Structural Equation Analysis of the Interaction between Internal Capabilities and External Factors on the Acquisition of Network Ties in Start-Up Firms in Automobile Clusters in Ghana

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ABSTRACT
Start-up firms promote the technological innovation industry, facilitates the creation of new jobs as well as generating additional wealth in society. Nonetheless, much is not known about these wealth creation business strategies especially the influence of internal capabilities and external factors in acquiring network ties that stimulate value creation. Our study investigated the effects of firm internal capabilities and external environmental factors (political, economic and socio-cultural) on acquisition of strong, medium or weak network ties among start-up firms in automobile clusters. The study mainly used data from 452 automobile start-up firms in automobile clusters in three cities in Ghana. We defined internal capabilities in our study as technological capabilities, entrepreneurial orientation and financial resources invested in the organisation’s innovation drive. We introduced external factors as the influence of the political, economic and socio-cultural factors in the market. Our study confirms the interactive role of internal capabilities and external factors in the acquisition of strong, medium and weak network ties which ultimately influences business performance.

Keywords: Entrepreneurial Orientation, External Factors, Technological Capabilities, Financial Capabilities, Network Ties.

INTRODUCTION
According to Schumpeter (1934) as cited in (Johnson et al, 2016) start-up firms and entrepreneurs are the main driving forces of modern paradigm shift of economic development. These start-up firms promote the technological innovation industry (Gatignon, Gotteland, & Haon, 2016), facilitates the creation of new jobs as well as generating additional wealth in society (Honig & Hopp, 2016). Nonetheless, much is not known about these wealth creation business strategies especially the influence of internal capabilities and external factors in acquiring network ties that stimulate value creation. Even though previous studies have examined the value creation activities of start-up businesses, most of them failed to expose their business strategies in achieving that. This study therefore aims at exploring the interaction between the accumulation of internal resources and external factors in the acquisition of strategic network ties needed for a firm’s value creation system.

Business firms operate in an open system where they acquire resources from the business environment and in turn provide finished products and services to the market environment. Firm’s environmental factors are of different kinds; whereas some of these come from close and internal sources, others emanate from the external sources of the firm’s environment. Sources of the external forces may include those that come from the cluster, regional, national, or international levels. The environmental sources play two different roles in firms’ operations; that is, these forces may either provide opportunities to the business or pose certain level of threats to the business. The prime concern of automobile start-up firms is to have the necessary capacity to exploit the opportunities available in the market environment and also handle the challenges that are posed by the business environment. Automobile firms may not have the ability to change the external business
environment; however, they can only adapt and react to the changes that emerge from the external environment. These firms usually adapt to the external environment by iterating their internal business capabilities; that is, their internal environment in order to adjust and take advantage of the external opportunities available as well as dealing with the threats that emerge from the external environment. The RBV theory acknowledges that, the firm holds a lot of resources and even goes further to indicate that the characteristics of these resources have a major influence on the firm’s competitive advantage consequently, affecting its performance such as the acquisition of strong network ties.

These resources include those that are valuable, rare and those that are inimitable (Lin & Wu, 2014; Nason & Wiklund, 2015; Paladino, Widing, & Whitwell, 2015). It is the view of the RBV theory that start-ups actually follow up on business strategies that focus mainly on survival or growth by accumulating intangible resources. Social capital theory on the other hand, proposes that an organization’s external environment play important role in its performance such as the acquisition of strong network ties (Rass, Dumbach, Danzinger, Bullinger, & Moeslein, 2013). Organizations conduct transactions with suppliers and other partners to acquire external resources to produce products and services at competitive prices and improve on quality in order to gain new customers as well as maintaining the existing ones (Stam, Arzlanian, & Elfring, 2014; Zane & DeCarolis, 2016).

Thus, a firm’s ability to mobilize resources from its external partners, gain new customers and quickly recognize business opportunities conditional to its external networks, such as social relations and economic transactions, give legitimate status to firms in an industry (Esendemirli, Turker, & Altuntas, 2015). The theory of social capital means that, emerging companies must follow strategies on developing valuable networks with organisations in possession of external resources to enable it to be successful. These two points of view have an impact on the different origins of value creation, such that RBV mainly focuses on in-house accrued resources and capabilities, while social capital theory focuses on the relational abilities with external network ties which are the product of the external environment (Wang & Rajagopalan, 2015). From these two theoretical views, this article examines the combined effect of firm’s internal capabilities and external forces on the acquisition of network ties in automobile clusters using Ghana as a case study.

Located in many parts of Ghana especially in Accra, Kumasi and Takoradi, the agglomeration of small producers and traders in the auto industry locally known as “Magazine” began in the early 1970s. Their growth was partly due to the unavailability of imported materials and spare parts which resulted in an increasing necessity to repair and recycle in particular cars, lorries and small buses. These local workshops found every new ways of prolonging the life of vehicles and producers and traders were highly specialised in particular operations or products whiles some small engineering workshops emerged that produced new or reconditioned old parts. The study mainly uses data from 452 automobile SME firms in Ghana.

These firms are mainly into manufacturing and assembling of cars, vehicle repairs, metal works, sale of engineering materials and accessories, sale of automobile spare parts, new and used vehicle sale market, local and international exporters and other auxiliary service providers. We rely on these SMEs because of availability of data and also due to the industrial importance of technology for the emerging Ghanaian economy.

The current paper stretches the study into the ingenious manipulations of clustered small-scale automobile enterprises in combining RBV and social capital theory. It is a noticeable fact that recent knowledge about wealth creation in start-up companies is still in its embryonic stage. In theory, this study can still examine the empirical validity of RBV theory and social capital in terms of competitive advantage. Although, the empirical data on social capital is enhanced by an impressive collection program, it still requires additional theoretical framework. Various researchers such as (Eesley, Hsu, & Roberts, 2014; Fry et al., 1998), have made efforts to combine these two theoretical dimensions to expound firm performance such as the acquisition of strong network ties; it is however our belief that no one has tackled the phenomenon in connection with start-ups.

In practice, this current research offers managerial insights to managers of clustered small-scale automobile oriented businesses that encounter a lot of uncertainty regarding the kind of business strategy to pursue. We postulate that the interaction between internal capabilities and external factors has a significant effect on acquisition of network ties by clustered small-scale start-up automobile enterprises that eventually stimulate their performance. The next section of the study reiterates the key literature and empirical works associated with the subject of this study. The materials and methods used in the study are highlighted in the subsequent section. Finally we
analyze our results and discuss the outcome to conclude the study. The literature on RBV refers to a firm’s distinctive internal capabilities as a sustainable competitive advantage. Various prior studies have presumed that a start-up firm is just an appendage of the founder of the business (Augusto Felício, Couto, & Caiaído, 2014; Brüderl & Preisendorfer, 2000; Zahra, 2016) and discuss the characteristics of these entrepreneurs as predictive factors for small business performance. However, these studies have not been able to offer any significant results on the relationship between the proprietor’s characteristics and the performance of the firm (Scholten, Omta, Kemp, & Elfring, 2015). An important exception to this phenomenon is that of a research conducted by Brüderl and Preisendorfer (2000) and cited by Augusto Felício et al. (2014), containing seven characteristics like gender and the experience of self-employment; however, they only observed the managerial experience of the founder to forecast whether a start-up was slow or a high-flyer. In this paper however, we do not take into account the characteristics of the founder as resources at the firm level, but resources at the individual level, and therefore consider them as control variables. Despite the founder’s significant contributions, various studies have rather lay emphasis on the qualities of the firm’s top management hierarchy; these include the size, the level of their combined work experience and the heterogeneity of the members in functional antecedents (Bjornali, Knockaert, & Erikson, 2016; Eesley et al., 2014).

It must be stated that different studies have evaluated the success and failure of automobile start-up firms but only covered the general characteristics of these start-ups; these include founding strategy, (Jang, 2015; Pe'er, Vertinsky, & Keil, 2016), technological innovation in basic technology (Eesley et al., 2014; Hao & Song, 2016) and the amount of capital injected into the firm after its establishment (Zane & DeCarolis, 2016). This article takes a critical look at the various capabilities of start-ups as a whole, and not that of the founder's characteristics. An inspired RBV firm literature coupled with probing interviews involving some top Ghanaian automobile start up business executives revealed three major internal capabilities with significant impact on start-up firms’ performance. These are; firm orientation, technological capabilities and financial investment made at the firm’s development stage.

ENTREPRENEURIAL CAPABILITIES
Oftentimes, business owners establish and manage their businesses with the aim of either carving a market niche by introducing unique products/services or by offering substitute products with enhanced quality features and competitive prices. Identifying these processes and activities is termed as the creative destruction and is usually referred to as entrepreneurship by Schumpeter as cited by (Carland, Carland, & Stewart, 2015). The entrepreneurship concept is a widespread phenomenon that has moved from the individual level unto the organizational level which has been referred to as entrepreneurial orientation (EO hereafter) (Anderson, Kreiser, Kuratko, Hornsby, & Eshima, 2015; Engelen, Kaulfersch, & Schmidt, 2016). EO as a concept is defined as the organisational practices, procedures and styles used in the implementation of a start-up establishment strategy (Arshad, Rasli, Arshad, & Zain, 2014; Engelen et al., 2016). The EO concept is considered as the entrepreneurship that assumes its definition at the enterprise level and not at the individual level. There are three conceptual dimensions of EO; these are innovation, risk-taking propensity and proactiveness as advocated by Miller (1983) and espoused by other researchers (Arshad et al., 2014; Lechner & Gudmundsson, 2014). Various researchers have established a positive relationship between EO and the performance of start-ups (Anderson et al., 2015; Lechner & Gudmundsson, 2014); however, it is not combined with the solid theoretical framework with efficient empirical work. A typical example is that, most past research have applied idiosyncratic procedures of EO and enterprise performance (Lechner & Gudmundsson, 2014; Zahra, 2015) and thus the result might probably be blown up by general-method biases. This research however, will attempt to espouse the relationship using RBV and testing it with an unbiased data. The literature suggests that EO is a vital resource for business performance (Anderson et al., 2015; Lechner & Gudmundsson, 2014). EO is considered to be a key organizational resource that offers firms sustainable competitive advantages (Covin & Miller, 2014; Grimmer, Miles, & Grimmer, 2015), since EO is incorporated into firm practices (Lechner & Gudmundsson, 2014), is not tangible and it is spread among members of the organization (Aghajari & Senin, 2014). A high degree of EO cannot be purchased from the market and therefore organisations would have to make time investment into it to enable it to instill such a culture thereby making EO a viable source of competitive advantage to the firm. Now, our focus will shift to the discussion of the three dimensions of EO.

Innovativeness
Innovativeness reflects the trend of an organisation in developing new ideas, experiences and R & D activities to drive the development of new products and processes (Lechner & Gudmundsson, 2014). The concept of creative destruction has forced employers to rethink their current business models and adopt new methods of creating and introducing new products/services unto the market (Lai & Lorne, 2014; Ziemnowicz, 2013). The absence of innovation will mean that start-ups may have to depend on the traditional models of conducting business, i.e. traditional production method, traditional products/services, traditional distribution channels and so on. Engaging directly with the established traditional firms will obviously end in failure for start-ups because of their scarcity of resources, less sales volumes as well as lack of industry reputation and thus, the only way of gaining competitive advantage under this circumstance is to embark on aggressive innovation. That is, for automobile start-ups to survive the market, they have to adopt differentiation as a key strategy to pull themselves apart from the established players in the industry and introduce innovative ways of production processes and marketing. In this way, they will possess inimitable models and processes that competitors will find hard to copy due to their dependency on quality and complex social networks.

An illustration of the significance of the innovation strategy of start-ups is clearly shown by a very famous research on German entrepreneurship by (Brüderl & Preisendörfer, 2000). Studying the Bavarian start-ups and relying on a high quality and a large sample, the researchers found out that the major significant predictor of firm growth is innovation. That is, innovation had a coefficient that was three times higher than the standard error and reduces the influence of many other strategic factors and the attributes of the founder. In this research, a logistic regression with the binary outcome were carried out with start-up representing as slow versus fast growth. The final result then showed innovation as a dominant predictive factor of growth despite other variables that were included to the stepwise equation.

**Risk-taking Behaviour**

Typically, firms that display entrepreneurial-orientation usually exhibit risk taking behaviours represented by high-risk corporate commitments and high-profit business returns. Mostly, innovative products face a significant degree of uncertainty on the market before they are commercialized (Hamdi, Silong, Rasdi, & Omar, 2015). A firm’s risk taking behaviour can be measured by its tendency to commit large amounts of resources into uncertain innovative products and or businesses (Anderson et al., 2015; Lechner & Gudmundsson, 2014). Exhibiting this risk-taking tendency behaviour however, is not easy to produce, as it depends on the forethought about the new product and the risk taking absorptive capacity level of the business owners (Açıkdilli & Ayhan, 2013).

**Proactiveness**

Proactiveness as defined in this study refers to firm’s strategic approach in taking advantage of the market opportunities by actively researching the market as well as being first on the market with respect to the introduction of new products/services in order to enjoy first mover advantages (Lechner & Gudmundsson, 2014). One of the most significant organisational processes is proactiveness. This is because it involves a prospective viewpoint. Taking the leadership position as a firm by prospecting and also chasing new opportunities as well as taking part in new markets is usually considered as the benchmark of entrepreneurship. Start-ups are usually proactive and always carry the inspiration of becoming the first to establish new markets and in doing so replace the traditional firms by introducing novelty products and services (Osiyevskyy & Dewald, 2015).

Established firms always have a thinking that is supported by a view to neglect the newly created markets. That is, members of the organization, in particular of intermediate level managers in the established firms have the inclination to resist the stopping of existing businesses and restructuring the company in the direction of the emerging markets as strategic innovation means losing their grip on the market, their human capital getting eroded and bringing to an end their long standing careers (Colombo, Franzoni, & Veugelers, 2015). By leveraging existing irregularities in the market, proactive businesses unusually enjoy high profit and an advantage in brand awareness.

**TECHNOLOGICAL CAPABILITIES**

The RBV theory considers technological capabilities as a major factor that provides a firm with a sustainable competitive advantage. This is because, capabilities consist of technological knowledge, patents that are legally protected, and production skills that are inimitable by competitors. These skills are apparently more essential in start-up firms in general (Gatignon et al., 2016; Yi, Li, Hitt, Liu, & Wei, 2016) and new technology firms in particular (Larrañeta, Zahra, & Galán González, 2014; Mallon, Lanivich, & Klinger, 2016). These capabilities
actually consist of technological knowledge, trade secrets, technical know-how through R & D and other specific intellectual capital of technology (Gatignon et al., 2016). Patent laws protect intellectual property which provides additional value in developing new businesses with the single aim of commercializing their new products that give them the extra advantage of capturing the market opportunities thereby differentiating themselves from the established industrial players.

It must however be stated that, some capabilities cannot be protected by patent laws especially, those that cannot be codified. This makes some of these technological capabilities that are not shielded by the patent law appear susceptible to being copied as well as being substituted by competitors, consequently weakening the firm’s unique intellectual system which indicates the ability of the firm to acquire virtual rents mainly created by their capabilities (Pitelis & Teece, 2015; Teece, 2017).

Again, a firm may incur greater intellectual system in a new venture if these capabilities are integrated into technicians and researchers. However, after leaving the firm and start their own new businesses or if they are employed by their counterparts, the company then cannot generate more value from their skills. Indeed, both complex and tacit capabilities are difficult to be imitated since they find themselves greatly rooted in the firm’s practices and routines (Olavarrieta, 2015; Pyle & Liker, 2014). Consequently, tacit capabilities benefit from a strict regime of appropriability, whereby an innovator is virtually certain of converting its innovation into a commercial value over a certain range of time (Pitelis & Teece, 2015).

A firm’s quality control capability is a typical example of tacit skill. Because quality control demands complex organizational arrangements, it provides a competitive advantage for new businesses that cannot be easily disposed of (Un & Asakawa, 2015). There is however an argument out there in the literature that the ability to control quality are no longer tacit due to the fact that quality control manuals and supply guidelines articulate international requirements of TQM such as ISO standards, indicating how to control quality. A lot of companies have invested a lot of resources to benchmark other companies with a high degree capability of quality control like Caterpillar and Quartz watches and depend on these manuals for improvement in their product/service quality; however, they are unable to attain the quality standards of these companies. This error indicates that, some capability aspects such as quality control skills are still tacit, and thus, can be a source of firm’s sustainable competitive advantage.

Financial Capability

Start-ups spend a lot of their available financial resources at their foundational stage on the development of new products and markets. However, in general, they do not have enough financial resources to develop technology, conduct market research and also promote their products since most of them do not possess asset liquidity and also unable to access the credit facilities available to the giant market players. In fact, their lack of any history of dealings with the financial institutions and also being considered as high risk customers, as a general rule, they have to pay premium price to acquire external resources from the commercial banks and venture capitalists, suppliers and other businesses. In contrast with the established companies, start-up companies pay over the top interest rates from financial firms as well as paying higher prices accompanied by unfavourable credit conditions for supplies and components, and worst of it all, are compelled to offer long-term juicy emolument packages as an incentive package to attract competent and professional employees into the firm.

That is, start-ups in their foundational stage with insufficient financial muscle and resources are critically disadvantaged before they grow into well-established business entities (Wagner & Zidorn, 2017). On the other hand, newly established firms with sufficient financial resources at the foundational stage place themselves in an advantageous position in the industry and hence, usually perform better. These financially endowed new firms are able to take full advantage of a niche market that is rich in resources but require huge initial capital to breakthrough. This is due to the fact that these new companies possess the financial wherewithal to develop innovative products, promote products and also able to afford to recruit the best human resource in the industry.

On the contrary, newly established firms with little financial capital in their foundation stage are unable to take advantage of market niches with rich resources and therefore may be forced to move into the less endowed resource territories because of their lack of sufficient initial financial resource. Holding everything constant, start-ups with strong financial muscles and are able to capture the resource-niche markets will in all probability perform well than their counterparts that enter into the less endowed and small market segments. In their studies supporting this argument, Robert and Hauptman (1987) as cited by Shan, Song, and Ju (2016) showed that
underfunded biomedical firms that pursue technological innovation attain lower success. The literature espousing the RBV concept does not assume that financial resources offer a sustainable competitive advantage, as these resources are neither scarce nor imitable. Notwithstanding, having sufficient financial resources to invest at the foundation stage of the firm provides a sustainable competitive advantage since such a firm is likely to accrue a large amount of stock of strategic assets than their counterparts with less financial resources during their foundational stage (Lin & Wu, 2014).

**INTERACTION BETWEEN INTERNAL CAPABILITIES AND EXTERNAL FACTORS**

Internal capacity refers specifically to the skills and resource needed from the firm to convert inputs into outputs whereas social capital refers to the resources acquired from external ties to aid a firm’s production and the distribution of outputs (i.e. products and services) and also ensuring identification and development of valuable opportunities (Gu, Jiang, & Wang, 2016; Stam et al., 2014). One of the main advantages of internal capabilities is that, it facilitates the accumulation of social capital due to the fact that prospective external partners prefer cooperation with firms that possess valuable amount of internal capabilities. In the same vein, social capital also contribute to the internal capabilities such that, it facilitates firms access to information, technology and, sometimes, human and financial resources to strengthen the required internal skills/capabilities (Stam et al., 2014).

It is therefore clear from the above that, both internal capabilities and social capital play a complementary role in wealth creation. The complementary role of internal capability and social capital has been proposed by Thompson (1967: 19) and cited by (Jensen, Larsen, & Pedersen, 2013). Thompson proposed that, a firm’s rationality comprises of three main activities namely; firm input activities (capabilities/skills), technological activities and output activities (products and services). Due to the interdependency of these, the organisational rationality is needed to be properly connected to each other. The acquired firm inputs must lie within the scope of the technology, whiles that of internal capabilities must lie within the organization's ability to provide that technological production. The worth placed on a firm's internal capabilities always depends on its social capital (Iтурриоз, Aragón, & Narvaiza, 2015; Kwon & Adler, 2014). For firms to be able to generate more wealth from internal capabilities that they possess, companies must acquire additional external resources to implement the skills and sell off their output i.e. products/services. Organizations that possess more social capital obtain higher reward to their internal capabilities since getting information from the external contacts positions them to be able to identify rewarding opportunities on the market (Wise, 2014) to develop and acquire additional external complimentary resources (Crema, Verbano, & Venturini, 2014) and for the execution of technological production with better conditions. In the same vein, organizations that possess less social capital would obviously have their internal capabilities generating fewer rents and that their market valuation will be lower.

The value that a firm attaches to its social capital mainly hinges on the internal capabilities it possesses. A firm’s internal capabilities position it to better exploit the complimentary external resources available to them based on their social capital. In the absence of internal capabilities, resources obtain from the social capital and the firm’s ability to dispose output will be meaningless in the sense that the firm would not be able to convert the inputs into outputs in an efficient manner. Moreover, a firm in possession of a higher degree of internal capabilities and consequently a higher degree of absorptive capacity is able to acquire more resources from its ties thereby generating more wealth from the opportunities made available to them from these external ties. A firm without internal capabilities faces serious challenges in creating value from its external ties.

Touching on start-up firms, having in possession internal capabilities alone may not be sufficient to experience superior performance because these capabilities may be lacking the complementarity of external resources. To be able to exploit the actual value of their internal capabilities, new firms should possess valuable internal capabilities. In some specific context, entrepreneurial orientation enables new firms to generate more value when they possess external ties that make available these resources to them as well as providing them with rewarding opportunities. In some instances, the knowledge and other physical and nonphysical resources that are acquired via external ties facilitate and further augment the firm’s technological capabilities (Crema et al., 2014). In the same way, internal capabilities are augmented with external resources obtained through social ties. In summation, it has been clearly shown from the discussion that internal capabilities and social capital play a complimentary role in value creation for new firms.
MATERIALS AND METHODS
We carried out this study among start-up firms in three automobile clusters in Ghana (Abossey Okai, Kumasi Suame Magazine and Takoradi Kokompe). These were selected due to their economic significance to the cities in particular and the country as a whole and the number of firms located in these clusters. In all they boast of a total of five thousand small and medium scale firms with business profile ranging from manufacturing and assembling of cars, vehicle repairs, metal works, sale of engineering materials and accessories, sale of automobile spare parts, new and used vehicle sale market, local and international exporters and other auxiliary service providers. A sample of 452 managers and supervisors of start-up firms in the respective clusters were contacted to fill the questionnaire for the analysis based on convenience sampling method. This approach was adopted due to the need to get people who are available and are willing to participate in the research due to the sensitive nature of information to solicit from them. We composed the full questionnaire from a collection of prior designs used in related studies. Specifically, we designed the questionnaire to evaluate internal environmental factors such as entrepreneurial capabilities, technological capabilities and financial capabilities. We measured entrepreneurial capabilities on three dimensions (δ₁, δ₂, δ₃), financial capabilities (δ₄, δ₅, δ₆), and technological capabilities (y₁, y₂, y₃). Further, we measured external environment factors (political, economic and socio-cultural) on the three dimensions (y₄, y₅, y₆). Finally we decomposed network ties into three different categories based on the extant literature as strong ties (y₇) medium ties (y₈) and weak ties (y₉). To demonstrate that interaction between internal capabilities and external environment has a significant effect on acquisition of network ties, we developed interactivity between external environment and entrepreneurial orientation, entrepreneurial orientation and technological capability and financial capability. All these factors organically interact to affect acquisition of network ties as shown in the path diagram (figure 1).

Analytical Procedure
Firstly we determined the sampling adequacy using the Kaiser–Meyer–Olkin measure of sampling adequacy (KMO-MSA) and Bartlett’s Test of Sphericity and the recorded values were within acceptable thresholds. A factor analysis was conducted to investigate the dimensions of entrepreneurial capabilities (δ₁, δ₂, δ₃), financial capabilities (δ₄, δ₅, δ₆), and technological capabilities (y₁, y₂, y₃), external environment factors (political, economic and socio-cultural) (y₄, y₅, y₆).

This was preceded by a check of the basic assumptions such as the constant variance and normality so as not to influence the outcome. The varimax rotation and principal components analysis were performed for factor analysis.

We set and ensured that all measure of sampling adequacy exceeded the Cronbach’s alpha reliability value threshold level of 0.80 and the Bartlett’s Test of Sphericity were large and significant. All items of entrepreneurial capabilities on three dimensions (δ₁, δ₂, δ₃), financial capabilities (δ₄, δ₅, δ₆), and technological capabilities (y₁, y₂, y₃) and external environment factors (political, economic and socio-cultural) (y₄, y₅, y₆) exceeded the factor loading threshold and no multicolinearity was noted among the variables. Our analytical model uses the structural equation model which is a departure from the traditional form of regression analysis. The structural equation model is explicitly formulated as a causal model, not just a predictive model with column vector, y, containing p dependent variables. The vector y is understood to represent an arbitrarily chosen observation from the population, maybe the ith. In SEM (Structural Equation Model) terms y is said to contain the endogenous variables and x contains the exogenous variables. An endogenous variable is one that appears at least once as the dependent variable in an equation. On the other hand, variables that do not appear on the left hand side are exogenous, or "given." In other words, all variances of, and covariances between, exogenous variables are determined outside of the system. The variances and covariance of the endogenous variables are being modeled as a function of the exogenous variables. This is mathematically expressed as follows:

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y = \mathbf{B}x + \mathbf{\Gamma}x + \mathbf{\zeta}.
\]

Where for each of the causal parameters, the γ’s and the β’s, the subscripts follow the same pattern. The first subscript refers to the equation, in other words the y variable which is the effect. The second subscript refers to the cause. The p by p B matrix contains the coefficients of the regressions of y variables on other y variables with 0’s on the diagonal which implies that a variable cannot cause itself. The p by q matrix Γ contains the coefficients of the y’s on the x’s. The error vector, \( \mathbf{\zeta} \), is p by 1.
These errors are different than factor analysis errors; they represent errors-in-equations, in the way that these equations are specified. Thus they are also called specification errors. To get to a point to estimate the model, some assumptions were added. For example, it was assumed that $E(y) = 0$ and $E(x) = 0$, which has absolutely no impact on the variances or covariances of these variables. We then assume that the $x$ and $\zeta$ vectors are independent. Further, we employed a second order factor model. In effect, the factors themselves may form a higher order factor. In other words, if the correlations amongst the factors have the right structure, these may be the result of a latent variable.

RESULTS
A path diagram of this model appears below:

The analysis indicates a strong and positive influence of external environment on firms entrepreneurial capability (.26) and this is statistically significant (p value =04). On the other hand, the next path diagram suggest a positive and significant relationship between entrepreneurial capability and technological capability (.51) on one hand and financial capability and technological capability on the other (.55) and these are statistically significant in their respective p values. Further analysis also shows that external environment on its own has a positive and significant influence on acquisition of network ties (.83) in the same way as financial capabilities also influence acquisition of network ties autonomously at a significant value (.09).

Apart from the fact that entrepreneurial capability on its own influences acquisition of network ties in automobile clusters in Ghana (0.51), the analysis also shows a positive and significant influence of technological capabilities. It is observed that the positive effect of the interactive variable is significant on all the form of network ties namely strong ties ($Y_7$) medium ties ($Y_8$) and weak ties ($Y_9$)

CONCLUSIONS AND IMPLICATIONS

As indicated in previous sections, internal capabilities of firms can increase the success of the firm in a very demanding business environment (Baker & Sinkula, 2009). We recognized that there has not been sufficient research into the benefits of the complementarity between internal and external factors for firms in Ghana which includes automobile start-ups (Dunning, 2012; Lichtenthaler, 2011), whiles the organisational structure in which they are more effective are not comprehensively understood (Becker, Kugeler, & Rosemann, 2013). Our study investigated the effects of firm internal capabilities and external environmental factors (political, economic and socio-cultural) on acquisition of strong, medium or weak network ties among startup firms in the automobile clusters. The study mainly used data from 452 automobile start-up firms in automobile clusters in three cities in Ghana. We defined internal capabilities in our study as technological capabilities, entrepreneurial orientation and financial resources invested in the organisation’s innovation drive. We introduced external factors as the influence of the political, economic and socio-cultural factors in the market. Our study confirms the interactive role of internal capabilities and external factors in the acquisition of strong, medium and weak network ties which ultimately influences business performance. In providing answers to this question and also stressing the significance of how automobile start-up firms can take advantage of their internal strategic orientation options and external network ties with the view to enhancing their innovation performance, this current research thus offer two major contributions to the intellectual debate on strategic orientations.

First, in the view of Wirtz, Pistoia, Ullrich, and Göttel (2016), in developing countries, the institutional environment limits start-up firms in accessing vital markets and resources and thus a start-up firm’s business network ties usually help in such situations to surmount such institutional hindrances thereby enabling these firms to have access to suppliers, banks, buyers, customers and distributors. Second, from the viewpoints of (Sun, Yao, Zhang, Chen, & Liu, 2016; West, Ford, & Ibrahim, 2015), firms in industrialized nations do recognise that, the growing levels of business network ties improves their efficiency in gathering market intelligence information and also react appropriately to the mechanisms of market orientation. Thus, by establishing strong network ties by start-up firms could lead to reduction in costs of exchanges among network members, less disputes and also opportunistic behaviour of partners are
minimized whiles access to vital resources is thereby enhanced.

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