# INTELLECTUAL CAPITAL AND FINANCIAL PERFORMANCE IN UGANDA'S MICROFINANCE INSTITUTIONS

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## ABSTRACT

This paper examined the individual contribution of intellectual capital elements to performance. Its purpose was to explore the extent to which intellectual capital elements can explain financial performance in Uganda's microfinance industry. Hierarchical regression was used because of its capacity to indicate precisely what happens to the model as different predictor variables are introduced. This study confirms that the three intellectual capital elements are strong predictors of financial performance and they account for 47% of variance in performance. However, the order of importance of these variables in explaining the variance in financial performance (basing on their standardized beta values) is: relational capital, structural capital and human capital. The findings can help management to intensify initiatives to encourage greater understanding and acceptance of the concept of intellectual capital that boosts performance in the industry.

**Keywords** Intellectual capital, Microfinance institutions, financial performance, human, relational and structural capitals

**JEL Codes: G2, G21**

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## I.  INTRODUCTION

The liberalization and suspension of donor grants and concessional funding have threatened the survival of financial institutions in Uganda, the microfinance industry in particular.  Entry of other firms in the industry has created a competitive environment which has endangered both the performance and going concern of microfinance institutions in Uganda (CGAP, 2002; Adongo and Christopher, 2005). Most microfinance institutions have recognized that a sustainable solution to the above challenges lies in building more efficient and strong institutions that are capable of investing and managing strategic assets that are valuable, rare, and hard-to-imitate. Stewart (1997) observed that they are assets which enhance the firm's competitive advantage and superior performance, which Cabrita, Vaz and Landeiro (2006) identified as intellectual capital resources. Balaji and Makhija (2001), Goh and Ryan (2005) further observed that sustainable competitive advantage is no longer rooted in physical assets and financial capital, but in effective channeling of unique intellectual assets that cannot easily be purchased from the market. Thus, many firms have recognized that intellectual capital as opposed to tangible assets is a critical resource that drives sustainable competitive advantage and superior performance of business firms (Huang and Liu, 2005).

In a related case, microfinance institutions also adopted a market–oriented and enterprise development approach which was perceived as another option to address stiff competition in the liberalized financial market (Fernando, 2007, and Kalyango, 2004). The move however, necessitated the suspension of microfinance institutions' core activity (social–mission-oriented activity) that could no longer be sustained in a competitive commercial environment (Adongo et al., 2005; Fernando, 2007).

However, the increased investments and management of intellectual capital resources in Microfinance Institutions have not yielded any positive results (Baguma, 2008; Nannyonjo and Nsubuga, 2004).  The financial performance of Uganda's microfinance firms has continued to deteriorate despite the increased effort to boost the firms' competitive advantage through improved investment in intellectual capital assets (Adongo et al., 2005; Kalyango, 2004).

The continued poor performance of MFIs in the presence of increased investments in intellectual assets raises questions on the substance of intellectual capital in addressing the challenges facing the microfinance institutions in Uganda. Besides, the extent to which individual intellectual capital elements contribute to financial performance is limited in Microfinance literature. Whereas  Wang and Chang (2005), Stewart (1997), Edvinsson and Malone (1997) observed that intellectual capital can influence firm performance, Firer and Williams (2003), and PekChen (2005) argued that the effect of intellectual capital on firm performance could be industry and country specific. It is therefore not clear whether intellectual capital influences financial performance of microfinance institutions in Uganda.

However, the extent to which individual intellectual capital elements affect financial performance of microfinance institutions guided this study.

## II.    LITERATURE REVIEW

While there are plenty of generic definitions of intellectual capital, there is so far no generally accepted definition or classification of intellectual capital (Maaloul and Z'eghal, 2010; OECD, 2006). Nonetheless, definitions that have stood a test of time include that of Stewart (1997, p.67) who identified it as "packaged useful knowledge." Edvinsson and Malone (1997, p.358) broadened the definition of intellectual capital to "knowledge that can be converted into value". Other scholars like Sofrain, Tayles and Pike (2008) delineate intellectual capital as the possession of knowledge and experience, professional knowledge and skill, goal relationships, and technological capacities, whose synergic effect can boost firm performance.

Though earlier scholars may not agree on the precise explanation and shape of intellectual capital, there is broad consensus that it contains human capital (HC), relational capital (RC) and structural capital (SC) (Tovstiga and Tulugurova, 2009; Bontis, 2002; Stewart, 1997; Edvinsson and Sullivan, 1996, Lynn, 1998). According to Halim (2010, p.63) human capital is "what a single employee brings into the value-adding processes, consisting of four indicators, that is, professional competence, social competence, employee motivation, and leadership ability. In the same spirit, Namasivayam and Basak (2006) observed that 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) further argued that structural capital is a stock of knowledge that is owned by the firm which encompasses corporate culture, information technology and explicit knowledge, product innovation, process optimization, and innovation among others. Similarly, Stewart (1997) and Barry (2001) also take relational capital as the value of an organization's external relationships with other organizations and people with whom it does business. It is knowledge embedded in the marketing channels and customer relationships that an organization develops through the course of conducting business (Bontis, 1999; 2001; Choo and Bontis, 2002).

Goh and Ryan (2005) claimed that though physical capital is crucial for financial institutions' operations, it is eventually the intellectual capital that determines the quality of services provided to the customers. It is therefore clear that the drivers of firm value in modern competitive environments lie in a firm's intellectual resources rather than its physical and financial capital. In support of this,

*Lao Tzo, Chinese philosopher, 600 BC states "We make doors and windows for a room. But it is the spaces that make the room livable. While the tangible has advantages it is the intangible that makes it useful."*

Using an analogy of fruits and roots, Cabriat and Landeiro (2007*)* observed that *"it is the roots of the tree that influence the size and beauty of the fruits; but not the stem and branches".*

This signifies that assets that are not physically seen (invisible assets) are critical in influencing firm performance in a competitive environment. Many scholars appreciate that intellectual capital is an invisible, valuable asset and most powerful competitive weapon in influencing firm performance (Stewart, 1997, 1998). For example, studies in the Portuguese banking industry by Cabrita and Jorge (2005) proved that intellectual capital substantively and significantly influences organizational performance. Other scholars including Hazline and Zubaidah (2008) found that intellectual capital is a significant predictor of performance in Malaysian financial institutions. Studies by Wang et al. (2005), Bontis, Chong and Richardson (2006) have also proved that intellectual capital is major in influencing firm performance in diverse industries. However, Firer and Williams (2003) and PekChen (2005) observed that the effect of intellectual capital on performance is industry specific. Villalonga (2004) further observed that in some industries and countries intellectual resources can even lock firms in persistent disadvantages.

The above empirical evidence depicts that the implications of intellectual capital to performance cannot be generalized to all industries. The fact that most of intellectual capital studies were carried out in the developed world, there is still limited literature on the effects of intellectual capital in the developing world, particularly the microfinance industry. Thus, the study necessitated the testing of the following hypothesis:

**H1: Intellectual capital positively influences financial performance in Uganda's microfinance industry.**

From another perspective, whereas there is general consensus that intellectual capital encompasses human capital, relational capital and structural capital (Tovstiga., 2009; Bontis, 2002; Stewart, 1997; Edvinsson *et al.*, 1996, Lynn, 1998), the three intellectual capital elements are not equally important in influencing firm performance (Bontis, 1998; Stewart, 1997; and Martos *et al.*, 2009). More so, empirical studies so far done on the influence of individual intellectual capital elements on firm performance in different industries have also yielded mixed results. For example, Wang *et al.* (2005) discovered that all intellectual capital elements directly affect performance with exception of human capital in technological information industries in Taiwan. Other scholars like Pfeffer (1994) and Uzzi (1996) found human capital and relational capital key predictors of performance in Japanese pharmaceutical companies. Meanwhile, Pablos (2004) observed that of the three elements of intellectual capital, structural capital was the only significant element in predicting organizational performance in Ireland's steel works. Central to these contradictions, the individual effect of human capital, structural capital and relational capital on financial performance

in most industries and Uganda's microfinance industry in particular, remains unclear. Thus, we tested the following hypotheses.

**H2: Structural capital positively influences financial performance in Uganda's microfinance industry.**

**H3: Human capital positively influences financial performance in Uganda's microfinance industry.**

**H4: Relational capital positively influences financial performance in Uganda's microfinance industry**

## III. STUDY DESIGN AND METHODOLOGY

This study took cross-sectional and quantitative research designs to address the formulated hypotheses. Population consisted of 78 microfinance institutions which are registered members of Association of Microfinance institutions (AMFIU) in Uganda (*Microfinance Directory* 2009/10). 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

e - represents tolerable error

Simple random sampling was applied for sample selection. The selection procedure involved picking of pieces of paper in a 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%.

Questionnaires earlier developed and tested by Bontis (1998) and Sveiby (2001) 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 10 items that measured employees' perception of that variable. Human capital was measured using the intangible asset monitor developed by Sveiby (2001) 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 Chang, 2005; Brooking, 1996; Roos *et al.*, 1997; Sveiby, 1997; Bontis *et al.*, 2002 and Kaplan and Norton 1997). Relational capital was measured using a combination of instruments developed by Edvinsson and Malone (1997); Rindfleisch and

Moorman (2001), modified and used by Heng-Chiang and Chia-wen (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 Ledger wood (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.

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 a content validity index of greater than 0.80.

We further tested the reliability of the instrument (using the internal consistency approach) to find out whether it consistently measured the study variables on the scales used (Anastasi, 1982 and 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 signifying that the scales used were reliable.

Quantitative secondary data was extracted from documentary sources particularly the MFIs' published financial reports accessed on www.microfinance-mixmarket on 28th September 2008. Performance ratios obtained supplemented primary data gathered through questionnaires filled by 5 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, Mackenzie and YeonLee, 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 (i) collecting data from at least five senior managers of each MFI and (ii) 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 (Hinken 1995 and Drasgow and Idaszak, 1987). According to Hinken (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 was checked; recorded, cleaned and negatively worded scale items were reversed-coded. Data was 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 and Vanata, 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 (Obrien, 2005; Scott, 2003; Kutner, 2004 and Chong Ho Yu, 2008).

The regression analysis was also conducted to test the model fit and to establish the predictive power of the models in criterion variable. We used the hierarchical regression approach because of its capacity to indicate precisely what happens to the model as different predictor variables are introduced in the model (Field, 2006). This gave us chance to systematically follow the contribution of each independent variable in explaining the predictive power of the model.

## IV. PRESENTATION OF THE RESULTS

Out of 65 MFIs 51 responded, hence representing a 78.5% response rate. Of these, 47% were from central, 29% western region, 10% Northern and 14% Eastern region. The majority (82%) of microfinance institutions' capital structure consists of equity and loans and their average capital size was greater than Shs.2 billion. The average organizational tenure was15 years.

Principle component analysis was conducted with varimax rotation. All variable items were confirmed valid since their factor loading values were more than 0.5. This result mirrors previous studies conducted by Bontis (1998), Bollen *et.al*. (2005) and Bin Ismail (2005). The elements of intellectual capital including human, relational and structural capitals were extracted and accounted for 62.5% of the variance in intellectual capital. The mean scores of each variable were above 3.0 and standard deviations did not deviate significantly from the means. These results are not far from the previous studies conducted by Bontis (1998), Wang and Chang (2005) and Serenko and Bontis (2009).

Pearson's bi-variate correlation coefficient was used to test the relationship between predictor and dependent variables. Results are depicted in Table 1 below.

Table 1
**Zero order correlation between intellectual elements and financial performance**

|  | *Means* | *Std Dev.* | *Structural* | *Human* | *Relational* | *Performance* |
|---|---|---|---|---|---|---|
| Structural Capital | 4.3 | .56 | 1 |  |  |  |
| Human Capital | 4.1 | .47 | .42** | 1 |  |  |
| Relational Capital | 3.1 | .81 | .10 | .26** | 1 |  |
| Performance | 3.2 | .79 | .46** | .54** | .42** | 1 |

The results shown above indicate that human capital has a substantive and significant relationship with financial performance($r = .54$, $p< 0.01$). It is also evident that positive and significant relationships between structural capital and financial performance existed in Microfinance institutions($r = .46$, $p< 0.01$). More so, relational capital is significantly associated with financial performance($r = .42$, $p< 0.01$).

## V. TESTING PREDICTIVE POWER OF STUDY VARIABLES

We preferred hierarchical regression method because of its clarity in pointing out the contribution of each predictor in the regression model (Field, 2006). The application of this method also helped us to test the theoretical assumptions and examine the influence of HC, SC, and RC variables in a sequential way, such that the relative importance of a predictor is judged on the basis of how much it adds to the prediction of a criterion variable. The regression results are provided in Table 2.

**Table 2**
**Hierarchical regression of intellectual capital elements on financial performance**

|  | *Model 1* | *Model 2* | *Model 3* | *Collinearity* |  |
|---|---|---|---|---|---|
|  | B | B | B | **Tolerance** | **VIF** |
| Constant | 0.35 | -1.53 | -2.44 |  |  |
| Structural Capital | 0.46** | 0.28* | 0.33** | 1.00 | 1.00 |
| Human Capital l |  | 0.43** | 0.32* | 0.83 | 1.21 |
| Relational Capital |  |  | 0.34** | 0.92 | 1.09 |
| R squared | .21 | .36 | .47 | na | Na |
| R squared change | -- | .15 | .11 | na | Na |
| F statistics | 13.11 | 13.61 | 13.84 | na | Na |
| F change | 13.12 | 11.34 | 9.48 | na | Na |
| Sig. F change | .00 | .00 | 0.01 | na | Na |
| Sig. | .00 | .00 | 0.01 | na | Na |

The results reported in Table II reveal that: In model 1, structural capital accounted for 21% of variance in financial performance (F-Change = 13.12, P < .01) and caused a statistically significant coefficient (B =0.46, P <0.01); this finding supports hypothesis two (H2). In model 2, the inclusion of human capital in the equation yielded an additional 15% to the explanatory power of the model. This implies that human capital accounted for an additional 15% of the variance in financial performance (F- change= 11.34, p < .01) and caused a statistically significant coefficient (B =0.43, p <0.01); this finding supports hypothesis three (H3).

In model 3, the inclusion of relational capital in the equation yielded an additional 11% to the explanatory power of the model. This means that relational capital explained an additional 11% of the variance in financial performance (F-change = 9.48, P < .01) and caused a statistically significant coefficient (B =0.34, P <0.01); this finding supports hypothesis four (H4).

# VI.   DISCUSSION AND CONCLUSION

*The state of Intellectual Capital in Uganda's microfinance institutions*

Intellectual capital was found to be a multi-dimensional predictor consisting of human capital, structural capital and relational capital, which operate in a synergetic manner to cause an effect. This composition of intellectual capital is consistent with the works of Kiong Tang (2009); Bontis (1996, 1998); Roos, Dragonetti and Edvinsoson (1998); Stewart (1994, 1997); Dzinkowski (2000); Stovel and Bontis (2002); and Marr and Karim (2005) on different intellectual capital studies.  In this study, intellectual capital elements (that is, human, structural and relational capital) were found to account for 62.5% of the variance in the intellectual capital variable (Appendix Ai). However, findings have indicated that human capital constitutes the biggest percentage as compared to the rest of intellectual capital dimensions; a discovery that mirrors the findings of Ahonen (2009) and El- Bannany (2008).

*Relationships between intellectual elements and financial performance*

Results have indicated that there is positive and significant relationship between human capital, structural, relational capital and financial performance in Microfinance industry. This signifies that improvement in intellectual capital elements is associated with high financial performance. These findings are consistent with conclusions made by Martos et al. (2009), Bontis et al. (2002), Kulvisaechan (2005), Younde and Snell (2004) and Abraham (2004). In summary, human capital, structural capital, relational capital and financial performance are highly related in microfinance industry.

## VII. PREDICTIVE POWER OF STUDY VARIABLES

The key objective of this study was to establish the extent to which individual intellectual capital elements predict the financial performance of microfinance industry in Uganda. Using hierarchical multiple regression analysis, predictive power of each variable was established.

Overall, research results indicated that all the three intellectual capital elements (HC, SC and RC) significantly affect the financial performance of microfinance institutions in Uganda. The three intellectual elements account up to 44% of variance in microfinance institutions' performance levels. In this case, structural capital, human capital and relational capital are important predictors or determinants of financial performance in microfinance industry.

Findings have also shown that relational capital accounts for the biggest variance, followed by structural capital and lastly human capital. Since the findings specifically indicate the relative importance or weight of individual intellectual capital elements in influencing financial performance, the purpose of this study is thus addressed. This finding is supported by the works of Pfeffer (2000) and Uzzi (1996) who found that the three intellectual capital elements play an important role in enterprise performance and in survival of the business. Ting *et al.* (2009) also support the finding and observed that firm value is created when intellectual capital elements act together.

## VIII. CONCLUSION

In the nutshell, this study has shown that the three intellectual capital elements are strong predictors of financial performance; except that their predictive power is different. Central to the findings, the relative importance of these variables in explaining financial performance variance in ascending order (basing on their standardized beta values) follows - relational capital, structural capital and human capital as indicated in Table II. These findings are crucial because they identify predictor variables that contain considerable explanatory power. The strength of each intellectual capital element suggests that there is a need to comprehend and manage intellectual capital resources on the basis of the weights of the elements.

## IX.  MANAGERIAL IMPLICATIONS

The results suggest a series of issues that need to be considered seriously by managers and researchers.

First, the study has introduced a clear understanding on the effect of intellectual capital elements on performance in microfinance institutions. This can promote management efforts of MFIs to improve business performance which can be facilitated through the appropriate management of leading elements of intellectual capital in advance by inputting more resources in most

important elements. Thus, management can intensify initiatives to encourage greater understanding and acceptance of intellectual capital resources that boost performance in Uganda's microfinance industry.

The managers of microfinance firms need to appreciate that the rise of intellectual capital in the industry is inevitable, given the competitive and technological forces that are sweeping the modern world. More importantly, current and future managers must know that a modern company changes so rapidly that every thing is dependent on its talents, the dedication of its people (human capital), the quality of stock of knowledge (structural capital) and the strength of networks with its stakeholders(relational capital).

It is therefore high time that microfinance firms changed their management styles and traditional valuation models that do not include intellectual capital as a major component otherwise, the true value of microfinance firms will never be uncovered.

These findings also hold far-reaching implications for accountants and accounting professionals in particular. The profession should seize the opportunity to assist with the measurement and auditing of what makes companies valuable. Rather than the historical and supposedly objective approach that has characterized financial reporting to date, valuation of intellectual capital requires immediate and precise measures.

## X. LIMITATIONS OF THE STUDY

The findings of this study are subject to some limitations that provide the initiatives for future research.

One of the possible reasons for the varied results of the study is the methodology used for measuring intellectual capital. Although the constructs have been defined as precisely as possible by drawing from relevant literature and validation by practitioners, the measurements used may not perfectly represent all the dimensions. Secondly, only a single research methodological approach was employed and so future research through interviews could be undertaken to triangulate.

Future studies could use the same basic hypotheses and regression construction, but implement the study in terms of a longitudinal rather than a cross-sectional design. The longitudinal study would need to correct changes in data relative to time element. Despite possible limitations of using single-period data, the results of the present study provide valuable insights into the effect of intellectual capital on the financial performance of microfinance firms.

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