

Research Article

The Role of Digital Platforms in Women's Entrepreneurial Opportunity Process: Does Online Social Capital Matter?

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In response to investigating the role of IT on entrepreneurs, this research increases the understanding of the impact of online social capital created and developed on social media platforms regarding the entrepreneurial opportunity process of nascent female entrepreneurs. To fulfill that, this research employed the mixed-method approach allowing two phases to complement and prevent unjustified findings. In the two phases, a multilevel model that incorporates entrepreneurial capacity and resource acquisition as mediating variables is created, justified, and investigated. In the first phase, the researchers use Natural Language Processing (NLP) by analyzing big data on social media communities, followed by a quantitative confirmatory study using SmartPLS 3.3 in the second phase. Results show that nascent female entrepreneurs use online social capital, especially bridging social capital, to develop their entrepreneurial capacity and to access resources, both necessary to recognize and exploit entrepreneurial opportunities.

1. Introduction

The last decade witnessed fast technological and digitalization developments that have been reflected by entrepreneurs and on entrepreneurship research. It creates a more networked nature of digital entrepreneurship and an innovative ecosystem [1, 2]. After the COVID-19 pandemic, there was an influence on the global economy; these digital developments played a vital role in responding to the new normal created through the extensive lockdown and physical distancing [3]. Researchers have become more interested in digitalization as it creates more fluidity in the entrepreneurial ecosystem that allows the move of resources into and out of the networks [4, 5]. This is besides moving the social relationships toward a more diverse and dynamic set of agents with different interests, objectives, and competencies [4, 6].

This new business environment attracts female entrepreneurs in the Middle East to create various online communities to empower their counterparts and capitalize on the fast, low-cost, and fluid nature of social media platforms. All these aspects facilitate facing many challenges of starting a

business [7]. Although women nearly constitute half of the population in Egypt, they are ill-represented in the labor force by only 18.7% in 2020 [8]. The unemployment rate of females in Egypt was 21.33% in 2019 compared to 8.4% worldwide [9]. Women were laid off from the formal employment sector or offered sluggish jobs due to the COVID-19 pandemic while reconsidering the microbusiness sector as nascent entrepreneurs.

Nevertheless, contemporary research shows the positive impact of using social media (SM) on different entrepreneurial activities, such as opportunity process [10], firm growth opportunity [11], the relationship between entrepreneurs and their customers [12], the business-to-business network and resource mobilization [13], and opportunity creation [14]. Other researchers argued that online SM can hinder entrepreneurs' ability to capitalize his/her prior knowledge due to the devastating amount of unreliable information shared by common people in online SM while consuming the entrepreneurs' time and effort and minimizing their ability for real socialization. Besides, future research recommends investigating different factors related to SM

and the entrepreneurial opportunity process (EOP), like social capital [15]. This contradiction emphasizes the importance for more investigation regarding the role of SM networks and draws attention to the importance of the social capital component for studying the social media and opportunity recognition process relationship recommended for building a “contextualized framework” that integrates entrepreneurial business attributes and individual characteristics [11, 14, 16–20].

The importance of this enquiry has increased since entrepreneurs became more interested in using SM platforms, especially Facebook, to support their business through building their own social capital [21, 22]. This enquiry has become more significant as SC developed through SM platforms may differ from SC developed through face-to-face context [15, 20, 23].

For female entrepreneurs in emerging economies, the importance of SM platforms increases as weak ties are created by these platforms to support women in these communities to overcome the pressure of their families’ responsibilities and perceived gender roles [7, 16]. Prior studies have examined the relationship between social capital and opportunity recognition in the face-to-face context [24–27]. However, few studies have explored social capital in the online context even from a theoretical perspective [20], its mediating role on the relationship between social network usage and entrepreneurial learning [28], or its impact on performance [23]. As social capital is considered a context-specific phenomenon that creates new norms different from the offline one, this research is arguing that the relationship between social capital and the opportunity process may need more investigation [18–20].

The importance of this study is increasing as there is a dearth of studies addressing the effect of information communication technology and the results of online social capital on female entrepreneurs in emerging markets. The benefits of social media on entrepreneurs’ behavior depend, to a great extent, on their life cycle stage (nascent or mature) and on the size of their business [29]. The importance of social media increased for nascent entrepreneurs in developing countries and emerging economies like Egypt [30], where the ecosystem is characterized by scattered supporting schemes, narrow as well as unstable network, and lack of finance. This caused the nascent entrepreneurs to face many problems dealing with the turbulent environment due to the lack of experience and scarce information [31].

Earlier research implies that gender affects the creation and the way social capital impacts the entrepreneurship ecosystem [25]. Research has proven that women’s possibility of discovering business opportunity is reduced when entrepreneurship is related to masculine characteristics. On the other hand, when entrepreneurship is linked to feminine characteristics, women can create new social norms to reduce this gender stereotype [32]. With the rise of social media networks, female entrepreneurs build new online communities to create large social capital to increase their entrepreneurial capacity and self-efficacy [16], practice their business, and present themselves to other women as a role model [33, 34]. While many studies are concerned with women’s entre-

preneurship in western cultures, few are known about women’s entrepreneurship in emerging economies [16, 34].

To fill the gap in the literature and to better understand how online social capital supports nascent female entrepreneurs to discover and exploit opportunities, this research answers the following questions:

- (i) How do female entrepreneurs use FB groups to improve their experience and access resources?
- (ii) How does social capital created on social platforms support women’s entrepreneurial opportunity process?
- (iii) What is the role of entrepreneurial capacity and resource acquisition in the relations between online social capital and entrepreneurial opportunity process?

To answer these questions, this research is using a mixed-method approach to explore female entrepreneurs’ use of online social platforms and to develop a multilevel model based on the opportunity discovery theory. Our model integrates both the psychological/cognitive characteristics of nascent female entrepreneurs and contextual factors to examine the role of social capital on entrepreneurial opportunity process (EOP) within the context of social media platforms. The model will examine the mediating role of perceived entrepreneurial capacity (EC) and resource acquisition (RA).

Our research contributes to the entrepreneurship theory in four ways. First, this research increases the comprehension of social capital impact on entrepreneurial opportunity process in the online context since contemporary research indicates that online context is quite distinct from offline [20]. Second, this research is investigating how online SC, created by nascent female entrepreneurs in emerging economies, affects the EOP. This contextual level, which is responsible for part of the findings, is overlooked in most of the research addressing social capital and nascent entrepreneurs. Third, considering the effects of the subdimensions of the opportunity process and online social capital, they may lead to additional insights into the mechanisms of the opportunity process [17]. Furthermore, this research proposes a multilevel model that incorporates two cognitive characteristics of entrepreneurs (entrepreneurial capacity and resource acquisition) in examining this relationship.

2. Theoretical Background

2.1. Entrepreneurial Opportunity Process: Concept and Theory. Several researchers have considered the entrepreneurial opportunity process significant to entrepreneurship [35]. Even some define entrepreneurship by the opportunity recognition process that resulted in new venture creation [36]. This avenue attracts researchers to develop various avenues of research of business opportunities in entrepreneurship literature.

From an ontological perspective, to understand the opportunity process, we can distinguish between two

theories: the opportunity discovery theory and the opportunity creation theory. The opportunity creation theory argues that opportunity is a subjective phenomenon formed by external environmental changes; it is created by the entrepreneur actions and reactions and through experimentation and learning [35, 37]. On the other hand, the discovery theory has proposed that opportunity is an objective phenomenon that exists in the environment independent from the entrepreneurs, and the entrepreneurs use their own cognitive framework to realize the environmental changes and recognize the opportunity [10, 17].

Despite that some researchers argued against the benefits of this debate [27, 38, 39], this research endorses the opportunity discovery theory. Discovery theory has origins in the Austrian economic school of thinking; it involves that the opportunity is a result of an unequal distribution of knowledge, and it can be discovered through the dynamic scanning of environmental changes in technology, consumers, and markets [37, 40].

Researchers developed different models to identify the EOP antecedents and consequences [41–43]. These models can be grouped by identifying two views. The first view concentrated on internal individual factors, such as motivations [44], psychological determinants [45], prior knowledge, and cognitive characteristics [46, 47]. The second view focuses on external and contextual factors, such as institutional environment and social capital [17, 26, 35]. Recent research tried to combine both views to better understand the entrepreneurial opportunity [10]. In this line, we propose a model to understand the entrepreneurial opportunity process combining online social capital (OSC), developed through social media platforms, and individual factors presented in perceived entrepreneurial capacity and perceived resource acquisition.

2.2. Social Capital. Despite that there are many definitions of SC (due to different research backgrounds) [48, 49], there is a consensus that SC refers to the ability of individuals or groups to obtain actual or potential resources through their membership in social networks or structures to create value or achieve results [23, 49–52]. SC enables both individuals and collectives to benefit from these networks. Creating relations among people inside the network and maintaining these relations consistently enable them to acquire reciprocal resources like new information, skills, supportive emotions, and sometimes financial resources [49, 53]. These benefits empower them to achieve things beyond their individual capacity or at least achieving it more easily [22, 52]. SC capital can be considered as one of the most essential theories to understand entrepreneurship as it can combine individual with environmental perspectives to build a comprehensive theoretical model. This can explain the social relations at multiple levels of analysis and across various contexts [51]. The social capital theory argues that SC is created because of interactions among groups of people in social networks, where they can gain actual or potential resources through this network [54].

There is a debate regarding conceptualizing SC. Some researchers conceptualize SC into 3 dimensions: structural

(weak and strong ties), relational (shared language and shared vision), and cognitive (trust and shared norms) [48]. Others identify that it can be classified into bonding and bridging [50, 55]. The former view considers that SC can be better represented by the structural dimension, while the relational and cognitive ones indicate SC resources. Bridging and bonding refers to different forms of resources embedded within the social network. Bridging describes the weak ties between homogenous individuals connected through broadening behavior and described mainly by information sharing [50]. In platforms like Facebook, people are engaged in online communities according to their interests and communicate with others through bridging social capital that increase the weak ties in the network and enable them to gather new information and create a communication process with diverse people [20, 50]. Bonding social capital is created through strong ties and is built upon deep and repeated communications. These interactions are encouraging the development of both trust and willingness to help and are created via mechanisms of reciprocity and commitment. Bonding social capital is accrued through an entrepreneur's network-deepening behaviors, which include actions such as time-based interaction, pacing, network preserving, and relational embedding. Network-deepening behaviors also include providing emotional support, accessing scarce or limited resources, and mobilizing solidarity. Such behaviors are consistent with converting weak ties into strong ones and maintaining or enriching these relationships [20, 56]. This view is supported by [50, 55] and adopted by researchers studying online SC, especially on Facebook pages [23, 34, 50, 55, 57].

The development of SC on online social network platforms (SNPs) attracted researchers in the last decade. From a theoretical perspective, studies highlight the importance of OSC and the fact that online communities creates a new context due to its affordance and fluidity that require more research and presents a gap in the literature [52]. These characteristics are described as “the democratization of entrepreneurship” that allows a diverse set of individuals to be engaged in the entrepreneurial process stages [58]. SC can be considered as a part of the new infrastructure that comes with digitalization and offers new communication channels, access to new knowledge, and opportunities for collaboration that support creativity and opportunity recognition [4]. Empirical articles, related to online SC, are fragmented. Some researchers investigated how online SC has developed in SNPs (like Facebook (FB)) and agreed that the use of FB affects bridging, bonding, and maintenance. SC might help users with low self-esteem and low life satisfaction to improve the quality of their network [55, 59]. Firm performance is better in active online social networks compared to offline social networks as online engagement can increase their relationship with their customers and results in more satisfaction and loyalty and, eventually, more profit [23, 28] and explains that SC fully moderates the relationship between knowledge seeking and entrepreneurial learning, while SC has not moderated the relationship between knowledge sharing and entrepreneurial learning.

3. Literature Review and Hypothesis Development

3.1. Social Capital and Entrepreneurial Opportunity Process. While the theory supports that SC is essential for EOP through producing a high level of entrepreneurial alertness [41], previous research reaches contradicting results based on the study context and methodology. Regarding the entrepreneurial stage, researchers found that in the prephase, entrepreneurs' SC positively affects entrepreneurial intention through increasing both desirability and feasibility [60] and both bridging as well as bonding. Although SC has a positive impact on EOP [35], bonding SC is significant in the early and late phases only [35]. Using secondary data (from the Global Entrepreneurship Monitor and European Bank for Reconstruction and Development research) proved that both SC components positively affect all stages of the entrepreneurial opportunity process (EOP) [26, 60]. Using data collected from entrepreneurs, the results show that SC directly affects opportunity recognition and mediates the relationship between network capabilities and opportunity recognition [59, 61]. By analyzing SC and EOP components [39], it was found that the relationship between bridging and firm performance is more positive in the recognition context, whereas, in the exploitation context, the strong ties become more significant. Studies on female entrepreneurs support that strong bonding capitals (created through friends and networks) hinder female entrepreneurs' progress, while the weak bridging capital (developed through the female supporting programs) inspires female entrepreneurs through offering them the skills needed to improve their human and social capital and pursue their entrepreneurial development [62].

In relationship to the opportunity process, it was found that in social capital, created using social media, networking enhances business performance and the chance to create new business. This research used two qualitative methods: analyzing the interaction among professional groups in LinkedIn and using 12 interviews [63]. Agreeing with this result (using a semistructured interview with 30 women in Egypt), researchers found that SN usage of female entrepreneurs in Egypt creates a SC that supports them in their relations with different stakeholders, especially their customers. SN usage empowers them, increases their self-efficacy, and enhances their reputation [16].

We argue that social media platforms (like Facebook) create an innovative entrepreneurial ecosystem that grows to be the basis of innovation and competitive disturbance [1]. Women, interested in beginning their business, are engaged in online communities which are created to empower female entrepreneurs. They select those groups according to their interests, based on social identity theory, and communicate with them creating both bridging and bonding social capital through interacting and strengthening relations with their peers and potential partners [10]. Bridging SC enables entrepreneurs to gather new information, create a communication process with diverse people, and build trust and reciprocal relationships which enhance their EOP [20, 49, 50]. The kind of networks (women are embed-

ded in) will determine the timing and quality of information and, consequently, determine their ability to perceive new opportunities [54]. Due to fluidity and affordance, these online communities affect their SC and enable female entrepreneurs to access a vast amount of information and ask for advice about different types of resources as well as skills which can affect their opportunity recognition process. Bonding SC boosts trust among women on SNs and activates their team spirit. It encourages them to emotionally support each other and help them in reaching limited resources which increase their ability to recognize entrepreneurial opportunities [37]. Based on these arguments, this study hypothesizes the following:

- (i) *H1*: online social capital has a positive and direct impact on opportunity recognition and exploitation
- (ii) *H1a*: bridging SC has a positive and direct impact on opportunity recognition
- (iii) *H1b*: bridging SC has a positive and direct impact on opportunity exploitation
- (iv) *H1c*: bonding SC has a positive and direct impact on opportunity recognition
- (v) *H1d*: bonding SC has a positive and direct impact on opportunity exploitation

This information exposure process forms and refines the cognitive framework of individuals inside this social network and affects the opportunity recognition process as it is a cognitive phenomenon [64].

3.2. The Mediating Role of Entrepreneurial Capacity (EC). Entrepreneurial capacity (EC) refers to the individual skills needed to identify and exploit opportunities. Scholars in entrepreneurship who consider it as the main characteristic needed for opportunity recognition [64, 65] found that entrepreneurial capacity affects academics' involvement in entrepreneurial activities initiated by them or created by others. EC is positively related to entrepreneurial alertness; References [66, 67] found that perceived opportunity mediates the relationship between EC and entrepreneurial intention, and it has a higher mediating impact on the fear of failure. Agreeing with that result, References [25, 43] found that EC (entrepreneurial skills) mediates the relationship between opportunity recognition and entrepreneurial orientation through using a sample of female entrepreneurs. It has been confirmed that entrepreneurial skills, especially marketing ones, are important for female entrepreneurs in emerging economies as they enable them to sustain the competitive advantage of their small business [68].

Literature related to female entrepreneurship in emerging economies revealed that women are facing many cultural constraints that hinder their ability to recognize and exploit entrepreneurial opportunities [16, 34, 62]. These constraints are related to role stereotypes and identity image, which are common in these cultures [45, 54]. Studies show that SC is the most important source of information for female entrepreneurs [54]. However, due to the gender roles, research

indicates that bonding capital, created from strong ties like family and friends, negatively affects the development of female entrepreneurs in their early entrepreneurial life [61]. Being a part of the women's communities, exploring the success stories of women, entrepreneurs help women to recognize and exploit opportunities even if these communities just provide them with information, emotional support, and training [62].

SNs and SC are considered important components of the entrepreneurial ecosystem. However, women in emerging and developing economies are regularly barred from being part of male-dominated high-level networks [25]. When women are compared to men, they tend to underestimate themselves [69]. Therefore, searching for an equal opportunity, female entrepreneurs use social media platforms to express themselves, develop their skills, and overcome their boundaries [70]. Female entrepreneurs create informal institutions in the form of "women-supporting-women" groups on Facebook. These groups are aimed at influencing the social norms related to gender stereotypes and applying "ethics of caring" rather than "ethics of judgment" [32]. It provides them with a safe environment to develop their professional identity, to discuss their feminist ideas, and to, securely, use their own norms and words in expressing themselves without judgment [71]. Besides, informal institutions enhance female entrepreneurship in emerging economies [72]. Research using qualitative methods also argued that SC, created through social media platforms, is expected to increase female entrepreneurial capacity and self-efficacy [16, 34].

To understand how online SC affects entrepreneurial opportunity recognition in the online context, we propose that online SC (created by women-supporting-women entrepreneurs) increases women's perception of entrepreneurial capacity and, as a result, helps them to identify and exploit entrepreneurial opportunities. Taking this argument into account, this study hypothesizes the following:

- (i) *H2*: online social capital increases opportunity recognition and exploitation through increasing the entrepreneurial capacity
- (ii) *H2a*: bridging social capital increases opportunity recognition through increasing the entrepreneurial capacity
- (iii) *H2b*: bridging social capital increases opportunity exploitation through increasing the entrepreneurial capacity
- (iv) *H2c*: bonding social capital increases opportunity recognition through increasing the entrepreneurial capacity
- (vi) *H2d*: bonding social capital increases opportunity exploitation through increasing the entrepreneurial capacity

3.3. *The Mediating Role of Resource Acquisition (RA)*. There is a consensus on the importance of resource acquisition to the growth and continuity of entrepreneurship as well as

small business and start-ups, in general. The importance of resource acquisition is rooted in the resource-based value theory. While a business might differ according to the type of resources needed by the business, all businesses, regardless their type and size, share the interest to acquire and develop resources to continue and sustain growth and/or survival.

Scholars agree on the value of resource acquisition for business while emphasizing the part that social capital plays in creating such resources and knowledge [73, 74]. Social capital and external balanced networks might be the main creator of the knowledge and resources required to visualize and exploit opportunities [75].

A big-sized business might depend on the knowledge and resources generated from intrafirm social capital. Nascent entrepreneurs, start-ups, and small businesses in the introductory stage might depend more on interfirm social networks (a firm's external social capital). Social capital is considered as an asset; if it is used wisely, it can facilitate the acquisition of resources and access to knowledge necessary to exploit opportunities [76, 77]. The network configuration, density, and appropriateness issue, embedded in the structural social capital, facilitate resource acquisition [78]. This is confirmed in a study on female entrepreneurs by [75], where bonding ties facilitate informal loans and emotional support while bridging ties facilitate accessibility to innovative resources when made up of instrumental industry contacts and professional advisors. Online SC is a sort of network that is formed voluntarily by joining or engaging with online groups expecting a type of benefit. For non-clustered entrepreneurs in an emerging economy, online social capital is expected to act the same role of facilitating resource acquisition while enabling opportunity recognition and exploitation. Accordingly, this study hypothesizes the following:

- (i) *H3*: online social capital increases opportunity recognition and exploitation through increasing resource acquisition
- (ii) *H3a*: bridging social capital increases opportunity recognition through increasing resource acquisition
- (iii) *H3b*: bridging social capital increases opportunity exploitation through increasing resource acquisition
- (iv) *H3c*: bonding social capital increases opportunity recognition through increasing resource acquisition
- (v) *H3d*: bonding social capital increases opportunity exploitation through increasing resource acquisition

The model is shown in Figure 1.

4. Methods

To understand the complex phenomenon of online social capital, these research questions are examined through a mixed-method approach using both qualitative and quantitative methods. Employing a mixed-method study design prevents inconsistent conclusions and unjustified models

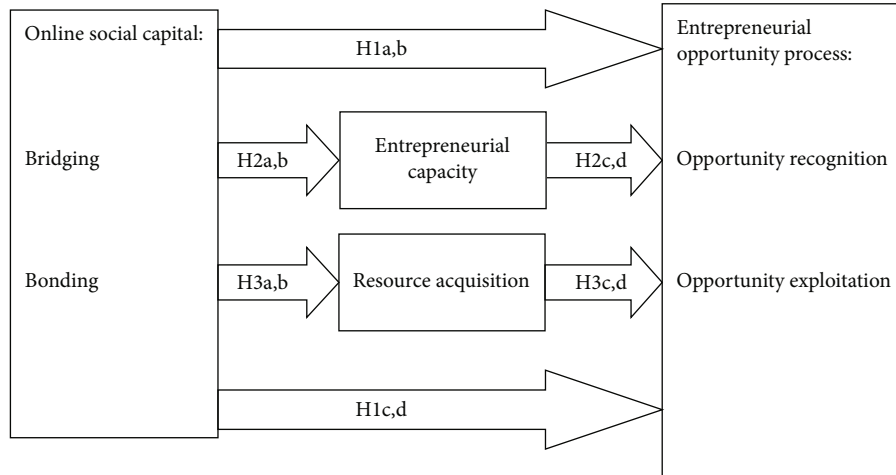


FIGURE 1: Research model (source: developed by the authors).

TABLE 1: Internal reliability and validity.

	Bonding	Bridging	Entrepreneurial capacity	Opportunity exploitation	Opportunity recognition	Resource acquisition
Cronbach's alpha > 0.7	0.880	0.820	0.891	0.775	0.867	0.848
Composite reliability > 0.7	0.926	0.881	0.917	0.870	0.924	0.908
Rho_A < 1	0.881	0.822	0.892	0.797	.884	.851

Note: developed by the authors.

caused by focusing on using either qualitative or quantitative alone [79]. Using mixed methods permits the logical and justified interpretation of context in the phenomenon to be investigated quantitatively since little is known on how online social capital assists entrepreneurs [20].

4.1. Qualitative Study: Natural Language Processing (NLP). This research used Natural Language Processing (NLP), an automatic content analysis tool, to explore to what extent female entrepreneurs use FB groups to increase their experience and ask for resources. NLP is a machine-learning method used for text mining of unstructured data in the human natural language [80]. For this purpose, it employs algorithms to help the computer understand, interpret, and conclude insights from the human language [81]. NLP is simply employing artificial intelligence in analyzing big data on social media platforms, and it is recently used in the field of entrepreneurship [82]. In this stage, NLP is used to make insights from unstructured data on social media. NLP is the most appropriate machine-learning tool to deal with the complexities of the Arabic language in the absence of ready-made software that can do the job [83].

4.2. Quantitative Study

4.2.1. Population and Sample. The population is female entrepreneurs in their early stage who are using FB groups to support their business. We use a judgmental sample by approaching FB group administrators who create their FB groups to support female entrepreneurs. The sample included 232 participants. Results show that 80% of the

respondents are owners of business with a mean age of 2 years while 20% are considering starting their business. Moreover, results confirm that 81% are members of more than one FB group assisting entrepreneurs.

4.2.2. Measures. To improve the validity and reliability of the findings, this study has adopted measures verified in the literature and adapted to meet the study context.

Structural social capital: bonding social capital and bridging social capital were adopted from [57] with minor change in few words to reflect the context of the research. Bonding SC was measured using 5 items while bridging SC was measured using 9 items. *Opportunity process* was adopted from [84]. Opportunity recognition is measured using 5 items, and opportunity exploitation is measured using 4 items. *The mediating variables: entrepreneurial capacity* is measured by 10 items, adopted from [85], and *resource acquisition* was measured by 5 items, adopted from [86].

This research adopted a five-point Likert scale with participants rating their disagreement and agreement for each survey item: 1 is strongly disagree, 2 is disagree, 3 is neutral, 4 is agree, and 5 is strongly agree. All measures are illustrated in Appendix 1.

The convergent validity of the latent variables in the model shows satisfactory measures as shown in Table 1. Values of Cronbach alpha are all above 0.7 as recommended [87]. Moreover, the values of composite reliability (CR) are all more than 0.8 above the threshold [88] and rho_A < 1 for all latent variables [89].

TABLE 2: Words mostly used in FB community of entrepreneurs.

Words	Number
Experience	88
Loan	26
Finance	134
Capital	27
Sources of material	204
Packaging	41
Promotion	74
Distribution	26
Pricing	348

Note: developed by the authors.

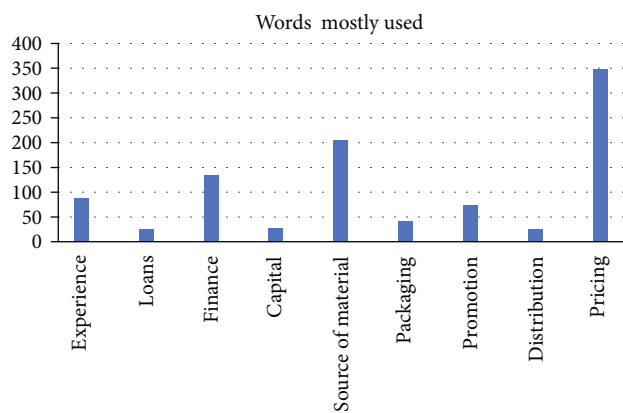


FIGURE 2: Bar chart for words mostly used (note: developed by the authors).

4.2.3. Data Collection Methods. An online survey was used as a subsequent tool to test the relationship between the previously designed models with the determined hypotheses. The survey has been pretested on a selected sample of entrepreneurs to ensure full understanding of the statements, where the comments of respondents were taken seriously into consideration to change the statement structure. Then, the survey was distributed to female entrepreneurs through FB group administrators and owners. FB groups are selected based on their purpose and their acceptance to participate in the research.

4.2.4. Data Analysis Methods. SmartPLS, version 3.3, has been used to test the direct relations hypotheses and the indirect relations hypotheses that, involve testing mediation using structure equation modeling.

5. Results

5.1. Qualitative Study Results. In this research, NLP is used to summarize data resulting from members' online discussions with four public FB groups targeting entrepreneurs at early stages. This process allows the analysis of a large amount of data resulting from posts of a one-month period on the four FB groups. Python is used to implement the text preprocessing with NLP, and then, data analysis and classification were done using PHP language. In NLP, topic model-

ing is widely used as a text-mining tool to determine "hidden patterns" in a manuscript [82]. After collecting the unstructured data from the FB groups' posts, the data are processed with a list of words which is called "stemming." Stemming is a text-processing task which returns words to their roots; as an example, the words "financing" and "financier" share the root "finance." Stemming, implemented with words, is related to experience and resources.

In this research, Natural Language Processing (NLP) was operationalized on FB groups through the following steps:

- (i) Get the FB group URL
- (ii) Crawl to extract posts on those public FB groups targeting entrepreneurs using Python
- (iii) Read and scrape the posts by removing the unwanted tags and elements
- (iv) Categorize and classify the resulting text using PHP language
- (v) Count the word frequency (as shown in Table 2) in the result text and draw graphs (as shown in Figure 2)

By analyzing the topic modeling resulting from the NLP, we can conclude that entrepreneurs are using their social capital, created in social media platforms, to improve their entrepreneurial capacity, experiences, and knowledge related to pricing, packaging, distribution, and promotion as shown in Table 2 and confirmed in Figure 2. Sources of finance and pricing strategies seem the most central enquiry they have. They also seek other entrepreneurs' experiences to improve their entrepreneurial capacity (EC). Moreover, they ask for different types of resources, mainly material and financial resources.

5.2. Quantitative Study Results: Model Testing

5.2.1. The Measurement Model. This study used the partial least-squares-based structural equation modeling (PLS-SEM) method to analyze the data output from the survey to overcome the problems attached to a small sample size and those related to normality [87]. To assess the model, the variance inflation factor (VIF), used to evaluate colinearity of the formative indicators, shows that all measures do not exceed 3 as the cut-off recommended [87, 88].

The discriminate validity is satisfied by multiple pieces of evidence [90]. Discriminate validity was assessed by cross-loading, AVE, and Fornell-Larcker criterion. Table 3 shows that AVE values are all greater than 0.5. The Fornell-Larcker criterion, for assessing discriminate validity, compares the square root of the AVE values with the latent variable correlations. The square roots of the AVE for each construct shown by the diagonal figures are greater than their highest correlation value with any other construct which satisfies the Fornell-Larcker criterion. Table 4 shows no cross-loadings, and the dimensions are well loaded on their constructs with 0.7 as the minimum loading. The cross-loadings are typically the first approach to assess the

TABLE 3: Reliability and validity of the measurement model.

	Bonding	Bridging	Entrepreneurial capacity	Opportunity exploitation	Opportunity recognition	Resource acquisition
Bonding	0.898					
Bridging	0.739	0.805				
Entrepreneurial capacity	0.446	0.484	0.804			
Opportunity exploitation	0.390	0.396	0.561	0.831		
Opportunity recognition	0.286	0.334	0.545	0.518	0.895	
Resource acquisition	0.671	0.629	0.493	0.463	0.417	0.876
<i>Diagonal italic values are the square root of AVE of each latent variable</i>						
Average variance extracted (AVE) > 0.5	0.807	0.649	0.647	0.691	0.802	0.767

Note: developed by the authors.

TABLE 4: Loadings and VIF values.

	Entrepreneurial capacity	Bonding	Bridging	Opportunity exploitation	Opportunity recognition	Resource acquisition	VIF
OPCAP11	0.779						2.037
OPCAP2	0.798						2.068
OPCAP3	0.787						2.097
OPCAP6	0.827						2.546
OPCAP7	0.831						2.604
OPCAP8	0.804						2.286
Bonding 10		0.892					2.343
Bonding 11		0.916					2.822
Bonding 12		0.885					2.326
Bridging 1			0.804				1.797
Bridging 4			0.819				1.886
Bridging 5			0.821				1.879
Bridging 7			0.777				1.513
oe6				0.819			1.679
oe7				0.901			2.031
oe8				0.768			1.467
or1					0.912		2.813
or2					0.859		2.023
or5					0.914		2.683
resacquis1						0.850	1.772
resacquis2						0.907	2.543
resacquis4						0.869	2.251

Note: developed by the authors.

discriminate validity of the indicators. The heterotrait-monotrait (HTMT) ratio of correlation is less than 0.9. Thus, the convergent and discriminate validity of the measurement model was accepted.

5.2.2. *The Structural Model.* The bootstrap method (with 5000 subsamples) was used to test the previously stated hypotheses as recommended by [90]. The PLS-SEM model fit indices are measured using SRMR, NFI, dG, and dULS.

The tested model indicates acceptable model of fit indices [88] with SRMR = 0.074 < 0.12 ≤ 0.12, NFI = 0.773, dG = 0.605, and dULS = 0.89.

Figure 3 (see Appendix 2 for SmartPLS output figure) shows that 24.5% of entrepreneurial capacity is explained by social bridging on Facebook groups with $B = 0.341$, $p \leq 0.001$, and by social bonding with $B = 0.194$, $p \leq 0.05$. Besides, 48.5% of the variance in resource acquisition is explained by structural social capital with its two

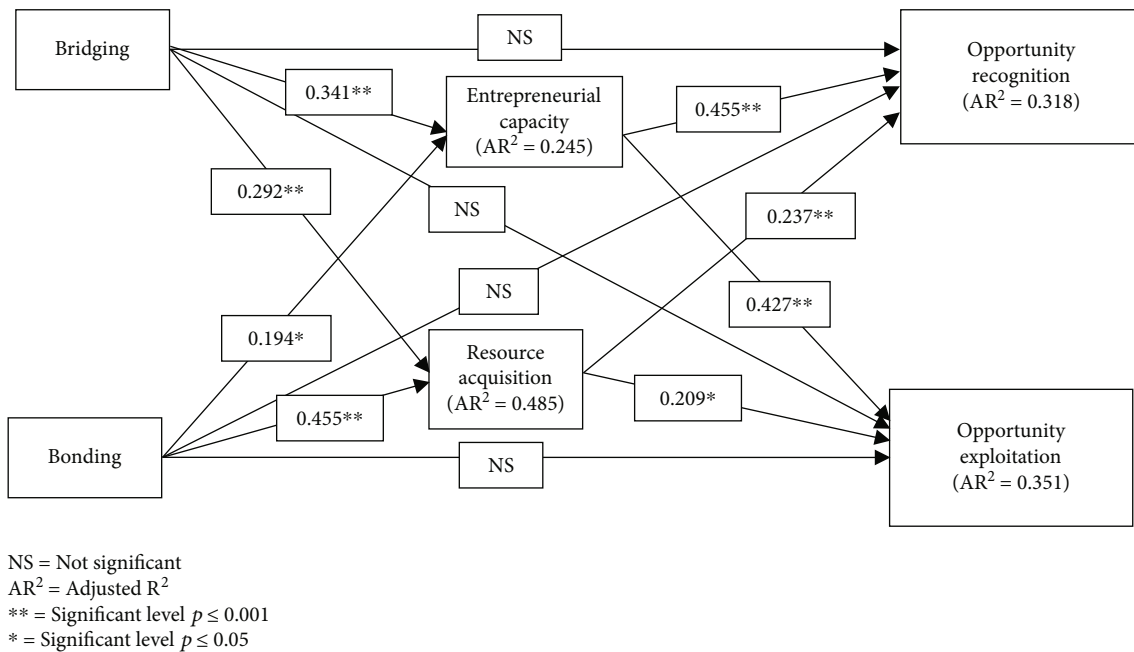


FIGURE 3: Tested research model (note: developed by the authors).

dimensions, social bonding, and social bridging, with $B = 0.455$ and $B = 0.292$ with $p < 0.001$. Moreover, Figure 3 shows that 31.8% of the variance of opportunity recognition is explained by both entrepreneurial capacity with $B = 0.455$, $p < 0.001$, and resource acquisition with $B = 0.237$, $p < 0.001$, while the effects of both social bridging and social bonding were not supported. In addition, 35.1% of the variance in opportunity exploitation is explained by entrepreneurial capacity with $B = 0.427$ and resource acquisition with $B = 0.209$, $p < 0.001$.

Table 4 shows the insignificant direct relationships between each of the bridging, bonding, and opportunity recognition and exploitation. As a result, H1a to H1d are rejected.

5.2.3. Mediation Analysis. The tested mediators are entrepreneurial capacity and resource acquisition. Independents are bonding and bridging dimensions of structural social capital, while dependents are opportunity identification and opportunity exploitation. Partial mediation is confirmed when the indirect effect is significant and when the variance accounted for (VAF) lies between 20% and 80% and could be more than 80% in case of full mediation [91]. Table 5 shows significant indirect effects between the tested independents and the dependents except H2c, confirming that entrepreneurial capacity and resource acquisition mediates the relationship between bonding and opportunity exploitation, thereby accepting H2d and H3d. Moreover, Table 5 shows that entrepreneurial capacity and resource acquisition mediates the relationship between bridging and each of opportunity exploitation and opportunity recognition. The entrepreneurial capacity VAF accounts for 38.7% on the effect of bonding on opportunity exploitation, indicating partial mediation, while the resource acquisition VAF

accounts for 44.9% on the effect of bonding on opportunity exploitation, signaling partial mediation. The resource acquisition accounts for 80.2% on the relationship between bonding and opportunity recognition accounts, indicating full mediation. The entrepreneurial capacity VAF accounts for 61.3% on the effect of bridging on opportunity exploitation and accounts for 57.4% on the effect of bridging on opportunity recognition, implying partial mediation. In addition, resource acquisition VAF accounts for 25.5% on the effect of bridging on opportunity exploitation, while it accounts for 26% on the effect of bridging on opportunity recognition, signifying partial mediation.

6. Analysis and Conclusion

To understand the role of social capital in the online context, this research used a mixed-method approach to understand how nascent entrepreneurs use social capital created on online platforms in the opportunity recognition and exploitation process [4–6, 50, 92]. The first phase of this research answered the question of how nascent female entrepreneurs benefit from social media networks and what assistance they are looking for. Accordingly, big data (collected from the posts) were refined, analyzed, and categorized using NLP to identify the most used words in the generated text. These words are categorized with the assistance of the literature on SC and entrepreneurship into two categories: entrepreneurial capacity and resource acquisition. The first phase demonstrates that nascent entrepreneurs are in need of financial resources, management, and marketing skills; these are necessary to recognize and exploit entrepreneurial opportunities. Findings are consistent with the needs of female entrepreneurs reported in previous studies in developing countries [93–95].

TABLE 5: Direct and indirect relationships between online SC dimensions and EOP.

(a)

	Direct relations	Standard deviation	<i>T</i> statistics	<i>P</i> values	Reject/accept
H1a	Bridging → opportunity exploitation	0.094	0.333	0.739	R
H1b	Bridging → opportunity recognition	0.105	0.0443	0.658	R
H1c	Bonding → opportunity exploitation	0.120	0.297	0.766	R
H1d	Bonding → opportunity recognition	0.105	1.042	0.297	R

(b)

	Indirect relations (mediation)	Specific indirect effects	Standard deviation	<i>T</i> statistics	<i>P</i> values	Accept/reject
H2d	Bonding → entrepreneurial capacity → opportunity exploitation	0.083	0.042	1.987	0.047	A
H2b	Bridging → entrepreneurial capacity → opportunity exploitation	0.146	0.049	2.966	0.003	A
H2c	Bonding → entrepreneurial capacity → opportunity recognition	0.088	0.045	1.950	0.051	R
H2a	Bridging → entrepreneurial capacity → opportunity recognition	0.155	0.050	3.096	0.002	A
H3d	Bonding → resource acquisition → opportunity exploitation	0.095	0.046	2.046	0.041	A
H3b	Bridging → resource acquisition → opportunity exploitation	0.061	0.029	2.124	0.034	A
H3c	Bonding → resource acquisition → opportunity recognition	0.108	0.043	2.534	0.011	A
H3a	Bridging → resource acquisition → opportunity recognition	0.069	0.030	2.299	0.022	A

Note: developed by the authors.

In the second phase, the results of model testing (using SmartPLS 3.3) indicate that online social capital, developed through social media platforms, facilitates the recognition and exploitation of entrepreneurial opportunities through providing access to resources and cultivating entrepreneurial capacity for nascent female entrepreneurs.

Through using opportunity discovery theory, we build a model to understand the entrepreneurial opportunity process combining SC (developed through social media platforms) with individual factors (presented in perceived entrepreneurial capacity and perceived resource acquisition). The results of the tested model in the second phase (using SmartPLS 3.3) indicate that there is no direct relation between online social capital (bridging and bonding) and the entrepreneurial opportunity process. Results ensure that it is not about social capital and networks developed online; it is about the value created from these online networks. Results assert that unless online social capital improves entrepreneurial capacity and resource acquisition, female entrepreneurs will not be able to recognize and exploit opportunities. These research results are consistent with others ensuring that online communities offer a better context in which various members with diverse backgrounds and experiences interact conveniently to create a good “value of relationships” and minimize boundaries to enhance social exchange [4–6]. This result supports the idea that in Facebook, women are interested in initiating their business while being engaged in online communities that are created to empower female entrepreneurs. They select these groups according to their interests and communicate with them by creating both bridging and bonding social capital. Bridging SC enables them to gather new information and create a communication process with diverse people [20, 50]. Due

to its fluidity and affordance, these online communities become an essential part of the entrepreneurial ecosystem [5, 6]. This ecosystem affects female entrepreneurs’ SC and enables them to access a vast amount of information and ask for advice regarding different types of resources and skills which can affect their opportunity recognition process. By developing and maintaining these relations over time, female entrepreneurs build strong ties that are reflected in bonding SC. Bonding social capital supports female entrepreneurs in their opportunity exploitation through affecting their resource acquisition process.

Consistent with the previous studies related to resource acquisition and how it is accessed by entrepreneurs at early stages [75, 78], our results confirm that resource acquisition (RA) mediates the relationship between both bridging and bonding on the one side and entrepreneurial opportunity recognition and exploitation for nascent female entrepreneurs on the other side.

In addition, as the results show that EC does not mediate the relationship between bonding and opportunity recognition, it mediates the relationship between bonding and opportunity exploitation. This indicates that weak ties (created on social media platforms) are more influential than strong ties regarding the ability of nascent female entrepreneurs to recognize and exploit opportunities. This is justified by the nature of social media networks, in general, the benefits provided by bridging relationships and the needs of female entrepreneurs at their early stages [29, 96]. Bonding relations need time to develop in an online context, which might not be easily accessible to entrepreneurs with a mean age of two years in business facing lots of challenges. Moreover, this result indicates that EC gained by bonding SC and strong ties affects opportunity exploitation as it gives the

female entrepreneurs the confidence to capitalize on their skills and create their ventures. SC created online empowers women to take entrepreneurial actions and transfer their ideas into business.

Despite that EC is essential to undertake entrepreneurial activities in different contexts [43, 64, 65], our results show that the role of online social capital (in providing access to resources) is more influential than improving EC for nascent female entrepreneurs. This result is consistent with the argument [50] that bridging social capital or weak ties (created online) better support information exchange between online community users. This can be justified by the time duration needed to develop EC, the variety of challenges faced at this stage, and the complexity of the process that increases with female entrepreneurs at their early stages [29, 97]. For female entrepreneurs in emerging economies, the access to different types of resources is of big urgency. Online SC enhances women's chance to acquire the needed resources, which can support their opportunity recognition and exploitation process.

To conclude, female entrepreneurs (engaged online) are cocreators of the value grasped from the online social capital; this is consistent with the idea that digital platforms play an essential role as an "external enabler" to entrepreneurial opportunities [6, 10].

According to our results, social media platforms create an innovative entrepreneurial ecosystem that grows to be a basis of innovation and competitive disturbance [1, 98]. These new platforms have allowed female entrepreneurs to be exposed to a wide range of information about means and end of relationships as well as allowing them to observe a third-person opportunity and discover new opportunities [37]. Entrepreneurs use these platforms to create their own social networks, interact, and strengthen relations with their peers and potential partners [10]. Being part of these platforms produces new information and offers possibilities for entrepreneurs and potential entrepreneurs to discuss opportunities with members in their social networks [17]. This exposure process forms and refines the cognitive framework of individuals inside these social networks and affects them as a cognitive phenomenon [64].

7. Implications

This research has examined the role of online social capital on facilitating opportunity recognition and exploitation. The findings of this research are significant to academics, policy makers, entrepreneurs, and social media community leaders and administrators.

7.1. Theoretical Implications. From an academic perspective, this research is one of the few attempts that recognize the role of online social capital in supporting female nascent entrepreneurs. These findings contribute to the literature of entrepreneurs and social capital as they call for investigating new types of social capital that emerge due to technology and human-computer interaction. The results of our research highlight the importance of studying the characteristics of computer-mediated communities and reinforce

those unique characteristics while enabling them to function as bridging and bonding ties.

7.2. Managerial Implications. Our results have implications to online community leaders and administrators because they show the role of online communities as an enabler of entrepreneurial opportunities for female entrepreneurs in their early stages. This is due to the support it offers them in developing their skills and competencies besides giving them information about where to find resources.

Female entrepreneurs' challenges, constraints, and needs might change according to their social and marital status, their business lifecycle, the industry sector they operate in, and their previous skills and background. Accordingly, online community leaders should collect membership data (gender of entrepreneurs, lifecycle of their business, the business they operate in, with posts to know who posts what) which can be important in customizing and cultivating diversified online bonding and bridging tools and incorporating online training sessions and customizing tools to assist them. Online community leaders use Facebook group analytical tools to detect the posts with the most likes and responses on their digital platforms as they are more concerned with entrepreneurs. This can facilitate extracting beneficial discussions, summarizing them into meaningful forms (to be profitability traded to NGOs and other interested parties), and closing the gap between the attempts of "scattered isolated islands" to act as a unified party which would boost entrepreneurship among women.

Moreover, the results of this research are important to policy makers in emerging markets, characterized by a lack of information on start-ups, mostly operating in the informal economy. First, policy makers must seriously consider the significant role of the online social capital, created on digital platforms, in facilitating and energizing micro- and small business entrepreneurs, particularly at the introductory phase. To fulfill that, policy makers should engage online community leaders and utilize the output from the analysis of big data generated by these groups to articulate effective policies supporting nascent entrepreneurs, especially women who are marginalized (because of either education or social and economic situations).

8. Limitations and Area of Further Research

In this research, the findings are limited to the effect of online social capital on female entrepreneurs at their early stages. Nevertheless, the need for social capital components might differ along the business lifecycle [99]. Further research can examine the relative importance of social capital structural components along the small business lifecycle.

This research has examined the role of online social capital on opportunity recognition and exploitation. Future studies might highlight the relative importance of interorganizational social capital and external social capital on the entrepreneurial opportunity process.

This research has measured the impact of structural social capital on the opportunity process. The scale used was adopted from the literature. Further research might

examine the interplay between the cognitive dimension of SC and structural dimensions of SC among nascent and mature entrepreneurs.

Furthermore, the fear of failure among female entrepreneurs has proven to have a significant effect in their early stages. However, future research might be directed to demonstrating how structural social capital affects the fear of failure of early entrepreneurs.

This research focuses on female entrepreneurs; however, future research might study the impact of different gender entrepreneurs on the ability to benefit from social capital in recognizing and exploiting entrepreneurial opportunities in developing countries.

Data Availability

Data is available upon request.

Consent

Respondents were free to accept or reject participating in the study.

Conflicts of Interest

The authors declare no conflict of interest.

Authors' Contributions

The two authors participated equally in the manuscript. All authors have read and agreed to the published version of the manuscript.

Supplementary Materials

Appendix 1: measurements of variables. Appendix 2: model created through the SmartPLS 3.3. Appendixes are provided in the Supplementary Materials. (*Supplementary Materials*)

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