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आ नो भद्रा : क्रतवो यन्तु विश्वत : ।
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- Rig Veda 1-89-1

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Patron

N. Ramanuja

Chairman - Bharatiya Vidya Bhavan, Bengaluru Kendra
email: itsramanuja@yahoo.com

Editor-in-Chief

N.S. Viswanath

Director & Principal
Bharatiya Vidya Bhavan's
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Bengaluru
viswanathns19@gmail.com

Joint Editor-in-Chief

B. Shekar

Professor of Decision Sciences &
Information Systems Area
Indian Institute of Management
Bengaluru
shek@iimb.ernet.in

Editors

K.L. Ramadas

Professor of Marketing
Bharatiya Vidya Bhavan's
M. P. Birla Institute of Management
Bengaluru
profklr@gmail.com

B.V. Pushpa

Asst. Professor
Bharatiya Vidya Bhavan's
M. P. Birla Institute of Management
Bengaluru
pushpabv75@gmail.com

Assistance Subscription:

Praveena V. Savadi

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Editorial Board

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Ohio University, Athens, Ohio, USA
professororgupta@yahoo.com

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(Former Vice-Chancellor,
University of Agricultural Sciences, Bengaluru)
Professor Emeritus of Economics
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M. P. Birla Institute of Management, Bengaluru
sbisaliah@yahoo.com

Chandra Akkihal

Professor Emeritus of Economics
Marshall University, Huntington, USA
akkihal1@yahoo.com

Dinesh Kumar U.

Professor of Quantitative Methods & Information Systems
Indian Institute of Management Bengaluru, Bengaluru
dineshk@iimb.ernet.in

Jishnu Hazra

Professor of Production & Operations Management
Indian Institute of Management Bengaluru, Bengaluru
hazra@iimb.ernet.in

Lingaraj B.P.

Professor Emeritus
Department of Management & Marketing
Indiana University-Purdue University Fort Wayne, Indiana, USA
babilin@gmail.com

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Professor of Production & Operations Management
Ohio University, Athens, Ohio, USA
koshal@ohio.edu

Narahari Y.

Professor
Department of Computer Science & Automation
Indian Institute of Science, Bengaluru
hari@csa.iisc.ernet.in

Narappanavar S.R.

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shrinish_r_n@yahoo.co.in

Prabhakar K.V.

(Former Vice-Chancellor, Gulbarga University, Gulbarga)
Professor of Marketing
Bharatiya Vidya Bhavan's
M. P. Birla Institute of Management, Bengaluru
prabhakar_sarojini@rediffmail.com

Rajindar Koshal

Professor Emeritus of Economics
Ohio University, Athens, Ohio, USA
koshalrk@yahoo.com

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Professor of Marketing
Indian Institute of Management Bengaluru, Bengaluru
rkumar@iimb.ernet.in

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Professor of Economics
Mahajan Post Graduate Centre
University of Mysore, Mysuru
ckrenukarya@hotmail.com

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Director, Brindavan College, Bengaluru
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Bangalore University, Bengaluru
madhavi.tv@accenture.com

Subhash Sharma

Dean, Indus Business Academy,
Bengaluru & Greater Noida
re_see@rediffmail.com

Uday Tate

Professor of Marketing
Marshall University, Huntington, USA
tateu@marshall.edu

EDITORIAL

This edition of the journal is presented with sorrow at the loss of one of the Editors: Prof. K.L. Ramadas. A brief on Prof. K.L. Ramadas is written here for the readers to have a feel of the person.

There are two research papers: 1. An Invited Article & 2. A Paper on Crypto currency. Both are themes of current relevance. Readers can acquire insights in to them & may further document their thoughts.

The synopsis of Ph.D. thesis presented is on MSMEs and Innovation of two kinds: Closed and Open. The scholar has done quality thesis in terms of providing facts on Innovation in Indian companies and as to how do they adapt to change. The findings of the study are of value to the companies and the Governing body.

Editor-in-Chief

Prof. K.L. Ramadas: A Person who Aimed at Excellence



Prof. K.L. Ramadas, who left for heavenly abode on September 1, 2018, was a person who brought in a significant difference in the functioning of M.P.Birla Institute of Management.

On superannuation from HMT Ltd., as General Manager (Corporate Communications), he moved to academics. With a rich experience of three decades in the corporate, he joined the institution in 2002 and began to make a mark in every activity that he did.

A keen learner himself, he shared his ideas, thoughts and experiences with students and was always sincere in his attempt to pursue something new. And that was proven when he acquired Master's in Philosophy degree at the age of 70, while he was teaching.

As an administrator, he ensured orderly functioning of the placement and personnel department at the institution and was meticulous in keeping records and drawing statistics for facilitating right decisions.

A man, who would not hesitate to differ and put across his views clearly, was always reflective about discussions on current affairs and trends. His study and report on the success of HMT Ltd., was highly appreciated. His work on the top brands of India was acclaimed as a good work in academics. His involvement in literature and cultural activities is worth mentioning in this context.

Being one of Editors of Dharana - Bhavan's International Journal of Business, he ensured that the journal was released on time and with excellence in terms of quality and content.

We all pray for Prof. K.L Ramadas.

Population Growth and Trends in Consumption Pattern in Karnataka: Implications to Agricultural Development

S. Bisaliah* & Khalil Shaha**

Abstract

The paper discusses implications of population growth on consumption and agricultural development with reference to the state of Karnataka. Data have been culled out from several authenticated sources. Definite trends have been noticed in Karnataka Agriculture. While population has increased during the last four decades, noticeable change in the same tract has been uneven. The share of Agriculture to GSDP has declined consistently followed by low productivity. Three domain areas of drivers have been identified for policy and action frame work: 1. Natural Source 2. Human Development and 3. Technology. Intensifying area under irrigation by resource use is recommended.

Key Words and Phrases: *Trends in Population, Action Drivers and Yield Gap.*

1. The Theme Addressed

It is the major premise of this paper that trends in population growth and in consumption pattern have far reaching implications to agricultural development than what is commonly understood and what is commonly brushed aside. Hence the present paper addresses the following issues:

- What would the decadal trends in major components of demographic profile of Karnataka be suggestive of growth pattern of Karnataka Agriculture?
- How are the broad trends in consumption of food articles in the State, and what are the implications to cropping pattern?
- How have been the trends in the share of agriculture, industry and service sector in Gross State Domestic Product (GSDP) during the last four decades and what do these trends suggest about the future of agriculture in Karnataka?
- What changes have taken place in land resource base of the State and in patterns of land holdings?

*S. Bisaliah: Former Vice- Chancellor, University of Agricultural Sciences, Bengaluru) Professor Emeritus of Economics Bharatiya Vidya Bhavan's M P Birla Institute of Management, Bengaluru.

**Khalil Shaha: Institute for Social and Economic Change, Bangalore.

- How are the trends in gross irrigated area, in sources of irrigation and in cropping intensity?
- Where does Karnataka stand with respect to yields of some major crops compared to India and of world yield levels, and of major producing countries of these crops?
- What could be the possible indicative of agricultural development path for Karnataka given the context and complexity of agriculture in the State?

2. Trends in Population Profile

Population growth in any region could put a pressure on the resource base: natural and economic resource, comprising of many things like social infrastructure, physical infrastructure, and at the end quality of life itself. In this study, the focus of population profile is on total population for more than half a century, composition in terms of male and female population, urban and rural population, density of population and literacy rate. It is observed from Table 1:

Table 1: Decadal Trends in Demographic Profile of Karnataka Population:

Particulars	Decade						
	1951	1961	1971	1981	1991	2001	2011
Total Population (crore)	1.94	2.36	2.93	3.71	4.50	5.29	6.11
• Male (crore)	0.99	1.21	1.50	1.89	2.30	2.69	3.10
• Female (crore)	0.95	1.15	1.43	1.82	2.20	2.60	3.01
Population Growth (%)	-	21.58	24.22	26.75	21.11	17.51	15.60
• Share of Urban Population (%)	22.96	22.33	24.30	28.89	30.92	33.99	38.70
• Share of Rural Population (%)	77.04	77.67	75.70	71.11	69.08	66.01	61.30
Density (sq. km.)	-	123	153	194	235	276	319
Literacy Rate (%)	19.26b	29.80b	36.83b	46.21c	56.04c	66.60c	75.40c

Notes: 1.b = Population aged 5 years and above.

2.c = Population aged 7 years and above.

3.Source: Many Publications of Indian Census-1951-2011.

- Between 1951 and 2011, the population of the State had increased from 1.94 crore in 1951 to 6.11 crore, and decadal population growth from 21.58% in 1961 to 15.60% in 2011, registering a slowdown in population growth.
- The share of urban population in total population had increased from 22.96% in 1951 to 38.7% in 2011, and the corresponding rural population from 77.04% to 61.3%. This rural-urban population composition puts a pressure on the need for producing food for urban sector.
- Density of population per sq. km had increased from

123 in 1961 to 319 in 2011, with implications for man-land ratio.

- Yet another trend is increase in literacy rate from 19.2% in 1951 to 75.4%, with implications to changing food consumption composition.

Temporal Trends in Consumption Pattern of Food Articles

Population profiles like population growth, rural and urban population, and literacy rate-all will have a bearing on consumption pattern of food and non-food articles. It is observed from Table 2:

**Table 2: Temporal Trends in Consumption Pattern of Food Articles in Karnataka:
Percentage of Monthly Per-Capita Consumer Expenditure:**

Broad Groups of Consumption Items	Rural			Urban		
	1993-94	2004-05	2011-12	1993-94	2004-05	2011-12
I Food Items:						
Cereals	22.8	16.48	9.61	16.40	11.11	6.13
Pulses and Pulse Products	4.30	3.53	3.14	3.50	2.24	1.95
Fruits and Nuts	3.20	3.26	4.31	3.20	2.61	4.12
Vegetables	4.90	4.61	5.26	4.20	3.12	3.38
Egg, Fish and Meat	3.30	3.50	5.42	3.40	2.91	3.64
Other Items	23.50	24.29	13.14	21.00	21.22	20.86
Total Food Items	62.00	55.67	51.35	51.70	43.21	40.08
II Total Non-Food Items:	38.00	44.33	48.65	44.30	56.79	59.92
Total	100.00	100.00	100.00	100.00	100.00	100.00

Source: Various issues of National Sample Survey Reports on Level and Pattern of Consumer Expenditure.

Notes: 1. Other items include milk and milk products, edible oil, spices, beverages, refreshments etc, fruits and nuts and so on.

2. Total non-food articles include medical, education, durable goods, clothing and bedding, fuel and light and so on.

- In percentage of monthly expenditure by both rural and urban population on food items, there was a drastic decline between 1993/94 and 2011/12, much more so in case of urban population. Obviously there has been a considerable increase in total non-food items like medicare, education, clothing, fuel, light, and other durable goods. This kind of shifts in consumption pattern is much more so in case of urban population.
- Among food articles, decline in percentage of

expenditure on cereals and pulses is considerable, whereas percentage of expenditure on fruits, nuts, vegetables, egg, fish and meat has increased. This kind of change in consumption pattern will have a bearing on prices and production in farm sector.

4. Following the changing consumption pattern, broad trends in cropping pattern have come to be registered as shown in table 3:

- In percentage to gross cropped area, the share of cereals had declined from about 60% in 1962-63 to 40% in 2017-18, and that of pulses had increased. However the percentage area had declined in total food grains during the same period.
- But the percentage area under fruits and vegetables had increased considerably during the same period, following changing consumption pattern.

Table 3: Change in Cropping Pattern: Some Broad Trends – Percentage to Gross Cropped Area Triennium Ending

Indicators	1962-63	1982-83	2002-03	2017-18
Total Cereals	59.72	52.41	45.07	39.96
Total Pulses	11.92	13.22	16.91	24.67
Total Food Grains	71.92	66.59	61.98	61.63
Fruits and Vegetables	-	1.86	5.33	5.10 (2014-15)

Source: Many Publications of Ministry of Agriculture, Government of Karnataka.

5. Population growth, composition of rural and urban population, shifts in consumption patterns of food and non-food items-all these have a bearing, among others, on the percentage share of three broad sectors viz agriculture, industry, and service sector-in Gross State Domestic Product (GSDP). The bearing is reflected in the results shown in Table 4:

- In about four decades, the percentage share of agriculture sector had declined from 43.13% to 11.10%, share of industry had marginally declined, whereas the share of service sector had doubled from 33.56% to 66.63%. This implies that GSDP in Karnataka is service sector-led, and agriculture sector has to bear the burden of producing food for the people in industry and service sector. Over 60% of the State population parked mainly in rural areas get a share of about 11% of income produced in the State. This explains vividly rural-urban development divide, and over 80% of the poor parked in rural areas. How long can this go on, without social unrest is a question of great concern? What is the choice of growth-development path? This will be examined in the last section of the paper.

Table 4: Sectoral Share in Gross State Domestic Product (GSDP):

Year	Sectoral Share (%)		
	Agriculture	Industry	Service
1980-81	43.13	23.31	33.56
1990-91	34.19	25.72	40.09
2000-01	30.33	22.99	46.68
2010-11	17.96	28.66	53.38
2016-17	11.53	22.94	65.53
2017-18	11.10	22.27	66.63

Source: Publications of Central Statistical Organization (CSO), Government of Karnataka.

Land Resource Base & Land Holding Pattern

Land resource base and land holding pattern will have a far reaching implications for meeting the growing and changing foods needs of population. Table 5.A and

5.B provide dynamics of this resource base and of land holding pattern of different dimensions:

Table 5.A: Land Resource Base and Pattern of Land Holdings:

Indicators	1970-71	1980-81	2000-01	2010-11
1. Total Cropped Area (in lakhs)	108.87	106.60	122.84	130.62
2. No of Operational Holdings (in lakhs):				
Marginal	10.81	14.89	35.52	38.49
Small	8.40	10.57	19.09	21.38
Semi-Medium	7.88	9.18	12.59	12.67
Medium	6.23	6.62	5.69	5.11
Large	2.19	1.83	0.90	0.68
Total Holdings	35.51	43.09	70.79	78.32
3. Share (%) of different sizes of holdings in total holdings:				
Marginal	30.44	34.56	45.94	49.14
Small	23.66	24.53	26.97	27.30
Semi-Medium	22.19	21.30	17.78	16.18
Medium	17.54	15.36	8.04	6.52
Large	6.17	4.25	1.27	0.87
Total	100.00	100.00	100.00	100.00
4. Area share of holdings (%):				
Marginal	4.83	6.24	12.12	15.22
Small	10.74	13.14	22.28	24.83
Semi-Medium	19.40	21.90	27.86	27.90
Medium	33.36	34.21	26.95	23.88
Large	31.68	24.52	10.70	8.17
Total	100.00	100.00	100.00	100.00

Notes: Marginal holdings: Below 1ha. Small: 1 to 2ha. Semi-Medium: 2 to 4ha. Medium: 4 to 10ha. Large: Above 10ha.

Source: Many Publications of Ministry of Indian Agriculture, Government of Karnataka.

Table 5.B: Average of Different Size Holdings (in ha):

Indicators	1970-71	1980-81	2000-01	2010-11
Marginal	0.51	0.49	0.46	0.48
Small	1.45	1.46	1.44	1.41
Semi-Medium	2.80	2.80	2.72	2.68
Medium	6.09	6.07	5.83	5.68
Large	16.44	15.74	14.74	14.62
Average of Total Holdings	3.20	2.73	1.74	1.55

Source: Many Publications of Ministry of Indian Agriculture, Government of Karnataka.

- Number of operational holdings had more than doubled from 35.51 lakh holdings in 1970-71 to 78.32 lakh holdings. Of these total holdings, the number of marginal and small holdings increased from about 19 lakh in 1970-71 to about 60 lakh in 2010-11. Whereas in the case of semi-medium, there was some increase in the number of holdings, but medium and large holdings experienced quite a decrease in the number.
- With respect to the share of different holdings in total holdings, there was quite an increase from 54% in 1970-71 to about 76% in 2010-11 in case of marginal and small holdings. The state has become a region of marginal and small holdings. Whereas in the case of all other three size groups, the percentage share had declined during the same period, much more so in case of medium and large holdings.
- An examination of the issue from the angle of area share of different size holdings, both marginal and small holdings as well semi-medium holdings had increased their percentage share in area during the period of 40 years. But in case of medium and large holdings, there was a considerable decline in their area share, much more so in case of large holdings. Which had experienced a decline from 31.68% in 1970-71 to 8.17% in 2010-11.
- As could be seen from Table 5.B, during 40 years of study period, there was a decline in the average size of holdings, measured in terms of area owned.

If could be inferred from the above analysis that (1) The number of operational holdings had more than doubled, the share of marginal and small holdings had increased three fold, and in case of other three holding groups there was a decline in their share. (2) With respect to percentage share in total holdings, there was a considerable increase in the share of small and marginal holdings, and decrease in the share of other groups: (3) An increase in area share was registered in case of marginal and small holdings as well as semi-medium holdings, whereas in case other two groups there was a considerable decline in the area share. (4) The average size of holdings had declined in all group sizes. All these inferences are suggestive of pressure of population growth on land resource base. However, this does not account for declining fertility of land resource base. This also will have bearing on productivity of land resource base.

7. Irrigation Resource Base

The irrigation resource base for supporting Karnataka agriculture is displayed in Table 6:

- The percentage of gross irrigation area had increased from 9.22% in 1960-61 to 34.18% in 2014-15. This implies that about two-thirds of cropped area in the State is still rain-fed. Hence Karnataka is a land of dryland agriculture.
- During the period of less than 60 years, cropping intensity increased from 103.52% to 120.85%.
- With respect to sources of irrigation, tube-well irrigation had increased its dominance from almost zero percentage in 1960-61 to 38.54% in 2014-15, followed by canal irrigation with a share of 34.24% in 2014-15. Tanks which were dominant source of irrigation in 1960-61 had registered a considerable decline from about 40% to about 4% during the study period. Other two sources had experienced a decline in their share. It is to be remembered that depletion of water resource in the State is a great concern with its impact on productivity (yield) of land in the State.

Table 6: Total Cropped Area, Gross Irrigated Area and Cropping Intensity

Indicators	1960-61	1980-81	2000-01	2014-15
1. Total Cropped Area (in lakh ha.)	105.88	106.60	122.84	122.47
2. Gross Irrigated Area (in lakh ha.)	9.76	16.76	32.71	41.86
3. Percentage of Gross Irrigated Area	9.22	15.72	26.63	34.18
4. Share of Irrigation Sources (%):				
Tube Wells	0.00	0.04	20.39	38.54
Wells	15.47	26.72	18.12	10.52
Canal	27.50	40.19	36.55	34.24
Tanks	40.05	22.31	9.88	4.32
Other	16.98	10.74	15.02	12.38
5. Cropping Intensity (%)	103.52	107.69	118.00	120.85

Source: Many Publications of Ministry of Indian Agriculture, Govt. of Karnataka.

8. Yield Gap Analysis

Where does Karnataka stand with respect to yield, of some major crops compared to India, world and major producing countries globally? The results are displayed in Table 7, with three year average yield data. Yield ratios are computed with Karnataka yield as the base. In case of comparison between Karnataka and India, yield levels are better in Karnataka with respect to sugarcane, maize and sorghum, but with respect to world average yield, Karnataka is better in case of yield of Rice and Sugarcane. With respect to wheat, maize and sorghum the world average yields are higher. When comparison is drawn between Karnataka and major producing countries in the world, yield levels are lower in Karnataka compared to U.S.A in case of maize and sorghum, compared to U.K in case of wheat, compared to China in case of rice, and compared to Columbia in case of sugarcane. The yield levels of other countries in case of five crops covered in this study set the benchmark for Karnataka. In fact, Karnataka agriculture

is trapped in median level without sliding down in growth hierarchy and unable to climb up the ladder.

Table 7: Yield Gap in some Major Crops of Karnataka vis-à-vis India and Major Producing Countries:

Crop	Yield Ratio			
	Karnataka	India	World	Major Producing Country in the World
Wheat	1.00	2.64	2.95	7.47 (U.K)
Rice	1.00	1.21	0.87	2.30 (China)
Sugar Cane	1.00	0.84	0.83	1.06 (Columbia)
Maize	1.00	0.89	1.93	3.70 (U.S.A)
Sorghum	1.00	0.91	1.58	4.83 (U.S.A)

Sources: FAO and Economic Survey of Karnataka: 2017-18.

9. Analysis Of Indicative Development Path For Karnataka Agriculture

The discussions on population growth and changing consumption pattern of food and non-food articles are suggestive of the directions which need to be piloted for agricultural development in Karnataka. Analysis of resource base in case of land and water suggest the depletion and degradation of natural resource base in Karnataka, and the need for addressing these issues. An examination of pattern of land holdings suggests that Karnataka is a state of small and marginal holdings due to population pressure, and fragmentation and subdivision of holdings due to law of inheritance:

- Only about one-third of the cropped area is irrigated. Hence the State is a region of dominantly dryland agriculture.
- Yield gap analysis indicates the low productivity of Karnataka agriculture with respect to dominant crops.
- Added to the concerns of Karnataka agriculture derived from the empirical analysis performed in this later, there are other complexities and

the context in which the State agricultural sector is placed-falling public investment in the sector, polarized growth pattern instead of broad-based virtuous growth, transition to high value crops mainly thanks to entry of corporate sector, failure of governance, and agrarian crisis reflected in persistent farmers' suicide syndrome and so on. Added to all is the transition of the sector from protective sector through trade policy to competitive environment under WTO of globalization era.

- Then what are the search areas for revitalizing Karnataka agriculture:
 - There are three search areas as possible drivers and directions of agricultural development in the State: Natural resource domain to provide physical and bio logical foundation for agriculture, human development domain for farmers' capacity buildings, technology-cum-institutional domain (like credit and marketing institutions).
- It is not the objective of this paper to elaborate all these: But to cite a few of them:
 - Farmers' capacity building through development education and development associations to address the issues of natural resource management, marketing, and for availing institutional development credit.
 - "Build on the Rest" strategy in addition to "Build on the Best", so as to bring laggards into the orbit of high growth path.
- Gradual reduction in subsidies to plough back resources for public investment in irrigation development and management.
- Reduction in number of operational holdings through amendment to Land Reforms Act so as to facilitate leasing in and leasing out land.
- Shift labour force in agriculture by promoting labour intensive industries in rural and semi-urban areas so as to diversify rural economy, as done in China.
- Adoption of new technologies like biotechnology with bio safety.
- Any of the failure to support agriculture and rural population would lead to strong surfacing of third and fourth level state of psychological behavior of human beings viz vocal and violence. The first two stages viz silent tolerance and silent resentment are over, and the agrarian crisis is already on. It is realized that many new initiatives such as distribution of quality seeds and bio-pesticides, sub-mission on agricultural mechanization, schemes under National Food Security Mission, Rashtriya Krishi Vikas Yojana, National Mission of Oil Seeds, Soil Health Mission, National Mission for Sustainable Agriculture, Rainfed Area Development, Bhoochetana and so on for supporting agriculture are on. But it is too early to be conclusive about the extent of their positive impact on the sector. It is not known whether the outcome of these new initiatives would match the budget outlay. At the end it becomes a management problem.

Crypto currency - A Cauldron of Legal & Technical Challenges: An Indian Perspective

Hema Harsha*

Abstract

Crypto currency is the key action word of caution and currency in operation. Technology has enabled operations of currencies across possible by least cost with appropriate legal correctness. There are two options left to Governments of Nations: 1. Adapt to fast changing to curb Bitcoins - a symbol of challenge for the Nations and 2. Legalize crypto currencies to control their disastrous effects. The time is now to discuss the issue at the global level to address the challenge before it erupts into a volcano.

Key Words and Phrases: *Cryptocurrency, Bitcoins, legal correctness and Virtual Currency*

1.0 Introduction

The crypto currency, from using stones and beads which had a physical form, which in an “e” form does not have any physical dimensions, mankind has come a long way in devising mechanisms for bartering or conducting any sort of economic transaction. The evolution of the Banking system, both organized and unorganized, as a mechanism of recording and tracking economic transactions between entities has been one of the many milestones of the growth of economic activities. With maturity of Kingdoms and Nations, the mechanisms and responsibilities of assuring the economic value shifted from individuals to the Sovereign State through a system of legal frameworks. The concept of “legal

tender”, with a plethora of statutory legal frameworks ensured stability to infuse confidence in the users of these various instruments of economic value – currencies, securities, negotiable instruments, etc.

Crypto currency, which originated to circumvent the necessity of carrying cash in unsecure areas, has grown leaps and bounds, taking multiple forms as it evolved and matured. The innovative payment network Bitcoin, has gained popularity and grown in value from a little over a cent in 2008 to about \$ 7,500 in 2017². With an ever-growing demand for bitcoins, which is entirely technology driven, the accompanying pitfalls associated with it – hacking, phishing, etc. have caught up with the system and an estimated \$700 million

*Hema Harsha, Faculty, MP Birla Institute of Management, Associate Bharatiya Vidya Bhavan, Bangalore-560 001.

have been stolen in incidents officially reported since 2012³. With this risk of losing money looming large and no legal recourse to such a loss, and with bitcoin not considered as a legal tender in most nation's world over, this paper explores the legal options available for protecting investor's interests in India.

2.0 Bitcoins as a medium of financial transactions

The dictionary definition of bitcoin is - "a digital currency in which encryption techniques are used to regulate the generation of units of currency and verify the transfer of funds, operating independently of a central bank"⁴. The emergence of bitcoin has challenged the monetary systems of many nations, spewing it onto the center stage of discussions of its legal status and the necessity of regulations to bring it into the legal frameworks of nations.

This network, as a parallel economy, put in place by an unknown entity, Satoshi Nakamoto in 2009 is still in its nascent stage to validate the claims put forward to support its growth. One of the major advantages as propagated by the creators – lesser cost of financial transactions as compared to transactions through other financial institutions. Like any other technology based innovative ideas, which has started its journey and stood the test of time, the costs are bound to follow the stage of adoption and acceptance. Way back in the early 90's when cable TV networks or the mobile telephony consisting of pagers and mobile phone handsets or for that matter e banking facilities which included credit cards, debit cards and internet banking, were attempting to make inroads into the society to gain acceptance, the cost of owning and utilizing these technologies was almost zero. However, once accepted by a larger section of the society, the cost of utilizing these services has slowly crept in and is here to stay.

With this context, the major factor which is challenging the sovereign states is the identity of the individual/s who are operating this parallel economy. Post the financial downturn of 2008, at which juncture the bitcoin emerged, it appeared lucrative to investors who had lost faith in the institutionalized systems as a secure means of safeguarding their wealth and ensuring its growth. However, the volatile growth of this medium casts an air of doubts on its claims of stability and

growth. Starting with a value of \$ 0.30 per bitcoin in 2011⁵, it rose to an all-time high of \$ 19,666 per bitcoin on 17 Dec 2017, before falling 70% to a value of \$ 5,920 on 06 Feb 2018⁶. Similarly, the e trail generated during the transactions of transferring funds from or to a secure banking system punctures the claims of secrecy of identity, thereby opening the debate on the very purpose of creating a parallel system of financial transactions and its *modus operandi*.

3.0 Legal status of Virtual currency (VC) owners – A Global Overview

The reaction across the globe to the genesis and subsequent growth of the Bitcoin per se as a member of the crypto currency family, has been mixed. Starting with an air of secrecy and exclusivity of membership to the club of bitcoin owners, Crypto currency as an independent platform of trading, has come a long way. However, today, it stands at a juncture where mixed and divergent signals by nations has generated an intense debate, which questions the relevance of bitcoin as a medium for conducting economic activities.

From being a silent spectator to the growth and developments related to the bitcoin version of crypto currencies to some recent reactions of sovereign bodies, the response ranges from acceptance to skepticism. While many online market place portals like Microsoft, Subway, Atlantic Virginia, Wikipedia, KFC Canada, Intuit, Expedia, eGifter and a host of other companies accept payment with bitcoins⁷, it is yet to gain popularity for acceptance as a medium of payment.

Issues like terror funding and black marketing are not restricted to crypto currencies alone and hence cannot be used for advancing campaigns for banning crypto currencies, more specifically bitcoins. Similarly, some economists have postulated the possibility of another economic bubble in the making with the rapid growth of the bitcoins, which again appears to be a misplaced apprehension. Economic bubbles are created when false reporting of values related to assets are recorded within a framework of legal regulations, which when exposed leads to reduction in book values of assets in financial records. However, in case of bitcoins, since it is not reflected in the books of accounts of either individuals or institutions, the possibility of the

creation of an economic bubble is not even a remote possibility. While the net value of individuals will definitely diminish, this will remain off the books and hence should not be treated as erosion of value of the legal fiscal system.

On the other hand, the response of fifteen countries/unions to the usage of bitcoins has been mixed as researched by Andrew Nelson⁸. The position of some nations summarized below highlight the mixed reactions:

- The United States is still not clear on whether to treat crypto currencies as “currency” or “securities”. Either way, the necessity of bringing in regulations has been expressed by the policy makers.
- Canada does not consider crypto currencies as “legal tender” but has been the first nation to pass national law on digital currencies, which subjects them to certain regulations.
- Japan has been more accommodative in accepting crypto currencies but is yet to formulate a national policy.
- China has banned all Initial Coin Offering (ICO) schemes apart from banning all crypto currency-based transactions. Recently, Guangzhou Development District, has also banned all promotional events related to crypto currency events.⁹
- While South Korea was considered friendly for crypto currency holders, recent rules disallow anonymous accounts from trading in crypto currencies.
- While lawmakers in Singapore state that they accept all forms of currencies including novel ways of transmitting value, recent incidents of frauds have compelled them to get serious about the crypto currency market.
- Australian lawmakers prefer to treat bitcoins as a capital gain for taxation purposes while at the same time do not consider it a financial supply for GST. But scandals have brought in a need for a balanced regulation which is anticipated to be user friendly.
- In the United Kingdom and European Union, the lawmakers have expressed the necessity of making transactions of crypto currencies transparent and

exercising due diligence on customers and reporting suspicious transactions.

- Switzerland has been open to crypto currency transactions and wishes to be a ‘Crypto Nation’ and is working on legal standards which will maintain integrity of the financial center and be technology neutral. What it means will be known by end of 2018 when ICO working group submits its report to the Swiss Federal Council.
- Russia, like South Korea, while encouraging crypto currency transactions wishes to regulate the market to know the identity of the players and also tax crypto currency transactions.

3.1 The Indian Perspective

Considering that crypto currency is picking up as medium of transactional value accounting, India has been on the wait and watch mode as far as its stand on crypto currency. The recent statement of the Finance Minister that government “**does not consider crypto currencies as legal tender**”, has sent the market into speculative mode. Compounding this speculation is the Central Board of Direct Taxes stand that earnings from bitcoins treated as income, and reported in the IT returns and is taxable.

The fine line between **not legal** and **illegal** is the escape route for the institutional stakeholders who are tasked with the responsibilities of protecting the economic and financial interests of the nation and its citizens. While a clear **illegal** verdict will empower the agencies to crackdown on the bitcoin market and ensure its total shutdown, the **not legal** opinion shifts the responsibilities of risks to the individuals who are willing to stick their neck out but also continues to keep the options open for regulating the market with legal framework even with retrospective effect later. This is probably a very mature and futuristic approach to an emerging trend, which can swing either way depending on how the other nations handle the subject. With the trail that bitcoins transactions leave, tracking the owners and cracking down on the bitcoin market at any point of time is the easiest task for the government, the current stand appears to be on creating an environment to test how the investors react to this new medium of exchanging economic value.

So, while the global deliberations on what should be the status of bitcoins and its owners continues, as a common man who can own a bitcoin we need to educate ourselves on the possible scenarios as a fallout of these decisions by sovereign states. Any legislature, regulation or policy addressing bitcoin transactions will aim at transparency in dealings which apart from other aspects will include maintaining a record of the individuals who are parties to the transactions and reporting the value of all such transactions to various statutory bodies. They will also endeavor to protect the interests of all parties, maintain stability in the financial market and ensure that these coins are not used for unlawful activities. Bitcoins being universally tradeable, Indian laws and regulations will have to align to global forum policies and guidelines in addition to own regulations on various aspects.

3.2 The Legal & Technical Cauldron

The plethora of legal domains that need to be covered in legislations designed to govern crypto currencies ranges from banking laws, investment laws, foreign exchange laws, negotiable instruments, securities, etc. and many more. This paper will restrict deliberate to some legal and technical issues, specifically related to Contract Laws and IT Laws, that need to be addressed by any legislation enacted to govern the crypto currencies, and more specifically the bitcoins are discussed under two scenarios – they are declared illegal or legal.

- **Verdict “Legal”** Irrespective of whether bitcoins will be treated as negotiable instruments or securities, the robust regulations of RBI and the SEBI will address these basic requirements and has been deliberated adequately by an inter disciplinary committee appointed by the Government of India in Apr 2017 tasked to examine the existing legal framework on crypto currencies.

When considered securities, special focus on who will be the parties to the contract needs to be addressed and defined. In the current scheme of things, where one mines their own bitcoins and the identity of the parties are kept secret, the necessity of revealing the identity of both the buyer and the seller, and yet maintain a cloud of secrecy from prying eyes needs to be clearly defined and tested.

Similarly, when illegality either in source of funds or utilization of funds is proved, how will the equivalent of bitcoins be confiscated and who will provide the necessary codes is another issue which will need to be addressed and covered in the legal frameworks. Regulations of volatility of the value of the bitcoins also needs to be addressed.

Last, but the most important in the Indian Context, is the legal and technical challenges of transferring the ownership of bitcoins to the legal heirs on the demise of the original owners. This is going to be a nightmare for both the legal pundits and the technical wizards and an arduous journey. On the demise of the original owner, the crypto code which becomes inaccessible permanently, cracking the code and authorizing multiple access, with the threat of hacking and phishing looming large, is not only going to be a technical challenge, but also a legal maze. Technology related legislations, specifically designed to manage one of the many such scenarios needs to be drafted and enacted.

- **Verdict “Illegal”** Once declared illegal, to initiate punitive actions against those who have invested in bitcoins concrete evidence needs to be collected. The current set of legislations need to be strengthened to ensure that the required information about investors is shared by the financial institutions with the investigating agencies. Some pointers from the Bank Secrecy Act (BSA) of the USA, which mandates that the financial agencies must collect information about their customers and share it with enforcement agencies without any specific court directions can guide us in this journey.

Secondly, to strengthen the current drive against black money, money laundering and terror funding, legislations to mandate disclosure of source of funds by investors and details of investments by bitcoin trading platforms must be made mandatory. Provisions to deal with failure to comply must also be inbuilt into the system.

Most importantly, the technology providers must be roped in through stringent legislations to ensure sharing of information on demand without getting in to a Facebook like situation, wherein a battle of

sovereign nations with an adamant IT giant which is precipitated due to inadequate legal frameworks has kept the entire world on tenterhooks.

The issues highlighted in this paper is just the tip of the iceberg and is just an indicative list to draw the attention of the common man to the challenges that investors of bitcoins must be prepared for when they decide to invest in them. In the current situation of uncertainty all over the world, and the spate of hackings reported till date, the route of the bitcoins is speculative, risky and lucrative, which one must tread cautiously.

4.0 Conclusion

Bitcoins as a medium of financial transactions is here to stay, if not permanently at least for some time till legal frameworks decide its fate. This means policy formulation and regulations will also have to go through an overhaul either way – to rein in and arrest the growth of bitcoins as a parallel economy which can destabilize the financial market, or to create an environment that will nurture its growth as a stable medium of financial transactions. While nations have been on a “wait and watch” mode for some time, they have realized the urgency to step in and regulate this parallel economy before it derails the structured system on which the larger population of nations depend for stability. The need of the hour is that India should make its stand clear as to which side of the fence it wishes to be and not continue with its wait and watch policy until a problem, which can derail the economic stability of the nation, erupts.

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Innovation Approaches, Practices and Firm Performance Among Select Software Product SMEs: A Case of Bangalore Firms

Sumukh Hungund*

Abstract

Innovation is considered as a topic of interest among both academicians and practitioners. Right from Schumpeter till current day researchers have worked extensively in the area of innovation yet the topic appears to be fresh and new. Henry Chesbrough coins the word 'open innovation' and 'closed innovation' in his pioneer work. Small and Medium Enterprises (SMEs) are very much essential for the growth of any economy. In India, SMEs play a vital role in the development and growth of the economy. Indian SMEs adopt innovation for sustaining rather than for transforming. A rigorous review of literature identifies the research gap to study the innovation approach adoption and its influence on firm performance among SMEs.

The research adopts a mix research approach to examine the SMEs of Bangalore region. A structured online survey is administered to 213 survey participants who are identified through criterion based snowball sampling method. The results indicate that firm-level factors such as age, size, experience and culture have a significant influence to adopt innovation approach whereas investment in Research and Development do not influence SMEs to adopt Innovation. Whereas external factors such as ecosystem and competition have a significant influence to adopt an innovation. Customers influence to adopt an innovation is minimal, technological advances and government policies do not play any role in innovation adoption. Further, the Open Innovation practices such as collaboration, Spin-offs, and alliances positively influence firm performance. Intellectual Property Rights trading is still not encouraged by the SMEs in the Indian context. Closed Innovation approach does influence the firm performance. Hence the decision makers of SMEs should cautiously choose the innovation approach that is suitable for their firm at that point in time. The SMEs must consider adoption of innovation approach as a strategic choice for their growth and sustainability.

Key Words: *Open Innovation, Closed Innovation, Firm Performance, Firm level Factors and External factors.*

*Assistant Professor, Manipal Institute of Technology, MAHE, Manipal 576 104. This is the edited synopsis of the author, who was awarded PhD in 2018 under the guidance of Dr.Kiran B, by NIT, Suratkal, Karnataka.

1 Introduction

The term Innovation is widely accepted by industry and academic professionals as an essential competitive enabler for any enterprise to sustain growth (Drucker, 1985). Innovation has been seen as an engine to support competitiveness of the firm. Firms irrespective of size practice innovation to sustain a competitive advantage (Yifeng, 2011; Mashilo and Iyamu, 2012). Organization for Economic Cooperation and Development (OECD) found that innovation is the primary factor that determines a country's long-term economic growth and increases in productivity and that innovation is even more important to an economy than either capital or labor resources alone (OECD, 2008). National Knowledge Commission report (2007) reveals that innovation has the most significant impact on competitiveness for large firms while for SME's innovation will make an indelible impact on the market share.

The innovation process is undergoing profound changes in the way it is managed (Chesbrough, 2003). Innovation approach is categorized as Closed Innovation and Open Innovation. Closed innovation approach is said to be a process where firms developed innovates by using only internally their in-house resources and technologies and then commercialized those innovations on their own. Whereas Open innovation, which was named and defined by Chesbrough as the "purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively." Companies may practice two types of open innovation approach i.e. inbound open innovation and outbound open innovation (Chesbrough and Crowther, 2006).

1.1 Importance of MSMEs in an Economy

Small and medium enterprises (SMEs) occupy an important and strategic place in economic growth and equitable development in all countries. MSMEs enable fostering of entrepreneurship and have more flexibility in production with the potential of developing managerial skills, individual initiatives, and rich personal relations. Therefore, it is often promoted as a source of technological innovations among developed economies (Bala Subrahmanya, 2005). SMEs are responsible for the majority of industrial units and contribute to the

major proportion of employment, output, and exports in most developing and developed economies. In developing countries, SMEs are responsible for most jobs and income generation opportunities and can be identified as the main driver for poverty alleviation. In most national economies, SMEs account for a majority of business establishments (Chew and Yeung, 2001).

1.2 MSME in India

The micro, small and medium enterprises (MSME) sector contributes to the manufacturing output, employment generation, and exports of the country. MSME sector values for 45 percent of the manufacturing output of India. Also contributes around 40 percent of the total export of India. This sector is projected to generate employment for 101.26 million individuals in over 44.77 million firms across the country. MSME accounts about 8 percent of the country's Gross Domestic Product. Indian MSME manufactures over 6000 products ranging from basic commodities to highly specialized products (MSME report, 2015-16). The Indian MSMEs not only manufactures traditional goods such as products in leather, jewelery, gems, agricultural products etc. but also provides value added (FICCI-MSME Report, 2012).

1.3 Innovation

Joseph Schumpeter is said to be the first economist to state the importance of innovation and asserts that innovation represents the driving force of economic development. The key process in the economic force of changes is the introduction of innovation and culture of innovation in the enterprise (Schumpeter, 1934). Edwards and Delbridge (2001) define an innovative firm as one that identifies, interprets and applies knowledge efficiently and as appropriate throughout the organization. Innovation can be defined as the application of new ideas to products, processes or any other aspect of a firm's activities. Innovation is concerned with the process of commercializing or extracting value from ideas (Rogers, 1998). Roy and Wield (1985) view technological innovation as the transformation of an idea into a new or improved saleable product or operational process in industry or commerce. Innovation does not occur when a new idea is generated, rather when that idea is successfully commercialized. Innovation is viewed as the creation, development, and introduction of new product/services,

or product/service components, or a new procedure or process for doing things to benefit one or more of the stakeholders in an organization (Birchall et al., 1996). Hence, Innovation can also be defined as a process of problem-solving of customer's unheard need that can also benefit the society at large.

1.4 Research Gap

An extensive literature review suggests that the studies conducted so far are in the view of Open Innovation largely in the context of the West and China. However, there are limited studies which compare both open innovation practices and closed innovation practices. Also on factors influencing adoption of innovation, the internal factors identified are firm age, firm size, investment in R & D and R & D importance and firm culture. Earlier studies have not focused too much of entrepreneurs' experience and education. Also among the external factors influencing adoption of innovation studies are scarce. From the empirical studies of Lichtenthaler (2008), Van de Vrande et al., (2009), Gumus and Cubukcu (2011), Abulrub and Lee (2012), Tian and Feng(2010), Lee. et al. (2015) and Sikimic et al. (2016) it is clear that studies have only concentrated on adoption of open innovation. Vanhaverbeke, Vermeersch and De Zutter (2012) opines that adoption of open innovation practices in SMEs is quite a different from large organizations and hence there is need to study the practices of open innovation as adopted among SMEs. Lukac et al. (2012) suggest that cultural issues in the adoption of innovation practices need to be analyzed. Studies which take into account of the influence of firm culture on practices of Innovation are also scarce. Very few studies discuss innovation practices and firm performance (Mazzola et al., 2012; Cozzarin, 2004; Santos et al., 2014) but these studies are in the context of American and European firms and discuss only open innovation practices adopted and its influence on firm performance. Also, there is little or no systematic evidence on the adoption of type of innovation approach and its influence on firm performance (Sisodiya et al., 2013; Sikimic et al., 2016). Earlier studies do not confirm whether Open Innovation approach is better than Closed Innovation approach for SMEs (Rodriguez and Lorenzo, 2011; Choi, Lee, and Ham, 2016). Su and Lee (2012) finds that

European and American studies on Open Innovation are more published than other countries. Among the Asian countries work related to open innovation are found in Chinese, Korean and Taiwanese context only. India is the frontrunner in the Information Technology industry globally. A study on innovation approaches and practices adopted by Indian software product SMEs commands a study. Hence there is a definitive need to study innovation approaches, practices and their influence on firm performance among Software product SMEs.

1.5 Statement of Problem

Any firm grows with the experiences within & outside the environment. The large firms have their own R&D division, and also a recent trend is seen in these firms of making their firm boundary permeable and adopting innovation as their strategy to be market leader, Whereas small and medium firms are seen to depend on R&D of large firms, and yet the competitiveness of the SMEs make a mark on the contribution to the GDP.

Given the present scenario, it is of critical interest to assess what influences Technological SMEs to adopt innovation in open & closed formats. The current practices of innovation approach need to be enumerated by studying the characteristics of firms & the dynamics that govern it. The current study is an attempt to evaluate forms & formats of Innovation practices and its influence on the performance of the firm.

1.6 Conceptual Framework of Study

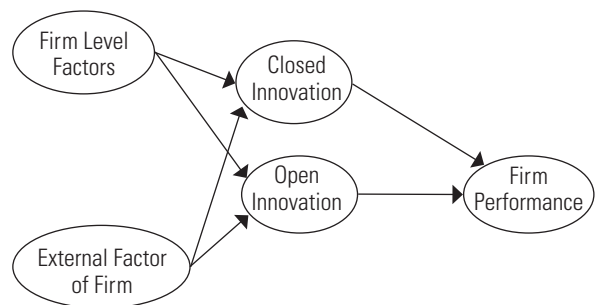


Fig 1 Conceptual Framework for the Study
(Source: Literature Review)

SME's Firm performance is dependent on innovation practices adopted and practiced by these firms. The firm's strategic choice of innovation practices are of two types i.e. Open Innovation and Closed Innovation. The Open Innovation practices include Collaborations with external agents like Academic Institutions, Suppliers, Customers and R&D Labs, Spin-offs of products from parent organization, Intellectual Property Rights trading and Strategic Alliances. Closed Innovation practices include internal Research & Development. The adoption of open innovation or closed innovation is influenced by firm level factors or external factors or both. The firm level factors include that influences adoption are Size of the firm, Age of the firm, Education level of Manager/Entrepreneur, Work experience of Manager/Entrepreneur, Research & Development and firm culture. The external level factors that influence innovation adoption are Competition, Technological Advances, Customers, Ecosystem and Government Policies.

1.7 Research Questions

The research questions for the study are:

1. What are important motives and challenges for SMEs to adopt Innovation?
2. Is there an association between awareness of Innovation approach and its adoption?
3. Do firm internal factors and external factor influence to practice Open/Closed innovation?
4. Given the nature of Open/Closed Innovation, How does it influence firm performance?

1.8 Research Objectives

The research objectives of the study are:

1. To outline the motives and challenges for SMEs to Practice Innovation;
2. To find out the association between awareness level and adoption level of innovation approaches among Indian SMEs;
3. To examine whether the internal and external characteristics of firm influences to practices Open Innovation or Closed Innovation or both;
4. To examine whether the Open Innovation practices influences firm's performance

5. To examine whether the Closed Innovation practices influences firm's performance &
6. To determine policy implications for the promotion of Open/Closed Innovation in the SME sector.

1.9 Statement of Hypotheses

SMEs have an awareness of open innovation practices and closed innovation practices. Also, these SMEs have adopted these practices of innovation. To test the association between awareness of innovation approach and its adoption, following hypothesis is stated.

H_{01} : There is a no significant positive association between awareness and adoption of Innovation approaches.

H_{A1} : There is a significant positive association between awareness and adoption of Innovation approaches.

Adoption of Innovation among SMEs is influenced by firm level factors or external factors or both firm level and external factors to the firm. Hence to test the influence of these factors on the adoption of innovation approach among SMEs, following hypothesis is stated.

H_{02a} : There is no significant influence of internal factors of the firm to adopt Innovation approach

H_{A2a} : There is a significant influence of internal factors of the firm to adopt Innovation approach

H_{02b} : There is no significant influence of external factors of the firm to adopt Innovation approach

H_{A2b} : There is a significant influence of external factors of the firm to adopt Innovation approach

H_{02c} : Adoption of Innovation approach by SMEs is not significantly influenced by both Internal and External factors of the firm.

H_{A2c} : Adoption of Innovation approach by SMEs is significantly influenced by Internal and External factors of the firm.

Innovation approach practiced influences firm performance of SMEs. Hence to test the influence of SMEs adoption of open innovation approach on its firm performance, following hypothesis are stated.

H_{03a1} : Practices of Open Innovation approaches do not significantly improve performance of the firm

H_{A3a1}: Practices of Open Innovation approaches do significantly improve performance of the firm

H_{03a2}: Practices of Open Innovation approaches do not significantly influence the firm's market share

H_{A3a2}: Practices of Open Innovation approaches do significantly influence the firm's market share

H_{03a3}: Practices of Open Innovation approaches do not significantly influence the firm's Revenue

H_{A3a3}: Practices of Open Innovation approaches do significantly influence the firm's Revenue

H_{03a4}: Practices of Open Innovation approaches do not significantly influence the firm's Product Sales

H_{A3a4}: Practices of Open Innovation approaches do significantly influence the firm's Product Sales

H_{03a5}: Practices of Open Innovation approaches do not significantly influence firms to develop more products

H_{A3a5}: Practices of Open Innovation approaches do significantly influences firms to develop more products

Innovation approach practiced influences firm performance of SMEs. Hence to test the influence of SMEs adoption of closed innovation approach on its firm performance, following hypothesis are stated.

H_{04a1}: Practices of Closed Innovation approaches do not significantly improve performance of the firm

H_{A4a1}: Practices of Closed Innovation approaches do significantly improve performance of the firm

H_{04a2}: Practices of Closed Innovation approaches do not significantly influence the firm's market share

H_{A4a2}: Practices of Closed Innovation approaches do significantly influence the firm's market share

H_{04a3}: Practices of Closed Innovation approaches do not significantly influence the firm's Revenue

H_{A4a3}: Practices of Closed Innovation approaches do significantly influence the firm's Revenue

H_{04a4}: Practices of Closed Innovation approaches do not significantly influence the firm's Product Sales

H_{A4a4}: Practices of Closed Innovation approaches do significantly influence the firm's Product Sales

H_{04a5}: Practices of Closed Innovation approaches do not significantly influence the firms to develop more products

H_{A4a5}: Practices of Closed Innovation approaches do significantly influence the firm to develop more products

1.10 Research Design

Research design briefly describes the blueprint that the researcher has used for the collection, measurement, and analysis of data to better understand the topic of adoption of Innovation approach and its influence on firm performance among software product SMEs. Given the fact that research related software product SMEs limited to Bangalore, to the best of the researcher's knowledge, this research uses both inductive and deductive reasoning. The conceptual model is deduced from relevant literature on innovation and SMEs. A questionnaire survey has been conducted among the decision makers of software product firm located in Bangalore to empirically test the conceptual framework. This forms the inductive framework of the study. The research is both exploratory and descriptive limited to the case of Bangalore. To achieve the purpose of the study, quantitative as well as qualitative methods have been applied. Data was collected primarily through a survey of 213 decision makers of software product firms in the form of self-administered web survey as well as interviewing about ten experts who are owners of software firms, senior members of a trade association and domain specialists in the area of Innovation. The survey instrument consisted of the 11-page questionnaire. A total of 78 items is used. 16 items collect the basic profile of the firm which is measured on a nominal scale, 33 items collect the factors that influence and drives innovation in the firm and awareness and adoption of innovation. These are measured on an ordinal scale (5-point Likert scale) and nominal scales. 23 items collected innovation approaches and were measured on an ordinal scale (5-point Likert scale) and six items collected data on firm performance and were measured on a 7-point scale. The secondary sources of information were gathered from books, research papers published in journals and industry reports. Most of the literature were found through NITK Digital Library. The validity of the instrument is obtained with the help of experts

and pilot tested for a small group of respondents and reliability was tested using Cronbach's alpha. The criterion for deciding on the population was (i) Firm should be located in Bangalore (ii) Firms should be in the business line of the core product, or product and service or product as service category (iii) Headcount of the firm should be less than 250. Since the selection of survey participant had many criteria, a criterion-based sampling and snowball sampling is used for the purpose of the study. Data collected is analyzed using SPSS 21 version. Statistical tools such as Chi-Square Test, Kruskal-Wallis Test, Multinomial Logistic Regression and Ordinal Regression are used to analyze the data set for inference and interpretation.

1.11 Results and Findings

The research instrument is tested for reliability, and Cronbach alpha is found to be fit, and the content validity of the instrument is carried out by experts and found to be fit. The KMO test indicates that sample size considered for the study is adequate. The multinomial logistic models and the ordinal logistic models used to test the hypothesis.

The key findings of the study are:

- There is a strong association among the SMEs on awareness of innovation approach and its adoption.
- More 50% of the firms have Intellectual Property Rights from their R & D activities. Firms funding pattern do not differ in the adoption of innovation approach.
- The firms who own IPR from their R & D activities differ in their adoption of innovation approach.
- The motivating factor in adopting an innovation is to become a market leader, customer satisfaction and competition.
- Government policies do not motivate firms to adopt an innovation.
- The time factor is the major challenge to adopt and practice innovation, and the fund's availability is also the challenge for firms to adopt and practice innovation.
- There is a positive association between awareness of innovation approach and its adoption.

When the internal factors alone is considered and external factors as control variable then it is found that internal factors that influence the firm to adopt open innovation as compared to both the approaches are Firm age, Firm size, Education level, Experience of the decision maker, the culture of the firm.

When the internal factors alone is considered and external factors as control variable then it is found that internal factors that influence the firm to adopt closed innovation compared to the adoption of both the approaches are Firm Age, Firm Size, Experience of the decision maker, the culture of the firm and to an extent the emphasis on R&D.

When only Firm external factors are considered and the internal factors are considered as control variable, external factors such as competition, and Eco System has influence to adopt both approaches compared to open approaches and customers, Government Policies, and Technological Advances do not influence the SMEs to adopt open innovation or closed innovation approach compared to both the approaches.

When both firm level and external factors influence is considered together, the firm level factors such as age, size, education, experience, emphasis on R & D and culture of the firm influence to adopt open innovation as compared to both the practices, Whereas external factors such as such as competition, customers, ecosystem and technological advances influences firm to adopt open innovation as compared to both the approaches. When both firm level and external factors influence is considered together, firm-level factors and external factors to the SMEs do not influence to adopt closed innovation.

The open innovation practices such as idea generation from both internal and external sources, collaborations with academic, R&D institutes and customers, and spin-off have a significant influence on firm performance. The closed innovation approaches such as idea generation through internal sources significantly influence firm performance.

Open innovation practices such as idea generation by both internal and external sources, collaboration with academic institutes, Intellectual Property Rights purchases, and Spin-off significantly influences to the firm to develop more products.

Open innovation practices such as idea generation by both internal and external sources influences to improve the market share of the firm.

Open innovation practices such as idea generation by both internal and external sources, collaboration with academic institutes, collaboration with R&D institutes, collaboration with the customer, Spin-off, and alliance significantly influences to improve the overall firm performance.

1.12 Conclusion of the study

SMEs in the software product segment adopt both open innovation approach and closed innovation approach for better firm performance. There are certain internal factors and external factors which influence software product SMEs to adopt certain innovation approach. When only influence of internal factors are considered, then the study found that factors such as firm age, firm size, education level, experience of the decision maker, culture of the firm influences the SMEs to adopt open innovation approach as compared to adoption both the approaches and Firm Age, Firm Size, Experience of the decision maker, culture of the firm and to an extent the emphasis on R&D influences SMEs to adopt closed innovation approach compared to of both the approaches. Firm external factors considered only factors such as competition, Customers, Eco System, Government Policies, and Technological Advances do not influence the SMEs to adopt open innovation or closed innovation approach compared to both the approaches.

When both firm level and external factors influence is considered together, the firm level factors such as age, size, education, experience, emphasis on R & D and culture of the firm influence to adopt open innovation as compared to both the practices, Whereas external factors such as such as competition, customers, ecosystem and technological advances influences firm to adopt open innovation as compared to both the approaches. When both firm level and external factors influence is considered together, firm-level factors and external factors to the SMEs do not influence to adopt closed innovation.

SMEs which adopt open innovation approach and practices idea generation by both internal and external

sources, collaboration with academic institutes, collaboration with R&D institutes, collaboration with the customer, Spin-off, and Alliance have found that their overall performance improves. The SMEs can improve their market share by practicing open innovation practices such as idea generation by both internal and external sources. SMEs can develop more products if they practice the open innovation practices such as idea generation by both internal and external sources, collaboration with academic institutes, Intellectual Property Rights purchases, and Spin-off. SMEs adoption of closed practices such as practices such as idea generation by internal sources only and Product development by internal sources only helps the firms to improve firm performance. Closed innovation practices such as idea generation by internal sources only help the SMEs to enhance firm market share. Closed innovation practices such as product development by internal sources only help SMEs in the development of more products. Overall SMEs which adopts a mix of open and closed innovation approach to improve the firm performance.

1.13 Policy Suggestion for the Promotion of Innovation

In the current scenario, the government policies are not having an influence on the innovation approach adopted by the SMEs. There is an intervention needed by the government in the promotion of innovation among the SMEs. SMEs feel that if the government can provide a dynamic ecosystem that will help the SMEs in their thought process. SMEs feel that lack of funds is the major reason for not being innovative. The government can propose to provide funds for those SMEs who are being innovative and who have developed innovative product or service for solving the major societal problem. Also, Government can propose tax soaps for the companies who provide innovative solutions. The government should propose a comprehensive tax structure that can help the companies to save funds for their innovation activity. Government's technological projects which are undertaken by technically institutes should have an industry collaborating partner. This would help to bridge the gap between academic and industry interaction.

1.14 Managerial Implication

The results of the study have a huge implication on the practicing manager and decision makers of technological firms in the SME segment. The adoption of innovation approach has to be carefully selected considering the markets and domain of the business. No single innovation approach is suited for SMEs in the Indian context of Software product segment due to changing business and technological requirements. The SMEs have to strategically choose a combination of open innovation practices and closed innovation practices for the better performance of the firm. The open innovation practices such collaboration with various partners and alliances should be carefully selected and should be strategic importance to the company. Managers should carefully evaluate both the open innovation and closed innovation practices and must opt for a combination of open innovation and closed innovation practices for both idea generation and product development. Practices such as Spin-offs and trading of IPR is very nascent in the context of Indian technological SMEs and SMEs should carefully adopt these practices

1.15 Contribution of the study

This study contributes to the academic knowledge of innovation and SMEs. The study provides a dimension in the selection of innovation approaches and practices for the technological SMEs. The factors influencing SMEs to adopt innovation has been studied extensively, but a void was there on external factors influence on adoption of innovation. The study has addressed this issue. Also, the innovation approaches that have been adopted by technological SMEs in India has been addressed, and study attempts to fill the gap to compare the both open innovation approach and closed innovation adopted by technological SMEs and its influence on firm performance.

1.16 Limitation of the study

Some limitations need to be considered. Firstly, the study findings are not generalizable to the entire population of Indian Software SMEs. Nevertheless, the study findings apply to Software product SMEs in Karnataka. Secondly, the present study was able to analyze the change in firm performance only not the actual performance. The third limitation was that the study was limited only to the ecosystem of Bangalore.

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BOOK REVIEW

A Call for Educational Renaissance in India

By Dr. G.N.M. Dixit

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Pune, India, First Edition 2016; 365 pages**

- Reviewer: Sudhindra Gargesa*

Renaissance is to re-recognise its roots in modern context. While it is finding a new path in many countries probably for India, it is revisiting its roots which had flourished millenniums ago with the spirit of आनो भद्राः कर्तव्यो यन्तु विश्वतः 'Aa No Bhdrah Kratavo yantu Vishwatah' Let noble thoughts come to us from every side – a dhyeya vakya from Rigveda and the purpose of education defined in this shloka:

विद्या ददाति विनयं विनयाद्याति पात्रताम् ।
पात्रत्वाद्धनमाप्नोति धनाद्धर्मं ततः सुखम् ॥५॥
(true/complete) knowledge gives discipline,
from discipline comes worthiness,
from worthiness one gets wealth, from wealth
(one does) good deeds, from that (comes) joy.

Acquisition of knowledge/talent went hand in hand with ethics in life, while humanists in Europe sought to create a citizenry able to speak and write with eloquence and clarity, thus capable of engaging in the civic life of their communities and persuading others to virtuous and prudent actions. This was to be accomplished through the study of the humanities: grammar, rhetoric, history, poetry, and moral philosophy.

'A call for educational renaissance in India' the book authored by Dr. GNM Dixit, brings out a plethora of transformative thoughts with author's deep research into the roots of renaissance in education in various countries of Europe, China, Japan and South Korea. The way his analysis opens up the way the idea of nationalism and humanism get into the roots of the society through carefully planned education system is eye opening. Written in four thematic structure of the book, the author traces the path of education ancient India, middle ages, gives the examples of

other countries and suggests solution cautioning the obstacles in the modern India. The degeneration of the system is brought out not with cynicism but objectively, so that the policy makers could ponder over them.

Discussing the inclusiveness of values and materialism in the development of society, the author says 'A society is a conglomeration of different communities sharing some common element, like belonging to a single nation and nationalism, as a binding force'. For example, communities of teachers, business class, peasants, salaried class, bureaucrats and others form the constituents of a society. These constituent elements should work in unison for the welfare of the society. The value system defines the role of wealth, which is for development of the community. The value system in ancient India clearly defined this.

India was known for its knowledge in various areas like language, literature, grammar, mathematics, medicine, astronomy. The attitude of questioning was encouraged as we see in the emergence of Upanishads. Brahmasutras framed to enable the seeker to interpret them in the background of Upanishads, ushered in various schools of thought in the country. However, in the period 12th century to about later part of 19th century, during which the country was subject to severe invasion from Middle East and Europe, the picture of Indian education system is unclear and hazy. This was the time when much of Indian Knowledge was lost. Total destruction of universities like Nalanada, Takshashila and Sarda in Kashmir resulted in near demise of not only education system but also the knowledge itself. Dr. Dixit mentions in the book that the library in Nalanda University destroyed by Bhaktiyar Khilji in 12th century, burnt for over three months.

*Director (Academic Administration), M.P.Birla Institute of Management, Bengaluru 560 001.

Concept of education in ancient times

On the concept of Dharma, which was the foundation of all the actions in the ancient India and advocated ethics, the author says:

Man should conduct himself beyond boundaries to evolve this kind of Dharma, and education is the driver of this cause. This is what the "Bhagavadgeetha" teaches, as I understand. This clearly defines the purpose of education. Both the material and the intellect with knowledge are useful for foundational ethics to conserve nature, and the development includes both. As I understand, birth of any new religion is not to be settle the earlier religion or dharma and on the other hand, it is to make living better just as any new education system replaces or has to replace a former system to improve the current system.

Author recalls thoughts of Aristotle and Amartya Sen while talking about the role of wealth: *'Wealth is evidently not the good we are seeking, for it is merely useful and for the sake of something else. According to Amartya Sen, the usefulness of wealth lies in the things that it allows us to do, the substantive freedom it helps us to achieve, should we say, wealth is what wealth does?'* Reflected in Indian thought 'dhanaath dharma tatah sukham' – from wealth one does good for the society and the happiness follows! The purpose of learning itself was to *experience knowledge and discover the self and true nature of consciousness.*

Author discusses *'Four models of development to illustrate how education has served as the driver of the process of development – both human and economic – through political systems in the respective countries kept on changing. There are three phases in this process of development namely the pre-industrial revolution, the post-industrial revolution, and the post – World War II. The four models are about China, Japan, South Korea and Finland, the first three being the Asian nations and Finland a European nation. If in China, the leadership(s), In japan gradual evolution of systemic approach, and in South Korea the patriotism and learning lessons (introspection) from the mistakes are playing the role of development, in Finland the development of a cohesive social capital is being realized by providing more and more freedom(s) to the education operators and students while treating them with respect'.*

He also discusses emergence of education system in these countries along with European Countries viz., England, Germany, Italy, Russia and finally the United States of America before discussing Indian scenario thus building a solid background for comparison and probably formulating the path of renaissance in our own country.

Like all Indian sages, as brought out in Upanishads, Confucius too took lifelong delight in learning as well as teaching. Highlighting the role of Confucius in formulating Chinese education author says *'The Confucianism along with its leader Confucius was seen as the founder of education for the masses in China. One of his saying was 'provide education for all people without discrimination', and another was teach according to the student's ability'.* Author emphasises out that in China Confucius heralded opening of education to the rich and poor alike. His teachings required examination and context to be understood. He developed in own education doctrine. Author continues: *Confucius firmly believed that right education as a blend of virtue and knowledge coupled with skill as appropriate to the social structure of a nation develops the culture, nature, or way of life of the people while bringing in good governance – Dharma of the nation.*

Kathopanishad defines happiness as – one, which is permanent viz., Shreyas, and the other one, which is temporary or short-lived as Preyas. *The search for chemical formula to combine both shreyas and preyas perhaps is the purpose of life of a sensible mind as Yajnavalkya and Aristotle said.* How thoughtful of the King of Bhutan to usher in a refreshing concept of Happiness through heralding of Gross National Happiness (GNH), like the world saw economic development defined through GDP. Author intertwines the GNH and education as *'the outcome of educated populace can be reflected in qualitative elements such as happiness, quality of life, and well-being- as well as quality of education, the quality of jobs and quality of environmental assets like forests, rivers and lakes and the quality or supply of timber and water available.* Author also talks of a class belonging to the class of pure shreyas focused individuals. Gurudev Rabindranath Tagore founded Viswabharathi University

at Shantiniketan in West Bengal spending his Nobel Laureate money. Another Nobel Laureate Amartya Sen is an alumnus of this university, who always speaks about Welfare Economics meaning to serve the less fortunate. The author notes on how *Bhutan has envisaged its own Dharma of education as reflected in a GNH based education system....*

It was fascinating to read about the growth of education South Korea after the liberation from Japan after enslavement. The author points out how naturally *'South Korea strengthened its antique value system by harnessing local education system to develop patriotism in the minds of young school going children and their parents as the way of life'* which is lacking in the education system in India, which also saw long history of invasion and enslavement more so in the recent days when the system is being polluted by excessive political interference in the system. Naturally, the author questions if *'India is on the path of progress! Is an illusion or a reality?'* This thought lingers in every thinking educationist's mind.

Calling for inclusiveness of values, Author notes that *'A society is a conglomeration of different communities sharing some common element, like belonging to a single nation and nationalism, as a binding force. These constituent elements should work in unison for the welfare of the society'*. The purpose of education is to educate or develop a healthy intellect in a person, which thought made many wealthy in the United States *to invest in education because of which we see universities to develop competent graduates to serve in intellectual needs of their industry'* also serving the society as we see today as Jamshedji Tata did in India. In fact, Indian thought believed that the purpose of education is to gain wealth where by one could serve the society *'Dhanatdharma tatah sukham'* Such an education would be 'value education'. The purpose of education has always been invariant but the learning is dynamic which depends on the evolution of the civilization and intentions & attitudes of the individual learner.

The history of development of education in China, Japan or Korea is due to the influence of Confucianism's *'inward thinking'* which has resulted in an undisturbed education development identity which is inward looking

narrative, on which India is still struggling to figure out after seven decades of independence.

Author explains in detail the growth of education in China, Japan South Korea and Finland the education is specific to their national needs, thus education triangle has three vertices- knowledge, skills and values. Irrespective of the political turmoil, China today is second largest economy, a technology leader and Chinese entrepreneurs provide valuable lessons on managing effectively in an 'unpredictable context'! China's transformation process incorporates that relationships between the essential drivers of development are ownership, capacities and policies. Ownership is the basis and forms the critical starting point.

Author traces the path of education in the 'dark' period of about 6 centuries prior to independence, which was under 'invaders' rule- Muslim rulers and also British. In fact reading this was a good treatise.

He notes *'The destruction of these centres of learning at Nalanda and other places across northern India was responsible for the demise of ancient Indian scientific thought in mathematics, astronomy, alchemy and anatomy'*.

The education system under the rule of Akbar adopted an inclusive approach with the monarch favouring additional courses, medicine, agriculture, geography and even from texts from other languages and relations, such as Patanjali's work in Sanskrit.

The traditional science in this period was influenced by the ideas of Aristotle, Bhaskara II, Charaka and Ibn Sina. It is anybody's imagination how Europe was struggling to sort out its educational priorities during the same age and how advanced was the Indian education.

Many dynasties of South India _ Pandyan, Cholas, Vijayanagar Kinds, Wodeyars of Mysore and some more till Tipu Sultan was defeated by the British were responsible for the development of education. Immaterial of the rulers, the temples of South India were not only religious centres but also played the role of educational institutions.

They were considered as centres not only of education but also of moral and spiritual instruction.

'Indian subcontinent did have an excellent education system until about 13th century. Later due to successive invasions and due to influence of the invaders the Indian system of education started losing its base and of course Britishers dealt a death blow by uprooting the Indian cultural fabric including education by imposing their system to their advantage'. (216)

As a result, the present education system in India has been a total deviation from all these aspects. As author observes: *The current system of education, with its western style and content, was introduced and founded by the British during the British Raj, following recommendations by Lord Macaulay, who preferred to form a class of persons, Indian in blood and colour, but English in taste, in opinions, in morals, and in intellect. He enrolled Jawaharlal Nehru, whom he met on a ship voyage before India became independent, and as Prime Minister of India, Nehru was an ardent supporter without whom the project would never have taken off. We are yet to get over Macaulay and reinvent our roots.*

However, author delves into details how centres of excellence like IISC, Bhabha Atomic Research Centre grew with the patronage of industrialists with vision and a sense of patriotism, which unfortunately is missing in today's education system.

Author says in his book *'the only thing that anybody has any control over is his life on this earth: so better make the best of it. Make money as much as possible to lead a "comfortable" and powerful life. One should live as secure and enjoyable a life as he can. And, when one thinks about it, the fact that he might misuse other people in order to get what he wants does not really matter'*. The purpose of education must be enable this.

One can see his exasperation when he speaks of Japanese system and especially the 'Bunjins':

In the mid eighteenth century – the Bunjin (literati or humanists) of Japan used education to create a new vision and a new social class. They rejected the official hierarchy based on birth, with its three hereditary classes of swordsman (samurai) peasant and townsman. They replaced it with a meritocracy in which nothing countered except performance as a scholar, calligrapher, and artist. If one sees between

*the lines, this is a great cultural shift towards social reconstruction and national development. They thus laid the foundation for modern Japan. A hundred years later in 1867 where the feudal regime of the Tokugawa Shogun fell and the Meji Restoration began, every one of the new leaders was a graduate of an academy founded seventy years earlier by such eminent stalwarts as Bunjin, Nukina Kaioku and Rai Sanyo. **Though late than never, would it be possible for India to create a class like Bunjin in India who will transform India! – It is only a wishful thinking of a frustrated mind, perhaps.***

The frustration much higher when he talks of how the present day leaders have messed up the education system: *It appears as if Machiavellian Humanism and Laissez Faire have stayed firm on this land in all walks of life unseating our rich cultural heritage. Thus, India is at the cross – roads looking desperately for a pathway to get back to her rich swadeshi cultural heritage.* The author observes the education system has gone into wrong hands who have successfully converted the educational institutions into commercial institutions with 'saleable' degrees with scant respect for quality.

However, the author does not stop at posing problems. As a teacher and thinker, he also gives directions for improvement. He gives a beautiful example of comprehensive outcome and culmination outcomes through the example of Krishna and Arjuna. But cautions against the divergence of the aspects. However good system one may implement, if the attitude of the people who are supposed to follow the rules is corrupt the system will be a failure. He discusses the gaps in education (239) elaborates role of Industry – Education interface by numerous examples of involvement of entrepreneurs in education and resultant innovation, generously entwining Deming's philosophy of *'Constancy of Purpose as continuous Improvement'* based on the notion that in education domain, change is always changeable.

As Dr. Kalam says *The primary purpose of education in a country such as India is to develop and enhance the potential of our human resources and progressively transform into a knowledge society, (241) author stresses that there is a great need for a robust education*

system that will drive a meaningful change. - In the event all should join hands to pull the country out of the dark ages of education, we are presently in. (217).

Author, concluding his book says '*System of Education as a whole should work in such a way that it develops a generic holistic human character to adopt to any situation to augment developmental process from all angles...*' He continues like '*Swatchha Bharath, Swatchh Swadeshi Shikshan may have to become a mission*' to which everyone would endorse.

With good printing and quite readable fonts, reading the book was an experience for me and I strongly feel that there is an urgent need that this book should reach the policy makers who can spearhead change. As author opines '*Knowledge is the true wealth as a thief*

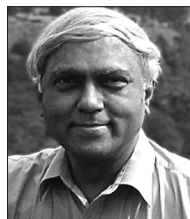
cannot steel it; the government cannot take it away; brothers cannot ask for a share in it; it is weightless and if you go on spending it, it becomes richer and richer... Functional nationalism is the form of yoga and swadharma on the platform of right education for the entire nation encompassing all functionaries without exception (348).

In 'What the book is all about' the author pushes us into thinking that 'Right to Right Education' is more fundamental than 'Right to Education'. Despite Globalisation, India is still grappling with a conservative mind-set and quality of higher education is slipping into deep abyss.

Will the policy makers please stand up and come out of the 'cobweb' created by the 'educationists'.



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BHARATIYA VIDYA BHAVAN'S
M. P. Birla Institute of Management
#43, Race Course Road, Bengaluru 560 001, India
•Ph: +91-80-2238 2798, 4277 2000
•Email: viswanathns19@gmail.com

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REFERENCES

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A Journal Publication: Glazer Rashi, Joel H. Steckel and Russel S. Winer, "Locally Rational Decision Making: The Distracting effort of information on Managerial performance", *Management sciences*, 38, February 1992, 212-226.

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