



Finding Entrepreneurial Opportunities in Times of Crisis: Evidence from Tunisia

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Abstract

Entrepreneurship is a highly complex process influenced by numerous factors. The goal of this paper is to identify the combinations of fundamental entrepreneurial determinants that drive opportunity recognition (OR) in different economic environments. We focus on two points in Tunisia's recent economic cycle: before and after the 2011 Revolution. Using micro-level survey data, the study employs ordered logit analysis to identify basic entrepreneur characteristics that may increase the likelihood of identifying entrepreneurial opportunities during these two economic cycle phases. Several key factors, such as training, creativity, and social networks, are found to be ineffective in the OR process. Furthermore, education attainment lost its major and well-established function throughout Tunisia's profound and protracted socioeconomic crisis. Only self-efficacy and prior experience have particularly strong effects on identifying entrepreneurial opportunities during the period of economic downturn. Despite the government's efforts to incorporate entrepreneurship education into university curricula and business practices, these findings show that Tunisia is still in the early phases of entrepreneurship integration and development, with patchy and uncoordinated activity. The drivers of entrepreneurial perception in the quest for opportunities described by western theories should not be applied uniformly in less developed economies, which have unique political and economic contexts and challenges. We also noticed that the revolution's resulting crisis did not deter young entrepreneurs from launching business ventures. This finding may pique the Tunisian government's interest in devising an effective strategy to support young entrepreneurship, especially in light of the new COVID-19 outbreak's potential impact on Tunisia's already vulnerable economy.

Keywords Entrepreneurship · Opportunity recognition · Crisis

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Introduction

Entrepreneurship research emphasizes the significance of the individual entrepreneur in the formation of new ventures as an economic indicator of a country's economic health and prosperity (Wennekers et al., 2010; Baron & Tang, 2011). This may explain the increased interest in and focus on entrepreneurship in recent years, particularly in light of the occurrence of several socioeconomic crises. Job creation, increased competition, and technological advancement that boosts innovation and productivity growth are the primary channels through which new business generation contributes to economic development. Gartner (1990), Shane and Venkataraman (2000), and others have stressed the importance of the concept of “opportunity” in understanding entrepreneurship and its contribution to economic growth. In this context, opportunity recognition (OR) and exploitation are regarded as critical aspects of entrepreneurship, particularly during times of crisis (Alvarez et al., 2010; Devece et al., 2016). An entrepreneur is defined in the literature on entrepreneurship as someone who recognizes an opportunity and creates a new adventure to pursue (Shane and Venkataraman, 2000). The term “opportunity discovery”¹ has been used in the literature to refer to the occurrence of sufficient information to identify an “opportunity” at a specific point during the discovery process. According to Eckhardt and Shane (2003), the explorer perceives a profitable opportunity at the time of “opportunity discovery.” Exploring and discovering high-potential business opportunities, as a result, is critical to entrepreneurial success (Alvarez et al., 2010). The question then is: what explains why some people perceive and seize opportunities while others do not? According to the large conceptual and empirical literature, the answer varies as a function of the entrepreneurs' personal and environmental factors (Shane & Venkataraman, 2000; Grégoire et al., 2010a, b; Thornton et al., 2011; Turro et al., 2016). Other research has highlighted the significance of social capital and network ties in recognizing entrepreneurial opportunities (Ardichvili et al., 2003; Ramos-Rodríguez et al., 2010; Nieto & González-Álvarez, 2016).

While the large entrepreneurship literature explicitly acknowledges these various factors as potential drivers of opportunity discovery and new venture formation, their findings are equivocal, particularly in countries with weak institutions or those under political or economic pressures, as is the case in the developing world. On one hand, researchers such as Altenburg and Lütkenhorst (2015) explicitly mention access to financial capital by new entrepreneurs as a problem in developing economies, as well as poor entrepreneurial infrastructure, a high level of corruption, and poor human resource management. On the other hand, it is well established in the literature that weak institutional foundations and long-term economic turbulence

¹ Sarasvathy et al. (2003) have debated the differences between discovery, creation, and recognition of entrepreneurial opportunity. Yet, recent researchers have fused these diverse visions of entrepreneurial opportunity (Gaglio & Katz, 2001).

prevent developing countries from overcoming crises, resulting in the institutionalization of an unfavorable entrepreneurial environment (Martinez et al., 2015; Bluhm et al., 2020). For example, Autio and Acs (2016) demonstrated that individuals may not react similarly to opportunities in all contexts, but rather that their reactions may be influenced by the institutional context in which they find themselves. As a result, similarly qualified individuals in different contexts may react differently to the same opportunity. At the same time, the literature on entrepreneurship acknowledges that entrepreneurial opportunities arise from changes in the environment in which an entrepreneur evolves. Entrepreneurs can, in fact, profit from the disequilibrium created by crises and environmental changes (Cohen & Winn, 2007; Wang et al., 2017). Hence, despite the broad consensus that entrepreneurship is highly dependent on the current political, economic, and institutional climate and that crises can have a significant effect on entrepreneurial actions (Civera et al., 2021; Klapper & Love, 2011), little quantitative research has been conducted, even in developed countries, to investigate how these contextual factors shape OR drivers, particularly during times of severe economic downturn or crisis (e.g., Giotopoulos et al., 2017; Hermans et al., 2015).

The purpose of this research is to add to the existing literature on context and entrepreneurship by investigating entrepreneurs' reactions to adversity and their ability to recognize opportunities amid unfavorable environmental conditions. We analyze key characteristics of entrepreneurs that may influence their propensity to recognize opportunities in a developing country context, where "bad" initial conditions inhibit entrepreneurship activity. We explicitly examine whether the relevance of these key factors has increased during a crisis period compared to a non-crisis period. To do so, we consider the case of Tunisia, which has been deeply impacted by a severe economic crisis since the Jasmine Revolution of 2011. The economy has remained stagnant, with high unemployment, and has been unable to take off (World Bank, 2014). Entrepreneurs have suffered a double shock due to the drastic drop in demand for goods and services. Furthermore, the crisis has had a significant impact on the financing of innovative entrepreneurship (OECD, 2015c, 2018). This economic downturn that followed the revolution highlighted the importance of understanding not only the determinants of OR, but also the factors that make entrepreneurship sustainable in difficult times in order to support growth and employment. The motivation for analyzing this issue in a developing country such as Tunisia lies in (1) the assumption of different empirical results compared to developed countries because of dissimilarities in the political and institutional environment (De Jong & Den Hartog, 2010; Wennekers et al., 2010); (2) a growing need to address the sustainability of the growth of developing countries already characterized by fragile economies, particularly during times of crisis (Dhahri & Omri, 2018); and (3) a lack of an adequate understanding of entrepreneurship in the development process, owing to a lack of data on entrepreneurs and entrepreneurship in Tunisia. Governments and other stakeholders are increasingly relying on robust and credible data to make key decisions that facilitate and promote sustainable forms of entrepreneurship that, in turn, boost economic growth.

To sum up, the contribution of this paper is twofold. First, it extends the scarce empirical literature on the determinants of entrepreneurial OR in times of crisis. As

our sample covers the period before and after the Tunisian revolution, the findings may help to understand the full extent of the crisis's impact on entrepreneurship and provide better insights on the role of specific factors in discovering and creating new ventures during economic downturns. Second, to the best of the authors' knowledge, this is the first study to look into OR drivers not only in the midst of a crisis but also in a developing country with an already fragile entrepreneurial environment. In this regard, Giotopoulos et al. (2017) is the only empirical work we are aware of that examines the impact of crises on entrepreneurial activity. However, while this study focused on the determinants of OR in Europe during the global financial crisis (GFC) of 2008, it only provided the mean effects and did not distinguish between developed and less developed European countries, which have significantly different political, institutional, economic, and thus entrepreneurial environments.

The current study is based on data collected at the individual level from a survey of micro and small businesses in a variety of industries (services, trade, industry, etc.). We look at how the OR process is shaped by contextual conditions and individual traits and constructs. Our empirical evidence suggests first that the relationship between OR and its determinants, as identified in the literature, varies significantly between non-crisis and crisis periods in the Tunisian context. Then, we find that entrepreneurs, with the sole and main support of their human capital, can survive and prosper under resource constraints and adversity. The data does, in fact, confirm the role of education, efficacy, and sectoral experience prior to the revolution. Surprisingly, and contrary to past study findings, we find that at times of crisis, education's well-established and powerful influence vanishes, with no substantial effect on the likelihood of OR. During difficult times, self-efficacy and sectoral experience are found to be more effective in the entrepreneurial OR process than during calm times.

The structure of the paper is as follows. “[Theoretical Background and Past Evidence](#)” reviews the literature and formulates the main hypotheses to be tested; “[Data and Methodology](#)” describes the data and the econometric methodology used; “[Results and Discussion](#)” presents and discusses the empirical analysis's findings; and “[Conclusion](#)” concludes and discusses policy implications.

Theoretical Background and Past Evidence

Entrepreneurial opportunities are central to the literature on entrepreneurship (Eckhardt & Shane, 2003; Shane & Venkataraman, 2000; Shane et al., 2010). The concept of entrepreneurial opportunities was referenced in earlier research on entrepreneurship. For example, Hulbert et al. (1997), for example, define it as “the chance to meet an unmet need that is potentially profitable.” An entrepreneurial opportunity, according to Shane (2003), is “a situation in which a person can create a new means-ends framework for recombining resources that the entrepreneurs believe will yield a profit.” It is defined by Lumpkin and Lichtenstein (2005) as “the ability to identify a good idea and transform it into business concepts that add value and generate revenue.” Regardless of the perspectives on opportunities considered, the literature suggests that entrepreneurial opportunities engage in

a variety of processes for creating value. Entrepreneurs are distinguished in this early literature by specific characteristics that influence their propensity to recognize opportunities and mobilize the resources required to start their businesses (Shane & Venkataraman, 2000; De Carolis & Saporito, 2006). Based on an examination of 180 articles, Mary George et al. (2016) classified prior research into six influential factors: prior knowledge, social capital (Cliff et al., 2006; Ramos-Rodríguez et al., 2010), cognition/personality traits (De Carolis & Saporito, 2006; Grégoire et al., 2010a, b), environmental condition process (Baron & Tang, 2011), alertness, and systematic search. As a result, investigating these factors yields a more in-depth understanding of the rationale underlying the entrepreneurial recognition process and explains why some people can identify opportunities while others cannot.

Human Capital

Human capital is defined as the knowledge gained by an entrepreneur through education, experience, or both (Bhagavatula et al., 2010). Some people are then able to identify opportunities, while others are unable to. According to the human capital theory, knowledge enables people to improve their cognitive abilities, resulting in more productive and effective potential activities. As a result, people with higher or better human capital should be better able to spot potentially profitable opportunities in any new economic activity. Thus, human capital is a resource that causes heterogeneity among people and is critical to understanding the differences in the OR process. Prior research divided human capital into three categories: education, work experience, and entrepreneurial experience (e.g., Ucbasaran et al., 2009). These human capital dimensions drive individuals to identify and take advantage on market opportunities that solve or satisfy unmet market needs (Cantner & Wolf, 2019; Kim et al., 2018; Trzcielinski, 2019; Vaghely & Julien, 2010). Nonetheless, some scholars believe that higher levels of human capital may result in higher opportunity costs for potential entrepreneurs. These higher costs may make pursuing entrepreneurial opportunities less appealing (Shepherd et al., 2015).

H1. Entrepreneurs' human capital has a significant impact on the number of opportunities identified.

Education and Training

Education is one of the most commonly studied aspects of human capital. It is well established in the literature that the most educated entrepreneurs are better able to deal with complex problems (Shane, 2003). They can also use their knowledge and the social contacts generated by the education system to acquire resources and identify and exploit business opportunities. It is important to note that the literature on entrepreneurship claims that educational deficiencies explain the greater difficulty of performing activities such as entrepreneurship or business creation (Acs & Amorós, 2008), particularly in higher education (Mas-Tur et al., 2015). Vocational training

programs, in addition to formal education, enable people to develop specific business skills. Training and specialized courses foster critical thinking, good communication, teamwork, and other entrepreneur-related skills. Numerous studies (Kim et al., 2018; Nieto & González-Álvarez, 2016; Ucbasaran et al., 2009) discovered a significant relationship between education level, entrepreneurship training, and the process of identifying entrepreneurial opportunities in high-income countries. The same reasoning appears to apply in the contexts of the least developed countries. According to Bastian and Zali (2016), entrepreneurs with higher educational qualifications and a higher level of personal and professional skills are more likely to explore new market opportunities in the Middle East and North Africa (MENA). Also, according to Giotopoulos et al.'s (2017) study of 32 European countries over a 7-year period preceding and including the GFC of 2008, highly educated and trained people motivated by personal development and entrepreneurial aptitude are more likely than less educated people to identify opportunities and start a business in difficult economic times. Thus, we assume:

H1a. Entrepreneurs' educational attainment has a significant and positive impact on the number of opportunities they recognize, and this effect is expected to be stronger in crisis periods than in non-crisis periods.

Experience

Similarly, there is preliminary evidence that previous work experiences are an important criterion for identifying business opportunities because they provide entrepreneurs with information about the market in which they operate (McGrath, 1999; Shane & Venkataraman, 2000). Experience-based knowledge can initially direct attention, expectations, and interpretations of market stimuli, facilitating idea generation (Gaglio & Katz, 2001). It is argued that entrepreneurs can identify opportunities that others cannot because of the specific knowledge they have gained through their entrepreneurial experiences. However, the information accumulated as a result of previous professional experience may be useful for some entrepreneurs, but not for others, in identifying opportunities. According to Ucbasaran et al. (2009), entrepreneurs learn about their abilities by running a business and changing their behavior in response to their experiences. However, empirical literature results have not provided a clear picture of the direction of the relationship between prior experience and OR. Kim et al. (2006) tested this hypothesis on a sample of 830 new firms in the USA and found a positive and significant relationship between previous managerial experience and opportunities to create a new business. However, some academics argue that having entrepreneurial experience is not necessary for successfully identifying entrepreneurial opportunities (Frese & Gielnik, 2014; Tang et al., 2012). Greater experience may have drawbacks such as liabilities, cognitive fixedness, and "mental ruts" (Gielnik et al., 2014; Ucbasaran et al., 2009). Indeed, experience can restrict an entrepreneur's ability to identify opportunities in other industries by confining him to a single domain (Petkova, 2009). Using a large sample of 2793 entrepreneurs in Spain, Fuentes et al. (2010) made an interesting contribution by demonstrating that prior industry experiences

have no influence on the number of opportunities identified and developed. Long and Dong (2017) discovered, using dynamic data from the Chinese Panel Study of Entrepreneurial Dynamics, which randomly sampled and followed nascent entrepreneurs for 3 years, that those with successful entrepreneurial experience can create new ventures more quickly, whereas industry experience has a negative effect on new venture emergence. Poblete et al. (2019) discovered an inverted U-shaped relationship between the length of entrepreneurial experience and their optimism indicator in a cross-national sample of 450,000 people from 35 countries from 2009 to 2011. This finding suggests that novice entrepreneurs are more likely than mature and experienced individuals to have an immature perception of the obstacles and threats to the development of a new venture during a severe crisis, such as the 2008 GFC. Apparently, early research findings did not converge in this regard. They either suggest that experienced entrepreneurs exaggerate their perception of obstacles, hindering their ability or motivation to uncover new opportunities during crises, or, on the contrary, that their experience helps them to identify opportunities even in adverse conditions. Therefore, we propose:

H1b. Past managerial experiences have a significant and positive effect on the ability to identify more business opportunities, and this effect is expected to be stronger in times of crisis than in non-crisis periods.

H1c. Previous experiences in the business sector strengthen the ability to identify more entrepreneurial opportunities, and this effect is expected to be stronger in times of crisis than in noncrisis periods.

Cognition and Personality Traits

The main individual characteristics that influence and can facilitate the opportunity recognition and exploitation process discussed in the literature include creativity, self-efficacy, motivation, and the propensity to assume risks (Grégoire et al., 2010a, b).

H2. Entrepreneurs' cognition and personality traits have a significant and positive effect on the number of opportunities identified.

Creativity

Entrepreneurial creativity, according to Ardichvili et al. (2003), is “the ability to quickly recognize the association between problems and their solutions based on the identification of non-obvious associations and/or by remodeling or reforming available resources in a non-obvious way.” Thus, entrepreneurial skills, creativity, and innovation serve as distinguishing factors in defining the “pure” entrepreneur. In a systematic and bibliometric analysis of entrepreneurial cognition, Sasseti et al. (2018) identified entrepreneurial creativity as being linked to the generation of novel and useful opportunities. Furthermore, a large body of empirical research has already demonstrated that creativity positively influences the ability

to identify opportunities (Baron & Tang, 2011; Chang & Chen, 2020; Chetty et al., 2018; Tabares et al., 2021), even during economic downturns (Brzozowski, 2019). Recent contributions on the COVID-19 outbreak prove that farsighted and creative entrepreneurs can adapt to changes in times of crisis. Entrepreneurs' creativity and adaptability will be crucial in relaunching their activities and positioning their businesses in the post-crisis period. It is because of resilience that they can see an opportunity in chaos and survive uncertain times (Maritz et al., 2020; Scheidgen et al., 2021). To make those opportunities a reality, however, some government intervention is required to mitigate the negative effects of lockdown restrictions by revitalizing the entrepreneurial ecosystem. Ratten (2020) discusses how the sports industry, which has been impacted by the COVID-19 crisis, can use entrepreneurship to combat uncertainty while promoting the recognition of new opportunities.

H2a. Entrepreneurs' creativity positively influences the number of opportunities discovered especially in crisis times.

Self-Efficacy

Scholars have paid close attention to self-efficacy due to its importance in task completion. Self-efficacy is the belief in one's own ability to undertake a risky endeavor. Even if there is a clear indication that a promising opportunity exists, a person with low self-efficacy will be unable to perceive or maximize its use (Bandura et al., 1999). In a seminal work, McGee et al. (2009) conceptualized entrepreneurial self-efficacy as having five dimensions labeled as searching, planning, marshaling, implementing-people, and implementing-financial. Searching for self-efficacy, which is the development of an entrepreneurial idea and the identification of entrepreneurial opportunities, is the dimension that best captures OR. More recent research indicates that a high level of self-efficacy is required for identifying a niche opportunity and can even predict the type and number of opportunities recognized by the entrepreneur (Asante & Affum-Osei, 2019; Chen et al., 2020; Lu et al., 2018). However, in this literature, questions about the role of entrepreneurial self-efficacy as a driver of OR in the face of major uncertainty remain unanswered. For example, Schmitt et al. (2018) concluded that self-efficacy acts as a cross-level moderator of the indirect effect of state uncertainty on the number of opportunities identified. Santos et al. (2017), on the other hand, investigate the role of individual characteristics and social norms as predictors of early-stage entrepreneurial activity prior to and during the European crisis. Self-efficacy and risk perceptions are found to be the most important predictors of entrepreneurial activity, and this effect has remained consistent throughout the crisis. As a result, we posit that individuals' ability to recognize opportunities will be determined by their level of self-efficacy, especially during times of crisis.

H2b. Entrepreneur's self-efficacy positively influences opportunity recognition, and this effect is expected to be stronger in times of crisis than in non-crisis periods.

Social Capital

Social capital is a set of resources from which a person benefits as a result of his social relationships. Newman et al. (2019) conducted a systematic review of the literature on entrepreneurial self-efficacy, including its theoretical underpinnings, measurement, and outcomes. Because entrepreneurs require information and resources during the OR process (Ardichvili et al., 2003; Ramos-Rodríguez et al., 2010; Tang et al., 2012), contacts within one's network can serve as a source of all the necessary resources and support. Social capital connects entrepreneurs to networks that aid in the discovery of opportunities as well as the identification, collection, and distribution of scarce resources, thereby making it a more financially rewarding entrepreneurial action (Fuentes et al., 2010; Nieto & González-Álvarez, 2016). The literature on social capital highlights mainly two dimensions that allow for the measurement of its added value. To begin with, the size of a network is determined by the number of contacts made by an individual. Entrepreneurs with a larger network will have greater access to information and will be able to identify many more opportunities than those who do not have such networks (Tang et al., 2012). Second, Granovetter's (1973) classic work focuses on the nature of links and distinguishes two types of links: strong ties and weak ties, and their respective influence on OR.

Strong ties are attachment links referring to relationships with close friends or close relatives, whereas weak ties involve vague knowledge. These are links to distant relatives, old friends, or acquaintances. There is widespread agreement that social networks, business networks, and institutional networks all positively strengthen entrepreneurs' social identities and, as a result, have an impact on their overall OR (Boutillier, 2020; Song et al., 2017). Prior research, however, has yielded mixed results in terms of the types of links. According to some scholars (García-Cabrera & García-Soto, 2009; Gretzinger et al., 2018), entrepreneurs gather more information from weak ties than from strong ties. According to another line of research (Ruiz-Palomino and Martínez-Cañas, 2021; Ma et al., 2019), strong ties provide critical strategic opportunities and resources for entrepreneurs. The larger a person's network of strong ties, the more resources and opportunities he or she obtains and identifies. Moreover, there is very little empirical evidence on the viability of the discovered effects of these OR drivers in times of crisis. Soetanto (2017), for example, concluded that entrepreneurs form various types of networks in response to difficulties, not in relation to products or technologies, but to learn how to overcome self-crises or external threats. Entrepreneurs build networks that are dominated by strong ties to exploitative learning and weak ties to explorative learning. When it comes to dealing with uncertainty, the findings reveal a somewhat mixed pattern in which entrepreneurs seek information from both strong and weak ties. Khazami et al. (2020) is the only study that examines entrepreneurship in Tunisia after the political upheaval. In this study, according to one interviewee, "I created my firm to make money because, on our days and especially after the revolution, in Tunisia, to stay in your job without any other income, it makes life difficult. Also, I want to be an owner business and advance my career in agriculture engineering in the world of business. My family supports me with my decision ... and this is a support for me ... they help me morally, money, networks ... and now, I think that

I took the right decision to launch my cottage in this area ... my business shows a growth success near the visitors.” Based on the above discussion, we propose:

H3. Social capital has a significant and positive effect on the number of entrepreneurial opportunities identified.

H3a. The size of social networks has a positive influence on the ability of entrepreneurs to identify more opportunities.

H3b. Social networks dominated by strong links are effective in facilitating opportunities recognition in times of crisis.

Contextual Factors²

Scholars studying entrepreneurship have often assumed that entrepreneurial features are rooted in North American and European culture, and they have assigned such universal characteristics to entrepreneurs (Hayton et al., 2002). Several international scholars, on the other hand, have analyzed the generalizability of empirical findings from North American and European studies governing theories of entrepreneurship to countries with markedly diverse cultural, social, and economic climates (Thomas & Mueller, 2000). They argue that political or economic factors heavily influence entrepreneurial decisions, which can have a significant impact on entrepreneurship development by generating a new set of information that aids in the process of opportunity identification (Shane & Venkataraman, 2000). In turn, this would either hinder or foster the decision to launch a new venture based on OR (Thornton et al., 2011; Turro et al., 2016).

On the one hand, because of the inherent uncertainty of an entrepreneurial career, latent entrepreneurs may be socially discouraged in high-risk situations. For instance, González-Pernía et al. (2018) investigate how a recessionary environment affects the likelihood of individuals engaging in the formation of new businesses. Analyzing the case of Spain, the results show that entrepreneurship shrinks during economic downturns. Alvarez et al. (2013) argue that opportunity discovery and creation are difficult in adverse political/economic environments. Specifically, “hostile” environments with extreme uncertainty, market changes, high inflation and unemployment rates, and wavering economic growth may induce skepticism and dissuade potential entrepreneurs from taking action (Bhidé, 2000). Moreover, factors such as uncertainty, bureaucratic barriers, corruption, lack of corporation law, and adequate tax systems, among others, that are common in less developed economies, may thwart entrepreneurship in these countries. According to Alvarez et al. (2011) and Urbano and Alvarez (2014), controlling corruption in developing countries has

² In management research the phrase ‘contextual factors’ has also been used, referring to “circumstances, conditions, situations, or environments that are external to the respective phenomenon and enable or constrain it. The term “contextual factors” is frequently used to avoid confusions with ‘environmental factors’ in the sense of “green” aspects. Nevertheless, other entrepreneurship authors such as Gartner (1990) refer to the ‘environment’ so we will acknowledge that these terms can be used interchangeably.

a positive but lower impact on the OR than in developed countries. They argue that because these countries have a high informal economy, entrepreneurs would consider bribes and other inefficient market conditions to be a business cost (Martinez et al. 2015). Tang et al. (2012), for example, investigated OR in China, where institutional weaknesses include discretionary governmental policies and inefficient regulations. The authors claim that human and social capital, as well as social skills, can assist entrepreneurs in overcoming such failures and discovering opportunities. Webb et al. (2010) examined the world's poorest countries, which frequently operate in institutional voids where capital markets may be lacking and communication infrastructure may be underdeveloped. The authors argue that by conducting activities such as market research, entrepreneurs can close institutional gaps in comparison to developed economies. In short, this assists entrepreneurs in identifying business opportunities. Using data from India, Pakistan, and China, Zulfiqar et al. (2019) show that social capital, social empathy, a normative institutional environment, formal education, and training may enhance OR behavior, whereas the economic and regulatory institutional environments may harm youth OR behavior in these emerging countries. To summarize, new ventures in emerging and underdeveloped economies fail at a higher rate than in developed markets due to economic difficulties and institutional challenges (Chen et al., 2020), which may discourage potential entrepreneurs from identifying opportunities and launching new businesses.

Another body of literature, on the other hand, assumes that some individuals analyzing entrepreneurial opportunities, exhibit a readiness to bear risks, and are comfortable with difficult and uncertain situations (Busenitz & Lau, 1996; Shinnar et al., 2012). According to this line of research, economic uncertainty can also stem from political instability and that changes in economic conditions due to crises make OR possible, even though economic stability is essential for generating a positive environment for entrepreneurial activity and that business opportunities due to unmet needs are expected to occur in unstable economic conditions. Typically, crisis-hit economies proceed to restructure state institutions, resulting in a high level of environmental dynamism and a positive influence on the entrepreneurs' activities (Wiklund & Shepherd, 2003). Evidently, in times of crisis, the business environment undergoes major reforms that create new gaps and barriers. In a changing market context, customers and providers lack information about their alternatives. In this case, motivated entrepreneurs are more likely to find and take advantage of attainable opportunities, acting as potential gap fillers (Bhidé, 2000). Salvato et al. (2020) investigated disparities in opportunity identification between Italian family and non-family enterprises in the aftermath of a devastating earthquake in 2009. Their findings provide evidence of the traits that enable disaster-affected enterprises to seize post-traumatic entrepreneurial possibilities for recovery and growth. In Tunisia, as stated by Khazami et al. (2020), post-revolution entrepreneurs started their businesses for fear of losing their corporate or public jobs and thus their incomes. However, according to the World Bank (2014) report on the Tunisian economy since the 2011 revolution, the high cost of bureaucracy is a burden, particularly for small entrepreneurs who lack the resources to outsource the handling of administrative requirements, and it encourages small businesses to remain informal.

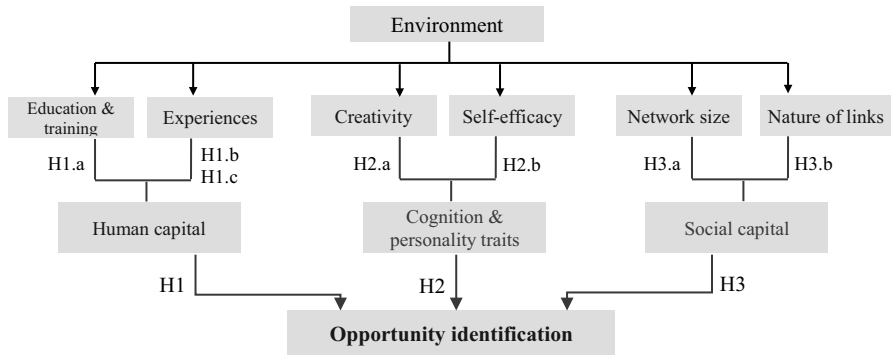


Fig. 1 Conceptual model

Overall, we assume that, in the Tunisian context, the effects of human and social capital on OR will be greater during crisis periods than during non-crisis periods. The conceptual model, shown in Fig. 1, describes all of the assumptions listed above.

Data and Methodology

Data and Variables

In this study, the sample is made up of Tunisian micro and small enterprises according to their importance in the Tunisian economic fabric. Since, in most economies, the majority of firms are small and medium-sized, the survey sample is subdivided into microenterprises (fewer than 10 employees) and small businesses (10 to 49 employees). The Enterprise Survey is answered by business owners and top managers. More than 120 questionnaires were distributed to micro and small businesses operating in various sectors (services, trade, industry, etc.). Only 74 responses were valid. The survey items in this study were drawn from the literature on entrepreneurial opportunities (Skuras et al., 2005; Boden & Nucci, 2000; Fuentes et al., 2010; Chen et al., 1998). We consider entrepreneurs aged 29 years or under as juniors, as is the case in the scarce studies on youth entrepreneurship (Pillai & Ahamat, 2018; Tanatova et al., 2018). A detailed description of the sample is provided in Table 1, while measurement and summary statistics for all variables are provided in Table 2. Data collection took place at the end of the year 2015.

Overall, the male respondents represent 89.47% of the total sample, and 56.6% of them have a university degree. Interestingly, female entrepreneurs appear to be more engaged in business during the crisis period (18.9%) than they were prior to the revolution, when they only accounted for 2.6% of the total. Also, 48.7% of entrepreneurs were trained in the field of entrepreneurship, and 80.3% claimed to have experience in the business sector upon detecting their first opportunity. The majority of entrepreneurs surveyed (72.4%) have microenterprises, compared to 27.6% of small businesses. During the crisis period, it appears that the number of

Table 1 Sample description

	Description	Frequency (%)		
		Whole sample	Pre-revolution	Post-revolution
<i>Gender</i>	Male (Ref)	89.47	97.44	81.08
	Female	10.53	2.56	18.92
<i>Junior</i>	Age ≤ 29 years (Ref)	14.47	.00	29.73
<i>Senior</i>	Age > 29 years	85.53	100.00	70.27
<i>Education</i>	College degree (Ref)	56.58	43.59	70.27
	Elementary or High school degree	43.42	56.41	29.73
<i>Business training</i>	Yes	48.68	41.03	56.76
	No	51.32	58.97	43.24
<i>Managerial experience</i>	Yes	59.21	61.54	56.76
	No	40.79	38.46	43.24
<i>Sector experience</i>	Yes	80.26	76.92	83.78
	No	19.74	23.08	16.22
<i>Network size</i>	Number of links			
<i>Network nature</i>	Strong ties			
	Weak ties			
<i>New venture</i>	Firm age ≤ 10 years	65.79	33.33	100.00
<i>Micro</i>	Number of employees < 10 (ref)	72.37	58.97	86.49
<i>Small</i>	Number of employees ≥ 10	27.63	41.03	13.51
<i>Firm creation</i>		100	51.30	48.70
<i>Number of opportunities</i>	1 opportunity	44.74	53.85	35.14
	2 to 3 opportunities	39.47	35.90	43.24
	> 3 opportunities	15.79	10.26	21.62

(Ref) stands for the category of reference

microenterprises has increased (86.5%). This is consistent with the 2018 assessment of the Tunisian private sector led by the European Bank for Reconstruction and Development, which reported that 10% of Tunisian companies consist of big and inefficient state-owned companies, while small firms represent the remaining 90% (World Bank, 2018). Prior to 2011, all the respondents were senior entrepreneurs, with only 43.6% having a university diploma and training (41.1%). However, the vast majority of them (61.5 and 76.9%, respectively) have managerial and industry experience. After 2011, 29.3% of entrepreneurs were junior, with a high level of education (63.6%), training (72.7%), managerial experience (54.5%), and sector experience (91.7%). Surprisingly, it appears that during a crisis, more business opportunities are identified than during a non-crisis period. This demonstrates, first, that times of crisis not only present a challenge, but also provide new opportunities for entrepreneurship, and that some people are capable of seizing these new business opportunities. Then, it suggests that entrepreneurship may have increased in Tunisia during the economic downturn.

Table 2 Measurement and summary statistics of the used variables

Variable	Description	Mean	Std. dev.	Min	Max
Human capital					
<i>Gender</i>	Binary that takes 1 if the entrepreneur is a male and 0 otherwise	0.895	0.309	0	1
<i>Junior</i>	Binary that takes 1 if the entrepreneur is aged 29 or under and 0 otherwise	0.145	0.354	0	1
<i>Education</i>	Binary that takes 1 if the level of the entrepreneur has a graduate (college) degree and 0 otherwise	0.566	0.499	0	1
<i>Business training</i>	Binary and takes the value of 1 if the respondent has been trained in business creation and 0 otherwise	0.487	0.503	0	1
<i>Managerial experience</i>	Binary and takes the value of 1 if the respondent has managerial experience and 0 otherwise	0.592	0.495	0	1
<i>Sector experience</i>	Binary and takes the value of 1 if the respondent has previous experience in the business sector and 0 otherwise	0.803	0.401	0	1
Cognition and personality traits					
<i>Creativity</i>	A mean score of the points awarded to six items measured on a 5-point Likert scale: "1 = Strongly disagree" and "5; Strongly agree". Example of items: "I am able to anticipate how to make things work" "I am able to see several solutions to a problem" "I am quite curious and I am always looking to discover"	3.091	0.434	1.166	4
<i>Self-efficacy</i>	A mean score of the points awarded to eight items measured on a 5-point Likert scale: "1 = Strongly disagree" and "5; Strongly agree". Example of items: "I am able to achieve most of the goals I have set for myself" "I am able to successfully overcome the challenges I encounter."	3.879	0.652	2.125	5
Social capital					
<i>Network size</i>	The number of links to individuals who supported the respondent in their affairs	3.145	1.874	0	7
<i>Network nature</i>	Equal to the number of strong links relative to the total links	1.592	1.601	0	7
<i>Weak ties</i>	Equal to the number of weak links relative to the total links	1.553	1.464	0	6
Control variables					
<i>Micro</i>	Binary and takes the value of 1 if the number of employees is smaller than 10 and 0 otherwise	0.724	0.450	0	1
<i>Firm age</i>	The number of years since the creation of the company	10.171	10.664	1	36

The Ordered Logit

The hypotheses provided in “[Theoretical Background and Past Evidence](#)” relate to the influence of the entrepreneur’s characteristics (profile) on his ability to detect entrepreneurial opportunities. Hence, the intensity of opportunity detection is represented by an ordinal variable that reflects the number of opportunities detected by the respondent. Accordingly, the ordered logit model seems an appropriate methodological choice to analyze the determinants of the intensity of opportunity detection in the entrepreneurial domain. Indeed, the logistic functions of the logit (or probit) type make it possible to model discrete variables whose behavior is not linear and have the advantage of not requiring that the independent variables have a normal distribution.

The ordered logit model is defined as (Cameron & Trivedi, 2005):

$$Y_i^* = \beta X_i + \varepsilon_i \text{ for } i = 1, \dots, n$$

with

$$Y_i = j \text{ if } c_{j-1} \leq Y_i^* < c_j \text{ for } j = 1, \dots, m \quad (1)$$

m denotes the total number of alternatives of the dependent variable and n denotes the sample size. Furthermore, X_i is a column vector of explanatory variables, β is a row vector of parameters to be estimated and ε_i is the logistic distributed random error. The unknown parameters c_j ’s represent threshold parameters to be estimated along with β . The probabilities associated with the observed outcomes are:

$$P(Y_i = j|X) = P(Y_i^* < c_j) - P(Y_i^* \leq c_{j-1}) = F(c_j - X_i\beta) - F(c_{j-1} - X_i\beta) \quad (2)$$

where F is a logistic function of the form: $(z) = \frac{e^z}{1+e^z}$. For identification purposes, we impose that $c_{j-1} < c_j$; $c_0 = -\infty$ and $c_m = +\infty$.

Threshold values c_j and the coefficients β are obtained by maximizing the log-likelihood function:

$$l(\beta, c_1, \dots, c_m) = \sum_{i=1}^n \sum_{j=1}^m \mathbb{1}(Y_i = j) \cdot \log(P(Y_i = j|X_i)) \quad (3)$$

where $\mathbb{1}(\cdot)$ is an indicator function taking the value 1 if $(Y_i = j)$ and 0 otherwise.

Unlike continuous dependent variable models, the coefficients β are not directly interpretable.³ The marginal effect of an increase in an independent variable for the j th response is given by:

$$\frac{\partial P(Y_i = j|X)}{\partial x_k} = \frac{\partial F(c_j - X_i\beta)}{\partial x_k} - \frac{\partial F(c_{j-1} - X_i\beta)}{\partial x_k} \quad (4)$$

³ Neither the sign nor the magnitude of the coefficient is informative about the result of ordered logit, so the direct interpretation of the coefficients is fundamentally ambiguous.

which is the slope relating x_k to $P(Y_i = m|X)$, holding all other variables constant. Accordingly, the partial effects in the ordered choice model on each outcome category are straightforward to compute as:

$$\left\{ \begin{aligned} \frac{\partial P(Y_i=1|x_i)}{\partial x_k} &= -f(c_1 - X_i\beta) \times \beta_k \\ \frac{\partial P(Y_i=2|x_i)}{\partial x_k} &= [f(c_1 - X_i\beta) - f(c_2 - X_i\beta)] \times \beta_k \\ &\vdots \\ \frac{\partial P(Y_i=m|x_i)}{\partial x_k} &= f(c_{m-1} - X_i\beta) \times \beta_k \end{aligned} \right. \tag{5}$$

The partial effects give the impacts on the specific probabilities per unit change in the regressor.⁴ Thus, increases in one variable increase the probability of the highest cell while decreasing the probability of the lowest cell (Greene, 2012). Worthy to note that, the size of the mass of probability in the middle category first gets larger, then smaller as we increase X_k (for a positive β_k). Mathematically, this means that the change in the probability of getting a “middle category,” as a function of X , is somewhat indeterminate. Assuming that, for example, $m = 3$ and $\beta_k > 0$, the probability $P(Y = 1)$ decreases in X_k . Similarly, $P(Y = 3)$ increases in X_k . However, $P(Y = 2)$ may go up or down, relative to the other categories.

Finally, the average marginal change in the probability across all of the outcome categories is:

$$\bar{\Delta} = \frac{1}{J} \sum_{j=1}^J \left| \frac{\partial P(Y_i = j|X)}{\partial x_k} \right| \tag{6}$$

Results and Discussion

In this work, we use an ordered multinomial logit model with three occurrences:

$$OR_i = \begin{cases} 1 & \text{if only one opportunity is detuned by the individual } i \\ 2 & \text{if 2 to 3 opportunities are detected by the individual } i \\ 3 & \text{if more than 3 opportunities are detected by the individual } i \end{cases}$$

Accordingly, the estimated model can be presented as follows:

⁴ We note, however, since it is a ratio of percentage changes, the elasticity is not likely to be useful for dummy variables such as gender. A counterpart result for a dummy variable in the model would be obtained by using a difference of probabilities, rather than a derivative (Greene, 2012).

$$\begin{aligned}
 OR_i = & \beta_1 firm_age_i + \beta_2 micro_i + \beta_3 junior_i + \beta_4 gender_i + \beta_5 education_i \\
 & + \beta_6 training_i + \beta_7 managerial_exp_i + \beta_8 sector_exp_i + \beta_9 creativity_i \\
 & + \beta_{10} efficacy_i + \beta_{11} netwoksiz_e_i + \beta_{12} strong_ties_i + \beta_{13} weak_ties_i + \varepsilon_i
 \end{aligned}
 \tag{7}$$

with ε_i is the random error term assumed to be normally distributed. Parameters β_k denote the marginal effects to be estimated. Three models are estimated: for the whole sample, for the non-crisis or pre-Revolution (before 2011) and post-Revolution (after 2011) periods⁵ to identify potential differences in the effects of the variables of interest. Since the OR of entrepreneurs is measured by a categorical ordinal variable, we employ ordered logit models to estimate the effects of the explanatory variables on the probabilities of high-level recognition of entrepreneurial opportunities.

Table 3 presents the obtained marginal effects of the regressor on the probability associated with the highest category of the OR relative to the lowest category. The reported results concern the whole analyzed period (M1), and the pre- and post-Revolution sub-periods (M2 and M3, respectively). In our models, the value of the *Pseudo* – R^2 ranges between 0.24 and 0.41.⁶ Besides, the overall model chi-squared (*LR*) indicates that the three models are highly significant.⁷ Also, to judge the predictive quality of the estimated models, Table 4 reports the percentage of the correctly predicted observations. The results show that the models carried on the whole sample period, pre- and post-Revolution sub-samples correctly predicted 60.53%, 61.85%, and 51.32 percent of the observations respectively, which reflects an acceptable predictive efficiency of our models. The average probabilities of belonging conditionally to each category on the explanatory variables considered are reported in Table 5. Overall, the results show that for the global model, on average, the probability of belonging to the second group (2 to 3 opportunities) seems to prevail over the other groups. Surprisingly, the same result was observed in the post-Revolution results, where the conditional probability $P(y_i = 2)$ increased even further, whereas in the pre-Revolution period, entrepreneurs had a better chance of detecting, at best, one opportunity. This is an interesting finding since it confirms that several Tunisian entrepreneurs are acting as gap fillers in times of crisis and taking advantage of the unmet needs as advanced in the literature section. Recall that our sample comprises 51.4% of entrepreneurs who launched their business before 2011 and 48.6% who started their projects after and that 30% of the latter are junior entrepreneurs.

⁵ We use the terms Pre- and Post-revolution rather than Pre- and Post-crisis, since Tunisia is still within the economic crisis existing since the early 2000s but further deepened by the social Revolution in 2011.

⁶ This low value seems a bit surprising given the several highly significant coefficient estimates in the reported results. However, as with the counterpart in linear regression, highly significant coefficients need not attend a high fit measure (Grenne, 2012).

⁷ The likelihood ratio tests the null hypothesis that the model contains only a constant term and the threshold parameters. Furthermore, in order to avoid any heteroskedasticity problem related to an error distribution that does not conform to the logistic distribution assumption, we used a robust estimate. In addition, the VIF (variance inflation factor) was used to check the absence of a problem of multicollinearity between the explanatory variables.

Table 3 Results of ordered logistic regression and marginal effects

	Whole sample (M1)			Pre-Revolution (M2)			Post-Revolution (M3)								
	Mean effect	Marginal effect		Mean effect	Marginal effect		Mean effect	Marginal effect							
	β	$P(Y_i = 1) \quad P(Y_i = 2) \quad P(Y_i = 3)$	β	$P(Y_i = 1) \quad P(Y_i = 2) \quad P(Y_i = 3)$	β	$P(Y_i = 1) \quad P(Y_i = 2) \quad P(Y_i = 3)$	β	$P(Y_i = 1) \quad P(Y_i = 2) \quad P(Y_i = 3)$							
<i>Firm age</i>	-0.1077***	0.0265*** -0.0185*** -0.0080***	-0.1033*** 0.0196*	0.0294** -0.0273	-0.0021	0.1022	0.0135	-0.0203	0.0095	0.0108					
<i>Micro^(a)</i>	0.8306	-0.2045	0.1509	0.0536	0.0742	0.0057	3.3648	0.4539	-0.6809*	0.5115	0.1694				
<i>Junior^(a)</i>	-1.7862**	0.4067**	-0.3232**	-0.0836*	0.0000	-	-1.7926*	0.2593*	0.3889**	-0.2377	-0.1512*				
<i>Gender^(a)</i>	0.6655	0.1099	-0.1649	0.1249	0.0400	0.0000	-	0.1134	-0.1571	0.0922	0.0650				
<i>Education^(a)</i>	0.8987	0.1460	-0.2190	0.1542	0.0648	3.4192** 0.4468**	-0.6702***	0.5733**	0.0970**	0.1570	-0.0522	-0.1048			
<i>Training^(a)</i>	-0.4167	0.0682	0.1022	-0.0713	-0.0310	0.1251	-0.1163	-0.0088	-0.7146	0.0921	0.1381	-0.0594	-0.0788		
<i>Managerial experience^(a)</i>	0.7631	0.1246	-0.1870	0.1328	0.0542	0.8867	0.1808	-0.2713	0.2520	0.0193	-0.1222	0.0161	-0.0130		
<i>Sector experience^(a)</i>	-2.0964***	0.4139***	-0.1476**	-0.2663**	-2.4011*	0.2879	0.4318	-0.3768	-0.0551	-4.1384** 0.4990*	0.4117***	0.3369	-0.7486**		
<i>Creativity</i>	0.6869	0.1127	-0.1690	0.1179	0.0511	0.9956	0.2025	-0.3037	0.2819	0.0218	0.4956	0.0656	-0.0983	0.0460	0.0523
<i>Self-efficacy</i>	1.3904***	0.2280***	-0.3421***	0.2387***	0.1034**	2.4705** 0.3255**	-0.4882**	0.4531**	0.0351**	1.6804** 0.2222*	-0.3334***	0.1560	0.1773**		
<i>Strong ties</i>	0.1751	0.0287	-0.0431	0.0301	0.0130	0.2548	0.0439	-0.0658	0.0611	0.0047	0.1318	0.0174	-0.0261	0.0122	0.0139
<i>Weak ties</i>	0.2522	0.0414	-0.0621	0.0433	0.0187	0.6293	0.0948	-0.1422*	0.1319	0.0102	0.2237	0.0296	-0.0444	0.0208	0.0236
<i>c1</i>	6.8507*			6.4512*							6.4111*				
<i>c2</i>	9.5349**			9.0197*							9.3847**				
Obs	76			39							37				
Pseudo-R ²	0.2398			0.4101							0.2812				
LL	-58.8296			-21.5012							-28.2209				
LR	37.11			29.90							22.08				
p-value	0.0002			0.0016							0.0366				

Level of significance. * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$
^(a) dy/dx is for discrete change of dummy variable from 0 to 1

Accordingly, it seems that the economic crisis induced by the 2011 Revolution did not dissuade young entrepreneurs from starting their own businesses. This may be explained by the general fear and the serious risk of the public sector's collapse, which may result in the inability of the Tunisian government to ensure the public sector's salaries (Khazami et al., 2020).

Starting with the firm characteristics, recall that scholars have defined new ventures by using age cutoffs from six to 10 years (e.g., Wang et al., 2017). As our sample is mainly composed of new ventures (65.79%), the negative sign of the first variable, “*firm age*”, suggests that earlier entrepreneurs were less likely to detect numerous opportunities. More specifically, we discover that being an earlier entrepreneur increases the likelihood of finding a 1 opportunity by 2.65 percentage points, while decreasing the probability $P(Y = 2)$ and $P(Y = 3)$ by 1.85 and 0.8 percentage points, respectively. However, this significant effect was observed prior to the crisis at 1.96 percentage points, but vanished during the crisis.

Human Capital

Regarding the entrepreneur's age, we find that it is highly significant (at 1% level) and negatively related to opportunity detection. Indeed, being a *junior* rather than a senior entrepreneur decreases sharply the probability of higher OR in the global and crisis models. Junior entrepreneurs are more likely to detect only a few opportunities, $P(y = 1)$, especially during turbulent periods, where being a junior entrepreneur decreases the likelihood of higher opportunity detection, $P(y = 3)$, by 15.12 percentage points. This is a counter-intuitive result, since many scholars believe that young people are especially likely to create new and successful firms. Among the benefits of youth are technology and inventiveness. Young people are thought to be more cognitively acute, less distracted by family or other commitments, and more capable of generating transformative ideas (Azoulay et al., 2020). However, in our sample, 70% of the entrepreneurs who started a new business in the crisis period were senior entrepreneurs. This is contrary to what common sense and prior research has suggested, since the fear of failure in crisis times is usually linked to risk aversion that may characterize aged entrepreneurs (Giotopoulos et al., 2017). Mature entrepreneurs who believe that the probability of failure is high are less likely to start a new business. This may be explained by the fact that more than 73% of senior entrepreneurs running a business during the crisis period have a high-education diploma, 50% have business training, 58% have managerial experience, and 81% have experience in their activity sector, according to our sample composition. All these advantages make them more prepared than junior entrepreneurs for business risks in adverse economic conditions. Our findings are consistent with the findings of Azoulay et al. (2020), who discovered that the average age at founding for the one-in-1000 fastest-growing new ventures is 45 years.

Then, the most intriguing result concerns the controversial role of education in entrepreneurial OR. Educational attainment is found to be positive and highly significant only in the pre-Revolution sub-period model. As discussed in “[Human](#)

Table 4 Predictive quality of the ordered logit models

	Whole sample (M1)	Pre-Revolution (M2)	Post-Revolution (M3)
$OR_i = 1$	67.65%	67.65%	41.18%
$OR_i = 2$	63.34%	63.34%	66.67%
$OR_i = 3$	33.34%	41.67%	41.67%
Total	60.53%	61.85%	51.32%

Capital”, the positive role of formal education has been empirically explored and supported by numerous studies focusing on entrepreneurship. In contrast to these prior research findings, our results show that education in crisis times has no significant effect on the probability of OR. The reported differences in the marginal effects between the examined periods are strongly validated (Table 6) at a 1% level of significance. This result invalidates our hypothesis (H1a). It also contradicts prior research findings (Giotopoulos et al., 2017; Levie & Autio, 2008) that show that, in adverse economic conditions, highly educated people driven by personal development and entrepreneurial aptitude are more likely—than less-educated ones—to start a business in high-income countries. One possible explanation for our counter-intuitive result is that the existing empirical literature’s conclusions are more related to studies undertaken in wealthy countries. These countries’ government policies ensure that education is targeted and responsive to market needs. Unfortunately, this is not the case in Tunisia, particularly since the political revolution. Graduate studies do not guarantee a good understanding of the job market or entrepreneurial opportunities. Karamti (2016) and the World Bank (2014) highlighted the distortions in the Tunisian higher education sector and have recommended reforming the education system to improve the quality of human capital, which in turn supports and enhances productivity and innovation (Herrera et al., 2018; Mas-Tur et al., 2015).

Regarding experience, only prior sector experience is found to have a significant impact on the OR, and this effect is only observed in the post-revolution scenario. For the whole sample, the highly significant and negative coefficient corresponding to this variable in Table 3 indicates that individuals with more business activity experience are less likely to detect a greater number of opportunities, both before and after the crisis. This contradicts our expectations (hypotheses H1b) and does not support most of the previous research. Our result is, however, consistent with that of Fuentes et al. (2010) who, using a sample of 2793 Spanish entrepreneurs, also

Table 5 Predicted probabilities

	Whole sample (M1)	Pre-Revolution (M2)	Post-Revolution (M3)
$P(OR_i = 1 x)$	0.4369	0.6995	0.2728
$P(OR_i = 2 x)$	0.4822	0.2885	0.6073
$P(OR_i = 3 x)$	0.0809	0.0120	0.1199

Table 6 Tests for the equality of the regression coefficients between the Pre-Revolution (M2) and the Post-Revolution (M3) periods

Variable	$\beta_{M2} = \beta_{M3}$	p-value
<i>Firm age</i>	0.26	0.6115
<i>Micro</i>	1.79	0.1815
<i>Junior</i>	4.12	0.0425
<i>Gender</i>	39.81	0.0000
<i>Education</i>	5.25	0.0220
<i>Training</i>	0.001	0.9582
<i>Managerial experience</i>	0.64	0.4248
<i>Sector experience</i>	6.42	0.0280
<i>Creativity</i>	0.04	0.8341
<i>Self-efficacy</i>	0.28	0.5999
<i>Strong ties</i>	0.05	0.8210
<i>Weak ties</i>	0.47	0.4940

found that prior industry experience has no effect on the number of opportunities identified and developed. Furthermore, prior professional experience, according to Petkova (2009), confines the entrepreneur to a single domain, limiting his ability to identify opportunities in other sectors. This is supported by our findings, particularly in times of crisis, where business experience appears to be important for OR but has a decreasing relationship with the number of opportunities identified. Looking at the detailed marginal effects (Table 6), it appears that having more experience increases the likelihood of the lowest category by more than 41 percentage points, while decreasing the likelihood by more than 26 percentage points in the same model. These results are robust in the post-revolution model, which is in times of crisis. In this regard, it is worth noting that 48% of the respondents to our survey started their businesses after the Revolution, and more than 83% of them claim to have sector experience (Table 1). Lack of experience frequently places entrepreneurs in high-risk situations, especially during difficult times. This is a significant finding because it reveals sector experience as a powerful determinant of opportunities identified, albeit in small numbers, during times of crisis as opposed to calm times when experience appears to play no role in the OR. Our hypothesis (H1c) is only partially validated.

Furthermore, the lack of a significant relationship between creativity and the number of opportunities identified invalidates our hypothesis (H2a). This inconsistency may be due to the context peculiarities that, in our opinion, affect and strongly orient the meaning of our results. The creativity of entrepreneurs is synonymous with original and generally innovative ideas. However, in a country like Tunisia, such ideas may not be feasible or prohibitively expensive, especially given the country's economic situation. Unfavorable conditions that do not allow creative people's innovative ideas to materialize can reduce the number of entrepreneurial opportunities identified.

In terms of "self-efficacy," the positive and highly significant (at the 1% level) coefficient indicates that an entrepreneur who is self-efficient has approximately 0.228 more chances of belonging to the group of entrepreneurs who can detect more

opportunities. This finding is consistent with previous research (Chen et al., 2020; Schmitt et al., 2018) and allows us to assert that the entrepreneur's self-efficacy is a determining factor in the entrepreneur's ability to detect entrepreneurial opportunities. The detailed marginal effects provide full support for hypothesis H2b, indicating that entrepreneurs with self-efficacy are more likely to perceive higher entrepreneurial opportunities even in crisis times. Contrary to popular belief, in turbulent economic environments where market restructuring and institutional reforms usually take place, business opportunities may emerge as a result of unmet needs and gaps in the markets, and only efficient entrepreneurs will recognize those opportunities (Giotopoulos et al., 2017). When compared to the crisis period, the marginal effect appears to be greater by more than 30 percentage points in the non-crisis period. These differences, however, are statistically insignificant, as confirmed by the corresponding *t*-tests in Table 6. This supports the robust role of entrepreneurs' self-efficacy in the OR process, both in calm and turbulent periods.

Social Capital

Another important finding is that the relational dimensions “weak ties” and “strong ties” have no effect on the entrepreneur's ability to identify business opportunities. This result, once again, contradicts our hypotheses H3a and H3b and is contrary to previous studies' findings. It is an unexpected finding, especially in the Tunisian context, as social networks can facilitate access to valuable information in developing countries marked by a lack of transparency and high levels of corruption. Mzid et al. (2019) conducted interviews with four Tunisian family businesses from 2011 to 2014. They showed that family firms' social capital contributes the most to their ability to cope with external disturbances. Our result may be explained by the composition of the analyzed sample, which has an average strength of entrepreneurial networks of 1.59 on a scale of 0 to 7, and 1.55 on a scale of 0 to 6 for strong ties and 1.55 on a scale of 0 to 6 for weak ties. Furthermore, social network theory suggests that the structural dimension of social capital is related to network stability. Accordingly, social relationships take time to develop, but once established, they improve trust and mutual understanding (Granovetter, 1973; Porras-Paez & Schmutzler, 2019). This may be difficult to observe in the context of crisis-hit economies such as Tunisia, where lagging industrial development threatens both business creation and continuity.

Conclusion

In this study, we are interested in the effect of the entrepreneur's profile on his ability to detect business opportunities, especially in adverse economic situations. Analyzing the Tunisian context and employing a logistic regression approach, we assumed different empirical results (1) compared to developed countries because of dissimilarities in economic, political, and institutional environments, (2) before and after the 2011-revolution.

Overall, the findings differ from prior research and support hypotheses anticipating a distinct (insignificant or even negative) effect of several key entrepreneurs' traits on OR in a less developed country like Tunisia, which is also experiencing a severe economic crisis. At first, in line with previous research, we find that the entrepreneur's ability to detect opportunities stems essentially from his education, prior experience, and self-efficacy. However, these effects faded throughout the Tunisian revolution's crisis period, compared to a relatively calm period a few years before. A notable result concerns education, which has lost its significant role as a 'classical' driver of OR. Besides, in a time of crisis, and contrary to the vanishing role of education, entrepreneurs' experience plays a prominent role in the opportunity identification process. Then, several factors identified in the literature such as the entrepreneur's creativity or the size of his relationship network, have proven insignificant in the Tunisian context. This could point to idiosyncratic conditions that have a substantial impact on how these key factors affect Tunisian entrepreneurship. This result, while disappointing at first glance, proves that earlier research findings are not generalizable and that each country, particularly the developing ones, has its own entrepreneurial context and challenges. We believe that this conclusion has implications for the applicability of entrepreneurial theory to formulate propositions regarding the effects of individual traits on OR under different economic and political environments. That is, initial conditions and contextual factors may play a significant role in shaping the entrepreneur's profile, which, in turn, influences opportunity identification, and exploitation processes. Context is often absent from empirical entrepreneurial OR research and frequently fails to be acknowledged or taken into account, which suggests that further work is required in this area.

From a policy standpoint, our findings suggest that promoting and sustaining entrepreneurship necessitates a thorough understanding of entrepreneurs' quality traits, antecedents, and peculiarities. Furthermore, given the scarcity of empirical studies on entrepreneurship in Tunisia, our results could be highly informative and particularly important in the local context for developing policy plans and initiatives, especially during difficult economic times when financial constraints are tightened and the need for economic recovery is urgent. According to the OECD (2012), 40–60% of active start-ups in Tunisia fail or go bankrupt within the first 2 to 3 years after the revolution. Hence, the primary policy goal of entrepreneurship should obviously not be to increase the number of new ventures, but rather to improve entrepreneurial education and managerial qualities so that start-ups can be viable even in times of crisis, support long-term growth, and generate jobs. In this regard, the Tunisian government can play an active role in accompanying entrepreneurs through horizontal measures and addressing coordination failures. First, given the well-established impact of university-based entrepreneurship education and training on opportunity-seeking and identification in the literature, there is an urgent need in Tunisia to embed entrepreneurship and develop entrepreneurial skills at all levels of education and to improve the relevance and quality of the Vocational and Educational Training (VET) system. Simultaneously, vocational education should be refocused on reorienting toward a dynamic, knowledge-based economy (implementing the pilot reforms begun in the mid-2000s) (World Bank, 2014). According

to the Global Entrepreneurship Monitor (GEM, 2015)⁸ statistics, experts assert that entrepreneurial education at school and at post-school stages is highly insufficient. Investing in people leads to more wealth and faster economic growth because human capital (skills, experience, and a population's effort) is the world's greatest asset (Kim et al., 2018). Also, from our results, it appears that the economic crisis triggered by the revolution did not deter Tunisians from starting new businesses. This is in line with the GEM study (2015), which indicates that, after the revolution, perceived business opportunities appear to have increased, as did the fear of failure rate (14.9 in 2012 vs. 40.3 in 2015). Thus, the government should simplify and improve the effectiveness of the financing procedures available to new entrepreneurs, support services, and public contact, and reduce administrative hurdles for start-ups. All this will encourage the private sector, which in turn may reduce the regional clustering that has been nurtured via the polarization of the private sector. New entrepreneurs are critical to funding new businesses and entrepreneurially-led economic growth in developing countries where political insecurity, weak institutions, and significant informality discourage other foreign investors (Martinez et al., 2015).

In the same vein, our work gains more relevance while Tunisia and the world are facing the economic consequences of the new global crisis caused by the COVID-19 outbreak. Today, for entrepreneurs, a crisis may represent a danger, but also an opportunity. Indeed, Am et al. (2020) point out that in a recent survey of more than 200 organizations across industries, more than three-quarters agreed that the COVID-19 crisis would create significant new opportunities for growth, although this varies significantly by industry. Also, in a very recent contribution by Scheidgen et al. (2021), the authors examine how crises in general—and COVID-19 in particular—shape entrepreneurial opportunities in Germany. They find that entrepreneurs are proactive agents in alleviating the negative consequences of the COVID-19 crisis. They also point out the variance in the persistence of changes, with consequences for entrepreneurial opportunities. Some social innovations are rather ephemeral, while others might endure and promise long-term impacts.

Finally, because our study was conducted on a small number of Tunisian entrepreneurs, the findings cannot be generalized. In future research, a larger sample size will be required to validate and maybe improve our empirical results. Additionally, due to the subjects' self-reporting, bias is inevitable when employing questionnaire survey data, the presented results are correct only to the extent that these data were reported accurately. Also, because the survey dataset is time-constant, it can only be used to predict significant (or not) correlations; hence, we cannot claim that the obtained results are due to a causal influence. Repeated surveys or longitudinal data will be highly valuable in empirically assessing bidirectional Granger-causal effects in order to understand how contextual conditions shape entrepreneurial actions and how entrepreneurial actions affect these contextual factors in turn. The analysis should also be expanded to examine more activity sectors (or focus instead on a specific sector). This could lead to better and more refined solutions to counter the

⁸ The GEM research project is an annual assessment of the national level of entrepreneurial activity in multiple, diverse countries. The statistics are available from the website: <https://gemconsortium.org/economy-profiles/tunisia>.

social and economic effects of any major crisis, like the COVID-19 outbreak, on entrepreneurship as a driver of Tunisian economic growth and development.

Author Contribution Chiraz Karamti: Conceptualization, methodology, software, data curation, validation, writing—original draft, writing—review and editing, visualization. Najla Wannas Abd-Mouleh: Conceptualization, investigation, writing—original draft.

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