

# The Intangible Resources and Small Firms' Multilevel Performance: A Partial Least Squares Approach

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## Abstract

Previous literature testified the impact of both intellectual capital and entrepreneurial orientation on small firm performance, but the studies generally ignore the combined effect of such intangible resources on multilevel performance (i.e., financial and non-financial performance) which is the appropriate measurement system of performance. Hence, this study designed to address this issue by investigating the impact of such intangible resources on the aforesaid performance of 302 registered small and medium firms in Nigerian. To analyze the data, variance based structural equation model was employed using SmartPLS3. Consequently, the analysis established the empirical evidence of the positive significance effects of all dimensions of intellectual capital and entrepreneurial orientation on multilevel performance.

**Keywords:** intellectual capital, entrepreneurial orientation, multilevel performance, small firms

## 1. Introduction

Entrepreneurship literature recognizes the impact of intangible firm's resources as a major determinant of firm performance. Among the popular paradigms that explain such relationship is a resource-based view (Barney, 1991; Bridoux, 2003). This perspective supposes that if all firms share the same resources, then none of them is having a possibility of sustained competitive advantage. This is because, as one firm is able to conceive of and implement a strategy that can improve its performance, the other firms can also do the same as they possessed everything in common. Thus, the source of sustained competitive advantage according to Barney (1991), is for a firm to have heterogeneous intangible valuable, rareness, inimitable and non-substitutable assets to be used in implementing strategy which is not simultaneously being implemented by current or potential competitors and also difficult to be duplicated.

However, some of the major constructs which have been conceptualized and empirically testified as those intangible resources which explain under the framework of resource-based perspective are intellectual capital (Roos & Roos, 1997) and entrepreneurial orientation (Shane, Mcgrath, & Macmillan, 2009). The impact of both of these resources was empirically proven by a number of researchers on small and medium firms (Lumpkin & Dess, 2001; Sumedrea, 2013; Walsh, Enz, & Canina, 2008; Wiklund & Shepherd, 2005; Wiklund & Shepherd, 2003). Nevertheless, upon all the existing evidence of such relationships, there are very rare studies on how both intellectual capital and entrepreneurial orientation impact multilevel performance (i.e., both financial and non-financial performance). Financial and non-financial measurement system considered the most appropriate way of measuring today's performance (Kaplan & Norton, 1992) as against the traditional financial measures, which is solely concerned with historical nature of the firm (Bourguignon, Malleret, & Nørreklit, 2004; Norreklit, 2000), and that can, of course, give misleading indicators for today's competitive environment (Kaplan & Norton, 1992; Suwignjo, Bititci, & Carrie, 2000).

However, to determine such modern day's performance, firms ought to have both the knowledge assets (Denicolai, Zucchella, & Strange, 2014) and also entrepreneurial resources, which are crucial part of their survival and success (Lyon, Lumpkin, & Dess, 2000). Consequently, some scholars recommended that knowledge assets should be investigated with other firm's intangible assets (Denicolai et al., 2014). Similarly, Nieves and Haller (2014) suggested that other variables that are investigated on the performance in previous studies could be investigated alongside knowledge resources to determine performance. Hence, this study is designed to address this knowledge gap by investigating the impact of intellectual capital (IC) and

entrepreneurial orientation (EO) on multilevel performance on a sample of small and medium enterprises in Nigeria. The study is basically made up of six sections, the next section concerned with the background and hypothesis. While section three explained the methodology on which the study built-on, section four presented the analysis of the result. In section five, discussion, conclusions, and research implications are presented, and finally limitations and direction for future research are presented in the last section.

## **2. Background and Hypothesis**

### *2.1 Intellectual Capital and Performance*

Intellectual capital (IC) refers to intangible benefits accessed by a particular firm, which is generated from its workforce and the relationships it established with other external groups (Gowthorpe, 2009). It is also a set of intangibles assets which sources performance and value creation (Gogan & Draghici, 2013). However, the pool of previous studies viewed the concept as multidimensional construct which consists of three dimensions (Campbell & Abdul Rahman, 2010; Gogan & Draghici, 2013; McPhail, 2009; Roos & Roos, 1997). These are (1) human capital, (2) structural or organizational capital, and (3) relational or customer capital (Castro & Sáez, 2008; Díez, Ochoa, Prieto, & Santidrián, 2010; Lu & Hung, 2011; Sydler, Haefliger, & Pruksa, 2013). However, a clearer understanding of the concept of IC and its impact on performance could be best explained on the basis of these components or dimensions which constitute the concept (Marcin, 2013).

#### **2.1.1 Human Capital**

Human capital is one of the crucial form of intangible knowledge assets which resides within individual employees (Nieves & Haller, 2014). It is a personal information or knowledge stock of the firm that is represented by its employees and sources of strategic innovation and invention which consists some elements such as experience, skill, business knowledge, education, creativity and employees' satisfaction (Yıldız, Meydan, & Güner, 2014). It also comprises knowledge's stock of capital skills, attitudes, and intellectual agility of employees at all levels and their ability to make good decisions, deal with the problems, as well as creating and maintaining good interpersonal relationships (Gogan & Draghici, 2013). Other assets composed of this dimension of IC includes information and data held by employees, their technical ability as well as personal traits such as ability to learn, desire to share information, imagination and creativity, participating and commitment to overall firm's goals and objectives (Marcin, 2013).

#### **2.1.2 Structural Capital**

On the other hand, structural capital refers to sum total of organizational capabilities which are considered to be owned by the business and enable it to meet its market requirements (Yıldız et al., 2014), and therefore remains with the firm even when the employees leave, as it is generally explicit and owned by the business independently from its employees (Sydler et al., 2013). It is a form of capital which contains both organizational and technological elements which pursue the integration and coordination of activities within the firm (Castro & Sáez, 2008). These elements of structural capital include intellectual property, culture, systems and processes (Yıldız et al., 2014), databases and computer networks, equipment structure, management style or software as well organizational culture (Gogan & Draghici, 2013).

#### **2.1.3 Relational Capital**

Relational capital gathers the value of that relationship which a firm acquires and maintains with external environmental agents (Castro & Sáez, 2008; Gogan & Draghici, 2013). It is the information which is grounded within market channels which the firm developed through business and customer relations (Yıldız et al., 2014), and entirety of the value of the relationships between firm with people and organizations with which it conducts its business (Sydler et al., 2013). Castro and Sáez (2008) argued that, relational capital is also concerned with both business capital, i.e., value of firm's relationships which involved the agents of its basic business activities and processes such as customers, suppliers, and allies, and the social capital which refers to the value of the firm's relationships with its surroundings and other social agents. Other elements of relational capital include the relationships of the firm with its clients and business partners (Gogan & Draghici, 2013), and most importantly customer relationships such as image building and customer loyalty, and the branding, such as preference, reputation, attitude and brand recognition (Sydler et al., 2013).

However, these stocks of intangible knowledge assets are some of those valuable rare, inimitable and non-substitutable firm's assets (Roos & Roos, 1997) which constitutes the firm's sources of competitive advantage and performance (Barney, 1991). Nieves, Quintana, and Osorio (2014) noted that the ability of a firm to stimulate and improve the level of these knowledge assets would put it in a better position to address any competitive difficulties. Thus, based on the above discussion, the following hypotheses are formulated:

**H1:** *There is significant positive relationship between human capital and multilevel firm performance*

**H2:** *There is significant positive relationship between structural capital and multilevel firm performance*

**H3:** *There is significant positive relationship between relational capital and multilevel firm performance*

## 2.2 Entrepreneurial Orientation and Performance

EO refers to the strategic orientation of a firm which captures the specific aspects of a firm's decision-making styles, practices and methods (Wiklund & Shepherd, 2005). Miller's (1983) conceptualization has initially identified three basic dimensions, innovation, risk-taking, and proactiveness. In another development, Lumpkin and Dess (1996) delineated five dimensions of entrepreneurial orientation. In other words, Lumpkin and Dess (1996) added two more dimensions of competitive aggressiveness and autonomy to the first three (i.e., innovation, risk-taking, and proactiveness) to make them five dimensions of EO. As the present study drawn on Miller's (1983) theorization and conceptualization of entrepreneurial orientation (EO), the research adheres to adopt these first three dimensions of EO construct and test the effect of each dimension independently on performance as suggested by Mahmood and Hanafi (2013).

### 2.2.1 Innovativeness

Wang et al. (2001) held that innovativeness is the effort of the firm in finding new opportunities and new solutions. This involves an experimentation and creativity which will result in new goods and services or improving technological processes. However, in today's rapid and unpredicted changes in business environment, effectiveness in producing, assimilating as well as exploiting innovation cannot be overemphasized. In other words, innovativeness is the willingness of a firm to support the creativity, new ideas as well as experimentation in producing goods and services (Mahmood & Hanafi, 2013), and also concerned with the openness of a firm to new ideas (Pratono et al., 2013). Wang et al. (2001) further posited that the firm's innovativeness can be in many forms, such as technological innovativeness (efforts on research and engineering in order to develop new goods and services as well as process), product-market innovativeness (market research, market segmentation, product designed, advertisement and promotions), and administrative innovativeness (innovations in management systems, organizational structure and control techniques).

### 2.2.2 Risk-taking

Risk-taking is concerned with bold actions by venturing into an unknown, borrowing heavily, or committing considerable resources to ventures into an uncertain market environment (Rauch, Wiklund, Lumpkin, & Frese, 2009). It is the degree of the managers' ability and willingness to commit large and risky resources into an uncertain or unknown venture (Wang et al., 2001). Accordingly, such risk-taking could be in the form of risk preference, risk perception, and risk propensity. More so, risk-taking involves activities such as highly borrowing and a high percentage of resources commitments into uncertain projects and unknown markets (Lyon et al., 2000). Such risky investment, if succeeded, will possibly generate and yield a high return. In essence, a firm with managers who are so bold in taking business related risk are more likely to achieve and sustain competitive advantage over nonentrepreneurial firms which are characterized as risk-averse (Miller, 1983).

### 2.2.3 Proactiveness

Proactiveness is associated with seeking first mover advantage and forward-looking efforts to shape the firm's business environment resulting from introducing products and process ahead of competitors (Lyon et al., 2000). However, as a dimension of entrepreneurial orientation (EO), proactiveness refers to an opportunity-seeking, and forward-looking behavior which is characterized by an introduction of new products or services ahead of the competitors in an anticipation of expected future demand (Rauch et al., 2009). This includes an initiative effort and applying existing advantages in shaping the business environment and responding to competitive challenges (Wang et al., 2001). As such, the firm will always be the first to come up with proactive moves in terms of its products and beat other competitors (Miller, 1983).

Generally, entrepreneurial firms are firms where their top managers are entrepreneurially oriented as prove by their strategic decision and operating management philosophy (Covin & Slevin, 1989). These authors argued that unlike conservative firms in which top level management decision is decidedly non-innovative, risk-averse and reactive, entrepreneurial oriented firms are characterized as those that are innovative, taking business-related risk and proactive in their decisions. These types of firms usually come up with new products, processes, and strategies ahead of their competitors. As a result, the non-entrepreneurial firms always imitate them instead of leading the way, and consequently entrepreneurial firms are in the good position for taking advantage of superior performance over their non-entrepreneurial rivals (Miller, 1983).

Thus, the EO literature theorized that innovativeness, risk-taking, and proactiveness have a positive impact on financial and non-financial firm performance (Keh, Nguyen, & Ng, 2007). Wang (2008) argued that EO is an ingredient firm's resource which determines its success. Huang, Wang, Chen, and Yien (2011) also maintained that, generally, there is the universal effect of those dimensions of EO on firm performance. However, a number of empirical studies supported this notion as they found significant relationship between EO and firm performance (Covin & Slevin, 1989; Lumpkin & Dess, 1996; Lumpkin & Dess, 2001; Rauch et al., 2009). Moreover, although there is a lack of studies which investigate the impact of EO dimensions on both financial and non-financial performance, such relationship has also been established in the work of Keh et al. (2007). As such, in this study we hypothesized thus:

**H4:** *There is significant positive relationship between innovativeness and multilevel firm performance*

**H5:** *There is significant positive relationship between risk-taking and multilevel firm performance*

**H6:** *There is significant positive relationship between proactiveness and multilevel firm performance*

### 3. Methodology

#### 3.1 Design and Sample

This study was designed as a quantitative approach which engaged in hypothesis testing of the causal relationship between predictor and criterion variables, which is commonly known as causal research (Sekaran & Bougie, 2013). Generally, organizational researchers drawing on quantitative research often employ survey method as it is considered the most appropriate for collecting information on the predetermined instruments that yield statistical data on a large sample for the purpose of generalization (Creswell, 2003). The study is also on the basis of the cross-sectional method in which data collection was conducted over a single period of time. Hence, 302 usable data collected on Nigerian firms which are categorized as formal SMEs under the classification of Nigerian national policy on MSMEs (*Small and Medium Enterprises Report*, 2009), and the questionnaires were responded by managers/owners representing their various firms.

#### 3.2 Measures

The measures for all constructs of this study were adapted from previous studies. For firm performance which is the dependent variable, eight items comprising both financial and non-financial measures (i.e., multilevel performance) were adapted from the work of Spillan and Parnell (2006). The performance in this study was hypothesized as a multilevel construct which comprises measures from different background (i.e., three financial and five non-financial indicators). Nevertheless, the construct is considered as a reflective-reflective type of the hierarchical component model (HCM). For human, structural, and relational dimensions of intellectual capital, twelve items were adapted from Castro and Sáez (2008). In this case, the first four items present the human capital, three for structural capital, and the last five for relational capital. Similarly, the nine items measuring innovativeness, risk-taking, and proactiveness dimension of entrepreneurial orientation were adapted from the work of Milovanović and Galetić (2008) which were developed based on the Knight's (1997) study. Each of the aforesaid dimensions of entrepreneurial orientation was measured using three items respectively. However, all of the twenty-nine items of this study were measured using Likert scale (1-7) ranging from strongly disagree to strongly agree. Finally, for both the preliminary and main analysis, Smart PLS3 was employed.

### 4. Analysis of the Results

Both the reliability and validity of this study was assessed using measurement model of structural equation modeling. The reliability analysis was measured using composite reliability, as shown in the Table 1 below, the reliability analysis for all constructs is above the threshold of .70, and the average variance extracted (AVE) which represents the convergent validity is also above the threshold of .50 (Hair, Hult, Ringle, & Sarstedt, 2014). Similarly, the discriminant validity of the constructs is also presented in Table 2, where the square root of AVE (i.e., diagonal bolded figures) of all the variables is higher than the correlation between two variables, and thus, indicating the distinctiveness of each variable (Fornell & Larcker, 1981). However, since the dependent variable (performance) is reflective-reflective type of HCM, we employed repeated indicator approach, thereby repeating the seven valid indicators of both financial and non-financial lower order components (LOCs) on performance which is the higher order component (HOC) as suggested by the HCM extant literature (Afthanorhan, 2014; Becker, Klein, & Wetzels, 2012; Ringle, Sarstedt, & Straub, 2012). Although financial and non-financial LOCs appeared in the research model, but LCOs are not taken into cognizance in both measurement and structural equation model, and therefore HOC represents the HCM in the analysis (Hair et al., 2014).

Table 1. Results of measurement model and convergent validity (n = 302)

Constructs	Items	Loadings	AVE	CR
Human Capital	HC01	0.772	0.585	0.849
	HC02	0.777		
	HC03	0.805		
	HC04	0.701		
Structural Capital	SC01	0.789	0.612	0.825
	SC02	0.813		
	SC03	0.743		
Relational Capital	RC02	0.752	0.580	0.806
	RC04	0.761		
	RC05	0.773		
Innovativeness	INN01	0.783	0.582	0.807
	INN02	0.750		
	INN03	0.756		
Risk-Taking	RT01	0.776	0.581	0.806
	RT02	0.762		
	RT03	0.748		
Proactiveness	PR01	0.782	0.652	0.849
	PR02	0.876		
	PR03	0.760		
Performance	FP01	0.800	0.646	0.927
	FP02	0.854		
	FP03	0.851		
	FP04	0.777		
	FP05	0.774		
	FP06	0.806		
	FP07	0.759		
	FP08	0.759		

Note: Items RC01, RC03, and FP07 were deleted due to low loadings.

Table 2. Results of measurement model and discriminant validity (n = 302)

Constructs	1	2	3	4	5	6	7
1 Human Capital	<b>0.765</b>						
2 Structural Capital	0.670	<b>0.782</b>					
3 Relational Capital	0.729	0.733	<b>0.762</b>				
4 Innovativeness	0.552	0.610	0.619	<b>0.763</b>			
5 Risk-taking	0.542	0.516	0.504	0.634	<b>0.762</b>		
6 Proactiveness	0.677	0.679	0.691	0.723	0.589	<b>0.921</b>	
7 Performance	0.639	0.594	0.543	0.650	0.622	0.678	<b>0.804</b>

The elements on the diagonal (bold headed) correspond to the square root of the AVE of the construct.

To test the proposed hypotheses, structural equation modeling (SEM) using partial least square method was employed. As shown in Table 3, all the predictors of the model have significant relationships with the criterion variable by looking at the path coefficient (Beta) and T Statistics. Specifically, the human capital is significantly related to performance ( $\beta=0.273$ ,  $p<0.01$ ), as such H1 is supported. The structural capital on the other hand, is positively related to performance ( $\beta =0.117$ ,  $p<0.10$ ), whereas, relational capital is significantly related to multilevel performance ( $\beta=0.141$ ,  $p<0.05$ ) respectively. Consequently, the statistical data supported H2 and H3 hypothesized relationships. On the dimensions of entrepreneurial orientation, the empirical data indicate the significant positive relationship between innovativeness and performance ( $\beta=0.212$ ,  $p<0.01$ ), risk-taking and performance ( $\beta=0.214$ ,  $p<0.01$ ), and proactiveness and performance ( $\beta=0.232$ ,  $p<0.01$ ). Thus, these statistical

results indicate that hypotheses H3, H4, and H5 are also supported. However, the  $R^2$  value for the whole model is 0.595; therefore it is clearly that these variables explain the high level of variance in firm multilevel performance, which is about 60%.

Table 3. Results of structural model (n = 302)

Hypotheses	Relationships	Std Beta	SE	t-values	Decision
H1	Human Capital ->Performance	0.273	0.055	4.936***	Supported
H2	Structural Capital ->Performance	0.117	0.063	1.861*	Supported
H3	Relational Structural ->Performance	0.141	0.070	2.014**	Supported
H4	Innovativeness -> Performance	0.212	0.064	3.300***	Supported
H5	Risk-taking -> Performance	0.214	0.050	4.270***	Supported
H6	Proactiveness ->Performance	0.232	0.070	3.305***	Supported

\*\*\*p < 0.01; \*\*p < 0.05; \*p < 0.1

## 5. Discussion and Conclusions

This study investigated the effects of intangible firm resources on the multilevel performance of small and medium firms in Nigeria. This relationship has been theorized and supported by the resource-based perspective (Barney, 1991). However, although some studies investigated the impact of both intellectual capital and entrepreneurial orientation on performance of small firms, studies were not conducted to examine the combined effect of intellectual capital and entrepreneurial orientation on such small firms. More so, even the studies carried out on either intellectual capital on performance or entrepreneurial orientation on performance are often concerned with a single dimension of performance, thereby neglecting other vital components of the concept.

Consequently, this study investigated such relationship. The data of the study analysis provide the empirical evidence of positive significant relationship between human, structural, relationship capital and performance concept of this model, and these results are consistent with some previous findings in the extant intellectual capital literature (Abdullah & Sofian, 2012; Kamukama, Ahiauzu, & Ntayi, 2010; Diez et al., 2010). Although all of the three dimensions of intellectual capital are significantly related to multilevel firm performance, human capital has more impact on multilevel performance than structural and relational capitals. However, this is not surprising as some previous findings concluded that human capital has more influence on performance than other forms of intellectual capital (Bontis, Keow, & Richardson, 2000; Castro & Sáez, 2008). For the dimensions of entrepreneurial orientation on the other hand, as consistent with a number of research (Covin & Slevin, 1989; Keh et al., 2007; Wang, 2008), innovativeness, risk-taking, and proactiveness are found to be highly significant to the performance of this study. Conclusively, this study shades some light on how intangible knowledge assets and entrepreneurial posture are contributing significantly to the small firms' multilevel performance. By implication, these firms are therefore encouraged to inculcate entrepreneurial orientation and develop the intellectual capital as their source of competitive advantage and superior performance.

## 6. Limitations and Future Research

As with many deductive studies, this study has some limitations. One of the major limitations of this study is that, the analysis took into consideration of only intellectual capital as a form of knowledge assets. Thus, future study should consider incorporating other forms of knowledge resources such as organizational knowledge. Secondly, as unpredictable changes and environment turbulence continue to dominate today's business strategy, entrepreneurial firms should embark on new strategies by reconfiguring their intangible resources to build a new source of superior performance. Hence, future research ought to be conducted on how a firm's existing resources can be integrated, rebuilt, and reconfigured to determine performance in a turbulent setting. Finally, this research is conducted as a cross-sectional, due to a number of challenges, such as cost, time and other scarce resources, and as such, future study may conduct longitudinal research to extend the understandings.

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