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MESSAGE FROM PROF. SAMPATH AMARATUNGE

It is with immense pleasure that I warmly welcome all participants to International Conference on Economics and Development, on behalf of University of Sri Jayewardenepura as the hosting partner of the Conference organized by The International Institute of Knowledge Management (TIKM).

The University of Sri Jayewardenepura has always encouraged Research by way of providing adequate grants and other resources to all academics. It is indeed a pleasure to be the hosting partner for this conference.

The theme for this year's conference has been carefully picked, "Inclusive Economic Growth: Rethinking the Development Process in a Time of Paradigm Shift" and it is undoubtedly an issue of high interest for all of us. Though, it is a national issue which is relatively new to local researchers it has been there within the economic vocabulary of the contemporary world for quite a while.

It is my strong belief that this conference would contribute greatly to the enrichment of the discipline as well as the enhancement of the knowledgebase amongst the Academics. I need to emphasize that this International Research Conference is a great opportunity for the academia to engage in productive dialogue on the growth process of the country.

Concluding my message I wish the Conference every success and wish to see the

Knowledge and expertise derived from the Conference will go a long way enriching the fields of Economics and Development.

Prof. Sampath Amaratunge,
Vice-Chancellor,
University of Sri Jayewardenepura,
Sri Lanka.

MESSAGE FROM DR. SUMUDU PERERA: CONFERENCE CHAIR

It is a true pleasure for me to release this message as the Chairperson of the International Conference on Economics and Development (ICED) 2017. The conference provides a unique opportunity to academics and practitioners to interact and share their knowledge on Economics and Development. The theme of the conference has been set as “Inclusive Economic Growth: Rethinking the Development Process in a Time of Paradigm Shift”.

Inclusivity being a concern for decades has not been adequately discussed in academic forums of this nature within the country thus far. Therefore, the ICED 2017 has provided the timeliest podium to bring about the reality of inclusivity in terms of concept and application through high quality research. It is my strong belief that ICED 2017 will act as a good platform for the researchers in this field to share and enhance their knowledge on economic development and sustainability.

I wish all the best for the ICED 2017 and would take this opportunity to thank the organizing committee for their valuable efforts.

Thank You!

Head of Department and senior lecturer,
Department of Business Economics,
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Sri Lanka.

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COMMERCIAL FRUIT CULTIVATION FOR POVERTY ERADICATE

Chathura Dissanayaka D.M.T.G.C.H.

University of Peradeniya, Sri Lanka

Abstract: The objective of the study is examine the how the help fruit village program for eradicate rural poverty. The study conducted under the hypothesis of “Fruit village program very helpful to eradicate all forms of rural poverty”. Using mini survey study checked the whether the relationship between poverty eradication of fruit village program. Test the final development outcome of the farmers such as health, infrastructures, education, and livelihood and increase the income of the farmers. Data collected using random sampling method and interviewee farmers and try to use data for develop policy creation based with the final results of the study. The results of the study is very can’t believe because of the papaw cultivation are ongoing and farmers are earning money well and they use income for maintain their life very good condition. Actually they live without any poverty highlights. But their method of income book keeping and attitudes of the income are not very satisfied and most of are ideally neutral about satisfaction. And they don’t know about separately identified the income, house hold expenses and real profit calculation. Also they have no idea about how to maintain quality of papaw cultivation with applying new technology with post-harvest technology for achieve hi income.

Keywords: Fruit Village, Income, Poverty, Food, Agriculture

Introduction

Poverty is one of major challenge for the development. Most of Asian country depends with agriculture. Every country invests agro base industry, aiming with increase income of farmers and eradicates their poverty. Process of food consumption by the peoples is depending with the food availability of the market. Researchers found, most of non-communicable deceases coming with lack of fruit consumption by the peoples. The poverty define as a “Condition characterize by server deprivation of basic human need, including food safe drinking water, sanitation, facilities, health, education and information”. Sustainable development goals mentions as their challenge, eradicate poverty in all forms and end hunger achieving food security, improve nutrition with promoting sustainable agriculture. Its directly connect with the end poverty among peoples. Our study hypothesis is “fruit village program very helpful to eradicate all form of rural poverty”. As a country, “2017 nominate as a *year of eradicate poverty* by the government. As a practice provincial council of eastern province conducted fruit village program for eradicates the farmer’s poverty.

The program already implemented by the department of Agriculture and issued several thousand of plant within farmers and technically supported. Water pump, agro wells and some infrastructures given under half of department contribution. Vulnerable peoples are select as a beneficiary and perform to implement papaw cultivation with compost and bio fertilizer applying. Using mini survey study checked whether the relationship between poverty eradication of fruit village program. Test the final development outcome of the farmer’s health, infrastructure, education, livelihood and increase income of the peoples what project objected. Random sampling method will be use collect data. Finally try to check how help this type of program for eradicate poverty and how it’s important to development of national economy.

Objectives

The main objectives of the study understand the relationship between commercial fruit cultivation under fruit village program and its effect to eradicate poverty. And also another sub objectives are understand the real poverty situation and its indicators, understand the project real output and outcomes, finally how its effect to eradicate rural poverty for achieve national targets.

Methodology

The study already use primary data and secondary data for the understand research outcome. As a secondary data what use, department of Agriculture extension data and seasonal progress report. And the primary data we collected from the collected commercial papaw cultivators in the Mahaoya, Padiyathalawa and Lahugala area. Generally use the questionnaire and interview method for collect data. And the study is very specially focused in that area between fist 40 beneficiary 10 farmers is randomly selected. The research use framework analyzes method. So we use prioritize questions we try to identifying issues and within small timeframe. The questionnaire address the land ownership, investment to the papaw project, year by year expenditure, income of the project, expenditure food which they are consuming, expenditure to education, infrastructure, other livelihood some of challenge facing by the peoples and peoples satisfaction about the develop impact of papaw project etc.

Literature review

The study focus about reduce rural poverty in the sector in the Sri Lanka; Poverty is absolutely saying as an income less than us\$2 per day. Poverty all aviation policy implemented by the every governments involves the strategic use of tool such as education, economic development, health and income redistribution, to improve the livelihood of the world poorest by government and local level to achieve gaols of poverty eradicate internationally. The sustainable development goals already aiming to reduce poverty every way. The consequence of poverty exists on a relative scale. Poverty alleviation is a progress done by lots of government NGO organization within last decades. Its aiming to empower peoples with quality education, health food and water, provision and skills and training, income re distribution, are mainly focus area for that. It wants to take long to see real improvement in the living condition of the community. “The report of poverty and human development in Sri Lanka” Say maternal mortality and child malnutrition in Sri Lanka is very high. Especially in the rural, urban, and estates sector also. It’s very hi relate to the poverty. The estate sector has inequality. It’s driven by uneven access to infrastructure and education with educational deference’s. House hold, labour and demographic ethnicity problems also reason for those inequality situation. The report especially mention about poverty is highly effected to the poor performance in agriculture. Its unintended fallout of government intervention for protects rural sector research. Accessing funding scheme for agriculture their also has a problem. And it’s found the system of agriculture investment is wary week also its quality of output also become a very low. The paper of “Strategies and programs for reducing rural poverty in Sri Lanka” Saied some of poverty reducing process, such as Samurdhi programme, self employment progress for the youth, on another poverty eradicate focus programme implemented, and discuss with this programme and also discuss special emerging issue challenge and future direction with the poverty alleviation programme. The study generally guides some

ideas for government and private sector intervention is very important to poverty alleviation. Finally our some policy creates big problems for the nutrition, health and other lots of sectors.

“The poverty reduction strategy in Sri Lanka” paper tries to understand private and civil society participation for the poverty reduce programme. Its use results oriented method and identifying multidimensional nature of poverty. The research try to reach out poverty situation, a micro economic framework, public action plane, resource plane, structural policy, creating equity, government and public sector management, indicators and a monitoring mechanism. Sri Lanka always receives more donors from the International Monitoring Fund and World Bank under the Regaining Sri Lanka study (2003) issues for poverty Sri Lanka and how addresses the problem.

01. Increase two million new jobs
02. Overcoming public debt crisis.
03. Allocation resource to construct North and East
04. Increasing income level trough increasing productivity and invest.

Finally the report highly recommended good monitoring method. The report of International Fund for Agriculture Development (2012) already highlighted the important of Agro Business for food security and poverty reduction. Generally in third world country farmers product yields are very low and it's create marketable surplus due to access lack of modern technology information & produce factor. Lack of infra structure facility for access market. Farmers facing missing linkage between farm level production and downstream activity such as processing and marketing. Finally research recommend upgrade entire value chain, straight value technology, proving innovations, sources of financing, stimulating private sector participation, focus area development under local government etc. “The Indonesian rural poverty reduction programme using Agriculture development” discuss about measure it using the fallowing equation,

$$dP = \alpha + \epsilon\beta + y$$

The study compare the agriculture, industry and rural service sector contribution for the reduce rural poverty results say only can 12 to 13 percent Agriculture contribution other sector more higher than that so its recommend policy creation for other sectors.

The rural poverty is already we have and we have some of nutrition problems specially vitamin deficiencies anaemia etc. (UNICEF nutrition report 2012) and we have no plans to import fruit and its very hi price so cant access all peoples. Finally we want national fruit demand plane and apply technology for achieve targets. Those all things already mention in the Sustainable development agreement and its dividing to all departments as targets also those are implementing in policy level now.

Findings

The special area we covered and understanding the real situation we can see this type of business commercial projects doing by the farmers. Most of farmer's income generate by their own traditional farming practice. The selected farmers are also doing their papaw cultivation using family workforce specially 1 Ac to 5Ac they maintain by own labor. But some are have two income such as government job and own small business so they have deferent income. And large level cultivators pay their payment to the Mahaveli authority and some are for land owners.

	Category	Small scale(01 ac to 05 (1ac to 5ac)	Large scale (5ac – to up)
01	Land ownership	Own	Private, Mahaveli or Government
02	Investment	Own	Company or privet
03	Zero year invest	Rs.100,000	Up to Rs.100,000
04	Average annual production	12000Kg	12000Kg
05	Price for papaw Rs. 30 to 90 (per one Kg) Income average	Rs.10,80,000	Rs.10,80,000
06	Market	Villagers, mobile and weekly fair	Company, national Market
07	Annual expenditure	Rs.420,000	Rs.420,000
08	Fertilizer	Compost and chemicals	Compost and chemicals
09	Monthly net income (Average)	48000	48000

The department of agriculture introduce the program with aiming to the introduce new income, popular organic fruits, and develop framers livelihood but farmers already use chemicals and chemical fertilizers for the field. The all of papaw cultivators have some challenges such as droughts with climate change, insect affected and marketing problems for the product. The larger level expenditure is very high and its income share with government, labors and owners but in small scale they have no land expenditure, laborious are family members as a results they can use those income as their family expenditure, and also given some jobs opportunity for families in the village. The income has some special because the income can generate monthly, but it's depend the good condition in the field. So family income can continue and its develop family infra structure also. The all members of family's normal food consumption they continue it's a mixture of local food and imported foods. After the starting this project they automatically include some more food, fruit and vegetable for their meals specially hi protein are added. This potion helps to increase family nutrition level.

The education expenditure of the family is also good they spend advance level and degree or diploma level education. Most of are traveling to faraway for quality education. The infra structure development such as electricity, water supply, shelter, home garden, and perches agro related vehicle also. Another factor is health cost of the family it's near to Rs. 2000 per month its mean their health situation in good condition it's as a result of family labors. Generally they use their fruits product also villager's fruits consumptions growing with the availability of local fruit products. It's specially use organic manures so it's healthy than other fruits which are in the available markets. But some time they use chemicals and chemical fertilizer to the plants. Problem is no any measurement or guideline to control these types of chemical use.

Results and discussion

We identified the papaw plant is a very sensitive plant for the drought and climate change. It’s mainly effect to the production some time production totally fails. Some bacteria affection and white dots (biliea bugs) highly attracted those are biological challenge for the papaw cultivation. Another challenge is local and national market failure directly effect to the papaw cultivation and its price variation only festival time reported hi price for fruits.

Hi temperature and long rainfall can effect to the pollination it’s directly effect to the production. The farmers are not aware about rite use of chemical and use of post harvest techniques. And the government of Sri Lanka has no quality checking method for local food those problems are reason to didn’t control the chemical usage for food. Also farmers are aware about something of technology can implement. Also laborers are not aware about quality control, equipment use and post harvest technology also. The large scale farmers have some linkage with the company in the starting level but the privet company only purchases product under hi quality. Without hi quality they want to supply product for local market and its has competition again.

The farmers are requesting government intervention for the continue good price and market channel for continue income. And as a post harvesting method they use news paper for cover fruit. Some time reported used ethylene for the fruits those are practical problems we should give to solution.

As a project we can see papaw cultivation is a good solution for eradicate poverty NPV calculation (Table 01) show the results. The results show the below positive price mean the project is very successful.

Net present value calculation				
Year	0	1	2	3
Expenditure	-200000	420000	420000	420000
Income	0	800000	900000	1000000
Net income	-200000	380000	480000	580000
Rate	13%			
NPV	\$808,993.53			

Conclusion

The aim of the study is identifying a good solution for the eradicate rural poverty using local sources the programme implemented by the department of Agriculture and the other NGO and INGO for address this issue. Technically and theoretically the programme are very satisfied success full but the real situation is farmer’s attitude about the papaw cultivation its half of farmers are satisfied another half are neutral about the satisfaction. The reason is their income and expenditure are mixed with the domestic expenditure and they spend time year around as a labour in the field but monthly income is near to Rs.50, 000 so they compare it with paddy and other seasonal crops. But papaw is a good nutrition with should increase available in the market and also quality of product directly effect to the price of the papaw and year around cultivation control by the weather condition. And labour cost is

very high finally we can understand the real situation they think to save more money after their expenditure. So they have some neutral idea about income. But as a solution for eradicate poverty its good solution government should plan annual production within across country its help to continue best price for product. Another problem is quality of product it's should aware people and train farmers for continue quality with organic condition and if we can popular organic product within people its good solution for price. Also we can introduce by-products for the papaw. Finally the papaw production is a commercially good solution for eradicate rural poverty.

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Department of Agrithure Seasonal Report 2016/2017

WORKING CAPITAL MANAGEMENT AND FIRM VALUE: THE ROLE OF FIRM INNOVATIVENESS

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Abstract: There have been variations in working capital performance among firms and industries in various countries over the last decade. One of the causes of the variations is level of firm innovativeness. This study aims to examine the moderating role of firm innovativeness on the effect of working capital management on firm value between innovative and non-innovative firms in an emerging market. The study was carried out based on 400 listed firms in Bursa Malaysia for the period 2006-2015. By using a fixed regression estimation, the findings indicate that innovative firms have a better working capital performance than the non-innovative firms since they apply their innovative capabilities towards improving their working capital performance. This study suggests that firms need to align their innovative capabilities towards working capital management to improve firm value.

Keywords: Working Capital Management, Firm Value, Firm Innovativeness, Cash Conversion Cycle

Introduction

Generally, firms may look at the time spent in managing working capital as less vital in compare to other key decisions such as payout decisions or capital budgeting, but aftermath the 2008 global financial crisis, firms realized the significance of managing working capital judiciously (Charitou et al., 2010). This is because the valuable cash tied up through working capital cycle contributes to business failures and played a critical role in firm performance during the financial crisis (Campello et al., 2011, 2012; Campello et al., 2010; Claessens et al., 2000; Pomerleano, 1998). It is then obvious to firms that their liquidity problems can only be solved through effective liquidity and cash management, since an effective way to lessen the reliance on external funding and counter-market difficulties is to continue to track and optimize internal resources (Rydel, 2012).

However, despite the enormous awareness towards working capital management (WCM henceforth) after the financial crisis, survey has shown that the performance of working capital has increasingly deteriorated by €300 billion over the years globally and worse than the levels before the financial crisis (PWC 2016). According to Ernst and Young global working capital reports (2011 to 2016), approximately US\$1.2 trillion of cash is tied up in working capital of the firms every year since 2011. This represents a large proportion of the scope of their working capital and equals 7% of their combined sales. It also implies that for every US\$1 billion in sales, working capital could improve averagely by US\$70 million.

Furthermore, various reports on working capital performance (Deloitte, 2012; Ernst & Young, 2016; The Hackett Group, 2016; KPMG, 2011; PWC, 2016; REL, 2016), also depict variation in working capital performance among firms and industries in various countries over the last decade. While some of the firms are consistently improving yearly in their working capital, some others record deteriorating performance every year which is tying up billions of dollars meant to be used to improve their overall performance. These reports have also traced the causes of this issue of variation to many factors, which they generally accepted that firms' innovativeness is one of the causes of the varied performance. The report of PWC (2012) which specifically focused on what the top performing companies are doing differently to reduce their working capital concluded

that “*The most successful companies are constantly adapting themselves to a new regulatory environment and are innovating by making the most out of technology to achieve significant reductions in working capital*” (p.3).

The above conclusion is an indication that those firms that are improving consistently in their working capital performance yearly may involve in significant innovation and make use of their innovative capabilities to improve their working capital performance. A good example is firms that have renewed interest in evaluating possibilities in supply chain finance programmes. This allows them to make the most of accounts payable processing technology and create a win-win situation, because the supplier will get paid within short time frames and the firm benefits from extended payment terms. Meanwhile, those firms that continuously achieving deteriorating performance may involve in insignificant innovation and may not direct their innovative capability towards improving their working capital performance.

This assumption has been identified by Filbeck and Krueger (2005) where they concluded that rate of firm innovation is one of the organizational factors that can impact WCM. Also, Tauringana and Afrifa (2013) corroborated this in their argument that the type of any WCM policy chosen could either increase or decrease the profitability of a firm, depending on the firms innovativeness and availability of resources including expertise, technology, and finance. Therefore, it can be concluded that firms’ innovativeness is an internal organizational setting that affect the relationship between WCM and firm value which need empirical investigation. This study aims to empirically examine this assumption by examining the moderating effect of firm innovativeness on the relationship between WCM and firm value.

1. Literature Review and Hypotheses

1.1 Literature Review

1.1.1 Working Capital Management and Firm Value

The knowledge and understanding of the WCM policies among large firms is presently insufficient because payment terms is still generally longer in most countries and regions despite the fact that ineffective WCM and late payment are known as the main basis of business failures (Ernst & Young, 2015; Tingbani, 2015). Late payments cause an increase in working capital for the firms due to the need to raise financing from one of the four sources (Chittenden & Bragg 1997). It also increased debt, which resulted into higher interest payments, reduced borrowing capacity, reduced profits, increased equity, which dilutes and devalues existing investors’ stakes if stockholders’ returns are unaffected; reduced capital investment in the future, limiting the seller’s long-term business performance; or an increase in the length (and therefore the amount) of trade credit taken from suppliers (Fisman & Love, 2003; Love et al., 2007; Love & Zaidi, 2010; Paul & Boden, 2014; Paul et al., 2012; Zainudin, 2008). Late payment is, therefore, an imperative factor that may deter overall firm value.

Though, previous studies (e.g., Aktas et al., 2015; Autukaite & Molay, 2013; Kieschnick et al., 2013; Wang, 2002; Wasiuzzaman, 2015) have focus on the impact of WCM and its components (i.e. account receivables, account payables and inventory holding) on firm value, however, there is need for more studies to concentrate on large firms due to their vulnerabilities of managing working capital in recent years and because most large firms have a tendency of having a large amount of cash invested in working capital, and considerable amounts of short-term payables, as a basis of financing (Deloof, 2003). Therefore, there is still need for more studies on WCM to focus on large firms, specifically comparative studies of large firms among countries.

In addition, there is inconsistent results among past studies. While some studies found a negative relationship between WCM and firm value (e.g., Aktas et al., 2015; Autukaite & Molay, 2013; De Almeida & Eid jr, 2014; Kieschnick et al., 2008; Kieschnick et al., 2013; Lifland, 2011; Mohamad & Saad, 2010; Wasiuzzaman, 2015), others found a positive relationship (e.g., Abuzayed, 2012; Ali & Ali, 2012; Lyroudi & Lazaridis, 2000; Rimo & Panbunyuen, 2010). Varying explanation has been given by different researchers on the direction of the

relationship between WCM and firm value. While some studies (e.g., Aktas et al., 2015; Autukaite & Molay, 2013; De Almeida & Eid jr, 2014; Lifland, 2011; Wasiuzzaman, 2015) argue that the reduction in WCM increases firm value, other studies (e.g., Abuzayed, 2012; Ali & Ali, 2012; Lyrouti & Lazaridis, 2000; Rimo & Panbunyuen, 2010) also argue that higher working capital increases firm value.

Meanwhile, Abuzayed (2012) argue that the plausible reason for positive relationship is that investors in stock market do not base their firm selection on firms with efficient and effective working capital, and also ignores liquidity as a crucial factor in evaluating firm value. He also stressed that a positive relationship shows that firms that are more profitable are less driven to manage working capital efficiently; the letdown of the financial market to penalize these firms for managing working capital inefficiently leads to such positive relationship. Based on these assertions, there is need for more studies to provide new evidence for these claims and contribute to the contemporary knowledge on the WCM and firm value relationship.

1.1.2 Firm Innovativeness and Firm Value

According to Subramanian and Nilakanta (1996) the implicit assumptions of innovation is that it is a firm response to changes in external environment; while the believe of contingency theory proponents is that a firm external environment is incontrollable; for a firm to be successful, its needs to acclimatize to the fluctuating environmental situations by changing its firm characteristics which include its processes or its structure (Lawrence & Lorsch 1967). Innovativeness denotes the concept of openness to new ideas as a characteristic of firm's culture while capacity to innovate is the ability of the organization to adopt or implement new ideas, processes, or products successfully (Cheng & Lin, 2012; Jha et al., 2016; Lagat & Frankwick, 2015; Slaughter, 2015). It is obvious that firms have different levels of innovative capabilities, nonetheless innovative activities need to be focused on many aspects simultaneously such as new products, new organizational and marketing practices or administrative systems, and new process technologies (Camison & Villar-Lopez, 2014; Huang et al., 2015; Jiménez-Jiménez & Sanz-Valle, 2011; Walker, et al., 2015).

Moreover, according to Damanpour and Gopalakrishnan (2001), Damanpour and Wischnevsky (2006) and Damanpour and Evan (1984), a balanced rate of adoption of administrative and technical innovations are more effective in aiding firms to preserve and improve their level of performance than implementing them alone. Although innovation literature does not reveal a conclusion whether a specific innovation type is likely to provide more or less an impact on corporate performance, it can be concluded that innovations influence each other and need to be implemented in conjunction (Damanpour & Wischnevsky 2006). Thus, an innovative firm is one which aims to enhance production or delivery capabilities through improvements in productivity, efficiency or quality, or by facilitating the production of new products. Based on all these arguments, it can be assumed that the effect WCM will have on firm value of innovative firms may be different from that of non-innovative firms. This study aims to empirically examine this assumption by examining the moderating effect of firm innovativeness which will be divided into innovative and non-innovative firms, on the relationship between WCM and firm value.

1.2 Hypotheses Development

1.2.1 Working Capital Management and Firm Value

Cash conversion cycle (CCC) can be regarded as an appendage in evaluating working capital since it implies the numbers of days needed by a firm to finance its current assets with extra funds. It is better for a firm to have a shorter CCC because as costs of financing day-to-day activities reduce then the cash used in providing current assets will return quicker (Gołaś et al., 2012). Thus, through combining the short term operating efficiency and the vital components of a firm's liquidity, CCC can be sustained as WCM main variable.

Soenen (1993) argued that the duration of the cash conversion cycle (CCC) determines firm value; and firms with shorter duration of CCC attain higher firm value. In addition, firms with shorter duration of CCC can maximize their firm value due to their capability to internally generate funds, which could decrease their reliance on external financing (Autukaite & Molay, 2013; Baños-Caballero et al., 2014). Studies such as Deloof (2003), Lazaridis and Tryfonidis (2006), García-Teruel and Martínez-Solano (2007), and Baños-Caballero et al. (2014) have evidence of a negative significant relationship between the profitability of the firm and CCC. Deloof (2003) suggested that minimum level of reduction in account receivable days and inventory holding days enhance shareholders' value. Lazaridis and Tryfonidis (2006) also suggested that the more firms delay payments of their payable, the higher the working capital level reserved and used in improving firm value. In addition, the study of García-Teruel and Martínez-Solano (2007) also show that firm profitability is negatively related with both account receivable days and inventory holding days, and suggested that managers could create value by shortening CCC since it increases the available cash flow used in operating their day-to-day activities. Therefore, this study hypothesized that CCC has relationship with firm value as follows, based on previous studies:

H1a: There is a negative relationship between the cash conversion cycle and firm value.

The components of CCC are accounts receivable days and accounts payable days and inventory holding days. In order to understand the WCM and firm value relationship, there is need to disintegrate the individual components of WCM disjointedly due to their different consequences on firm value (Afrifa, 2013). Optimizing each of the components can enable a firm to minimize its CCC (Enqvist et al. 2014).

In regards to account receivables, it usually serves as short-term advances to buying firm given by the supplying firm. Accounts receivable policy of a firm always affect its firm value significantly (García-Teruel & Martínez-Solano, 2010). Decrease in number of accounts receivable days improve firm value through increase in available cash flow. This increase in available cash flow will assist firms to meet their short-term obligations, evade cash shortage, take advantage of optimistic speculation and development opportunities, and lessen transactional cost of bills paying as well as cost of financial distress (Petersen & Rajan, 1997). In line with the arguments, this study assumed that account receivables period has relationship with firm value as follows:

H2a: There is a negative relationship between the account receivables period and firm value.

Based on inventory, it is essential for firms to keep inventory for precaution purposes because of imperfections; and level of inventory held has impact on their firm value (Eroglu & Hofer, 2011). Reducing level of inventory held increases firm value since the funds untied through the reduction can be invested elsewhere; and it also avoid seeking short-term credit to finance inventory (Deloof, 2003). Therefore, this study assumed the following relationship between inventory holding period and firm value:

H3a: There is a negative relationship between the inventory holding period and firm value.

On the other hand, accounts payable serve as an essential source of short-term funds for many firms. Firms prefer achieving an optimal accounts payable policy because of market imperfection, which could impact firm value (Baños-caballero et al., 2014). Delaying accounts payable assist to enhance operational efficiency as well as firm value through reduction in transactional cost, exchange costs. It also assist firm in accumulating amounts owed and pay them periodically based on the credit period agreement; which then enable them to avoid financial constraint (Bhattacharya, 2008). In consistent with the arguments, it is assumed that account payable periods and firm value are related as follows:

H4a: There is a positive relationship between the accounts payable period and firm value.

1.2.2 Working Capital Management, Firm Innovativeness and Firm Value

The direct effect of firm innovativeness on WCM and firm value relationship has not been investigated by any study. However, few studies (e.g., Halkola, 2014; Hofmann & Kotzab, 2010; Jingmeng, 2013; Li et al., 2014; Lind et al., 2012) have revealed the effect of some aspects of firm innovativeness on WCM and its components. Vuorikari (2012) examined the optimization of WCM from processes viewpoint. The study concluded that WCM can be improved through numerous activities with little determination, though, seeing the effect of the activities is a further study yet to be examined. The study revealed the most essential processes that need reformation, which include invoicing, purchasing, as well as credit management. Faster issuing of invoice and short payment terms decrease the span of receiving payment from customer. Making negotiation on longer payment terms and larger order sizes are vital in the process of purchasing. Also, collecting and inspecting credit rating reduces the risk for bad debts.

Halkola (2014) investigates the improvement of inventory turnover and WCM through business model innovation. The findings imply that the Case company can improve its inventory turnover and WCM by developing a responsive supply chain. In addition, the company could also improve its inventory turnover and WCM by optimizing batch sizes. Hofmann and Kotzab (2010) examine a supply chain-oriented approach to WCM, with the aim of exploring the difference between the cash-to-cash cycle in a single firm and from a supply chain-oriented viewpoint through analyzing the role of payment terms for improving working capital. The conclusion of the study is that effective management of a firm supply chain improve WCM. Also, Lind et al., (2012) examine WCM in the automotive industry using financial value analysis, with the objective of analyzing WCM through the value chain from the raw material suppliers to the end customers. This will make the firm receives a holistic understanding of the value chain it operates in.

Moreover, Li et al. (2014) examine the effect of strategic choice on WCM and performance relationship. The findings indicate that working capital is configured and adjusted to its target in different ways under different competitive strategic choices. This effect is finally transferred to influence the relationship between working capital configuration and operational performance. Jingmeng (2013) also construct a management system based on the modifying cycle of WCM performance. This system includes five basics, which are management goal, management policy, business environment, management performance and management mode. The main purpose of the system is to achieve the long-term improvement of WCM.

However, the effective use and advanced structure of a firm's internal settings formulate its innovativeness. Empirical influence of some innovative aspects of firm internal settings on WCM indicates that firm innovativeness may affect the WCM and firm value relationship. Therefore, this study assumes the following hypotheses:

H1b: Firm innovativeness moderates the relationship between Cash Conversion Cycle and Firm Value.

H2b: Firm innovativeness moderates the relationship between Accounts Receivable Period and firm value.

H3b: Firm innovativeness moderates the relationship between Accounts Payable Period and firm value.

H4b: Firm innovativeness moderates the relationship between Inventory Holding Period and firm value.

As some studies found evidence of influence of firm innovativeness on firm value, growth, and overall performance (e.g., Domi, 2016; Geldes et al., 2016; Jiménez-Jiménez & Sanz-Valle, 2011; Lisboa et al., 2011; Ortega, 2010; Rhee et al., 2010; Tsai & Yang, 2013; Yam et al., 2011; Yang, 2012; Zhang et al., 2013), few studies also found in found insignificant relationship between firm innovativeness and firm performance (e.g., Chandler, Keller, & Lyon, 2000; Terziovski, 2010). This is an indication that despite that firm innovativeness improves firm performance, there is still inconsistency from the empirical studies (Tsai & Yang 2013).

The plausible for this inconsistency could be traced to the level of firm innovativeness. According to Baldwin and Johnson (1995), the level of firm innovativeness could differentiate firms into innovative and non-innovative firms. They argued that innovative firms lay more emphasis on human resources, financing, marketing, production economics, technological advancement, government programs and supports, management, growth than non-innovative firms. In addition, innovative firms usually combine their available resources with their innovative to improve their firm value. Baldwin and Johnson (1995) concluded that innovative firms can also be categorized as more-innovative or more-successful firms, and non-innovative firms as less-innovative or less-successful firms. Therefore, based on this differentiation, this study hypothesizes that:

H5: The working capital management and firm value relationship of Innovative firms are better than the working capital management and firm value relationship of Non-Innovative firms

H6: The effect of firm innovativeness on working capital management and firm value relationship of Innovative firms is better than the effect of firm innovativeness on working capital management and firm value relationship of Non-Innovative firms

2. Data Environment and Variables Description

2.1 Data environment

The data of 400 non-financial firms listed on the main market of Bursa Malaysia for the period 2006-2015 was used for this study. The firms were divided into innovative and non-innovative firms based on the definition of innovative firms by the Organisation for Economic Co-operation and Development (OECD) (Gehrke & Grupp, 1994; Grupp, 1995) and the NIW-ISI-list (Lower Saxony Institute for Economic Research (NIW) and Institute for Systems and Innovation Research (ISI)). They separated industries into 'High-Tech Industries' and 'Non-High Tech Industries' due to their R&D intensity and differentiation of 'technology intensive' goods. They regarded firms in 'High Tech Industries' as innovative firms and firms in 'Non-High-Tech Industries' as non-innovative firms. Therefore, in consistent with the OECD definition, the innovative firms used for this study are listed in table 1 (below).

Table 1 List of Innovative and Non-Innovative industries and Firms selected for this study

Innovative Industries	No of Firms	Non-Innovative Industries	No of Firms
Aerospace & Defense	1	Beverages	6
Automobiles & Parts	10	Construction and Materials	40
Chemicals	15	Food & Drug retailers	3
Electronic & Electrical Equipment	15	Food producers	35
Forestry & Paper	15	Media	5
General Industrials	20	Industrial Transportation	15
Health Care Equipment & Services	7	Mobile Telecommunications	5
Household Goods	20	Travel & Leisure	15
Industrial Engineering	21	Personal Goods	15
Industrial Metals & Mining	15	Real Estate Investments & Services	37
Oil & Gas Producers	8	Real Estate Investments Trusts	8
Oil equipment & Services	11	Support Services	13
Pharmaceuticals & Biotechnology	6	Fixed Line Telecommunications	2
Software & Computer Services	20	Tobacco	1
Technology Hardware	16		
Total	200	Total	200

2.2 Variable measurement

The dependent variable is firm value and is measured using enterprise value. Enterprise value is generally used in identifying undervalued firms and is a robust market value proxy (Lifland 2011), because it provides the economic measure of real market value of firm as a whole business (Bhullar & Bhatnagar 2013). Enterprise value put into consideration debt obligations, non-controlling minority interest and excess cash in valuing a firm. Thus, this study used a unique ratio of enterprise value-to-operating performance (EV/EBITDA) as a measure of firm value. This means firm value is enterprise value divided by Earnings before interest, taxes, depreciation and amortization (EV/EBITDA). Enterprise value is measured as Equity Value + Total Debt – Cash & Cash Equivalents + Preferred Stock + Minority Interest. Previous studies (e.g., Deloof, 2003; García-Teruel & Martínez-Solano, 2007; Soenen, 1993) have adopted the CCC as the main measure of working capital management. This study also adopts CCC as a proxy for working capital management. CCC measures the time lag between expenditure for the purchase of raw materials and the collection of sales of finished goods; or reveals the time (days) interval needed to convert a dollar invested in current assets into cash (Richards & Laughlin 1980). Other independent variables are account receivables period, inventory holding period, and account payables period. Moderating variable is firm innovativeness and it is proxied by R&D Investments. It is measured through dividing R&D expenditure by total sales volume. Control variables applied are firm size, financial leverage, liquidity ratio, assets tangibility, and firm growth. The measurements for the variables are depicted in table 2 (below).

Table 2 Variables Measurement

No	Variables	Connotation	Measurement
1.	Firm Value	FV	(Equity Value + Total Debt – Cash & Cash Equivalents + Preferred Stock + Minority Interest)/EBITDA
2.	Cash conversion cycle	CCC	Account receivables period + Inventory holding period - Account payables period. (ARP + IHP – APP)
3.	Account receivables period	ARP	Accounts receivables divided by sales and multiplied by 365 days. (AR/Sales) X 365
4.	Inventory holding period	IHP	Inventory divided by cost of sales and multiplied by 365 days. (INV/COS) X 365
5.	Account payables period	APP	Accounts payables divided by cost of sales and multiplied by 365 days. (AP/COS) X 365
6.	Firm Innovativeness	R&D	R&D expenditure divided by total sales volume
7.	Firm size	SIZE	Natural logarithm of sales
8.	Financial leverage	LEV	Total debt divided by total capital
9.	Liquidity ratio	LIQ	Current assets divided by current liabilities
10.	Assets tangibility	ASTAN	Fixed assets divided by total assets.
11.	Firm growth	GROWTH	(Current sales –previous sales) / previous sales

The following models were estimated to examine the hypotheses:

$$FV_{it} = \beta_0 + \beta_1 CCC_{it} + \beta_2 ARP_{it} + \beta_3 APP_{it} + \beta_4 IHP_{it} + \beta_5 FIRMSIZE_{it} + \beta_6 LIQ_{it} + \beta_7 LEV_{it} + \beta_8 ASTAN_{it} + \beta_9 GROWTH_{it} + V_{it} + \varepsilon_{it} \quad (1)$$

$$FV_{it} = \beta_0 + \beta_1 CCC_{it} + \beta_2 ARP_{it} + \beta_3 APP_{it} + \beta_4 INV_{it} + \beta_5 FIRMSIZE_{it} + \beta_6 LIQ_{it} + \beta_7 LEV_{it} + \beta_8 ASTAN_{it}$$

$$+ \beta_{10}GROWTH_{it} + \beta_{11}R\&D*CCC_{it} + \beta_{12}R\&D*ARP_{it} + \beta_{13}R\&D*APP_{it} + \beta_{14}R\&D*IHP_{it} + V_{it} + \varepsilon_{it} \quad (2)$$

$$FV_{it} = \beta_0 + \beta_1CCC_{it} + \beta_2ARP_{it} + \beta_3APP_{it} + \beta_4IHP_{it} + \beta_5FIRMSIZE_{it} + \beta_7LIQ_{it} + \beta_8LEV_{it} + \beta_9ASTAN_{it} + \beta_{10}GROWTH_{it} + \beta_{11}COMP_{it} + V_{it} + \varepsilon_{it} \quad (3)$$

$$FV_{it} = \beta_0 + \beta_1CCC_{it} + \beta_2AR_{it} + \beta_3AP_{it} + \beta_4INV_{it} + \beta_5FIRMSIZE_{it} + \beta_6BSIZE_{it} + \beta_7LIQ_{it} + \beta_8LEV_{it} + \beta_9ASTAN_{it} + \beta_{10}GROWTH_{it} + \beta_{11}R\&D*CCC_{it} + \beta_{12}R\&D*AR_{it} + \beta_{13}R\&D*AP_{it} + \beta_{14}R\&D*INV_{it} + \beta_{15}COMP_{it} + V_{it} + \varepsilon_{it} \quad (4)$$

Where: FV = Firm Value, CCC = Cash Conversion Cycle, ARP= Account Receivables Period, APP = Account Payables Period, INV = Inventory Holding Period, FIRMSIZE = Firm Size, LIQ = Liquidity Ratio, LEV = Financial Leverage, ASTAN = Asset Tangibility, GROWTH = Firm Growth, R&D= Firm Innovativeness, COMP= Comparative dummy variable, V_{it} = Unobserved company effects (fixed effects), ε_{it} = idiosyncratic shocks i = nth firm, t^{th} = t^{th} year

The first equation (1) specifies a direct relationship between working capital management and firm value without the moderating variable which is to examine hypotheses H1a to H4a, while the second equation (2) indicates the relationship with the consideration of the moderating variable. Thus, correlation and OLS fixed effect estimation was applied to examine the models.

3. Analysis and Findings

3.1 Summary Statistics

The summary of descriptive statistics of the variables are shown in table 3 (below).

Table 3 Descriptive statistics

Variable	Obs.	Mean	Std Dev.	Min	Max	Skewness	Kurtosis
FV	4000	1.018647	0.536542	0.925416	1.653815	1.241412	2.332672
CCC	4000	125.4286	183.7103	-1242.64	7210.31	8.25494	10.67531
ARP	4000	95.63246	50.41816	-738.3242	867.4923	4.736820	12.74637
IHP	4000	101.2457	124.3652	-0.952742	943.1371	5.356494	11.51423
APP	4000	94.216	143.6892	-837.5482	964.2364	3.485326	10.67553
R&D	4000	7.892134	12.28656	-98.6	89.46	-0.075981	15.61462
FIRMSIZE	4000	4.56047	1.53412	-1.572241	6.421835	-1.356434	6.457372
LEV	4000	0.6859837	8.11396	-0.865981	261.2188	26.11288	871.9942
LIQ	4000	1.953286	2.463738	0	92	14.43428	862.1354
ASTAN	4000	7.465265	76.78566	-1.744256	784.7459	12.63168	146.3482

GROWTH	4000	0.8342134	8.532284	-42.49936	289.7183	27.62864	924.2658
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Firm value shows approximately an average of 102%, which indicates that the firm value of the firms is very robust for these periods studied. CCC shows an average of 125 days, account receivables period with average of 95days, inventory holding period with 101 days averagely, and account payable period with an average of 94 days. This is an indication that it took averagely longer days for the firms to convert their sales to cash during the periods examined. R&D investments shows an average of 78.9%, which implies that there is high R&D investment in ratio to total sales during these periods investigated.

4.2 Correlation Matrix

Table 4 Correlation result of the variables

Variable	FV	CCC	ARP	INV	APP	R&D	SIZE	LEV	LIQ	ASTAN	GROWTH
FV	1.00										
CCC	-.05***	1.00									
ARP	-.12***	.18***	1.00								
INV	.07***	.38***	.04**	1.00							
APP	-.03**	.64***	.03**	.05**	1.00						
R&D	.16***	-.08**	.05**	.04**	.07*	1.00					
SIZE	.50***	-.07**	-.04**	.02*	.01**	-.04**	1.00				
LEV	-.04	-.02	-.08**	.05*	.03**	-.10	-.04**	1.00			
LIQ	-.20***	.10**	.06**	.04**	.06**	.02**	.05*	-.08*	1.00		
ASTAN	.04***	.05**	.30**	.04**	.07*	.05**	.04**	.03**	.02*	1.00	
GROWTH	.06***	.07**	.05*	-.03*	.05**	.04**	.05**	.02	.01*	.03	1.00

Significance levels are at 1% (***), 5% (**) and 10% (*)

A Pearson correlation analysis was applied to measure the extent of linear relationship that exist between the variables used in this study, which is depicted in Table 4 (above). Also, a variance inflation factor was used to test the present of multicollinearity The test show that the largest VIF is 1.462 (LEV), approving the absent of multicollinearity in the sample since the highest VIF is below 10 (Hair et al., 2006). Furthermore, the coefficients of the variables are less than the limit of 0.87 or 0.97 as in line with Field (2009). The results show that firm value and CCC are negatively correlated, indicating that reduction in working capital level will increase firm value because firms can convert their inventories into sales within short periods, receive cash from their credit sales and delay their payables. Account receivable period and firm value are negatively correlated, which implies that firm value is negatively influenced by the account receivable policy of the firms. As inventory and firm value indicates a negative correlation, it implies that firm value is negatively affected by the firm's inventory policy. Account payable period and firm value shows a positive relationship, which implies that firm value was increased by longer payable period.

4.3 Regression Results

Table 4 Fixed Effects regression of the models

	All Selected Firms		Innovative Firms		Non-Innovative Firms	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
CCC	-0.369***	-0.593***	-0.470***	-0.647***	-0.281***	-0.496***

	(-3.12)	(-5.47)	(-4.31)	(-6.36)	(-3.22)	(-4.71)
ARP	-0.499*** (-6.71)	-0.553*** (-8.41)	-0.316*** (-5.63)	-0.426*** (-7.25)	-0.298*** (-5.18)	-0.356*** (-6.43)
IHP	-0.043*** (-0.98)	-0.534*** (-6.38)	-0.033*** (-0.72)	-0.311*** (-5.62)	-0.029*** (-0.81)	-0.245*** (-4.74)
APP	0.067*** -4.37	0.073*** -6.14	0.082*** -3.63	0.086*** -5.32	0.074*** -3.26	0.082*** -4.22
CCC*R&D		0.613*** -8.25		0.742*** -9.16		0.624*** -8.51
ARP*R&D		0.657*** -5.51		0.765*** -7.62		0.675*** -6.57
IHP*R&D		0.751*** -6.83		0.876*** -8.62		0.788*** -7.36
APP*R&D		0.662** -5.26		0.871** -6.74		0.718** -4.46
SIZE	-0.468*** (-5.76)	-0.492*** (-4.27)	-0.251*** (-4.42)	-0.317*** (-3.16)	-0.356*** (-5.21)	-0.382*** (-4.74)
LEV	-0.014** -3.93	-0.031** -4.71	-0.011** -2.28	-0.019** -3.72	-0.012** -3.53	-0.024** -4.5
LIQ	-0.041*** (-3.22)	-0.088*** (-5.82)	-0.032*** (-2.12)	-0.054*** (-4.61)	-0.040*** (-2.78)	-0.062*** (-5.22)
ASTAN	-0.024*** (-5.28)	-0.035*** (-4.72)	-0.020*** (-4.94)	-0.027*** (-3.18)	-0.023*** (-5.02)	-0.012*** (-3.29)
GROWTH	0.009** -1.56	0.007** -1.25	0.006** -1.45	0.004** -1.62	0.007** -1.53	0.005** -1.74
Constant		-8.327*** (-18.81)		-4.238*** (-14.97)		-6.162*** (-16.68)
R&D		-0.022** (-4.86)		-0.027** (-2.53)		-0.027** (-3.64)
Observations	4000	4000	200	200	200	200
R-SQ	42	65	41	58	43	52
Akaike Test	8463	6831	6491	5214	7129	6369
Total Effect		0.623		0.482		0.401

Significance levels are at 1% (***), 5% (**) and 10% (*)

The results of the fixed regression analysis of the models is depicted in table 4. Model 1 presents the regression on the direct relationship between WCM and firm value. Model 2 presents the regression on the moderating effect of firm innovativeness on the relationship between WCM and firm value. Model 3 and 4 show the regression results for innovative firms, while model 5 and 6 show the results for non-innovative firms.

Model 1 shows a negative relationship between CCC and firm value at 1% significant level. (at $b = -0.369$, $p < 0.01$). Hence, H1a is accepted, which indicates that with 1% decrease in CCC the firm value will increase by 36.9%. This results is in line with the study of Deloof (2003) and Shin and Soenen (1998). Account receivable period and firm value are negatively related at 1% significant level. (at $b = -0.499$, $p < 0.01$). Thus, H2a is accepted, and suggests that the firm value will increase by 49.9% when account receivable period decrease by 1%. This is consistent with the argument that a shorter account receivable period untied cash and improve firm value (García-Teruel & Martínez-Solano, 2010; Padachi, 2006). Inventory holding period and firm value are negatively related at 1% significant level. (at $b = -0.043$, $p < 0.01$). Therefore, H3a is accepted, and implying that with 1% decrease in inventory holding period the firm value will rise by 4.3%. It also implies that decreasing inventory through converting it into sales within shorter period increases firm value. This finding is supported by Gill et al. (2010) and Nobanee et al. (2011). Account payable period and firm value are positively related at 1% significant level. (at $b = 0.067$, $p < 0.01$). Hence, H4a is accepted, and indicates that at 1% increase in account

payable period the firm value increases by 6.7%. This also suggests that delaying payables will increase firm value. The result is in line with the findings of Mathuva (2010) and García-Teruel & Martínez-Solano (2010b)

Model 2 signifies that the direct relationship between firm value and all the independent variables are still significant and improved than in model 1. With the presence of the moderating variables, 1% decrease in CCC, account receivable period and inventory holding period will increase firm value by 59.3%, 55.3% and 53.4% respectively. Also, at 1% increase in accounts payable period, firm value will increase by 7.3%. These findings indicate that firm innovativeness affect the relationship between working capital management and firm value positively. Therefore, hypotheses 1b, 2b, 3b, and 4b are accepted. Meanwhile, CCC and the interaction of the firm innovativeness (CCC*R&D) is significant and has a positive coefficient ($b= 0.613$, $p<0.01$). Accounts receivable period and the interaction of firm innovativeness (ARP*R&D) is significant and has a positive coefficient ($b= 0.657$, $p<0.01$). Inventory holding period and the interaction of firm innovativeness (IHP*CRN) is significant and has a positive coefficient ($b= 0.751$, $p<0.01$). Accounts payable period and the interaction of firm innovativeness (ARP*R&D) is significant and has a positive coefficient ($b= 0.662$, $p<0.01$). The combine total effect is also significant and positive ($b= 0.623$, $p<0.0$). This suggests that the interaction of firm innovativeness with working capital management variables improve firm value as anticipated by various reports and studies (e.g., Filbeck & Krueger, 2005; PWC, 2012).

Furthermore, in regards to the control variables, firm size and firm value are negatively related at 1% significant level (model 1, $b = -0.468$ $p< 0.01$), and the direction of the relationship remain the same with the presence of moderating variable in model 2 but with an improve coefficient ($b = -0.492$ $p< 0.01$). This shows that there is a negative relationship between firm size and firm value; and implies that larger firms generate more profit than smaller firms since larger firms take advantage of economies of scale to improve their return on assets (Bhattacharya, 2014). Based on financial leverage, the result shows a negative relationship between financial leverage and firm value at 5% significant level (model 1, $b = -0.014$ $p< 0.05$), and the inclusion of moderating variable in model 2 does not change the relationship but improve the coefficient ($b = -0.031$ $p< 0.05$). This implies that low leverage firms achieved higher firm value. Likewise, liquidity ratio and firm value are negatively related at 1% significant level (model 1, $b = -0.041$ $p< 0.01$) and the direction remain the same with the moderating effect in model 2 but improved the coefficient ($b = -0.088$ $p< 0.01$). This is in line with the argument of Hvide and Moen (2007) that decrease in liquidity improves firm value. In addition, assets tangibility and firm value have a negative relationship at 1% significant level (model 1, $b = 0.024$ $p< 0.01$) and the direction is unchanged with a moderating effect in model 2, but with an improved coefficient ($b = -0.035$ $p< 0.01$). This indicates that any increase in the level of tangible fixed assets will reduce firm value (Raheman & Nasr 2007). Moreover, firm growth and firm value are positively related at 5% significant level (model 1, $b = 0.009$ $p< 0.05$), and an improved coefficient with moderating effect in model 2 ($b = 0.007$ $p< 0.05$). This suggests that firms with higher firm growth achieve higher firm value because of they generate higher sales (Hawawini et al., 2003; Serrasqueiro & Nunes, 2008).

In comparing innovative and non-innovative firms, the results of model 3 shows the relationship between WCM and firm value of innovative firms, while model 4 shows the moderating effect of firm innovativeness on the relationship between WCM and firm value of innovative firms. On the other hand, model 5 shows the relationship between WCM and firm value of non-innovative firms, while model 6 shows the moderating effect of firm innovativeness on the relationship between WCM and firm value of non-innovative firms.

Therefore, comparing the results of model 3 and 5, they both indicate that WCM and firm value are negatively related, and that WCM influence firm value of both innovative and non-innovative firms. However, the influence of WCM on firm value is more robust among innovative firms compare to non-innovative firms. This can be deduced from the coefficient of CCC of innovative firms ($b= -0.470$, $p<0.01$) which indicates that at 1% decrease in CCC of innovative firms their firm value increase by 47%, while coefficient of non-innovative firms ($b= -0.281$, $p<0.01$) indicates that at 1% decrease in CCC the firm value of non-innovative firms will increase

by 28.1%. Similarly, the influence of each components of WCM (i.e., account receivable period, inventory holding period, and account payable period) on firm value is stronger on innovative firms compare to on non-innovative firms. As 1% decrease in account receivable period will increase the firm value of innovative firms increase by 31.6% ($b = -0.316$ $p < 0.01$), the account receivable period of non-innovative firm will increase by 29.8% ($b = -0.298$ $p < 0.01$). This is an indication that account receivable period is tying up more cash in non-innovative firms than in innovative firms. The firm value of innovative firms improves by 3.3% when inventory holding period decrease by 1% ($b = -0.033$ $p < 0.01$), however, the firm value of non-innovative firms improves by 2.9% when inventory holding period decrease by 1% ($b = -0.029$ $p < 0.01$). This implies that it takes shorter time for innovative firms to convert inventory into sales in compare to non-innovative firms. Also, when account payable period of innovative firms increases by 1% their firm value increase by 8.2% ($b = -0.082$ $p < 0.01$), but when account payable of non-innovative firm increases by 1% their firm value increases by 7.4% ($b = -0.074$ $p < 0.01$). This implies that innovative firms delay their account payable much longer than the innovative firms to increase their firm value.

With the inclusion of moderating effect in model 4 and 6, the results show that firm innovativeness moderates the relationship between WCM and firm value of both innovative and non-innovative firms. Though, the moderating effect of firm innovativeness on WCM and firm value relationship is more sturdy on innovative firms than on non-innovative firms. The with the presence of firm innovativeness as a moderator, the coefficient of CCC of innovative firms improve and indicates that 1% reduction in CCC will increase firm value by 64.7% ($b = -0.647$, $p < 0.01$), which is higher than 47% without moderating effect of firm innovativeness. However, for non-innovative firms, the presence of firm innovativeness as a moderator will increase firm value by 49.6% ($b = -0.496$, $p < 0.01$) when CCC decreases by 1%, which is higher than 28.1% without moderating effect of firm innovativeness. This is an indication that rate of firm innovation affect WCM, which then led to improve in firm value (Filbeck & Krueger 2005). Also, there is plausible reason that innovative firms involve more in innovation through getting the best out of their available resources and innovative capabilities to achieve significant decrease in their working capital, which then improve their firm value (PWC 2012). Meanwhile, non-innovative firms may involve in insignificant innovation and do not direct their innovative capabilities toward improving their WCM, which then reduces their firm value.

4. Conclusion

This study is unique in working capital studies as it examines the moderating effect of firm innovativeness on the relationship between working capital management and firm value of selected innovative and non-innovative firms listed in Bursa Malaysia. In consistence with previous studies (e.g., Autukaite & Molay, 2013; Kieschnick et al., 2008; Wasiuzzaman, 2015), the findings indicate a negative significant relationship between working capital management and firm value. This implies that a decrease in working capital management will increase firm value. This study also show that the presence of firm innovativeness as a moderator between working capital management and firm value significantly improve the relationship. This can be deduced as 1% decrease in CCC improve firm value by 36.9% without a moderator and by 59.3% with moderating effect of firm innovativeness. This study also provide evidence that innovative firms have a better working capital performance than non-innovative firms. This implies that innovative firms improve their working capital by aligning their available resources and their innovative capabilities towards improving their working capital, which then led to increase in their firm value. However, non-innovative firms involve in less innovation, and could not align their available resources and innovative capabilities towards their working capital.

Firms that react to intense competition through investing in R&D that focus on innovating its products, processes and technology will achieve an improvement in their firm value. This is because firm unique or innovative products, processes and technology create superiority and contribute to firm value (Demsetz, 1973). Firms that align its assets with the changes in environment, the available resources and management capability will improve its firm value.

This study implies that firm innovativeness influence the management of working capital to improve firm value. This suggests that firms must align their innovative capabilities towards their working capital to improve firm value. The clear reason is that attaining an efficient working capital management does not involve only financial view but also include other disciplines (Baltes, 2015). This led to the argument that to maximize firm value there is need integrate working capital management with business processes since working capital management covers the full choices of business processes (Leavell, 2006). Also, it is essential for firms to make reliable decisions policies that align with their resources to take advantage of opportunities and challenge threats that exist in the environment to improve their firm value.

As this study uses firm innovativeness as dynamic capability that improve the relationship between working capital management and firm value, there are other dynamic capabilities, intangible resources, or innovative capabilities that can improve working capital management and firm value. This study recommends that further research should put into consideration the effect of any of these resource factors on working capital management on firm value.

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MEASUREMENT OF TECHNICAL EFFICIENCY AND ITS DETERMINANTS IN COTTON PRODUCTION IN NORTH-WEST, NIGERIA.

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Abstract: This study was designed to measure the technical efficiency and its determinants in cotton production in North West, Nigeria. The study used primary data generated during the 2013/2014 cotton production season. Data were collected through the use of structured questionnaire administered to 355 cotton farmers. The data were analyzed using stochastic frontier production model. Multi stage purposive sampling technique was used to select the States, the Agricultural Development Project zones, the Local Governments and the villages, while random sampling was used to select the respondents from which input-output data were collected. The result of the overall elasticities of production which give the level of return to scale derived from the Cobb-Douglas equation was 0.68. The result of the study further shows that 30% of the farmers had technical efficiency of 0.81 and above while 70% of the farmers operate at less than 0.8 efficiency level. The farmers with the best and least practice had a technical efficiency of 0.99 and 0.10, while the average technical efficiency index was 0.65 respectively. This implies that on the average, output fall by 35% from the maximum possible level due to inefficiency. The result of the determinants of technical inefficiency shows that the coefficients for age and farming experience were significant at 1%.level of probability, while educational level, household size and marital status were negative and not significant.

Keywords: Technical Efficiency, Determinants of Technical Inefficiency, Cotton Production

Introduction

Cotton (*Gossypium spp*) is one of the most important vegetable natural fiber crops. It is one of the most important sources of income for smallholder farmers in many of the arid and semi-arid regions of Africa (UNDP, 2012). It is the number one natural fiber crop, used in textiles and it plays a very great role in international trade. It is a soft fiber shrub, native to tropical and sub-tropical regions around the world including America, India, and Africa (Idem, 1999). The largest volume of cotton production in the world is concentrated in countries like China, United States, India, Pakistan and Brazil. These countries produced more than three quarters of world output. However, low-income countries like Nigeria also depend on cotton to earn foreign exchange (Anderson and Valenzuela, 2006).

The role of the crop in the economy of West and Central Africa has been very prominent. It contributes 1.3% of Gross Domestic Products (GDP) in Cameroun, 8.8% in Benin Republic and 5% in Nigeria (Levi, 2010; Fortucci, 2012; and Huseyn, 2014). Hussein (2010) observed that cotton has been at the heart of an agricultural revolution in cotton-producing countries in West and Central Africa. Although cotton production in Africa is not significant on a global scale, a large number of African countries remained heavily dependent on cotton. For instance, cotton accounts for 60% of foreign exchange earnings in Benin. The West and Central African producers, which had a very marginal rank in the world market forty years ago, have considerably increased

their production capacity, and now account for more than one million tons, representing over 4% of the world production (ICAC, 2013). Between 1990 and 2007, West African cotton yield per hectare was approximately 1.1 tons (FAOSTAT, 2010). The area put under cotton production in West Africa and Central Africa has been estimated to be 2.4 million hectares (Alam et al., 2013).

Cotton is grown as a cash crop by about 0.8 million farmers on a total estimated area ranging from 0.6 - 0.8 million hectares (Gbadegesin et al., 2007). The major feature of cotton production in Nigeria is that about 80% of total production is by peasant farmers under rainfed conditions with simple tools and animal drawn implements (Adeniji, 2007). This has resulted in farmers in tropical Africa usually obtaining low yields averaging 300 and 500 kilogram per hectare of seed cotton. World average yield of cotton is about 1.5 tons per hectare (International Cotton Advisory Committee, 2013). In the year 2014, the average Nigeria yield is 232 kilogram per hectare (USDA, 2014)

Statistics on Nigerian cotton production and yield shows significant fluctuation, but on average it is on a downward trend over the last twenty years. The peak period of cotton production in Nigeria was the year 1995 when 459,000 bales (183.45kg/bale) at a growth rate of 53.51% and a corresponding peak period of yield record of 454kg/ha representing a growth rate of 46.45%. Thereafter production started declining to the current production status of 320,000 bales (6.6% growth rate) and yield states of 232kg/ha (3.11% growth rate) which is about half the figures of 1995. The impact of this is decline in foreign exchange, lack of raw materials for textiles and oil mills (ASDA, 2014). In the 1980s Nigeria earned over 8.9 billion US dollars from cotton. This amount represented more than 25% of the nation's GDP. The country's earning from cotton however dwindled to a mere 300 million US dollars in 2013 (Huseyn, 2014).

This study is therefore very essential because of the immense contribution of cotton as a cash crop to the national economy of Nigeria. The increasing need for the country to diversify its economy and revenue base to non-oil alternatives, increasing demand for cotton lint and seed to meet the needs of textile and oil-processing and feed industries has made the study necessary as it would determine the efficiency of resources used with a view to making appropriate recommendations for increased cotton production. Furthermore, the research will serve as a "spring-board" for further research by public and private institutions particularly on the aspects not covered in this study. The outcome of the study should provide information on the state of efficiency with which cotton is being produced in Nigeria so that investors, donor agencies, non-governmental organizations, development partners and private companies wishing to invest and sponsor intervention programs that will improve on the production efficiency and profitability of cotton farming decisions in the study area.

Methodology

The study area

The study area was the north-west agro-ecological zone of Nigeria which lies between latitudes 9°N and 14°N and longitudes 7°E and 6°E of the Greenwich Meridian. The zone comprises of seven States, namely, Jigawa, Kano, Katsina, Zamfara, Sokoto, Kebbi, and Kaduna. However, the study was conducted in only three States, namely, Kano, Katsina and Zamfara which are known for large-scale cotton production. The climate of the zone is essentially tropical climate, generally characterized by alternating wet and dry seasons with mean annual rainfall ranging from 500mm to nearly 1200mm.

Sampling procedure

Multi-stage sampling technique was used to select respondents for this study. In the first stage, three States were purposively selected based on their scale of cotton production. The second stage involved a purposive selection of two Agricultural Development Project (ADP) Zones from each State. The ADP zones were selected based on

their prominence in cotton production. In the third stage, two Local Government Areas were also purposively selected from each of the ADP Zones based on their scale of cotton production. In the fourth stage, two villages were purposively selected based on their prominence in cotton production from the selected Local Government Areas. Finally, a 15% proportionate random selection of cotton farmers was done from the selected villages given a total of 355 respondents.

Sources of data

The study used primary data. The primary data pertaining to this study were collected using structured questionnaire. The data was collected based on the 2013/2014 cotton cropping season. To facilitate the collection of the data, the services of agricultural extension agents was engaged. Some training was given to the extension agents to acquaint them with the content of the questionnaire. The data collected included:

- (i) Socio-economic and institutional characteristics of the cotton farmers, for example, age, sex, educational level, family size, farming experience, marital status, access to credit, membership of cooperative societies and contact with extension agents.
- (ii) Farm production and market information which included: farm size, hired and family used, fertilizer used, quantity of agrochemicals used, quantity of seed used, farm output, farm input costs, market prices of output, and constraints to cotton production.

Analytical procedure

In estimating the technical efficiency, the Cobb Douglass functional form of the *stochastic frontier* model was used as an economic method of efficiency measurement to achieve the objective of the study. It is specified as thus;

$$\ln Y_i = \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \beta_3 \ln X_3 + \beta_4 \ln X_4 + V_i + U_i$$

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Where:

Ln = natural logarithm,

Y_i = output of cotton from the ith farmer in (Kg)

X₁ - X₄ = quantity of inputs used,

β₁-β₄ = regression coefficients.

V_i = A random variable in production which accounts for the random variation in output by factors beyond the control of farmers.

U_i = random variable called technical inefficiency effects,

β₀ = intercept.

This was estimated by maximum likelihood estimation (MLE) technique available in the computer program called FRONTIER VERSION 4.1 developed by Coelli (1996).

When TE = 1, it shows that a farmer obtains maximum feasible output, while if TE < 1 means a shortfall of the observed output to the frontier output.

The study also identified the determinants of farmers' technical efficiency in terms of socio-economic and institutional variables. In this respect, an inefficiency model which assumes that the inefficiency effects are

independently distributed having N(O,σ²u) distribution and mean U_i. The model is specified as follows:

$$U_i = \alpha_0 + \alpha_1 W_1 + \alpha_2 W_2 + \alpha_3 W_3 + \alpha_4 W_4 + \alpha_5 W_5 + \alpha_6 W_6 + \alpha_7 W_7 + \alpha_8 W_8 + \alpha_9 W_9 + E_i \dots \dots \dots 2$$

Where

U_i = technical inefficiency of the ith farmer,

W₁- W₉ Socio-economic variables,

α₁- α₉ = parameters to be estimated,

α₀ = intercept, E_i = error term

The variances of the random errors, δ^2V , and that of technical inefficiency effects, δ^2U , as the overall variance of the model, δ^2 , are related as follows:

$$\delta^2 = \delta^2V + \delta^2U, \text{ and the ratio } \alpha = \delta^2V/\delta^2 \dots \dots \dots 3$$

Results and Discussion

The Maximum likelihood (ML) estimates and inefficiency determinants of the specified frontier are presented in Table 1. The study revealed that the generalized log likelihood function was -542.47. The value of gamma (γ) is estimated to be 76% and it was highly significant at 1% level of probability. This is consistent with the theory that true γ -value should be greater than zero. This implies that 76% of random variation in the yield of the farmers was due to the farmers' inefficiency in their respective sites and not as a result of random variability. The value of sigma squared (δ^2) was significantly different from zero level of probability. This indicates a good fit and correctness of the specified distribution assumptions of the composite error terms. This means that the inefficiency effects make significant contribution to the technical inefficiencies of cotton farmers.

However, the estimated coefficients of all parameters of production function were positive. Seed and fertilizer were positive and significant at 1% level of probability, while the coefficient of agrochemical was positive at 5% and hence play a major role in cotton production in the study area. The average technical efficiency for the farmers is 0.762 implying that, on the average the respondents are able to obtain 76% of potential output from a given mixture of production inputs. Thus, in a short run, there is minimal scope (24%) of increasing the efficiency, by adopting the technology and techniques used by the best cotton farmer.

The estimated coefficient for seed was 0.195, which is positive and statistically significant at 1% level. The estimated elasticity of seed (0.195) implies that increasing seed by 1% will increase cotton output by less than 1% which means, all things being equal the output is inelastic to changes in the quantity of seed used. This is in line with the findings of Shehu *et al* (2007) who observed that the estimated coefficient of seed was positive.

Table 1: Maximum Likelihood Estimation Result of the Stochastic Frontier Production Function

Variables	Parameter	Coefficient	Standard Error	T-ratio
Constant	β_0	8.853976	0.888785	9.961886
Seed	β_1	0.194643***	0.06151	3.164429
Fertilizer	β_2	0.357827***	0.105037	3.406666
Agrochemicals	β_3	0.1143**	0.0553	2.065200
Labor	β_4	0.021469	0.030394	0.706335
Return to scale (RTS)		0.68		
Diagnostic statistic				
Sigma-squared (δ^2)		1.247729***	0.090693	13.75777
Gamma (γ)		65.5*	0.516162	1.937376
Log likelihood function	-542.47			
LR Test	68.466			
Total number of observation	355			
Mean efficiency	0.762			

***P<0.01

**P<0.05

*P<0.10

Result of the overall elasticity of production is also determined and presented in Table 2. Elasticity of production is a useful guide that enhances farmers to be prudent and rational when allocating and utilizing inputs in production. The elasticities derived from the Cobb-Douglas equation was 0.68. This gives the return to scale which was obtained from the summation of the coefficients of the estimated input elasticities. Since this value (0.68) was less than 1, it shows that it is a positive decreasing return to scale at stage II of production process where every farmer strives to maximize profit and minimize cost of production. The result also shows that if all the inputs included in the production function model are increased by 1%, cotton output will increase by 0.68%

Table 2: Elasticity of Production and Return to Scale in Cotton Production

Variables	Parameter	Coefficient
Seed	β_1	0.194643***
Fertilizer	β_2	0.357827***
Agrochemicals	β_3	0.1143**
Labour	β_4	0.021469
Return to scale (RTS)		0.68

The production elasticities of output with respect to quantity of seed and fertilizer were 0.2 and 0.4 which were all positive and statistically significant at 1% level (Table 1 and 2). This implies that a 1% increase in seed and fertilizer will increase cotton output by 0.2 and 0.4%. The coefficient of fertilizer also has the highest value. This indicated that fertilizer devoted to cotton production was the most important input to which output was responsive because it has the highest elasticity.

The coefficient of agro-chemical was 0.11 which was positive and statistically significant at 5% level and has the expected positive sign, which is in conformity to *a priori* expectation.

The coefficient for labor was positive and significant at 5% and has the expected positive sign. This implies that labor positively influences the output of cotton farmers in the study area especially human labor that plays a crucial role in virtually all farming activities. This situation has been attributed to split-plot cropping on small scattered land holdings and lack of affordable equipment (Umoh, 2006)

Frequency Distribution of Technical Efficiency Estimates of Cotton Farmers

The frequency distribution of the technical efficiency estimates for cotton farmers in the study area as obtained from the stochastic frontier model presented in Table 3. It was observed that the average technical efficiency levels is 0.65 ranging from 0.10 to 0.99, while the maximum and minimum was 0.99 and 0.10 This is comparable to the study of. Adzawla *et al.*, (2013) in their study on technical efficiency of cotton production in Yendi Municipality, northern Ghana who had mean maximum and minimum technical efficiency estimates of 0.88, 0.99 and 0.70. Similarly, Tsimpo,(2010) in his study on technical efficiency and optimal farm size in the Jajik's cotton sector found a mean technical efficiency of 0.67. Neba *et al.*,(2010) had also a similar finding (mean technical efficiency of 0.83) in their study on determinants of technical efficiency of cotton farmers in northern Cameroon.

The result of the study in Table 3 shows that 30% of the farmers had technical efficiency (TE) of 0.81 and above while 70% of the farmers operate at less than 0.8 efficiency level. The result of the mean technical efficiency of the farmers implies that, on average 65% of output was obtained from the given mix of production inputs by farmers, while cotton output of farmers have fallen by 35%, otherwise there is potential for increasing output by 35% through the adoption of efficient farming practices.

The results also suggests that for the average farmer in the study area to achieve technical efficiency of his most efficient counterpart, he could realize about 35per cent $(1 - 0.65/0.99 \times 100)$ cost savings while on the other hand, the least technically efficient farmers will have about 91per cent $(1 - 0.10/0.99 \times 100)$ cost saving to become the most efficient farmer. The fact that the technical efficiency of all sampled farmers is less than 1, implies that no farmer reached the frontier

. Table 3: Frequency distribution of technical efficiency estimates

Technical efficiency	Frequency	Percentage
0.10-0.20	7	1.972
0.21-0.40	50	14.085
0.41-0.60	70	19.718
0.61-0.80	122	34.366
0.81-1.00	106	29.859
Total	355	100
Average	0.646681	
Maximum	0.994639	
Minimum	0.10338	

Determinants of technical inefficiency

Table 4 shows the estimated determinants of technical inefficiency in cotton production in North-West Nigeria. It should be noted that the socio-economic and institutional variables used in the technical efficiency model are the determinants of inefficiency and not efficiency. This implies that a negative sign on a parameter means that the variable reduces technical inefficiency and increases technical efficiency, while a positive sign means a variable increases technical inefficiency and thus reduces technical efficiency.

The coefficient for age in this study was positive and significant at 1% level of significant. This shows that increase in age increases technical inefficiency. This is similar to the findings of Adzawla *et al* (2013). Valino and Fleming (2006) in their estimation of excess water use in irrigated agriculture using data envelopment analysis in Punjab found that older farmers were less willing to adopt better practices and less willing to take risks of adopting new innovations and hence more technically inefficient. This is in contrast to the findings of several studies including that of Neba *et al* (2010) and Gul *et al* (2009) who found age to be negatively related to technical inefficiency. The possible reason given may be due to the fact that as the farmers advance in age, inefficiency in resource uses decreases, while technical efficiency increases.

Household size showed a negative relationship with predicted technical inefficiency and is not significant. This implies that farmers who have large household sizes are more technically efficient. The reason for this relationship is that as the number of people in a household increases, a pool of family labor becomes available and this leads to specialization.

Education showed a negative relationship with technical inefficiency and is not significant. The negative coefficient of education reveals that the level of education results in reduction in technical inefficiency of cotton farmers. This is in accordance with *a priori* expectation. Educated farmers are able to gather, understand and use information from research and extension more easily than illiterate farmers. Moreover, educated farmers are likely to be less risk-averse and therefore more willing to try out modern technologies. Kehinde and Awotido (2012) in their study on production efficiency of mechanized arable farming in Osun State, Nigeria observed that education sharpens managerial input and leads to a better assessment of the importance and complexities of good decisions in farming.

The coefficient for extension contact was negative and significant at 1% level. Access to extension services increases the level of cotton farmers' availability of information about technical aspects of crop technologies that play an important role in increasing farm level efficiency. The availability of an extension worker in the community and the usefulness of the extension messages (as perceived by the respondents) are significant determinants of technical efficiency. Furthermore, farmers who are members of extension-related organizations exhibit higher levels of efficiency. For instance, Asongwa *et al.* (2011) in the analysis of the efficiency of Nigerian small-scale farmers in Benue State, Nigeria observed that a marginal increase in access to extension contact of households resulted in 22.23% decline in technical inefficiency among the respondents. In some cases extension agent are also the channels of input supply to rural farmers. For extension contact to achieve the desired impact in improving technical efficiency, the farmers must be able to adopt the improved technology to their local situation.

The coefficient of cooperative membership was positive and significant at 1%. This is also contrary to *a priori* expectation as reported by Odedokun (2014). The reasons might be that although farmers belong to a cooperative association, they do not derive any benefit from their membership, but rather tie down their resources and end up being used in unprofitable ventures. It also shows that membership of cooperative association does not favor cotton marketing or cheap input procurement at all.

The coefficient for farming experience (number of years in cotton production) was negative and significant at 10%. This shows that it increases technical efficiency and decreases technical inefficiency. This is similar to findings of Adzwala *et al.* (2013) This was perhaps due to the ability of experienced farmers to draw on past experiences to suit their farming condition. The availability of an extension worker in the community and the usefulness of the extension messages (as perceived by the respondents) are significant determinants of technical efficiency. Furthermore, farmers who are members of extension-related organizations exhibit higher levels of efficiency. For instance, Asongwa *et al.* (2011) in the analysis of the efficiency of Nigerian small-scale farmers in Benue State observed that a marginal increase in access to extension contact of households resulted in 22.23% decline in technical inefficiency among the respondents. In some cases extension agent are also the channels of input supply to rural farmers. For extension contact to achieve the desired impact in improving technical efficiency, the farmers must be able to adopt the improved technology to their local situation

The coefficient of access to credit was negative and significant at 1%. This is in accordance with *a priori* expectation, because credit is believed to increase crop area, more input application and more yields. Yessin (2004) in his study observed that farmers who are not constrained by credit are more technically efficient than those who are. It must however be noted that for access to credit to positively affect technical efficiency, the credit has to properly managed and sound agronomic practices has to be adopted (Adejoh, 2010). To be more effective in increasing farmers' productivity, it is suggested that institutional credit should be of low interest rate, procedures of advancing loan should be made simple to peasant farmers and credit should be made available on time (Shah *et al.*, 2008).

The co-efficient of marital status was negative and not significant. This shows that marital status reduces technical inefficiency and increase technical efficiency. This disagrees with Rahman and Umar (2009) in their study who found marital status to be positive and significantly related to technical efficiency. The coefficient of Gender Dummy (male=1) was negative and not significant. This shows that women farmers can produce Cotton more efficiently than men. This disagrees with the finding of Rahman and Umar (2009) in their study on measurement of technical efficiency and its determinants in crop production in Lafia local government, Nasarawa State, Nigeria.

Table 4: Estimated determinants of technical inefficiency

Variable	Parameter	Coefficient	Standard error	T-value
Constant	Z ₀	0.819296	0.19801	4.138
Age	Z ₁	0.002532*	0.001347	1.88
Education	Z ₂	-0.00871	0.009596	-0.907
Access to credit	Z ₃	-0.155505***	0.041674	-3.731
Household size	Z ₄	-0.00017	0.000151	-1.124
Cooperative membership	Z ₅	0.008745***	0.001292	6.769
Extension contact	Z ₆	-0.00119***	0.001663	0.715
Farming experience	Z ₇	-0.003*	0.001588	-1.889
Marital status	Z ₈	-0.11229	0.090538	-1.24
Gender	Z ₉	-0.03188	0.040713	-0.783

***P<0.01

**P<0.05

*P<0.10

Conclusion

The results from the production function showed that the major input variables influencing cotton output were seed, fertilizer and agro chemicals. These results imply that in order to improve output levels in cotton production there is need to increase seed quality, fertilizer and agro chemicals used. The results revealed that the

sum of the output elasticities with respect to all inputs is 0.69. This is a positive decreasing return to scale at stage II of the cotton production process where every farmer strives to maximize profit and minimize cost. Furthermore, the estimated mean technical inefficiency in cotton production suggests that some scope exist for farmers to increase their levels of technical efficiency. Results of the determinants of technical inefficiency indicate that farmers' socio-economic variables should be considered as significant factors influencing inefficiency in cotton production. The conclusions from these findings are that there is ample opportunity to increase the present level of efficiency of cotton production in the study area. This can be achieved through improved farmer-specific factor which include educational level of farmers, access to credit, extension contact, and membership of cooperatives.

Recommendations

Based on the findings of this research, the following recommendations are made:

- i. The positive and significant relationship between farm size, family labor and agrochemicals with output implies that increasing the levels of utilization of each of these inputs will result in an increase in the level of output of cotton. Farmers should therefore be encouraged to increase their use of these inputs to the recommended levels.
- ii. Since the mean levels of technical (0.65) efficiencies was below the optimum level, there is scope for increasing the levels of technical 35 through the adoption of the best technologies or techniques in cotton production.
- iii. Education was found to have contributed in increasing technical efficiency in cotton production in the study area. All policy measures that build the educational capacities of farmers and strengthen their managerial capacities will lead to a substantial reduction in technical inefficiency. For example, adult literacy programmes could be introduced in rural areas and agricultural sciences introduced as part of these programmes.
- iv. The farmers should be encouraged to form goal driven cooperative groups and pool their resources together to improve upon their finances and bargaining powers in order to increase their output and income.

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EXAMINING CHANGES IN THE LEVEL AND SHAPE OF INCOME DISTRIBUTIONS IN INDIA, 2005-2012

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Abstract: Though Indian economy since 1980s has expanded very rapidly, yet the benefits of growth remain very unevenly distributed. This is corroborated while examining the panel data from the India Human Development Survey for 2005 and 2012. We find that Gini as a measure of income inequality has increased from 0.52 to 0.53 between 2005 and 2012. While, income inequality in rural area has increased from 0.49 to 0.52, in urban area, the same has increased from 0.47 to 0.49 during the same period. Adding to this, based on a recent distribution analysis tool, “ABG” the paper focuses on local inequality, which summarizes the shape of inequality in terms of three inequality parameters (α , β and γ) to examine how the income distributions have changed over time. Here, the central coefficient (α) measures inequality at the median level, with correction parameters at the top (β) and bottom (γ). The results reveal that at the middle of distribution (α), there is almost the same inequality in both the period, but the coefficients on the curvature parameters β and γ show that there is less inequality in 2005 at the extremes than in 2012 ($\alpha+\beta$ and $\alpha+\gamma$ are both smaller in 2005). Surprisingly, there is more inequality in rural India than its counterpart at both the extremes. Thus, this paper stresses the importance of inequality reduction in ending poverty and boosting shared prosperity in two core areas namely; progressive taxation and substantial social spending in education and health sectors compared to its present level.

Keywords: Income inequality, Isograph, Gini-coefficient, India

I. Introduction:

Over the last decades, the world has witnessed impressive average gains against multiple indicators of material prosperity. For instance, gross domestic product (GDP) per capita in low- and middle-income countries has more than doubled in real terms since 1990. Today’s globalization, like earlier globalizations, has seen growing prosperity alongside growing inequality. Countries that were poor not long ago, like China, India, Korea, and Taiwan, have taken advantage of globalization and grown rapidly, much faster than have today’s rich countries (Deaton 2013).

But this progress is under threat from the scourge of rapidly rising inequality. A recent study reveals that the richest 1 percent now have more wealth than the rest of the world combined and it is more alarming that ‘power and privilege is being used to skew the economic system to increase the gap between the richest and the rest’(OXFAM 2016). The poor and the middle class matter the most for growth via a number of interrelated economic, social, and political channels. Moreover, high and sustained levels of inequality, especially inequality of opportunity can entail large social costs. Entrenched inequality of outcomes can significantly undermine individuals’ educational and occupational choices. Further, inequality of outcomes does not generate the “right” incentives if it rests on rents (Stiglitz 2012). Thus, reductions in inequality are important intrinsically and because they are associated with reductions in absolute poverty and greater sharing of prosperity.

Turning onto the trends in economic inequality globally (as measured through the global Gini index), there has been a long-term secular rise in interpersonal inequality. The industrial revolution led to a worldwide divergence in incomes across countries, as today’s advanced economies began pulling away from others. However, in the late 1980s and early 1990s, the global Gini index began to fall. This coincided with a period of rapid globalization and substantial growth in populous poor countries, such as China and India. Nevertheless, the national inequality measured by the Gini index also increased steeply in a number of developing countries (World Bank 2016).

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Against this backdrop, the objective of this paper, based on longitudinal household surveys, is to examine recent trends and dimensions of income inequality in India- the third largest economy in the world, after that of China and the United States. Needless to mention, at present, the seven largest emerging market economies - China, Brazil, Mexico, India, Indonesia, Turkey and Russia - are the key engine for the world economy. The IMF (2017), in its World Economic Outlook, projected that while the world growth is expected to rise from 3.1 percent in 2016 to 3.5 percent in 2017 and 3.6 percent in 2018, India country is expected to accelerate from 6.8 per cent to 7.2 per cent and further to 7.7 per cent during the same period. It further projected that 8 per cent growth in the medium-term is within reach and, thus would experience the highest economic growth resulting from the implementation of important structural reforms.

Needless to mention, it is indisputable that standards of living have improved for a significant share of India's poor during the period of rapid economic growth since the early 1990s. Even though a trend decline in poverty emerged around the early 1970s, the year 1991-92 – the benchmark year for economic reforms in India – stands out as the year of the great divide. There was a significant spurt in economic growth, driven by growth in the tertiary sector and to a lesser extent, secondary sector. The pace of poverty reduction also accelerated, with a 3-4 fold increase in the proportionate rate of decline in the post-1991 period (Dutt, Ravallion & Murgai, 2016). Nonetheless, India is the second (next to Russia) most unequal country in the world with the top one per cent of the population owning nearly 60% of the total wealth, according to Global Wealth Report 2016 compiled by Credit Suisse Research Institute.

In India, however, the inequality data collected most frequently and most systematically – by the National Sample Survey (NSS) – involve the distribution of expenditure on consumption rather than income. Even by this measure, studies show a significant increase in inequality both within and between urban and rural areas in the post-1991 period (Dutt & Ravallion, 2009). Furthermore, the NSS has a practice of oversampling the poor and under sampling the rich (often missing the super-rich altogether), so its survey results tend to understate the degree of inequality even of consumption.

Nonetheless, measures of inequality calculated, based on consumption in India is significantly lower than the actual degree of inequality in income. Because the rich tend to save a significant fraction of their income, while the poor tend to use all of their income – and often some borrowed money as well – for consumption, the distribution of consumption is considerably less unequal than that of income. An example of the degree to which measures of consumption inequality understate income inequality in India may be gauged by comparing estimates of the Gini coefficient for all-India consumption in 2004-05 (which was roughly 35%), as compared to an estimated Gini coefficient of 54% for all-India income calculated by the Indian National Council for Applied Economic Research (NCAER) from a household survey carried out in the same year (Weisskopf, 2016). A study by Banerjee and Piketty (2003) suggest that the gradual liberalization of the Indian economy did make it possible for the rich (the top 1 percent) to substantially increase their share of total income.

Adding to this, there are little evidences based on large-scale longitudinal household survey, especially in the context of India, in examining these three specific issues: (a) trends in the standard of living (in terms of distribution of income) and movements in inequality in recent years in rural and urban India, (b) how this growth has been shared among these households and, finally (c) the intensity and shape of inequality in these two geographic regions in the country.

The objective of our paper is to address the above mentioned three questions based on recent data. The remainder of this paper is structured in four parts. Section II provides details relating to data, definitions being used in the study and methodology. Here, we report a number of different inequality measures including recent ones. Section III focuses major findings. Section IV presents conclusions.

II. Data, Definition and Methodology:

II.1. Data:

This study uses the first nationally representative detailed income data for India from the 2004-05 and 2011-12 India Human Development Survey (IHDS). This survey was conducted by researchers from the National Council of Applied Economic Research (NCAER) and the University of Maryland.

In 2004-05, IHDS began as a multi-topic panel study of 41,554 house-holds from 33 states and union territories(excluding only the small populations living in the island states of the Andaman and Nicobar Islands and Lakshadweep) across 1,503 villages and 971 urban neighborhoods. The survey was designed to be nationally representative at its inception. In 2011–12, all of the 2004–05 households as well as any households separating from the root household but residing in the same area were selected for re-interviews. Comparison of IHDS data with other reputable data sources such as the Census, National Sample Surveys (NSS) and National Family Health Survey (NFHS) shows that the IHDS compares well with these sources on common items (Desai et al. 2010). For example, the NSS estimates poverty rate to be 37 per cent in 2004–05 and 22 per cent in 2011–12; IHDS estimates are similar at 38 per cent in 2004–05 and 21 per cent in 2011–12(Thorat et al. 2017).

IHDS2 reinterviewed 83 per cent of the original IHDS1 households that held 85 per cent of the Indian population— 92 per cent of households in rural areas and 76 per cent in urban areas (*ibid*). Attrition was lower among larger, rural households, especially those who owned agricultural land. With an additional replacement sample of 2,134 households, IHDS –II has a sample size of 42,152 households. This has created a unique longitudinal or panel dataset, which provides a rich description of changes in the Indian society.

While looking at unweighted data at household level, it is observed that about 1 per cent of the total households in each of these two rounds is said to have reported negative incomes mostly owing to agricultural and business losses (461 and 452 HHs in 2004-05 and 2011-12 respectively). However, their consumption expenditures and household possessions resemble average households more than they do to other low-income households. Because of this incongruity, for income calculations in the remainder of the study, we exclude all households who have reported negative incomes.

II.3. Methodology:

II.3.1. Overall Intensity & Population Class-wise Measures of Inequality: The Gini coefficient is widely used to measure inequality in the distribution of income, consumption, and other welfare proxies. While the relative Gini coefficient is usually explained with the use of the Lorenz curve, there is an alternative way to understand it. Consider an economy composed of N individuals, with y_i referring to income (or expenditure) of the i^{th} individual, with $i = 1, 2, \dots, N$. Let $\mu = (1/N) \sum y_i$ refer to the mean income in this economy. In the N individual economy under consideration, by arranging individuals in an increasing order of their income and then comparing two randomly picked incomes. Since there are N^2 possible pairs of incomes (including pairing of an income with itself), the expected value of the absolute difference between a random pair of incomes is given by

$$\bar{D} = \frac{1}{N^2} \sum_{i=1}^N \sum_{j=1}^N |y_i - y_j| \text{-----} (1)$$

The relative Gini coefficient let's denote as G^R - is defined as half of \bar{D} normalized by the mean of the distribution, μ :

$$G = \frac{1}{2\mu} \bar{D} \text{-----} (2)$$

Further, a Gini coefficient can be decomposed in two different ways. First, if the total population is divided into a few classes(by sex, occupation, region, etc.), the Gini coefficient for the entire population can be decomposed into three components: (a) an intra-class component arising from income variations within each class; (b) an inter-class

component arising from the differentials of mean incomes between classes; and (c) an overlapped component arising from the fact that poor people in a high-income class may be worse off than rich people in a low-income class. Second, for the total population, if per capita income can be divided into several sources (e.g. agricultural wage, non-agricultural wage, etc.), the Gini coefficient can be decomposed by income source.

Turning on to the first case,

.As this paper uses data from a longitudinal household survey in India, the classification of population is first made by a rural/urban division. The rural and urban sub-populations are then classified by region. As a result, the Gini coefficient is decomposed twice (two-tier decomposition). The decomposition is, however, based on exactly the same formula and principle. If one understands the first tier decomposition, one should be able to do the second tier decomposition. Let G denotes the Gini coefficient for the entire population under consideration. It can be decomposed into three components – intra-class, inter-class and overlapped as shown in Equation 3:

$$\mathbf{G} = \mathbf{G}_W + \mathbf{G}_B + \mathbf{G}_O \text{ -----(3)}$$

G_W is the intra-class component of G . If there is no income inequality within each of the classes, $G_W = 0$. G_B is the inter-class component of G . If the mean incomes of all classes are identical, $G_B = 0$. G_O is the overlapped component of G . If the richest person in any low income class “I” is not better off than the poorest person in any high income class “J”, $G_O = 0$. The relative contribution of G_B to G has important implications for inter-class income inequality. If G_B is small, inter-class inequality is small, and vice versa. Equation 3 is due to Pyatt (1976) who uses matrix algebra based on game theory to derive the Gini coefficient and its class components (for more detailed discussion, see Yao and Liu, 1996).

II.3.2. Shape of Income Inequality:

Through Gini coefficient, we can understand the intensity of inequality, but it does not help us in distinguishing the inequality at the top, middle and bottom level of income distribution. Assuming that we are dealing with income dynamics, like in our case, and it may turn out that this coefficient of both the periods is similar. Does it mean that there is no change in inequality at all? To answer this question, we need to examine the shape of inequalities at the local level. A pioneering work in this context has recently been made by Chauvel (2016). The author used the well-known Champernowne I – Fisk (CF) distribution (Champernowne, 1937, 1952; Fisk, 1961) as a baseline for local inequality analysis and accordingly, has proposed an ABG (α, β, γ) method of estimating three inequality parameters, compatible with the Pareto properties of the tails. In this method, the level-specific measures of inequality can be deducted from the CF hypothesis at the median but with additional curvature at the top and bottom of the distribution.

Here, the central coefficient (α) measures inequality at the median level with correction parameters at the top (β) and bottom (γ). In this approach, the magnitudes of ranks and incomes, defined by logit (quantile) and log (income), are (almost) linearly-related as given in the following equation:

$$\mathbf{M}_i = \alpha \mathbf{X}_i + \beta \mathbf{B}(\mathbf{X}_i) \mathbf{X}_i + \gamma \mathbf{G}(\mathbf{X}_i) \mathbf{X}_i \text{ -----(5)}$$

Where, $X_i = \text{logit}(p_i) = \ln[p_i/(1-p_i)]$ is the logit-rank, and $M_i = \ln(m_i) = \ln(y_i/\text{median})$ is the log of medianized incomes. On the other hand, B and G are two simple linear combinations hyperbolic tangent functions:

$$\theta_1 = \tanh(X/2) \quad \& \quad \theta_2 = \tanh^2(X/2) \quad \text{such} \quad \text{that}$$

$$B(X) = \frac{\theta_1(X) + \theta_2(X)}{2} \quad \& \quad G(X) = \frac{-\theta_1(X) + \theta_2(X)}{2}.$$

Thus, individuals are defined by their logit (quantile) of income and their related B and G functions. The OLS linear regression proposed by Chauvel is easy to carry out and produces the estimates of the ABG parameters. For the detail derivation of the above equation pls. refer Chauvel’s seminal work.

In the above decomposition, α , $\alpha + \beta$ and $\alpha + \gamma$ are the inequality measures at the median, top and bottom of the distribution, respectively. Besides this, Chauvel (2016) proposed the introduction of an ISO function that generalizes the quantile CF income distribution (CF_α) given by:

$$M_i = \alpha X_i, \quad \text{where} \quad M_i = \ln\left(\frac{y_i}{\text{Median}}\right) \quad \& \quad X_i = \ln\left(\frac{P_i}{1 - P_i}\right) \quad \text{-----} \quad (6)$$

(where α measures the degree of inequality understood as the stretching out of the distribution curve) in to the form:

$$M_i = ISO(X_i) X_i, \quad \text{where} \quad M_i = \ln\left(\frac{y_i}{\text{Median}}\right) \quad \text{-----} \quad (7)$$

$$\text{Thus, } ISO(X_i) = \frac{M_i}{X_i}, \quad \text{where} \quad M_i = \ln\left(\frac{y_i}{\text{Median}}\right) \quad \text{-----} \quad (8)$$

However, the isograph representing $ISO(X_i)$ is not a constant (due to the presence of B and G functions as shown in equation (5)) and expresses the intensity and the shape of local inequality. The higher is $ISO(X_i)$, the greater the stretching out of incomes at the logit rank level X_i . The change in $ISO(X_i)$ along the distribution measures “local inequality”, which can be thought of as the local stretching of the distribution. The empirical isographs are horizontal lines that are often bent at the two extremes in different ways.

Most importantly, in equation (5)

- (a) The coefficient α measures inequality close to the median;
- (b) The coefficient β characterizes the additional inequality at the top of the distribution, β being positive when the rich are richer than in the CF_α , so that the upper tail is stretched; and
- (c) The coefficient γ characterizes the additional inequality at the bottom of the distribution, γ being positive when the poor are poorer than in the CF_α .
- (d) The signs of β and γ can be positive or negative and can move in opposite directions as well. Thus, there can be four possibilities:
 - (i) Type 1(When β +ve and γ -ve): Rich are richer and the poor richer than under the CF. The isograph has a positive slope;
 - (ii) Type 2(When β +ve and γ +ve): Rich are richer and the poor poorer, but the middle class is relatively homogeneous. The isograph has a U shape;
 - (iii) Type 3(When β -ve and γ -ve): Rich are poorer and the poor are richer than under the CF. The isograph has an inverted-U shape; and
 - (iv) Type 4(When β -ve and γ +ve): Rich are poorer and the poor are poorer. The isograph has a negative slope.

Thus, the above methodology will help us in examining contours of inequality in terms of both measurement and graphical representation in terms of isograph.

III. Empirical Results:

III.1. Levels, Growth and Facets in Inequality of Income Distribution:

The typical mean household income per capita has increased from Rs. 8,746 in 2004-05 to Rs. 23,831 in 2011-12 (henceforth the year 2005 and 2012 respectively). On the other hand, the median household income per capita has increased from Rs. 8,746 in 2004-05 to Rs. 23,831 in 2011-12. Further, a perusal mean and median per capita income reveal that whereas, the former got increased from Rs. 5,141 to Rs. 13,860 during the sample period. In terms of spatial income distribution by rural and urban areas, it is observed that whereas, the average mean and median growth of household income per capita in the former case was 24.4 per cent and 22.9 per cent respectively, the average mean and median growth of household income per capita in the latter case was 20.2 per cent and 18.0 per cent respectively (**Table 1**).

Table 1: The level and Growth of Household Income Per Capita (in Rs.)

Rural India	2004-05	2011-12	Urban India	2004-05	2011-12	All India	2004-05	2011-12
Mean	6711	18158	Mean	14953	36101	Mean	8746	23831
Avg. Mean Growth Rate (%)		24.37	Avg. Mean Growth Rate (%)		20.21	Avg. Mean Growth Rate (%)		24.64
Median	4260	11085	Median	10000	22595	Median	5141	13860
Avg. Median Growth Rate (%)		22.89	Avg. Median Growth Rate (%)		17.99	Avg. Median Growth Rate (%)		24.23
S.D.	12142	35777	S.D.	20176	50372	S.D.	14973	41799

Source: Author's calculation based on IHDS-I & IHDS-II data.

The distribution of household income per capita by quintile groups reveal that for the top quintile (i.e., for the 20 percent highest) group, it has increased from Rs. 25, 266 in 2005 to Rs. 70,197 in 2012 with an average growth of 25.4 per cent, whereas for the bottom quintile (i.e., for the 20 percent lowest) group, the mean household income per capita has increased from a mere amount of Rs. 1,675 in 2005 to Rs. 4,196 in 2012 with an average growth of 21.5 per cent (Table 2).

Table 2: Household Income Per Capita by Quintile Groups

Quintile Groups	Rural			Urban			Combined		
	2004-05	2011-12	Avg. Growth Rate	2004-05	2011-12	Avg. Growth Rate	2004-05	2011-12	Avg. Growth Rate
Q1	1464	3501	19.87%	3350	7771	18.85%	1675	4196	21.51%
Q2	2905	7410	22.16%	6396	14881	18.95%	3350	8928	23.79%
Q3	4372	11376	22.89%	10085	23054	18.37%	5317	14212	23.90%
Q4	6917	18156	23.21%	16103	37680	19.14%	8914	23760	23.79%
Q5	18638	52482	25.94%	39460	98579	21.40%	25266	70197	25.40%

Source: Same as Table 1

As mentioned above, percentile shares have become increasingly popular for the analysis of distributional inequality. Percentile shares quantify the proportions of total outcome (e.g. of average or total income) that go to different groups defined in terms of their relative ranks in the distribution. Since, they have an intuitive and

appealing interpretation, before we interpret Gini coefficient for the analysis of income inequality over time, it is quite relevant to analyse of distributional changes in income through this measure.

Table 3: Share of Household Income Per Capita by Quintile Groups

Quintile Groups	Rural		Urban		Combined	
	Relative Share in 2004-05 (%)	Relative Share in 2011-12 (%)	Relative Share in 2004-05 (%)	Relative Share in 2011-12 (%)	Relative Share in 2004-05 (%)	Relative Share in 2011-12 (%)
0-20	4.27	3.77	4.44	4.27	3.76	3.46
20-40	8.47	7.97	8.48	8.18	7.52	7.36
40-60	12.75	12.24	13.38	12.67	11.94	11.72
60-80	20.17	19.54	21.36	20.71	20.02	19.59
80-100	54.34	56.48	52.34	54.17	56.75	57.87

Source: Same as Table 1

The table above confirms the high inequality in India. We can see, for example, that the top quintile (i.e., for the 20 percent highest) group receive 57.9 per cent of the total of income, whereas the bottom quintile (i.e., for the 20 percent lowest) group only receive 3.5 per cent. Further, an examination of distribution of household income per capita reveals that inequality is more in rural India as compared to urban India irrespective of quintile groups. Taking our analysis, a step forward, percentile share densities have an intuitive interpretation. They indicate how much each member in a group gets (on average) in relation to the overall average (Jann, 2016).

As we see from Table 4 that average household income per capita of the lowest 10 percent in 2005 was only about 12.6 per cent of the overall average, whereas in 2012 it plummeted further to 11.3 per cent of the overall average. On the other hand, average household income per capita in the highest 10 percent group in 2005 was about 401 per cent of the overall average, whereas in 2012 was about 414 per cent of the overall average. We also see that about 70 per cent of people are below the equal distribution line (that is, receive below average per capita income).

Table 4: Percentile Share Densities: Average Household Income Per Capita as compared to the Overall Average by Decile Groups

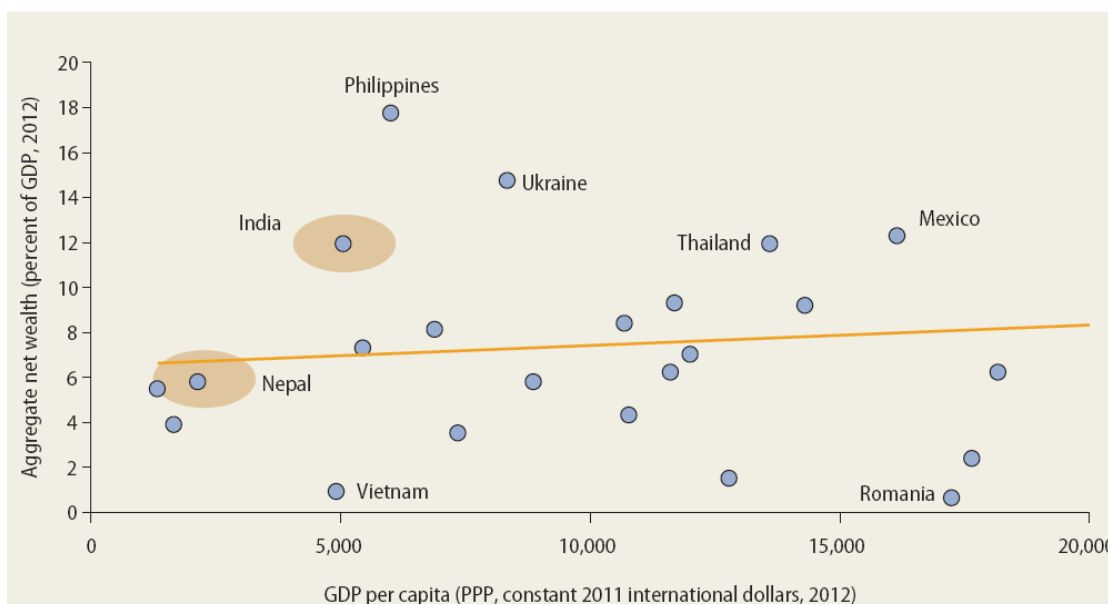
Decile Groups	Rural		Urban		Combined	
	2004-05	2011-12	2004-05	2011-12	2004-05	2011-12
0-10	14.17%	12.24%	16.27%	15.41%	12.61%	11.31%
10-20	28.53%	25.44%	28.17%	27.30%	25.01%	23.29%
20-30	38.16%	35.07%	37.17%	36.20%	33.25%	32.30%
30-40	46.54%	44.67%	47.67%	45.58%	42.00%	41.32%
40-50	57.08%	54.76%	59.53%	56.41%	52.88%	52.01%
50-60	70.39%	67.66%	74.23%	70.29%	66.54%	65.16%
60-70	87.96%	84.29%	93.46%	89.70%	85.39%	83.89%
70-80	113.73%	111.10%	120.12%	117.37%	114.83%	112.00%

80-90	161.69%	158.17%	166.69%	166.08%	166.24%	164.86%
90-100	381.76%	406.61%	356.70%	375.67%	401.26%	413.87%

Source: Same as Table 1

A recent study reveals that the concentration of billionaire wealth appears to be exceptionally large in India. According to Forbes magazine (2014), total billionaire wealth represented about 10 percent of gross domestic product (GDP) in 2012. As such, India is an outlier in the ratio of billionaire wealth to GDP among economies at a similar development level (Figure 1).

Figure 1: Billionaire wealth in India

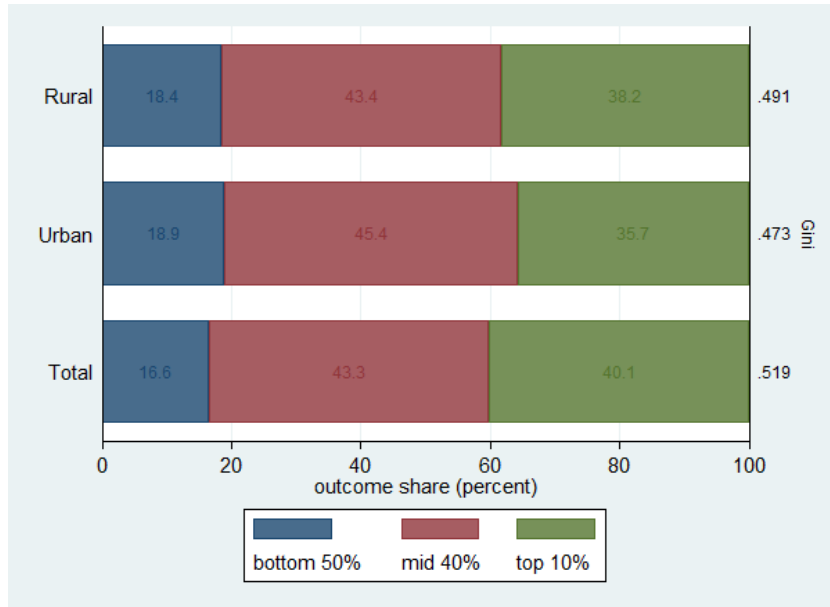


Source: Based on Forbes magazine’s billionaires database, <http://www.forbes.com/billionaires/>, and World Bank’s WDI database, <http://data.worldbank.org / data-catalog / world-development-indicators> cited in Rama, Martín, Tara Bêteille, Yue Li, Pradeep K. Mitra, and John Lincoln Newman. 2015. Addressing Inequality in South Asia. South Asia Development Matters. Washington, DC: World Bank.

Note: PPP = purchasing power parity.

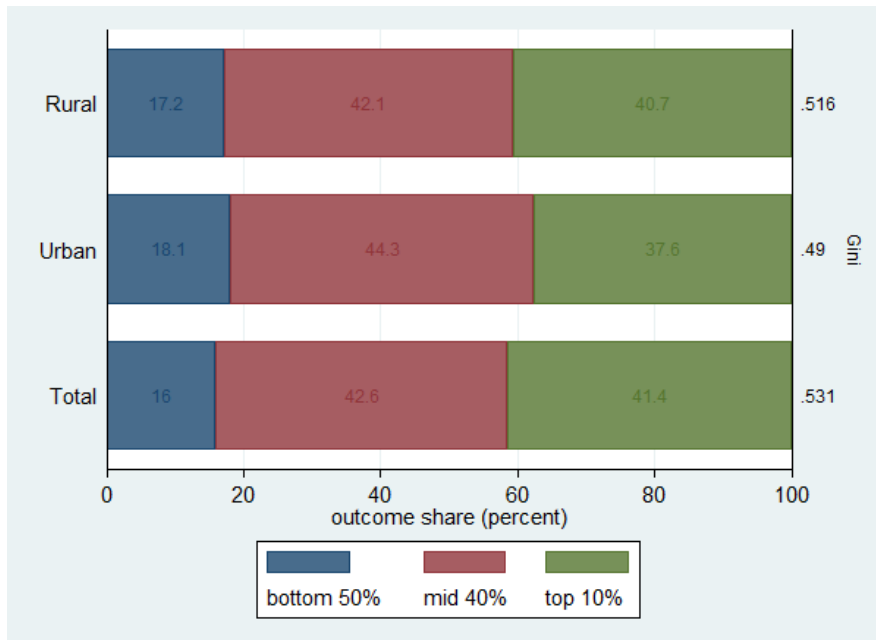
The final thing that we analysed here is the magnitude and trends in the per capita income Gini at the all-India level (and in rural and urban areas as well) during the sample study period. Figure 2 and Figure 3 show that the Gini coefficient has increased from 0.519 in 2005 to 0.531 in 2012. Moreover, it has increased steeper in rural areas (from 0.491 in 2005 to 0.516 in 2012 as compared to urban areas (from approximately, 0.473 in 2005 to 0.490 in 2012). The pattern of rising inequality at the aggregate and/or rural and urban level, is not only revealed by the Gini coefficient but also in terms of income share of select percentile groups, such as "bottom 50%" "mid 40%" "top 10%". For example, the Palma ratio of per capita income (top 10% share divided by bottom 40% share; see, e.g., Cobham et al., 2015) has increased from 3.56 to 3.82 at all-India level. Similar interpretations can be made for other select percentile groups.

Figure 2: Gini Coefficients with "bottom 50%" "mid 40%" "top 10%" Income Share in 2005



Source: Same as Table 1

Figure 3: Gini Coefficients with "bottom 50%" "mid 40%" "top 10%" Income Share in 2012



Source: Same as Table 1

III.2. Shape of Inequality of Income Distribution:

It is often worthwhile in understanding the population's mobility across different income levels in different regions. The following table is helpful in this regard.

Table 5: Distribution of Population across Quintiles

	1	2	3	4	5
2004-05					
Urban	5.5	9.0	17.2	25.7	42.5
Rural	24.7	23.6	20.9	18.1	12.6
Total(A)	20.0	20.0	20.0	20.0	20.0
2011-12					
Urban	6.6	12.2	19.2	26.0	36.0
Rural	26.2	23.6	20.4	17.2	12.6
Total(B)	20.0	20.0	20.0	20.0	20.0
% Point Change					
Urban	1.1	3.2	2.0	0.3	-6.6
Rural	1.4	0.0	-0.5	-0.9	0.0
Total(C)	0.0	0.0	0.0	0.0	0.0

Table 3 analyzes the population distribution in India and its rural and urban areas across five quintiles of per capita income during the period under study. Each of the five columns denotes a quintile. Column 1 denotes the lowest, or first quintile, column 2 denotes the second quintile, and so forth.

All cells in row A or B have a value of 20, obtained by dividing India's entire population into five equal groups in terms of per capita income. Each group contains 20 percent of the population. The fifth quintile contains the richest 20 percent of the population, the fourth quintile consists of the second-richest 20 percent of the population, and so on, and the first quintile consists of the poorest 20 percent of the population.

Rows 2 and 3 report the population distribution in urban and rural areas for 2005 using the national quintiles. Consider the value 5.5 in the urban row. This value implies that 5.5 per cent of the total urban population falls in the first quintile. Similarly, 42.5 percent of the total urban population falls in the fifth quintile.

The picture is considerably different for the rural area, where only 12.6 per cent of the total rural population falls in the fifth quintile and 24.7 per cent falls in the lowest quintile. In 2012, the urban population share in the first two quintiles increased to 6.6 percent and 12.2 per cent respectively, but for the rural areas, while in the first quintile, the population share increased to 26.2 per cent, for the second quintile it remained the same at 23.6 per cent. In contrast, the rural population share in the two highest quintiles taken together has decreased in 2012 as compared to 2005, and likewise the urban population share in the two highest quintiles taken together, has decreased in 2012 as compared to 2005.

Another way of examining income distribution in India and its rural and urban areas is to compare average household income per capita as compared to the overall average by select percentile groups. As we see from Table 6 that average household income per capita of the lowest 10 per cent in 2005 was only about 12.6 per cent of the overall average, whereas in 2012 it plummeted further to 11.3 per cent of the overall average. On the other hand, average household income per capita in the highest 10 percent group in 2005 was about 401 per cent of the overall average, whereas in 2012 was about 414 per cent of the overall average. We also see that about 70 per cent of people are below the equal distribution line (i.e., percentage of population that, receive below average per capita income).

Table 6: Percentile Share Densities: Average Household Income Per Capita as compared to the Overall Average by Decile Groups

Decile Groups	Rural		Urban		Combined	
	2004-05	2011-12	2004-05	2011-12	2004-05	2011-12
0-10	14.17%	12.24%	16.27%	15.41%	12.61%	11.31%
10-20	28.53%	25.44%	28.17%	27.30%	25.01%	23.29%
20-30	38.16%	35.07%	37.17%	36.20%	33.25%	32.30%
30-40	46.54%	44.67%	47.67%	45.58%	42.00%	41.32%
40-50	57.08%	54.76%	59.53%	56.41%	52.88%	52.01%
50-60	70.39%	67.66%	74.23%	70.29%	66.54%	65.16%
60-70	87.96%	84.29%	93.46%	89.70%	85.39%	83.89%
70-80	113.73%	111.10%	120.12%	117.37%	114.83%	112.00%
80-90	161.69%	158.17%	166.69%	166.08%	166.24%	164.86%
90-100	381.76%	406.61%	356.70%	375.67%	401.26%	413.87%

Source: Same as Table 1

It may be noted that the mean and the median, two different measures of standard of living, are differently sensitive to the distribution of per capita income. Mean is more sensitive to extreme values, whereas median is more robust to extreme values. For example, if the only change in the distribution of per capita income is at the highest quintile or the lowest quintile, the change would be reflected by the mean, but the median would not change. In contrast, in certain situations, when changes occur in the middle of the distribution, mean per capita income may remain unaltered, but the median may reflect the change.

However, ABG (α , β , γ) method as mentioned above, addresses these issues with α , $\alpha + \beta$ and $\alpha + \gamma$ are the inequality measures at the median, top and bottom of the distribution, respectively. The results shown on the following table based on earlier discussed ABG (α , β , γ) method reveal that at the middle of income distribution,

Table 7: Estimates of ABG Parameters in India (2004-05 & 2011-12)

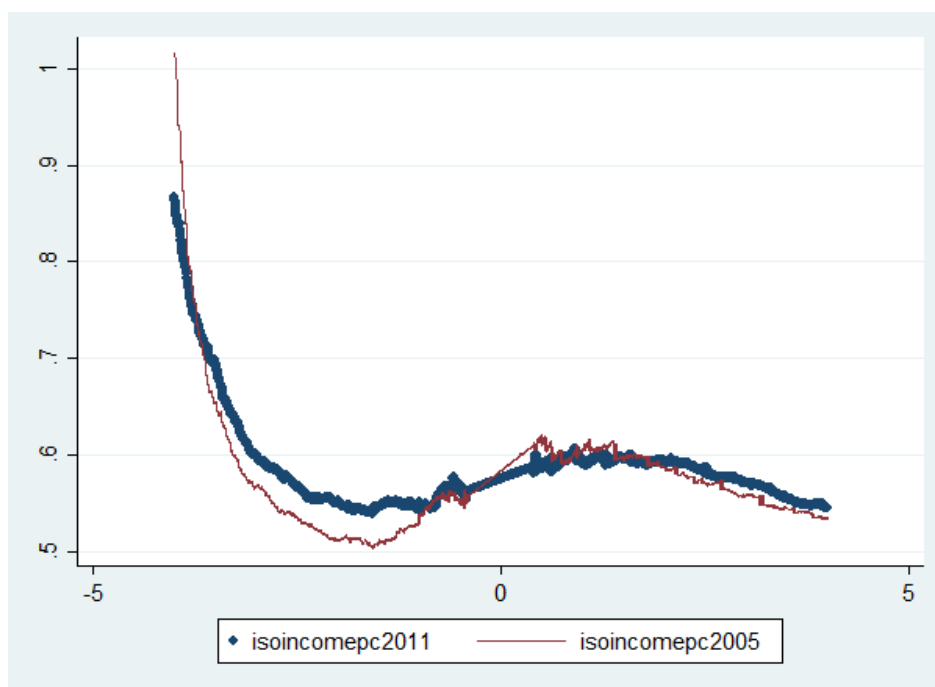
Parameters	α	β	γ	$\alpha+\beta$	$\alpha+\gamma$
2004-05					
Urban	0.550	-0.075	-0.076	0.475	0.474
Rural	0.509	0.046	0.049	0.554	0.558
Total	0.577	0.014	-0.051	0.590	0.526
2011-12					
Urban	0.553	-0.020	-0.115	0.532	0.437
Rural	0.509	0.075	0.102	0.585	0.611
Total	0.571	0.032	0.007	0.602	0.577
Change in Parameter Values					
Urban	0.003	0.055	-0.039	0.058	-0.036
Rural	0.001	0.030	0.053	0.030	0.053
Total	-0.006	0.018	0.057	0.012	0.051

Note: Changes shown between years 2004-05 and 2011-12. All these parameters are statistically significant at 1% level.

there is more inequality in 2005 as compared to 2012 and which is more prominently observed in urban area. On the other hand, the negative coefficients of β and γ values in both the years(2005 and 2012) in urban India show that there is less inequality at the extremes than in the rural counterpart ($\alpha+\beta$ and $\alpha+\gamma$ are both smaller in Urban India). But, in urban area, there is an increase in inequality at the top end of income distribution during the study period and, in contrast, there is suggestive evidence of a decrease in inequality at the bottom of income distribution. On the other hand, in rural area, there is an increase in inequality at the top and bottom of social ladder than near the median during the reference period. Overall, a net increase in both $\alpha+\beta$ and $\alpha+\gamma$ values suggest increasing inequality in extreme ends meaning thereby a polarization in the society where rich are getting richer and poor are getting poorer. In contrast, the net (small) negative coefficients on the parameter α shows there is a marginal decline in inequality at median income distribution at all-India level.

The above analysis can be corroborated with the help of Isograph-a tool which represents the diversity of local inequality over the income distribution- as represented in Figure 4. The higher the curve at a given level of X (logit rank), the greater are the income inequalities at this level (For more details, pls. refer Chauvel(2016)). As can be seen from the figure, there is more inequality in 2012 at the extremes than in 2005. In other words, the inequality measures at the top and at the bottom of income distribution is found to be more unequal in 2012 as compared to 2005.

Figure 4: The Isograph for India in 2004-05 vs. 2011-12



Note: isoincomepc2011 and isoincomepc2005 represent Isograph based on per capita income in the year 2011-12 and 204-05 respectively.

IV. Concluding Remarks:

The paper examines the trends, levels and shapes of income inequality in India between 2005 and 2012. The paper also uses Gini as a measure of inequality and finds that income inequality in rural India has increased from 0.49 to 0.52 between 2005 and 2012. On the other hand, income inequality in urban India has increased from 0.47 to 0.49

during the same period. However, this measure of inequality does not provide information on where the stroke is: at the bottom, middle, or top of the distribution.

To answer this, apart from examining incomes at certain points (in terms of percentile shares) in the distribution, we have used the ABG (α , β , γ) method which reveals that at the middle of income distribution, there is more inequality in 2005 as compared to 2012 and which is more prominently observed in urban area. On the other hand, the negative coefficients of β and γ values in both the years (2005 and 2012) in urban India show that there is less inequality at the extremes than in the rural counterpart ($\alpha+\beta$ and $\alpha+\gamma$ are both smaller in Urban India). But, in urban area, there is an increase in inequality at the top end of income distribution during the study period and, in contrast, there is suggestive evidence of a decrease in inequality at the bottom of income distribution. On the other hand, in rural area, there is an increase in inequality at the top and bottom of social ladder than near the median during the reference period. Overall, a net increase in both $\alpha+\beta$ and $\alpha+\gamma$ values suggest increasing inequality in extreme ends meaning thereby a polarization in the society where rich are getting richer and poor are getting poorer. In contrast, the net (small) negative coefficients on the parameter α shows there is a marginal decline in inequality at median income distribution at all-India level.

Thus, our research suggests that not only is income inequality very high in India, but also the shape of inequality matters a lot. The Government of India, in the last a few decades, is engaged in several concerted actions to address poverty: an ambitious economic reform agenda; announcement and allocation of resources for a range of social protection measures; and a strong commitment to good governance. Concomitantly, there is need to tackle growing inequality. From policy perspective, one way to mitigate inequality is for the state to step in social spending in education, healthcare, and generating a pool of skilled labour force so as to ensure employment and income security both in rural and urban areas and above all, progressive taxation in order to redistribute resources across society. Policymakers seeking to combat inequality overall also need to focus on ways to lift the incomes of the very poorest, to get them closer to the middle class, so as to contain the pace of social polarization.

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DETERMINANTS FOR FINANCING IT FIRMS: A STUDY OF INDIAN INVESTORS

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Abstract: The present work is based on survey dataset of 104 investors who invests in various sector of the Indian economy along with IT sector in order to understand the selection process and evaluation criteria of investors towards IT sector in Indian context and to analyze the different dimensions of venture capitalists management and other investors based on risk return aspects, choice of investment firm, expected return on investment and financing mix. Our study gathered importance of selection factor and economic aspects of VCs in the selection process of IT firms and analyze the various other aspects of proposed investment. A designed questionnaire was sent to all investors who are the part of investment process. Factor Analysis and ANOVA has been used to obtain the results.

Keywords: Investment, IT Sector, Selection Process

1. Introduction

The growth and development of any sector largely depends on the fulfillment of funding requirement and availability of funding sources. In order to achieve the targeted future goals, it is important to continue with regular flow of capital in to the business concern. Initial and regular investment not only provide financial support but also helps to face the increasing completion, within the economic boundary and worldwide as well.

Availability of financial resources has been considered as an important aspect for continual growth and development. It has also been observed that availability of such funding resources is critical in most of the expansion activity. Different firms face various funding issues from different sources of funding agencies. In the spectrum of innovating source of finance, among the other mode of investment, venture capital is also emerging as an important innovating financial source for various sector of the economy.

Venture capital can be defined as a process through which the new highly risky startups are financial supported by investors in the overall development of business concern, in order to attract market opportunities and in obtaining long term capital gains (Shilson, 1984). Venture Capital, has been defined as a dedicated pools of capital which is independently managed and primarily has the interest in privately held, high-growth companies through investments in their equity, or equity-linked financial instruments (Lerner, 2009), and it also performs an important role in the commercial transformation of R&D activities and is therefore proven catalyst for innovation (Christofidis and Debande, 2001). The founding editor and also an influential UK Venture capitalist of The Venture Capital Report (Reid, 1998) has further added: "venture capital is invested in high-risk venture (typically new companies and new technologies)".

2. Literature Review

It is to be noted that the process of designing of business plan, its submission for investment purpose, review

and selection has been considered as one of the important aspect of investment decision. Most of the business plans are rejected by the investors because of multiple factors which investor demand in the proposed business plans. During the period of 1974 to 2016 number of studies have concluded in their research work that selection factors, investment objectives, investment dimensions and investment process are integral part of any investment decision making process. The present work is the mirror image of previous work who investigated the selection criteria, investment motives, significance of factors based on firm's structure and other dimensions of investment process.

In the selection process of business proposal, preference for evaluation process (Barry, 1994; Fried & Hisrich, 1994), experience and personality of the entrepreneur, ownership and uniqueness of a product or service [Wells (1974), MacMillan et al. (1985), Ray (1991), Ray & Turpin (1993), Ramón et al. (2007) where as MacMillan et al. (1985) and Muzyka et al. (1996) Fried & Hisrich (1994) and Tyebjee & Bruno (1984)], significance of market growth and its link to competitive advantage [Poindexter (1976) and Pandey & Jang (1996)] and return on investment was given more importance. Shepherd (1999) highlighted that industrial experience has high importance. Shepherd (1999) determined the importance of factors which lead to success or failure with the venture and gathered various aspects such as managerial skills, product branding and market awareness. Lerner (2004), by reviewing all criteria gathered in previous studies focused on flexibility of business conditions so that venture can adjust in any adverse condition and could gain possible profitable opportunities. Worrall (2008) in his study emphasized on due-diligence as an important factor in order to complete valuation process of a company. Chen et al. (2009) in his study given strong preference to creation and submission of business plan and determined two major factors, business plan and project planning. Geronikolaou and Papachristou (2012) in his study obtained the significant relationship among VC investment and its relationship with patent. Faria and Barbosa (2014) investigated investment stage as one of the significant factor of investment proposal and also linked it to growth aspect of a business concern. Dutta and Folta (2016) described the relationship between business angles, venture capitalist and patent applications.

3. Objectives of the Paper

- To understand the importance of different dimensions of VC management team related with investment decision.
- To obtain the key selection and key investment criteria based on two major aspects: Entrepreneurs dimension and investment dimension
- To check the pattern and relationship among choice of factor and importance of factors.

4. Research Methodology

4.1 "Data"

The present study is exploratory and descriptive in nature. Primary and secondary sources have been used for study. Primary data is collected through a structured questionnaire, created with the help of identified factors resulted in previous empirical studies and was sent to various investors located in various metro cities of India. Secondary data is collected from various published literature, Journals, news papers and research articles.

4.2 Analysis Tool

For obtaining the different dimensions of investors in the selection process of IT firms in Indian context, gathering the factors affecting selection process and determining the investment motives, factor analysis has been used and to prove the relationship among choice of factors and its internal relationship, ANOVA has been used.

5. Results

We have obtained the results on two major outcomes of the study. Firstly aspects of selection process and risk-return factors related with investment decisions and relationship between choice of factors have been identified and second analytical study based on different dimension related with investment decision have been obtained.

5.1 Results obtained through Factor Analysis

To assess the importance of funding decision and investment process, we used factor analysis to reduce the variables. For understanding the evaluation criteria, total 32 variables were taken into considerations which were reduced in to 16 variables, grouped under four dimensions and for the determination of investment motives, total 42 variables were taken into consideration and were reduced in to 28 variables using factor analysis. Factor analysis has been used to obtain the number of variables. Factors have been extracted through principal analysis and rotated by means of Varimax, with Kaiser Normalization. The representation of the outcome of rotation process has been given as an appendix in Annexure 1 and Annexure 2. The formation of dimensions and creation of groups are given below in Table 3 and Table 4

Table 1 Factors affecting evaluation criteria

	FACTORS			
	1	2	3	4
	Entrepreneur Skills pertaining to market research	Risk –Return and investment strategies	Branding and existence of the product	Track Record
Variables	Demonstrated leadership ability	Capable of sustained intense effort	Personal compatibility to me, Wells.	Track record relevant to venture.
	Demonstrated managerial capabilities in general business.	Ability of evaluation and reaction to risk.	Entrepreneur referred by trustworthy source.	
	Market has significant growth rate.	Venture provides exit strategies.	Product has been developed to prototype.	
	Familiarity with industry.	Required return of 10 times investment.	Product has raw material availability.	
	Resistance to economic cycles.	Required liquidity and taken public.	Venture will stimulate existing market.	

Table 2 Investment Motives

	Factors			
	Social and Economical Development	Financial Motives	Investment appraisal and evaluation	Product Branding
Variables ⇒	Target an ownership position in investee firm	Own return	Discounted value of free cash flows	Investor return
	Growth and regional development	Experienced Forecast of the likely future value of the firm	Risk of losing entire investment	Promoting entrepreneurs
	Tax incentives	Capitalized maintainable earnings (P/E multiple	Risk of unsuccessful implementation of the idea	Capable of high profit margin
	Fixed compensation,	Capitalized maintainable earnings (P/E multiple – historic basis)	IT sector as a growing sector	
	Market capitalization	Future plans		
	Latest transaction prices for acquisition in the sector			
	Capitalized maintainable earnings (EBIT multiple)			
	Industry's special rule of thumb pricing ratio (e.g. turnover ratios)			
	Present value of future cash flows			
	Risk of being unable to bail out, if necessary			
	Competitive risk			
	leadership failure			
	Market potentiality and links			
	Resources and capabilities			
	Risk taking capacity			
	Leadership style			

5.2 Results obtained through ANOVA

Analysis of Variance is a technique to understand the relationship among the variables. In the present work, we used five point likert scale for obtaining the responses from investment firms. We observed the different investors have different opinions in their preference about the selection and evaluation criteria in the process of acceptance of an investment proposal. This difference is due to different aspects which are based on investment motives of investors. With the help of ANOVA, we proved the relationship among investor's investment motives, selection of aspects, identification of right business proposal and assignment of weights to all factor. Through ANOVA we obtained that different investors have their common preference in selection of different factors of investment motives, selection process, evaluation criteria, accepting or rejecting business proposal, deciding risk return aspects and creating funds for proposed investment decision. All investors have

same opinion for investment motives but there are certain differences in terms of providing the range of selection and weights while selecting each factor. It has also been proved that selection of factors seem to be an important objectives in creation of business plan by IT firms in order to get their proposal funded by VCs. Results obtained by applying ANOVA has been given in the appendix.

5.3 Analytical Results for Different Investment Motives

Next we have also analyzed the other dimensions of VC management team to understand their preference about proposed investment sources, expected rate of return, compensation motive and financing mix.

5.3.1 Preference in Investment source:

In order to obtain the information about the preferred investment source, our survey collects the data considering 5 sectors of Indian economy such Information Technology sector, pharmaceutical sector, telecommunication sector, hospitality sector and infrastructure sector. The survey reported that 30% investors have their preferences in choosing information technology sector as investment destination, 14% prefer pharmaceutical sector, 9% have their choice in telecommunication sector, 29 % want to select hospitality sector and 18% have their preference in choosing infrastructure sector.

5.3.2 Expected Average Rate of Return on Investment

To understand the pattern and choice of investment desired by investors, our survey analyzes the data considering 5 different ranges of investment return. The survey reported that 40% investors have their preferences in getting 10%-20% returns, 35% look for 5%-10%, 7% have their choice in generating 30% returns and 18% want to 20%-30% returns.

5.3.3 Compensation Management

To obtain the desire about the needed compensation by investors, our survey reported that 48% investors have their preferences in getting good returns on investment, 24% investors are interest in receiving management fee, 17% look for growth in proposed value of investment and 11% proceed for equity stake.

5.3.4 Financing Mix for Proposed Fund Requirement

Total 6 instruments have been used for this purpose such as equity capital, convertible debt, shareholder's contribution, loans with separable option, preferred stock and participating loan. Out of our respondents, 19% prefer to raise funds from equity capital, 19% from convertible debt, and 12% from shareholder's contribution, 22% from loans with separable option, 23% from preferred stock and 5% from participating loan.

5.3.5 Strategies for Exit Plans

To understand the decisions about the strategies towards exit plan from investment destination, our survey determined that of various options such as Initial public offer, buy back, trade sale and structural change in investment, 20% investors are interest for initial public offer, 46% have their choices in acquisition or trade sale, 14% look for secondary sale, 11% want to go for buyback and 9% investors are interested for reconstruction of investment.

5.3.6 Stage wise choice of investment

In order to understand the investment choice of investors during selection of preferred stage of investment, our study obtained that out of all stages of venture capital investment proves, 30% have their preferences in selecting seed stage for investment purpose, 17% look for startup stage, 17% choose expansion stage, 19% have their preferences for replacement stage and 17% target exit stage for their investment preferences.

6 Conclusions

The present work determines the investment motives and evaluation criteria of VCs and other investors in order to select IT firms in Indian context and analyzes their risk return and investment dimensions related with proposed investment. Our results gathered that choice of factors among different investors remains same and selection of aspects to individual firms differ. We find that entrepreneurs capability, designing of business plan, risk return relationship, market research, branding of product, acceptability of the product and track record of the firm plays very important role in the evaluation process of firms and investors give due care to all factors during their screening process.

Factor analysis resulted with most important investment motives and evaluation criteria and ANOVA resulted with a relationship between choice of aspects and their impact on assignment of weights.

The results will have a positive impact in the designing of business plans by IT firms in order to attract more investment by traditional and modern sources of investment and will also help investors to understand the firm's qualitative aspects in a prescribed manner.

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Appendix

Appendix 1: Factor Loading for Evaluation Criteria

Factor Loadings of Variables in Four Dimensions				
Variables	Factors			
	1	2	3	4
Leadership skills	.934			
Managerial skill related with the business	.962			
Productive growth rate	.935			
Industry exposure	.962			
Economic conditions and adoptability	.934			
Efforts for generating returns from market		.755		
Risk – return analysis and its evaluation		.986		
Planning for exit opportunities		.986		
10 times return from proposed investment		.780		
Liquidity profitability trade off and taken public		.986		
Compatibility features with investors			.869	
Entrepreneur reference source			.939	
Preface to product development			.913	
Raw material conditions			.939	
To gain market opportunities			.913	
Ventures track record				.921

Source: Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Appendix 2: Factor Loading for Investment Motives

Factor Loadings of Variables in Four Dimensions

Variables	Factors			
	1	2	3	4
Desire of ownership position	0.756			
Positive growth and development on regional basis	0.818			
Tax implication and incentives	0.972			
Investment returns	0.844			
Market capitalization rate	0.880			
Acquisition and its transaction price	0.844			
Earnings before interest and tax	0.818			
Analysis or turnover ratio	0.880			
Predictive cash flow	0.928			
Risk of being unable to bail out	0.772			
Risk of intense competition	0.880			
Risk of leadership failure	0.764			
Market awareness	0.818			
Available resources	0.899			
Risk bearing capacity	0.972			
Leadership traits	0.972			
Internal returns		0.985		
Evaluation of future value of the firm		0.966		
Price- earnings ratio		0.985		
Evaluation of Capitalized maintainable earnings		0.985		
Planning directions for future		0.911		
Discounted value of future cash flow, free or tax based			0.988	
Risk of investment lost			0.988	
Risk of idea implementation			0.988	
Growing capacity of IT sector			0.988	
Investor return				0.986
Promotional factors of entrepreneurs				0.986
Evaluation of profit margin				0.903

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Appendix 3 RESULTS OF ANOVA

ANOVAs: Two-Factor Without Replication
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<u>Summary</u>	<u>Count</u>	<u>Sum</u>	<u>Average</u>	<u>Variance</u>		
F1	8	35.12	4.39	0.010628571		
F2	8	32.34	4.0425	0.007364286		
F3	8	33.98	4.2475	0.001135714		
F4	8	36.3	4.5375	0.008392857		
Financers	4	17.26	4.315	0.0233		
Financial Consultants	4	17.28	4.32	0.109333333		
Financial Institutions	4	17.38	4.345	0.027833333		
Fund Managers	4	17.28	4.32	0.060266667		
Private Banks	4	17.12	4.28	0.055466667		
Public Banks	4	17.14	4.285	0.081166667		
VCs	4	17.1	4.275	0.013966667		
Others	4	17.18	4.295	0.0433		
<u>ANOVA</u>						
<u>Source of Variation</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>P-value</u>	<u>F crit</u>
Rows	1.0679375	3	0.355979167	42.48383889	4.26E-09	3.072467
Columns	0.0166875	7	0.002383929	0.284506642	0.952887	2.487578
Error	0.1759625	21	0.008379167			
Total	1.2605875	31				

Appendix 4 RESULTS OF ANOVA

ANOVAs: Two-Factor Without Replication						
<u>Summary</u>	<u>Count</u>	<u>Sum</u>	<u>Average</u>	<u>Variance</u>		
F 1	7	28.6063	4.08661	0.00507		
F 2	7	29.94	4.27714	0.02259		
F 3	7	28	4	0		
F 4	7	33.5	4.78571	0.01032		
Financial Consultant	4	16.675	4.16875	0.08391		
Financial Institution	4	17.3058	4.32646	0.1368		
Fund Manager	4	17.2488	4.31219	0.09101		
Private Bank	4	16.9838	4.24594	0.19694		
Public Bank	4	17.1688	4.29219	0.13108		
VC	4	17.3058	4.32646	0.1368		
OTHERS	4	17.3583	4.33958	0.13627		
ANOVA						

<u>Source of Variation</u>	<u>SS</u>	<u>Df</u>	<u>MS</u>	<u>F</u>	<u>P-value</u>	<u>F crit</u>
Rows	2.599372	3	0.866457	112.1727	7.72E-12	3.159908
Columns	0.088834	6	0.014806	1.91676	0.133009	2.661305
Error	0.139038	18	0.007724			
Total	2.827244	27				

CORPORATE GOVERNANCE: INDIAN PERSPECTIVE WITH RELATION TO SARBANES OXLEY ACT

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Abstract: Corporate governance is one of the most important legislative domains of a business organization which has an impact on its profitability, growth and even sustainability of business. As business circumstances are vary the investors are differ with respect to incentives, risk-attitude, and different incentive strategies, the outcome of this process emerge as a kind of corporate governance practices. In order to protect investors from financial irregularities, misleading and fraudulent activities carried out by the firm the U.S Securities and Exchange Commission passed the act called Sarbanes-Oxley Act (SOX), whereas in India the Clause 49 of SEBI, is many times termed as Indian version of SOX but it has also been criticized for not being holistic in nature. Many of the corporate governance regulations are scattered in various clauses of Indian Companies act too. In this paper we aim to compare SOX and Indian regulations on corporate governance. We discuss the similarities, differences, areas of SOX superiority and suggest various improvements which if incorporated in Indian laws may lead to achievement of comprehensive regulation on corporate governance.

Keywords: Corporate Governance, Indian Clause 49, Sarbanes Oxley Act (SOX)

Introduction:

Attention towards Corporate Governance

In the corporate world, since frauds and scandals were arising, it can be seen that laws and rules come after when some of such frauds and scandals had already happened. How good is that? If we can predict the future frauds and scams and accordingly we can make certain laws and rules so that growing number of frauds could be minimized. From developed to developing countries, it can be seen that corporate frauds are a major problem which is increasing in its frequency as well as in its severity. In the era of globalization as new technologies are emerging the nature of business transactions are also changing. It became a challenging task for the organizations as business transactions became very complex (Rujitha T R, 2012). A corporation is a group of people which includes various stakeholders like employees, customers, investors, partners, government, and society. The relationship between managers and shareholders is fraught with conflicts due to the difference in their objectives, information asymmetry, and separation of ownership and control. Because of these conflicts, managers always have the ability to maximize their own benefits at the expense of shareholders. For mitigating these agency conflicts corporate governance structure evolves (Dey 2008). Corporate governance has received much attention in the corporate world after the high-profile scandals such as Adelphia, Enron, and WorldCom, were revealed in the United States (US) as well as Harshad Mehta, Ketan Parekh, Satyam, 2G were revealed in the Indian market. This lead to the most sweeping corporate governance regulation in the US named as Sarbanes–Oxley Act, (SOX) 2002 and in India it came in the form of Clause 49 of the Listing Agreement to the Indian stock exchange which comes into effect from 2005. The purpose was of ensuring the reduction in corporate frauds and irregularities. It recommended independent auditors and the financial heads to take the undertaking of the financial statements. Proponents of the rules argue that such rules are necessary because the corporate scandals indicate that existing monitoring mechanisms in the public corporations should be improved.

Historical Perspective

The term corporate governance was originally developed in 1962 which was a step for ensuring that shareholders who invest their money into the corporation receive a fair return on the investment made by them and also having

a protection against those management activities which are unethical and also creates poor use of their invested money (Arsalidou and Wang, 2005). Over the past two centuries, there have been several critical events which occurred and make a drastic change in corporate governance.

Over the last several decades the US system of corporate governance structure has changed constantly. During the 1960s and 1970s, strong corporate managers and weak corporate owners can be seen. The resulting was seen as giving power to managers which called agency problem (Berle & Means, 1932). Table 1 and Figure 1 shows the list of notable corporate frauds & scams in the US while Table 2 and Figure 2 shows the list of notable corporate scams in India.

Table-1 Notable frauds & scams in US

Year	Scam	Amount in INR
2001	Enron	4788.17billion
2002	WorldCom	245.88billion
2003	HealthSouth	90.59billion
2004	Adelphia Communications	148.82billion
2005	American insurance Group	252.35billion
2008	Madoff investment scandal	1294.1billion
2012	JP Morgan	388.23billion

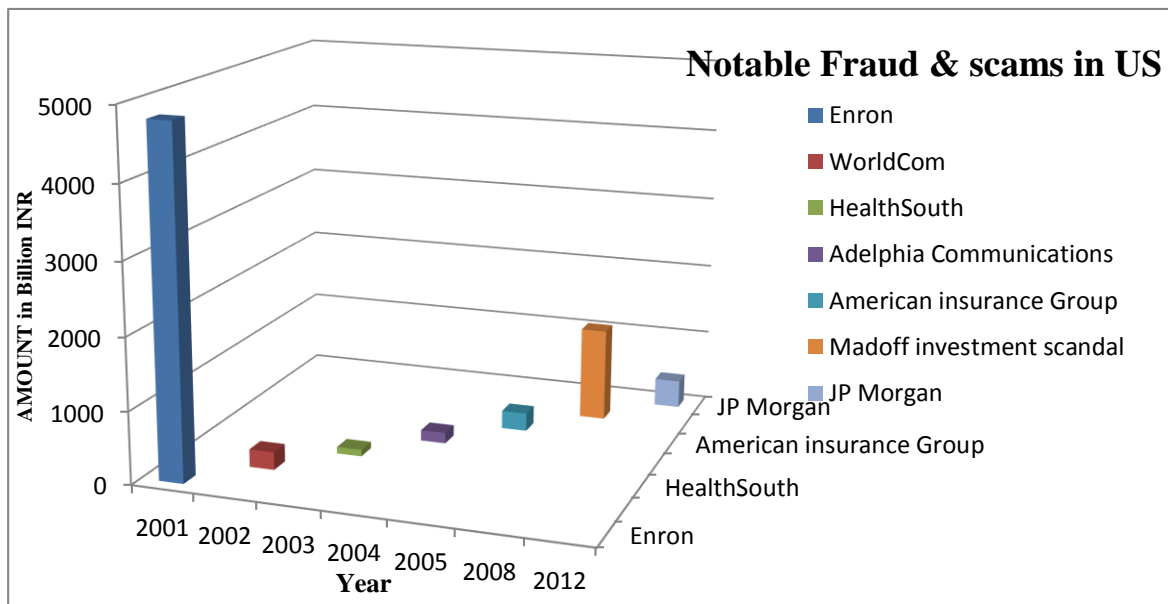


Figure 1 Notable Fraud and Scams in US

Before Enron, many key organizations in the US “model” of corporate governance were in place but the wave of speculation was also running parallel, due to which so many opportunities raised for short-term profit making through Initial Public Offering (IPO).

Around the globe, a wide-ranging re-examination of corporate governance norms has been raised with the collapse of Enron in the year 2001 (Bratton, 2002, Coffee Jr., 2003). Enron revealed the fact that there were so many reasons due to which the system was not functioning as per the requirement. The weaknesses of each activity seemed to potentially undermine the other activity (Gordon, 2002). Again in 2002 WorldCom scandal creates focused substantial criticism on the US corporate governance. This led to the emergence of SOX Act which was enacted by that time Republican Congress and President, generally SOX is seen as a piece of “progressive” regulation (Baker, 2008). From the above Table 1, it can be seen that after the emergence of SOX in the US the scandal rate was minimized but not comes to an end.

In India again there were some corporates which were indulged in speculation and short-term profit making through IPO. It was the year 1992 when the Harshad Mehta scam came into light as Mehta was dipping illegally into the stock manipulation activities financed by Worthless banks receipts.

Table-2 Notable frauds & scams in India

Year	Scam	Amount in INR
1992	Harshad Mehta securities scam	50 billion
2001	Ketan Parekh securities scam	1.37 billion
2002	Stamp paper scam	200 billion
2008	2G scam	1760 billion
2009	Satyam Scam	71.36 billion
2010	Sahara Scam	250 billion
2012	Indian coal allocation scam	1860 billion
2013	Saradha Group financial scandal	400 billion
2016	Kingfisher Scam	9 billion

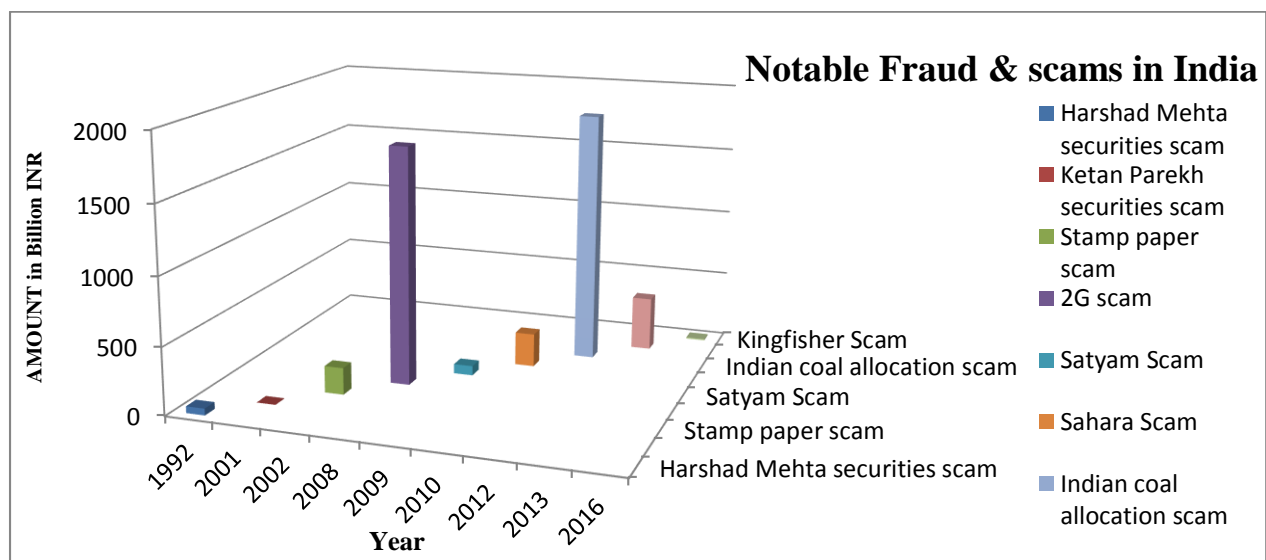


Figure 2 Notable Fraud and Scams in India

As Harshad Mehta considered “Sultan of Dalal Street”, investors blindly followed his tricks. Harshad Mehta misused his status to manipulate the stock prices of particular shares on the stock for his personal financial gain. At that time Stock Exchange Board of India (SEBI) was not having such authority to regulate the transactions between investors and stockbrokers. The only authority which has the jurisdiction to look into the matter was the

Central Bureau of Investigation (CBI) (Nagarajan, G and Khaja Sheriff J, 2012). But In lieu of this, the Legislature system approved the SEBI Act, 1992. The SEBI Act provided SEBI 3 fold functions.

- Protection function- To protect the stock market activities from unscrupulous investors and to provide protection from unfair market practices.
- Development Function- To develop the stock market actively and lawfully.
- Regulation Function-: To regulate the transactions between stock brokers and investors.

In 1997, Mehta again tried to re-enter the markets by employed stock brokers who bought and sold shares at the stock market on his behalf for a commission. But at that time SEBI also had become too smart to catch the Harshad Mehta's tricks (Chandok S, 2015). During that period, SEBI had grown immensely and create a way to becoming the market watchdog. Resulting emergence of Clause 49 came into existence in late 2002. But as per Table 2, it can be seen that the corporate scams were still in continuation as Ketan Parekh scam revealed in 2001, the 2G scam in 2008, and Coal scam in 2013. It means SEBI was not successful in detecting the scam on its own; although it managed to lash back strongly to ensure such a scam never arise again.

Corporate Fraud & Reporting structure in India and US

Corporate fraud is a worldwide scenario which affects all countries and all sectors of the economy. Corporate Fraud includes a wide-range of illegal acts and illegitimate practices involving misrepresentation, intentional deception. (Bhasin M. L., 2013).

The first initiative that US government has taken was the passing of Foreign Corrupt Practices Act in the year 1977 for ensuring sound corporate governance practices. It was mainly dealt with the systems of internal control. As high-profile failures were emerging the Treadway Commission was incorporated in the year 1985 which highlighting the necessary requirement for constituting Independent Boards and Committees. It was constituted for ensuring transparency with regard to the financial position of the company and other vital issues. In the year 2002 After Enron collapse, the US legislator enacted the SOX Act to protect investors from the possibility of fraudulent accounting activities by corporations. SOX mainly dealt with auditor's independence and financial disclosures.

When corporate governance practices were emerging around the world, India was lagging behind. In India, corporate governance gained prominence in the wake of liberalization during the 1990s. The reform of SEBI was the most significant initiative of 1992. At that time the main role of SEBI was to control and supervise the stock trading activities, with this SEBI also formed many corporate governance rules and regulations. After that it was also introduced as a voluntary measure by the Confederation of Indian Industry (CII) in 1996, at that time it created the set of laws which have rules and guidelines for Indian corporations as to initiate the act towards corporate governance. on May 7, 1999, two committees Narayan Murthy and Kumar Mangalam Birla was formed under Securities and Exchange Board of India in order to deal with insider trading and insider information, and also draft a code for best corporate governance practices. Based on the suggestions provided by these committees, Clause 49 was introduced so that the standards of Corporate Governance can be raised and promote. Timely it was reformed to incorporate and overcome the problems and contained all the regulations and requirement.

Regulatory Legislations

India has witnessed several corporate Frauds, few of them being can be seen above in Table-2. Indian Research evidence shows that growing number of corporate frauds and misleading activities have undermined the integrity of financial data, in results it contributed substantial economic losses, and investors also became eroded. The US has also witnessed several such corporate Frauds where fraudulent financial reporting and corrupt business practices having its existence since the era of footprints of the Public Corporation.

A prior study of historical literature reveals that the state of non-compliance has typically been investigated using governance and financial variables (e.g., Kinney et al., 2004; Srinivasan, 2005; Abbott et al., 2004; Agrawal and Chadha, 2005; Beasley, 1996; Caruso, 2002; Erickson et al., 2006; Farber, 2005). However, it is generally accepted that the SOX Act of US and the Indian Clause 49 with equivalent Indian Regulations has improved the corporate governance compliances and decreased the incidence of misleading activities and fraud.

US and India’s Corporate Governance Norms- Comparative analysis of SOX and Clause 49 with equivalent Indian Regulations

A comparative analysis has been made between the US and India to gain insights into the Corporate governance system in the both countries (Suraj A. B., Elango S., Pal S., et.al., 2012). The comparison will thus provide us with various factors on which the corporate governance of these can be distinguished and the factors on which they are similar

Table-3 Different Regulatory Legislation of India and US

S. No.	India	US
1	Indian Contract Act 1872, Clause 49 of Listing Agreement	Sarbanes Oxley Act
2	Indian Penal Code	Foreign Corrupt Practices Act
3	Prevention of Corruption Act	Patriot Act
4	Prevention of Money Laundering Act	OECD Guidelines
5	The Companies Act 2013	IIA Guidance

Table -4 Corporate Governance Regime in US and India

Factors	Sarbanes-Oxley Act	Clause 49 & Equivalent Indian Regulations
Corporate governance structure	Rules based	Rules based
Control	In section 404 details regarding control are specified	Only specified but no elaborative details are given
Responsibility	Board is responsible and accountable for any frauds	CEO and CFO are responsible and accountable for any frauds
Audit committee composition	Minimum of 3 independent directors	2/3 rd independent directors
Review of internal control mechanism by	public company accounting oversight board (PCAOB)	Audit committee
Penalties and Punishments	Penalties having range between loss of stock from listing on the exchange to fines upwards of millions of dollars. Provision for imprisonment can be range from 1 year to 25 years	Penalties having range between loss of stock from listing on the exchange to fines upwards of millions of dollars. Provision for imprisonment can be range from 1 month to 10 years
Whistle blower protection	Strong protection laws in place	No strong protection laws in place

Although the intention of both the regulations is same, the structure and provision are much different.

- SOX provide a regulatory framework mainly for the internal control over the financial reporting (“ICFR”). Section 404(b) of SOX Act requires that an independent auditor attests to management’s assessment of those

internal controls. Financial information and accuracy which applied throughout the entire corporation should take into consideration as per all the controls which specified in the act. While on the other side the Clause 49 focuses on the guidelines related to corporate governance of the entire corporation. It means Clause 49 covers all the aspects related to the processes and not just financial process of the corporation.

- As per SOX, the boards are responsible for the internal control. They are certifying authority which is the principal financial official for the similar function. While Clause 49 has no any guidelines for boards as it mentioned the same for CEO and CFO of the business organization. CEO and CFO have to certify that the internal controls are in place. CEO and CFO are responsible if any frauds take place in the organization.
- As per SOX, there would be a committee established by the board of directors of the issuer in order to oversee the financial reporting and accounting processes. If no committee is there then all directors who are on the board would be considered as a member of the audit committee. Each member who should be a director and also must be independent. As per Sarbanes-Oxley Act, the frequency related to audit committee meeting and the number of directors for constituting the audit committee is not specified. But in Clause 49,
 1. There shall be minimum 3 directors as members in audit committee.
 2. Independent directors shall be two-thirds of the members of the audit committee.
 3. All members of the committee should be financially literate and at least single member shall have accounting and financial management experience.
- The requirement for the independent director as to be a member of the audit committee is same for both the SOX and the Clause 49, but the information regarding the same is different in both the regulations. SOX tells regarding the independent person that any person who may not accept any consulting fee or compensation from the firm or affiliated to any subsidiary firm known as independent. Whereas in clause 49, an independent director is any person who
 - Takes only director's remuneration and not has any monetary benefits other than his remuneration.
 - Does not have any relation with any other person who is holding the management position in the firm and also does not have any relation with the promoters of the firm.
 - Has not been the executive in the immediate past 3 years and also not been a partner, in any legal and consulting firm of the organization or in any audit firm of the organization.
 - Is not a service provider to the firm or supplier to the firm?
 - Does not have more than two percent of the voting shares. As from above, we can see a clear meaning of the definition of the independent directors. In the Clause 49, the scope of exclusion of independent director is very much wider than the Sarbanes-Oxley Act.
- The section 301 of SOX tells about the responsibilities of audit committee which includes retention and redressal of the complaints and establishing the procedures for receipt. The complaints can be related to auditing, accounting and internal controls of the firm. While on the other hand, under Clause 49 there is a disclosure section which said that Investors Grievance Committee shall be formed which include non-receipt of declared dividends or balance sheet and the transfer of shares. Therefore, it can be observe that the SOX considers accounting related concerns very especially unlike clause 49.
- As per SOX companies should reveal the accepted code of conduct and if there is no any accepted code of conduct then reasons should be given. However, in Clause 49 it is mentioned that it is necessary to publish the code of conduct on the company's website and it should be followed strictly by all the senior management staff and board members of the corporation. In the Indian framework code of conduct is mandatory for each firm. Also, the code of conduct is applicable to all the stakeholders, however, as per SOX, the code of conduct is applicable to the main financial officers only.

Legal Provisions for Penalties and Punishments in US:

The SOX had a profound effect on corporate governance in the US. The SOX established stricter criminal penalties for securities fraud and changes how public accounting firms operate their businesses (Table-5).it imposes harsher punishment for obstructing justice, misleading or fraudulent financial reports, violations, mail frauds and wire frauds. The maximum punishment for securities frauds increased to twenty-five years, and the maximum imprisonment period for obstruction of justice increased to twenty years. The SOX also increased the penalties for public companies which are committing the same offense. Compliance penalties can be range from loss of exchange listing to fines upwards of millions of dollars.

Table -5 Legal Provisions for Penalties and Punishments in US (Source: US Sarbanes-Oxley Act, 2002)

Sarbanes-Oxley Act of 2002.	Related to	Penalties and Punishments
Sec. 105	Investigations and disciplinary proceedings. If a firm has engaged in any act or practice, or omitted to act, in violation of this Act	a monetary fine — (i) not exceed of 1 lakh US dollar for a natural person or 2 million US dollar for any other person; (ii) where paragraph 5 applies, it shall not more than 7.5 lakh US dollar for a natural person or 15 million US dollar for any other person
Sec. 306	Insider trading throughout pension fund blackout phases	Fine up to 100 \$ for a day from the date of such failure or as per section 101(i) denial to give notice to applicants in accordance with the same
Sec. 802	Criminal penalties for altering documents	shall be imposed fine under this head, imprisonment for not more than 20 years, or both
Sec. 807	Criminal penalties for defrauding shareholders of publicly traded companies	shall be imposed fine under this head, imprisonment for not more than 25 years, or both
Sec. 903	Mail Fraud and Wire Fraud	(a) MAIL FRAUD.—Section 1341 of the title 18- ‘5’ and inserting ‘20’. (b) WIRE FRAUD.—Section 1343 of title 18- striking ‘5’ and inserting ‘20’
Sec. 904	Violations related to the Employee Retirement Income Security Act, 1974.	(1) striking 5 thousand US dollar and inserting 1 Lakh US dollar (2) striking ‘1 year’ and inserting ‘10 years’; and (3) striking 1 lakh US dollar and inserting 5 Lakh US dollar.
Sec. 906	Penalties for certifying a misleading or fraudulent financial report	Shall be imposed fine not more than 1 million \$ or imprisoned not more than 10 years for knowing violations and shall be fined not more than 5 million \$ or imprisoned not more than 20 years for willful violations.
Sec. 1106	Increased crime related penalties under Securities Exchange Act, 1934	(1) Striking “1 million \$, or imprisonment for not more than ten years” and inserting “5 million \$, or imprisonment for not more than twenty years”; and (2) striking “25 million \$” and inserting “25 million \$”.

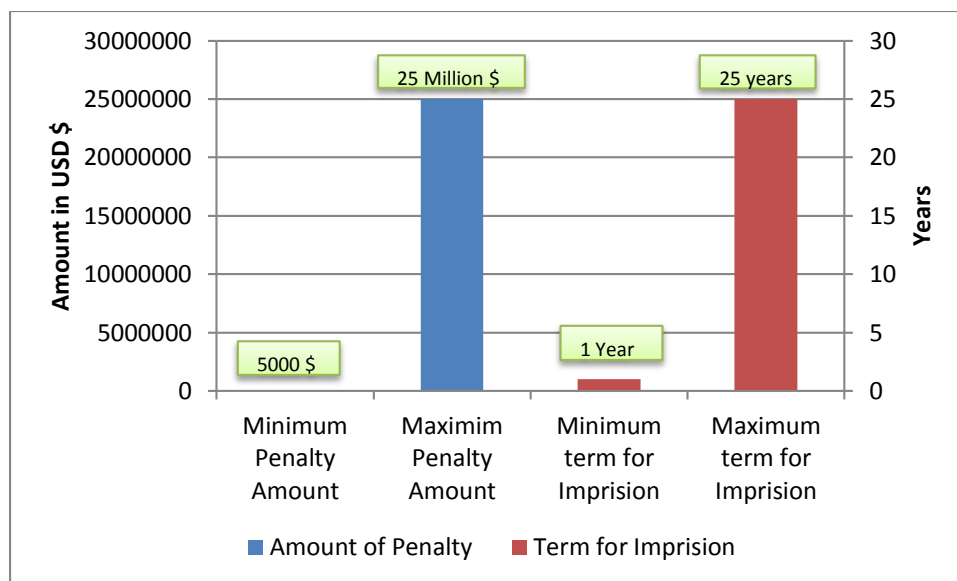


Figure 3 Legal Provisions for Penalties and Punishments in US

Legal Provisions for Penalties and punishments in India as per Companies Act, 2013:

The Indian Companies Act, 2013 also imposes stricter criminal penalties if specific violations including non-compliance made by directors and officers. This Act covers a wide range of violations made by any person either he belongs to officers or not. Under this new Act, there is also a provision for imprisonment along with penalties for any individual who found guilty for any kind of conduct which results into fraud under the Act. There is also provision for monetary penalties which arise in the case of failure to discharge duties as per under section 2(60). Apart from these general duties, statutory duties are also defined in the Companies Act, 2013 which related to statutory requirements fulfilled by the directors including the filing of personal details during incorporation, the disclosure of personal and professional interest, etc

. Table -6 Legal Provisions for Penalties and Punishments in India as per Companies Act, 2013 (Source: The Indian Companies Act, 2013)

Indian companies Act, 2013	Related to	Penalties and Punishments
Sec. 447	Punishment for fraud	Imprisonment of not less than six months and may extend to ten years. Fine is not less than the amount involved in and may extend to thrice the amount. If the fraud involves public interest then the imprisonment would not be less than three years.
Sec. 448	Punishment for false statement	The punishment is the same as applicable for fraud
Sec. 449	False proof	There is a provision for a term Imprisonment which will not be less than 3 years and can extend to 7 years and with fine which can increase to rupees 10 lakh.
Sec. 450	If there is no any provision for penalty	Monetary penalty of 10 thousand rupees and if the contravention is an ongoing offence, then further fine extending to 1 thousand rupees for each day.
Sec. 451	Repetitive default	Punishable for double the amount of penalty, with any imprisonment for the same
Sec. 452	Unlawfully withholding of property	Fine not less than 1 lakh rupees but it can extend to 5 lakh rupees. There is a provision for imprisonment

		which is 2 years and when Court may ordered restoration of property and in default thereof,
Sec. 453	Punishment for improper use of the word “limited” or “private limited”	Fine of not less than 500 rupees but it can extend to 2000 rupees for each day during which the title or name has been used

Legal Provisions for Penalties and punishments in India as per Securities Contract Regulation Act (SCRA), 1956

Along with the companies act, 2013, every listed company also must comply with the rules and provisions of SCRA, Act, 1956 and SEBI Act, with their regulations. These Acts contains provisions for non-compliance as per the seriousness of the crime, may be in form of delisting of the company, impose penalties, imprisonment etc. as specified in the Act. Penalties can be resulting in the range from loss of listing on the stock exchange to fines upwards of millions of rupees.

Table -7 Legal Provisions for Penalties and Punishments in India as per Securities Contract Regulation Act, 1956 (Source: Securities Contract Regulation Act, 1956)

Securities Contract Regulation Act, 1956	Related to	Penalties and Punishment
Sec. 23A	Penalty for not furnishing the required information, return, etc.	Fine of rupees 1 lakh for each day during which such kind of failure continues or 10 million rupees, whichever is less for each failure.
Sec. 23B	Any person who enter into an contract with clients	Same as applicable for Sec. 23A
Sec. 23C	Penalty for failure if redress investors’ grievances arise	Same as applicable for Sec. 23A
Sec. 23D	Penalty for moneys of client or clients and for failure to segregate securities or	Monetary fine which may not exceeding 10 million rupees
Sec. 23E	Penalty for delisting conditions or grounds and failure to comply with provision of listing conditions.	Monetary fine which may not exceeding 250 million rupees
Sec. 23F	Excess dematerialization or delivery of unlisted securities	Monetary fine which may not exceeding 250 million rupees
Sec. 23G	Failed to provide timely returns, etc.	Monetary fine which may not exceeding 250 million rupees
Sec. 23H	Contravention where there is no any provision for penalty	Shall be liable to a penalty which may extend to 10 million rupees.
Sec. 23M	Offences	<ol style="list-style-type: none"> 1. if any person breaches the provisions of this Act or any instructions or guidelines, for which no penalty is provided elsewhere in this Act, then there will be disciplinary imprisonment for a period which can be extended for up to 10 years, or with monetary penalty, which can be extend to 250 million rupees or both. 2. If any person who is not paying the penalty amount levied by the adjudicating officer or not to follow any directions or orders given by adjudicating officer, then there will be a provision for

		imprisonment for a period which is not less than 1 month but which can extend to 10 years, or with monetary penalty, which may extend to 250 million rupees, or both.
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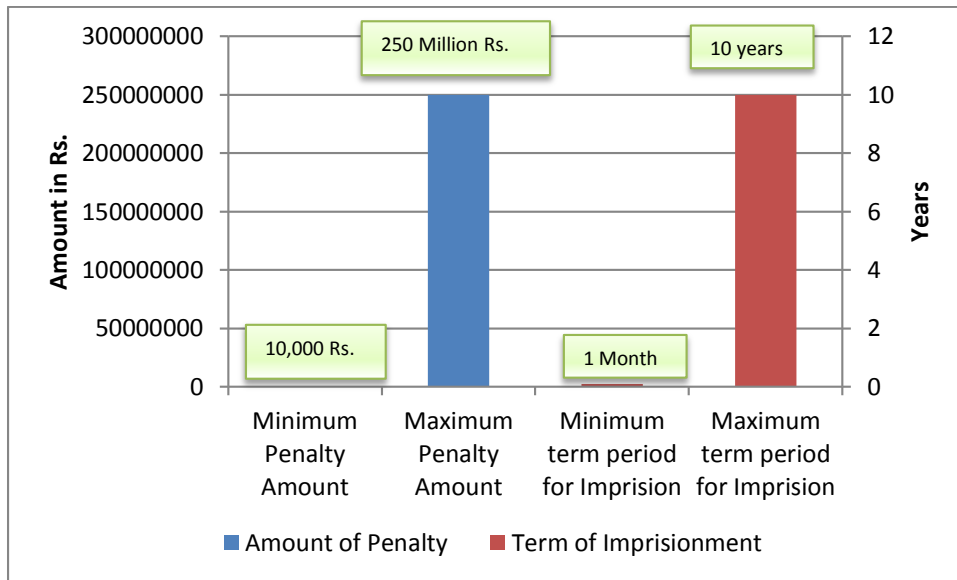


Figure 4 Legal Provisions for Penalties and punishments in India as per Companies Act, 2013 and Securities Contract Regulation Act, 1956

Limitations in Corporate Governance Structure:

From the above study, it seems that in both countries there is a proper structure of rules and regulation for corporate governance. But It is felt that rule-based approach alone may not serve the purpose of improving the Corporate Governance. As both countries said in their regulation to join a board as a nonexecutive director describing some directors as independent will create greater accountability upon them. It seems that they are independent and selected because of their skills, experience and not in conflict. But there are some issues related to independent directors which matter to co-operatives

- There interests seems to be artificial
- Tend to be more conservative
- Spending other people’s money
- Moderator of independence for time service

Good corporate governance cannot be assured by independent directors but independence judgment can be a key considerable quality.

If there is any strict law or mandatory system, then again compliance is not certain as fear of penalties to be paid for non-compliance may not be influencing the firms. Many firms may simply ignore the rules and regulations and follow the non-compliance. If there is a well-performing firm with satisfied investors then corporate governance standards will be of secondary importance to them. In India, penalties are somewhere flexible since no criminal offense is implied by regulators, as companies of US under SOX which is more severe for non-compliance. As per Fig. 3 and 4 it can be seen that the provision for penalties and punishments are different in both country’s regulations.

Recommendation

As in India the regulations are timely revised and amended but still, SEBI and Indian government is lacking to overcome the issues which are resulting in the form of noncompliance with corporate governance rules. Presently the Clause 49 and the Indian Companies Act 2013 is incorporating all the aspects of corporate governance. But as India is having the largest number of listed companies structure in the world, it is also needed to design and implement a dynamic mechanism of corporate governance legal structure, which protects the interests of investors and other stakeholders. The main additions which are required in the new legal structure are as follows:

- Currently, in Indian corporate governance, there is no any Public Company Accounting Oversight Board (PCAOB) or similar kind of body which can deal with the audit process of the public listed companies. The Clause 49 which also comes under the purview and jurisdiction of SEBI not having any proper rules and guidelines related to auditing. In the year 2013 when the Indian Companies Act, 2013 came into existence which also supersedes the Clause 49 having some better rules and guidelines which can overcome the noncompliance of corporate governance. But still, there is a need of single entity like PCAOB in the Indian context. This is also required because we are having a comprehensive rulemaking body. With the single entity rulemaking body for auditing, it should also be ensured that every auditor must follow the rules and guidelines completely.

The following responsibilities must be entrusted with rulemaking body:

- All the firms dealing accounting must be registered.
 - Public company audits must perform with standards established for the purpose. Establishment of standards related to audits of public company.
 - Required regulations and discipline must be enforced.
 - Conduct inspections and disciplinary proceedings on regular basis for accounting firms.
- As above already mentioned that the clause 49 and the Indian Companies Act 2013 did not mention any details related to internal controls. Therefore an amendment becomes necessary which should be made to create a benchmark with an internal control framework. Committee of Sponsoring (COSO) is also an Internal Control Framework adopted by US SOX Compliant companies. Such kind of adoption is necessary required for removing any ambiguity related to internal controls.
 - In a whole picture, India is not having such regulation which put strict control over white collar crimes. With the laws like Indian Companies Act, 2013, Cybercrime Act, Securities Contract Regulation Act, 1956, Indian Penal Code, etc. India is trying to address the white collar crimes in current times which are not sufficient enough. Corruption and non-compliance can only tackle and minimize with comprehensive legal bindings and punitive charges made along with.
 - The comprehensive legal structure must have featured in the lines of SOX, which is as follows:
 - Imprisonment (which may vary between 1 to 25 years, as the case may be).
 - The term of imprisonment must not be less than three years if litigation or fraud involves in the public interest.
 - The monetary amount of fine must extend to three or four times of the amount of fraud committed in certain cases.
 - In the US the Statement on Auditing Standards (SAS) No. 70 is a standard which allows the auditors in order to assess the internal control. There are mainly two types of reports in the SAS 70 namely Type I and Type II. All the internal control framework design and domain of business entity are concerning with Type I, report and testing and evaluation of the effectiveness of controls implemented is concerned with Type II report. In Indian context a mandatory requirement of such type of auditing structure necessarily required.

This is also required because at present there is no any standard or regulation which provides any information for the assessment of internal controls. However, in Clause 49 somehow it is mentioned that internal controls

should be in place. But, how it should implement, for that there is no any structural method. Therefore, as US is having the COSO for Internal Control framework, in India there is also a need for the same which will become mandatory to effectively check these internal controls. Such kind of organization will surely help the Directors, CEO/CFO so that they can certify the validity and operational effectiveness of the internal controls.

Conclusion

Acts like SOX, 2002 and Clause 49 of India which has more similar provisions of SOX has come forward in order to protect investors and other stakeholders of companies with some strong provisions. To keep a close vigil on corporate activities of companies such Acts have been passed and amended from time to time. Although Indian Corporate governance provisions discussed in Companies Act, 2013 is contained in several stringent features as compared to US SOX Act, but yet some provisions like PCAOB is still missing in Indian Clause 49. Oversight Boards under the SOX, has expressed with tremendous power of auditing, inspecting, investigating, and regulating the activities performed by auditors and auditing firms in U.S. Such powers also to be handed to Indian agencies of auditing, though The Institute of Chartered Accountants of India (ICAI), has vested with the task of auditing and inspecting the works of auditors and auditing agencies in India, but still ICAI has not empowered with making rules for ethical code of conduct for auditing works.

If talking about clarity of language or terms used in the Indian corporate governance provisions few terms like internal control is not defined clearly in any of the provisions whether it is Clause 49 or Companies Act, 2013. On the contrary, if SOX is considered for the definition of the same term i.e. internal control is planned to implement with a strongly recommended committee known as Committee of Sponsoring Organizations which is to be incorporated for the purpose of implementing internal control framework in companies. Incorporation of such a framework will certainly have a wide scope for clear explanation and understanding of the term internal control. Committee framework also has reliability factor attached with the structure of internal control among corporate entities. Ambiguity regarding the application of internal control at different levels such as functional, process or entry level is removed with such committee framework approach. Indian Acts must also try to clear, consistent and reliable on internal control measures taken by the companies in their organizations. Certainly, these provisions will increase investors' confidence as well as a sense of protection against misunderstanding. SOX has many such provisions to address non-compliance by the white collar people and their crimes. All in all, it can be concluded from the comparative study of the two acts on the same thrust area of corporate governance, Indian Act, and its provisions are having much wider area of implementation, However it needs timely amendments and refinement in order to cope with changing time and needs, so that it can present a strong sense of corporate governance in India.

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