



Competitive advantage: mediator of intellectual capital and performance

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Abstract

Purpose – The purpose of this paper is to examine the mediating effect of competitive advantage in the relationship between intellectual capital and financial performance in Uganda's microfinance institutions. The major aim is to establish the role of competitive advantage in the relationship between intellectual capital and firm performance.

Design/methodology/approach – The paper adopts MedGraph program (Excel version), Sobel tests and the Kenny and Boran approach to test for mediation effects.

Findings – Competitive advantage is a significant mediator in the association between intellectual capital and financial performance and boosts the relationship between the two by 22.4 percent in Ugandan microfinance institutions. Further findings confirmed a partial type of mediation between the intellectual capital, competitive advantage and financial performance.

Research limitations/implications – Only a single research methodological approach was employed and future research through interviews could be undertaken to triangulate. Furthermore, the findings from the present study are cross-sectional. Future research should be undertaken to examine the mediation effects studied in this paper across time.

Practical implications – In order to have a meaningful interpretation of the results of the relationships between study variables, it is always vital to assess the role of the third variable (competitive advantage) in the relationship. This enables practitioners and scholars to comprehend and make legitimate decisions and conclusions that can foster business growth.

Originality/value – This is the first study that focuses on testing the mediating effect of competitive advantage on the relationship between intellectual capital and financial performance in Ugandan microfinance institutions.

Keywords Intellectual capital, Competitive advantage, Financial institutions, Financial performance, Uganda

Paper type Research paper



Introduction

The liberalization and commercialization of microfinance industry in some nations, Uganda in particular, resulted into stiff competition (CGAP, 2002; Adongo and Christopher, 2005), which is thought to account for the poor performance of microfinance institutions (Kalyango, 2005). This orientation has changed the strategy of microfinance

to the extent that most pioneering microfinance institutions that considered microfinance as a social-mission-oriented activity resorted to providing their products on commercial basis (Littlefield *et al.*, 2003). As a result, Uganda's microfinance industry adopted market-oriented and enterprise development approach so as to be in a better competitive position in the Ugandan financial sector (Kalyango, 2005; Baguma, 2007).

Furthermore, microfinance institutions have also recognized that a sustainable strategy to above challenges lies in building more efficient and strong financial institutions that are capable of cultivating strategic assets that are firm specific. Barney (1991), Stiles and Kulvisaechana (2004) observed that increased investment and management of assets that are valuable, rare, and hard-to-imitate, is the answer to competitive challenges. According to Stewart (1997), they are assets which enhance the firm's competitive advantage and superior performance. Scholars such as Porter (1999) observed that the key requirement for firm success in a competitive environment is to employ resources that are unique and specific to the firm. Seubert *et al.* (2001) further observed that sustainable competitive advantage is no longer rooted in physical assets and financial capital, but in effective channeling of unique intellectual assets. Subsequently, Hitt *et al.* (2001) argued that intellectual capital resources are more likely than tangible resources to breed competitive advantage, which translates into superior performance.

The microfinance industry is complex and highly innovative (Kalyango, 2005), with great potential to expand the financial frontier to the poor in a sustainable manner (Littlefield *et al.*, 2003), and to a great extent dependent on intellectual capital for a source of renewal (Sharabati *et al.*, 2010). Most firms in this industry have embraced a more business oriented outlook and maintaining their target groups of economically active poor while focusing on achieving operational and financial sustainability (Kalyango, 2005; Baguma, 2007). Uganda's microfinance firms specifically took a drastic measure to increase their investments and management of intellectual assets (Baguma, 2007; Nannyonjo and Nsubuga, 2004) with the intention of improving its competitive advantage and hence performance. However, what is actually on the ground is contrary to expectations of microfinance firms (PMT, 2008/2009; Baguma, 2008). The financial performance of Ugandan Microfinance firms has continued to deteriorate despite the increased effort to boost the firms' competitive advantage through improved investment in intellectual capital assets (Adongo and Christopher, 2005; Kalyango, 2005). It is therefore unclear whether intellectual capital boosts the competitive advantage to influence financial performance of microfinance institutions in Uganda.

Whereas theoretical assertions confirm that competitive advantage mediates the association between intellectual capital and firm performance (Barney, 1991), empirical evidence in the existing literature is limited (MacKinnon, 2008). The desire to understand the role of competitive advantage in the relationship between intellectual capital and firm performance motivated this study.

This study is expected to enable scholars and practitioners to have a more definite and direct understanding of the implication of competitive advantage in the association between intellectual capital and firm performance. Besides, more explanation for an outcome as to how competitive advantage transmits the effect of intellectual capital to firm performance will be explained.

Literature review

While earlier scholars may not agree on the precise definition and shape of intellectual capital, there is broad consensus that it contains human capital, relational capital and

structural capital (Tovstiga and Tulugurova, 2009; Bontis, 2002; Stewart, 1997; Edvinsson and Sullivan, 1996; Lynn, 1998). Such taxonomy permits researchers such as Sofian *et al.* (2008) to delineate intellectual capital as the possession of knowledge and experience, professional knowledge and skill, goal relationships, and technological capacities, which when applied can give organizations competitive advantage. Others like Stewart (1997) identified intellectual capital as the aggregation of all knowledge and competences of employees that can bring about competitive advantage for companies. Edvinsson and Malone (1997) broadened the definition and described intellectual capital as possession of knowledge, applied experience, organizational technology, customer relations and professional skills that provide a company with a competitive edge in market.

Central to components of intellectual capital, is human capital, which denotes what a single employee brings into the value adding processes and encompasses professional competence, social competence, employee motivation, and leadership ability (Halim, 2010). In the same line of argument, Bontis (2002) observed that human capital represents the human factor in the organization; the combined intelligence, skills and expertise that employees take with them when they leave the company; and gives the organization its distinctive character. Meanwhile, the macroeconomic perspective recognizes it as the driver of national economic activity, competitiveness and prosperity of a firm (OECD, 1999), and as the source of innovation and strategic renewal (Bontis, 1998).

Similarly, structural capital is “what happens among the people, how the people are connected within the company, and what stays when the employee leaves the company” (Halim, 2010). As further observed by Halim, structural capital is a stock of knowledge that is owned by the firm and includes corporate culture, information technology and explicit knowledge, product innovation, process optimization, and innovation among others. In the final analysis, Welbourne (2008) identified relational capital as an intangible asset that is based on developing, maintaining and nurturing high- quality relationships with any organization, individuals or group that influences or impacts your business. The findings of Rivkin (2000) and Bontis and Stovel (2002), indicate that the three intellectual capital elements are interrelated and operate in interactive or collaborative way to form a strong intellectual capital base which creates or influences the firm’s competitive position.

All the above definitions indicate that intellectual capital fosters or promotes firm’s competitive advantage. According to Porter (1985) competitive advantage is the ability to earn returns on investment consistently above the average for the industry. Other scholars like Barney (1991) specifically noted that competitive advantage can be achieved if the firm implements a value-creating strategy that is not simultaneously being implemented by any current or potential competitors. According to Meso and Smith (2000), sustained competitive advantage results from strategic assets; which Barney (1991) regards as those that are internally controlled and permit the firm to formulate and implement strategies that expand its efficiency and effectiveness. Competitive advantage is thus dependant not, as traditionally assumed, on such bases as natural resources, technology or economies of scale, since these are increasingly easy to imitate. Rather, competitive advantage is, according to the resource base view, dependant on the valuable, rare, and hard-to-imitate resources that reside within an organization (Barney, 1991; Stiles and Kulvisaechna, 2004). They are indeed the assets which Stewart (1997) referred to “invisible assets” which in real sense is intellectual capital.

Intellectual capital therefore, encompasses resources and capabilities that are valuable, uncommon, poorly imitable and non-substitutable, which present a lasting competitive advantage and superior performance to the firm (Barney, 1991; Prahalad

and Hamel, 1990). Similar to resource-based theory of the firm, Spender (1996) argued that the competitive advantage only arises from the use of scarce, intangible and firm-specific assets. In the related case, Wang and Changa (2005) acknowledged that intellectual capital is a fundamental determinant of firm current and future competitiveness as well as firm value growth. Tovstiga and Tulugurova (2009) further affirmed that the firm's internal resource base and foremost its intellectual capital is a determining factor of competitive performance in medium and small firms. Central to their findings, it was observed that competitive advantage is achieved by those firms that succeed in mobilizing their intellectual assets in the form of knowledge, technological skills, experience and strategic capabilities.

The extant literature further affirms that the firm's competitive advantage and performance are largely influenced by its intellectual capital (Tovstiga and Tulugurova, 2009; Barney, 1991; Prahalad and Hamel, 1990). However, there is far from enough empirical research investing the practical role of competitive advantage on the relationship between intellectual capital and performance. The mediating effect of competitive advantage and the extent it links intellectual capital to financial performance is limited in the literature. Most previous literature addressing intellectual capital has ignored the significance of competitive advantage on the relationship between intellectual capital and organizational performance (Chang and Lee, 2008; Ho, 2009; Bontis, 2002; Stewart, 1997, 1998). Thus, mediating effect of competitive advantage on the association between intellectual capital and financial performance in a microfinance industry is still a litigious matter that calls for redress in the literature. This therefore, lends to the following hypotheses:

- H1.* Intellectual capital and competitive advantage are positively related in Microfinance firms.
- H2.* Intellectual capital and financial performance are positively related in microfinance firms.
- H3.* Competitive advantage mediates the relationship between intellectual capital and financial performance in microfinance firms.

Study design and methodology

This study took cross-sectional and quantitative research designs to address the formulated hypotheses. The population consisted of 78 microfinance institutions which are registered members of the Association of Microfinance Institutions (AMFIU) in Uganda (AMFIU, 2009). The sample size of 65 firms was covered and the number was arrived at by adopting Yamane (1973) sample selection approach. Under this approach, sample size was determined using the formula:

$$n = N/1 + N(e)^2$$

where:

- n* – represents a sample size;
- N* – represents total population; and
- e* – represents tolerable error.

Simple random sampling was applied for sample selection. The selection procedure involved picking of pieces of paper in box without replacement until 65 firms were

selected. The survey unit of analysis composed of microfinance institutions whose directors, senior members of staff were the units of inquiry. On the basis of Ntoumanis (2001) and Field (2006) guidelines, this study covered a minimum of five senior staff per MFI. However, out of 65 MFIs, 51 firms responded, hence giving a response rate of 78.4 percent.

Questionnaires earlier developed and tested by Bontis (1998) and Sveiby (1997) were adapted to match the Ugandan study context. Intellectual capital was sub-divided into three elements: human capital, structural capital and relational capital. Each dimension was operationalized with ten items that measured employees' perception of that variable. Human capital was measured using the intangible asset monitor developed by Sveiby (1997) later modified by Petty and Guthrie (2004) and the main focus was on employee know-how, education, vocational qualifications, work-related knowledge, work-related competence, entrepreneurial spirit, innovations, proactive and reactive abilities, and changeability. Structural capital was measured on the basis of many dimensions. They included company's culture, orientation to quality, innovation, continuous improvement, information systems and teamwork (Wang and Changa, 2005; Brooking, 1996; Roos *et al.*, 1997; Sveiby, 1997; Bontis and Stovel, 2002; Kaplan and Norton, 2004). Relational capital was measured using a combination of instruments developed by Edvinsson and Malone (1997); Rindfleisch and Moorman (2001), modified and used by Huang and Chang (2007). The main dimensions included among others network levels, customer capital and level of marketing channels.

Financial performance was measured using the works of different scholars, including Ledgerwood (2000) and the microfinance performance monitoring tool (2007). In this study, financial performance ratios including portfolio at risk (PAR), net profit ratio, loan loss recovery ratio, repayment rate, yield on portfolio, and return on assets (ROA) were considered suitable measures of financial performance. Competitive advantage was measured using the instruments used by Sharma (2005), and Porter (1985); specific dimensions covered cost leadership, product differentiation and out reach levels.

All items were anchored on a five-point Likert-type scale ranging from 5 (strongly agree) to 1 (strongly disagree).

The questionnaire was validated through expert interviews and a panel of practitioners. All the variables registered content validity index of greater than 0.80. We further tested the reliability of the instrument (using internal consistency approach) to find out whether it consistently measured the study variables on the scales used (Anastasi, 1982; Nunnally, 1978). Item-total reliability (a measure of internal consistency) and Cronbach alpha coefficients of study variables were computed. The Cronbach alpha coefficient results of intellectual capital and its elements together with financial performance were all above 0.75 respectively signify that the scales used were reliable.

Quantitative secondary data were extracted from documentary sources particularly the MFIs' published audited financial reports accessed on www.microfinance-mixmarket on 28 September 2008. Performance ratios obtained supplemented primary data gathered through questionnaires filled by five senior managers in every microfinance institution in Uganda.

We addressed the common methods bias in order to reduce the measurement error (random and systematic errors) which normally threatens the validity and conclusions about the relationships between measures (Podsakoff *et al.*, 2003). Measurement error caused by consistency motif (Johns, 1994; Podsakoff and Organ, 1986) or consistency

effect (Salancik and Pfeffer, 1997) was addressed in this study by collecting data from at least five senior managers of each MFI and sourcing most of the data relating to the dependent variable (financial performance) from financial reports (archival sources). This approach is supported by Podsakoff *et al.* (2003), who contend that one way of controlling common methods variance is to collect the measures of both predictor and criterion variables from different sources. We endeavored to reduce the potential effects of response pattern biases by incorporating negatively worded or reversed-coded items on the questionnaires (Hinkin, 1995). According to Hinkin (1995) the logic is that reversed-coded items are like cognitive “speed bumps” that require respondents to engage in a more controlled, as opposed to automatically cognitive processing.

Data were checked; recorded, cleaned and negatively worded scale items were reversed-coded. Data were aggregated to a firm level. Completed questionnaires were further checked for missing values and inconsistencies in responses given by the respondents. Simple frequency runs were made to screen the data so as to identify missing values using series of means value replacement method (Field, 2006; Vanatta, 2002). The data screening exercise aimed at establishing the distribution of data to assess whether the assumptions of parametric data were tenable. Specific assumptions tested included normality of the distribution of the data, homogeneity of variance, linearity of the data independence of errors and multicollinearity. We tested multicollinearity by running the variance inflation factor (VIF) and the tolerance levels. The test for multicollinearity yielded VIF and tolerance values of 1.23 and 0.81 respectively. These results indicated that multicollinearity problem among the predictor variables did not exist because all the values were below the cut-off value as per the rule of 10; which advocates for a threshold VIF of less than 10 or tolerance ratio of greater than 0.1 (O’Brien, 2005; Scott, 2003; Kutner, 2004; Yu, 2008).

Tests for mediation were conducted in this study to establish the nature of mediation, and the extent to which competitive advantage influences the association between intellectual capital and financial performance. The test for mediation was carried out using MedGraph program (an excel version program) by Jose (2008); which is based on the works of Field (2006); Baron and Kenny (1986).

Results

Out of 65 MFIs 51 responded, hence representing a 78.5 percent response rate. Of these, 47 percent were from the central region, 29 percent were from western region, 10 percent from the northern region and 14 percent from the eastern region. The majority (82 percent) of microfinance institutions’ capital structure consists of equity and loans and their average capital size was greater than 2 billion. The average organizational tenure was 15 years.

Principal component analyses were performed to identify patterns in data and to reduce data to a manageable level (Field, 2006). The analysis produced three factors of intellectual capital accounting for 62.5 percent of variance. More so, the analysis yielded two factors of competitive advantage and financial performance and explained 61 percent and 65 percent of variance respectively. The mean scores of each variable were above 3.0 and standard deviations do not deviate significantly from the means. These results are not far from the previous studies conducted by Bontis (1998), Wang and Changa (2005) and Sharabati *et al.* (2010).

Correlation and regression analyses

Pearson’s bi-variate correlation coefficient was used to test the relationship between independent, mediating and dependent variables. The results are depicted in Table I.

The table indicates that intellectual capital has a substantive and significant relationship with financial performance ($r = 0.67, p < 0.01$); hence lending support to *H2*. It is also evident that positive and significant relationships between intellectual capital and competitive advantage existed in microfinance institutions ($r = 0.43, p < 0.01$); and this supports *H1*.

Testing for mediation

Mediation tests were performed to establish whether the conditions suggested by Baron and Kenny (1986) are met. Besides the MedGraph program, a modified version of Sobel test was used to compute the Sobel z -value and the significance of the mediation effect of competitive advantage on the association between intellectual capital and financial performance. The results are summarized in Table II and Figure 1 respectively.

Table II indicates that the four conditions for mediation according to Baron and Kenny (1986) are met. First, there is an effect to be mediated ($B = 0.93, p < 0.01$). Second, there is a significant relationship between intellectual capital and mediator ($B = 0.42, p < 0.01$), and third, the coefficient of the mediator (competitive advantage) is significant in regression three ($B = 0.49, p < 0.01$) with both intellectual capital and competitive advantage as predictors. Finally, the absolute effect of intellectual capital on financial performance is less in regression three (standardized beta = 0.42) than in regression two (standardized beta = 0.54).

The significance of the mediation effect and nature or type of mediation was also tested by calculating Sobel's z -value and ratio index using the MedGraph program and results are indicated in Figure 1.

From Figure 1, a Sobel z -value of 2.46 with p -value of 0.014 and the beta weight for the basic relationship between intellectual capital and financial performance ($r = 0.42, p < 0.001$) were registered. These results indicate that: first, since the Sobel z -value is large with a p -value less than 0.05, it means that a significant mediation of competitive

Table I.
Zero order correlation between intellectual capital, competitive advantage and financial performance

	Mean values	Intellectual capital	Competitive advantage	Financial performance
Intellectual capital	4.17	1.00		
Competitive advantage	4.11	0.43*	1.00	
Financial performance	3.21	0.67*	0.49*	1.00

Note: *Correlation is significant at less than 0.01 level (one-tailed)

Table II.
The mediating effect of competitive advantage on the relationship between intellectual capital and financial performance

Predictor	Dependent variable								
	Competitive advantage			Financial performance					
	Model 1			Model 2			Model 3		
	<i>B</i>	SE	Beta	<i>B</i>	SE	Beta	<i>B</i>	SE	Beta
Intercept	2.38**	0.67		-0.62	0.85		-1.81*	0.89	
Intellectual capital	0.42**	0.16	0.351	0.93**	0.21	0.54	0.72**	0.20	0.42
Competitive advantage							0.49**	0.17	0.34

Notes: $n = 51$; * $p < 0.05$; ** $p < 0.01$

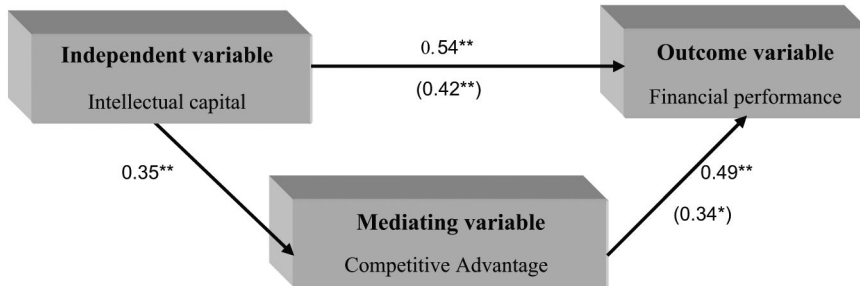
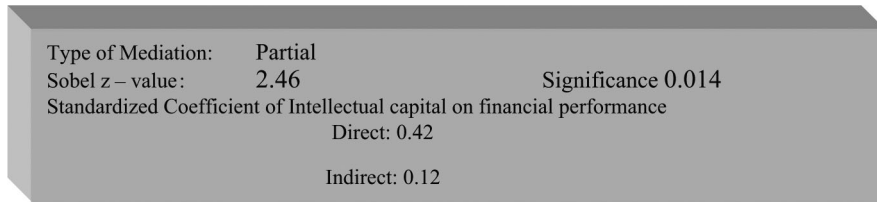


Figure 1. The MedGraph program graphically depicting mediation among three variables (intellectual capital, competitive advantage, and financial performance)

advantage in the relationship between intellectual capital and financial performance existed. In real sense, it indicates that the association between the predictor variable (intellectual capital) and the criterion variable (performance) has been significantly reduced (i.e. from 0.54 to 0.42) by the inclusion of the mediating variable (competitive advantage) in the third regression model (Jose, 2008). Second, partial type of mediation was also registered because the correlation between independent variable and dependent variable was reduced to a significant level (that is, from 0.54** to 0.42**).

Third, the ratio index of 22.4 percent given by $(0.12/0.54 \times 100)$, implies that 22.4 percent of the effect of intellectual capital on the financial performance goes through the competitive advantage and about 77.6 percent of the effect is direct.

Discussion and conclusion

This research investigated and tested the mediating effect of competitive advantage on the association between intellectual capital and financial performance in microfinance industry in Uganda. The findings indicate that mediating effect of competitive advantage on the relationship between intellectual capital and firm performance satisfies the conditions of mediation as pointed out by Baron and Kenny (1986) and MedGraph guidelines (Jose, 2008). This is true because the uniqueness of intellectual assets that reside in an organization can put an organization in a better competitive position.

This finding links well with resource-based view (RBV) of the firm which postulates that the presence of assets that are difficult to imitate are associated with the firm's competitive position (Barney, 1991). Other scholars whose conclusions mirror this study finding include Marr and Schium (2001) who established that intellectual capital is the group of invisible assets that are ascribed to an organization and most significantly influence the firm's competitive position and performance. This above discussion confirms that the presence of competitive advantage acts as a conduit between the intellectual capital and financial performance in microfinance institutions. Thus, competitive advantage is a true

mediator of the relationship between intellectual capital and financial performance, thus supporting *H3*.

Furthermore, mediation effect of competitive advantage on the relationship between intellectual capital and financial performance is further confirmed by significant Sobel *z*-value of 2.46 ($p < 0.05$) as shown in Figure 1. Central to these findings, ratio index of 22.4 percent signifies that competitive advantage partly augments the relationship between intellectual capital and financial performance; and the balance, that is, 77.4 percent accounts for the direct relationship.

In a nutshell, competitive advantage boosts the association between intellectual capital and financial performance by 22.4 percent in Uganda microfinance institutions. The fact that the ratio index is not equal to zero and the effect of intellectual capital on financial performance is not reduced to zero when competitive advantage is introduced in the model, implies that there is Partial rather than full type of mediation between the intellectual capital, competitive advantage and financial performance (Jose, 2008; Baron and Kenny, 1986). Hence *H3* is supported.

Implications for management and researchers

The results suggest a series of issues that need to be considered by managers and researchers. In order to have a meaningful interpretation of the results between the relationships between study variables, it is always vital to assess the role of the third variable in the relationship. As mentioned by Rosenberg (1968), a relationship study that does not address the mediating mechanism ends up with facts but with incomplete understanding. Besides, the study that fails to consider the possibility of a mediator effect in the data may miss more explanation for an outcome (Bennet, 2000). A model that addresses mediation effects will thus offer a more accurate estimation of the relationship between the variables studied. In this regard the significance of competitive advantage on the association between intellectual capital and performance should always be addressed by scholars and practitioners if legitimate decisions and conclusions are to be made. Thus, findings can help management to intensify initiatives to encourage greater understanding and acceptance of the concept of intellectual capital which boosts firms' competitive position and superior performance.

Limitations of the study

This research is not without its limitations. First, given that findings from the present study are cross-sectional, future research should be undertaken to examine the mediation effects studied in this paper across time.

Second, although the constructs have been defined as precisely as possible by drawing relevant literature and validated by practitioners they can realistically only be proxies for an underlying latent phenomenon that is itself not fully measurable.

Finally, only a single research methodological approach was employed and future research through interviews could be undertaken to triangulate.

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