurial activity in society (Aparicio et al., 2016). Prior studies have shown that informal institutions such as fear of failure, role models and family support have been associated with an increased rate of entrepreneurial activity (Aldrich & Cliff, 2003; Caliendo et al., 2009; Noguera et al., 2013; Shinnar et al., 2012; Stephen et al., 2005; Urbano et al., 2017; Wagner, 2007). These are examined below.

Fear of failure characterises a potent factor constraining individuals' entrepreneurial activity (Caliendo et al., 2009). Research indicates that women are more likely than men to be risk-averse (Shinnar et al., 2012), and the fear of failure affects women's behaviours negatively for entrepreneurial entry (Noguera et al., 2013; Wagner, 2007). Scholars claim to understand the risk behaviour of individuals, particularly women who wish to become entrepreneurs (Caliendo et al., 2009; Noguera et al., 2013; Alvarez et al., 2013; Shinnar et al., 2012; Wagner, 2007). Studies suggest that there is risk-aversion in respect to business creation; therefore, the question is what levels of fear of failure prevent individuals from starting their own business (Knörr et al., 2013; Minniti & Nardone, 2007). Wennberg et al. (2013) found that in societies with high degrees of uncertainty individuals' fear of failure inhibits entrepreneurial activity. A study in the Middle East and North Africa, however, revealed low levels of fear of failure amongst women who pursue entrepreneurial activity (Hattab, 2012). Welter and Smallbone (2006) explained the effect of low degrees of fear of failure among women, specifically in a collective culture. The authors found that institutional collectivism plays an important role in providing individuals with a positive social fabric to provide support.

Prior research has reported that there are different attitudes to failure. Some are risk-averse (Knörr et al., 2013; Shinnar et al., 2012), others ridicule experiencing failure (Wood et al., 2013), and others focus on the ability to achieve goals (Noguera et al., 2013). These different



descriptions of behaviours show the consequences of a person's emotional responses to menace. Generally, however, the fear of failure has been found to be higher among women than men (Noguera et al., 2013; Wagner, 2007), and this has been linked to the gender gap in entrepreneurial activity (Wagner, 2007). If women are naturally more risk averse, we would expect fear of failure to be a key factor affecting Saudi women's willingness to get involved in entrepreneurial activity. Accordingly, we propose the following hypothesis:

**Hypothesis 3.** *Fear of failure has a negative effect on the probability of women engaging in entrepreneurial activity.*

North (2005) conveyed that informal institutions are "equally known but not laid down in writing and they tend to be more persistent than formal rules." An example of that is role models. Contín-Pilart and Larrazza-Kintana (2015) defined role models as an ideal example for another individual, who is inspired by the role model's path or journey. Several findings have evidenced the influence of role models on entrepreneurial activity (Contín-Pilart & Larrazza-Kintana, 2015; Dilli & Westerhuis, 2018; Martin-Sanchez et al., 2018; Powell & Eddleston, 2013; Stephen et al., 2005; Welsh et al., 2016).

The review has shown that there are different forms of role models. Welsh et al. (2017) proposed that role models among family members are a pivotal influence for women to engage in entrepreneurial activity. For example, the authors found that amongst family members who established their own firm, other family members were influenced to become entrepreneurs. Also, an empirical study in the Spain region, using data between 2008 and 2014, found that the knowing entrepreneur played a positive and inspirational role not only on an individual's decision to become an entrepreneur, but also for the characteristics of new entrepreneurial initiatives (Martin-Sanchez et al., 2018). According to Dilli & Westerhuis (2018), however, based on a report of the European Commission (2013) one of the main barriers for female entrepreneurship is a lack of role models.

Authors such as Rocha and Van Praag (2020) have suggested studying the influence of female entrepreneurs on other women's decisions to become entrepreneurs. GEM report (2017) showed that knowing an entrepreneur increased an individual's propensity towards entrepreneurial activity. Although there is an increasing number of studies on the impact of role models on an individual's decision to become an entrepreneur in different forms: family transition, student (Karimi et al., 2014; Urbano et al., 2017), or immigrants (Contín-Pilart & Larrazza-Kintana, 2015), there is limited literature on the impact of female entrepreneurs on the decision of other women to become entrepreneurs (Rocha & Van Praag, 2020), or the creation of role models in collective culture. Since Saudi Arabian culture limits the interaction and networking of women to men within their own family, or other females it represents a unique context where females are subjected to interact further with other females in daily life. The uniqueness of this culture exposes the importance of investigating behaviour within this gender imbalanced society and thus also the influence of females on the behaviour of other females in terms of entrepreneurship. Thus, we formulate the following hypothesis:

**Hypothesis 4.** *Knowing another female entrepreneur has a positive effect on the probability of women engaging in entrepreneurial activity.*

In terms of family support, there is an increasing focus on the influence of family on entrepreneurs, particularly on women's decision to become entrepreneurs (Faisal et al., 2017; Powell & Eddleston, 2013; Welsh et al., 2014; 2017; 2016). It is well recognised that family support is a vital form of social capital embedded in an individual to get involved in business activity (Welsh et al., 2014). According to these authors, family support is divided into two parts: family norms, which contain the culture and rules of the family; and family social capital, which includes advisory support and emotional support. They point out that social capital plays a pivotal role in family support for females becoming entrepreneurs, particularly for an extremely collective culture.

Female entrepreneurs may have an advantage from social capital that originates from family support. For example, Ram et al. (2017) pointed out that entrepreneurs find it easier to access loans and labour. Dilli & Westerhuis (2018) have shown that women's responsibilities in the home and family might benefit entrepreneurial activity but remove leverage from those who wish to become entrepreneurs. Since the financial support and welfare from family to Saudi women is pivotal, the lack of these support systems may negatively impact women's involvement in business activities (Dilli & Westerhuis, 2018). Thus, researchers have indicated that family constraints play an important role in helping or hindering females from being involved in entrepreneurial activity (De Vita et al., 2014; Raghuvanshi et al., 2017). They have also determined that family support is one of the most significant factors for female entrepreneurs' success in Malaysia (Alam et al., 2011). Hence, this study would expect to see a similar effect in the Saudi context, given the similarity in the contexts: i) the dominance of the Islamic religious beliefs, ii) the collectivistic culture and social ties. Moreover, we would expect that the nature of this support to be stronger upon the Saudi Arabian family since the Saudi nation considers itself as collective and conservative concerning women. We thus hypothesise:

**Hypothesis 5.** *Family support has a positive effect on the probability of women engaging in entrepreneurial activity.*

## Methodology

### Data and sample

This paper uses primary data collected from both female business owners and women who are interested in business creation in Saudi Arabia, thus allowing an assessment of both the behaviours and perceptions of female entrepreneurs and the behaviours and perceptions of those who are not considered entrepreneurs. A stratified sample method ensured that all regions of Saudi Arabia were represented (Lynn, 2019). The technique is commonly used to select specific group known as strata to improve precision (reduce error) relative to simple random sampling (e.g. Liu et al., 2019; Sussan & Obamuyi, 2018). The sample consists of female entrepreneurs from different regions, educational backgrounds, and work sectors as we designed the sample to be representative of Saudi society. The questionnaires comprised exploratory questions and statements on a five-point Likert scale. The data was collected during 2019. In all, 208 surveys were completed and used for this study. For the sample size, the paper followed a rule suggested by Austin and Steyerberg (2015), that sample size should be at least ten observations per variable. The Double Translation Protocol was adopted (Welsh et al., 2014): the English version of the questionnaires was established first, translated into Arabic, and then translated back into English. The step of translating into Arabic went through four researchers in the entrepreneurship field with bilingual proficiency in Arabic and English to ensure an accurate translation.

### Variables

We measured females who are becoming entrepreneurs on a dummy question where a dummy variable is 1 if a female is an adult in the process of starting her own business or presently owning a young business up to 3.5 years old; and zero otherwise. The GEM classification of an "entrepreneur" was used because the study aimed to find female entrepreneurs in their early stages of entrepreneurial activity since entrepreneurship is evolving concept in Saudi Arabia, in particular amongst women. Furthermore, the used of TEA "Total Entrepreneurial Activity" as well indicator of GEM project because the project has taken the research initiative of entrepreneurial activity for more than 15 years and covers more than 60 different countries. This measurement is often used in entrepreneurial studies (e.g. Gimenez-Jimenez et al., 2020; Noguera et al., 2015).

The three hypotheses that our research examined by means of Likert scales (1 meaning strongly disagree to 5 meaning strongly agree). These were: Intervention policies, urban driving and family support, and two hypotheses captured through dummy variables (fear of failure and female role model). The study followed previous findings to focus on the impact of formal institutional factors, such as intervention policies and unbanning female drivers, on women's propensity to become an entrepreneur (Dilli & Westerhuis, 2018; Nishat Faisal et al., 2016; Burton et al., 2010; Ram et al., 2017). Likewise, our research followed the previous findings regarding informal institutional factors, specifically fear of failure (Caliendo et al., 2009; Noguera et al., 2013; Shinnar et al., 2012; Wagner, 2007), female role model (Contín-Pilart & Larrazakintana, 2015; Noguera et al., 2015; Rocha & Van Praag, 2020; Urbano et al., 2017), and family support (Alam et al., 2011; Ram et al., 2017; Welsh et al., 2014), and modified these to fit the context of the country.

Our study also controlled for demographic variables. The previous findings identified a significant relationship between age, education and work status and individuals' decisions to become entrepreneurs (Dilli & Westerhuis, 2018; Lopez & Alvarez, 2019; Martin-Sanchez et al., 2018; Welsh et al., 2014). First, age is a continuous variable showing a significant relationship to entrepreneurial activity (Dilli & Westerhuis, 2018). It was found that subjects with younger ages, between 25 and 34 years, were more likely to engage in the early stage of entrepreneurial activity (Delmar & Davidsson, 2000). Since a high percentage of Saudis are young (SCEDA, 2016), the research intends to investigate the influence of age on Saudi female self-employment. Second, the literature shows that the choice of female self-employment is more limited in countries with a larger state sector (Estrin & Mickiewicz, 2011), and it suggests that women are more likely to lean toward self-employment because of their dependency and the need for time flexibility, particularly in the cases of wives and mothers (Dilli & Westerhuis, 2018; Klyver et al., 2013). In Saudi Arabia, as in most countries that have highly collective culture, home caring and child-rearing are the responsibility generally falls on women (Yousuf Danish & Lawton Smith, 2012). The investigation of employment therefore assesses the research to understand the gender gap in entrepreneurial activity (Dilli & Westerhuis, 2018). Following the work of Aidis et al. (2008), the proxy of work status is here reflected as a binary variable of one for a female who is either in a full or part-time job excluding self-employment, and zero otherwise. Next, education is an important measure of human capital (Aidis et al., 2008), that potentially determines the decision about involvement in the early stage of entrepreneurship (Davidsson & Honig, 2003; Hattab, 2014). Since there is an increasing number of educated women in Saudi Arabia (Yousuf Danish & Lawton Smith, 2012), potentially leading to higher self-employment of women, a binary variable was established and set at one for females who obtain secondary education and higher, and zero otherwise.

Table 1 reports a summary description of the variables employed in this study. Female entrepreneurs who fell into the early stage of entrepreneurial activity classification account for 54 % of the respondents selected for this research. The mean age of respondents was 32.09 years. Table 1 also shows that the majority of respondents had reached a secondary education or higher (85 %), while 59 % indicated that they had a full- or part-time job.

### Analysis

Regarding the independent variables, the research examined three hypotheses through Likert scale questions (1 meaning strongly disagree to 5 meaning strongly agree), which are (intervention policies, urban driving and family support). The study started to seek the underlying relationship between latent variables (Hair et al., 2006). The step involves exploratory factor analysis (EFA), which is "a statistical mechanism to understand the relationship between latent variables and loading in single factor" (Hair et al., 2010). The analysis reports that

**Table 1**  
Description of Variables.

Condition	Variable	Variable Description	Mean	SD	Min	Max
Dep. variable	Female entrepreneur	Whether female expected to start a firm or started within three years and half; 0 otherwise	0.54	0.49	0	1
Independent variables Formal institutions	Intervention policies	The respondents are asked to rate: If the sudden changes of government policies will hinder you to start your own business	0.03	1.01	1	5
	Urban driving	The respondents are asked to rate: Is that correct, allowing women to drive boost you to start and own your business.	0.04	0.09	1	5
	Fear of failure	A dummy variable of 1 is if a fear of failure preventing you from starting your business.	0.61	0.48	0	1
	Female role model	The respondent asked to rate: If the story of another women-started/owned business successfully, encourage you to start your own business.	0.52	0.50	1	5
Informal institutions	Family support	The respondents are asked to rate: I have received enough support from family & relative(s) to start my own business	0.01	0.98	1	5
	Age	Current age of participants in years	32.09	8.90	18	64
	Work states	The respondent asked to identify current status of employment (harmonized)	0.59	0.49	0	1
Control variables						

(continued on next page)

**Table 1** (continued)

Condition	Variable	Variable Description	Mean	SD	Min	Max
	Higher education	into 1 for having full or part-time job only; zero otherwise) The respondents asked to identify the highest educational obtained (harmonized into 1 for who attained secondary education and higher; zero otherwise)	0.85	0.36	0	1

perceptions of intervention policies are composed and related to three items, unbanning driving to two items and family support to three items. Table 2 reports the factor loadings, the composite reliability, and convergent validity (Hair et al., 2010). The results show that Cronbach's Alpha, KMO, and Average Variance Extracted (AVE), all have the acceptable level to predict the main factor.

To contrast the hypotheses and to verify the influence of formal institutional factors (Intervention policies and unbanning driving), and informal institutional factors (fear of failure, role models and family support) on women's attitude to becoming entrepreneurs, we employ binomial logistic regression technique. The purpose of employing binomial logistic regression as a technique for analysing our data is that our dependent variable is binary, helps to estimate the likelihood of an even happening, and "allows the study to [include] a mixture of categorical and continuous independent variables with respect to a categorical dependent variable" (Buis, 2010; Mitchell & Chen, 2005; Urbano & Alvarez, 2014).

Table 3 shows means, standard deviations and pairwise correlations of the independent and control variables. It should be noted that some of the independent variables' correlation coefficients are high, with (-0.24) being the highest. We therefore checked for multicollinearity among the explanatory variables using the variance inflation factor (VIF), with the result showing that multicollinearity is not a problem to be considered in our data, and we have an acceptable level to proceed (Hair et al., 2010).

## Results

Table 3 provides descriptive statistics and pairwise correlations. Pearson's correlation was run to assess the relationship between female

entrepreneurship and each of the independent variables (intervention policies, unbanning driving, fear of failure, role model, and female family support) and control variables (age, work status, and higher education). Table 3 shows that the average of female entrepreneurs in their early stage of entrepreneurial activity is 54 %, with a standard deviation of 0.49, and an average age of approximately 32 years old. The result presents a negative correlation between female entrepreneurship and intervention policies,  $r(109) = -0.12, p \leq 0.10$ , although allowing women to drive is a positive sign, there is no significant correlation to female entrepreneurship,  $r(109) = 0.04, p > .10$ . These interesting findings are apparent in Table 3. The informal institutions' norms show a stronger correlation to female entrepreneurship than formal ones. This shows that the fear of failure has a negative relationship to female entrepreneurship,  $r(109) = -0.24, p \leq 0.01$ , thus supporting previous research that has demonstrated the importance of investigating the correlation of the level of risk-aversion among women when considering business start-ups at a nationwide level (Caliendo et al., 2009; Noguera et al., 2013; Shinnar et al., 2012; Wagner, 2007). Also, the correlation between female entrepreneurship and other female role models shows a positive relationship,  $r(109) = 0.12, p \leq 0.05$ , supporting the previous findings (Contín-Pilart & Larraza-Kintana, 2015; Rocha & Van Praag, 2020; Urbano et al., 2017) by capturing the contextual behaviour among females. Family support also presents a strong positive correlation to female entrepreneurship,  $r(109) = 0.23, p \leq 0.01$  (Alam et al., 2011). Regarding demographic variables, only work status has a significant relationship to female entrepreneurs, indicating that women being in full and part-time employment is positively related to business creation.

Although age has no significant correlation to female entrepreneurship, the positive correlation was interesting; thus, we conclude that there is no significant coefficient between this variable and female entrepreneurship in Saudi Arabia, in contrast to previous studies (Dilli & Westerhuis, 2018). Additionally, there is a correlation between female entrepreneurship and higher education, but it is not statistically significant ( $p > .01$ ). While previous research has identified education as a vital human capital for entrepreneurship (Aidis et al., 2008; Dilli & Westerhuis, 2018; Hattab, 2014), our work agrees with that of Van der Sluis et al. (2008) in indicating only a weak relationship, suggesting that it may correlate differently at different stages of entrepreneurial activity.

Table 4 includes the results of four binomial logistic regression models. The stated coefficients indicate marginal effects from a maximum-likelihood binary model with sample selection. In the first model, we regress our dependent variables with the control variables (age, work status, and higher education). In the second model, we repeat this procedure, and we added the formal institutional factors with the control variables. Then, in model three, we follow the same procedure, and we added our informal factors. Lastly, in our fourth model, we seek the effect of each variable and respond to our proposed hypotheses. Doing these steps build a strength measure to the main model (Urbano & Alvarez, 2014).

In model 1, the study examined the relationship between female

**Table 2**  
Loadings, Reliability and Convergent Analysis.

Construct	Loadings	Factor Analysis		Reliability Analysis		
		KMO	Bartlett test	Cronbach's $\alpha$	CR	AVE
<b>Intervention policies</b>		0.633	98.51/**	0.682	0.826	0.614
Item 1	0.8034					
Item 2	0.8388					
Item 3	0.7013					
<b>Unban driving</b>		0.500	199.23/**	0.894	0.950	0.904
Item 1	0.9510					
Item 2	0.9511					
<b>Family support</b>		0.674				
Item 1	0.8664					
Item 2	0.8515					
Item 3	0.4107		159.36/**	0.772	0.770	0.548

**Table 3**  
Correlations matrix.

Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9	VIF
Female Entrepreneur	0.54	0.49	1									
Intervention policies	0.03	1.01	−0.12*	1								1.05
Unban driving	0.04	0.09	0.04	0.14*	1							1.09
Fear of failure	0.61	0.48	−0.24***	0.08	0.10	1						1.05
Female role model	0.52	0.50	0.12**	0.15**	0.21***	0.04	1					1.14
Family support	0.01	0.98	0.23***	0.02	0.12*	−0.11*	−0.04	1				1.06
Age	32.09	8.90	0.09	−0.09	−0.02	−0.01	−0.19***	0.13*	1			1.07
Work status	0.59	0.49	0.12*	−0.02	−0.02	−0.12*	0.02	−0.04	0.03	1		1.06
Higher education	0.85	0.36	−0.01	−0.08	0.01	−0.04	−0.18**	−0.03	0.12*	0.19**	1	1.09

\*\*\*significant at  $p \leq 0.01$ ; \*\*significant at  $p \leq 0.05$ ; \*significant at  $p \leq 0.10$ .

**Table 4**  
Logit Regression Results.

Variables	Model 1		Model 2		Model 3		Model 4	
	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
<b>Formal Institution</b>								
Intervention policies			−0.26*				−0.30*	0.16
Unban driving			0.13				0.06	0.17
<b>Informal Institutions</b>								
Fear of failure					−1.01***	0.33	−1.01***	0.33
Female role model					0.72**	0.33	0.79**	0.34
Family support					0.51***	0.17	0.52***	0.17
<b>Control variable</b>								
Age	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Work status	0.05*	0.31	0.05*	0.31	0.48*	0.32	0.49*	0.33
Higher education	−0.25	0.42	−0.31	0.42	−0.13	0.46	−0.17	0.47
<b>Model <math>\chi^2</math></b>	4.97**		8.38**		29.40***		33.06***	
<b>Pseudo R<sup>2</sup></b>	0.0190		0.0320		0.1122		0.1262	
<b>Observations</b>	190		190		190		190	
<b>Log-likelihood</b>	−128.54		−126.83		−116.32		−114.49	
<b>Percent correctly predicted</b>	58.95 %		58.42 %		66.84 %		72.11 %	

The reported coefficients are marginal effects. \*\*\*significant at  $p \leq 0.01$ ; \*\*significant at  $p \leq 0.05$ ; \*significant at  $p \leq 0.10$ .

entrepreneurship and demographic factors. Following prior studies demonstrating a positive and significant relationship to entrepreneurship, we controlled for demographic factors (age, work status and higher education) (Dilli & Westerhuis, 2018; Hattab, 2014; Klyver et al., 2013; Lopez & Alvarez, 2019; Martin-Sanchez et al., 2018). On that basis, linear regression established that work status significantly predicts female entrepreneurship ( $p \leq 0.01$ ). This result supports the previous suggestions in respect to the effect of employment on female entrepreneurship; showing that employed women's are more likely to start a business in comparison to those not employed (Dilli & Westerhuis, 2018; Klyver et al., 2013). Based on the result of model 1, however, age and higher education were not statistically significant to predict female entrepreneurship at ( $p > 0.10$ ). Although age was not significant, the result appears to indicate that age has a positive relationship on a female's decision to become an entrepreneur, indicating that, at an older age, a female has a higher probability of involvement in the early stage of entrepreneurial activity. Regarding human capital, higher education shows a negative relationship and is not significant in predicting female entrepreneurship at this stage in entrepreneurial development in Saudi Arabia. While previous studies have suggested that a relationship exists here, we suspect that it correlates at a different stage of entrepreneurial activity (Van der Sluis et al., 2008).

In model 2, the study included the variables relating to formal institutions (intervention policies and unbanning driving) along with the control variables. However, the positive sign of the results is noticed, which indicates that there is a positive relationship between formal institutional factors in terms of unbanning driving and women's decision to become an entrepreneur. However, this positive relationship is not significant. Intervention policies revealing a significant negative correlation in the model may be a result of the policies to support Saudi females not yet having been fully implemented in the community.

According to O'Connor (2013), the lack of the government promotion of policies supporting entrepreneurship, and the failure to report the positive effect of policy issues might lead to a lack of awareness of change within society in general, therefore affecting entrepreneurship negatively.

Similarly, in order to explain the influence of informal institutional factors, the study added fear of failure, female role models and family support to the control variables in model 3. The model overall is statistically significant at  $p$ -value = 0.01 with pseudo-  $R^2$  0.1262. It can be seen that all the surveyed informal institutional factors report a significant relationship to women becoming entrepreneurs, in line with previous findings as to the importance of these factors for predicting female entrepreneurial activity (Alam et al., 2011; Aldrich & Cliff, 2003; Bardasi et al., 2011; Caliendo et al., 2009; Noguera et al., 2013; Shinnar et al., 2012; Urbano et al., 2017; Wagner, 2007).

Model 4 included all the formal and informal institutional variables with the control variables in order to test the effect of proposed hypotheses. Hypothesis 1, which proposed that intervention policies have a negative effect on the probability of females engaging in entrepreneurial activity, was supported ( $\beta = -0.30$ ,  $p < .10$ ). Hypothesis 2, which proposed that unbanning driving has a positive effect on the probability of females engaging in entrepreneurial activity, was not supported ( $\beta = 0.06$ ,  $p > .10$ ). The result showed that allowing driving had a positive effect but not a significant one. This may reflect the conservative nature of family life in Saudi Arabia, when men have stronger authority over how women conduct themselves than what is allowed or not allowed within formal laws (Al-Khateeb, 1998). In other words, negative informal institutional effects may outweigh positive formal institutional ones. Hypothesis 3, which predicted that fear of failure has a negative effect on the probability of women engaging in entrepreneurial activity, was strongly supported thus identifying fear of failure as the biggest



obstacle to women pursuing business start-up ( $\beta = -1.01, p < .01$ ). [Hypothesis 4](#), which proposed that knowing another female entrepreneur has a positive effect on the probability of women engaging in entrepreneurial activity, was also supported ( $\beta = 0.79, p < .05$ ). Finally, [Hypothesis 5](#), which proposed that family support has a positive effect on the probability of women engaging in entrepreneurial activity, was strongly supported ( $\beta = 0.52, p < .01$ ).

The overall model report was measured to predict the result with a  $p$ -value of 0.01, and the model R-squared at 0.1262. The model concludes that formal institutions, in terms of intervention policies, and informal institutional factors, in terms of fear of failure, female role models and family support have a stable influence on women's decisions to become entrepreneurs. The coefficient of informal institutional factors, however, shows a closer relationship to the probability of women becoming entrepreneurs than that for formal institutions factors. On the other hand, there is not enough evidence to support the notion that unbanning driving has a significant influence on female entrepreneurship. Moreover, it was observed that while we include all variables, work status (i. e., already having a full or part-time job) has increased its coefficients to report the highest among all models.

## Discussion

The findings above reveal the effect of formal and informal institutions on women's decisions to become entrepreneurs in Saudi Arabia. The study extends previous works in this area ([Aljarodi et al., 2022](#); [Urbano et al., 2017](#)) by seeking the effect of recent changes in both institutions on female entrepreneurship within a country that is known to be highly conservative which may discourage women networking. Our research is using recently collected data from Saudi Arabia to better capture the changes in both formal and informal institutions. Also, this research estimates the reforms among institutions while considering the factors that influence females to become entrepreneurs, building upon the previous research and modifying it to fit the context of the country ([Aljarodi et al., 2020](#); [Welter et al., 2020](#)). This extension is especially vital given Saudi Arabia's shift towards policies intended to increase women's involvement in entrepreneurial activity. Additionally, the findings provide evidence from an environment that might establish a base for future studies in other emerging economies in the Middle East and North Africa with similar cultural traits.

Four out of five of the initial hypotheses about institutional factors that might support female entrepreneurship were supported by the results with statistically significant relationships. This includes formal institutions, such as intervention policies, and informal institutions such as fear of failure, female role models and family support. The results are in line with previous findings on the importance of understanding the risk-averse nature of individuals in society, particularly amongst females ([Noguera et al., 2013](#); [Wagner, 2007](#)), and the role of family support in increasing propensity to entrepreneurial activity ([Alam et al., 2011](#); [Bardasi et al., 2011](#); [Powell & Eddleston, 2013](#)). However, unbanning driving did not have a statistically significant relationship to increased entrepreneurship. Since allowing women to drive began only since the beginning of 2018 ([SCEDA, 2016](#)). It is probably too early to assess the long-term effects. Finally, work status shows a positive and significant effect, indicating that women are more likely to become entrepreneurs when they are already involved in the workforce. Overall, although our evidence is neither suggestive nor conclusive, it is sufficient to demonstrate that both formal and informal institutions are pivotal to entrepreneurial activity ([Dilli & Westerhuis, 2018](#)).

## Implications

The results of this study suggest that changes in the formal institutions in terms of allowing women to drive have not yet affected female entrepreneurship in practice. The new policies in Saudi Arabia are meant to reduce the obstacles women face in starting their firms and

to be supportive of them, but females did not perceive them as helpful and they had a less than expected effect on female involvement in entrepreneurial activity. Since it can be argued that the regulatory environment is one of the biggest obstacles for female entrepreneurial activity in Gulf Cooperation Council (GCC) countries ([Elam & Terjesen, 2010](#); [Faisal et al., 2017](#)), and since our results suggest that this continues to be the case even when efforts are being made to liberalise, policymakers should focus on raising awareness of changes in the formal environment, especially for women. A better communications approach may help to overcome pessimistic perceptions of the entrepreneurial environment.

The findings showed that fear of failure has a negative effect on the likelihood of female entrepreneurship. Saudi women perceived self-employment as highly risky. Earlier studies have elaborated on the negative impact of fear of failure on the behaviour of women and labour market satisfaction ([Noguera et al., 2013](#); [Shinnar et al., 2012](#); [Wennberg et al., 2013](#)). The risk of failure and the perception of entrepreneurship as high risk are strong obstacles for women when considering entrepreneurial activity. Although this has been explored extensively in the research, few studies have been conducted on women in GCC countries, especially Saudi Arabia. Research generally indicates a lack of motivation to seek and utilise all capabilities, as fear of losing their capital investment and fear of being perceived as a failure within society. These negative perceptions suggest that policymakers need to communicate a message of entrepreneurship as a distinguished career vis-a-vis other professional jobs using publicity campaigns. Also, policymakers should provide one more direct policy intervention is preferential tax treatment for entrepreneurs, so recognising that small businesses are risky and that people who undertake self-employment face more risks to their income than people in regular jobs but rewarding that willingness to take on risk through a preferential tax regime.

The findings also reported the significant impact of role models, especially that knowledge of female entrepreneurs creates a positive perception of entrepreneurship among other women. This is interesting in showing how the evolving concept of entrepreneurial activity has a positive effect on society's view of entrepreneurs. While Saudi Arabia has in the past decades relied on natural resources and a few large firms, and the job market is male-dominated ([SCEDA, 2016](#)), there is now a change and an increasing attention paid to entrepreneurs in society. Prior studies have examined various effects of entrepreneurial role models ([Contín-Pilart & Larraza-Kintana, 2015](#); [Urbano et al., 2017](#)), showing how knowing about other female entrepreneurs can have a positive effect on women's desire to create businesses and how this can offset the cultural obstacles created by a conservative and male-dominated society. The study suggests, therefore, that policymakers should support the status of entrepreneurs to enhance this positive view amongst females, focusing particularly on promoting entrepreneurship for women through the education system and collaborating with existing entrepreneurs to provide information to new generations.

Another vein of informal institutions is family support. Previous research has demonstrated the positive and significant impact of family support, especially for female entrepreneurs ([Edelman et al., 2016](#); [Powell & Eddleston, 2013](#)). This study elaborates on these previous results by showing how in a collectivist culture, such as in the Gulf region, family members and relatives greatly influence women and how this impacts the probability of female entrepreneurship. This result is interesting. On the one hand, scholars have argued that conservative attitudes encouraging women to be homemakers has a negative influence on female entrepreneurship in Gulf countries ([Elam & Terjesen, 2010](#); [Faisal et al., 2017](#)). Others have highlighted how family involvement in entrepreneurial activity can have a supportive and positive effect on women engaging in business creation ([Powell & Eddleston, 2013](#)). Family support gives women a sense of self-satisfaction and improves business performance. This suggests that policymakers should highlight the role of family support in the business

environment, and the pivotal role of women in society, as well as in the economic development of the country.

## Conclusion

In summary, the paucity of empirical research on women in developing and emerging economies has been noticed from the literature review. The present work adds to the body of literature by providing empirical evidence to both formal and informal institutional factors that determine female entrepreneurship in the context of a country shifting from a rentier economy to one more reliant on entrepreneurship amongst citizens, especially women. Consequently, the study indicates that informal institutions have a greater impact on female entrepreneurship. In particular, the negative influence of fear of failure in society, seeing and knowing other female entrepreneurs, and family and relatives' support are all factors that are strongly associated with the likelihood of female entrepreneurship in the Saudi Arabian context.

The use of formal and informal institutions to predict female entrepreneurial activity is a relatively recent development in entrepreneurship scholarship. This study adds to that research literature by providing the first empirically based assessment of the impact of changes in formal and informal institutions on female entrepreneurship in Saudi Arabia.

## Limitations and future research

Although, the study has tried to overcome the previous research limitations, several remain and should be acknowledged. First, because most of the changes in formal institutions such as unbanning driving came into effect during the last four years only, it is difficult to reach firm conclusions. Future research should investigate formal institutional effects with different indicators and focus on the implications of this change.

Second, the analysis relies on a sample that contains women in the early stage of entrepreneurial activity. Future research should extend that by comparing with men in the same stage of entrepreneurial activity. Expanding on this should further the knowledge regarding the different reasons behind the gender gap from the same or different stages of entrepreneurial activity. This may in turn show the differences that might relate to the two genders.

Third, while the study investigates the effect of the formal and informal dimensions, it noticed the lack of literature on female entrepreneurs from emerging economies and specifically the Middle East region. This lack of research into female entrepreneurs in the Middle East region and especially Saudi Arabia has been a limitation for this study since it means that there is inadequate literature and statistics to provide a more detailed view of female entrepreneurial activity over the last decades. The study therefore provides a view of female entrepreneurs based on the limited literature that is available from the region.

Lastly, the primary data collected allows this study to consider circumstances only in the immediate aftermath of the change in policies, and the study was therefore unable to do a comparison with the previous situation due to the lack of evidence. Hence, while the results showed that informal institutions have a strong relationship to female entrepreneurial activity, future research should extend our findings to use a qualitative technique for providing a rich and detailed about how these informal institutions factors enhance the attitude of females toward entrepreneurship.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## References

- Aidis, R., Estrin, S., & Mickiewicz, T. (2008). Institutions and entrepreneurship development in Russia: A comparative perspective. *Journal of Business Venturing*, 23(6), 656–672.
- Alam, S. S., Jani, M. F. M., & Omar, N. A. (2011). An empirical study of success factors of women entrepreneurs in southern region in Malaysia. *International Journal of Economics and Finance*, 3(2), 166–175.
- Aldrich, H. E., & Cliff, J. E. (2003). The pervasive effects of family on entrepreneurship: Toward a family embeddedness perspective. *Journal of Business Venturing*, 18(5), 573–596. [https://doi.org/10.1016/S0883-9026\(03\)00011-9](https://doi.org/10.1016/S0883-9026(03)00011-9)
- Alhammad, F. A., Al-Weshah, G. A., & Aljarodi, A. (2021). Governmental intervention and entrepreneurs' personal values: Qualitative evidence from Saudi Arabia. *Middle East Journal of Management*, 8(1), 23–41.
- Aljarodi, A., Lopez, T., & Alfahaid, T. (2020). Different approaches of context in quantitative entrepreneurship research. *How to make your doctoral research relevant*. Edward Elgar Publishing.
- Aljarodi, A., Thatchenkery, T., & Urbano, D. (2022). The influence of institutions on early-stage entrepreneurial activity: A comparison between men and women in Saudi Arabia. *Journal of Entrepreneurship in Emerging Economies*.
- Alkhalidi, T., Cleve, E., & Brander-Brown, J. (2018). Formal institutional support for early-stage entrepreneurs: Evidence from Saudi Arabia. *European Conference on Innovation and Entrepreneurship*, 903–XIII.
- Al-Khateeb, S. A. H. (1998). Women, family and the discovery of oil in Saudi Arabia. *Marriage & Family Review*, 27(1–2), 167–189.
- Alshebami, A. S. (2022). Psychological features and entrepreneurial intention among Saudi small entrepreneurs during adverse times. *Sustainability*, 14(13), 7604.
- Alshebami, A. S., & Seraj, A. H. A. (2022a). Exploring the influence of potential entrepreneurs' personality traits on small venture creation: The case of Saudi Arabia. *Frontiers in Psychology*, 13.
- Alshebami, A. S., & Seraj, A. H. A. (2022b). Investigating the impact of institutions on small business creation among Saudi entrepreneurs. *Frontiers in Psychology*, 13.
- Alwakid, W., Aparicio, S., & Urbano, D. (2020). Cultural antecedents of green entrepreneurship in Saudi Arabia: An institutional approach. *Sustainability*, 12(9), 3673.
- Aparicio, S., Urbano, D., & Audretsch, D. (2016). Institutional factors, opportunity entrepreneurship and economic growth: Panel data evidence. *Technological Forecasting and Social Change*, 102, 45–61.
- Austin, P. C., & Steyerberg, E. W. (2015). The number of subjects per variable required in linear regression analyses. *Journal of Clinical Epidemiology*, 68(6), 627–636.
- Bank, T. W. (2013). *Opening doors: Gender equality and development in the Middle East and North Africa*. World Bank Publications.
- Bardasi, E., Sabarwal, S., & Terrell, K. (2011). How do female entrepreneurs perform? Evidence from three developing regions. *Small Business Economics*, 37(4), 417.
- Bruton, G. D., Ahlstrom, D., & Li, H.-L. (2010). Institutional theory and entrepreneurship: Where are we now and where do we need to move in the future? *Entrepreneurship Theory and Practice*, 34(3), 421–440.
- Buis, M. L. (2010). Direct and indirect effects in a logit model. *The Stata Journal*, 10(1), Article 1.
- Caliendo, M., Fossen, F. M., & Kritikos, A. S. (2009). Risk attitudes of nascent entrepreneurs—new evidence from an experimentally validated survey. *Small Business Economics*, 32(2), 153–167.
- Choukir, J., Aloulou, W. J., Ayadi, F., & Mseddi, S. (2019). Influences of role models and gender on Saudi Arabian freshmen students' entrepreneurial intention. *International Journal of Gender and Entrepreneurship*.
- Contín-Pilart, I., & Larrazza-Kintana, M. (2015). Do entrepreneurial role models influence the nascent entrepreneurial activity of immigrants? *Journal of Small Business Management*, 53(4), 1146–1163.
- Davidsson, P., & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing*, 18(3), 301–331.
- De Vita, L., Mari, M., & Poggesi, S. (2014). Women entrepreneurs in and from developing countries: Evidences from the literature. *European Management Journal*, 32(3), 451–460.
- Delmar, F., & Davidsson, P. (2000). Where do they come from? Prevalence and characteristics of nascent entrepreneurs. *Entrepreneurship & Regional Development*, 12(1), 1–23.
- Dilli, S., & Westerhuis, G. (2018). How institutions and gender differences in education shape entrepreneurial activity: A cross-national perspective. *Small Business Economics*, 51(2), 371–392.
- Edelman, L. F., Manolova, T., Shirokova, G., & Tsukanova, T. (2016). The impact of family support on young entrepreneurs' start-up activities. *Journal of Business Venturing*, 31(4), 428–448.
- Eikhof, D. R., Summers, J., & Carter, S. (2013). "Women doing their own thing": Media representations of female entrepreneurship. *International Journal of Entrepreneurial Behaviour & Research*.
- Elam, A., & Terjesen, S. (2010). Gendered institutions and cross-national patterns of business creation for men and women. *The European Journal of Development Research*, 22(3), 331–348.
- Escandon-Barbosa, D., Urbano-Pulido, D., & Hurtado-Ayala, A. (2019). Exploring the relationship between formal and informal institutions, social capital, and entrepreneurial activity in developing and developed countries. *Sustainability*, 11(2), 550.
- Estrin, S., & Mickiewicz, T. (2011). Institutions and female entrepreneurship. *Small Business Economics*, 37(4), 397.

- Faisal, M. N., Jabeen, F., & Katsioloudes, I. M. (2017). Strategic interventions to improve women entrepreneurship in GCC countries: A relationship modeling approach. *Journal of Entrepreneurship in Emerging Economies*, 9(2), 161–180.
- GEM (2021). GEM Global Entrepreneurship Monitor. Retrieved January 10, 2022, <https://www.gemconsortium.org/reports/latest-global-report>.
- GEM Global Entrepreneurship Monitor. (2017). GEM Global Entrepreneurship Monitor. Retrieved October 10, 2019, from <https://www.gemconsortium.org/report/gem-20162017-womens-entrepreneurship-report>.
- Gimenez-Jimenez, D., Edelman, L. F., Dawson, A., & Calabrò, A. (2020). Women entrepreneurs' progress in the venturing process: The impact of risk aversion and culture. *Small Business Economics*, 1–21.
- Gnyawali, D. R., & Fogel, D. S. (1994). Environments for entrepreneurship development: Key dimensions and research implications. *Entrepreneurship Theory and Practice*, 18(4), 43–62.
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. (2010). Multivariate data analysis. *Multivariate Data Analysis*. Pearson.
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate data analysis* (Vol. 6). Upper Saddle River, NJ: Pearson Prentice Hall.
- Hattab, H. (2012). Towards understanding female entrepreneurship in Middle Eastern and North African countries. *Education, Business and Society: Contemporary Middle Eastern Issues*.
- Hattab, H. W. (2014). Impact of entrepreneurship education on entrepreneurial intentions of university students in Egypt. *The Journal of Entrepreneurship*, 23(1), 1–18.
- Karimi, S., Biemans, H. J., Lans, T., Chizari, M., & Mulder, M. (2014). Effects of role models and gender on students' entrepreneurial intentions. *European Journal of Training and Development*.
- Kleinert, S., & Mochkabadi, K. (2021). Gender stereotypes in equity crowdfunding: The effect of gender bias on the interpretation of quality signals. *The Journal of Technology Transfer*, 1–22.
- Klyver, K., Nielsen, S. L., & Evald, M. R. (2013). Women's self-employment: An act of institutional (dis) integration? A multilevel, cross-country study. *Journal of Business Venturing*, 28(4), 474–488.
- Knörr, H., Alvarez, C., & Urbano, D. (2013). Entrepreneurs or employees: A cross-cultural cognitive analysis. *International Entrepreneurship and Management Journal*, 9(2), 273–294.
- Liu, C. Y., Ye, L., & Feng, B. (2019). Migrant entrepreneurship in China: Entrepreneurial transition and firm performance. *Small Business Economics*, 52(3), 681–696.
- Lopez, T., & Alvarez, C. (2019). Influence of university-related factors on students' entrepreneurial intentions. *International Journal of Entrepreneurial Venturing*, 11(6), 521–540.
- Lynn, P. (2019). The advantage and disadvantage of implicitly stratified sampling. *Methods, Data, Analyses: A Journal for Quantitative Methods and Survey Methodology (Mda)*, 13(2), 253–266.
- Martin-Sanchez, V., Contín-Pilart, I., & Larraza-Kintana, M. (2018). The influence of entrepreneurs' social referents on start-up size. *International Entrepreneurship and Management Journal*, 14(1), 173–194.
- Mehtap, S., Pellegrini, M. M., Caputo, A., & Welsh, D. H. (2017). Entrepreneurial intentions of young women in the Arab world. *International Journal of Entrepreneurial Behavior & Research*.
- Minniti, M., & Nardone, C. (2007). Being in someone else's shoes: The role of gender in nascent entrepreneurship. *Small Business Economics*, 28(2–3), 223–238.
- Mitchell, M. N., & Chen, X. (2005). Visualizing main effects and interactions for binary logit models. *The Stata Journal*, 5(1), Article 1.
- Mostafiz, I., & Goh, S.-K. (2018). International women entrepreneurs and international opportunity recognition skills for start-up ventures. *Journal for International Business and Entrepreneurship Development*, 11(3), 201–220.
- Noguera, M., Alvarez, C., Merigo, J. M., & Urbano, D. (2015). Determinants of female entrepreneurship in Spain: An institutional approach. *Computational and Mathematical Organization Theory*, 21(4), Article 4.
- Noguera, M., Alvarez, C., & Urbano, D. (2013). Socio-cultural factors and female entrepreneurship. *International Entrepreneurship and Management Journal*, 9(2), 183–197.
- North, D. (1990). Institutions, economic theory and economic performance. *Institutions, Institutional Change and Economic Performance*. Nueva York: Cambridge University Press.
- North, D. C. (2005). The contribution of the new institutional economics to an understanding of the transition problem. In *Wider Perspectives on Global Development* (pp. 1–15). Springer.
- O'Connor, A. (2013). A conceptual framework for entrepreneurship education policy: Meeting government and economic purposes. *Journal of Business Venturing*, 28(4), 546–563.
- Powell, G. N., & Eddleston, K. A. (2013). Linking family-to-business enrichment and support to entrepreneurial success: Do female and male entrepreneurs experience different outcomes? *Journal of Business Venturing*, 28(2), 261–280.
- Raghuvanshi, J., Agrawal, R., & Ghosh, P. K. (2017). Analysis of barriers to women entrepreneurship: The DEMA<sup>TEL</sup> approach. *The Journal of Entrepreneurship*, 26(2), 220–238.
- Ram, M., Jones, T., & Villares-Varela, M. (2017). Migrant entrepreneurship: Reflections on research and practice. *International Small Business Journal*, 35(1), 3–18.
- Rocha, V., & Van Praag, M. (2020). Mind the gap: The role of gender in entrepreneurial career choice and social influence by founders. *Strategic Management Journal*.
- Sadi, M. A., & Al-Ghazali, B. M. (2010). Doing business with impudence: A focus on women entrepreneurship in Saudi Arabia. *African Journal of Business Management*, 4(1), 001–011.
- Saudi Council of Economic and Development Affairs (2016) "Saudi vision 2030", 24 April, available at: <http://vision2030.gov.sa/download/file/fid/417> (accessed 15 October 2021).
- Shinnar, R. S., Giacomini, O., & Janssen, F. (2012). Entrepreneurial perceptions and intentions: The role of gender and culture. *Entrepreneurship Theory and Practice*, 36(3), 465–493.
- Stephen, F. H., Urbano, D., & van Hemmen, S. (2005). The impact of institutions on entrepreneurial activity. *Managerial and Decision Economics*, 26(7), 413–419.
- Stephen, F., Urbano, D., & van Hemmen, S. (2009). The responsiveness of entrepreneurs to working time regulations. *Small Business Economics*, 32(3), 259–276.
- Sussan, M. U., & Obamuyi, T. (2018). The impact of microfinance bank on entrepreneurship development in Nigeria. *Journal of Business and Economic Development*, 3(2), 51–61.
- Terjesen, S., & Amorós, J. E. (2010). Female entrepreneurship in Latin America and the Caribbean: Characteristics, drivers and relationship to economic development. *The European Journal of Development Research*, 22(3), 313–330.
- Thornton, P. H., Ribeiro-Soriano, D., & Urbano, D. (2011). Socio-cultural factors and entrepreneurial activity: An overview. *International Small Business Journal*, 29(2), 105–118.
- Urbano, D., & Alvarez, C. (2014). Institutional dimensions and entrepreneurial activity: An international study. *Small Business Economics*, 42(4), 703–716.
- Urbano, D., Aparicio, S., & Audretsch, D. (2019). Twenty-five years of research on institutions, entrepreneurship, and economic growth: What has been learned? *Small Business Economics*, 53(1), 21–49.
- Urbano, D., Aparicio, S., Guerrero, M., Noguera, M., & Torrent-Sellens, J. (2017). Institutional determinants of student employer entrepreneurs at Catalan universities. *Technological Forecasting and Social Change*, 123, 271–282.
- Van der Sluis, J., Van Praag, M., & Vijverberg, W. (2008). Education and entrepreneurship selection and performance: A review of the empirical literature. *Journal of Economic Surveys*, 22(5), 795–841.
- Van Stel, A., Storey, D. J., & Thurik, A. R. (2007). The effect of business regulations on nascent and young business entrepreneurship. *Small Business Economics*, 28(2–3), Article 2–3.
- Wagner, J. (2007). What a difference a Y makes-female and male nascent entrepreneurs in Germany. *Small Business Economics*, 28(1), 1–21.
- Welsh, D. H., Kaciak, E., & Minialai, C. (2017). The influence of perceived management skills and perceived gender discrimination in launch decisions by women entrepreneurs. *International Entrepreneurship and Management Journal*, 13(1), 1–33.
- Welsh, D. H., Kaciak, E., & Thongpapanl, N. (2016). Influence of stages of economic development on women entrepreneurs' startups. *Journal of Business Research*, 69(11), 4933–4940.
- Welsh, D. H., Memili, E., Kaciak, E., & Al Sadoon, A. (2014). Saudi women entrepreneurs: A growing economic segment. *Journal of Business Research*, 67(5), 758–762.
- Welter, F., & Smallbone, D. (2006). Exploring the role of trust in entrepreneurial activity. *Entrepreneurship Theory and Practice*, 30(4), 465–475.
- Welter, F., Urbano, D., Alfahaid, T., Aljarodi, A., Breit, E., Buhrandt, A., ... Köhn, P. (2020). Introducing the book: The what, why and how of relevance and impact. *How to Make your Doctoral Research Relevant*. Edward Elgar Publishing.
- Wennberg, K., Pathak, S., & Autio, E. (2013). How culture moulds the effects of self-efficacy and fear of failure on entrepreneurship. *Entrepreneurship & Regional Development*, 25(9–10), 756–780.
- Wood, M., McKinley, W., & Engstrom, C. L. (2013). Endings and visions of new beginnings: The effects of source of unemployment and duration of unemployment on entrepreneurial intent. *Entrepreneurship Research Journal*, 3(2), 171–206.
- Yousuf Danish, A., & Lawton Smith, H. (2012). Female entrepreneurship in Saudi Arabia: Opportunities and challenges. *International Journal of Gender and Entrepreneurship*, 4(3), 216–235.
- Zamperi Ahmad, S. (2011). Evidence of the characteristics of women entrepreneurs in the Kingdom of Saudi Arabia: An empirical investigation. *International Journal of Gender and Entrepreneurship*, 3(2), 123–143.