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Impact of Social Capital and Firms' Innovative Capability on Sustainable Growth of Women Owned Technoprises (SMEs): A Study in Malaysia

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Abstract: Women have prolific potential to uplift national economic and innovative growth by participating in technology entrepreneurship development. However the prospective benefits of this women technopreneurship reside greatly on the sustainable growth of the women owned technoprises and factors affecting it. This empirical study is a novel attempt to juxtapose significance of social capital and innovative capability in achieving sustainable growth of women owned technoprises (SMEs) in Malaysia. Data was collected by selecting 250 women owned firms through convenience sampling and distributing questionnaires through mail survey method. To investigate the direct and indirect (through innovative capability) effect of social capital on firms' sustainable growth, hierarchical multiple regression analysis was employed. Significant direct relationship of social capital and innovative capability with firms' sustainable growth was found. Nevertheless, strong mediating role of innovative capability was also proved. Insinuation for future research and policy recommendations are also given.

Key words: Innovative Capability · Social Capital · Sustainable growth · Small and Medium Enterprises · Technological entrepreneurship development · Women Technopreneurs

INTRODUCTION

The burgeoning global hype for technopreneurship development and its prolific effects on economic growth has initiated participatory exigency for the '*fair techs'* [1]. Women contribution in technology based businesses is although improving in most of the developed parts of the world [2], yet these female technopreneurs are practically invisible in most of the developing and transitional economies of the world [1]. Malaysia is gearing fast to enlist among innovation-driven economies by diligently improving their technological innovations and technopreneurship status [3] through varied governmental policies and programs [4] implemented and supported by government agencies like Small and Medium Enterprise Corporation (SME Corp) and Malaysian Technology Development Corporation (MTDC) [5]. Women in Malaysia are getting more technological education and skills in recent years [5] these women owned firms still lag behind their male counterparts in term of their number, innovativeness and growth [6]. Where individuals are the resources to bring in environmental transformations and developments, society is one major factor to configure these resources [7]. According to Naude´ [8], relationship of entrepreneurship and GDP in developing countries is a factor of improvising '*big push'* by identifying market failures and essentiality of institutional groundwork to help the entrepreneurs built up their linkages and contribute in economic development.

The growing interest in capitalizing social network theory for firms' growth and vital role of social capital in this regard [9] necessitates its evaluation in one of the most prevailing global concern of women technopreneurship development [10]. Strong social capital with affluent heterogeneous networks are not only deemed essential for successful venturing and long term growth orientation in women owned businesses [11] but also considered indispensible for firms' innovative capability [9]. Despite all its practical significance, women entrepreneurship literature falls short of exclusive empirical investigation regarding effects of women's

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social capital on the innovative capability and corresponding sustainable growth of women technology based businesses [12]. Hence, this study attempts to fill this gap in today's most buzzing research avenue of women technopreneurship development [2, 12] by evaluating direct and indirect (through innovative capability) influence of social capital of women technopreneurs on their firms' innovative capability.

Literature Review

Firms' Sustainable Growth: Technopreneurship development through SMEs is a hotbed for innovative and economic development of any nation [3], yet its productivity lies in development of growth oriented firms [13]. Danchev [14] described sustainable growth of the firm as its capacity to grow and hold out all kinds of financial, strategic and structural impediments. Achieving firms' growth is a business imperative for success and is more challenging in highly volatile technology world [15]. As innovation is documented as the top driver of growth, entrepreneurs with high growth orientation are the most essential agents in maintaining a technology-business strategy fit [16] for innovation led growth [13].

Sustainable Growth of Women Owned Businesses: Women have astounding significance in elevating economic, innovative and technological development of both developing and developed regions of the world [12]. Prominently working in non-technological business sectors [10, 17], however, women entrepreneurs prove to be potentially significant yet practically weak contributor to the overall economic growth [18]. The inconsistency of their practical involvement and its overall effectiveness in value added GDP exists due to their disparate growth aspirations and restrained proclivity for long term growth and profitability as compared to the male entrepreneurs [18]. Women owned businesses are generally thwarted by their limited external and internal resources which influence their growth aspirations [12, 19]. Their firms' external factors include industry, market, social networks, culture, government policies and financial agencies while internal factors primarily involves their education, knowledge, experience, skills, abilities and motivations [19-21].

Social Capital: Social capital is an aggregate of norms, networks and social ties of individuals that help them to work together to accomplish a common goal and mutual benefit [22] and is divided into two main categories of '*bonding'* and '*binding'* social capital, comprising of strong and weak ties respectively [7]. Social capital provides access to the social ties i.e. resources embedded in the network [23] and works in terms of *information* about unknown opportunities, *influence* decision making process due to their authority and structural position, certify individual's *social credentials* as additional strength beyond his/her personal capital and *reinforce* identity and recognition [24]. Importance of social capital of the individuals is raised by scholars in terms of better performance results, trust relationships and economic development [7]. The '*links'* within and between the '*nodes'* [25] need to be maintained, revitalized and updated with the passage of time for better enduring productivity [22]. Like traditional (human capital) and economic capital, social capital does not only play vital role in entrepreneurial orientation [26] for venture creation [27, 28] as well as growth prospects [23, 29] but also '*leverage the productivity of a venture's resource base*' [23]. Where strong ties, constituted of close family and friends, are generally essential for gaining resources for venture start-up, weak ties (bridging capital) comprising of business networks are indispensible for growth in hi-tech SMEs [30]. Regarding technological and non-technological entrepreneurs, although all dimension of social capital (social, cognitive and relational) are important for firms' success [27] yet both groups significantly differ in terms of relational social capital characterized by trust [28].

Women's Social Capital and Firms' Sustainable Growth: The visibility of the women in technological businesses around the world is quite l ow as compared to their male counterparts [1] and the situation exacerbates when it comes to the developing part of the world [3]. The disproportion regarding development and survival of these non-traditional women entrepreneurs is generally discussed as a factor of their resource deficiency where paucity of social resources (capital) and networking is deemed significantly critical [10].Women venturing in non-traditional and male-dominating technology based businesses of developed and developing regions suffer network deficit due to low stocks of their strong social capital in male chauvinistic industrial environment of tech world [11]. Male entrepreneurs, being the '*gatekeepers of resources'* in the women's non-traditional industries, are inherently as well as practically facilitated in building up heterogeneous business networks (linkages) [10]. Development and progress of women owned businesses is highly influenced by the strength of trustworthy environment [31] and strong social networking [10].

Women entrepreneurs predominantly apply and rely upon their informal networks or strong ties (close family or friends) for financial and motivational support that helps them in initial stages of firm development but fail to support their growth prospects [32]. Women owned technology firms extensively require industry and business linkages to help them gain better insight and assistance for recurrent technological advancements [33] as well as to maintain their bonding capital [34]. Women entrepreneurs are reluctant to approach these linkages due to lack of knowledge, proper training, access and their perceptions for personal inadequacy for mutual learning [35] hence require special training and facilitation regarding networking skills for firms' sustainable growth [10, 36].

H1: Social capital of women technopreneurs is positively related to their firms' sustainable growth

Innovative Capability: Innovative capability is known as firms' capability to devise and revise production of novel products and processes creation through offsetting uncertainties related to industry, market and competitors as well as fulfilling the prevailing plus envisaged demands and trends of market [37, 38]. Technological entrepreneurship development in any region requires technopreneurs' special attention for innovative capability development [39]. However, a balance between hard and soft capabilities of innovation is essential [40] by developing both technological (product & process) and non-technological (marketing & management) innovative capabilities [41]. Small firms have intrinsic innovative potential for their less rigid routines and flexible structure [16, 42, 43], yet their innovativeness is greatly administered and influenced by their entrepreneurs [44, 45]. Hence, in small firms, role of entrepreneur is indispensible in planning for successful innovative activities to maintain the innovation capability [39] and sustainable growth of their firms [42].

Innovative Capability and Firms' Sustainable Growth: Amidst sprinting technological advancements and rapidly changing global markets organizational innovations provide competitive prowess to the firms [46]. In this regard, firms' innovative capability works as significant part of firms' growth evaluation [47] and potential source for bringing in systematic innovations in a firm [48] hence leading to better innovative and overall firms' performance [49] as well as sustained competitive advantage [50] of technology based firms [51, 52]. Lack of innovativeness in women owned businesses is rooted in their occupational gender segmentation as well as disparate choices for field of study [53], hence delimiting their firms' growth prospects [10].

H2: Innovative capability of women owned technoprises is positively related to their sustainable growth.

Social Capital and Innovative Capability: Entrepreneurs influence the subsistence of innovativeness and generation of incremental as well as radical innovative capabilities [54] through their social capital [55, 56]. Social capital with its community characteristics has capacity to manipulate entrepreneurial behaviors of risk taking and innovativeness [22] and influence firms' (SMEs) incessant innovative and technological capability for better growth [57, 58]. As External and internal social networks being the most considerable firms' intangible assets [59], provide access to knowledge and essential tangible resources for increased innovation capability [9]. Growth through technological capabilities is found to reside upon innovation efficiency, guarded and supplemented by innovative networking with distinct business linkages [43]. However to ensure this social capital as an asset and not liability and an innovation facilitation agent, entrepreneurs need to build a range of extra industry social ties along with few close ties to avoid higher levels of network centrality that inhibits their firms' innovativeness [60].

Delineating the importance of social capital and innovation in women owned businesses Nyberg [1] (2009: 15) stated, *"To bring gender and innovation together can be mutually beneficial since gender awareness can benefit processes of innovation as well as innovation can bring emancipatory social change".* Women owned firms are considered to be less innovative than their male counterparts [17] due to gender differentiation [61] and overemphasis on strong ties which restrict new knowledge entrée and inhibits innovativeness [60]. Nevertheless, the success of '*technopreneurial matriarchy'* resides on a better rational, logical and decisive behavior of women technopreneurs in their relational orientation [62].

H3: Social capital o f women technopreneurs is positively related to the innovative capability of their technoprises.

Social Capital and Firms' Sustainable Growth: Mediating Role of Innovative Capability.

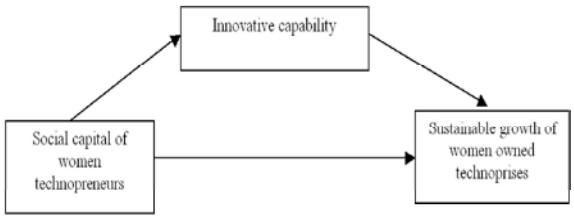

Fig. 1: Conceptual Framework

A fit of entrepreneurs' social capital resources and other firms' unique resources [60] provokes firm's innovative capability [59] which is highly desirable for firm's growth [49, 52]. Innovative capability with its capacity to directly influence firms' performance outcomes [50] has also numerously been found to act as a strong mediator to other success indicators like marketing capability [50], human capital [63] and social capital [57].

H4: Innovative capability mediates the relationship between social capital of women technopreneurs with their firms' sustainable growth.

Theoretical Framework: The theoretical framework of the study comprises of sustainable growth (SG) as the dependent variable, social capital (SC) as independent variable and innovative capability (IC) as mediating variable (Figure 1).

MATERIALS AND METHODS

Questionnaire: To carry out the survey for this quantitative study a questionnaire was developed after extant literature review of the major constructs of the study. Two distinct sections were designed for getting information about demographic details of women entrepreneurs and to get responses, through 5-item Likert's scale, for total 31 question items against all variables. Reliability and validity of the questionnaire was assured by taking experts' advice and pilot study.

Sampling scheme and Sampling Size: As there is no exclusive database for technology based women owned enterprises (SMEs) in Malaysia, the population of the study comprised of all women owned SMEs registered under SMI Association Malaysia. Purposive sampling scheme was employed to locate technology based women owned SMEs and a sample size of 250 women owned technology based firms (SMEs) from all business sectors of Malaysia was chosen by calculating the statistical significance, desired statistical power, effect size and number of predictors. The SMEs were selected on the basis of SMEs definition by NSDC [64] and only women owned SMEs with number of employees not more than 150 and annual sales turn over with a maximum of RM 25 million were selected from Official Business directory of SMI Association, 2011 retrieved from http://www. co. com. my/SMI-Association-of-Malaysia. html. Mail survey method was primarily employed for data collection, however, personal visits and telephonic follow-ups were given to ensure maximum response rate. Total 221 questionnaires were received but only 200 were used for data analysis as 21 were semi-filled, making fairly good 80% response rate.

RESULTS

Reliability Analysis: For reliability analysis of the questionnaire Cronbach's alpha coefficient was computed. Result in Table 1 showed that the alpha reliability coefficient of 0.75 which is fairly good for the new research instrument and shows high internal consistency of all items (n=31) in the scale [65].

Descriptive Analysis: The descriptive analysis for evaluating frequencies of demographic variables regarding age, education, marital status and ethnicity of Malaysian women technopreneurs and size of their firms was carried out. Results given in Table 2 showed that most of them are Malay (55), young with age below 30 (54), single (58) and education up to bachelors degree (52%). Moreover, most of the women owned technology based firms are micro enterprises within the range of maximum15 employees (80%).

Correlation Analysis: The strength of relationship among all predicting variables in respect to the dependent variable and each other was checked through correlation analysis. The results of correlation matrix (See Table 3) showed that all predictors were having significant correlations with the dependent variable as well as each other and the strongest one was between innovative capability and sustainable growth (.420**). The incidence of all correlation coefficients being less than 0.8, nevertheless illustrated absence of multicollinearity and associated distortion in finding from regression analysis.

Hierarchical Multiple Regression Analysis: To evaluate the hypotheses of this study, hierarchical multiple regression analysis was opted. The results from the two

Table 1: Reliability Statistics

Cronbach's Alpha	No. of Items
.750	31

Table 2: Correlation Matrix (N=200)

		SC	IC	SG
SC	Pearson Correlation	1	.420(**)	.415(**)
	Sig. (2-tailed)		.000	.000
IC	Pearson Correlation	.420(**)	1	.389(**)
	Sig. (2-tailed)	.000		.000
SG	Pearson Correlation	.415(**)	.389(**)	1
	Sig. (2-tailed)	.000	.000	

** Correlation is significant at the 0.01 level (2-tailed).

Table 3: Descriptive Analysis of Women Entrepreneurs' Demographic Profile

Variables	Frequency	Percentage
AGE		
Below 30	108	54
31-40	60	30
41-50	18	9
Above 50	14	7
MARITAL STATUS		
Single	116	58
Married	78	39
Divorced/Widow	6	3
EDUCATION		
Secondary	52	26
Bachelors/Diploma	104	52
Masters	42	21
PhD	2	1
ETHNIC GROUP		
Malay	110	55
Chinese	76	38
Indian	5	2
Others	9	4
FIRM'S SIZE (NO. OF WORKERS)		
1-15	64	80.0
16-45	8	10.0
46-100	8	10.0

Table 4: Hierarchical Multiple Regression Analysis

Dependent Variable	Model-1	Model-1	Model-2	Model-1
Predictor	SG	SG	IC	SG
SC	.415 (.000*)	-	.420(.000*)	.261 (.000*)
Mediator				
IC	-	.389 (.000*)		-
.306 (.000*)				
Adj. R^2	.168	.147	.172	.220
ΔR^2	-	.172*	-	.056*
F-Value	41.214	35.274	42.330	29.127
ΔF	-	-	-	14.277*
Model Significance				
(P-Value)	.000*	.000*	.000*	.000*

different regression models were combined in Table 4 to give a more comprehensive illustration of the findings. In Model-1, the predictor variables (social capital and innovative capability) were entered in step-1 and step-2 respectively to compute their direct effect on dependent variable (sustainable growth) and IC (β=.389, p-value=.000*) hence supporting hypothesis 1 and 2. In third step, to test mediation of IC, both SC and IC were taken together. Results supported hypothesis, 4 by showing significant partial mediation of IC (β=.306, p-value=.000*) in relationship between SC (β=.261, p-value=.000*) and SG. Moreover, the significant ΔR^2 (.56*) in third step showed that addition of variables in the regression model increased the strength of the overall regression model. According to Baron and Kenny [66], for true mediation analysis the mediator must have significant relationship with both the predictor and the criterion variable. As SPSS does not provide facility to evaluate two different dependent variables in one model, a separate Model-2, was run to test direct relationship of SC with IC. Results elucidated significant relationship of SC (β=.420, p-value=.000*) with IC hence fulfilling the requirement of mediation test as well as supporting hypothesis-3.

DISCUSSION AND CONCLUSION

The results from descriptive analysis of the demographic variables elucidated compliance with earlier studies carried out on Malaysian women entrepreneurs especially in terms of their age, ethnicity and qualification [6, 67, 68]. Majority of young, qualified Malay female technopreneurs in our sample showed the *Bumiputerism* in entrepreneurship development [3] and external facilitation from government in providing educational, technical and financial assistance to women entrepreneurs has provoked Malays young females to enter and succeed in traditionally male dominating tech world [5, 69] as well as come ahead of their Chinese counterparts [67]. Greater part of micro enterprises (80%) in our sample of women owned technoprises is also in corroboration with the finding of SME Annual Report [70] stating that about 88% of women owned businesses in Malaysia are micro enterprises.

Growth in women owned firms is intimately related to the stocks of their social capital [10]. Findings from regression analysis shed light on the important role of women's social capital in the sustainable growth of their technoprises and corroborated with earlier studies literature regarding dire need for women to improve their social ties and networks in order to compete with men in

non-traditional and technology based industries [10, 36, 67]. The positive influence of social capital on innovative capability also builds up the previous literature that the strength and density of social ties as well as networks fosters innovativeness [59] and improves firms' innovative capability [9] and to achieve growth prospects, Malaysian women entrepreneurs need to augment their firms' innovativeness with strong social capital reservoirs [6]. Innovative capability in women owned firms has not only been found to strongly effect the sustainable growth of their firms but also mediating the effect of social capital on firms' growth. This asserts that women technopreneurs in Malaysia should equip their firms with both tangible and intangible aspects of innovative capability to ensure their firms' sustainable growth [6] and it also confirms previous studies high levels of social capital propagates firms' innovative capability which consequently leads to firms' sustainable growth [57, 63].

With the strength of novelty and expediency of tapping the most recent issue of women technopreneurship in developing countries, this study falls short of some limitations too. Due to non-availability of exclusive database of women owned technology based SMEs in Malaysia the data was collected by using purposive sampling technique which delimits the generalizabilty of the results. Future studies in this line are encouraged to employ more reliable and rigorous methods like mixed methods to get deeper insights and holistic view of this exclusively gender based phenomenon of entrepreneurship [71]. Furthermore, no segregation between women owned technoprises in terms of their family businesses or pure women owned business was made even though the influence of social ties in family businesses is much greater and can have possible effects on firms' growth [10, 72]. However, this also provides opportunity to researchers of this field to explore any viable differences among social capital, innovative capability and consequent firms' growth of distinct groups of female technology based businesses. Nevertheless, this research opens avenues for further research on up and coming demand of managing innovative capability of technology based firms [73] by incorporating of more strategic and action-based frameworks can be fruitful in this regard [3].

In light of the results of this study, some policy recommendations are ensued to provide for improving growth performance of women owned technology based SMEs. More rigorous training programs and workshops should be held by government agencies to help women entrepreneurs understand the importance of building up heterogeneous business linkages on one hand and provide them platform to collaborate with these heterogeneous networks. Moreover, management and marketing facilitation for the product and process innovations of women owned technoprises should be provided in addition to the technical and financial assistance. This will certainly improve their firms' innovative capabilities to ensure not only bringing in (innovation generation) but bringing out (innovation commercialization) innovations at continual basis for long term growth.

Growth of Women owned technology based firms in Malaysia depends on range and vigor of their social capital as well as their firms' innovative capability. Fortification of women's social ties, networks and business linkages should hence be improved to harness the tangible as well as intangible facets of their firms' innovative capability leading to their sustainable growth amidst highly competitive tech world.

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