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Risks and Rewards of Outsourcing

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Abstract— the essence of business is in bringing the right product to the market at the right price, place, quantity and quality. If outsourcing enables production of products more economically then you have a competitive advantage. In this paper effort to recognize and categorize risks and rewards of outsourcing. This study tries to present new concepts of risks and rewards during the outsourcing process and how to control them. Success foundations explain completely.

Keywords: Outsourcing, Right sourcing, Risks, Rewards

I. INTRODUCTION

The essence of business is in bringing the right product to the market at the right price, place, quantity and quality. If outsourcing enables production of products more economically then you have a competitive advantage. The cost of manufacturing equipment is reported to be almost consistent around the world and, if optimal utilisation is achieved, competitive advantage in direct cost can be reduced by outsourcing direct labour and the associated overhead to low-cost areas (Wraige, 2004). Extensive outsourcing allows companies to concentrate on core competency (Leavy, 2001; Michaelides et al., 2003; Purchasing, 1995). The outsourcing of commodity components that do not add to customer value is already well advocated (Venkatesan, 1992). Almost the entire value chain may be outsourced (Jennings, 1997). Whilst non-core machined components and production items are frequently outsourced, Quinn and Hilmer (1994) believe that a firm should outsource any activity which is not strategic, unique or world class. Modern companies are choosing to outsource functions that are outside their core competencies and perform only functions that confer competitive advantage (Christiansen and Maltz, 2002). There are a number of opportunities to outsource functions across the enterprise. Further opportunities lie in the outsourcing of HR, where there is a growing trend to outsource recruitment. In a survey it was found that 16% of the companies admitted to not having a recruitment strategy in place and the cost associated with recruitment of the “wrong” person is estimated to be around 15 times the cost of recruitment (Golder, 2004). The IT function is becoming more commonly outsourced. Nearly all of North America’s major companies would outsource at least some of their IT functions by 2005 (Favre et al., 2004). It is estimated that 80-90% of the service work being done in India is for either US or UK companies (The Economist, 2004). In contrast the article cites a survey of 500 continental European firms which found only 1 per cent outsourcing IT services to low-cost countries, with 80 per cent saying they would not consider doing so. In Italy 90% were against the idea, followed by France and Germany. This may give UK and US Company’s a competitive advantage and enables them to build outsourcing capability and stronger relationships in low-cost countries. When considering outsourcing it is important to discuss this decision in terms of competence and examine a firm’s resource and core competences so as to prevent a firm’s value adding activities being outsourced to a supplier. These leaders created success through a complete pre-project, in-house situational diagnosis before moving on to an even more comprehensive evaluation of the outsourcing process. The paper is designed to provide some elements to organizations, large or small, that want to learn more about achieving success through an outsourcing initiative. Successful outsourced business units and functions are developed through a combination of best-practice methodologies along with continued collaboration with a well-prepared leadership team, supported by external experts on issues that extend far beyond the anticipated financial rewards. Sustained success requires a first-class leader and a first-rate, comprehensive strategy.

When considering a decision to outsource any business unit or function, companies and their leaders must weigh the potential cost savings against the potential risks - which are abundant. The paper at hand provides the required guidance on the essential issues that must be addressed if the fundamental structure of an outsourcing strategy and its implementation is to be sound. Going through the paper at hand, would bring out insights into the problems and challenges likely to be faced, with detailed advice on how to anticipate, mitigate, and manage those problems and challenges.

For the executive: Why consider an outsourcing initiative, and why now? Learn what you need to know before you make your decision. For the manager: Learn the major
hurdles that management must overcome, the new skills needed to deliver results on time and on budget, and tips on maintaining control of the project and the trust of your staff. For vendor selection: Learn how to select the best vendor for your specific needs (and get tips on how to avoid the charlatans).

Making it work: Learn how to help your team through the change in culture and dynamics that will take place, how to make the outsourcing initiative successful, how to avoid the most common outsourcing blunders, and what to do when it’s “too late.” As a reference guide, the paper at hand examines the reasons behind the successes that organizations have achieved, allowing for the analysis of decision drivers, questions, research, and considerations when developing a plan. The paper at hand has 2 parts; In part 1 there is an attempt to mention the fundamentals of outsourcing. Part 2 introduces more complex issues: the benefits and barriers surrounding outsourcing, along with “how to’s” from experts in the field. In addition it also attempts to present the real risks and rewards of implementing an outsourcing initiative.

PART 1 - THE FUNDAMENTAL

In order to create a successful, long-term outsourcing program, one must commence at the beginning, the very beginning. This section provides the buzzwords and acronyms used in outsourcing, enabling one to understand the vendors and salespeople who would come your way (and they will come; once the word is out, you will be fair game!). This section also provides you with a comprehensive understanding of outsourcing and offshoring so that you can begin to determine if this will be a wise option for the organization. To assist with the initial determining factors, this section also provides with the most recent survey data concerning outsourcing decision drivers, outsourcing markets, successes, failures, and more. Use of the data would enable better understanding of the options available through outsourcing; then one can move forward into the selection process.

1. WHAT IS OUTSOURCING?

Outsourcing is the practice of hiring functional experts to handle business units that are outside the firm’s core business. It is also a method of staff augmentation without adding to head count. Offshoring, or outsourcing offshore, is the practice of hiring experts in other countries to handle business processes that may be outside of the core business focus, or to reduce costs, enhance quality, and improve productivity. The world of outsourcing, onshore or offshore, may simply be described as delegating at an inter company level rather than an intra company level.

In order for one to make an informed decision about any outsourcing program, there are specific steps that need to be taken to ensure success. A great way to understand the complex scope of outsourcing is through a little history. Using outsourcing as a business strategy is not new. Decades ago, ADP (Automatic Data Processing) led the way to what is now considered onshore, off-site outsourcing. After World War II, the federal debt rose to the then astounding peak of $279 billion. By 1949, the federal government was finding new ways to pay off the debt, including the withholding of employee income taxes, and the burden on the employer of properly calculating, withholding, and keeping track of these dollars through payroll expanded. ADP realized that its expertise in payroll and taxes could be offered to other companies without such expertise, and it began offering companies the opportunity to outsource their payroll functions by simply delivering a copy of their payroll roster to ADP. ADP keypunch operators entered the data, and payroll checks, with appropriate withholding and recordkeeping, were returned to the company in time for payday.

ADP knew 50 years ago that companies that made cars, packaged consumer goods, built machines, or provided customer services all had core areas of business expertise, but payroll was not one of them. The more complicated payroll became, the larger ADP’s market became, making ADP one of the pioneers of onshore, off-site outsourcing.

OUTSOURCING ONSHORE, ON-SITE

With an office in Detroit, Michigan, and two employees, William Russell Kelly started a company to meet the office and clerical needs of Detroit-area businesses by providing calculating and inventory services, typing and copying. Initially customers sent their work to Mr. Kelly’s office, but as customers gained confidence in the new company, they began asking Mr. Kelly to send his employees to their offices to type, file, or operate business machines. Over 50 years ago, Mr. Kelly understood the importance of companies playing to their strengths. The company known in 1946 as Russell Kelly Office Services led the way in outsourcing onshore, on-site; it is now known as Kelly Services, a Fortune 500 company that is growing strong.

OUTSOURCING OFFSHORE

While the practice of offshore outsourcing began decades ago (for example, Nike in the 1970s), offshoring gained steam in the 1980s and 1990s as companies increased the outsourcing of lower-level, repetitive back-office jobs to onshore organizations that could do the work more efficiently and cost-effectively. Later in the 1990s, United States companies began hiring programmers in other countries, primarily India, to help corporate America in its race against the dreaded Y2K deadline. This need, along with the simultaneous expansion of the Internet and the telecommunications industry, made doing work remotely far less expensive and far more efficient. While onshore outsourcing is a method by which companies can hand over work to others who can do it inexpensively through gaining greater economies of scale, offshore outsourcing, or offshoring, is the process of outsourcing functions and business units to workers and business partners who are both outside the work site and outside the home country. As the global economy chugs along, companies that want to achieve high performance must balance the need for efficient operations with the need to deliver on current earnings. In order to do both, organizations must invest in future growth that will create new shareholder value. Does this automatically point to outsourcing a business unit offshore? Maybe yes but maybe not.

Before discussing whether your firm should consider outsourcing as a strategy, let’s first take a closer look at why organizations typically choose to outsource.

WHY OUTSOURCE?

Rapidly changing and increasingly complex business issues are creating key shifts in organizations and the manner in
which they do business. The advancement in technology, the sophistication of business operations, and the need for constant growth are circumstances that suggest a focus on functional core competencies. As companies struggle to adapt to and keep up with the demands of customers and shareholders alike, that focus on core competencies may suggest outsourcing as a potential strategy to remain competitive. A recent study of some five thousand executives conducted by Ventoro.com demonstrated that there are decision drivers for outsourcing that are valid and other decision drivers that are a pathway to failure. Typically, outsourcing decision drivers fall into the following categories:

1. To respond to a power play - Whether the pressure to outsource is imposed by the board of directors, shareholders, or other senior management, coercion is the least effective primary decision driver. According to research conducted by Ventoro.com in 2004, almost 20% of the respondents stated that their outsourcing initiative was driven by pressure from shareholders, boards of directors, or C-level executives. A best-practice response to this pressure is to choose an outsourcing strategy only after first establishing that it is the best solution for your specific business requirements.

2. To alleviate pain - Pain can be a powerful motivator, and when pain in the form of operating challenges exists, it may be an appropriate driver for an outsourcing solution, specifically to:
   - Reduce and control operating costs
   - Reduce labour costs
   - Balance competitive pressure

Tip: When a business process is in trouble while it is still in-house (that is, when the process is broken), shutting it off-site or offshore will just move the problem. Fix the problem first, then outsource off-site or offshore.

3. To fill a need - When you can envision the gap between where you are now, or what is and where you want to be, or what could be, your decision drivers may be in the category like:
   - Improve company focus
   - Achieve cost savings
   - Achieve revenue goals through round-the-clock shifts
   - Gain access to world-class capabilities
   - Improve time to market
   - Achieve development schedules not possible with internal staff
   - Avoid historic problems with projects that have been difficult to manage
   - Scale up for a project without increasing the number of permanent staff
   - Create a global market for your product or service
   - Improve efficiency
   - Focus on core business
   - Redirect your internal resources for other purposes
   - Become truly customer focused
   - Take advantage of potential tax incentives

Organizations that are experiencing pain will want to seek relief, and organizations with a need or desire will work to improve the status quo. Again, outsourcing may be the right move - but it may not be.

WHO SUCCEEDS, AND WHY
As a strategic business tool, outsourcing allows organizations to identify those functions that are not directly creating value for customers or shareholders (those that are not core business functions) and consider them as possible candidates for outsourcing. Depending on the strength of the foundation of your outsourcing initiative, outsourcing even the “good to go” business units may result in outcomes that aren’t always successful. Here are some examples.

POTENTIAL OUTCOMES WITH A WEAK FOUNDATION
The objectives are not achieved because
- There was not enough pre contract due diligence; the organization’s expectations were unclear to the vendor.
- The implementation team or the ongoing management team was unprepared for the challenges of the new process.
- The implementation team lacked the skills, knowledge, and style required to succeed.
- The managing executive did not establish a performance baseline prior to sending the functions to the vendor.
- The client-vendor relationship was rushed; roles and responsibilities were unclear.
- Mid contract, the ongoing management team changed the scope of the project; the vendor agreed to the change in scope (but was unable to complete the project on time or within the budget).
- Outsourcing was not the right solution in the first place.
- Internal support dissipated. (If the entire organization does not support the initiative, lowered morale will impede your progress).
- There was a lack of communication or management in-house.
- There was a lack of proper project management.
- Decision making was delegated to the vendor.
- There were cultural, language, or communication issues with the vendor.
- The vendor simply failed to execute as expected. The objectives are achieved, but
  - The organization was displeased with the vendor relationship because of ethical issues.
  - Brain drain left the company without key knowledge centres.

POTENTIAL OUTCOMES WITH A STRONG FOUNDATION
- Both client and vendor are satisfied with each other, and both benefited from the arrangement.
- The outsourcing arrangement achieved more benefits than anticipated at the outset.
- Both parties view the other as a “trusted partner” and continually work to create new opportunities to forge a deeper, more integrated relationship; share risks rewards; and move their objectives to increasingly higher levels.
- Outsourcing resolved the organization’s needs and desires.

Successful outsourcing initiatives begin with a strong foundation, executive support, a well-paced and comprehensive strategy, and a vision for success that serves all parties.
SUCCESS FOUNDATION, PART 1
Brian Maloney, the former COO of Perot Systems, was responsible for the company’s market-facing activities, including its major vertical industry concentrations—financial services, health care, industrial services, and strategic markets—its global infrastructure support unit, and its consulting businesses. Maloney’s success resulted from his ability to base the decision-making process on a return to value. In order to experience that return to value and the financial rewards associated with it, Maloney simply asked, “What does success look like? That is our starting point.”

SUCCESS FOUNDATION, PART 2
Industry expert Geoff Smith, principal and founder of LP Enterprises, recommends that CIOs (Chief Information Officer / IT Director) take a proactive view of their own operations, rather than waiting for the CEO or CFO to ask about the merits of outsourcing or offshoring. “At that point,” Smith states, “you’re playing defence.” He also recommends that you take your time, as rushing into a project is a fast path to failure.

RIGHTSOURCING
Clearly, both Brian Maloney and Geoff Smith understand the outsourcing decision-making process as strategic, building strong foundations on which to build their entire programs. In order to secure a successful outsourcing program, on or offshore, leaders must ask and answer the following questions:

1. What is our definition of success?
2. Why are we even talking about this?
3. Is outsourcing right for us, and if so, why?
4. What should we outsource, and what must stay here?
5. Where should we outsource, on or offshore?
6. How much will it cost?
7. How long will it take to implement?
8. How long will it take to realize our objectives in money?
9. What skills must remain here?
10. What skills are needed “there”?
11. What are the economic risks and rewards?
12. What cultural or language issues might exist?
13. What are the ethical issues that we might encounter?
14. What are the tax advantages or disadvantages of an onshore or offshore outsourcing initiative?
15. What are the psychological effects on the retained and outsourced employees?
16. What are the psychological effects on the retained and outsourced employees?

2. RECENT SURVEYS ABOUT OUTSOURCING THAT AFFECT YOUR BUSINESS DECISIONS
As you think about your own outsourcing needs and plans, there is a great deal that can be learnt from the data that is currently available. Several surveys and studies on outsourcing and offshoring have recently been conducted. Some of the less-than-objective (and less-than-scientific) studies and surveys are often used by outsourcing consultants to drive a business to one of their partner companies offshore. The survey results presented here are the product of long-term studies conducted by objective parties’ researchers with a balanced and realistic view of the landscape for outsourcing and offshoring.

The outsourcing market may be an example of history repeating itself. While organizations may be able to achieve significant cost reductions, many do not. Organizations that launch an outsourcing initiative before completely developing and understanding their own definition of success often find failure knocking at their door.

I don’t frown on outsourcing or offshoring—moving existing business functions to outsourced service providers is one of the most powerful tools an executive can use to improve both bottom-line and even top-line numbers. However, outsourcing must be done after establishing a sound business case and with a full understanding of the effort and planning it takes to be successful.

PART 2 - BENEFITS AND BARRIERS
Outsourcing is not simply packing up IT jobs and shipping them overseas—it is much more than that, and it has been a staple of Multi - National Corporations for years. When planned and executed well, an outsourcing initiative can be extremely successful.

MEASURING THE RISKS AND REWARDS
Twenty-five years ago, what now is called outsourcing was then called time-sharing. This practice, the on and offshore sub-contracting marketplace, has grown dramatically over the last several years, and will continue to do so as corporations focus on a return to value.

It might be thought that after 25 years, the process of defining and implementing an outsourcing initiative would be relatively simple and painless, that there would be no hurdles to overcome and no snags to work out, and that all of the risks associated with outsourcing would be mitigated to the point that an organization could easily create an outsourcing initiative that would deliver immediate results. Unfortunately, that is not the case - each outsourcing program, on or offshore, differs in complexity, and each has its own set of risks and its own set of rewards that must be identified and measured.

If you can answer the question, “Why should we outsource?” with a hearty, “I don’t know yet!” then you are not on the right track. Your thorough and systematic due diligence process will answer that question fully. A significant part of this investigative process must include a review of the risks and rewards experienced by those who have gone before.

THE RISKS
First, let’s take a closer look at the risks, some of them clearly visible and some hidden, associated with an outsourcing initiative.

- Customer service risks
  This scenario is not unique. If you outsource customer-facing functions, you must recognize the need to exercise close control over the processes that most directly affect your relationships with your current customers. Your outsourcing initiative may be developed to create cost savings for shareholders, but when you outsource a customer-facing process your success will be gained or lost on the basis of your customers’ experience. Customers expect predictability. Insist that your outsourcing provider has the same commitment to service as you do; establish metrics for what you
Define to be “predictable,” including service results; and measure your outsourcing provider against those metrics regularly.

Key point: Keep the value close to your customers.

- PRIVACY AND SECURITY RISKS
  That is evaluating outsourcing on - or offshore must first question whether their vendors have integrity, and also question whether the vendors have a sufficiently vigorous security system. Service vendors must meet security requirements and period. This issue goes beyond an angry offshore vendor threatening to post personal data on the Internet. As banks, tax preparers, loan processors, medical records companies, and other organizations outsource (and offshore) sensitive materials, privacy concerns must be completely addressed. Organizations evaluating an outsourcing initiative need to ensure that their outsourced service vendors have suitably tough security practices that will meet the organization’s internal requirements. The risk of security breaches or loss of intellectual property is amplified when working internationally, as legal systems in other countries may not offer the same intellectual property protection. Privacy concerns must be completely addressed; security requirements must be documented, monitored, and reported regularly; and the methods and integration with service vendors must be clearly defined.

Key point: Watch the valuables.

- DELIVERY RISKS
  A major issue facing organizations that choose to outsource involves delivery: the delivery of quality products or services, on time, within the scope of the contract, yet allowing for growth and innovation. Having a great product with a great cost base, but an outsourcing vendor cannot get it to market on time then the outsourcing initiative is not working. If the vendor can get the product to market, but the product lacks quality, the customers will fill their product needs elsewhere, and the outsourcing initiative would fail. Delivery issues - quality, growth, timing, and scope creep - must be addressed during the initial stages of the investigation. One must consider the following areas -

- Delivery and Quality
  Successful outsourcing is dependent on how well the customer requirements are defined and how well it is measured as to how those requirements are being met. If you cannot define or measure the requirements, one is doomed to fail. Delivery may be measuring call centre turn-around time on responses to customer inquiries, and an added value (or additional quality) is the metric that keeps track of how many similar requests come in. On or offshore, one must be specific and deliberate when documenting the expectations for delivery and quality.

- Delivery and Growth
  An outsourcing vendor needs to be prepared to meet potential growth requirements, so it is a must to evaluate the vendors’ ability to ramp up when it is needed. It is a must to identify their ability to increase staff and skills to react to your needs.

- Delivery and Deadlines
  If your outsourcing vendor is unaware of, uninterested in, or unable to meet your delivery deadlines, you have a big problem, and big problems have big price tags. You must identify the vendor’s sense of urgency by checking references, and, during the contract stage, metrics must be set to measure the vendor’s observance of your timetables.

- Delivery and Scope Creep
  Fixed-price contracts just do not exist in outsourcing. Since outsourcing contracts contain baselines and assumptions, when the actual work varies from estimates, the organization will pay the difference. This risk has become a major difficulty for organizations that are surprised when the service vendor expects to be paid for incremental scope changes. Most projects change from 10 to 15% during the development cycle, so a vital part of due diligence is to get your hands around the scope of your project before you begin. Do your homework at home first, and then do your homework outside.

Key point: Assess delivery from every angle; validate goals, objectives, and deliverables.

- Risks of rules and regulations
  Utilities, financial services institutions, drug companies, and health-care organizations, among others, face various degrees of government regulation. Non-compliance with government standards or insufficient “transparency” during an audit can spell big trouble. The issue of transparency is becoming more significant as requirements such as the Sarbanes-Oxley Act place greater burdens of accountability on all American corporations. Sarbanes - Oxley holds senior management accountable for the accuracy of financial statements; outsourcing financial activities requires great confidence in the service vendor’s controls, abilities, and integrity. Outsourcing could make compliance more cumbersome and costly - and certainly more risky.

Key point: Outsourcing does not minimize management’s accountability; it intensifies management’s accountability.

- Risks of the human element
  Unfortunately, organizations often underestimate the value of their employees, and therefore they also under - estimate the impact of this human element on their overall outsourcing success. It is the people, after all, who actually get the job done not processes, not tools, not specific sites or locations, just people. Successful outsourcing initiatives require seasoned professionals and dedicated workers in-house and off-site, and organizations are more likely to find those valuable candidates in their own back- yard. Once you have excellent resources, keep them, invest in them, and value them, using communication as your platform.
Communication
One thing is certain: The world changes quickly, and most people change slowly. This slow-to-change tendency is aggravated when modifications are made to people’s work processes, workplaces, or employment without their having awareness, understanding, or input. A fearful and risk-averse employee base can be a very real danger to an organization, resulting in anything from turnover of key personnel to stress claims. To avoid and dispel fear, inform. To shift from risk aversion to support, inform. To let your employees know that you value them, inform.

People
Whether you outsource on or offshore, you must strategize the process by which you will hire, train, reward, and maintain staff. In any outsourcing situation, there will be some level of attrition. If you do your homework, you will know what to expect; then you can create a process to manage it. If you do not want to risk losing all of the experience in your organization, you must make a plan to retain those you wish to keep.

When P&G planned to move from an internal solution to an outsourcing solution, approximately 7,000 employees were affected. At contract start-up, these P&G employees became employees of the outsourcing vendor. As the employees were informed on an on-going basis, they were employees aware of the process in front of them, as well as their value to the new organization; morale was high, and turnover was low.

If you must reduce staff to implement your outsourcing initiative, you must be aware of the potential for employee bitterness as demoralized employees do not feel valued and do not perform well. A well-rounded human resource strategy includes assisting your displaced employees to obtain additional training so that they can stay current in their field and providing some level of assistance in outplacement.

Key point: Retention of your best assets is critical - do not risk losing anyone because of a weak human resource strategy.

Additional risks considering
In addition to the risks of quality, customer service, delivery, privacy and security, human resources, and compliance, outsourcing provides opportunities for additional and very real risks that you may not have considered.

Disaster Recovery
What happens if, for example, you outsource your call centre to India, and it experiences a devastating earthquake? If you have an intelligent strategy to spread the risk, along with a sturdy disaster recovery plan, you will maintain a high customer satisfaction level while you dig out. If not, you risk losing just about everything.

In 2004, the U.S. government ordered flu vaccine from a source in the United Kingdom; that source found that the majority of its material was defective. The resulting shortage of flu vaccine was both tragic and avoidable; it is hard to ignore the fact that there was no alternative or backup plan and no additional resources from which to draw additional material. The government response to the shortage was to call on the public to “wash your hands more often.” A much more reliable and sensible process would have been to order vaccine from several sources, so that if a single source proved defective, the remaining sources could take up the slack.

Circle back now to the call centre example in India. You must ask yourself: If my call centre halfway around the world must close down because of some disaster, what is my plan? How long can we operate without a call centre? How can we avoid the “wash your hands” reaction?

Political Concerns
There are additional geographical concerns when outsourcing offshore. A solid strategy must address the political stability of the location chosen, the possibility of civil strife, and potential political strains that might undermine your outsourcing project.

Legal Concerns
To ensure the success of your offshore initiative, you must visit the offshore site, and you must visit it often. How easy is it to travel to your offshore site, how often will you visit, and how difficult will it be to obtain visas? Labour laws, import and export licenses, tax implications, and customs issues all must be addressed and resolved.

Ethical Concerns
Running a domestic ethics program supported by employee training and a 1 - 800 hotline for reporting misconduct is thorny. Offshore, there are certain countries where there is an even higher risk for ethical breach because the pressure to pay bribes is greater. Global compliance with ethics programs is considerably more complex, and is hindered by cultural differences. On or offshore, ethics must be addressed.

Key point: Your due-diligence process must involve expertise beyond that of your outsourcing vendor

THE REWARDS
Now for the good news, the rewards - and there are many.

Improved business focus
Outsourcing allows companies to focus on their core skills and products as well as on more expansive business issues such as branding, strategy, and planning while having specific operational details handled by outside specialists. A company engaged in a well calculated outsourcing initiative will benefit by focusing its resources on meeting the customer’s needs, having been released from dedicating resources to areas outside of its business expertise. In addition to shifting the focus from peripheral activities toward work that is customer - facing, outsourcing can help managers set more specific priorities, and since their time and attention are not divided, they are able to deliver results.

Reduced or controlled operating cost
Perhaps the single, most important tactical reason for outsourcing is the benefit of reducing and controlling operating costs. Gaining access to a vendor’s lower cost structure is one of the most compelling short-term benefits of outsourcing. Organizations that try to do everything themselves ma may actually experience elevated costs for research, development, marketing, and deployment expenses, and more; and all of these direct and indirect expenses are passed on to the consumer. Your outsourcing provider’s reduced cost structure may be the result of greater economies of scale or other advantages based on specialization, and that reduced cost structure may increase your competitive advantage.

Cost cutting may not be, and should not be, the only reason...
to outsource, but it is undoubtedly a significant consideration. For most organizations, employee-related costs and the associated overhead expenses are relatively fixed, regardless of the demand for the organization’s products or services, and during slow times this can be very expensive. Outsourcing allows you to convert fixed costs into variable costs, and your outsourcing provider can offer special pricing for this variable demand.

A recent study conducted by Accenture provides an overview of the fixed/variable-cost situation as it relates to airline companies. We know that airlines are in trouble around the globe, and we also know that they can use outsourcing to optimize their cost structures and achieve high performance.

With airline revenues down, with an over-supply of competitors, and with the vulnerabilities and uncertainties created by an unstable global economic and political landscape, it is no wonder that airlines all over the world are struggling to survive.

Airlines realize that they need cost management and efficiency strategies to improve their bottom lines and to compete with the successful business models of the low-cost/low-complexity airlines. The fundamental point of difference between the low-cost airlines and traditional airlines is the higher percentage of variable costs in their cost structure. Fixed costs make up 60 to 70% of the traditional network airline’s costs; that is reduced to 50 to 60% at low-cost airlines.

Accenture recommends that airlines convert as many of their fixed costs as possible into variable costs, while lowering overall operating costs. This will allow them to be both flexible and efficient enough to prosper in slow or growing economies.

Accenture, using an outsourcing program designed to help airlines enhance the effectiveness of their cost structures and realign themselves for high performance, required an up-close concentration on outsourcing of non-core, rules-based, back-office functions and processes under a term contract to a specialist third party. Forward thinking airlines are already outsourcing a wide range of noncore services such as finance and administration, information technology, and human resources, delivering significant cost savings to their organizations.

The airline industry is only one example of reducing costs through an outsourcing strategy. To save costs in any organization through outsourcing, make sure that the business model supports the need to outsource, investigate, test, and reap the rewards.

Increased access to world-class capabilities

By the very nature of their specialization, outsourcing providers bring extensive world-class resources to meet the needs of their customers. Partnering with an organization with outstanding capabilities can offer access to new technology, tools, and techniques that the organization may not currently possess. World-class providers make extensive investments in technology, methodologies, and people; they gain expertise by working with many clients who are facing similar challenges. This combination of specialization and expertise gives their customers a competitive advantage through these expanded skills, and helps them avoid the cost of chasing technology and training.

A level playing field

Resources redirected to more strategic activities

Every organization has limits on its available resources. Outsourcing allows resources to be redirected from noncore activities toward customer-facing activities that provide a greater return. Through a well-planned outsourcing initiative, the organization can redirect displaced employees (or their head count) to greater value-adding activities.

Cash infusion

Outsourcing may involve the transfer of assets from the organization to the vendor or service provider. Equipment, facilities, vehicles, and licenses used in the current operations have value and are sold to the vendor. The vendor then uses these assets to provide services to the organization. Depending on the value of the assets involved, this sale may result in a significant cash payment to the organization. When these assets are sold to the vendor, they are typically sold at book value, which is often higher than market value. In these cases, the difference between the book value and market value may represent a loan from the vendor to the organization that is repaid in the price of the services over the life of the contract. In either event, the benefit of the potential cash infusion is undeniable, and the organization can use this cash infusion to redouble its customer facing efforts, invest in retraining of displaced or transferred employees, or otherwise improve its business.

Availability of capital funds

In most organizations, there is enormous competition for capital funds. Deciding where to invest these funds is one of the most crucial decisions for senior management; it is difficult for a senior manager to justify noncore capital investments over investments that are more directly related to the product, service, or customer. Outsourcing reduces the need to invest capital funds in noncore business functions by contracting for these investments on an “as used” operational basis instead of acquiring the resources through capital expenditures. Outsourcing can also improve certain financial measures of the firm by eliminating the need to show a return on equity from capital investments in noncore areas.

CONCLUSIONS

The trend among firms that have higher outsourcing success rates indicates that organizations that take the time to do their homework and to build a business model for outsourcing that works are the most successful. Successful outsourcing engagements also require organizations that simply refuse to move a broken process or function,
organizations that inform and include their teams and staff, organizations that realize that an outsourcing initiative takes time, and organizations that refuse to be pushed into signing a contract. Organizations that are willing to take the time to complete a robust due-diligence process and assign a full-time team to consider all options, including demographics, politics, and best sourcing (regardless of location), always come up on top. Finally, the most successful outsourcing engagements are created and implemented by organizations whose executives accept complete responsibility for the success or failure of the process. So, given all of this failure information, why would anyone consider an outsourcing initiative? It is all due to the potential rewards experienced when it is done right.

The majority of problems with outsourcing deals are rooted in a deficient due-diligence process and poor communication. Executives who are considering an outsourcing program must clearly identify why they want to outsource and what they want to achieve through outsourcing, and they must carefully plan and execute a strong and extensive strategy in order to achieve a significant return on investment. Then, before commencing work with an outsourcing provider, executives must remember that making this process work requires building a relationship with the outsourcing provider; as in any relationship, communication and understanding of mutual expectations is critical to its development. There’s a delicate balance between trusting your outsourcing provider and controlling your outsourcing provider, and striking that balance will help develop and maintain a strong and long-term relationship. Negotiating an outsourcing contract is never easy and can take years. While designing and developing a relationship that will last for five or more years, you are attempting to intuitively build in protections for both sides, while also attempting to predict any changes and mitigating any risks in an effort to benefit from the abundant rewards that can come about during that five-year time frame.

With strong leadership, proper planning, due diligence, and a well-built strategy, the benefits of an outsourcing program are plentiful. Risks are abundant (and certain) without these elements.

REFERENCES

The Hazardous and Problems of E-Waste Management in India and its Strategies for Better Tomorrow

Pallavi Gupta, Asst.Proff in JIM,Gaziabad

Abstract

Electronic waste, e-waste, e-scraps, or Waste Electrical and Electronic Equipment (WEEE) describes loosely discarded, surplus, obsolete, or broken electrical or electronic devices. “E-waste is a popular, informal name for electronic products nearing the end of their useful life.” E-wastes are considered dangerous, as certain components of some electronic products contain materials that are hazardous, depending on their condition and density. The hazardous content of these materials pose a threat to human health and environment. Discarded computers, televisions, VCRs, stereos, copiers, fax machines, electric lamps, cell phones, audio equipment and batteries if improperly disposed can leach lead and other substances into soil and groundwater. Electronic waste or e-waste is one of the rapidly growing environmental problems of the world. In India, the electronic waste management assumes greater significance not only due to the generation of our own waste but also dumping of e-waste particularly computer waste from the developed countries.

With extensively using computers and electronic equipments and people dumping old electronic goods for new ones, the amount of E-Waste generated has been steadily increasing. The problem is that the e-waste generated, in the absence of proper disposal, finds its way to scrap dealers. Many end-of-life electronics items contain valuable elements such as gold, silver, and platinum. Unfortunately, E-waste can also contain potentially harmful substances such as lead, cadmium, and mercury. Regardless of whether its elements are valuable or potentially hazardous, handling and recovery of E-waste can be a costly undertaking. These considerations have led to intense debate about how E-waste can best be managed. Many of these products can be reused, refurbished, or recycled in an environmentally sound manner so that they are less harmful to the ecosystem. This paper highlights the problem and hazards of e-wastes in India, the need for its appropriate management and options that can be implemented in India.

Introduction

From California to Calcutta, Stockholm to Sialkot or London to Lucknow, electronics are changing the lives of people everywhere. They are touching every aspect of our lives – the way we do business, keep in touch with family, bring up children or entertain ourselves. And in the wake of this 21st century revolution, looms a disaster that is sure to damage the quality of our lives and that of generations to come. The problem of electronic waste, or e-waste, requires urgent global action. Discarded electronic waste is the fastest growing stream of waste in industrialized countries. Not surprising, when you consider that the electronics industry is the fastest growing manufacturing industry. The industry thrives on new aspiration products. Consumers are drawn to the latest cellular phones, personal stereos, air conditioners, consumer electronics and computers. The extreme obsolescence of these products spawns a unique ‘disposable’ mindset where products are replaced rather than repaired. Though this rapid obsolescence is a result of rapidly evolving technology, it is clear that the throw-away principle yields great monetary benefits to corporate.

“Electronic waste” may be defined as all secondary computers, entertainment device electronics, mobile phones, and other items such as television sets and refrigerators, whether sold, donated, or discarded by their original owners. This definition includes used electronics which are destined for reuse, resale, salvage, recycling, or disposal. It is an emerging problem as well as a business opportunity of increasing significance, given the volumes of e-waste being generated and the content of both toxic and valuable materials in them. The fraction including iron, copper, aluminum, gold and other metals in e-waste is over 60%, while plastics account for about 30% and the hazardous pollutants comprise only about about 2.70% (Widmer et al., 2005).

Solid waste management, which is already a mammoth task in India, is becoming more complicated by the invasion of e-waste, particularly computer waste. E-waste from developed countries find an easy way into developing countries in the name of free trade (Toxics Link, 2004) is further complicating the problems associated with waste management.

Components of E-Waste management

The major components of e-waste management are:
1. e-waste collection, sorting and transportation
2. e-waste recycling; it involves dismantling, recovery of valuable resource, sale of dismantled parts and export of processed waste for precious metal recovery
The stakeholders, i.e., the people who can help in overcoming the challenges posed by e-waste, are:
1. Manufacturers
2. Users
3. Recyclers
4. Policy makers

Effects on environment and human health

Disposal of e-wastes is a particular problem faced in many regions across the globe. Computer wastes that are land filled produces contaminated leachates which
eventually pollute the groundwater. Acids and sludge obtained from melting computer chips, if disposed on the ground causes acidification of soil.

This is due to disposal of recycling wastes such as acids, sludge's etc. in rivers. Now water is being transported from faraway towns to cater to the demands of the population. Incineration of e-wastes can emit toxic fumes and gases, thereby polluting the surrounding air. Improperly monitored landfills can cause environmental hazards. Mercury will leach when certain electronic devices, such as circuit breakers are destroyed. The same is true for polychlorinated biphenyls (PCBs) from condensers. When brominates flame retardant plastic or cadmium containing plastics are land filled, both polychlorinated diphenyl ethers (PBDE) and cadmium may leach into the soil and groundwater. It has been found that significant amounts of lead ion are dissolved from broken lead containing glass, such as the cone glass of cathode ray tubes, gets mixed with acid waters and are a common occurrence in landfills.

Not only does the leaching of mercury poses specific problems, the vaporization of metallic mercury and dimethyline mercury, both part of Waste Electrical and Electronic Equipment (WEEE) is also of concern. In addition, uncontrolled fires may arise at landfills and this could be a frequent occurrence in many countries. When exposed to fire, metals and other chemical substances, such as the extremely toxic dioxins and furans (TCDD tetrachloro dibenzo-dioxin, PCDDs-polychlorinated dibenzodioxins. PBDDs-polybrominated dibenzo-dioxin and PCBspoly chlorinated dibenzo furans) from halogenated flame retardant products and PCB containing condensers can be emitted. The most dangerous form of burning e-waste is the open-air burning of plastics in order to recover copper and other metals. The toxic fall-out from open air burning affects both the local environment and broader global air currents, depositing highly toxic byproducts in many places throughout the world.

### E-Waste in India

As there is no separate collection of e-waste in India, there is no clear data on the quantity generated and disposed of each year and the resulting extent of environmental risk. The preferred practice to get rid of obsolete electronic items in India is to get them in exchange from retailers when purchasing a new item. The business sector is estimated to account for 78% of all installed computers in India (Toxics Link, 2003). It is estimated that the total number of obsolete personal computers emanating each year from business and individual households in India will be around 1.38 million. According to a report of Confederation of Indian Industries, the total waste generated by obsolete or broken down electronic and electrical equipment in India has been estimated to be 1,46,000 tons per year (CII, 2006). The results of a field survey conducted in the Chennai, a metropolitan city of India to assess the average usage and life of the personal computers (PCs), television (TV) and mobile phone showed that the average household usage of the PC ranges from 0.39 to 1.70 depending on the income class (Shobbana Ramesh and Kurian Joseph, 2006). In the case of TV it varied from 1.07 To 1.78 and for mobile phones it varied from 0.88 to 1.70. The low-income households use the PC for 5.94 years, TV for 8.16 years and the mobile phones for 2.34 years while, the upper income class uses the PC for 3.21 years, TV for 5.13 years and mobile phones for 1.63 years. Although the per-capita waste production in India is still relatively small, the total absolute volume of wastes generated will be huge. Further, it is growing at a faster rate. The willingness of public to pay for e-waste management ranges from 3.57% to 5.92% of the product cost for PC, 3.94 % to 5.95 % for TV and 3.4 % to 5 % for the mobile phones.

Additionally considerable quantities of e-waste are reported to be imported (Agarwal, 1998; Toxics Link, 2004). However, no confirmed figures available on how substantial are these trans boundary e-waste streams, as most of such trade in e-waste is camouflaged and conducted under the pretext of obtaining ‘reusable’ equipment or ‘donations’ from developed nations. The government trade data does not distinguish between imports of new and old computers and peripheral parts and so it is difficult to track what share of imports is used electronic goods.

<table>
<thead>
<tr>
<th>Source of e-wastes</th>
<th>Constituent</th>
<th>Health effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broken in printed circuit boards, glass panels and gaskets in computer monitors</td>
<td>Lead (Pb)</td>
<td>Damage to central and peripheral nervous systems, blood systems and kidney damage. Affects brain development of children</td>
</tr>
<tr>
<td>Poly- and petchers printed circuit boards</td>
<td>Mercury (Hg)</td>
<td>Chronic damage to the brain. Respiratory and skin disorders due to biomagnification in fishes.</td>
</tr>
<tr>
<td>Corrugated plastic of uncoated and galvanized steel plates, foam, paper or paperboard for steel housings</td>
<td>Benzo(a)pyrene (BaP)</td>
<td>Aromatic benzenes. DNA damage.</td>
</tr>
<tr>
<td>Cables and computer housing</td>
<td>Plastic including PVC</td>
<td>Burning produces dioxin, bromates.</td>
</tr>
<tr>
<td>Plastic housing of electronic equipment and circuit boards</td>
<td>Brominated flame retardants (BFR)</td>
<td>Disrupts endocrine systems functions</td>
</tr>
<tr>
<td>Front panel of CRTs</td>
<td>Barium (Ba)</td>
<td>Short term exposure causes.</td>
</tr>
<tr>
<td>Motherboard</td>
<td>Beryllium (Be)</td>
<td>Causes renal (long-term)</td>
</tr>
</tbody>
</table>

### Table 1: Effects of E-Waste constituent on health
Figure: - 2 E – Waste in top 10 ten States and City in India

<table>
<thead>
<tr>
<th>State</th>
<th>WEE (Tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maharashtra</td>
<td>20270.59</td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td>13486.24</td>
</tr>
<tr>
<td>Andhra pradesh</td>
<td>12780.33</td>
</tr>
<tr>
<td>Uttar pradesh</td>
<td>10381.11</td>
</tr>
<tr>
<td>West bengal</td>
<td>10059.36</td>
</tr>
<tr>
<td>Delhi</td>
<td>9729.15</td>
</tr>
<tr>
<td>Karnataka</td>
<td>9118.74</td>
</tr>
<tr>
<td>Gujarat</td>
<td>8994.33</td>
</tr>
<tr>
<td>Madhya pradesh</td>
<td>7800.62</td>
</tr>
<tr>
<td>Punjab</td>
<td>6958.46</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>City</th>
<th>WEE (Tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ahmedabad</td>
<td>3287.5</td>
</tr>
<tr>
<td>Bangalore</td>
<td>4648.4</td>
</tr>
<tr>
<td>Chennai</td>
<td>4132.2</td>
</tr>
<tr>
<td>Delhi</td>
<td>9730.3</td>
</tr>
<tr>
<td>Hyderabad</td>
<td>2833.5</td>
</tr>
<tr>
<td>Kolkata</td>
<td>4025.3</td>
</tr>
<tr>
<td>Mumbai</td>
<td>11017.1</td>
</tr>
<tr>
<td>Nagpur</td>
<td>1768.9</td>
</tr>
<tr>
<td>Pune</td>
<td>2584.2</td>
</tr>
<tr>
<td>Surat</td>
<td>1836.5</td>
</tr>
</tbody>
</table>

### E-Waste recycling

Many discarded machines contain usable parts which could be salvaged and combined with other used equipment to create a working unit. It is labor intensive to remove, inspect and test components and then reassemble them into complete working machines. Institutional Infrastructures, including e-waste collection, transportation, treatment, storage, recovery and Disposal, need to be established, at national and/or regional levels for the environmentally sound Management of e-wastes. These facilities should be approved by the regulatory authorities and if required provided with appropriate incentives. Establishment of e-waste collection, exchange and Recycling centers should be encouraged in partnership with governments, NGOs and Manufacturers. Environmentally sound recycling of e-waste requires sophisticated technology and processes, which are not only very expensive, but also need specific skills and training for the operation. Proper recycling of complex materials requires the expertise to recognize or determine the presence of hazardous or potentially hazardous constituents as well as desirable constituents (i.e. those with recoverable value), and then be able to apply the company’s capabilities and process systems to properly recycle both of these streams. Appropriate air pollution control devices for the fugitive and point source emissions are required. Guidelines are to be developed for environmentally sound recycling of E Wastes. Private Sector is coming forward to invest in the e-waste projects once they are sure of the returns.

The major sources of e-waste in India – departments of the government, the public and private sectors, retailers, individual households, foreign embassies, PC manufacturing units, the secondary market, and imported scrap

### E – Waste Management Strategies

The best option for dealing with E wastes is to reduce the volume. Designers should ensure that the product is built for re-use, repair and/or upgradeability. Stress should be laid on use of less toxic, easily recoverable and recyclable materials which can be taken back for refurbishment, remanufacturing, disassembly and reuse. Recycling and reuse of material are the next level of potential options to reduce e-waste (Ramachandra and Saira, 2004). Recovery of metals, plastic, glass and other materials reduces the magnitude of e-waste. These options have a potential to conserve the energy and keep the environment free of toxic material that would otherwise have been released.

It is high time the manufactures, consumers, regulators, municipal authorities, state governments, and policy makers take up the matter seriously so that the different critical elements depicted in Figure - 2 are addressed in an integrated manner. It is the need of the hour to have an “e waste-policy” and national regulatory frame work for promotion of such activities. An e Waste Policy is best created by those who understand the issues. So it is best for industry to initiate policy formation collectively, but with user involvement. Sustainability of e-waste management systems has to be ensured by improving the effectiveness of collection and recycling systems (e.g., public–private-partnerships in setting up buy-back or drop-off centers) and by designing-in additional funding e.g., advance recycling fees.

### Figure: - 3 E – Waste Management Strategies
E-Waste related laws of India

- Hazardous Waste (Management and Handling) Amended Rules, 2003:
  These define hazardous waste as “any waste which by reason of any of its physical, chemical, reactive, toxic, flammable, explosive or corrosive characteristics causes danger or is likely to cause danger to health or environment, whether alone or when on contact with other wastes or substances.”

In Schedule 1, waste generated from the electronic industry is considered as hazardous waste. Schedule 3 lists waste of various kinds including electrical and electronic assemblies or scrap containing compounds such as accumulators and other batteries, mercury switches, glass from cathode ray tubes and other activated glass and PCB capacitors, or contaminated with constituents such as cadmium, mercury, lead, polychlorinated biphenyl or from which these have been removed, to an extent that they do not possess any of the constituents mentioned in Schedule 2.

- DGFT (Exim policy 2002-07):
  Second hand personal computers (PCs)/laptops are not permitted for import under EPCG scheme under the provisions of para 5.1 of the Exim Policy, even for service providers. Second-hand photocopier machines, air conditioners, diesel generating sets, etc, can also not be imported under EPCG Scheme under the provisions of Para 5.1 of EXIM Policy even if these are less than ten years old.

Recommendations for action

Today it is frequently cheaper and more convenient to buy a new machine to accommodate the latest software and hardware technology and their increasing demands for more speed, memory, and power, than it is to upgrade the old. We need to change the dominant paradigm that has prevailed over the past three decades. The lust for faster, smaller and cheaper must be governed by a new paradigm of sustainability that demands that our products are cleaner, long-lived, upgradable, and recyclable.

It is time to strengthen the call for sustainable production, environmental justice, and corporate and Government accountability in order to achieve these goals. Given here are a few recommendations for the action that needs to be taken.

- Ban hazardous waste imports
  All imports of hazardous waste materials, including hazardous e-waste must be banned. This is consistent with the Basel Ban Amendment decision by the Basel Convention to ban all trade of Hazardous wastes from OECD to non-OECD countries. There is no reason for the poor of the world to bear the burden of environmental risk, particularly when they have not benefited from the products and services that created that risk in the first place.

Make the producer responsible

Producers must be responsible for their products. The principle of ‘Extended Producer responsibility’ (EPR) requires accountability on producers over the entire life-cycle of their products. So far, manufacturers have passed on these costs to the consumers, and now to developing countries where the products eventually land up for recycling. By adopting EPR, producers will play their part in conserving resources through changes in product design and process technology.

Making producers financially responsible for end-of-life waste will provide them with a financial incentive to design their products with less hazardous and more recyclable materials. An effective example of EPR is product take-back where a producer takes the product back at the end of its life. However, it must be borne in mind that product take-back needs to go hand-in-hand with mandatory legislation to phase out e-waste. Take-back for e-waste is necessary to place the burden of a product’s environmental impact clearly back into the hands of those who design it in order to provide immediate incentive for improvement.

Inform the consumer

Manufacturers of computer monitors, televisions and other electronic devices containing hazardous materials must be responsible for educating consumers and the general public regarding the potential threat to public health and the environment posed by their products and for raising awareness for the proper waste management protocols.

Design for recycling

When it finally becomes necessary to decommission an electronic device, the device must be designed to ensure clear, safe, and efficient mechanisms for recovering its raw materials. Input materials must be suitable for safe reconstitution and recycling and there must be a pre-identifiable recycling market and mechanism established for the input material. Equipment components must be properly labeled to identify plastic and metal types. Warnings must be placed for any possible hazard in dismantling or recycling and the product must be made for rapid and easy dismantling or reduction to a usable form.

Conclusion

Solid waste management, which is already a mammoth task in India, is becoming more complicated by the invasion of e-waste, particularly computer waste. There exists an urgent need for a detailed assessment of the current and future scenario including quantification, characteristics, existing disposal practices, environmental impacts etc. Institutional infrastructures, including e-waste collection, transportation, treatment, storage, recovery and disposal, need to be established, at national and/or regional levels for
the environmentally sound management of e-wastes. Establishment of e-waste collection, exchange and recycling centers should be encouraged in partnership with private entrepreneurs and manufacturers.

Model facilities employing environmentally sound technologies and methods for recycling and recovery are to be established. Criteria are to be developed for recovery and disposal of E Wastes. Policy level interventions should include development of e-waste regulation, control of import and export of e-wastes and facilitation in development of infrastructure. An effective take back program providing incentives for producers to design products that are less wasteful, contain fewer toxic components, and are easier to disassemble, reuse, and recycle may help in reducing the wastes. It should set targets for collection and reuse/recycling, impose reporting requirements and include enforcement mechanisms and deposit/refund schemes to encourage consumers to return electronic devices for collection and reuse/recycling. End-of-life management should be made a priority in the design of new electronic products.

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A Study on performance of Small and Medium sized Enterprise (SMS’s) in India and strategies for countering down performance Nationally/Globally

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Shri. S.Nehru, Ph.D, Associate Professor, Gandhigram University, Gandhigram

ABSTRACT
Small and Medium sized Enterprise (SME) development is crucial for sustained and equitable development of the Indian economy. Evidence from more economically developed Asian nations demonstrates that SMEs have considerable potential for driving economic growth. With the advent of globalization, manufacturing SMEs across are facing increasing international competition and the need to improve quality and efficiency of output to match international standards to survive looks imminent. With globalization India has a serious threat of economy downturn which will be a shock for most SME’s. Therefore this study to underlined the strategies for Indian SME s Countering repeated Global/Domestic Slow Down, The Study was carried out by means of Secondary Data and revealed that Indian economic intelligentsia have individually and collectively suggested ameliorative steps for saving the small and medium entrepreneurs. By planning to implement Cost optimization, Manpower Trimming, Avoidance Postponement of Expansion Plans and Additional Borrowings, Sourcing of Personal Investments, developing Customer Relationship, Optimization of Working Capital : Identification of Financially Strong Clients Factoring of Invoices Domestic L/C Discounting. The Indian companies would have to study the above mentioned solutions and seek extensive dialogue with their employees, customers, banks and share holders to implement each of the solutions from time to time in the near future.

Keywords: SME’s, Entrepreneurs, Manpower Trimming, Customer Relationship, Personal investments, Effective Working capital, Clients Retention stratagy

INTRODUCTION
Small and Medium sized Enterprise (SME) development is crucial for sustained and equitable development of the Indian economy. Evidence from more economically developed Asian nations demonstrates that SMEs have considerable potential for driving economic growth. Under the right conditions, entrepreneurs, regardless of background, can start and grow SMEs, generating profits and creating employment opportunities. SMEs drive industrial progress, improve an economy’s ability to deal with shocks and are recognized as breeding grounds of innovation.

As elsewhere in Asia, SMEs make up the vast majority of businesses in India. Almost 40% of the nation’s enterprises have between 10 and 100 employees. It is estimated that SMEs provide about two thirds of the country’s employment.

With the advent of globalization, manufacturing SMEs across are facing increasing international competition and the need to improve quality and efficiency of output to match international standards to survive looks imminent. With globalization India has a serious threat of economy downturn which will be a shock for most SME’s. The impact when it hits, almost paralysis the SME space.. The Indian business environment needs improved efficiency parameters built in and SMEs need nurturing to be able to compete with imports, globally unfavorable factors etc. Creating a level playing field to face the global economy downturn and encouraging SME development will not only enable Indian SMEs to compete successfully in their domestic market; it will also pave the way for their involvement in catering to the global market.

The Govt. of India has a stated commitment to private sector growth internally and globally . In this context it recognizes the added importance of SMEs for sustainable and equitable economic development. This report focuses on the growth and current status of Indian SMEs, and the main barriers they face for sustained development. It discusses a number of planned and implemented policies, and recommendations to encourage SME development when the global economy creates challenges as recession, economic slowdown and currency volatility.

THE ROLE OF SMEs In India
Micro, small and medium enterprises (MSMEs) play a crucial role in the development of emerging and developed economies. According to UNIDO, small and medium enterprises around the world are estimated to account for more than 90% of the total number of enterprises and 50-60% of total employment. In India, MSMEs contribute immensely to the economy in terms of output, exports and employment and thus have strategic significance. MSMEs account for nearly 45% of India’s manufacturing output and more than 30% of total exports and provide employment to nearly 65.9 mn people, second to agriculture. With close to around 28.5 mn units in the sector, it is a driving force for long-term growth of the Indian economy.
MSME employment and total number of MSME units

MSMEs outperformed IIP and GDP growth rates. The domestic MSME sector has grown at a much faster rate than industrial and GDP growth. In FY08, MSMEs total production at current prices (2001-02) was equivalent to about 16% of India’s GDP (at current market prices).

For 2007-08, MSMEs were projected to grow at 13% as compared to the industrial and GDP growth of 8% and 9.2% respectively. Over FY03–FY08, MSMEs recorded annual average growth of 11.2%, outperforming average industrial and GDP growth of 9% and 8% respectively. This is a clear indication of MSMEs’ substantial contribution to the Indian economy through steady growth.

Total number and size of registered MSMEs (in thousands)

<table>
<thead>
<tr>
<th></th>
<th>Micro</th>
<th>Sm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of manufacturing enterprises</td>
<td>974.5</td>
<td>35</td>
</tr>
<tr>
<td>Number of service enterprises</td>
<td>501.1</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>1,475.7</td>
<td>48</td>
</tr>
</tbody>
</table>

MSMEs performance

SSI and India’s total exports

MSME exports account for nearly one third of the country’s total exports. MSME exports have managed to keep up with the growth rate of total exports of the country. The period of FY00-03 saw moderate growth in the economy, during which SSI exports grew in tandem with total exports at around 16% CAGR.

Even during the boom phase (FY04-07), SSI exports kept pace with the CAGR of India’s exports. However, during FY08, overall exports experienced much slower growth due to rupee appreciation, recording y-o-y growth of 15% in FY08, as against 25% in FY07. SSI exports also saw sluggish growth at 11% (versus 21% in FY07). Notably, since FY00, the share of SSI exports has been above 30% and stood at 31% during FY08.

A crucial industry segment as this needs measures to counter economic slowdown and look inwardly and outwardly to sustain and prosper.

PRESENT SCENARIO

The year 2011 has just ended but not the challenges which were faced by the industry in general and SMEs (Small & Medium Enterprises) in particular. The issues faced are largely due to the spiraling effect of global slow-down and a gloomy economic predication. The US and European economies are facing economic slow-down. The double dip recession kind of circumstance and falling Rupee has prompted a thought that exports from India will eventually be the casualty. Lot of policy implementing institutions in India have taken steps intended for course correction in the economy which includes higher interest rates, FII
investment revised rules and regulation which hinder the flow of inward investments and uncontrolled crude oil pricing which bears a detrimental effect for overall growth of the industry. These steps have inflicted heavy pressure on the performance of the Small and Medium Enterprises. Several organizations had to drastically alter their approach and literally hang in balance to avoid being badly hit by the situation. Nevertheless the businesses were able to survive only because they were ready to reinvent themselves. In this segment of the article we wish to dwell on the steps taken and how they have already impacted the enterprise.

Interest Rate
The year 2011 saw a soaring inflation of the Wholesale Price Index in India driven particularly by the spurt in demand of food items due to some contributory consumption factors. The Indian central bank that is the Reserve Bank of India came out with announcements to increase the Repo and Reverse Repo rates by several basis points within a gap of 2 quarters. This led to an immediate action of increasing the rate of interest by each and every individual Bank be it, nationalized or Private. Naturally, this enhanced rate of interest resulted in companies bearing the brunt of an increased, unplanned outflow resulting in a dent in the Balance sheet.

Delayed Receivables
SME’s have been effected by late payments from Corporate (their biggest customers) as large companies are looking at the balancing act of payables ageing vis a vis increased rates from banks. This payment delay is due to the fact that most of them are short of confidence as they are inundated with information on global and domestic monetary crisis.

Consequence
Delayed payments and enhancement in sundry debtors for SME’s have led to a difficult situation. The sourcing of raw materials has become difficult and companies face challenges in buying bulk raw material to enable improved costs. Inventory maintenance has faced severe imbalance due to improper off take of finished goods. The scenario ends in irregular salary payouts thereby creating non satisfied employees.

All the factors listed above has resulted in a financial disarray, causing enormous hardship particularly to the new SME entrants. Established Companies have also been straining every muscle to cross the budgeted top line and bottom line.

CUMULATIVE EFFECT
The Balance Sheets of many Organizations have turned negative which has caused a setback of their image with the shareholders. Many bankers are also reluctant to support such Companies and are not allowing excess borrowing or even the normal access to funds. Retention of quality manpower, experienced technical personnel and old hands has been affected, thereby affecting the company culture and its working norms to do with qualitative parameters. This is in addition to 2010 not being an encouraging year and 2011 sustaining the slowdown with policy variations which has affected SME’s operationally and commercially.

SOLUTIONS
Industry Concerns –SME Exchange- quite innovative and timely decision
1. The cost of raising capital for SMEs is quite high.
2. The current means of financing for SMEs are not adequate as they do not have easy access to funds from Angel Investors, VCs and PE players.
3. Most costs of compliance in raising capital under the existing guidelines are fixed. As a result, the costs become burdensome for smaller issues (SMEs).
4. The SMEs should be provided a framework that would enable them to raise capital quickly and at a low cost.
5. Owing to small size and less affordability, the eligibility conditions, listing requirements, corporate governance norms and disclosure standards may need to be suitably relaxed for SMEs.

In view of the aforesaid concerns raised by the market participants / industry representatives, there is a felt need for developing a dedicated stock exchange for the SME sector so that SMEs can access capital markets easily, quickly and at lower costs. Such dedicated SME exchange is expected to provide better, focused and cost effective service to the SME sector. The need for having a separate exchange / platform for SMEs was also discussed during the 32nd Annual Conference of IOSCO held in April 2007 in Mumbai and it was felt that the same would be necessary for the focused development of the SME sector. Subsequent to the same, Today BSE(Bombay Stock Exchange) has made the initiative to start an exclusive SME exchange which will start functioning from April 2012. In addition to the above the following points should be kept in mind.

Amazingly, at this juncture, Indian economic intelligentsia have individually and collectively suggested ameliorative steps for saving the small and medium entrepreneurs. Most of these action plans are easy to implement, even while they will stall the cancer of downturn from impacting the industry as a whole. Some of these steps are enumerated below

- **Cost Optimization**:
  This step is possible if the business is streamlined to snip off unproductive areas. Also, Most important thing that to be considered by SMEs are, the cost of borrowing, inventory management, effective working capital management and optimum manpower utilization& fast payment receipt by announcing certain incentives also to the buyer.. it would be important to have a sharp focus only on yielding revenue streams. In fact, this strategy is immediately applicable for the entire industry.

- **Manpower Trimming**:
  Every Organization has excess flab to suit to the whims of some of the technical employees. If, manpower is wasted, or redundant, it would be wise to jettison it in Toto. The resultant reduction in cost would most definitely enhance profitability. SMEs should certainly consider in today’s environment rather than future focus in employee
retention strategy, since running the company itself to today’s situation becomes extremely difficult. The root to this is non implementation of tried and tested HR policies and measures. Entrepreneurs end up making emotional decisions which directly affects the enterprise in total. In other words, certain firm decision to be taken and should implement the same more vigorously to ensure the cost minimization.

- **Avoidance of Additional Borrowings:**

  It would be necessary to exercise fiscal prudence and not involve in elitist expansion plans keeping long term goals in mind. In other words, the Companies need to become circumspect and indulge only in immediate unavoidable expenses. Implementation of processes to deal with this shall have long term gains. In other words, avoid paying excess interest for the operation, since the SMEs are already in margin pressure and adding up more interest will certainly dent the books of the company, which may become detrimental for the company in the long run, since the ratios of the project may become unviable for the banking institution to fund any expansion activity.

- **Sourcing of Personal Investments:**

  The need of the hour is to cut high cost and medium cost debt on capital. A sure shot way of raising capital is through known sources and family. This shall enable a company to go improve their bottom line with current businesses. Lot of entrepreneurs when they are in crisis, they tend to borrow more money at relatively high cost for running the day to day operation and they always forget the fact that, adding more business partners and removing personal investment and transfer the same to the organization will definitely yield much better result in terms of operational viability. They should consider bringing in more money either by third party equity dilution or their own personal investment in to the business for safeguarding the business, as once the business gets stabilized, they can always draw more money from their and attain more wealth.

- **Postponement of Expansion Plans:**

  As emphasized in point number 3, entrepreneurs have a tendency to gloat on past successes and end up making mistakes in a bad economy. This calls for seasoned set of advisors who can put the brakes on uncalled expansion. This is very important, as expansion is possible only after stabilizing the available business opportunities. Risky expansion could lead to disastrous consequences. In short span the cost of hiring the external consultants to analyze the operation may be a painful one. But if you neglect the same and start doing on your own method, it may lead to serious consequences and thereby make you to be in doldrums.

  Global expansions are certainly not recommended at times of challenge. The large Capital Expenditure which involves maintenance of interest also would pose severe challenges to the very survival of the enterprise. Most of the global expansion planned, take place with old data and market available reports. Clear research and requirement parameters take a back seat. In most cases this has led to the parent entity also losing their visibility in the domestic market and end up squeezed for operational capital.

- **Developing Customer Relationship:** In order to expand order books, regular interaction with Star Customers is necessary. Optimization measures from the SME’s side helps them cut costs on manufacturing thereby resulting in a more competitive pricing to sustain the existing customer. Also, prioritize the customer on their need and their payment capacity to us, so that, our working capital will not be blocked due to delay in payment.

- **Optimization of Working Capital:** A sense of tight rope walking must be practiced by the owners of the companies whenever working capital is being discussed. Clean management of working capital is possible only through scientific analysis of working capital and infusing just in time philosophy in their ranks and file. Preferably, the SMEs should work on the slot of innovative method of maintaining the working capital without disturbing the existing chain. Because, disturbance to the existing chain may become disasters in running the company.

- **Identification of Financially Strong Clients:** A conscious effort to define the pool of Elite customers who are available in the market would be required to strengthen profitability. Each Company must identify and develop their business with select set of clients who are good pay masters. Agreements may be signed to extend special facilities under attractive terms to enable them take quick decisions for a tie up with the Company.

- **Factoring of Invoices:**

  This particular arrangement is not very much understood by the SME industry in India. It is possible to factor the invoices raised by a Company with its customer by entering into a repatriate arrangement with a discounting Organization. A tripartite agreement could be signed between the Company, the customer and the discounting Organization for factoring of invoices. Such an arrangement will ensure early receipt of the 90% payment for the Company which is being factored. This will ease the pressure for the organization as the effective management of working capital will make the company to run in much better environment. The discounting Organization will receive the payment from the customer at a later date in accordance to the agreement executed. Some among the institutions to be named are IFCI Factors Pvt Ltd, Can bank factors ltd etc.
Domestic L/C Discounting:

It is possible to extend this arrangement with the Bank of the Enterprise dealing with the Bank of the customer. Needless to say, this step is also not being widely used by the Small and Medium Enterprise. There is a need to sensitize the Enterprisers to use Domestic L/C for reducing the impact of the fiscal pressure. SMEs should always try to get the facility with their own bank by way of paying some margin and keep the facility open for any future purchases and payments. SMEs can also recommend to their buyers to make the payment in LC, which in turn can be discounted with their own bank and avail the same for their business activity.

CONCLUSION

In 2012, the scenario in India for the Small and Medium Enterprise is one of promise. At the same time, it is also posing a plethora of challenges. To overcome this set of challenges and benefit from the immense opportunities, the Indian companies would have to study the above mentioned solutions and seek extensive dialogue with their employees, customers, banks and share holders to implement each of the solutions from time to time in the near future.

Corporate advisors and Mentors, need to be approached for counseling and hand holding to enable the entire SME sector to cross a large but not insurmountable hurdle. In any case, some of the Small and Medium enterprises from Retail, Pharmaceutical and Healthcare are slated to do well in 2012 which would be a repeat of their performance in the year 2011.

Government of India has also come out with a slew of measures and several plans to extricate the SME enterprises by cajoling and hand holding to support the promoters in this hour of crisis. The effort to build the Brand SME India is commendable. One such praiseworthy move is the proposed launch of the much awaited SME Exchange from April 2012 (details has been provided in the initial column). This step will not only enhance confidence of investors and banks but will also allow equity from public to flow in to the companies. The 50 odd companies who are eventually listed will most certainly benefit but the others who are in the queue to get listed on the SME Exchange also stand to gain in a big way. The expected support from other institutions like MSME, NABARD and other institutions will certainly work on the welfare of the sector with the support from Government of India.

The future looks bright and will allow the evolution of companies to move quickly to implement the steps described. It would be pertinent to recount that the rule of Corporate Evolution states that “The Fast” will stay and prosper, “The Slow” will be deprived and eventually perish. Therefore the pride of Indian SME story can be extended only if they are fast in implementing most of the action points explained in this article. Inexorable delay would lead to serious deprivation and slow death of the enterprise.

The situation would be retrieved by allowing the SME players to continue to make their yeoman contribution to the Indian Economy. The year of 2012 is without doubt, a year of challenges for the Indian SME champions but yet it is also one which will bring immense Business opportunities. That is exactly what many of the Captains of the Indian Industry believe. This Strong belief will lead eventually to irreversible success.

Limitations and Scope for future research:

As this study is based on Secondary data taken from the year 2000 onwards and studied only with India, there is a scope for future research by taking the data’s universally so that the performance and positioning of SMS’s all over the world can be discussed.

REFERENCE(Reference has been taken for only data in Image format and hence page numbers are not mentioned)

MSME employment and total number of MSME units
(Until 2005-06, data refers to the micro and small scale industry only. Data related to MSMEs was collected/compiled starting 2006-07 and hence includes both the industry and service sectors.)

Total number and size of registered MSMEs (in thousands)

MSMEs performance
3. Source: India stat, D&B research

Increase in estimated fixed investment and employment in MSMEs
4. Source: Ministry of Micro, Small and Medium Enterprises, Government of India

SSI and India’s total exports
5. Source: DGFT, MSME AR 09
Awarness and Attituds of Food safety knowledge

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Abstract

Many food borne illnesses arise from home kitchens. A survey was conducted in five districts of Tamil Nadu, India (n=2685) from mothers (food handlers). Equal importance was given to urban and rural mothers. The main aim of this study was to examine the awareness, attitudes and activities of mothers in food handling practices and the problems in realistic execution of food safety. The awareness of food safety activities is commendable in urban mothers. Mothers have high awareness in food safety and food borne diseases. However, practical execution of food handling methods is very low. These caused food borne diseases. The importance of food safety should be insisted through Primary Health Centres in the rural area. Mothers and teachers should be trained in practical application of food safety. Government machineries could be used to create awareness and provide training. Food safety subject should be introduced from primary school level to college level.

Key Words: Food safety; Food handlers; Food borne diseases; Mothers

INTRODUCTION

Each year, millions of people worldwide suffer from food-borne diseases and illnesses resulting from the consumption of contaminated food, which has become one of the most widespread public health problems in the contemporary world (Notermanns, Gallhof, Zweitering, & Mead, 1995). In response to the increasing number of food and water-borne diseases, governments all over the world have been taking efforts to improve food safety knowledge and practices among people. Safe food-handling practices and high awareness of hygienic practices reduce major incidents of diarrhoeal death and various other food borne diseases (Medeiros et al., 2004). The Centre for Disease Control and Prevention Food - Net surveillance data show that infants, children and women are affected more by food borne diseases. This arises from the consumption of contaminated food (Scheule, 2004). In a study, Mitakakis et al., (2004) stated that 70.3% of the respondents were poor in handling food preparation, 46.6% did not wash their hands properly, 41.7% mishandled raw food, and 70.1% mishandled cooked food. This concluded that risk of diseases through home-cooked food was high due to poor food handling practices.

In India religious practices play a dominant role in food handling practices. In the context of modern food production techniques and methods in a globalized world, the food handling methods adopted by women during religious and social ritual practices are not adequate to ensure the safety of the food. The most common factors contributing to food borne diseases are unsafe keeping of food (time/temperature), contaminated equipment, food from unsafe sources, poor personal hygiene and inadequate cooking. The role of food handlers, usually mothers, in ensuring food safety at the household level is well accepted and an understanding of the status of their food handling knowledge and practices is needed. A study however reported that consumers have inadequate knowledge about measures needed to prevent food borne illness in the home (Mederios et al., 2001). A significant proportion of food borne illnesses arises from practices in the home kitchen (Bryan, 1988; Scott, Bloomfield, & Barlow, 1982). In India, the negligent attitude of the general public due to illiteracy, ignorance and poverty has probably lead to a state of mass inertia, with the result, the entire burden of controlling the quality of food stuff rests with government and its enforcement machinery (Gopalakrishnamurthy, 1985).

STATEMENT OF THE PROBLEM

The global incidence of food borne illnesses is difficult to estimate, but it has been reported that in 2000 alone 2.1 million people died from diarrhoeal diseases (WHO 2006)\(^1\). A great proportion of these cases can be attributed to contamination of food and drinking water. The Centre for Diseases Control and Prevention (CDCP) has estimated that food borne contaminants cause approximately 76 million illness, 3,25,000 hospitalisations and 5,000 deaths each year (Mead et al., 1999)\(^2\). According to World Health Organisation (WHO), about 70% of 2 million deaths per year from diarrhoea in developing countries are related to contaminated food. Mothers, infants and senior citizens are in higher risk of food borne illness because they possess a weakened immune system. Nearly 40% of food borne illness is the result consumption of food prepared at home (WHO 2006)\(^3\).

A study has estimated that between 50% and 87% of reported food borne disease outbreaks have been associated with the home (Redmond & Griffith, 2002)\(^4\). In a survey, the majority of cases of food-borne illness in homes were never reported to the relevant authorities (Surujjal & Badrie, 2003)\(^5\). In over 90% of households in India, it is the mother who is involved in the preparation of food. In nature, every mother takes full care in food safety practices in preparing or obtaining food for their family. However, as per the UNICEF report, in 2009 infant mortality rate is quite high in India (50.78 value)\(^6\). In spite of mothers’ whole hearted preparation of food in the most possible hygienic way to protect their family health, food borne diseases exist in both developing and developed countries as per the WHO report. The question now is “Why are food borne diseases...
high in India, when the food is prepared and handled by mothers with proper care and stored in traditional, hygienic and scientific methods at home?”. Hence, the researcher has made an attempt to find out the existing awareness and attitudes of mothers in food handling practices which cause food borne diseases in the southern districts of Tamil Nadu.

OBJECTIVES OF THE STUDY

The main objective of the study is to analyze the food handling practices of mothers which caused food borne diseases. Concomitant the main objective, the following other objectives are also analyzed:

1. To analyze the awareness of existing food safety and food handling practices of mothers;
2. To evaluate the attitude of mothers in complaining against adulterated food;
3. To identify the involvement of mothers in the hygienic practices such as hand washing and cleaning kitchen equipments;
4. To analyze the practice of consuming of half cooked food and identification knowledge in contaminated and leftover food; and
5. To examine the food handling practices of mothers and their impact on food borne diseases.

2. MATERIALS AND METHODS

2.1 SAMPLE SIZE
Quantitative data was collected from 2685 mothers randomly selected from the five districts of Tamil Nadu. Equal importance had given both urban and rural mothers. In the field, data were collected through the questionnaire in the personal interview mode in the residence of the respondents after obtaining informed consent from them.

2.2 RESEARCH DESIGN
The survey examines the impact of food safety knowledge and practices of mothers during the period of February 2010 to September 2011 as a part of Doctoral research work. A food safety and food handling practices of the mother's questionnaire was designed, which consisted of demographic questions (gender, age, education, income, marital status) and 39 questions covering issues related to food safety, food handling practices and food borne diseases. The second part of the study is presented in the paper. The questionnaire was divided into four sections (1) a demographic section, (2) food safety knowledge and awareness, (3) food safety practices at home, and (4) food borne diseases. The investigator and research assistants were trained in collecting data. The questionnaires were prepared in both English and Tamil. In rural areas, Tamil questionnaires were given to collect data. In addition, the research assistants explained the questions in detail. Each respondent took 25 to 30 minutes to complete a questionnaire. Each collected questionnaire was allotted a separate code number for cross references. The researchers were interviewed in person by well structured questionnaire through eight trained research assistants and the investigator. Approximately, 34% of the questionnaires were filled in by the respondents while 66% was guided in filling the questionnaire.

2.3 PILOT STUDY
The questionnaire was pre-tested by collecting data from 105 mothers both in urban and rural areas in the months of November and December 2010. This helped to confirm practical applicability, clarity and to avoid unnecessary questions. The questionnaire was revised and restructured based on the results of the pilot study. Some additional questions were added after evaluating the questionnaires in the pilot study.

2.4 DATA ANALYSIS
The responses from mothers were analyzed by using a statistical package. Scores for each test category were calculated by assigning correct responses. Correlation and regression technique was used to identify the inter relationship between the different food safety knowledge and practices of mothers. Mean responses with standard deviation and percentage analysis of each category were calculated and presented in the tabular form. Cross tabulations and chi-square tests 5% significance level was used to compare indicators across demographic characteristics (age, educational level, urban and rural background). The independent sample t-test and ANOVA (confidence level 95%) were used to compare average values of selected parameters (food safety awareness, food safety practices at home) across demographic data. For the inferential statistical analysis, Spearman’s rank correlation coefficient (p) was used to identify correlations between ranked responses.

3. RESULTS AND DISCUSSION

3.1 PROFILE OF RESPONDENTS
Table 1 shows the demographics of the 2685 mothers by age, education, income, occupation and place of living. Analyzable questionnaires were obtained from 1295 urban mothers and 1390 rural mothers. They were randomly from household in India in which they had the primary responsibility of food preparation at home. None of them were professional food handlers. These respondents were interviewed face-to-face by well structured questionnaire by eight trained research assistant and one investigator. Appropriately 63% of the questionnaires were filled in by the respondents, while 37 percent was guided in filling the questionnaires. The majority of the respondents (38.7%) were in the age group of 25-30 years. About 54.1% of the respondents were school level educated and more the one fourth were (28.7%) illiterate. Of all mothers interviewed, majority of the respondents (55.4%) were housewives.
In this study, since ‘p’ value is less than 0.05 at five percent level of significance, the null hypothesis is rejected. It is concluded that there is a significant difference between food safety knowledge and practices of mothers and their family type. Mean value of knowledge and practices of nuclear family are better than joint family. The last one variable, the null hypothesis is accepted due to the ‘p’ value is higher than 0.05 at 5% significant level. Therefore, food safety practices are not differed with joint and nuclear family.

**Table: 3 Comparative Analysis of Food Safety Knowledge and Practices in Southern Districts of Tamil Nadu**

<table>
<thead>
<tr>
<th>Food Practices</th>
<th>Districts</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
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<td>Food Handling Practices</td>
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<td>Ramnad</td>
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</tbody>
</table>

Source: Primary Data  *Significant at five percent level

In this study, since ‘p’ value is less than 0.05 at five percent level of significance, the null hypothesis is rejected. It is concluded that there is a significant difference between food safety knowledge and practices of mothers and their family type. Mean value of knowledge and practices of nuclear family are better than joint family. The last one variable, the null hypothesis is accepted due to the ‘p’ value is higher than 0.05 at 5% significant level. Therefore, food safety practices are not differed with joint and nuclear family.

**Table: 2 Food Handling Practices and Knowledge of Mothers – Area Wise**

<table>
<thead>
<tr>
<th>Group Statistics</th>
<th>Locality</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>T value</th>
<th>P value</th>
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<td>Food Handling Practices</td>
<td>Urban</td>
<td>14.9</td>
<td>3.432</td>
<td>2.799</td>
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<td>Knowledge and Practices</td>
<td>Rural</td>
<td>14.6</td>
<td>3.568</td>
<td>0.005</td>
<td></td>
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<tr>
<td>Food Safety Knowledge</td>
<td>Urban</td>
<td>20.9</td>
<td>3.838</td>
<td>4.666</td>
<td>0.000*</td>
</tr>
<tr>
<td>Food Safety Practices</td>
<td>Rural</td>
<td>20.2</td>
<td>4.360</td>
<td>0.000*</td>
<td></td>
</tr>
</tbody>
</table>

Source: Primary Data  *Significant at five percent level

As per the result since, the mean score of the four practices are higher than the rural respondents, the urban respondents are having higher level of practices on food handling practices, knowledge and practices food safety knowledge and food safety practices. As per the analysis of this table, the first two variables’ hypotheses are rejected due to the significant value is less than 0.05. It shows that there is significant difference with food handling practices and knowledge and practices in urban and rural area. In contrast, for the last two variables, the null hypotheses is accepted due to the ‘P’ value is higher than 0.05 at 5% significant level. Therefore, food safety knowledge and food safety practices are not differed with urban and rural area.

**Table: 2 Food Safety Knowledge and Practices of Mothers in Different Family Type**

<table>
<thead>
<tr>
<th>Group Statistics</th>
<th>Type of Family</th>
<th>Mean</th>
<th>Std. Deviation</th>
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<th>P value</th>
</tr>
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<td>3.896</td>
<td>3.597</td>
<td>0.000*</td>
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<td></td>
<td>Nuclear</td>
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<td>3.397</td>
<td>0.000*</td>
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<tr>
<td>Knowledge and Practices</td>
<td>Joint</td>
<td>20.0</td>
<td>4.367</td>
<td>3.242</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Nuclear</td>
<td>20.6</td>
<td>4.063</td>
<td>0.001</td>
<td></td>
</tr>
</tbody>
</table>

Source: Primary Data  *Significant at five percent level

Note: Different alphabet between food safety knowledge and practices of mother.
denotes significant at 5% level using Duncan
Multiple Range test

As per this study, since p value is less than 0.05, the null hypothesis is rejected at 5 percent level of significance. It is concluded that there is significant difference between food safety knowledge and practices of mothers in five districts based on Duncan Multiple Range test, the mothers in Kanniyakumari districts significantly follows higher level of practices on food safety than Tuticorin districts, Ramnadu, Virudunagar and Tirunelveli districts. The last one variable, the null hypothesis is accepted due to the 'p' value is higher than 0.05 at 5% significant level. Therefore, food safety practices are not differ with Tuticorin districts, Tirunelveli, Ramnadu, Virudunagar and Kanniyakumari districts.

Table: 4 Mothers’ Age and its Impact on Food Handling Practices

<table>
<thead>
<tr>
<th>Education Level</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>F value</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Handling Practices</td>
<td>Belo w 25</td>
<td>237</td>
<td>15.05</td>
<td>3.693</td>
<td>2.511</td>
</tr>
<tr>
<td>25-30</td>
<td>771</td>
<td>14.60</td>
<td>3.663</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31-36</td>
<td>103</td>
<td>14.91</td>
<td>3.123</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37-42</td>
<td>362</td>
<td>14.98</td>
<td>3.784</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abovee 43</td>
<td>276</td>
<td>14.37</td>
<td>3.840</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge and Practices</td>
<td>Belo w 25</td>
<td>237</td>
<td>21.10</td>
<td>4.060</td>
<td>5.446</td>
</tr>
<tr>
<td>25-30</td>
<td>771</td>
<td>20.33</td>
<td>4.212</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31-36</td>
<td>103</td>
<td>20.27</td>
<td>3.982</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37-42</td>
<td>362</td>
<td>20.92</td>
<td>4.195</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abovee 43</td>
<td>276</td>
<td>21.24</td>
<td>4.294</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food Safety Knowledg e</td>
<td>Belo w 25</td>
<td>237</td>
<td>9.40</td>
<td>1.614</td>
<td>26.10</td>
</tr>
<tr>
<td>25-30</td>
<td>771</td>
<td>9.69</td>
<td>1.219</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31-36</td>
<td>103</td>
<td>9.97</td>
<td>1.288</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37-42</td>
<td>362</td>
<td>9.59b</td>
<td>1.642</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abovee 43</td>
<td>276</td>
<td>9.11</td>
<td>1.551</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food Safety Practices</td>
<td>Belo w 25</td>
<td>237</td>
<td>19.06</td>
<td>3.613</td>
<td>7.767</td>
</tr>
<tr>
<td>25-30</td>
<td>771</td>
<td>19.35</td>
<td>3.885</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31-36</td>
<td>103</td>
<td>19.66</td>
<td>4.035</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37-42</td>
<td>362</td>
<td>18.91</td>
<td>3.687</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abovee 43</td>
<td>276</td>
<td>18.34</td>
<td>3.467</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Primary Data *Significant at five percent level

Since ‘p’ value is less than 0.05, the null hypothesis is rejected at 5 percent level of significance. It is concluded that there is significant relation in food handling practices and age of mothers.

Table: 5 Food Handling Practices of Mothers and their Education Wise

<table>
<thead>
<tr>
<th>Education Level</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>F value</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Handling Practices</td>
<td>Illiterate</td>
<td>770</td>
<td>14.6</td>
<td>3.354</td>
<td>11.06</td>
</tr>
<tr>
<td>School level</td>
<td>145</td>
<td>14.6</td>
<td>3.559</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colleague level</td>
<td>462</td>
<td>15.4</td>
<td>3.319</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>268</td>
<td>14.7</td>
<td>3.508</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge and Practices</td>
<td>Illiterate</td>
<td>770</td>
<td>20.4</td>
<td>4.181</td>
<td>12.23</td>
</tr>
<tr>
<td>School level</td>
<td>145</td>
<td>20.3</td>
<td>4.162</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colleague level</td>
<td>462</td>
<td>21.4</td>
<td>3.839</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>268</td>
<td>20.5</td>
<td>4.131</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Primary Data *Significant at five percent level

Table 5 shows the four variables of food handling practices and its awareness. All four variables ‘p’ value is less than 0.05 at 5% level of significant. Hence, the null hypotheses for, all the four variables are rejected. It shows that there is a significant difference in the variables of Food Handling Practices, Knowledge and Practices, Food Safety Knowledge and Food Safety Practices with the mothers’ different levels of education.

Table: 6 Influence of Occupation in Food Handling Practices

<table>
<thead>
<tr>
<th>Occupation</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>F value</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Handling Practices</td>
<td>Housewife</td>
<td>148</td>
<td>14.3</td>
<td>3.835</td>
<td>38.11</td>
</tr>
<tr>
<td>Employed</td>
<td>624</td>
<td>16.0</td>
<td>3.835</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily wage</td>
<td>484</td>
<td>14.4</td>
<td>3.136</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>89</td>
<td>15.6</td>
<td>2.966</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge and Practices</td>
<td>Housewife</td>
<td>148</td>
<td>20.3</td>
<td>4.642</td>
<td>16.69</td>
</tr>
<tr>
<td>Employed</td>
<td>624</td>
<td>21.4</td>
<td>2.971</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The lack of access to potable water and constraints related to cooking fuel and sanitation in many households seem to be the main reasons for their practices not matching the knowledge. Ensuring food safety at the household level depends to a large extent on creating enabling environment with immediate emphasis on providing access to potable water, cooking fuel and sanitation. The results one concludes that the mothers have high awareness in food safety and food borne diseases but in the application side, the mothers failed to execute food safety practices. This is the main cause for food borne diseases. The most important issues relating to unsafe food and unsafe food handling practices were lack of refrigerator facilities, incorrect temperature maintenance in refrigeration, improper knowledge about harmful and helpful bacteria, occupation and low purchasing power, no proper kitchen counter, kitchen equipments, kitchen facilities, and kitchen infrastructure facilities. Great majority of the mothers did not have adequate knowledge in changing of dishcloths and the dishcloths bacteria. The results obtained from the study indicated the need for food safety awareness programmers.

Table: 7 Influence of House Hold Size in Different Food Handling Practices

<table>
<thead>
<tr>
<th>Food Handling Practices</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>F value</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upto 2</td>
<td>345</td>
<td>15.23</td>
<td>3.896</td>
<td>3.77</td>
<td>.023</td>
</tr>
<tr>
<td>3-5</td>
<td>207</td>
<td>14.69</td>
<td>3.440</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Above 5</td>
<td>265</td>
<td>14.96</td>
<td>3.462</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upto 2</td>
<td>345</td>
<td>21.27</td>
<td>4.419</td>
<td>6.38*</td>
<td>.002*</td>
</tr>
<tr>
<td>3-5</td>
<td>207</td>
<td>20.42</td>
<td>4.104</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Above 5</td>
<td>265</td>
<td>20.62</td>
<td>3.864</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upto 2</td>
<td>345</td>
<td>9.41</td>
<td>1.418</td>
<td>8.22</td>
<td>.000</td>
</tr>
<tr>
<td>3-5</td>
<td>207</td>
<td>9.74</td>
<td>1.355</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Above 5</td>
<td>265</td>
<td>9.72</td>
<td>1.724</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upto 2</td>
<td>345</td>
<td>18.94</td>
<td>3.508</td>
<td>5.02</td>
<td>.007</td>
</tr>
<tr>
<td>3-5</td>
<td>207</td>
<td>19.41</td>
<td>3.940</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Above 5</td>
<td>265</td>
<td>18.74</td>
<td>3.739</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Primary Data *Significant at five percent level
Note: Different alphabet between food practices of mother denotes significant at 5% level using Duncan Multiple Range test.

CONCLUSION
Generally, mothers are aware the concepts of food safety. It appears that the alarming rate of diarrhoeal deaths among children (<5 years) may not be directly attributable to lack of food safety related knowledge but due to a variety of reasons that are beyond the control of the households. The lack of access to potable water and constraints related to cooking fuel and sanitation in many households seem to be the main reasons for their practices not matching the knowledge. Ensuring food safety at the household level depends to a large extent on creating enabling environment with immediate emphasis on providing access to potable water, cooking fuel and sanitation. The results one concludes that the mothers have high awareness in food safety and food borne diseases but in the application side, the mothers failed to execute food safety practices. This is the main cause for food borne diseases. The most important issues relating to unsafe food and unsafe food handling practices were lack of refrigerator facilities, incorrect temperature maintenance in refrigeration, improper knowledge about harmful and helpful bacteria, occupation and low purchasing power, no proper kitchen counter, kitchen equipments, kitchen facilities, and kitchen infrastructure facilities. Great majority of the mothers did not have adequate knowledge in changing of dishcloths and the dishcloths bacteria. The results obtained from the study indicated the need for food safety awareness programmers.
regarding safe food handling practices, food safety activities and food borne diseases. The food handling practices such as operation of refrigerator, cross contamination, checking of dishcloths based on the food handling knowledge. The independent variables of food safety practices depend on food handling practices, food safety knowledge and food handling knowledge. The present study reveals that the mothers in all the five districts have high awareness in food safety knowledge and practices. However, they do not follow practically due to the lack of proper practical applicability of the food safety awareness. For instance, a mother has food safety knowledge, but due to lack of practical application, food borne diseases may arise. Government machinery is the main agent to reduce food safety problems. Practical training in food safety through workshops, seminars and conferences could be imparted. Teachers should be trained in food safety knowledge and practices, and the awareness of pathogens. The food safety subject should be introduced from primary school level to college-level education.

References


Role of Efficient procurement channels for supply of vegetables in major districts of U.P.

Mridulesh Singh, Assistant Professor Institute of Business Management, C.S.J.M University, Kanpur
Rajeev Singh, Assistant Professor (Business Management), Faculty of Technology, Etawah, C.S. Azad University of Agriculture & Technology, Kanpur.

Abstract:
Although India is the second largest producer of vegetables, their processing has largely remained in primary forms like pickling, sun drying and/or making preserves, but with rising trends in standards of living and convenience being the main objective among the consumers, dried vegetables are starting to find vast acceptance in the International and domestic market. In this study an attempt is made to develop an efficient procurement channel of cabbage, peas and capsicum for a vacuum drying unit in Kanpur. Feasibility of contract farming for all vegetables was studied by interviewing procurement staff of the processing unit and observing the price trend of these vegetables in the Kanpur and Unnao mandi. It was concluded that, with the increasing vegetable processing plants, cold storage capacities, erratic price fluctuations in both the mandis and abundant availability of cabbage, capsicum and peas contract farming cannot be taken as the only sourcing option for these vegetables. A procurement model covering all parameters of availability, price and assured produce is discussed in the model suggested. The model takes into consideration direct sourcing from farmers and by procurement officer who can avail the produce from Unnao, Kanpur Fatehpur, Etawah, Kannuj, Jalaun, Jhansi, Lalitpur which are also main clusters for procurement.

Introduction:
India is the world's second largest producer of vegetables in the world, but less than 2% of the total vegetables produced in the country are commercially processed as compared to 70% in Brazil and 65% in USA. Change in consumer taste, food habits & life style, convenience, nutritional value and purchasing power are the likely reasons for preference for food in standards of living and convenience being the main objective among the consumers, dried vegetables are starting to find vast acceptance in the International and domestic market. In this study an attempt is made to develop an efficient procurement channel of cabbage, peas and capsicum for a vacuum drying unit in Kanpur. Feasibility of contract farming for all vegetables was studied by interviewing procurement staff of the processing unit and observing the price trend of these vegetables in the Kanpur and Unnao mandi. It was concluded that, with the increasing vegetable processing plants, cold storage capacities, erratic price fluctuations in both the mandis and abundant availability of cabbage, capsicum and peas contract farming cannot be taken as the only sourcing option for these vegetables. A procurement model covering all parameters of availability, price and assured produce is discussed in the model suggested. The model takes into consideration direct sourcing from farmers and by procurement officer who can avail the produce from Unnao, Kanpur Fatehpur, Etawah, Kannuj, Jalaun, Jhansi, Lalitpur which are also main clusters for procurement.

Scope of Study:
The potential of the vegetable processing sector in Uttar Pradesh remains untapped despite the huge quantities of process-able vegetables that are produced in the state. And yet, Uttar Pradesh is unable to capitalize on surplus of vegetables, with just a very small percentage of production being processed. Vacuum dried and dehydrated products are less expensive than wet packed food because these are less bulky, its taste and the nutritional food value is excellent. Vacuum drying provides natural and additive free vegetables to be stored effectively for long periods of time, which is why these have high export demand. Keeping the opportunities lying in the export of vacuum dried vegetables, it is prerequisite to ensure the consistent supply of quality vegetables which will undoubtedly help nurture this sector the research was conducted with an objective of designing an efficient procurement channel for supply of peas, cabbage and capsicum.

Review of Literature:
Singh (1999) studied the growing importance of baby corn, a highly remunerative exotic vegetable among the progressive vegetable growers in Delhi, Meghalaya, Haryana, Maharashtra and Uttar Pradesh. The author concluded that although baby corn is popular only around big cities but its potential is to be explored since its cultivation fetches Rs 30653/Acre in a short span of time. One of the most significant conclusions was regarding the export market of baby corn in UAE and other European countries. Sirohi and Behera (2003) studied the present status and future strategies for vegetable export from India. It was concluded that India may be one of the top ranking countries in terms of vegetable production but still we have a long way to go before we make our space in global market. The work stressed that the important prerequisite to stepping up exports is improvement in the transportation system for agricultural produce. Extending shelf life of perishable cargo is of vital importance while determining the mode of transport to be used. Bajaj and Singh (2003) concluded that the removal of almost all the quantitative restrictions on imports and with the decks cleared for integration of Indian economy with the global one. There is a need to harness the competitive advantage of India in the international trade. He stressed the need to take a look at an agricultural produce in a comprehensive manner-right from farm to palate-so as to be able to deliver an appropriately priced and attractively packaged quality product in the international market.

Research Methodology:
Descriptive research was undertaken from March’ 01, 2007 to April’ 30, 2010 to study the present status of peas, cabbage and capsicum production and marketing in district Unnao of Uttar Pradesh, backward and forward linkages had been also analyzed. Both primary and secondary data was collected, although undisguised questionnaire was used as research instrument to collect primary data. Secondary data was obtained from government offices, research institutes, universities, and information published in the newspapers, journals and books. Both qualitative and quantitative techniques were used to collect the data. The data was analyzed through descriptive techniques. The results obtained were presented in the form of tables and charts.
was collected from Directorate of Horticulture U.P., concerned journals and referred books. **Primary data** have been collected through personally administered questionnaire plus in-depth interviews of vegetable processing unit officials, 3 logistics providers each in Kanpur and Etawah mandi, and 35 farmers in Unnao. Data collected was analyzed by using SPSS statistical methods through MS Excel.

**The major results of the study are:**

In the Agri export basket of India, export of processed vegetables holds a major chunk. Vegetables are generally processed to reduce their high moisture content. By dehydrating vegetables their shelf life can be enhanced to a great extent. Exhibit-1 shows trends in the quantity of dried vegetable export from India.

It shows that the quantity of dried vegetable export from India is increasing globally and the Indian vegetable processing industry should look at it as a good business opportunity. The export of dried vegetables has increased in terms of value in the past three years which can be clearly observed in Exhibit-2. The total value of the dried vegetables export which was 50.7 million US$ has reached up to 93.76 million US$.

The export of dried and preserved vegetables from India has increased in terms of both value and in terms of quantity. Thus it can be implied that the export of dried vegetables is a profitable business and it has a great potential which can be tapped by the vegetable processing units in India. The main markets for dried vegetables are United States, Russia, Europe, United Kingdom, Canada and others.

**Potential Clusters Growing Selected Vegetables Used for Drying:**

The major production of peas, cabbage and capsicum was done in the Unnao. Hence the study was focused on mapping the cluster areas in the district. Due to the plant location and Unnao mandi which deal in heavy volumes of these vegetables were also selected for studying the procurement channel.

**Cabbage:** To collect data regarding the production of cabbage and the area under cultivation, district horticulture office (Kanpur) was visited. The area and production status of cabbage in different district of Unnao for the last three years was obtained. Unnao is the main district in Uttar Pradesh for cabbage in terms of area and production with 310 hectares and 10545 MT respectively. Exhibit-3 shows that the production of cabbage has increased significantly.

Exhibit-4 shows the area under cabbage cultivation in different district for three consecutive years. It can be observed that the area under cultivation has increased significantly. The production and area under cultivation of cabbage has increased significantly in the past three years as shown in the two exhibits above. Thus we can imply that cabbage is a profitable vegetable crop for the farmer of this region. The vegetable processing units can tap the opportunity to process cabbage in this region.

**Arrival Season for Cabbage in Kanpur and Unnao Mandi:**

The arrival of cabbage in Unnao and Kanpur mandis starts in the month of November-December. It is available throughout winters and lasts till April in both the mandis. There after cabbage is available in Kanpur mandi from district from June to October. Table-1 shows the calendar for arrival season for cabbage in both the mandis.

Table-1 Calendar for Arrival Season for Cabbage

<table>
<thead>
<tr>
<th>Location/Seaon</th>
<th>J</th>
<th>A</th>
<th>M</th>
<th>A</th>
<th>M</th>
<th>J</th>
<th>Ju</th>
<th>A</th>
<th>S</th>
<th>O</th>
<th>N</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kanpur Mandi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unnao Mandi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The price of cabbage from plains ranges from 1 to 3 Rs/kg where as the cabbage arriving from hills is sold at a much higher price i.e. 5 to 7 Rs/kg in mandi. The vehicles used for logistics are Tempo traveler, Mahindra Pickup, TATA 407 and also Canter (LP). Gatta (Jute bags) of 40 to 45 kg are used for packaging in the mandis. The cost of cultivation and harvesting of cabbage came out to be 13500-14500 per Acre.

**PEAS**

To collect data regarding the production of peas and the area under cultivation, district horticulture office (Kanpur) was visited. The area and production status of peas in Uttar Pradesh for the last three years was obtained. Unnao is the main district in Uttar Pradesh for peas in terms of area and production with 1606 hectares and 10489 MT respectively. Exhibit-5 shows the peas production has increased significantly.

Exhibit-6 shows the area under peas cultivation in different district for three consecutive years. It can be observed that the area under cultivation has increased significantly.

The production and area under cultivation of peas has increased significantly in the past three years as shown in the two exhibits above. Thus we can imply that a pea is a profitable vegetable crop for the farmer of this region. The vegetable processing units can tap the opportunity to process peas in this region.

**Arrival Season for Peas in Kanpur and Unnao Mandi:**

The arrival of peas in Unnao and Kanpur mandi from the plains starts in winters in the mid of November and lasts till mid of March. It is available throughout winters and there after peas is available in Unnao, Kanpur district mandi from mid March to May and then again it starts in October and lasts till mid November. Thereafter peas are again available from the plains in both the mandis and the cycle continues. Table-2 shows the calendar for arrival season for peas in both the mandis.
The production and area under cultivation of capsicum has increased significantly in the past three years as shown in Exhibit 6.

Exhibit-8 shows the area under capsicum cultivation in different districts for three consecutive years. It can be observed that the area under cultivation has increased significantly.

The production and area under cultivation of capsicum has increased significantly in the past three years as shown in the two exhibits above. Thus we can imply that capsicum is a profitable vegetable crop for the farmer of this region. The vegetable processing units also tap the opportunity to process capsicum in this region.

Arrival Season for Capsicum in Kanpur and Unnao Mandi: The arrival of Capsicum in Unnao mandi and Kanpur mandi from the plains starts in early winters in the month of November. It is available throughout winters and lasts till mid of March. Thereafter Capsicum is available in Unnao mandi from the mandis of Kanpur district during mid of May to August. Table-3 shows the calendar for arrival season and sources for capsicum in both the mandis.

The price of Capsicum from plains ranges from 10 to 20 Rs/kg and the Capsicum arriving from hills is sold at a much higher price i.e. 20 to 30 Rs/kg. The vehicles used for logistics are Tempo traveler, Mahindra Pickup, TATA 407 and also Canter (LP). Gatta(Jute bags) of 35kg to 40 kg are used for packaging of peas in mandis. The cost of cultivation and harvesting of cabbage came out to be 8600 per Acre. The varieties which are popular in this area are Arkel, PSM-3, PSM-4 and Punjab Ageta.

The price of Capsicum from plains ranges from 10 to 18 Rs/kg and the peas arriving from mandi sold at a much higher price i.e. 15 to 45 Rs/kg. The vehicles used for logistics are Tempo traveler, Mahindra Pickup, TATA 407 and also Canter (LP). Gatta(Jute bags) of 35kg to 40 kg are used for packaging of peas in mandis. The cost of cultivation and harvesting of cabbage came out to be 8600 per Acre. The varieties which are popular in this area are Arkel, PSM-3, PSM-4 and Punjab Ageta.

Different Procurement Channels and Cost Involved: To suggest a feasible procurement model for the processing unit it was necessary to study the different costs involved for procuring the produce from different channels and the constraints faced by farmers for giving the produce directly to the processors.

Constraints Faced by Farmers for Giving the Produce Directly to Unit: Issues faced by farmers in taking their produce to the factory are shown in Exhibit-9. Majority of farmers agreed on the fluctuating demand as the major impediment for going to the factory.

Factory procures vegetables which are physically sound and good in appearance thus the rejections are high. Payments to the farmers are also not done on time. Where as in mandi there is no quality check and the whole lot is auctioned at one go so the deductions are not done. The buyback of factories from farmers may not be continuous thus farmers opt for going to mandi than to factories, as the relationship with arthiyas tend to take a strike if farmers opt for one season giving to factories and if prices are down in factories giving to mandis.

Procurement from the Mandi: The existing channel for procurement from mandi by the food processors along with the cost involved at each source is shown in Exhibit-10, it can be clearly seen that procuring from mandi would involve addition of cost in commission, wastages as in mandi the produce is sold in whole sale and the marketing fees these are accrued by the farmers, the processing unit pays the mandi tax and the logistics plus loading and unloading at the factory.

This model is suitable for peas and cabbage which are available in large quantities at lower prices in Unnao and Kanpur mandi. This will also help to escape from the hassles of the contract farming in which the factory has to promise assured buyback.

Procurement through Traders: The cost involved in procuring from traders is shown in Exhibit-11. The trader...
incurs harvesting cost, loading/unloading and logistics to the factory and adds his commission to the processors who pays the mandi tax for the purchased lot.

This channel is very much suitable for the vegetable processing units because it does not requires hiring a person who has to be present in the mandi everyday. Also the level of surety to get the required volume of vegetables to be processed everyday increases.

Farmers giving at Factory Gate
Costs involved procuring directly from farmers by the processors are shown in Exhibit-12. The processor in this channel has to pay the mandi tax on the purchased lot and the farmers incur the loading, unloading and logistics to the factory. This channel is practiced on the contract basis as well as on the non contract basis. In contract basis company write a contract with the farmer, in which farmer is provided with agri-input as well as technical support and also company assures buyback at an agreed upon price of the produce. In non contract basis the factory person (procurement officer) come in contact with the farmers, visits their fields and deal is finalized to get the produce.

Table-4 shows the four types of vehicles which are used for logistics at Unnao mandi and Kanpur mandi along with their charges for one trip to Mandi. The selection of the vehicle is done on the basis of the quantity of vegetables to be transported. It was observed that TATA 407 and Mahindra Pickup are more popular in use at these two mandis, because small quantities of vegetables are frequently moved.

Table-5: Operating Chart for Processing Unit

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<tr>
<th>Commodity</th>
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<td>Cabbage</td>
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</table>

Suggested Procurement Model for Selected Vegetables:
The suggested procurement model for cabbage, peas and capsicum is shown in the Exhibit-13. All the three channels have been adopted as a procurement source due to the factors discussed above which result in no-one perfect sourcing hub for these vegetables. As these vegetables have emerged as a short duration and high returns crop for the months of Nov, December, January and February, the models takes into consideration liasoning with traders before the harvest season so as to negotiate on a fixed price and planning the procurement for specific season as and from specific areas as shown in the exhibit. The channel from Kanpur mandi and Unnao mandi is an important link for the periods of November to February as this is the glut season for these vegetables. Thus for a processing firm it is the best time to procure in huge volumes and to get lowest prices. The model also deals with the major costs involved for the processing unit from the different channels, it is proposed for the unit to supply jute bags of 50-60 kilos which can be taken by the farmers for bringing in the harvest and the cost of the bag can be taken in parts during the payments.

Critical Observations:
1. Unnau,Kanpur Fatehpur,Etawah are potential areas in U.P.for vegetable procurement and companies like Parle Foods, Jindal Frozen Foods and other vegetable processing units in this region are preparing to start procurement in this region. So company is going to face a tough competition here. The first movers will get advantage.
2. The price of the vegetable at which it is sold in the mandi at a lower price.
3. In the situation of market glut if the company is getting lesser price in the local mandi, then generally company breaches the contract with the farmer and purchases from the mandi at a lower price.
4. In the case of breach of contract and particularly in those crops which do not have much demand in the local mandi, the farmers are even not able to sell the produce in the mandi.
5. The price of the vegetable at which it is sold in the mandi at a lower price.

Procurement Model for the Processing Unit in the Study Area: with the observations from the survey and interactions with the company and mandi officials a sustainable model for procurement of Cabbage, Peas and Capsicum is discussed. The operating chart for the four commodities for a particular year in different seasons is shown in the Table-5. Using the vacuum drying technique these selected vegetables can be processed and the plant can be operational for 6–7 months and due to increasing consumer demand for the dried products it provides a good alternative.
etc., then they can reject the crop on any hidden quality parameter.

6. There is need to increase farmers confidence in contract farming because farmers have seen companies breaching the contract and rejecting the produce.

7. Farmers in this region do cultivation and marketing in groups and this will help the company in making farmer’s associations.

8. The APMC law of the state should be amended in order to decrease the taxes charged on exporters, which will encourage other exporters to come into vegetable export and this will also help in giving contract farmers a reasonable price as the tax charged by the APMC lowers down the profit of farmers which will also reduce the risk of breach of contract by any party.

**Recommendations and Suggestions:**

1. Cabbage, peas and capsicum should be taken up as vegetables suitable for vacuum drying unit established in U.P.

2. During the survey it has been found in district named Kanpur, Unnao and Etawah have good production of Cabbage. These may therefore be considered as potential areas for procurement of cabbage as they are in vicinity of Graffiti Exports i.e. less than 100 kms away.

3. During the survey it has been found that in district named Kanpur and Unnao has good production of Capsicum. These may therefore be considered as potential areas for procurement of cabbage as they are in vicinity of Graffiti Exports i.e. less than 100 kms away.

4. During the survey it has been found that in district named Kanpur, Unnao, Fatehpur, Etawah have good production of Peas. These may therefore be considered as potential areas for procurement of cabbage as they are in vicinity of Graffiti Exports i.e. less than 100 kms away.

5. During the glut period procurement of vegetables from mandi is the best way, because at that time vegetables are available there at lowest prices and at the same time their quality is good. In the months when there is no glut in the mandis procurement should be planned through contract farming.

6. Procurement of cabbage, capsicum and peas directly from farmers should be made by collaborating with certain specific farmers groups of their respective vegetable growing clusters by jointly setting targets for processing year in advance.

**Bibliography:**


A Study on Mergers and Acquisitions – Its impact on Management and Employees

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ABSTRACT

The purpose of this paper is to study the concept of Merger/Acquisition in detail by taking examples of some companies. The objective is to find out the major issues associated with pre and post merging situations with special emphasis on the human aspect. Merger/Acquisition is a phenomenon which is easy to think but hard to implement. Three phases of mergers – pre merger, transition phase and the post merger phase have their own advantages as well as difficulties, if handled with proper care synergies can be withdrawn but a little mistake can spoil the whole transition. Both management and employees have to work hard at their own level to make it a successful one because man is the major factor during the whole deal. Post merger transition phase is the most difficult one as in any organization whether large or small cultural clashes exist which may turn up a merger into the failure. Merger/Acquisition is a process which is very essential nowadays for the growth and survival of the business. Companies are acquiring more and more firms in order to expand their business and with lots of reasons which are discussed here. If any company is not adopting this way either they will not grow or will be acquired by the other major big firm.

Although the present system which is adopted by the companies for takeover can’t be taken as the appropriate one because the major reason behind this is of synergies but still more and more companies are merging with one another as there is a flow of merger or acquisition in the present era. When companies merge or make a plan for acquisition the only factor in their mind is growth or expansion or synergies. People factor is totally ignored. Either they are not involved anywhere or if involved then at very lower level.

Key Words

Merger, Acquisition, Human factor, Communication, Employees, Management

INTRODUCTION

The terms merger, amalgamations, take-over and acquisitions are often used interchangeably to refer to a situation where two or more firms come together and combine into one to avail the benefits of such combinations and re-structuring in the form of merger etc., to face the challenge of increasing competition and to achieve synergy in business operations. The literature sources most frequently identify three phases of a merger or an acquisition process. Restructuring of business is an integral part of the new economic paradigm. As controls and restrictions give way to competition and free trade, restructuring and reorganization become essential. Restructuring usually involves major organizational change such as shift in corporate strategies to meet increased competition or changed market conditions.

This activity can take place internally in the form of new investments in plant and machinery, research and development at product and process levels. It can also take place externally through mergers and acquisitions (M&A) by which a firm may acquire another firm or by which joint venture with other firms. This restructuring process has been mergers, acquisitions, takeovers, collaborations, consolidation, diversification etc. Domestic firms have taken steps to consolidate their position to face increasing competitive pressures and MNC’s have taken this opportunity to enter Indian corporate sector.

This discusses impact of merger with reference to human resource aspect, it has actually integrated most of the significant management subjects under considerations into the judgment. The results of this study provide relatively strong support for the existence of a positive relationship between employee participation from top to bottom with employee satisfaction, motivation and performance. Since the basic aim of the study is to examine the impact of any major change like merge on the management. Here in this study the organizational performance is measured by means of employee performance and employee performance is measured by their motivation, satisfaction of employees towards the job and the organization. Empirical evidence appears to support the view that human capital practices like employee participation after merger can influence the organizational performance and growth. Organizations interested in the growth and in high performance must involve their employees in decision making process to motivate, satisfy and better performance of the employees. The research provides proofs for the organizations that whenever the workforce is not satisfied and motivated with their jobs, performance is affected. The conclusion also suggests that after a merger happened, the management might be able to increase the level of commitment in the organization by increasing satisfaction and motivation of employee with compensation, policies, and work conditions. Impact of mergers and acquisitions on top level management may actually involve a "clash of the egos". There might be variations in the cultures of the two organizations. Under the new set up the manager may be asked to implement such policies or strategies, which may not be quite approved by him. When such a situation arises, the main focus of the organization gets diverted and executives become busy either settling matters among themselves or moving on. If however, the manager is well equipped with a degree or has sufficient qualification, the
migration to another company may not be troublesome at all. Mergers and acquisitions, like organizational transitions in general, are typically followed by major structural and cultural changes, which may arouse stress, anger, disorientation, frustration, confusion and fright among personnel. Uncertainty and other negative emotions, in turn, tend to lead on to the several negative organizational outcomes, like lowered commitment and productivity, increased dissatisfaction and disloyalty, high turnover, leadership and power struggles, sabotage and a general rise in dysfunctional behaviours.

OBJECTIVE OF THE STUDY

Main objective of the study is to find out the major issues associated with pre and post merging situations where cultural shock arises and employees and management clashes to fulfill their desires moving in two different directions. This paper also analyse the present training methods to cope up with the environment and the up bringing situations and some alternatives are also suggested to make any merger/ acquisition a successful event for the company.

RESEARCH METHODOLOGY

Fifty companies are selected for the research purpose. In all those companies reasons of mergers and acquisitions were studied in depth. Intention of both acquirer and acquiree were studied to find out why companies are opting for mergers and acquisitions. Wave of merger and acquisition is floating all over the world including India. Out of the fifty companies five companies are again selected for macro study. These five companies are United Beverages and Shaw Wallace, HDFC and CBoP, Vodafone & Hutch, Federal Mogul and Goetz India and HP Compaq merger.

This is a qualitative study so how and why questions are handled instead of finding the no of reasons. In depth study of reasons is conducted. This methodological design is particularly useful in expanding our understanding and knowledge of mergers and acquisitions in terms of strategic planning and the issues surrounding the due diligence process.

CONCEPT AND TYPES OF MERGER

Although they are often uttered in the same breath and used as though they were synonymous, the terms merger and acquisition mean slightly different things.

1) When one company takes over another and clearly established itself as the new owner, the purchase is called an acquisition. From a legal point of view, the target company ceases to exist, the buyer "swallows" the business and the buyer's stock continues to be traded.

2) In the pure sense of the term, a merger happens when two firms, often of about the same size, agree to go forward as a single new company rather than remain separately owned and operated. This kind of action is more precisely referred to as a "merger of equals". Both companies' stocks are surrendered and new company stock is issued in its place.

3) In practice, however, actual mergers of equals don't happen very often. Usually, one company will buy another and, as part of the deal's terms, simply allow the acquired firm to proclaim that the action is a merger of equals, even if it is technically an acquisition. Being bought out often carries negative connotations, therefore, by describing the deal euphemistically as a merger, deal makers and top managers try to make the takeover more palatable.

4) A purchase deal will also be called a merger when both CEOs agree that joining together is in the best interest of both of their companies. But when the deal is unfriendly - that is, when the target company does not want to be purchased - it is always regarded as an acquisition.

5) Whether a purchase is considered a merger or an acquisition really depends on whether the purchase is friendly or hostile and how it is announced. In other words, the real difference lies in how the purchase is communicated to and received by the target company's board of directors, employees and shareholders. It is quite normal though for M&A deal communications to take place in a so called 'confidentiality bubble' whereby information flows are restricted due to confidentiality agreements (Harwood, 2005).

Types of Merger

There are four types of merger which are as follows:

1. Horizontal merger:
   It is a merger of two or more companies that compete in the same industry. It is a merger with a direct competitor and hence expands as the firm’s operations in the same industry. Horizontal mergers are designed to produce substantial economies of scale and result in decrease in the number of competitors in the industry. The merger of Tata Oil Mills Ltd. with the Hindustan lever Ltd. was a horizontal merger.

2. Vertical merger:
   It is a merger which takes place upon the combination of two companies which are operating in the same industry but at different stages of production or distribution system. If a company takes over its supplier/producers of raw material, then it may result in backward integration of its activities. On the other hand, Forward integration may result if a company decides to take over the retailer or Customer Company. Vertical merger may result in many operating and financial economies. The transferee firm will get a stronger position in the market as its production/distribution chain will be more integrated than that of the competitors. Vertical merger provides a way for total integration to those firms which are striving for owning of all phases of the production schedule together with the marketing network (i.e., from the acquisition of raw material to the relating of final products).

3. Co generic Merger:
   In these, mergers the acquirer and target companies are related through basic technologies, production processes or markets. The acquired company represents an extension of product line, market participants or technologies of the acquiring companies. These mergers represent an outward movement by the acquiring company from its current set of business to adjoining business. The acquiring company derives benefits by exploitation of strategic resources and
from entry into a related market having higher return than it enjoyed earlier. The potential benefit from these mergers is high because these transactions offer opportunities to diversify around a common case of strategic resources.

4. Conglomerate merger:
These mergers involve firms engaged in unrelated type of business activities i.e. the business of two companies are not related to each other horizontally (in the sense of producing the same or competing products), nor vertically (in the sense of standing towards each other the relationship of buyer and supplier or potential buyer and supplier). In a pure conglomerate, there are no important common factors between the companies in production, marketing, research and development and technology. In practice, however, there is some degree of overlap in one or more of these common factors.

Historical Background
United Beverages company when acquired Shaw Wallace the company was on its expanding line. UB it is a conglomerate of different beverages companies. After the acquisition they combined under one head of United Spirits Ltd. The combined entity now owns 12 millionaire brands to its credit. The UB Spirits Division now has sales figures of 56.6 million cases, making the group the second largest marketer of spirits in the world.

The Housing Development Finance Corporation Limited (HDFC) was amongst the first to receive an 'in principle' approval from the Reserve Bank of India (RBI) to set up a bank in the private sector, as part of the RBI's liberalization of the Indian Banking Industry in 1994. The bank was incorporated in August 1994 in the name of 'HDFC Bank Limited', with its registered office in Mumbai, India. HDFC Bank commenced operations as a Scheduled Commercial Bank in January 1995. Centurion Bank of Punjab was formed by the merger of Centurion Bank and Bank of Punjab, both of which had strong retail franchises in their respective markets. On May 23, 2008, the amalgamation of Centurion Bank of Punjab with HDFC Bank was formally approved by Reserve Bank of India to complete the statutory and regulatory approval process. The merged entity will have a strong deposit base of around. 1,22,000 crores and net advances of around Rs. 89,000 crores. The amalgamation added significant value to HDFC Bank in terms of increased branch network, geographic reach, and customer base, and a bigger pool of skilled manpower. As per the scheme of amalgamation, shareholders of CBoP received 1 share of HDFC Bank for every 29 shares of CBoP. Third Combination is taken as Vodafone & Hutch Merger. Fourth combination is of Goetz India and Federal Mogul. Goetz India Founded in 1954, Goetz India began as a joint venture of Anil Nanda Group and FM. Goetz was the largest domestic manufacturer of piston rings and pistons. Fifth and final merger for study is HP and Compaq merger. The company began in the year 1938 when two electrical engineering graduates from Stanford University called William Hewlett and David Packard started their business in a garage in Palo Alto. In a year's time, the partnership called Hewlett-Packard was made and by the year 1947, HP was incorporated. Compaq company is better known as Compaq Computer Corporation. This was a company that started itself as a personal computer company in the year 1982. The name of the company came from "Compatibility and Quality"

The most often mentioned human risks related to the M&A situation are listed as follows:
- Voluntary turnover of key people and losses of expertise
- Job losses
- Lowered commitment and disloyalty
- Performance drops and lowered productivity
- Motivational problems
- Dissatisfaction, frustration, confusion and stress
- Dysfunctional behaviour and sabotage
- People refusing assignments
- Increased absenteeism
- Health problems
- Power struggles.

Merger or acquisition process contains uncertainty, instability, disappointments and creates lack of commitment. When studying personnel particularly, the voluntary labour turnover is one of the severest human risks caused by these negative emotions. Voluntary turnover is at its highest in the early stages of the M&A process. This is due to the uncertain and ambiguous situation where employees are uncertain of what will happen and in which time scale the changes will come true. As the industry is undergoing fast changes and the number of information professionals has increased, their developmental needs are also constantly increasing. Problems may stem from e.g. if the personnel and their requirements are not included in pre-merger planning, or decision making during the merging. There are various reasons that why problems exist or stem out in front of the employees. All those problems are studied in detail with the why reason and a ways to solve out those problems are also tried to find out. A recommended approach is also suggested instead of traditional approach in order to solve out the problems which consists of many alternatives and suggestions for various problems.

The employees section move around the four parts (a) identifying the factors affecting the post merger integration, (b) identifying the challenges and opportunities presented by this situation, (c) identifying the managerial actions that can be taken, and to (d) explaining the dynamics between (a-c), as well as their effect on the possible outcomes. The success of a merger and acquisition depends on how well an organization deals with issues related to its people and cultural integration.

Major Human Related issues involved in any merger or acquisition activity starts with lack of communication which further moves on the lack of training. People face many HR related issues just because of lack of proper communication. Mergers and Acquisitions are now moved from a concept to the actual implementation for the companies to become a big giant. Theoretically there are various terms with different meanings but practically they are used interchangeably or as synonyms. Various types of mergers like horizontal vertical conglomerate or reverse mergers serve different purposes for which they are made. The various factors which compel any company to acquire or to
be acquired decide the type of merger required for the particular company. India has faced a very fast moving trend towards merger/acquisition. Cross-border mergers are now a common phenomenon. If we see the basic impact over the management all the analysis reveals that mergers or acquisition is a path to get two motives financial or value maximizing and managerial non value maximizing motives to be fulfilled. In most of the cases financial motives are easily fulfilled as every merger or acquisition is done with proper planning by the top management people. They are very much or at most concerned with the money objective which they realised by many means either by reducing cost or removing work force or by reducing cost of buying of products or services. Synergies are broadly divided into three categories:

1) Universal which is generally related to pre deal phase which is obtained by generally each and every merger deal.
2) Then next is Specific Synergy which shows the combination of task force teams which is during the transactional phase.
3) Then the last one is Unique Synergy which is generally related to the combination of complex technologies and is realized only by the expert merger deals only in a very format way.

Mergers are divided into four basic categories operational mergers which is taken to gain operational benefits from the organization. Takeover merger which is conducted to take over the sick or in debt companies for their own benefits. Then comes to mergers of equals, this is a kind of merger in which ego and cultural clash occurs at a very high level. At the last is Transformational merger which is intended to get transform benefits from one organization to another. In case of Hutch Vodafone this is a kind of Expansion merger in which management has not faced much of the cultural problems because they have no separate office in India in which they have to face the problem of overlapping. Similar happened with the Federal Mogul and Goetri India. In case of HDFC and Centurian and UB Group and Shaw Wallace they have faced the problem of overlapping as that has acquired a separate running branch. So they have to take care of all those problems emerged due to the no of existing employees and overlapping of employees and positions in the organization. There are various tactics suggested for the management also so that they can easily handle the problems.

Motives behind M&A (Mergers and Acquisitions)

The dominant rationale used to explain M&A activity is that acquiring firms seek improved financial performance. The following motives are considered to improve financial performance: Synergies: This refers to the fact that the combined company can often reduce its fixed costs by removing duplicate departments or operations, lowering the costs of the company relative to the same revenue stream, thus increasing profit margins. Increased revenue/Increased

Market Share:

This assumes that the buyer will be absorbing a major competitor and thus increase its market power (by capturing increased market share) to set prices.

Cross selling:

For example, a bank buying a stock broker could then sell its banking products to the stock broker's customers, while the broker can sign up the bank's customers for brokerage accounts. Or, a manufacturer can acquire and sell complementary products.

Economies of Scale:

For example managerial economies have increased the opportunity of managerial specialization. Another example is purchasing economies due to increased order size and associated bulk-buying discounts.

Taxes:

A profitable company can buy a loss maker to use the target's loss as their advantage by reducing their tax liability.

Suggestions for Making Merger Successful

Involve HR at the earliest possible juncture and commit to addressing all issues and processes from a “people perspective.” HR helps to know what people actually thinks about the conditions and the company. It can become a good mediator between the company and the people factor. As soon as HR is involved clouds of confusion will almost clear and the company and people both are very clear about one another.

Develop a cultural assessment that helps the two groups identify their differences and appreciate all that they have in common. This assessment group helps to locate out the points of differences from both the sides. When two sides are not communicating directly from one another such kind of assessment groups help in revealing the reality from both the sides. Both the sides can easily explain what they want and where are the problems.

Develop forums – in all areas and at all levels - for sharing institutional history, vocabulary and acronyms, formal and informal networks, management and work styles, and the sources of institutional pride. It’s nearly impossible to develop a new allegiance without mourning the loss of former loyalties. Forums will help in workout the problems and finding out the various alternatives for the solutions as they have a distinct viewpoint outside from the management and the employees.

Identify expectations and problems and design a realistic process for addressing them. Remember, the people who do the job every day know how to solve the problems, so include employees from all departments and all levels in transition planning.

Develop a new strategic plan and unified goals, objectives, and overriding messages that reflect the newly formed organization. Communicate even when there is nothing much to say. Silence erodes trust, and rumors start when there is a lack of information. If legal considerations prevent early communication, then promise that you will share as much as possible as soon as you can.
Many companies have lost their key, skilled people because they could no longer wait for “the shoe to drop.” Sadly, in many cases it never does, but how are people to know what’s ahead if they’re kept in the dark? Communication of newly formed goals and objectives helps in clearing the feeling of distrust and frustration among the employees and they don’t easily think to change the shoe unless and until it is very essential and no other option left.

Merger is the process which is not easily acceptable by all. If reasons are known to every body people are convinced they can easily think and accept the new changes and discuss all the rationale decisions.

Be sure that transitional teams are developed very early on for all pivotal areas and layers of the organization, and that team members are fully representative of the employee base. Facilitated sessions are the most successful because it’s easier for someone who does not have a stake in the outcome to be completely focused on the process. If in the transitional team any area or any group is left and not included than those people are obviously have problems which may spread like anything in the whole organisation.

Based on cultural assessment and mapping, use appropriate work teams to merge departments and make decisions regarding small issues (such as what forms to use) and larger strategies (such as how to handle customer service). While deciding upon best practices and new policies, cultural assimilation will be a by-product. Customers are treated as God because they are the only survival factors through which any business can exist. So in case of any merger or acquisition customer service should not be affected at all or if affected in an improved manner thereby increasing the chances of occupying the market share.

Provide leadership and supervisory training as though it were a completely new, start-up company -- because it is. For any mass transition leaders work as the guide on which they can rely even for their own existence. When true leaders are in front of them employees work as union which is beneficial for both management and the employees and if, leaders are misleading everything may turn up to negative and can be easily destroyed.

Label the transition activities as a learning process for all. It is a reminder that new territory is being experienced and goes a long way to explain the confusion and occasional chaos that will inevitably be present. Whenever there is a change it is for the betterment but many times it is misunderstood. Any person can’t easily accept the change unless it seems to be beneficial for him. Whenever a firm is occupied by any other firm the acquiree has to work as per the conditions of the acquirer. When employees take it as a learning phase they can easily go through the transition phase and will not face much problems whereas on the other side if an employee is pre-occupied with its own working style change will be very difficult for him to accept.

Set up periodic re-evaluations over the first two or three years that ensure that problems will be addressed long after the new organization is formed. This is for the management as well as for the employees, if they continuously re-evaluate their working they can work for the betterment and can learn many new things whereas management can easily evaluate their selection. Moreover they can easily put a check on the attrition rate also.

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Making use of the ‘Input Output Transaction Tables’, this paper analyses the trends in linkages of the Energy sector in the Indian economy over the period 1968-69 to 2003-04. Results show that there has been a gradual rise in the sectoral linkages of this sector. Barring Biomass, all the other Energy sub-sectors exhibit high Forward and Total linkages. In addition, Electricity and Petroleum also have high Backward linkages. In the light of recent energy crisis and the emergence of Energy as a ‘key sector’, an analysis of the same becomes imperative for relevant policy lessons to be drawn.

**Keywords**: Energy, Input Output model, Backward and Forward linkages, Power of dispersion, Sensitivity of dispersion, Key sector

I

Introduction

The Energy content in Indian economy, with its structural shift over the years from primarily an agro-based economy during 1970s to the emergence as dominant services sector during the late 1990s, is expected to have undergone a change. The structural transformation that occurred in the Indian economy over the decades was a consequence of the development process witnessed during different phases of five year plan periods. This has in turn been reflected in the changing sectoral composition of GDP.

Energy is an important input in economic activities\(^2\). Contribution of Energy services in an economy is marked by a wide variety of issues. The quantum of Energy requirements however, depend upon several macroeconomic aspects, its structural imperatives and direction of flow of Energy into different sectors collectively contributing to the value added in the economy. With the growing changes in the economy, the linkages of Energy sector to different sectors of the economy are therefore, an important aspect of the growth story\(^2\).

Per capita Energy consumption in India was found to be at a level of 439 kgoe during 2003-04. The projected per capita Energy consumption of India (with @ 8% GDP growth) is expected to be at a level of 1250 kgoe during 2031-32, which will be even less than the world average of 1688 kgoe during 2003. In order to support the projected GDP growth of 8% through 2031-32, India’s primary Energy supply will need to increase by 4 to 5 times and its electricity generation capacity by 6 to 7 times of their 2003-04 levels. Percentage share of Energy mix indicates that coal (currently at 51%) will remain the dominant primary Energy source to be closely followed by Oil (currently at 36%) and Natural Gas (currently at 9%). Considering the resource endowment of the country and various supply options, it is projected that import dependence of Energy in 2031-32 could be as low as 29% and as high as 59% depending upon the emerging Energy mix in the economy. However, on individual basis the import dependence of oil is likely to be the highest at a level of 93% from the current level of over 70% (GOI 2006). Since, presently, over 70% of our crude oil is met through imports, the numbers arising from high oil prices will look positively threatening for the economy. Pricing of Energy products, therefore, constitutes a critical element in the entire Energy value chain.

The plan of the paper is as follows: Section II carries out the theoretical background of growth theories, Input Output framework (IO), methodology and the data sources. The empirical results have been tabulated in section III. Finally, section IV summarizes the results with some comments on policy implications.

II

Theoretical considerations

Energy sector in the country has broadly developed under public sector initiative barring the initial few years of independence. The story of growth of Energy sector is therefore, associated with a series of perceived economic and social goals of the country likely to be promoted with the expansion of activities under the public sector. Considering the limited base of entrepreneurship, and large scale investment required for Energy sector in the initial years, Government continued expansion of its role as a development strategy which finally gave central control to the state in the entire value chain of the Energy sector. This trend continues even after the liberalization process of early nineties though with some progressive changes in the policy initiatives which entails involvement of private sector in the Energy sector\(^1\).

**Growth theories**

Scholars (Nurkse, 1953; Rosenstein Rodan,1943; Hirschman,1958) argue that linkage analysis and investment decisions in the economy entail discussions into the theoretical explanations given by the proponents of balanced growth theory (BG) and unbalanced growth theory (UBG). BG explains simultaneous expansion of a large number of industries in all sectors and regions of the economy. As a large number of industries develop simultaneously, each sector generates a market for the other. It further argues that demand for one product is generated by the production of others. However, it acknowledges the fact that BG approach is beyond the resources of most the poor countries besides, BG within a closed economy rather than specialization and...
trade contradicts comparative advantage. UBG theorists argue that sufficient resources can not be mobilized by Government to promote widespread, coordinated investments in all industries. Proponents of UBG, specifically Hirschman, believe that UBG is necessary to induce investment decisions, economize on the principal scarce resource, i.e. decision making process and proper sequence of investment decisions. This objective can be attained by following a policy of unbalanced investment. In operational terms, the crucial question is: How to determine the proper sequence of investment decisions in order to create the required amount of imbalance in the right activities? Relevant for this strategy is the concept of ‘linkages’, as discussed by Hirschman (Kaur, 2003; Hazari, 1970)

**Input Output framework**

Input-Output framework is used here to analyze and highlight the linkages between the Energy sector and the rest of the industries in the country. The analysis is based upon the concept of inter sectoral “linkages” which emphasizes the importance of identifying the key sectors which have strong technological linkages with other sectors in order to stimulate economic growth.

Existing literature on economic development generally suggests that sectors with high linkages play an important role in initiating the process of economic development and diversification of industrial structure of the economy and that substantial investment shall be made in these sectors. It is therefore, relevant to assess whether the investment decisions of Energy sectors follow the theoretical explanations as brought out above.

Leontief’s (1966) seminal work on Input-Output framework offers an empirical analysis of production of goods and services in an economy. This in turn seeks to determine what can be produced and quantity of each intermediate product which must be used up in the production process, given the quantity of resources available in the economy and the state of technology. The empirical evidence of the linkages of each of the sub sectors of Energy to the rest of the economy as mentioned subsequently is therefore, based on the model of Leontief Inverse.

**Input Output (IO) Model**

The derivation of both linkages and multipliers is performed through the Input-Output analysis. According to IO theory, output is related to final demand, as given by the usual Input-Output equation.

\[ X = (I-A)^{-1}Y \]

where \( Y \) is the vector of final demand, \( X \) is a vector of total output, \( I \) is the \((nxn)\) identity matrix in an economy identified as having \( n \) productive sectors including Energy sectors. \( A \) is the technology matrix of input output coefficients and \((I-A)^{-1}\) is the inverse matrix, termed as Leontief Inverse matrix.

**Linkages**

Linkage concept was first introduced in 1958 by Albert O. Hirschman. Input Output analysis allows quantification of both direct and indirect effects in terms of linkages. Three types of linkages are measured through the use of input-output models: (i) Backward Linkages (BL) (ii) Forward Linkages (FL) and (iii) Total Linkages (TL). Key sectors according to Hirschman are those sectors with both backward and forward linkages greater than unity. 

In the framework of Input-Output model, industry production is expected to exhibit two different types of effects in the economy. These are absorption effects and diffusion effects. When increase in production in one industry creates an increased demand for inputs from other industries, this demand is normally referred to as BL. This also analyses how a change in final demand in one sector affects the final demand in the economy. BL is also known as output multiplier. An industry with higher BL than other industries means that expansion of its production is more beneficial to the economy in terms of causing enhanced induced productive activities. This explains the process of absorption effect. Similarly, increase in production in industries lead additional output from other industries in order to supply inputs required to meet the enhanced demand. This supply function is known as FL and determines how changes in the rest of the sectors influence this particular sector. An industry with higher FL than other industries means that its production is relatively more sensitive to changes in other industries’ output. FL is also known as input multiplier. This explains the process of diffusion effect. The process of absorption and diffusion effects together provides a clear picture about the ‘key’ sectors in an economy.

The concept of Hirschman linkages are therefore, at play when ongoing activities “induce” more activities to be taken up. As BL effects are related to derived demand, FL effects are related to output utilization. It therefore, follows that by concentrating on the sectors with high forward and backward linkages, the process of industrialization can be enhanced.

**Measurement of linkages**

Hirschman had used linkage indices developed by Rasmussen (1956) to identify the key sectors and study the development strategies. Let \( A = [a_{ij}] \) be a matrix of direct inputs in the usual input – output system and \( B=(I-A)^{-1}=[b_{ij}] \), be associated with Leontief’s inverse matrix. Let \( B_j \) and \( B_i \) be the column and row multipliers of this Leontief Inverse. These are defined as

\[ B_j = \sum_{i=1}^{n} b_{ij} \quad \text{and} \quad B_i = \sum_{j=1}^{n} b_{ij} \quad \text{……..(1)} \]

Let \( V \) be the global intensity of the Leontief inverse matrix:

\[ V = \sum_{i=1}^{n} \sum_{j=1}^{n} b_{ij} \quad \text{……………………………..(2)} \]
Rasmussen(1956) has proposed two types of indices drawing on the entries of Leontief inverse matrix.

**Backward Linkage**
The backward linkages also give the power of dispersion (Drejer, 2003). The power of dispersion for backward linkages BL$_j$ is defined as follows:

$$BL_j = \frac{1/n B_j}{1/n^2 V} = \frac{B_j}{1/n V} \quad \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ld ....
### Year 1978-79
- **Energy sub sectors:**
  - **1. Iron, Steel foundries:** 1.538273
  - **2. Agriculture machinery:** 1.493892
  - **3. Banking:** 1.456997

#### Power of Dispersion
- **Year:**
  - **1968-69:** 3.000000
  - **1973-74:** 3.500000
  - **1978-79:** 4.000000
  - **1983-84:** 4.500000
  - **1989-90:** 5.000000
  - **1993-94:** 5.500000

### Year 1983-84
- **Energy sub sectors:**
  - **1. Coal Tar products:** 1.364604
  - **2. Inorganic heavy chemicals:** 1.344222
  - **3. Agriculture machinery:** 1.318836

### Year 1989-90
- **Energy sub sectors:**
  - **1. Synthetic fibre, resin:** 1.597259
  - **2. Iron and steel casting and forging:** 1.473345
  - **3. Iron steel and ferro alloys:** 1.383010

### Year 1993-94
- **Energy sub sectors:**
  - **1. Iron and steel foundries:** 1.433597
  - **2. Iron and steel casting and forging:** 1.386427
  - **3. Pesticides:** 1.342741

### Year 1998-99
- **Energy sub sectors:**
  - **1. Communication:** 1.636992
  - **2. Iron and steel foundries:** 1.312674
  - **3. Electronics Equipments:** 1.302613

### Energy sectors
- **Energy sub sectors:**
  - **Electricity:** 1.088836
  - **Petroleum:** 1.073310
  - **Coal:** 0.863145
  - **Bio mass:** 0.694372

### BL of Energy sector
- **Energy sub sectors total Backward Linkage:** 4.920667

### BL of Energy sector (incl TV)
- **Energy sub sectors total Backward Linkage:** 4.633499

* The figures within brackets indicate the percentage share of Energy sector’s BL as a percentage of total BL during the year.

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A graphical representation of the trends in backward linkage of Energy sector and its sub sectors is given in Figure 1.

**Figure 1(a): Trend in BL of Energy sector**

**Figure 1(b): Trend in BL of Energy sub sectors**
Some observations that emerge from analysis of Table:1 and the Figures 1(a), (b) and (c) are:

1. While food had the highest BL in 1968-69, its relative importance declined over time. Thereafter, manufacturing sectors such as basic metals, Iron and Steel foundries and inorganic chemicals took over and emerged as sectors having high Backward Linkages. However, since the early 1990s, the picture changed and services took over.

2. Even though in absolute terms, BL index for Energy sector has gone up from 4.26 in 1968-69 to 5.15 in 2003-04, the overall share of BL has significantly reduced to less than half at a level of 3.96% from 8.19 % during the same period. The decline in BL index of Energy sector from 4.37 to 3.44 during the period 1993-94 to 1998-99, seems to have been more than offset by its rise to a level of 5.15 during 2003-04. Barring the initial (1968-69 to 1973-74) and the recent (1998-99 to 2003-04) periods of upward shift, the overall BL index does not exhibit any significant change during the intervening period. It is further observed that within the Energy sector, BL index has been predominantly affected by Electricity and Petroleum sub sectors and to some extent by Biomass during the initial period. The other two sub sectors viz. Crude oil and Natural Gas exhibit weak BL.

3. Amongst the Energy sub sectors, Electricity has emerged as the one with the highest BL index during the entire period barring the initial few years. The relative importance of Electricity has gone up significantly with its BL index having increased from 0.91 to 1.14.

4. Next to Electricity, the Petroleum sub sector has emerged with a relatively high BL varying its index within a band of 0.89 (1989-90) to 1.26 (1973-74). Petroleum has consistently exhibited a strong BL (>1) from the beginning of the period with a marginal dip during 1989-90. However, one interesting feature is that the strength of BL index (even though >1) is on a decline over time.

5. Crude Oil and Natural Gas has been consistently exhibiting a weak BL index. However, a sudden increase of BL index for Crude Oil and Natural Gas is observed during the period 2003-04 to a level of 1.43 as against 0.62 during the previous period 1998-99. Increase of BL index for Crude Oil and Natural Gas as shown in Figures 1(a) to (c) during the period 1998-99 to 2003-04 is attributed to the fact that during the year 2003-04, Natural Gas (NG) sub sector of Energy was separately created in the Input Output table 2003-04 due to significant increase in NG production. During this period, production of NG increased by 20% as compared to about 1% of crude oil. The spurt in BL index for Crude oil and Natural Gas may therefore be attributed to enhanced production activities in NG sub sector.

6. The relative importance of Coal in terms of BL index has been nominal when compared to the other sub sectors viz. Electricity and Petroleum. There appears to be a sudden drop in BL index during 1978-79 for Coal sub sector to a level of 0.30 as against 0.64 during the previous period 1998-99. The country commenced its coal imports effective 1978-79. The percentage production share of coal as primary source of conventional Energy started declining during the period from 54% in 1970-71 to 50% in 2006-07 (Energy Statistics, 2007).

7. Even though the hierarchical position of Bio-mass has declined during the recent years in the Energy basket, it shows otherwise a steady trend with a marginal increase in BL index during the period 1978-79 to a level of 1.34, when the index was highest amongst all the other sub sectors. Finally, none of the Energy sub sectors exhibited high BL index to the extent of appearing amongst the top ten sectors during the entire period.

**Forward linkages (FLs) hierarchies**

During the reference period, the top three sectors with high forward linkages of the economy and the forward linkages of Energy sectors were found to be as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Rank</th>
<th>Sector</th>
<th>Sensitivity of dispersion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1968-69</td>
<td>1</td>
<td>Trade</td>
<td>3.126098</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Cash Crops</td>
<td>2.008177</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Electricity</td>
<td>1.793928</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Energy sub sectors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Coal</td>
<td>1.610061</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>Crude oil and Natural Gas</td>
<td>1.073762*</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>Petroleum</td>
<td>0.858985</td>
</tr>
<tr>
<td></td>
<td>37</td>
<td>Biomass</td>
<td>0.727632</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Energy sub sectors total Forward Linkage</td>
<td>6.064369 (11.7)*</td>
</tr>
<tr>
<td>1973-74</td>
<td>1</td>
<td>Trade</td>
<td>3.472713</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Iron, Steel Foundries</td>
<td>2.212073</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Electricity</td>
<td>1.820531</td>
</tr>
</tbody>
</table>

Table 2: Hierarchical order of FLs of Top three sectors and Energy sub sectors
A graphical representation of the trends in forward linkage of Energy sector and its sub sectors is given in Figure 2.

Figure-2(a): Trend in FL of Energy sector

Figure- 2(b): Trend in FL of Energy sub sectors

Figure- 2(c): Trend in FL of Energy sub sectors (indexed)

Few interesting observations that emerge from Table 2 and Figures 2(a) to (c) above are as follows:
1. Since 1968-69, Trade sector has remained at the top with respect to high FL. Further, the magnitude of this FL increased from 3.12 to 6.54 in 2003-04. Electricity is one of the sectors that had high FL in 1968-69. Further, it continues to be one of the top three sectors with high FL. The FL of Electricity increased from 1.79 in 1968-69 to 4.27 in 2003-04. Cash crops which showed a high FL in the beginning of the period lost its prominence during the subsequent years and were slowly replaced by Iron and Steel foundries of the manufacturing sector during the period up to 1983-84. Thereafter, services came up as one of the top three sectors.

2. FL of Energy sector shows an overall increasing trend. There is a significant difference in magnitude of FL indices of the Energy sector as compared to its corresponding BL indices. During the period, the average share of FL (11.4%) is found to be double that of BL (5.8%). This in turn means that in order to determine the overall linkages of Energy sector within the Input Output framework, the FL characteristics of this sector plays an influential role. In other words, the sensitivity of dispersion of Energy sector with the rest of the economy is significantly higher as compared to its absorption effects. Even though, in absolute terms, FL index of Energy sector has gone up from 6.06 in 1968-69 to 15.4 in 2003-04, the percentage share of FL has however, remained unchanged at a level of around 11% throughout the period with an exception of around 14% during the year 1983-84. Within the Energy sector, Electricity, Crude Oil and Gas followed by Petroleum sub sectors together predominantly influence maintaining the overall upward trend of FL index. Coal and Bio-mass exhibit a declining share in overall composition of FL index for the Energy sector.

3. The relative importance of Electricity has gone up with a significant increase in FL index by about 140 % during the entire period. The major jump of around 79% in the FL index occurred in 1989-90 from a level of 2.63 during the previous block year of 1983-84. However, during 2003-04, a decline of around 24% in FL index was observed from a level of 5.65 in 1998-99. Within the overall FL index of Energy sector, electricity broadly maintains its steady share at a level of around 28%.

4. Coal which started with a high initial FL of 1.61 in 1968-69 (next to Electricity) declined by around 57% to 0.68 in 1978-79 before picking up again to 2.00 during 2003-04. Even though Coal restored its relative importance through a higher FL index, the comparative share of FL within the overall Energy sector declined from around 27% to 13% between the two terminal years. Interestingly, around the same period percentage production share of coal amongst the primary sources of conventional energy came down from 54% to 49%. (Energy Statistics, 2007). The economy also saw the beginning of coal imports from the year 1978-79 onwards.

5. Crude Oil and Natural Gas which started with a high initial FL of 1.07 in 1968-69 next to Coal continued its upward trend during the entire period. Its relative importance through an increasing FL index reaching a level of 4.14 in 2003-04, was associated with the rising share of around 27% in the same year as against 18% in 1968-69. Contrary to Coal, Crude Oil and Natural Gas increased its production share of amongst the primary sources to 12% from 10% while at the same time the rising trend of imports of Crude Oil continued unabated in the economy.

6. In terms of percentage point increase (12 percent point) in FL within the overall Energy sector, Petroleum products were found to be ahead of other sub sectors. Petroleum products, which started with a relatively low initial FL of 0.86 in 1968-69, exhibited a constant upward trend during the entire period. Its relative importance through an increasing FL index reaching a level of 4.01 in 2003-04, was associated with the rising share of around 26% in the same year as against 14% in 1968-69.

Further, on overall basis, the ranking of each of the Energy sub sectors in terms of FL is significantly higher than its corresponding BL indices.

**Total linkages (TLs) hierarchies**

During the reference period, the total linkages of top three sectors and the Energy sectors were found be as follows:

Table3: Hierarchical order of TLs of Top three sectors and Energy sub sectors

<table>
<thead>
<tr>
<th>Year</th>
<th>Rank</th>
<th>Sector</th>
<th>Total Linkage value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1968-69</td>
<td>1</td>
<td>Trade</td>
<td>3.818059</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Iron, Steel Industries and Foundries</td>
<td>2.884342</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Other basic metal industries</td>
<td>2.819317</td>
</tr>
</tbody>
</table>

Energy sub sectors

<table>
<thead>
<tr>
<th>Rank</th>
<th>Sector</th>
<th>Total Linkage value</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Electricity</td>
<td>2.707505</td>
</tr>
<tr>
<td>13</td>
<td>Coal</td>
<td>2.249422</td>
</tr>
<tr>
<td>30</td>
<td>Petroleum</td>
<td>1.903217</td>
</tr>
<tr>
<td>37</td>
<td>Crude oil and Natural Gas</td>
<td>1.746888</td>
</tr>
<tr>
<td>39</td>
<td>Bio mass</td>
<td>1.717929</td>
</tr>
</tbody>
</table>

Energy sub sectors Total Linkage: 10.324961 (9.92)
A graphical representation of the trends in Total Linkage of Energy sector and its sub sectors is given in Figure 3.

Figure-3(a): Trend in TL of Energy sector

Figure- 3(b): Trend in TL of Energy sub sectors

Figure- 3(c): Trend in TL of Energy sub sectors (indexed)

Some observations –

1. Trade has all along dominated its importance in terms of its TL from the beginning of the period and with substantial increase from 3.81 from 1968-69 to 7.19 in 2003-04. However, its percentage share in TL has dropped marginally to 2.7% in 2003-04 as against 3.6% in 1968-69. Manufacturing sectors viz. Iron and Steel Foundries which continued its dominance after
Trade till 1983-84 gave its way to Services sector till 1993-94. Thereafter, again, during 1998-99 Iron and Steel Foundries sector briefly reappeared as one of the top three sectors to be replaced by Petroleum sector in 2003-04. Basic Metals barring the initial two years, did not find much significance during the subsequent periods. 1978-79 onwards, the total linkages borne by Electricity based on its position on backward and forward linkages, is one of the top three in terms of its importance.

2. There is an overall increasing trend in TL for Energy sector. This is mainly influenced by the magnitude of FL of this sector as indicated in course of previous analysis. The magnitude of TL of energy sector has doubled to a level of 20.6 during 2003-04. However, the percentage share of Energy sector within the overall linkages, declined from 9.92% in 1968-69 to 7.92% in 2003-04. A sharp decline (36%) in the TL share was observed during 1989-90 when share of fall in BL (-51%) was significantly more than the fall in FL (-27%).

3. The relative position of Electricity improved from 2.71 in 1968-69 to 5.35 in 2003-04 having shown an increase of around 98% during the reference period. TL share of Electricity during the same period was maintained at an average level of 2.6% showing a marginally downward trend in 2003-04 due to fall in both BL and FL indices. Electricity continued to be top energy sub sector during the entire reference period.

4. Magnitude of TL of Petroleum has more than doubled from a level of 1.9 in 1968-69 to 5.09 in 2003-04 to find a position as the second most important Energy sub sector during the recent period. This significant rise in TL is almost entirely attributed to more than three fold increase in FL index of Petroleum as compared to negligible increase in the corresponding BL index. However, percentage share of TL seems to have marginally fallen from 1.84% in 1968-69 to 1.54% in 2003-04.

5. Coal and Lignite which started its TL index from 2.25 in 1968-69 next to Electricity, dropped significantly to 0.99 in 1978-79 before restoring its position to 2.74 in 2003-04. The drop in TL index in 1978-79 was accompanied by corresponding drop in both BL and FL indices. Drop in BL (-63%) was more significant than the corresponding drop in FL (-36%) physically evidenced by decrease in consumption of coal by almost all the major industries resulting in resorting to imports for the first time in the country. Percentage share of Coal in TL broadly remained at an average level of 2% during the reference period.

6. Crude Oil and Natural Gas collectively exhibiting a TL of 5.58 in 2003-04. This even exceeds the TL of Electricity during the same year. However, with increased production activities of Natural Gas, this sector has since emerged as a distinct sector reorganized since 2003-04. When compared with the initial TL of 1.75 in 1968-69, Crude Oil and Natural Gas sector has more than doubled its index.

7. The low TL rank of Bio mass at a level of 1.71 in 1968-69 shows a marginal increase to 1.84 in 2003-04. However, percentage share of its TL distinctly declines to little above half from 1.65 % in 1968-69. In other words, relative importance of Bio mass is clearly on a decline during the reference period.

The analysis of TL comprising of absolute BL and FL of Energy sector jointly gives an indication as to how the outputs of Energy sector are distributed (both backward and forward) to other sectors of the domestic industry.

IV Conclusion and Policy Implications

In this paper, an attempt has been made to assess the role of the energy sector in initiating the process of economic development and diversification of the industrial structure of the economy via its linkages. However, while interpreting these results, few limitations of the analysis must be kept in mind. For instance, the Input Output analysis does not take account of the price induced changes in technical coefficients. Further, it assumes that whatever increases in final demand takes place, it will be met by its corresponding increase in the output of the sector. But, if capacity is a constraint, then gestation lag would imply that output increase only gradually, not instantly. Although these effects are not captured by the Input Out put analysis some interesting conclusions emerge. The results reveal that

(i) though Petroleum and Electricity sector still have high backward linkages (>1), the overall share of energy sector in backward linkages has significantly reduced from over 8% in 1968-69 to a little under 4% in 2003-04

(ii) the forward linkages have generally been high for Electricity, Petroleum, Crude oil, and Coal and Lignite. Further, the percentage share of Energy sector in forward linkages has increased from 10% in 1989-90 to almost 12% in 2003-04. It is also interesting to note that the average share of energy sector over the period 1968-69 to 2003-04, in forward linkages (11.4%) is almost double that of backward linkages (5.8%)

(iii) there is an overall increasing trend of energy sector in total linkages. It is interesting to note that each of five sub sectors of energy has a total linkage greater than 1. However, it is worth mentioning that despite its important position, the percentage share of Energy sector’s TL as a percentage of total TL has reduced from 9.9% 1968-69 to 7.9% in 2003-04.

The results thus reveal that the energy sector has indeed played a very important role in establishing a strong base for the development of India’s industrial structure. This makes it all the more important that this sector with substantial linkages should perform efficiently, more so, in the light of the recent oil price shocks.
Apart from oil price shocks, the energy sector is faced with numerous other challenges. The priorities of each of the sub sectors have been identified in XI plan document (2007-12) of Government of India. The need for a coherent policy framework encompassing on all its sub sectors has also been initiated by Government of India and ‘Integrated Energy Policy’ report (2006). The major concerns expressed in the report are to (i) price the Energy sources in such a way as to provide right incentives for utilizing it efficiently, (ii) create appropriate competitive pressure for enhancing efficiency in the sector, (iii) emphasize on end-use Energy efficiency measures, (iv) provide access to clean and convenient Energy to all sections of society at an affordable price, (v) effectively target the subsidies, (vi) device strategies for promotion of renewable Energy, (vii) intensify R&D efforts for Energy supply options and (vii) take appropriate measures on Energy security.

With the growing evidence of Energy linkages through its various sub sectors and the consequential need for the country for maintaining its sustainable growth, domestic policies are expected to be gradually aligned towards development of this sector. Export orientation of petroleum business during the recent past is an example of the enhanced international linkages, the benefits of which can not be fully captured within the framework of above analysis. Similarly, the other sub sectors of Energy viz. nuclear, hydro power, alternative sources of Energy (wind, solar etc.), non conventional sources of Energy (CTL, GTL, gas hydrates etc.) which are expected to play enhanced roles in deciding the Energy mix also gradually will come into play in linkage analysis in days to come. This is important keeping in view of the recent developments in the areas of climate change and the issues associated with Energy security of the country. Further, development policies towards these sub sectors of Energy will have impacts on the remaining industries which can be observed by the policy makers. In overall view, the country needs to implement a set of measures that bring about improved economic management on mineral and petroleum resources and a policy environment conducive to healthy economic growth. Once these observations on Energy linkages have been made, it is also important to validate these observations with the overall changes in the economy and also establish the changes in terms of intra sectoral dependence. This warrants for a separate analysis, which will be addressed in a further study.

References


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1 In the scheme of classification adopted in the ‘Input Output transaction table’(IOTT) by Government of India, Coal, Crude Oil and Natural Gas have been defined as primary production activity under mining and quarrying sector. Petroleum, Electricity and Biomass have been defined as secondary production activity under manufacturing sector.

2 Energy sector can be categorized into primary as well as secondary sources. Fossil fuel (Coal/Oil/Gas) can be broadly termed as a primary source of Energy. The other alternative sources (Wind/Solar/Biomass/Hydrogen/Nuclear) are used in varied degrees in production of Electricity. Electricity is therefore, known as secondary source of Energy. Energy mix in an economy is essentially a combination of primary and secondary resources which together flow into different sectors as intermediate use and also as final consumption.
Continuation of public sector expansion and dominant role of the Government at a substantial public cost in the business areas where resources can be otherwise mobilized by private sector, has been an area of much debate world over.

Linkages as defined by Bocoum (2000) may be classified as strong, intermediate or weak depending upon the following:
Strong linkages index $\geq 1$
Intermediate $0.9 = \text{or} < \text{linkage index} < 1$
Weak linkages index $< 0.9$

This is evident from the rising imports of Crude Oil and changing pattern of Natural Gas usage.