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Relationship between University Performance and Dimensions of Intellectual Capital: An Empirical Investigation *

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A R T I C L E I N F O	A B S T R A C T

Purpose: India is the second largest higher education system in the world and 50% of its population is under 25 years. This demographic advantage can be leveraged only if India has a formidable higher education system. Present study tries to explore the relationship between intellectual capital and university performance across North India with an objective of providing fruitful insights to the policy makers about the areas of focus.

Research Method: Quantitative research design was used for the study. Respondents of the study were comprised of faculty members of universities from selected North Indian states. Regression analysis using SPSS was employed to study the relationship between the two dimensions of intellectual capital and university performance.

Findings: Findings revealed that universities need to operate in close interactions with government institutions and private industries that help enhance relational capital. Organizational capital emerged as a major dimension that affects university performance. The study gives university policy makers tools in the form of organizational and relational capital that can be leveraged to enhance performance.

Implications for Research and Practice: These findings are pertinent for the top management of universities which can focus on strengthening relational capital by building strong relationships with alumni and industry, facilitating consulting and having consistent interactions with stakeholders in order to enhance university performance. Results imply that in addition to relying on teaching expertise and teaching pedagogy, planners need to focus equally or more.

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Introduction

If physical capital was central to the debates on economic development in the last century, intellectual capital (IC) occupies the center stage today. This is largely due to the emergence of knowledge economies, which are fast becoming concurrent with global competitiveness. For a developing country like India, one of the critical success factors is the ability to exploit its knowledge potential. Moreover education being an extremely important enterprise in any economy, its role in a country's success is undisputable.

Physical assets like plants, equipment, property, cash, investments and financial instruments are necessary, but they are no longer sufficient means to achieve an organization's objectives. Knowledge sharing practices, knowledge development, networks that produce a good image, and information systems that support quality decision making constitute the critical success factors today.

India is the second largest higher-education system in the world. Fifty percent of its population is under age 25, which is an immensely favorable demographic pattern. Leveraging this advantage is possible only if it has a formidable higher education system. This gives decision makers in India's higher education sector, the potential to improve university performance by harnessing the power of this intellectual capital. This informs the major research question of the current study: how does intellectual capital affect the performance of a university. The study also undertakes to explore the individual dimensions of intellectual capital: organizational and relational capital and their effects on a university's performance so as to highlight the specific importance of each dimension.

Theoretical Background

Intellectual capital & university performance. Researchers opined that the most critical ingredients of firm resource endowment are not tangible, but are intangible, and are thus rare, valuable, imperfectly imitable and non-substitutable (Issac, Herremans, & Kline, 2010; Nerdrum & Erickson, 2001). It was also proposed that identifying and valuing Intellectual Capital is increasingly important for knowledge-intensive organizations (Mondal &Ghosh, 2012). Although some researchers differ, most studies (Bontis, 1998; Mondal & Ghosh, 2012; Ramirez & Gordillo, 2014) proposed three dimensions of intellectual capital: human, organizational and relational.

For the purpose of this study, the authors have dealt with the dimension of organizational and relational capital. Researchers (Cannibano & Sanchez, 2009; Sanchez & Elena, 2006) emphasize the growing interest regarding intangibles and intellectual capital in higher education institutions with the purpose of making them comparable, transparent and competitive. Stark parallels have been drawn between IC and its configurations/approaches and the analytical framework proposed by the Observatory of European Universities to measure overall performance. It was suggested that the companies' framework of IC can be applied to universities with certain specifications. The importance of managing and measuring IC in universities was explored by researchers (Ramirez, Lorduy & Rojas, 2007) in their study as a part

of an important IC management initiative at Spanish public universities. The study provided deep insights into the definition and diffusion of the organization's strategic objectives and the identification of the critical intangibles related to these objectives.

H1: Intellectual Capital has a significant positive association with university performance.

Organizational capital. Organizations are store-houses of information, and how efficiently that information is accumulated and used determines its productivity (Prescott & Visscher, 1980). Organizational capital includes all non-human resources of knowledge, such as databases, executive instructions of processes, strategies and administrative programs that aid in informed decision making. It is the means by which an organization captures knowledge and makes it re-usable.

Studies proposed that information technology has the capacity to bring massive structural changes to a university and in another context, to the healthcare industry, they suggest that the reimbursement rates depend on how it is put to use. In context to Indian universities, it was suggested that deploying web-development technologies and mainstream web-information services on library websites will provide a one-stop portal for information to the students (Balaji & Kumar, 2011; Kohli & Devraj, 2004).

Conversion of willingness to innovate into innovative research and teaching, depends to a great extent on the institutional infrastructure. In organizations, it is important to make sure that people have the required support system to enhance creativity. Studies have shown a strong connection between supporting infrastructures- like online portals, accessibility to database and digital archives and research output (Minguillo & Thelwall, 2015; Zhang, Bao, & Sun, 2016).

With the emergence of knowledge sharing and communities of practice, organizational capital is fast becoming a prerequisite for collaboration within institutions. This thought has been substantiated by researchers (Lauring & Selmer, 2011, Syh- Jong, 2007). It was proposed that knowledge structures, networks and support systems were significant in achieving a collaborative environment in universities through the platform of knowledge sharing.

Capitalizing on organizational capital is important for universities because their ranking as centers of excellence depends greatly on the availability of the archived wealth of knowledge in their possession (Doctor, 2008; Doctor & Ramachandran, 2008). This further reinforces the strategic importance of organizational capital since the recent emergence of the neo-liberal universities treats these institutions as service providers and students and faculty as customers. Organizational capital affects the learning outcomes of not only students but also professors' imaginations, expectations and behavior, and this has been reinforced by previous researchers (Coates, James, & Baldwin, 2005).

Previous studies on organizational capital have covered the concept, its dimensions and their significance or have focused on its specific components and their effect on performance in particular sectors. This study covers the particular effects of organizational capital on the performance of universities.

H2: Organizational capital has a significant positive association with university performance.

Relational capital. Relational capital refers to external structures concerning the organization's relationships with channel partners, supply-chain partners and business collaborations. There is strong evidence of the impact of relational capital on an organization's performance and value creation (Tsai & Ghoshal, 1998; Westlund & Adam, 2010). Of late, research on intellectual capital has stressed on the importance of building reciprocal relationships between universities and the external world. This has resulted in a robust network between industry and academia and both reaping the benefits through university-industry collaboration channels like projects, alumni associations, incubators, industrial advisory boards, startup firms and spin offs (Dill, 1995; Fisher & Grosjean, 2002; Nyerere & Friso, 2013).

Universities have also started collaborating with local communities due to the triple-helix model. This has further accentuated the role of universities in local, regional and national development and brought out the growing recognition of university contribution towards economic development as a core part of the higher education policy.

Alumni are another source of monetary and non-monetary support in the form of political advocacy and volunteerism apart from funding (Weerts, Cabrera, & Sanford, 2010). Thus it is indispensable for universities to explore how alumni think of their alma mater after they are no longer a part of the institution.

University websites are becoming a potentially significant source of information, not only for the current and prospective students and stakeholders but also for the universities themselves in the process of creating academic and non-academic visibility in the external world. This idea has been corroborated by Utulu and Okoye (2010).

Studies have proposed having an open and interactive atmosphere where students and teachers can communicate freely. This has resulted in a customer centric and an interactive relationship between students and universities. The students-as-customer model proposed that if students think of themselves as customers, they are more prone to behaviors that are conducive to academic success (Finney & Finney, 2010; Koc & Celik, 2015).

Current research carries forward these thoughts to provide useful insights on the role of relational capital in determining a university's performance.

H3: Relational capital has a significant positive association with university performance.

University performance. There is an increased emphasis on continuous enhancement in the operating standards of knowledge-based institutions like universities. Kaplan and Norton (1992) introduced a new dimension to evaluate the performance of organizations from a balanced perspective. While Karathanos and Karathanos (2005) described how the Baldrige education criteria for performance excellence adapted the

concept of a balanced score card (BSC) to education, Umashankar and Dutta (2007) applied the concept of BSC to higher education programs/institutions in the Indian context.

Researchers (Bigliardi & Dormio, 2010; Karathanos & Karathanos, 2005; Zangoueinezhad & Moshabaki 2011) promoted the use of BSC and its application in measuring the performance of universities. Previous studies have emphasized on the role of intellectual capital approaches in managing the performance of higher education institutions (Secundo, Elena-Perez, Martinaitis, & Leitner, 2015; Secundo, Margherita, Elia, G & Passiante, 2010). Current study aims to focus particularly on university performance in India and to establish a relationship between the organizational & relational capital of universities. The literature review highlights that there is not enough work covering these relationships in the Indian context.

The growing focus on information and knowledge in all sectors of the economy suggests, that the role of universities will only become more important over time. So far very few studies have been conducted on intellectual capital in context of university education and performance. Even lesser literature is available in terms of Indian universities. For this study, researchers have adopted the balanced scorecard approach because it not only includes the financial aspect, but the market-oriented (neo-liberal) customer aspect apart from process and learning, which encompass teaching and research-related aspects, thus providing a complete holistic perspective.

Method

Research Design

The framework of the study has been developed in consistence with the mission of the Department of Higher Education, Ministry of Human Resource Development, Government of India. Salient points from the mission of the department are as follows:

- "Initiate policies and programs for strengthening research and innovation and encourage institutions - public or private to engage in stretching the frontiers of knowledge."

- "Promote quality higher education by investing in infrastructure and faculty."

Universities constantly need to raise the bar of innovation and performance. Although knowledge economy may not represent the pinnacle of the university, they are the most adaptable institutions, making them indispensable in evolving knowledge economies. As they are at the heart of knowledge creation and dissemination, monitoring and enhancing the performance of universities will be a critical success factor in creation of a knowledge economy.

Current research caters to the increased need for monitoring and augmenting the performance of universities against the backdrop of the mission of the Ministry of Human Resource Development. Both dimensions of intellectual capital-

organizational and relational, are included in the research design while human capital items have been taken into consideration only for the purpose of aggregate analysis of the relationship between intellectual capital and university performance.

Research Sample

The sample of the study was comprised of universities categorized into state, central and private from selected North Indian states. A stratified random sampling method was used to collect data. Three-hundred-thirty usable questionnaires were retained.

All respondents were faculty members of universities. They were categorized into three strata: lecturer/ assistant professor, associate professor & professor/ visiting professor. Tables 1 and 2 show the breakdown of the data collected.

Table 1.

Sample Institutions and Classifications

Name of University	Nature of University	State
Allahabad University	Central	Uttar Pradesh
Desh Bhagat University	Private	Punjab
Maharishi Dayanand University	State	Haryana
Maharishi Markandeshwar University	Private	Haryana
Punjab University	State	UT of Chandigarh
Thapar University	Private	Punjab
UP Technical University	State	Uttar Pradesh

Table 2.

Strata Sample Description

Job Title	Number of responses
Lecturer/ assistant professor	228
Associate professor	54
Professor/ visiting professor	48
Total	330

Out of a total of 330 respondents, 69% were lecturers/assistant Professors, 16.36% associate professors and 14.54% were professors/visiting professors. Roughly 25% of each category was included in the sample.

Research Instruments and Procedures

In order to reduce ambiguity, a preliminary pilot study was performed. The final questionnaire emerged as a close-ended tool based on 5- point Likert scale from Strongly disagree(1) to Strongly agree(5) .The questionnaire was tested for reliability and the overall reliability score for all the 103 items as depicted by Cronbach Alpha was 0.980. Table 3 lists the construct-wise Cronbach's-alpha scores of research variables. The Cronbach's-alpha score was close to 1 (Nunnally 1978) in all constructs. Thereafter factor analysis was performed for all three dimensions.

Table 3.

Construct Reliability Statistics

Name of the construct	Number of items	Cronbach's Alpha
Human capital	40	0.933
Organizational capital	9	0.918
Relational capital	21	0.932
Organizational performance	33	0.964

Results

Key Factors of Human Capital

Factor analysis helped in classifying human capital into six factors: research facilitation (HC1), perquisites for employee retention (HC2), faculty commitment (HC3), teaching effectiveness (HC4), individual recognition (HC5) and equal employment opportunities (HC6). These six factors explained 56.153% of the total variance. "Collaboration among faculty for research" emerged as a major item contributing towards human capital with a factor loading of (0.802) explaining 16.385% of the total variance. This substantiates the results of previous studies that claim that the productivity of researchers contributes immensely towards human capital (Bozeman & Corley, 2004; Hill & Lynn, 2010; Ponomariov & Boardman, 2010). "Collaboration with other universities" emerged as an important item under "Research facilitation" with a factor loading of (0.799). These items appeared to contribute towards human capital more than "hiring faculty with experience" and "provision of conducive physical environment". This analysis indicated that 'faculty commitment' is a major contributor to human capital, thus introducing a new dimension in the area of employee commitment.

Key Factors of Organizational Capital

The construct was classified into two factors-knowledge sharing (OC1) and knowledge infrastructure (OC2) that explained 72.26% of the total variance. The most important item that emerged under "knowledge sharing" was knowledge network (0.890) which explained 61% of the total variance, followed by "online portals for uploading teaching & reading materials" (0.877) and "Digital archives"(0.834), indicating the growing need to facilitate the sharing and dissemination of knowledge through these new age practices. This showed that having knowledge infrastructure is indispensable but more important is its implementation and usability. Studies (Charles, 2006; Huggins, Johnston, & Stride, 2012; Noor & Crossley, 2013) have found both the items significant in the context of firm innovation and regional innovation.

This study proposes knowledge sharing and knowledge infrastructure as major contributors towards organizational capital for universities. The KMO measure of sampling adequacy was 0.888 and the value of the Bartlett test of sphericity was 2065.718 (df: 36) which was significant at less than 0.05%. Table 4 shows the results of the factor analysis of organizational capital.

Key Factors of Relational Capital

The construct was reduced to four factors: "access to information" (RC1)," "network leveraging capacity" (RC2), "degree of interaction" (RC3) and "outreach", (RC4) which explained 65.101% of the total variance. The strongest item that emerged as the underlying factor of" "access to information" was academic paper repository with a factor loading of (0.799). This indicated that presence of an academic repository on the website of a university increases its visibility to the outside world. Other factors that emerged, were information about teaching resources (0.755) and information on conferences and seminars (0.740), indicating that information dissemination is the best way for a university to increase its outreach among the academic and industrial communities. University laws and handbooks (0.738), online public access catalogues (0.738) and student exchange programs (0.649) also emerged as important items.

The current study establishes "access to information" as the major contributor to relational capital. Making use of alumni networks (0.784) emerged as an important item indicating the role played by alumni in enhancing university relational capital, followed by a strong alumni network (0.687). Previous works (Datta & Saad, 2008; Doctor & Ramachandran, 2008; Kitson, 2004; Weerts, Cabrera, & Sanford, 2010) contain similar ideas.

Belief in students as stakeholders (0.757) seemed to be a significant contributor towards relational capital followed by interaction with parents (0.688) and interaction with students (0.679), showing that universities are increasingly adopting neo-liberal policies, operating as corporations and treating students, parents and industry sectors as stakeholders. The KMO measure of sampling adequacy was 0.908 and the value of Bartlett test of sphericity was 4235.088 (df: 210), which is significant at less than 0.05. Table 5 shows the results of the factor analysis of relational capital.

Key Factors of University Performance

Factor analyses were performed on the four parameters of "Financial", "Customer", "Learning" and "Process." The three factors with the highest loadings for all four parameters were taken and their average scores were calculated. For the financial aspect, items taken were "finance from research" (0.798), "professional development allowance" (0.766) and "salary hike" (0.760). For the customer aspect, items taken were "word of mouth among students" (0.825), "student satisfaction with pedagogy" (0.814) and "student satisfaction with infrastructure" (0.812).For the learning aspect, items included were "active involvement in consultancy" (0.809), "objective measure to assess teaching performance" (0.807) and entrepreneurial initiatives among faculty" (0.780). The process aspect was covered through "quality enhancement of regular program" (0.869), "program for enhancing staff productivity" (0.849) and "measurement scales to evaluate students" (0.828).

Moving further in the analysis, a stepwise regression was performed to determine the important predictors of organizational performance. Table 4 shows the regression results between organizational performance and the three dimensions of intellectual

capital. The Breusch- Pagan test of heteroskadasticity was conducted using STATA software and the values below indicate the validity of the statistical methodology used.

Ho: Constant variance

Variables: fitted values of op

chi2(1)　　=　18.68

Prob > chi2　=　0.0000

Table 4.

Step Regression Results for Intellectual Capital with University Performance

Model	R	R square	Adjusted R square	Std. error of the estimate	R square change	F change	df1	df2	Sig. F change	Durbin-Watson
1	.727[a]	0.528	0.527	0.61029	0.528	366.87	1	328	0	
2	.795[b]	0.631	0.629	0.54014	0.103	91.723	1	327	0	
3	.831[c]	0.69	0.687	0.49606	0.059	61.696	1	326	0	
4	.852[d]	0.727	0.723	0.46663	0.037	43.413	1	325	0	
5	.864[e]	0.747	0.743	0.44989	0.02	25.639	1	324	0	
6	.871[f]	0.759	0.754	0.43968	0.012	16.221	1	323	0	1.708

Beta values and significance level of predictor variables				
Model	Unstandardized coefficients		Standardized coefficients	t
	B	Std. error	Beta	
1　(Constant)	1.748	0.106		16.52
Knowledge sharing	0.546	0.028	0.727	19.154***
2　(Constant)	0.671	0.146		4.583
Knowledge sharing	0.354	0.032	0.471	10.98***
Access to information	0.443	0.046	0.411	9.577***
3　(Constant)	0.303	0.142		2.131
Knowledge sharing	0.241	0.033	0.32	7.309***
	0.361	0.044	0.335	8.27***
Access to information				
Network leveraging capacity	0.296	0.038	0.318	7.855***
4　(Constant)	0.048	0.139		0.343
Knowledge sharing	0.203	0.031	0.27	6.433***
Access to information	0.286	0.043	0.265	6.694***
Network leveraging capacity	0.284	0.036	0.3	7.862***
Individual recognition	0.205	0.031	0.226	6.589***

Table 4 Continue

Model		Unstandardized coefficients		Standardized coefficients	t
		B	Std. error	Beta	
5	(Constant)	-0.244	0.146		-1.671
	Knowledge sharing	0.178	0.031	0.238	5.806***
	Access to information	0.267	0.041	0.248	6.459***
	Networ- leveraging capacity	0.275	0.034	0.295	8.019***
	Individual recognition	0.161	0.031	0.177	5.140***
	Perks for employee retention	0.169	0.033	0.165	5.064***
6	(Constant)	-0.53	0.159		-3.321
	Knowledge sharing	0.146	0.031	0.195	4.715***
	Access to information	0.253	0.041	0.234	6.231***
	Network-leveraging capacity	0.206	0.038	0.221	5.472***
	Individual recognition	0.144	0.031	0.159	4.672***
	Perks for employee retention	0.187	0.033	0.182	5.668***
	Degree of interaction	0.177	0.042	0.161	4.028***

Note: All variables are significant at ***p< 0.001

Variables that emerge as important predictors are: knowledge sharing (B=0.146,t= 4.715, p=0.000), access to information (B=0.253, t= 6.231, p= 0.000), network-leveraging capacity (B= 0.206, t= 5.472, p= 0.000), individual recognition (B=0.144, t=4.672, p= 0.000), perks for employee retention (B= 0.187, t= 5.668, p= 0.000) and degree of interaction (B= 0.170, t= 4.028, p= 0.000). The model (R^2 = 0.759, p < 0.001) suggests that the three dimensions of intellectual capital have significant explanatory power.

A study by Mumtaz and Abbas (2014) contains similar thoughts. It also shows 75.9 % variation. Out of the six major predictor variables affecting organizational performance, significant ones were access to information, network leveraging capacity, perks for employee retention and degree of interaction, thus highlighting the importance of relational capital in predicting the performance of a university. Out of the six predictors, the ones having the maximum Beta values were access to

information, & network-leveraging capacity, the sub factors of Relational capital. Results provide significant support to H_1.

An important finding is, that out of the six significant variables that emerged, four were from the relational and organizational capital dimensions. Only two were from human capital, thus providing a novel insight into the new areas of focus for university policy makers. Focusing only on conventional faculty expertise and research performance will no longer be sufficient for universities. The policies will need to be more neo-liberal in terms of its relationship with the external world, students, industry and society in general. Table 5 shows the regression results of organizational capital and university performance.

Table 5.

Stepwise Regression of Organizational Capital with University Performance

Model	R	R square	Adjusted R square	Std. error of the estimate	Change Statistics					Durbin-Watson
					R square change	F change	df1	Df2	Sig. F Change	
1	.727a	0.528	0.527	0.6103	0.528	366.9	1	328	0	
2	.739b	0.547	0.544	0.5989	0.019	13.54	1	327	0	1.442

Beta values and significance levels of predictor variables				
Model	Unstandardized coefficients		Standardized coefficients	t
	B	Std. Error	Beta	
1 (Constant)	1.748	0.106		16.52
Knowledge sharing	0.546	0.028	0.727	19.154***
2 (Constant)	1.34	0.152		8.829
Knowledge sharing	0.435	0.041	0.579	10.564***
Knowledge infrastructure	0.202	0.055	0.202	3.680***

Note: Both variables are significant at ***$p<0.001$

Both variables of knowledge sharing and knowledge infrastructure emerge as important predictors of university performance and show a significant explanatory power (R2 =0.547, p=0.000) thus offering support to H2. Table 6 shows the regression results of relational capital and university performance.

Table 6.

Regression results of relational capital with university performance

Model	R	R square	Adjusted R square	Std. error of the estimate	Change Statistics					Durbin-Watson
					R square change	F change	df1	df2	Sig. F change	
1	.704[a]	0.495	0.494	0.63094	0.495	322.11	1	328	0	
2	.800[b]	0.639	0.637	0.53435	0.144	130.3	1	327	0	
3	.816[c]	0.666	0.663	0.51498	0.027	26.059	1	326	0	
4	.822[d]	0.675	0.671	0.50876	0.009	9.023	1	325	0.003	1.54

Beta values and significance levels of predictor variables				
Model	Unstandardized coefficients		Standardized coefficients	t
	B	Std. error	Beta	
1 (Constant)	0.665	0.171		3.892
Access to information	0.759	0.042	0.704	17.948***
2 (Constant)	0.151	0.152		0.993
Access to information	0.502	0.042	0.466	11.872***
Network leveraging capacity	0.417	0.037	0.448	11.415
3 (Constant)	-0.203	0.162		-1.256
Access to information	0.452	0.042	0.419	10.787***
Network leveraging capacity	0.296	0.042	0.318	6.979***
Degree of interaction	0.241	0.047	0.228	5.105***
4 (Constant)	-0.337	0.166		-2.032
Access to information	0.404	0.044	0.375	9.105***
Network leveraging capacity	0.264	0.043	0.283	6.101***
Degree of interaction	0.23	0.047	0.218	4.914***
Outreach	0.119	0.04	0.122	3.004**

All four variables- access to information, network leveraging capacity, degree of interaction and outreach, emerge as important predictors of university performance. The model also shows significant explanatory power (R^2 =0.671). Three out of four variables had a p value of 0.000. The above results support H3.

Discussion and Conclusion

If the 21st century is to be dominated by Asia, its universities will have to play a vital role to play, by producing world-class research and solutions to all policy-related challenges. According to the Times Higher Education BRICS & Emerging Economies University Rankings 2016-17, China has the highest density of leading educational institutions in the developing world. While 27 Indian universities have featured in the top 300 rankings, China still dominates the list taking 52 places. Policymakers across BRICS and emerging economies place far more importance on universities and the role they play in driving national growth and competitiveness.

Hence this is an opportune time for India to create a second wave of institution building based on strong institutional support systems, knowledge sharing, access to information, network -leveraging capacity and interactive culture based on market-like governance. Therefore it is timely and relevant to investigate university performance from a fresh perspective of intangibles.

Keeping the above objective in mind, the current research provides novel insights into the relationship between intellectual capital and performance of universities in North India. Although in the initial analysis, research facilitation had maximum loading on human capital, it was later found in the aggregate analysis that it did not emerge as a significant factor affecting university performance, which is quite dissimilar to what has been suggested in many previous studies (Edgar & Geare, 2011; Kuah & Wong, 2011; Pratt, Margaritis, & Coy, 2006). It was also found in the analysis that out of the two dimensions that effect university performance, organizational and relational capital, relational capital emerged as the more important one. When the regression model introduced the relational capital variables into the equation, three out of a total of six predictor variables comprised of relational capital, and it was revealed that access to information, network-leveraging capacity and degree of interaction are some of the areas that university policy makers just can't afford to neglect.

Access to information enhances the level of transparency in the university processes and network-leveraging capacity. Previous studies (Alvarez, Dominguez, & Sanchez, 2010; Bektas & Tayauova, 2014; Canibano & Sanchez, 2009; Chakrabarti & Santoro, 2004) argue along the same lines. This gives researchers and administrators in India; a new perspective for examining a university's performance and indicates that universities are undergoing a new paradigm of change from being just good quality education providers to institutions working on a customer centric model by being more flexible, transparent, competitive and accountable.

Many studies (Chan & Lo, 2007; Etkowitz, Webster, Gebhardt, & Terra, 2000; Gunasekara, 2004; Jongbloed, Enders, & Salerno, 2008; Trequattrini, Lombardi, Lardo, & Cuozzo, 2015) have described that universities around the world are increasingly shifting from their traditional primary role as education providers and scientific knowledge creators to a more complex "entrepreneurial" university model that incorporates the role of the commercialization of knowledge and active contribution

to the development of private enterprises in the local and regional economy with different stakeholders. Universities need to operate within a knowledge-based framework enabled with close interactions with government institutions and private industries.

These findings are pertinent and practically relevant for the top management of universities which can focus on these unconventional areas by strengthening relational capital, building strong relationships with alumni and industry members, facilitating industry consulting and increasing the degree of interaction with students and parents in order to enhance a university's performance.

Findings of the above study can also be generalized and applied to developing economies across the world, since relational capital that emerged in this study has also found a significant place in the framework given by the Times Higher Education World University Rankings 2016-17. Other than applying global yardsticks, this study also looks at the indicators from a completely fresh perspective of intellectual capital. Results imply that in addition to relying on the conventional areas of focus like teaching expertise and teaching pedagogy, planners in the education sector need to focus equally or more on the infrastructural aspects and a culture of knowledge which influences the methods of teaching and learning so that our universities are able to provide the best of learning and research experiences to their students and teachers.

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