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The Impact of Intellectual Capital on Firm Performance through Entrepreneurial Orientation: Moderating role of Knowledge Management

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Abstract

The purpose of this research is to investigate the effect of intellectual capital on firm performance, with the moderating effect of strategic knowledge management and mediating effect of entrepreneurial orientation. 465 questionnaires were distributed among 155 branches and about three to four questionnaires were filled out from each bank. Each bank had an average of three employees with one branch manager and two senior managers. The respondents were selected on the basis of convenience sampling. The respondents had sufficient knowledge of the banks and had considerable experience in this area. The respondents were also quite knowledgeable about the various operational functions of the banks. Out of 465 distributed questionnaires, 315 questionnaires were returned which has a response rate of 67.74%. Out of the returned questionnaires, 15 questionnaires were not included because they did not contain the required information. This study is quantitative and such statistical technique is reviewed by any software. The data obtained from the questionnaire is analyzed with SPSS and AMOS software. The empirical analysis shows that intellectual capital has a significant positive impact on firm performance, Moreover; entrepreneurial orientation plays its mediating role between the three dimensions of intellectual capital and firm performance. Strategic knowledge management does not play a role between human capital and entrepreneurial orientation. While the other two dimensions of intellectual capital; structural capital and relational capital have a significant effect on firm performance when it is moderated by strategic knowledge management. In addition, there are many future directions in this study for participations and scholars. The limitations have also been discussed.

Keywords: Intellectual capital • Human capital • Structural capital • Relational capital Entrepreneurial orientation • Strategic knowledge management

Introduction

Before the advent of the information society, people traditionally focused on input factors, such as labor, capital and raw materials, and other, intangible factors were gradually added and gained priority in companies' operations and survival [1]. Now, knowledge, information technology, and intellectual skills are the principal resources that organizations need to be effective and to gain a sustainable competitive advantage.

Even after recognizing the importance of intellectual capital, the accounting profession has failed to address the problem of how to measure the results of knowledge-based firms. In this era of knowledge, intellectual capital is seen in reports submitted by companies, but these intellectual capitals are limited to licensees, royalty fee and trademark only. Tangible assets are ignored in the company's financial statements that really create value for the company.

Existing accounting standards focus too little on intangible investment, which is why stakeholders force the company to disclose intellectual capital [2].

The global economy concentrates on the growth of regional aspects and believes that economic growth can increase by giving less input and gain high output in the form of production, as production converts from industrial economy to knowledge-based economy. The trend of investment in intellectual capital growing fast because the investment in intellectual capital accelerates economic growth. Many countries such as Sweden, Canada, Finland and Australia focused on nations in intellectual capital research, and in particular describe the intensity of knowledge. However, this concept has now become a global phenomenon, evidence which can be seen in studies in countries around the world; Germany, Ireland, Portugal, Australia, Malaysia, Egypt, Jordan and others. Some global researchers and global organizations rank Belgium 19th and Luxembourg 33rd for IC research productivity India and

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China are very densely populated and due to its high population, business activities are also high. The market of these two countries is considered attractive to investors because commercial activities are so high due to its large population [3]. There is no doubt the economic development of any country depends on the financial sector. That is why countries work to increase intellectual capital so that they can achieve their goals. The banking sector is most suitable for research on intellectual capital because it is one of the many industries that are knowledge-intensive. First, most banking operations depend on the customer and he can get a competitive advantage by providing better services to his customer. Second, the bank does not create any product, it does provide services and services depend on intellectual capital. Finally, banks make an investment in their human capital to improve their services. Banks play a very important role in the economy of Pakistan [4,5]. The banking sector is actually part of the financial sector of Pakistan. Pakistan's financial sector is comprised of various types of banks, insurance company's development financial institutions, and stock exchange, etc. Commercial banks play an important role in boosting the economy by providing finance to people. After independence, most banks were private. Private Banks were taken into government custody in 1994 that remained in government custody till 1990. The financial liberalization program was launched in 1908 with the help of the World Bank and the IMF, which aimed to restructure existing banks and issue licenses for the new banks [6]. That is why the government of Pakistan nationalized commercial banks which resulted in the emergence of many private banks. According to monetary industries are mostly knowledge-intensive industries that rely more on knowledge rather than physical assets [7-10].

A possible explanation for the divergence is that the concept of IC has been operationalized differently in prior studies. Some studies take intellectual capital as a single construct, while there are many other studies identify different sub-dimensions of intellectual capital such as human capital, structural capital and relational capital [11]. Some researchers believe that different dimension of intellectual capital effect company performance differently; while some researcher believe that different dimension of intellectual capital has a similar effect across company performance. Many companies use intellectual capital to gain competitive advantage, and they believe that intellectual capital provides the foundation for competitive advantage. As previously stated, intellectual capital does not directly affect company performance, so some other mediator variables e.g. knowledge enhancement and dynamic capability have to be introduced in recent studies. This study looks at the impact of intellectual capital components on the organization's performance in the context of banking sector.

Theoretical Background and Hypothesis

Intellectual capital and firm performance

The current intellectual capital approach emphasizes that in the modern knowledge-based economy; the company must focus more on knowledge to gain competitive. Just as other ideas emanate from knowledge, likewise intellectual capital also emerges from knowledge. There are many definitions of intellectual capital; therefore, the researcher differs greatly on the definition of intellectual capital. However, some researchers agree that the company can achieve its goals by highlighting the hidden capabilities of organizational staff and it is only possible through intellectual capital. Many of these frameworks have been developed at different levels in different companies. According to, human capital and structural capital are the components of intellectual capital later, intellectual capital was further divided into two subcategories, namely organizational capital and customer capital identifies three components of intellectual capital and recent studies have also cited these three components namely, human capital, structural capital and relational capital, and this study also discuss these three components [12]. Intellectual capital has a special significance in the literature of human resource management. Ever since the importance of intellectual capital has been recognized, human resource managers have been working to secure and enhance intellectual capital since then. The responsibility of the human resource manager is to appoint and retain an employee, in particular, that one of the many responsibilities is to turn human capital into organizational knowledge and this change leads the company to good performance [13,14]. One of the three components of intellectual capital is the human capital that exists within the company as an individual which can neither be easily implemented not followed in another company. Individual knowledge is human capital and if the company wants to grow in a changing environment, it is important that they pay close attention to individual knowledge [15-17]. The company needs more individual knowledgeable employees who can utilize their capabilities to make effective decisions in difficult situations. Human capital is indispensable for enhancing production and its quality, it not only enhances production and its quality, but it also improves management issues and operational efficiency. Moreover, human capital enables employees to improve the company's financial position by increasing sales and reducing costs because the talented staff knows this kind of work very well [18,19]. That is why the company places more emphasis on human capital so that they can achieve the standards they set and as a result, we can hypothesize [20].

Human capital is positively related to firm performance

Structural capital is owned by the company and is present when people leave the company. There are some organizational resources that cannot be obtained in the absence of employees because these resources are intangible, obtaining them is impossible in the absence of employees [21-23]. The presence of structural capital in an organization indicates that it performs its activities in a unique way which would be difficult for another competitor company to repeat such activities [24]. The company invests in structural capital to improve its work procedures so that it can achieve its goals and solve problems efficiently and effectively. If the company invests in structural capital to improve its business strategy, it will be better in the coming days and the company will be able to easily compete with its competitors. Structural capital helps to acquire knowledge, storage and to apply it. Employee's ability to work increases and they know exactly how to cut costs with good quality and all these steps take the business to its destination. Furthermore, structural capital protects employees from unnecessary efforts and enables them to use their

energy in a productive sector and increase revenue from the above discussion, we can do this hypothesis [25].

Structural capital is positively related to firm performance

Relational capital exists in the form of an interactive relationship between the organization and its stakeholders. Knowledge, commitment and mutual standards make it all the relational capital. Relational capital enables employees to share knowledge with their stakeholders and company, and these features solve many problems in a unique way [26]. Most importantly, relational capital helps to build a good relationship with its customers and partners, learning from the past bitter realities this business model becomes an example for any other business. We can say that relational capital enhances employees' ability to work and eliminates the unnecessary bias found within them. In the absence of relational capital, the business faces many difficulties and one of the most difficult is negotiating its own partnership that does not give a good impression [27]. Al these difficulties become a threat to their own to gain knowledge and take over another business [28-30]. Therefore, relational capital not only reduces costs but also increase profitability by increasing its production, it increases the quality of the company as well. We concluded from all the above discussion; Entrepreneurial orientation mediates the relationship between intellectual capital and firm performance [31].

Intellectual capital, entrepreneurial orientation and firm performance

Human capital is of particular importance in the performance of the company where the workers working continuously acquire the knowledge and use the knowledge as per the requirement of the company [32]. According to, profit depends on human capital found within the employee of the company as more knowledgeable employees apply their knowledge and can enhance the choice and application of entrepreneurial orientation [33]. The manager who follows the strategy is capable of responding quickly to the market which increases the market share emphasizes that greater investment is being made at human capital so that the company can promote entrepreneurial orientation as EO enhance the performance of the firm [34]. The name of the environment found within the company is structural capital which gives employees the ability to devote knowledge and skills. Apparently, structural capital saves as a handbook, database, and patent and continuous use of this database expands the knowledge of the company. According to some researchers, structural capital has some effect on entrepreneurial orientation. Argued that structural capital is the fundamental structure of the firm such as corporate culture, R and D is the company resources that identify the current needs of the market and lead the company to the solution by providing competitive potential. The effects of rational capital on entrepreneurial orientation are found in three different aspects. First, the good relational capital of the company is a source of innovation for the company which it builds with customers, suppliers, and competitors. The second aspect is related to the first one. Good relationships with one company from another not only accelerate innovation but also reduce the factor of risk by dividing between two companies. The third aspect is that good relational capital leads to EO company contribute to the revenue of the company as suppliers provide material and distributors provide marketing channels. According to relational capital plays the most role in bringing innovation to any item, followed by structural capital and human capital has the lowest role. Entrepreneurial orientation involves, embracing risk, be more active than your competitors and becoming a threat to your rivals by exploring new market opportunities. There are five dimensions of EO as suggested by including innovativeness, risk-taking, pro activeness, competitive aggressiveness, and autonomy. EO literature highlights the usefulness of the entrepreneurial orientation for the survival and performance of the company. Many empirical can be seen that the passage of time EO positively impacts firm performance evidence. EO is considered to be the resources of any company and these resources give incredible benefit by giving its economic momentum and wealth circulation over its competitors. The company that puts more emphasis on EO is able to explore the opportunities in the market and these resources of the company are helpful to adapting to the situation and responding to rivals in difficult times. In many studies, it has been found that EO helps the growth of the market and performance of the firm. With all these arguments we can hypothesis. Entrepreneurial orientation mediates the relationship between intellectual capital and firm performance.

Intellectual capital, strategic knowledge management, and entrepreneurial orientation

Intellectual capital and KM give rise to entrepreneurial orientation. There has been a lot of research on intellectual capital, entrepreneurial orientation, and knowledge management, but no research has examined these three simultaneously. Empirical studies lack the understanding of how knowledge management drives entrepreneurial orientation with the help of intellectual capital. The reason for such a small comprehensive research model is the variety of interactions found between intellectual capital and knowledge management, and the different roles of intellectual capital and knowledge management help to create and sustain the company's results. Presents many theoretical models on intellectual capital, knowledge management, and firm performance [30].

Many authors suggested that IC and KM lead the company to superior performance but they did not include the entrepreneurial orientation in this empirical model. Indeed, knowledge management helps in managing intellectual capital and converting intellectual capital into values. Surprisingly, very few studies have seen the moderating effect of knowledge management [35]. According to, a value can be generated if resources are used well but it is not possible that resources generate value. A large number of intellectual capitals also cannot generate value unless it has the support of managerial activities. That is why by combing intellectual capital with managerial activities, it can be better understood that intangible tends to lean toward entrepreneurial orientation (Figure 1). So, we consider intellectual capital to be the static assets of any company that can be managed and turned into value, we hypothesized knowledge management moderates the relationship between intellectual capital and entrepreneurial orientation.

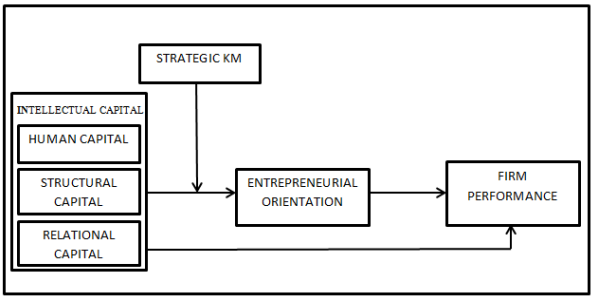

Figure 1. Conceptual model.

Materials and Metods

The data in this study was taken from private banks in Lahore. The purpose of taking the banking sector is on the basis of the knowledge-intensive and relationship industry. The growth of all three components of intellectual capital is very important for banks to survive in the competitive market. 465 questionnaires were distributed among 155 branches and about three to four questionnaires were filled out from each bank. Each bank had an average of three employees with one branch manager and two senior managers. The respondents were selected on the basis of convenience sampling. The respondents had sufficient knowledge of the banks and had considerable experience in this area. The respondents were also quite knowledgeable about the various operational functions of the banks. Out of 465 distributed questionnaires, 315 questionnaires were returned which has a response rate of 67.74%. Out of the returned questionnaires, 15 questionnaires were not included because they did not contain the required information. This study is quantitative and such statistical technique is reviewed by any software. The data obtained from the questionnaire is analyzed with SPSS and AMOS software.

Measures: All the answers were measured using Likert type scale to keep them consistent, with 1="strongly disagree", 3 ="Neutral" and 5="strongly agree". The questionnaire consisted of four sections, with the first part consisting of intellectual capital. The second part of the questionnaire contains the item of strategic knowledge management and in the third part are the entrepreneurial orientation items. At the bottom of the questionnaire, there are items to be asked about firm performance. How each variable is measured and how many items it contains is described below. Three components of intellectual capital have been measured by the researcher's stated items. Human capital was measured from the scale developed by and according to these researchers; there are five items that are given in the questionnaire below. Structural capital was measured from the scale developed by and this dimension has seven items that are given in the questionnaire below. Relational capital was measured from the scale developed by and there are five items in the questionnaire below. Firm performance was measured from the scale developed by. Two dimensions are used to measure the firm performance: operational performance and financial performance and these two dimensions are 11 items. Strategic knowledge management is measured on the basis of five items that were developed by entrepreneurial orientation has been measured with five dimensions which were developed by and these dimensions are innovativeness, risk-taking, pro activeness, competitive aggressiveness and autonomy. The number of asked form each dimension is different which are given in the questionnaire below.

Results

Mean standard deviation, reliability, and correlation

The Table 1 shows mean, standard deviation, reliability and correlation matrix. Cronbach's alpha is used to check the internal consistency of each variable item. If alpha is greater than 0.7 than this is acceptable but if the value are more than 0.8, this is good. But according to some researchers, if the values of alpha are up to the 0.6 then this is acceptable. As can be seen in the table below, the Cronbach's alpha for all the variables is more than 0.6. The highest value of firm performance is 0.833. Correlation analysis investigates the relationship between variables and tells about the degree of association in which two variables are related to each other. This analysis is just for the association among variables whereas the issue of dependency is not explained by the analysis. The value of correlation lies between +1 to -1 and if the value falls between 0.5 to +1 then considered good and strong relationship. As can be seen in the table below , human capital has a strong relationship with all variables except strategic knowledge management and the value of Pearson correlation coefficients are 0.516**, 0.547**, 0.444**, 0.086, 0.499** respectively.

	Mean	S.D	Reliability	1	2	3	4	5	6
Human capital	3.8727	0.50142	0.716	1					
Structural capital	4.0195	0.46774	0.764	0.516**	1				
Relational capital	4.0053	0.4896	0.704	0.547**	0.574**	1			
Entrepreneurial orientation	3.9387	0.40128	0.741	0.444**	0.525**	0.561**	1		
Strategic knowledge management	3.7593	0.40128	0.644	0.086	0.107	0.017	0.169**	1	
Firm performance	4.0061	0.4613	0.833	0.499**	0.512**	0.557**	0.639**	0.092	1

Table 1. Cronbachs alpha values of standard deviationa and reliability.

Measurement Model

Confirmatory factor analysis is used to explain the linearity of the relationship in a model. It tells about the covariance between-group

variables. It also tells about scale reliability and validity. Structural configuration can be done of adopted variables through confirmatory factor analysis. Researchers use different values for model fitness. The value of x^2/df (chi-square) should be less than 3 but some researcher says that this value is acceptable up to. In this model, the value of chi-square is 1.567 which means that this value falls within the acceptable range. The GFI value should be greater than 0.85 and in this model; the value of GFI is more than .850. The value of the Comparative Fit Index (CFI) should be greater than 0.90 and in this model the value of CFI touches the threshold value. The value of PCLOSE must be greater than 0.05 and in this model the value lies within the acceptable range. The value RMSEA should be less than 0.08 and this model meets the criteria of fitness. All values are in the range of the threshold values as mentioned in (Table 2) and the model is a good fit.

Model	CMIN/DF.	GFI.	CFI.	PCLOSE.	RMSEA.
	1.567	0.873	0.903	0.956	0.044

Table 2. All values are in the range of the threshold values as mentioned above and the model is a good fit.

Structure Equation Modeling (SEM)

To estimate and test the causal relationship Structure Equation Modeling (SEM) is used, which uses a set of statistical data. It helps to test the theory's development and theory test as it allows for confirmatory modeling as well as exploratory modeling. Confirmatory modeling is done to represent causal modeling, which usually begins with the hypothesis. The operationalization of the concepts used in the model must be done in order to test the relationship between the concepts in the model. The model is tested against the obtained measurement model to determine how well the model fit. One of the strengths of structural equation modeling is the ability to construct latent variables; variables that can't be measured directly but used in their model form several measured variables. Structural equational modeling enables the modeler to clearly evaluate the unreliability in the model. This allows the latent variables to be properly estimated in the theory. SEM is used in this study because it addresses errors in the model. It is a comprehensive technique that tests the relationship between observed and latent variables (Table 3).

Hypothesis	Path	Estimates	P	Results
H1	HCFP	0.598	***	Supported
H2	SCFP	0.696	***	Supported
H3	RCFP	0.749	***	supported

Table 3. Three dimensions of intellectual capital affect a company's performance. Based on these results we can say that our first three hypotheses are supported.

Bootstrapping

The present study uses a bootstrapping technique to check the effect of mediation. This technique is most effective because it accurately describes the effect of mediation. One of the reasons this technique is important is that it accurately measures the confidence interval even when the mediation does not exist. Bootstrapping canbe used when data has not fulfilled these assumptions don't be too much of a sample size; the assumption of normality in data is not fulfilled. This technique enables the researcher to estimate the type of mediation by looking at the total effect, direct and indirect effect. Bootstrapping can be used by stated value N=2000 with 95%. Our fourth hypothesis is based on three sun hypothesis that checks the mediating role of entrepreneurial orientation (Table 4). The result of our first sub hypotheses is indirect effect, while the other two sub hypotheses are the results of partial mediation. Based on our conclusion, we can say that all three of our sub hypotheses are significant.

Hypotheses	Direct beta value w/o mediation	Direct beta value with mediation	Indirect effect	Results
H4a: HC-E0-FP	$0.090^{(NS)}$	$0.087^{(NS)}$	0.669^{***}	Indirect effect
H4b:SC-E0-FP	0.245^{***}	0.265^{***}	0.488^{***}	Partial mediation
H4c:RC-EO-FP	0.411^{***}	0.440^{***}	0.363^{***}	Partial mediation

Table 4. The sub hypotheses is indirect effect, while the other two sub hypotheses are the results of partial mediation. Based on our conclusion, we can say that all three of our sub hypotheses are significant.

Moderation analysis

In this paper, the moderation analysis is done with the help of SPSS and AMOS. First of all the zee value of all the variables are calculated through SPSS as well as interaction terms of independent variables with the moderating variable .After doing all this, the zee value of the independent variable, the interaction term between the independent variable and moderating variable and the effect of zee value of moderating variable can be seen on the dependent variable (Table 5). Our fifth hypotheses also consisted of three sub hypotheses, and the results show that the last two sub hypotheses of the fifth hypothesis are significant. However, the first sub hypothesis in which check the moderating effect of SKM between human capital and entrepreneurial orientation is not significant.

Hypotheses	Estimates	p	Results
H5a: HC_SKM → ZEO	0.005	0.712	Not supported
H5b: SC_SKM →ZEO	0.025	0.003	Supported
H5c: RC_SKM → ZEO	0.027	***	Supported

Table 5. Fifth hypotheses also consisted of three sub hypotheses, and the results show that the last two sub hypotheses of the fifth hypothesis are significant. The first sub hypothesis in which check the moderating effect of SKM between human capital and entrepreneurial orientation is not significant.

Discussion

In this study, we looked at the impact of the three components of intellectual capital on the performance of the firm. Our findings are similar to those of previous studies and are in stark contrast to studies that certain components of intellectual capital increase firm performance. When we test our hypothesis all three components of intellectual capital are affecting the performance of the company which means that if the company wants to improve its performance, it will have to highlight the company's policy regarding intellectual capital. Many other elements between intellectual capital and firm performance can play a role as a mediator, which is why in our study; entrepreneurial orientation has been taken as a mediator. Our results confirm that entrepreneurial orientation partially mediated the effect of structural capital on firm performance and EO also partially mediated the effect of relational capital on firm performance. While checking the mediation effect of EO has an indirect effect on firm performance. The current study has shown the moderating effect of strategic knowledge management. If strategic knowledge management has been used very often as a moderator but the moderating effect between IC and EO has been seen for the first time. According to our findings, the relationship between human capital and entrepreneurial orientation weakened, when we saw the moderating effect of SKM. Similarly, the relationship between structural capital and entrepreneurial orientation weakened, when we saw the moderating effect of SKM. SKM plays the same role between relational capital and entrepreneurial orientation, with its role in both components described above at intellectual capital.

Practical implications

There are two types of implications for practitioners in this study. The above results have proved that the three components of intellectual capital affect the performance of the company., so the manager must work not only to maintain intellectual capital but also on its development and it will only come from investing in employees training, staff recruitment and other HRM activities. A manager needs to understand that all three components affect a company's performance, so the manager must devote more resources to the development of these three components. Second, manager needs to pay more attention to activities such as entrepreneurial orientation. If it acts just for the development of intellectual capital then the impact of intellectual capital on a company's performance is limited. Companies are left behind by their competitors if entrepreneurialorientation activities are ignored.

Limitations

The first limitation is that the questionnaire was self-administrated and we are unable to understand why the respondents had such certain views. Knowing the reason, we could make our study more clear. Secondly, this study is done in a particular sector and hence its results can be applied to a particular sector and cannot generalize the results to another sector. This study is on cross-sectional data, it is possible that respondents who think today may change their views over time.

Conclusion

In future studies, accounting data can be used to test the company's performance rather than managerial perceptions regarding firm performance. In line with the arguments by a mediating or moderating variable can be introduced between intellectual capital to see the company performance because intellectual capital work efficiently with different kinds of interactions, for example, the efficiency of intellectual capital can be enhanced by a factor such as corporate governance. Future studies with the same hypothesis should be done on a longitudinal study rather than a cross-sectional study. This model can be used in another economy as well. In the future, it can be explored whether the company's past performance affects the company's future intellectual capital efficiency.

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