Executive summary

Transport is an important component in the functioning of any organization. At Bharat Electronics Ltd., Ghaziabad, Transport department is instrumental in providing Transport (Hired Buses & Hired Taxis) to its employees and customers to perform official duties in NCR (National Capital Region) and also for the outstation duties. At present, on an average sixty taxis per day are being hired to facilitate the daily movement of employees & customers. Demand for taxis has increased significantly in the past one year due to increase in our outbound projects. Till date Transport department of Bharat Electronics Ltd.-Ghaziabad is using conventional way of managing transport activities like vehicle booking, vehicle allotment, filling logbook, verifying logbook and billing etc. Increased rate of employee retirement as well as vehicle demand has made it difficult to manage with the conventional system. Initiative was taken by Transport department with the help of Corporate Information System for development of an automated transport management system which has been incorporated in the ESS (Employee Self Service) module of SAP system at BEL – Ghaziabad for ease of transport operations. The initiative has been well taken by the employees as well as management for improvement of the total transport system which has resulted in not only the efficiency of the system but has improved the quality of service provided to customers. Transport service is sort of third party logistics wherein service quality depends upon the third party providing services.

1.Introduction

1.1 Industry Profile:

India has the third largest Army, the fourth largest Air force and the seventh largest Navy in the world. India is among the top 10 countries in the world in terms of military expenditure and world's largest arms importer. India allocates about 1.8% of its GDP towards defence spending, of which 40% is allocated to capital acquisitions and only about 30% of India's equipment is manufactured in India, mainly by public sector undertakings. Even when defence products are manufactured domestically, there is a large import component. All these factors make the Indian defence market one of the most attractive globally and provides an immense opportunity for both domestic and foreign players in the defence sector.

The post-independence industrial policy placed the production of defence items in the reserve List making it mandatory for production to be taken up only by the public sector. The sector for the first time was opened up to 100 percent Indian private sector participation in 2001. Reforms in the defence industrial sector and the acquisition policy have been one continuous process since then, beginning with the formulation of DPP 2002 and its successive revisions, formulation of the Defence Production Policy and the issuance of Joint Venture guidelines.

Indian defence industry is dominated by defence public sector undertakings (DPSUs) and ordnance factories (OFs) which contribute about 90% of the total domestic defence manufacturing output. The 41 ordnance factories are spread across 26 different locations and employ close to 1,25,000 people. The DPSUs and OFs manufacture a wide spectrum of equipment including small arms and field guns, ammunitions, explosives, armoured vehicles, transport vehicles, clothing, parachutes and general stores. DPSUs account for approximately 65 percent of the total industrial output of the defence public sector enterprises.

Combined, the DPSUs and OFs have played a critical role in building a domestic industrial base in this sector as they typically outsource 20 to 25% of their production requirements to private companies. In addition to the public

undertakings, there is a small but growing number of medium large private companies that have already entered, or, are seriously evaluating entry into the market. These are in addition to about 6000 MSMEs that have largely depended upon the DPSUs for survival. The Indian defence industry's import export ratio is inferior to countries with a much smaller defence industrial base. India's arms imports are now almost three times as high as those of the second and third largest arms importers—China and Pakistan. India is among the top five arms importer, besides China, Pakistan, the UAE and Saudi Arabia.

Since opening up of the defence industry for private sector participation, the Department of Industrial Policy and Promotion (DIPP) has so far issued 222 Letters of Intents (LOIs) and issued Industrial Licences (ILs) to more than 150 companies for manufacture of a wide range of defence items. 46 companies have so far reported commencement of production. The licenses have been issued to the Indian private sector for manufacture of Military Aircraft, Unmanned Aerial Vehicles, Radars, Electronic Warfare Systems, Ship borne platforms, Armoured Vehicles etc. In the recent years, many Indian private industries have been involved in a small way with several defence 'Make' projects. These are Integrated Materiel Management Online

System (IMMOLS), Integrated Air Defence Command and control system (IACCS) Tactical Communication System (TCS), Battlefield Management Systems (BMS) and Futuristic Infantry Combat Vehicles (FICV). While (IMMOLS) and (IACCS) have been deployed, TCS, BMS and FICV are in the early stages of development. Award of major projects under 'Make' category to Indian private industries is a new beginning in Indian defence industrialization.

Larsen & Toubro, Tata group, Pipapav Defence and Offshore Engineering Ltd., Reliance Industries Ltd., Mahindra and Mahindra, Ashok Leyland Defence Systems, Piramal System and Technologies are some of the key Indian players in the defence industry.

1.2 Organization Profile

In 1954, in a newly independent India, the need was utmost to develop indigenous industry. The dream of a self-reliant India gave birth to many Public Sector

Undertakings. Bharat Electronics Limited (BEL) was one such dream, which has come a long way since then with the far-sighted vision of its pioneers, the dedication and hard work of its employees, support and faith of its customers and the Government of India. The Government's clarion call for 'Make in India' resonates with what BEL has been successfully doing for over 6 decades.

From humble beginnings in 1954, when BEL was set up in association with CSF, France (now, Thales), to manufacture basic communication equipment, BEL now produces a wide range of state-of-the-art equipment in fields such as Defence Communication, Radars, Naval Systems, C4I Systems, Weapon Systems, Homeland Security, Telecom & Broadcast Systems, Electronic Warfare, Tank Electronics, Electro Optics, Professional Electronic Components and Solar Photovoltaic Systems, BEL also provides turnkey system solutions. Civilian products from BEL include Electronic Voting Machines, Tablet PC, solar-powered traffic signal systems and Access Control Systems.

Starting from a single Unit in Jalahalli, Bangalore, BEL has established its presence across the country by setting up eight other Units – in Ghaziabad, Pune, Machilipatnam, Panchkula, Kotdwara, Navi Mumbai, Chennai and Hyderabad. Each Unit has a specific product mix and customer focus. BEL has also set up a wide network of offices and service centres countrywide as well as two overseas offices – at New York and Singapore.

BEL was established to meet the specialized electronic equipment requirements of the Indian Defence Services. While this continues to be its prime focus, the Company has a significant presence in the civilian market, too. BEL exports some of its products and services to a number of countries as well.

BEL has been laying great emphasis on Research and Development right from the early years. It has also been able to successfully partner as production agency with many DRDO labs. **From a meagre turnover of Rs.2 lakhs in 1956-57, BEL has grown manifold to record a turnover of Rs. 8,800 crores in 2016-17.**

BEL is not only a successful business story but also an organization which cares for people and society. Even before the term 'Corporate Social Responsibility' gained

currency, BEL has undertaken innumerable CSR activities and continues to do them with a lot of passion and commitment. BEL has set up educational institutions, including a special school for the mentally challenged. It has also set up hospitals, fine arts clubs and sports facilities. These and other welfare initiatives ensure a good quality of life for employees and their dependents. Some of these facilities also serve the local community. BEL is currently concentrating on promoting education, sanitation, health care, rural development, employment and enhancing vocational skills, while ensuring environmental sustainability.

'Clean and green' is true of every Unit of BEL. Concern for the environment is visible in the profuse greenery in all the Units. Afforestation, effluent treatment, used water recycling, generation and use of bio gas, rainwater harvesting, green buildings, setting up and using wind energy and solar energy power plants, to name a few, are some of the activities in this direction.

Awards galore have come BEL's way, recognizing its emphasis on excellence. Recent accolades include India Today PSU Awards for 'Best Global Presence Award', 'Eco Friendly Award' and 'Best R&D Innovation Award; Digital India PSE of the Year Award; Standing Conference of Public Enterprises (SCOPE) Meritorious Award (Gold Trophy) for HR Excellence for Best Practices in Human Resource Management; Mentor Graphics Silicon India Leadership Award for 'Best VLSI/Embedded Design in Defence/Aerospace Sector'; International Aerospace Award for 'Innovation'; SAP Award for Customer Excellence; SODET Gold Award for 'Technology Innovation'; Government of Karnataka 'State Export Excellence Award' in the Electronics & Communications (excluding IT/BT & ITES sector) Medium/Large Industries sector; and Raksha Mantri's Awards for Excellence.

1.3 Objective of the Study

The main objective of the study was to study and analyze As-is –Process of transport system at BEL-Ghaziabad wherein overall system of right from booking of vehicle to allocation of vehicle, logbook filling, logbook verification and billing was studied in detail. Being a very old conventional type of system of a Government organization, it required a drastic change in the process to make it more efficient using information technology as a tool and making it more productive consuming less and less input of resources like manpower. Due to the increased rate of retirement of employees and no fresh recruitment at worker level, it became necessary to change the old process.

2.0 Literature Review

BPR (Business Process Reengineering)

BPR is known by many names, such as 'core process redesign', 'new industrial engineering' or 'working smarter'. All of them imply the same concept which focuses on integrating both business process redesign and deploying IT to support the reengineering work.

Business Process Reengineering (BPR) is not an unknown word to the business world. It has been more than two decades since it was introduced for the first time as a tool for change in American business sector. Hammer (1990) was the first person who introduced BPR and is considered as a father of BPR. BPR is a tool used for bringing radical change in the business process and was adopted initially by the private sector (US- based firms) in early 1990s as a replacement of total quality management (TQM, a Japanese approach) (Hammer and Stanton (1995)). BPR is said to be a new approach for the process management that brings radical change (improvement) in organizational performance.

Hammer, M. & Champy (1993) thinks it as radical change and rethinking of overall process to achieve overall performance in terms of cost, quality, service and speed, while Davenport & Short (1990) calls it as a process of analysis and workflow redesign in an organization. Talwar (1993) on the other hand emphasized on rethinking and reconstructing the organizational structure, workflow and value chain.

In the era of technology, globalization and rapid change in customer's need, it is essential to realize the importance of change. Thus, Change is becoming necessity in today's environment of massive competition and drastic technological changes thus, it is of great concern for the management and consultants to plan accordingly otherwise, they (company) will get out of competition (out of market). BPR is an important tools used for incorporating change and had proved to be the significant approaches due to its features and the results produced by the effective utilization of these approach over decades. Majed. Al-Mashari, Irani, and Zairi (2001) stated that, every firm wants to achieve efficiency and effectiveness in reducing cost of production, improving

quality of product and also by providing timely and speedy products and services to the customer thus, these requirements are well delivered by BPR. Thus, BPR is the only (consistent) tool (if applied properly) will produce ground breaking results as said by Weerakkody, Janssen, and Dwivedi (2011).

Gunasekaran and Kobu (2002) argued that the important feature of BPR adaptation is because of its ability and utilization of Information technology (I.T) and computation. It has been further stated that the gaining acceptance of BPR as a tool for change is due to its openness towards the technology. Thus, the major role played in the success of change process (BPR) is because of its development and ability to incorporate latest technology.

However, on the other hand, failure rate recorded by Cao, Clarke, and Lehaney (2001) is as high as 70%. Marjanovic (2000) also found the failure rate of BPR project is as more than 70% therefore, planning and implementing the BPR properly is necessary. This paper will focus on reviewing the available literature on BPR and will focus on the overall development of BPR concept, theories, models, approaches and outcomes, and success and failure causes. Every reengineering practitioner and BPR experts have their own way of explaining and using this tool. Similarly, there are differences in the approaches towards BPR and even various authors has shown differences in the concepts as well as definitions of this approach (which will be discussed in detail in this paper).Main objective behind this type of study will be to provide a comprehensive discussion on the overall work done in parts on BPR in different phases and to identify the gap so that the interested readers get a holistic insight of this concept and activities in most comprehensive manner as well as to identify the gap for further study in this field. Literature reviewed for this paper concentrated on identifying the need for change, tools and approaches used for bringing change in the organization and the findings of various studies conducted on the firms which utilized those tools for bringing change however, the main focus will remain on discussing BPR as a tool for change, introduction of BPR and development, approaches, methodology, success and failure factors, and comparison of BPR with other tools used for change.

BPR is the tool for change thus, it is important to construct a base regarding the need for change and why firms should bring change. The discussion below will start with the importance of change and then it will be followed by background of BPR, literature on BPR, approaches and applications of BPR in public as well as private sectors.

BPR as a tool for organizational change

Development of BPR

Bhandiwad (1998) argued that in 1970s people were after productivity while in 80s the trend shifted towards quality while since 1990s almost every organization is at least talking about ―process improvement‖, ―process redesign‖ or ―process reengineering‖ as a source (way) to cope with the dramatic changes in technology and competition. Among various techniques and management approaches BPR is new and most commonly used in this era of globalization and technology.

Venkartraman (1991) elaborates the birth of BPR in his study as for the first time effort of BPR was to align the I.T with strategy. This effort started in 1984 during research program at M.I.T. This was the first time that a proper procedure was developed and had dramatic results in the 1980's and 90's. Later on researchers and scholars had designed other process by studying and evaluating the outcomes as discussed by McKay and Radnor (1998).

Grey and Mitev (1995) concluded that there are three essential Cs in BPR i.e. customers, competition, and change. These Cs are in other word reasons why companies are adopting BPR. They want to satisfy customer's need and wants, achieve competitive advantage and to move with constantly changing environment.

T. H. Davenport and Short (1990); (Hammer, 1990) are the pioneers in the field of BPR who introduced this concept to the world and are known as the fathers of BPR. Hammer

& Champy (1993) defined Business process Research (BPR) as "the fundamental rethinking and radical redesign of business process to achieve dramatic improvement in critical contemporary measures of performance, such

as cost, quality, service and speed". Another definition of BPR was from T. Davenport (1993), "encompasses the envisioning of new work strategies, the actual process design activity, and the implementation of the change in all its complex technological, human, and organizational dimensions."

Changes in business process are named differently by various authors for example; Habib (2011) collected the various definitions and approaches and stated that, ―Interpretation of business process varies from author to author (for example Hammer & Champy (1993) thinks it as radical change and rethinking of overall process to achieve overall performance in terms of cost, quality, service and speed, while Davenport & Short (1990) calls it as a process of analysis and workflow redesign in an organization. Talwar (1993) on the other hand emphasized on rethinking and reconstructing the organizational structure, workflow and value chain. Petrozzo & Stepper (1994) call it synergetic and synchronized redesign of firms' process and overall system to improve the operations (as cited in Greasley & Barlow, 1998). O'Neill & Sohal (1999) argued that focus of the business process or change differs among many researchers. Hammer (1990) called it BPR (Business Process Re-engineering), Davenport & Short (1990) used BPR (Business Process Redesign), Harrington (1990) used term Business Process Improvement while Business process transformation term was used by Burke & Peppard (1993) etc. In all discussion, it is clear that the authors are obvious about the importance of BPR and all agree on the result i.e. improved performance, efficient and effectiveness, cost minimization and increase in production. In short it can be said that radical improvement of organizational performance and process is the key aspect of BPR‖.

According to Sentanin, Santos, and Jabbour (2008), the concept of BPR originated in 1990s enabling companies to improve productivity and relationships with customers and reduce time to launch new products and services in terms of cost quality customer satisfaction and shareholder's value in link with the strategy by identifying the most important processes of the company. It is to assess the stages of the company in line with the processes the company is going through to enable a company for process improvement process redesign and radical reengineering.

Similarly, Cao et al. (2001) considers BPR as a tool for managing change, increasing productivity, reducing cost, tool for improving satisfaction of customers and quality of products produced. Furthermore, Majed Al-Mashari and Zairi (2000) says that, BPR is about bringing radical (major) change to provide satisfaction to customers, to achieve competitive advantage, to improve quality of products and services, and to minimize cost. In struggle for survival in this dynamic business environment, globally $2.2 billion were spent on BPR between 1996- 2000 with an annual growth exceeding 46%. This shows the urgency of companies towards adjusting their business in histrionic and world-shattering changes.

Moreover, Goksoy, Ozsoy, and Vayvay (2012) considers BPR as a strategic tool for organizational change and stated that firm needs to bring moderate change every year and undergo a major change almost every fifth year if they want to survive in todays' hypercompetitive environment.

Thus, BPR, with so many names and differences in the approach leads to create confusion in the mind of readers therefore, it is necessary to review those approaches and different schools of thoughts for the purpose to identify the areas of agreement and disagreements.

Approaches to BPR and Schools of thoughts

Muthu, Whitman, and Cheraghi (1999) in their study focused on presenting a consolidated methodology for business process reengineering (BPR) however, their approach was based on the shortcomings of the previous studies and models (see in table:1) (presented by Furey, Timothy.R., (1993), Harrison, Brian.D., Pratt, Maurice.D., (1993), Manganelli, Raymond.L., Klein, Mark.M., (1994), Mayer, Richard.J., Dewitte, Paula.S., (1998), Underdown, D. R.,(1997)) and provide their own model for BPR. Muthu et.al,(1999) stated that BPR is the process for those who wants 10 times improvement thus, it should not be used for minor improvement in business processes. Before incorporating BPR, the authors insists on having process maps (department wise) as an important tool for getting insight of the area that needs radical change. However, authors were unable to provide any evidence that how to develop

process map and how to compare "As-Is business process" and "To-Be roadmap for reengineering".

Table 1.1

Activity	Furey, Timothy.R., (1993),	Harrison et. al (1993)
	• Set Direction • Baseline and Benchmark • Create the Vision • Launch Problem Solving Projects • Design Improvements	• Determine Customer Requirements &Goals for the Process • Map and Measure the Existing Process Analyze and Modify Existing Process Design a Reengineered Process: • Implement the Reengineered Process
	• Implement Change • Embed Continuous Improvement	

Table 1.2

Activity	Manganelli et. al (1994)	Mayer, et. al (1998)	Underdown (1997)
	• Preparation • Identification • Vision • Technical & Social design • Transformation	• Motivating Reengineering • Justifying Reengineering • Planning Reengineering • Setting up for Reengineering • As Is Description & Analysis: • To-Be Design and Validation	• Develop vision & strategy • Create desired culture • Integrate & Improve enterprise • Develop technology solutions

Consolidated methodology based on previous studies (shown in Table 1) was named IDEF0 (Integration Definition for Function Modeling) comprised of five steps; prepare for BPR, Map and Analyze As-Is process, Design To-Be process, Implement and Improve continuously. However, this model is unable to provide anything new or ground breaking solutions. As the major focus of

this model was to combine the previous work while authors were unable to add something new to the existing BPR process and model. Furthermore, the model is followed by series of other models IDEF1, IDEF2, IDEF3 etc. with the help of ―Structured Analysis and Design Technique (SADT)‖ which is complex software and is only used for developing model based on information provided. Moreover, in conclusion of the paper, researchers were unable to provide any validation and success ratio of this model. BPR is customized approach and is different needs, implication and varies from organization to organization therefore, it is very difficult to provide a consolidated model equally applicable in every organization.

Coulson-Thomas (1995) argued that it is learning organization which adopts change and believes in continuous learning and is always ready to accept changes thus, BPR is made for such organizations. This study was based on the findings of COBRA (constraints and opportunities in business restructuring – an analysis), a team designed to study BPR projects, experiences and studies and report to Commission of the European Communities. Their task was to organize seminars, workshops, discussion forums and case based interviews to study current practices, policies and methodologies of BPR in practice and later on come up with guidelines and suggestions for private, public and voluntary sectors. 80 cases were examined and BPR was divided into two sub methods (i.e. Davenport's BPR approach to process improvement or process simplification and Hammers' re-engineering). Comparison of both processes is given in Table below;

Table 1.3: Simplification or Re-engineering

Process Simplification	Process Reengineering
□ Incremental change	□ Radical transformation
□ Process-led	□ Vision-led
□ Within existing framework	□ Review framework
□ Improve application of technology	□ Introduce new technology
□ Assume attitudes and behavior	□ Changes attitudes and behavior
□ Management-led	□ Director-led
□ Various simultaneous projects	□ Limited number of corporate initiative

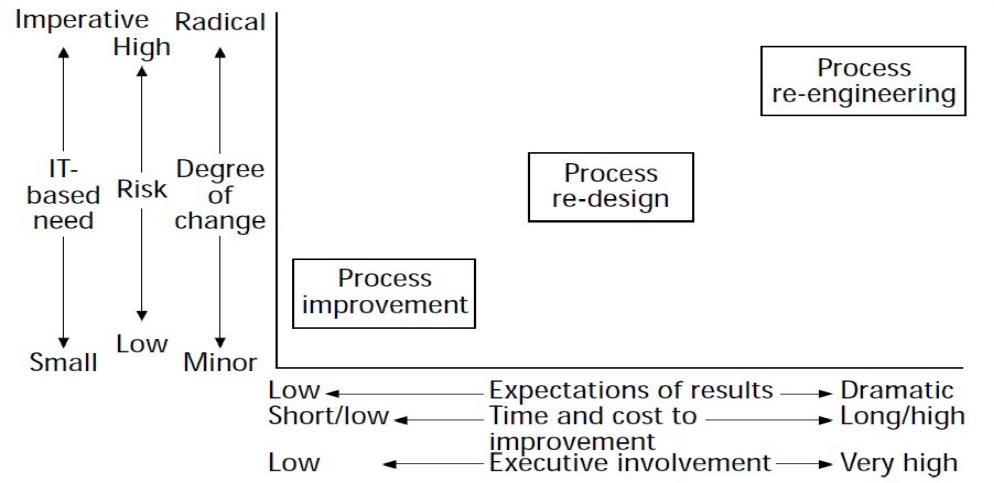
Despite the vows delivered by reengineering in the field of change, Mansar and Reijers (2007) focused on the concept of redesign (also known as Business process redesign (BPR)) which is less fruitful and less risky as compared to reengineering. The focus of study was to identify the best practices in this field for which a framework was designed having six major components (i.e. Customers, Products/Operation view, Behavioral view, External environment, Organization: structure, and Organization: population) as authors considered them as best practices in implementation. Furthermore, this framework was based on the selection of ten best practices of BPR in the past (most frequently used) i.e. Task elimination, Task composition, Integral technology, Empower, Order assignment, Specialist-generalist, Integration, Parallelism, and Numerical involvement.

Keith Grint (1997) having his own point of few regarding change and called this as ―fashion‖ and every year a new fashion emerges. Every type of approach i.e. TQM, BPR, JIT, BSCs (balance score card) and other TLAs (three letter acronyms) are all in line with any related fashion. These approaches itself possess some characteristics that are causing problems. Author further divides his work into two categories i.e. waves and drowning.

Macdonald (1995) argues that the nature of business environment is changing dramatically, the competitive pressure and demand of customers are increasing day by day therefore, alone TQM (steady improvement) will not be sufficient and there is a need for radical change for the organizational sustainability and survival. One of the misconceptions about process redesign is that most of the firm's considering it as a BPR because redesign engages companies in designing cross-functional teams and is having customer focus as well however, it focuses on redesigning existence processes for improvement with the help of cross-functional boundaries thus in broader sense it is what TQM is all about. However, the only difference between process redesign and earlier approaches is that it uses I.T for development. Lastly reengineering (BPR) is ―fundamental rethink and radical redesign of business processes‖ with an objective to meet company's requirements that cannot be achieved through improvement processes with dramatic improvements. Furthermore, dramatic changes via BPR will be achieved by cutting down product development cycle

(50%), reducing delivery time, cost reduction by 60 to 80%, and at the same time service improvement is what BPR does. BPR is radical but involves high risk, time consumption, costly while it provides dramatic results (see Figure).

Fig. 1.1



Failure recorded in this radical change is 50 to 70% however the same is resulted in TQM. An author suggests that BPR and TQM are ―complementary rather than in opposition‖. TQM will provide cultural framework for BPR as TQM focuses on change of behavior and attitude while this change can create a supportive environment for BPR implementation. As combination of BPR and TQM will overcome the deficiencies of each other e.g. BPR is management driven while TQM is people driven, BPR is top to bottom while TQM is bottom top approach, BPR focus of coping with external pressure while TQM is used to deal with issues that are arises internally thus, to implement radical change it is essential to create an internal environment and culture supportive. Thus, the above discussion can be summarized with the statement that there are differences in the opinion and approaches of scholars. Pruijt (1998) argues that there is a lot of contradiction between authors' point of view about BPR. Some authors interpret and see BPR as ―a break with Taylorism‖, few consider it as a ―direct continuation of Taylorism‖, other consider it as ―very different from continuous improvement‖ while there are some who refuses to point out any major difference between BPR and continuous improvement. According to author, BPR is having four various identities i.e. BPR as management fad (BPR-F), BPR as a neo-Taylorist movement (BPR-N), BPR as a euphemism for downsizing (BPR-D), BPR as a

nonnormative label for business process oriented change efforts (BPR-P). —BPR as management fad (BPR-F) is derived from management consultancy and literature and there are authors like Peter Drucker, Hammer and Champy believes that BPR is new and it has to be done. BPR as a neo-Taylorist movement (BPR-N) is considered as a new or modified form of Taylorist movement where BPR focuses on integration business process and on cross-functional borders however, in contrast to Taylorism of division of labor, skills and control, BPR shows no concern over these attributes. Moreover, BPR focuses on radical change while the fads of change management and implementation remains same to Taylorism. Taylorism involves HR in decision making and supporting the role of HR in an organization however, Neo-Taylorism has characteristics i.e. a top-down streamlining of operations, unproblematic acceptance of typical Taylorist solutions, asserting that the outcome for workers is an upgraded work content. Furthermore, BPR-F has replaced TQM largely while there is substantial difference among TQM and BPR-N (TQM gives control to subordinates, while BPR does not, Managers who believes TQM is not working have adopted BPR as more authoritarian approach). BPR as a euphemism for downsizing (BPR-D) is of the point of view that in either way (directly or indirectly) BPR results in downsizing (in some cases 50 to 90%). In last, BPR as a non-normative label for business process oriented change efforts (BPR-P) thinks that BPR is not that young phenomenon and it is full of history where almost every firm has reengineered even before the name BPR was coined. However, there have been additions to this process and still it remains open for contribution and refining. Furthermore, there is a wide chance of choosing between radical and incremental change with the help of workforce (bottom top approach) or without them (top to bottom). Thus, this means that BPR is not as an axe, it is up to the choice of decision makers that they swallow BPR as continuation to Taylorism or they consider it unique.

Methodologies and frameworks

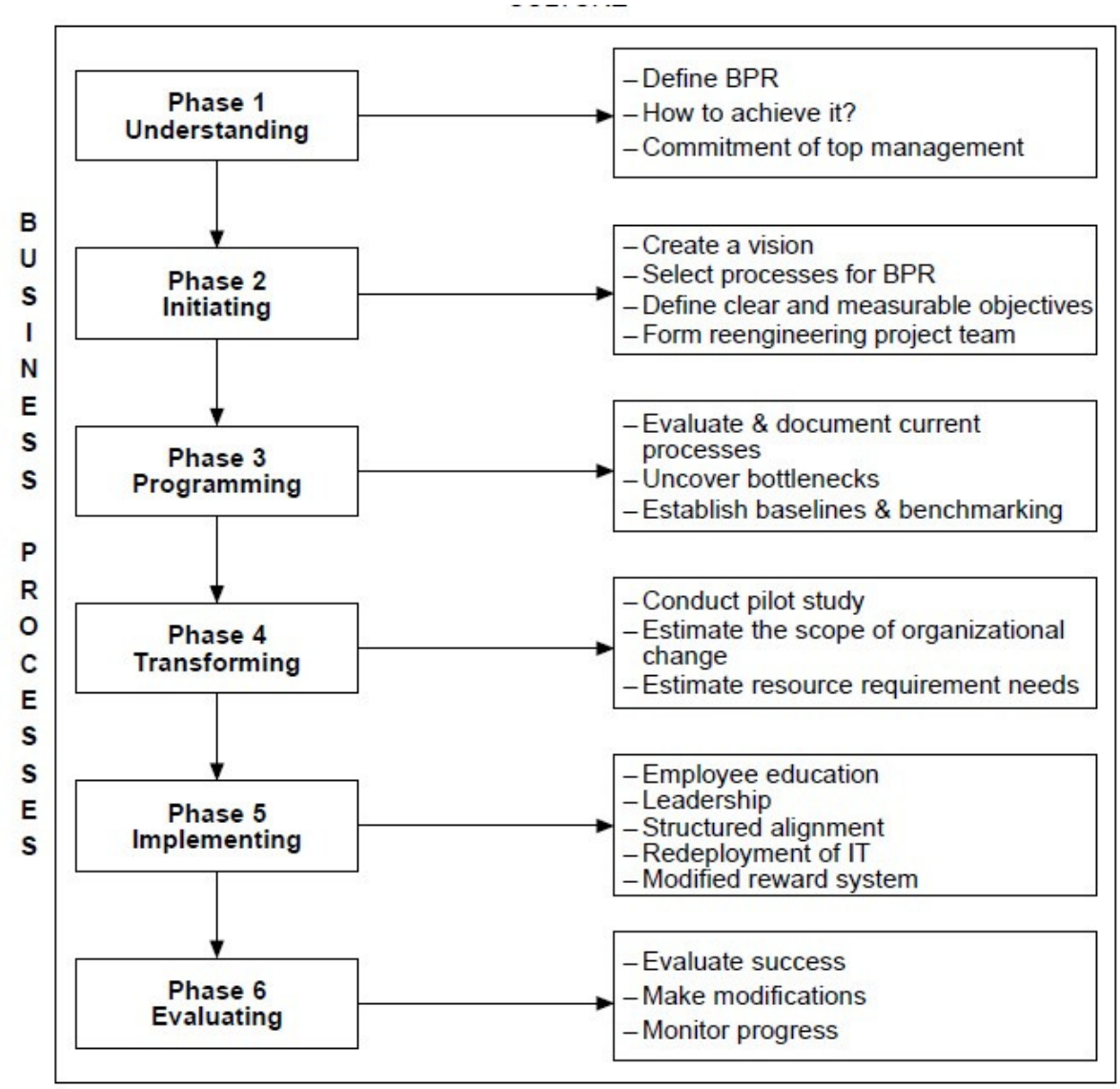
Mansar and Reijers (2007) focused on the concept of redesign (also known as Business process redesign (BPR)) which is less fruitful and less risky as

compared to reengineering. The focus of study was to identify the best practices in this field for which a framework was designed having six major components (i.e. Customers, Products/Operation view, Behavioral view, External environment, Organization: structure, and Organization: population) as authors considered them as best practices in implementation. Furthermore, this framework was based on the selection of ten best practices of BPR in the past (most frequently used) i.e. Task elimination, Task composition, Integral technology, Empower, Order assignment, Specialist-generalist, Integration, Parallelism, and Numerical involvement. The aim of the study was to find out the use and impact of those practices in the field of redesign thus, for investigation, a survey was designed with the sample of UK and Dutch BPR practitioners (60 from UK and 31 from Dutch) with an average of 20 years of experience in this field. The response rate was 20 and 42 % respectively. The results indicated that most of the concern among BPR framework components was towards the customers and followed by product and information system (3.72, 3.40 and 3.36 mean respectively). It further revealed that the most practice of BPR was of task elimination (removal of unnecessary tasks from the job) with a high percentage of 94, as well as 94 % used was Integral business technology, followed by task composition (89% used), Parallelism (88%), while organization structure (order assignment) was the least used best practice by the practitioners in the field of business process redesign with only 53 % usage by them. Thus it has been concluded that customers are the key reason for redesigning of business process and the best practice most frequently adopted for that purpose was of task elimination (for fast and efficient service) and inclusion of IT in the organization. However, almost similar is the purpose of most of the organizations that adopted reengineering and showing the same concern (reason) for incorporating change. Thus, this study also helped in showing the similarities that are possessed in redesign and reengineering.

Motwani, Kumar, Jiang, and Youssef (1998) presented a framework on BPR (as shown in figure bellow) comprising of six phases (stages). At the initial stage (phase 1), it is of very importance that the top management realize and understand what they want and why they want it? It is also very important that the top management should show their full commitment towards the initiative.

In the second stage, vision is required to make all the energy to run in the right direction thus, it is also the task of the top management to provide a proper vision and objectives to the rest of the employees so that the activities of the firm are channelized. Third stage is related to the benchmarking, where the current process and activities are evaluated to find out the areas of real concern and then establish the baseline for the BPR project. Forth stage is related to transformation where pilot study takes place and the work is evaluated to calculate the scope of change and the resources needed for this transformation. When this pilot study is conducted successfully then stage 5 is about the implementation where the BPR project is implemented organization wide. This stage is very crucial thus it requires support of top management and the commitment of middle managers to educate employees, provide leadership, alignment of the structure, implementation of IT and modification of reward system so that the integration is completed as a successful project. To avoid resistance, a proper and continuous communication should be there among all levels of the organization. The last stage of this model is about monitoring and evaluation of the whole project where the success of the project is monitored regularly as well as the areas that needs modification (continuous improvement) are also identified.

Fig. 1.2



Luo and Tung (1999) undertaken a study on devising a framework which will help in selecting appropriate BPR modeling method with an aim that many organizations are adopting BPR due to increase in competition and dynamic business environment (local as well as internationally). Availability of complete information at the time of BPR planning and then right tools selection for the analysis of situation that best suits organizational requirements is vital for BPR success. According to authors Business Process modeling (BPM) is defined as ―The techniques for characterizing and analyzing business processes‖. There are many methods and software that helps researchers and practitioners in designing BPM however, selection of right approach to BPR is still vital. Researchers in this study insist on selecting BPM method that is

having desirable perspective towards BPR and the organizational objectives. Base of this study relied on several types of business processes suggested by previous studies (Denna et al. (1995), Davenport and Short (1990) and Curtis et al. (1992)) focusing on different aspects of BPR process and its objectives. Denna et al. (1995) identified three basic types: 1 acquisition /payment, conversion and sales/collection (as discussed in the paper acquisition or payment and sales/collection is having almost similar procedure in most of the organizations while conversion i.e. production and operation mainly vary from company to company thus is crucial in nature to the success of BPR project. Davenport and Short (1990) elaborates business processes in terms of entities, objects and activities. Entities refer to the consideration of all processes ranging from internalpersonal to inter-functional and above all inter-organizational process. Objects refer to the type of (physical or informational) area of organization that need to be handled and activities (operational or managerial) that requires consideration. According to Curtis et al. (1992) as discussed in study identified most common perspectives of BPR modeling i.e. functional, behavioral, organizational, and informational. Moreover, authors are of the opinion that before undertaking BPR one should consider better understanding of existing process and then mapping new process (alternative) process and preparing measurement (evaluation) tools. Similar to other studies discussed in literature this study is also of the opinion not to rely on single model instead of concentrating on multiple modeling processes. A framework for selecting BPM method should be based on certain pre-defined objectives that require clear perspective and characteristics for reengineering. Objectives can be classified into three categories; communication (clear understanding, simplicity, clarity in terms of process, knowledge and reason for change), analysis (aim to analyze and improve existing process and identifying the areas that are of main concern) and control (managing and monitoring the modeling and later stages).

Salegna and Fazel (1996) argues that although TQM (total quality management) and BPR are two prevalent techniques used for change but most of the efforts to transform this effort as a successful project is turned out as a failure. Authors justify their statement as being of having lack of integrated framework for implementing those projects and further due to not having

alignment with company's plan (Vision and mission), competitive environment, culture of organization and its strategic objectives. Many of the management teams consider TQM and BPR as mutually exclusive and choose any one of them however, in the perceptiveness of authors the quality and reengineering should be unified for sound results. Both approaches will provide successful results only in case they are properly linked with strategic objectives of organization and properly planned however, there is difference between the tools and techniques and the areas that are covered by these approaches. However, both are known for its payoffs i.e. reduced time-cycle, cost efficiency, customer and employee satisfaction.

It has been proved by above discussion that BPR is having no universal approach, model or system that can be used for reengineering by firms all across the globe. Despite of the differences, there are several factors that are considered and reported time to time as causes of success and failure therefore, it is important to discuss those factors as well.

Generally, the topic of BPR involves discovering how business processes currently operate, how to redesign these processes to eliminate the wasted or redundant effort and improve efficiency, and how to implement the process changes in order to gain competitiveness. The aim of BPR, according to Sherwood-Smith (1994), is "seeking to devise new ways of organising tasks, organising people and redesigning IT systems so that the processes support the organisation to realise its goals".

Another BPR father, Davenport (1993), describes 'business process redesign' as:

... the analysis and design of workflows and processes within and between organisations. Business activities should be viewed as more than a collection of individual or even functional tasks; they should be broken down into processes that can be designed for maximum effectiveness, in both manufacturing and service environment.

These definitions suggest that we should concentrate on processes rather than functions (or structures) as the focus of the (re-)design and management of business

activity. The definitions of the term ‘process’ by different researchers are also slightly different.

In BPR, the process to be reengineered is the so-called business process. Davenport describes a business process as “simply a structured, measured set of activities designed to produce a specified output for a particular customer or market”. Riemer (1998) describes business processes in an object-oriented style: “business processes are series of steps that change states of business objects (that is, customers, orders and inventory), thereby causing business events”. However, we should note that BPR is concerned with customer-orientation. Thus the outputs of business processes should not only achieve the company’s objectives, but also need to satisfy customers’ requirements. From these definitions we can conclude that business processes start and end with customers, and the value of business processes is dependent upon customers.

3.0 Research Methodology

Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. In it we study the various steps that are generally adopted by a researcher in studying his research problem along with the logic behind them. It is necessary for the researcher to know not only the research methods/techniques but also the methodology. Researchers not only need to know how to develop certain indices or tests, how to calculate the mean, the mode, the median or the standard deviation or chi-square, how to apply particular research techniques, but they also need to know which of these methods or techniques, are relevant and which are not, and what would they mean and indicate and why. Researchers also need to understand the assumptions underlying various techniques and they need to know the criteria by which they can decide that certain techniques and procedures will be applicable to certain problems and others will not. All this means that it is necessary for the researcher to design his methodology for his problem as the same may differ from problem to problem. that research methodology has many dimensions and research methods do constitute a part of the research methodology. The scope of research methodology is wider than that of research methods. Thus, when we talk of research methodology we not only talk of the research methods but also consider the logic behind the methods we use in the context of our research study and explain why we are using a particular method or technique and why we are not using others so that research results are capable of being evaluated either by the researcher himself or by others. Why a research study has been undertaken, how the research problem has been defined, in what way and why the hypothesis has been formulated, what data have been collected and what particular method has been adopted, why particular technique of analyzing data has been used and a host of similar other questions are usually answered when we talk of research methodology concerning a research problem or study.

Discussions were made with employees as well as customers who are regularly using our transport system for performing official duties outside the company.

4.0 Case Study

4.1 Introduction to the case

During discussions, people shared the following problems:

- Busy telephone lines, particularly in the beginning of the shift, at Transport department because of simultaneous enquiries by users about vehicle details.
- Car drivers not responding on mobile phones.
- Non availability of allocated vehicles in the parking.
- Mismatching of car & driver details provided by transporter.
- Wrong information provided by car drivers on phone about their whereabouts to users.
- Complaints of non-usage of vehicles by some users after taking vehicle details from transport department.
- Refusal to go to some places by some car drivers.

4.2 Data Collection

Data was collected from the transport department for analysis for the following parameters:

i) Average number of Transport requests received per day.

ii) Average number of Transport requests for BEL employees per day

iii) Average number of transport requests for other than BEL employees per day

iv) Number of Cost centers where vehicle was asked daily

v) Number of customer cells where vehicle was asked daily

vi) Average number of log sheets filled per month.

vii) Maximum no. of days consumed between verification of log sheets and receiving of bill.

viii) Maximum time taken to process the bill.

4.3 Data Analysis

Data Collection period: 15.12.2015 to 15.11.2016

Table 1.4

Sl. No.	Parameter	Qty.
1.	Average number of Transport requests received per day.	65
2.	Average number of Transport requests for BEL employees.	43
3.	Average number of transport requests for other than BEL employees.	22
4.	Number of Cost centers where vehicle was asked daily	6
5.	Number of customer cells where vehicle was asked daily	8
6.	Average number of log sheets filled per month.	3200
7.	Maximum no. of days consumed between verification of log sheets and receiving of bills.	34
8.	Maximum Time taken to process the bills.	4

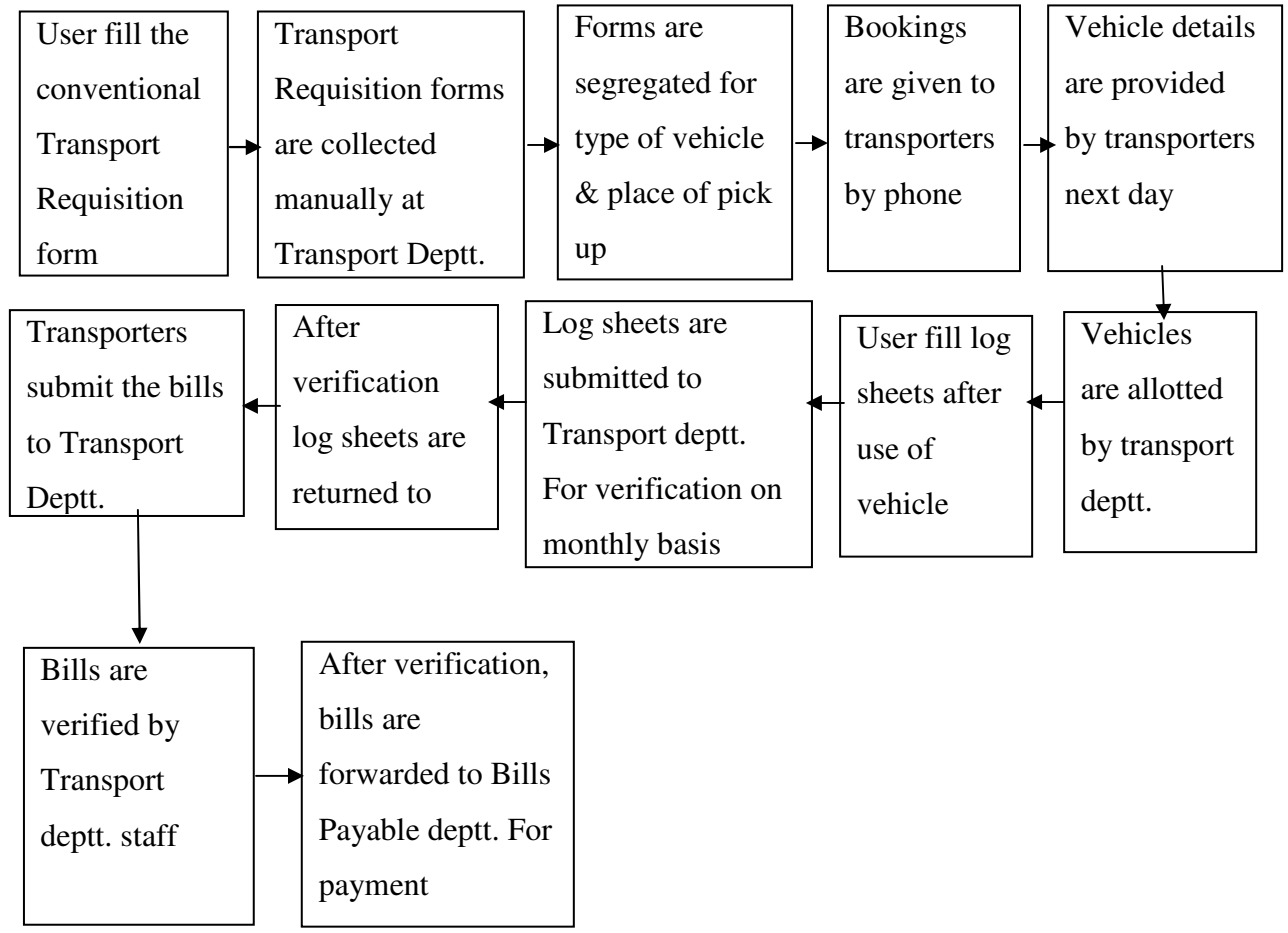
4.4 Findings & Recommendations

4.4.1 Findings

Process mapping for existing and proposed process was done.

As- is- Process:

The process flow diagram of transport management system at BEL-GAD at present is as under:



To- be- Process:

- User will fill Transport Request in the ESS (Employee Self Service)
- User will submit this form online after completing all the fields.
- A system generated control no. will be generated and the same will be reflected in the approver's ESS system.
- After due approval, it will be submitted to Transport department online.
- All the requests will get segregated by the inbuilt software for the following parameters and output will be obtained in an excel sheet:

  i) Employees asking transport from BEL.
  ii) Employees asking transport from other than BEL.
  iii) Customers /Guests pick up along with details of type of vehicle.

- For Cost Centres and customer cells where vehicle is asked daily, monthly rate based fixed vehicles will be allocated to them.
- For employees asking transport from BEL, a transport help desk will be formed at DLY parking area where two supervisors will be manning the desk. List of employees asking transport from BEL for the next day (output in the form of excel sheet) will be mailed to them at the end of the shift.
- All the above details in the excel sheet will be e-mailed to transporter.
- Transporter will provide vehicle and driver details by return e-mail same day.
- An sms will also be sent from the transporter to the user about vehicle and driver details on the mobile of user.
- User will fill the log sheet after using vehicle.
- Transporter will submit the bill along with log sheets and vehicle usage report from GPS.
- Bills will be checked and verified by transport deptt. Staff and forwarded to Bills Payable Department for payment.

4.4.2 Recommendations

The benefits that automation technology can provide, beyond those achievable with conventional, non-automated transportation operations, include error free bookings and details of the user and type of the vehicles demanded by the user. Transport management system is broken into seven parts: -

1. **Transport Request**
2. **Pending Transport Request**
3. **Allotted Transport Request**
4. **Trip Sheet or Log sheet**
5. **Completed Transport Request**
6. **Transport Request Report**
7. **Monthly vehicle status Report**

Transport Request: It facilitates the user to fill necessary information like name, staff no., contact no. and from where to where and time span. It has been connected with employee data base through SAP so that user has to enter only staff no. and all other details like designation, cost centre and name etc. are picked from the IS (Information Systems) data base.

Pending Transport Request: It facilitates to the transport department that after allotment of vehicle how many transport requests are pending or how many users have not taken vehicle although transport request was given by them.

Allotted Transport Request: It facilitates to the transport department about the data of allotted transport requests with vehicle details.

Trip Sheet or Log sheet: After completion of the trip, details are entered into the trip sheet for calculation of km and hrs. usage of the vehicle.

Completed Transport Request: After completion of the trip sheet, the total cycle of transport booking is completed and it reflects in the completed transport request.

Transport Request Report: It gives the complete report on transport requests on daily and monthly basis. This report can be sorted on user as well as cost centre.

Monthly Vehicle Status Report: It gives the complete report on monthly usage of vehicles.

Advantages to the user:

- Saving of manpower & paper movement from one department to another.
- No signature required. Only online approval will do.
- Chances of misplacing the transport request are eliminated
- Convenient to fill online request as it can be filled from any computer in the company.
- No need to make phone calls for confirmation of booking as system generated control number can be checked from ESS.
- In case of pick up other than BEL, details of vehicle and driver received by sms on same day of booking.
- In case of pick up from BEL, no need to make phone calls to transport department for asking driver and vehicle details as the vehicle will be allocated from Transport Help Desk at DLY parking area.
- Chance of misreporting are reduced drastically due to written communication.

Advantages to the Transport Department:

- Real time receiving of Transport request after approval.
- All the mandatory field are filled.
- Clarity in reading address for pick up and contact number as it is not hand written now.
- Chances of misreporting are reduced due to written communication between transporter and transport department.
- No need to verify log sheets as these are submitted with GPS data report for each vehicle used.

- Saving of manpower hrs.
- **Maximum no. of days consumed between verification of log sheets and receiving of bills is drastically reduced to 2 days resulting in reduction in Billing cycle.**
- Noise pollution is reduced due to fewer phone calls.
- Vehicle allocation system wherein after receiving the online transport request, vehicle details i.e. car no., driver name and his mobile no will automatically be sent on the user mobile no. For this purpose, Vehicle Model master, Vehicle no. master and Driver master have been prepared and data is being prepared.
- Billing system which will generate daily and monthly bill based upon km run and hrs run. For that purpose, Slab code master and Slab rate master have been prepared and data of daily & monthly rates is being prepared.
- For the billing system to be online, trip sheet entry has been made in the system for calculating Km run and hrs run of vehicle.

5.0 References

a. BEL intranet

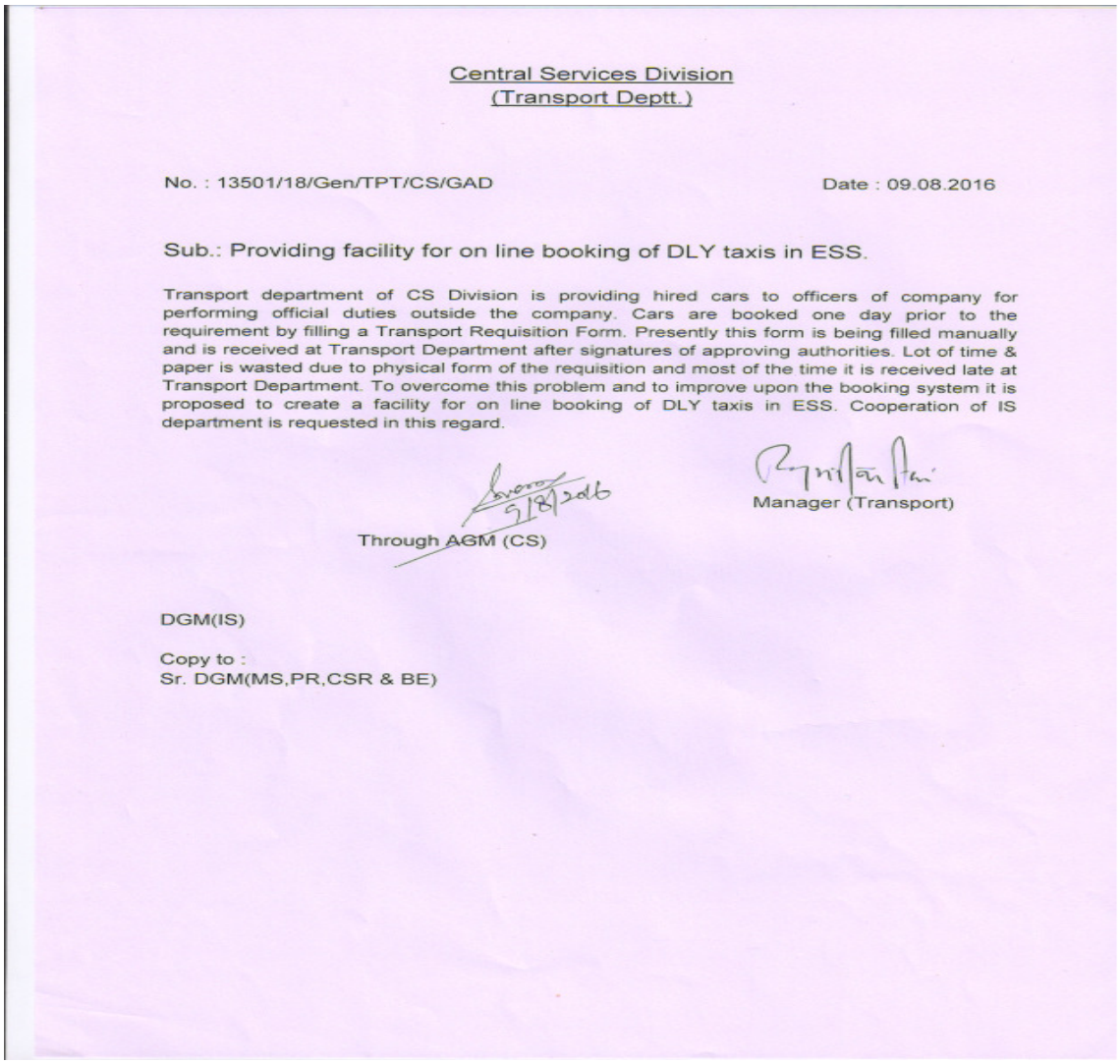
b. BEL Sampark website

c. www.bel-india.com

d Proceedings of 3rd Asia-Pacific Business Research Conference 25 – 26 February 2013, Kuala Lumpur, Malaysia, ISBN: 978-1-922069-19-1

6.0 Annexures

Annexure-I



Central Services Division
(Transport Deptt.)

No. : 13501/18/Gen/TPT/CS/GAD Date : 09.08.2016

Sub.: Providing facility for on line booking of DLY taxis in ESS.

Transport department of CS Division is providing hired cars to officers of company for performing official duties outside the company. Cars are booked one day prior to the requirement by filling a Transport Requisition Form. Presently this form is being filled manually and is received at Transport Department after signatures of approving authorities. Lot of time & paper is wasted due to physical form of the requisition and most of the time it is received late at Transport Department. To overcome this problem and to improve upon the booking system it is proposed to create a facility for on line booking of DLY taxis in ESS. Cooperation of IS department is requested in this regard.

Manager (Transport)

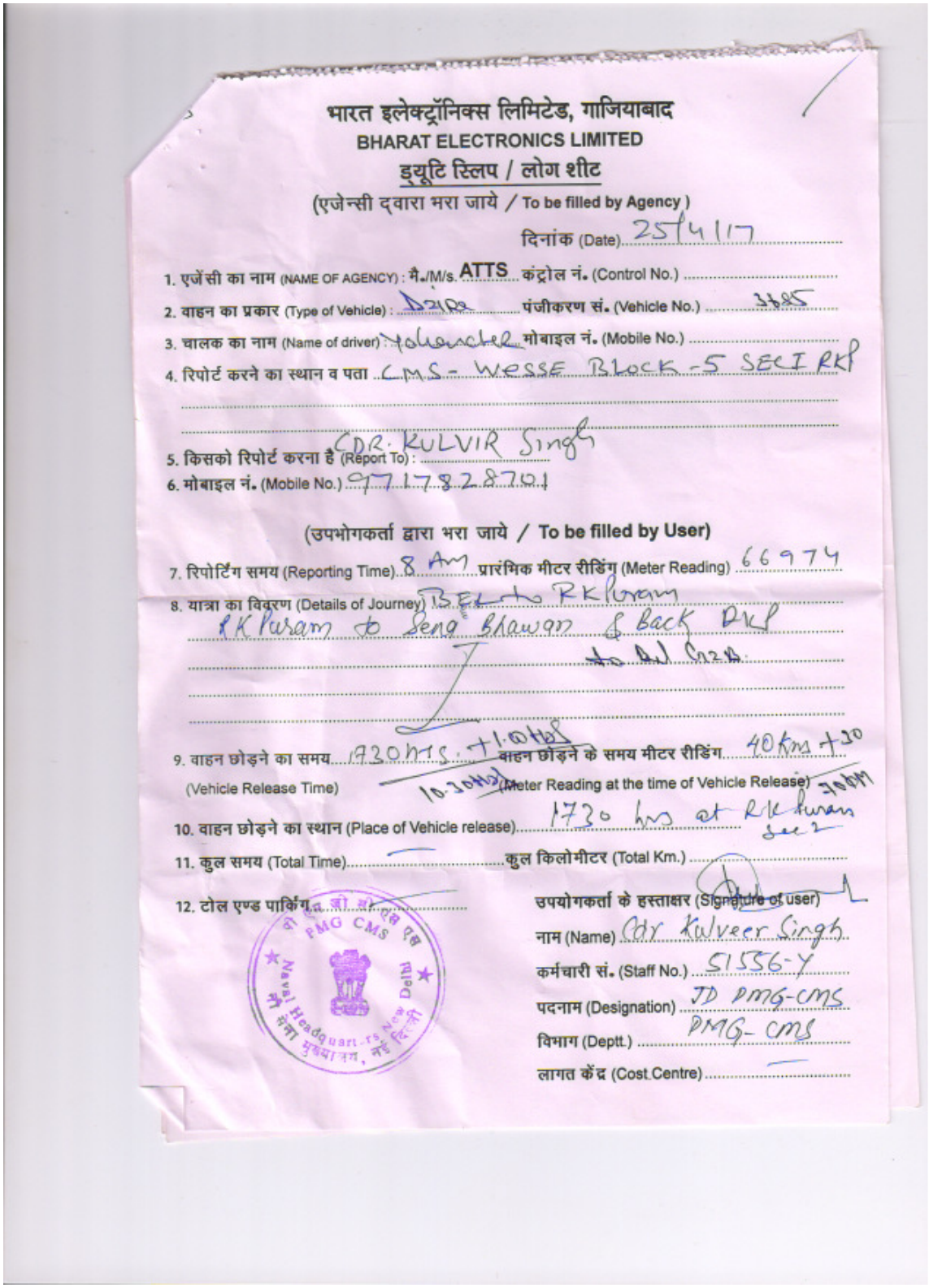
Through AGM (CS)

DGM(IS)

Copy to :
Sr. DGM(MS,PR,CSR & BE)

Copy of letter written to IS department for incorporating online booking module in ESS system.

Annexure-II



भारत इलेक्ट्रॉनिक्स लिमिटेड, गाजियाबाद
BHARAT ELECTRONICS LIMITED
ड्यूटि स्लिप / लोग शीट
(एजेन्सी द्वारा भरा जाये / To be filled by Agency)

दिनांक (Date) 25/4/17

1. एजेंसी का नाम (NAME OF AGENCY) : मै./M/s. ATTS कंट्रोल नं. (Control No.) .....
2. वाहन का प्रकार (Type of Vehicle) : D2DR पंजीकरण सं. (Vehicle No.) 3385
3. चालक का नाम (Name of driver) : Tolwinder मोबाइल नं. (Mobile No.) .....
4. रिपोर्ट करने का स्थान व पता CMS - WESSE Block-5 SECI RKP
5. किसको रिपोर्ट करना है (Report To) : CDR. KULVIR Singh
6. मोबाइल नं. (Mobile No.) 9717828701

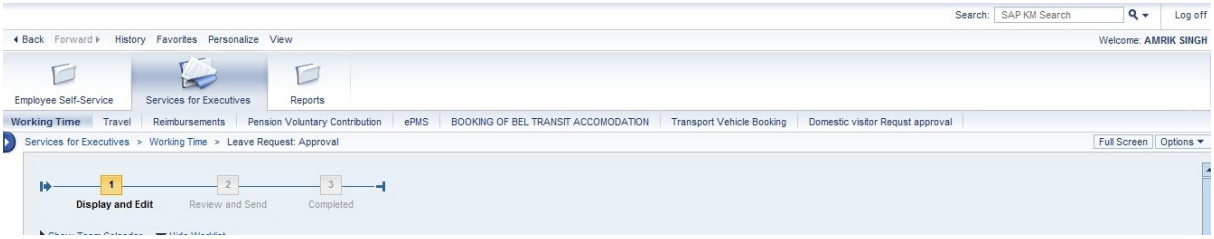
(उपभोगकर्ता द्वारा भरा जाये / To be filled by User)

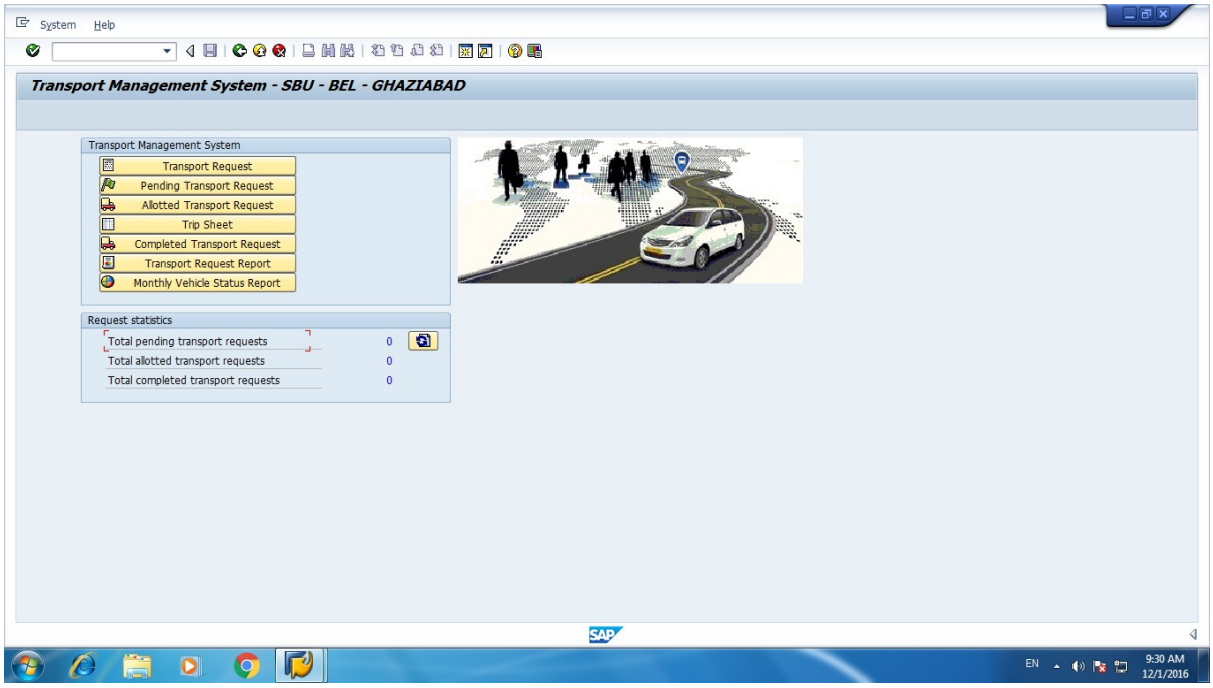
7. रिपोर्टिंग समय (Reporting Time) 8 AM प्रारंभिक मीटर रीडिंग (Meter Reading) 66974
8. यात्रा का विवरण (Details of Journey) BEL to RK Puram RK Puram to Sena Bhawan & Back RKP to DL Cntt.
9. वाहन छोड़ने का समय (Vehicle Release Time) 1730 hrs. वाहन छोड़ने के समय मीटर रीडिंग (Meter Reading at the time of Vehicle Release) 40 Kms
10. वाहन छोड़ने का स्थान (Place of Vehicle release) 1730 hrs at RK Puram Sec 2
11. कुल समय (Total Time) ..... कुल किलोमीटर (Total Km.) .....
12. टोल एण्ड पार्किंग .....

उपयोगकर्ता के हस्ताक्षर (Signature of user)
नाम (Name) Cdr Kulveer Singh
कर्मचारी सं. (Staff No.) 51556-Y
पदनाम (Designation) JD DMG-CMS
विभाग (Deptt.) DMG-CMS
लागत केंद्र (Cost Centre) .....

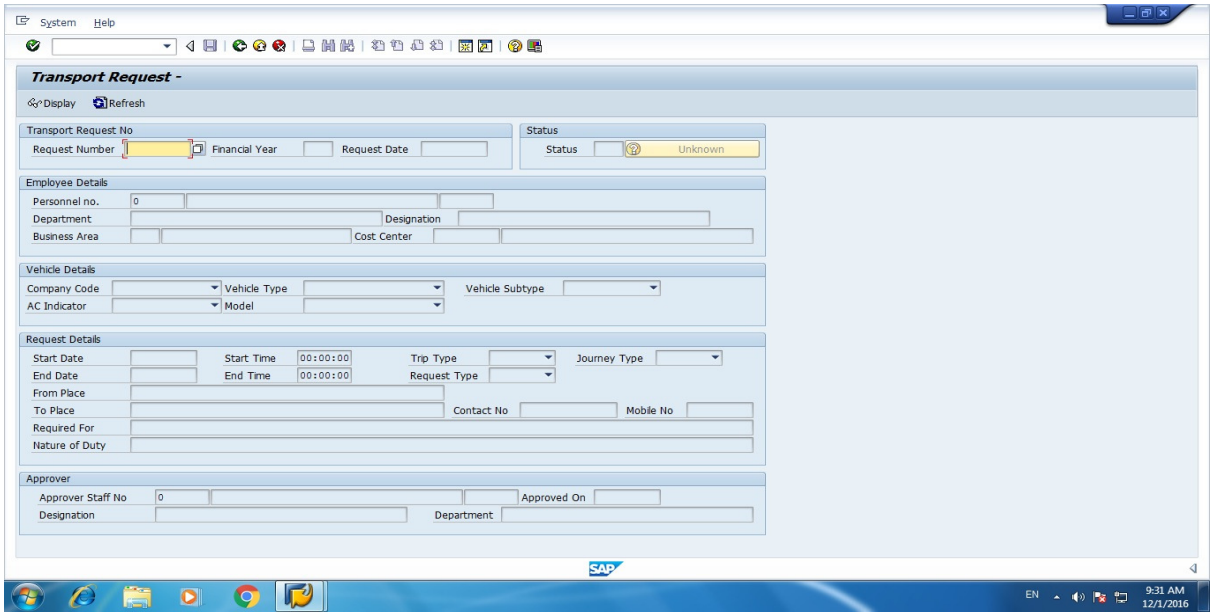
Copy of Improved log sheet format

Annexure-III

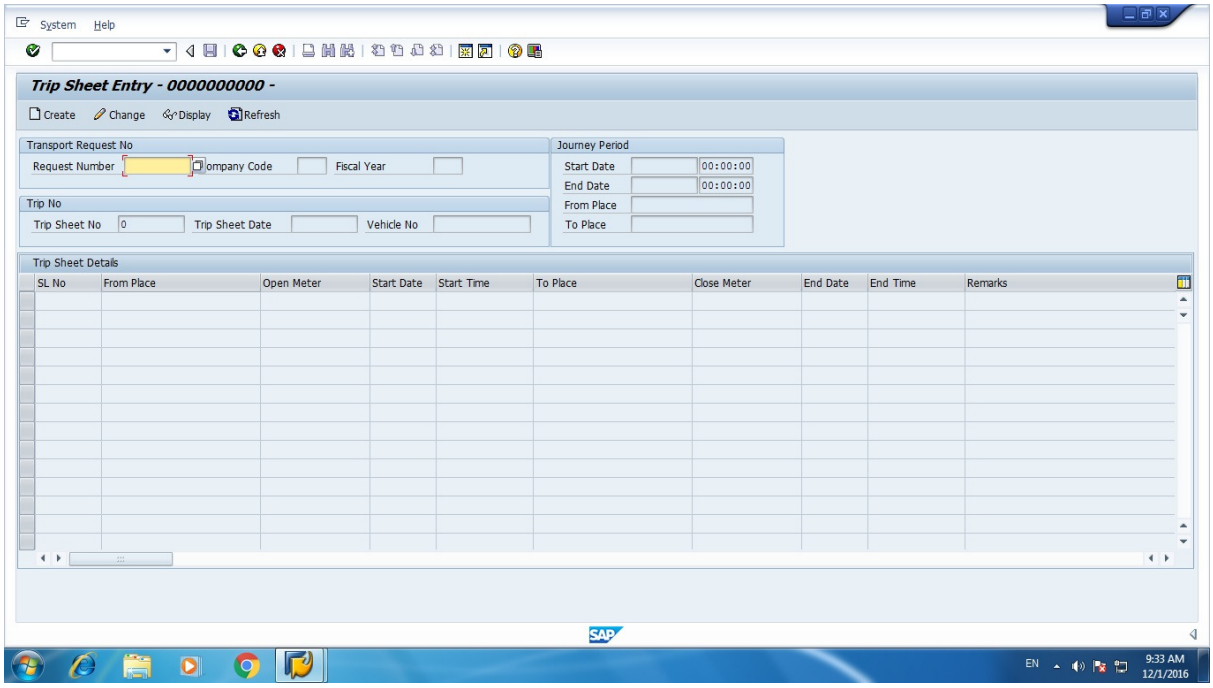




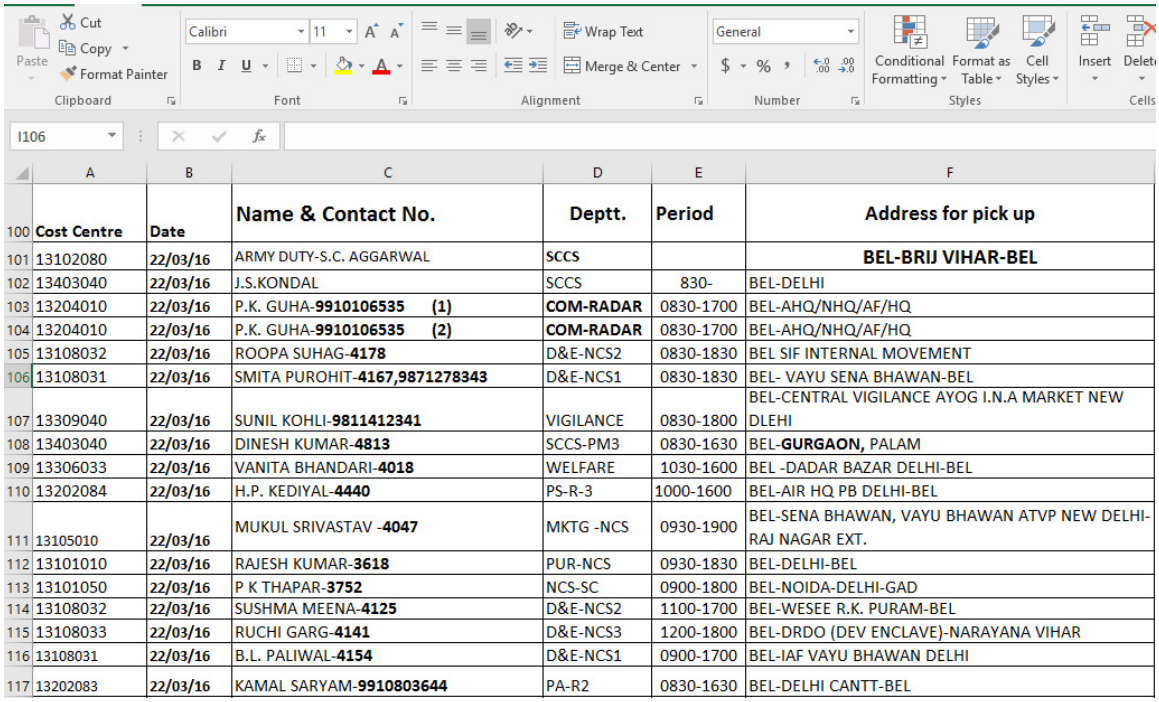
Screen shots of online screens of transport management system



Annexure-IV



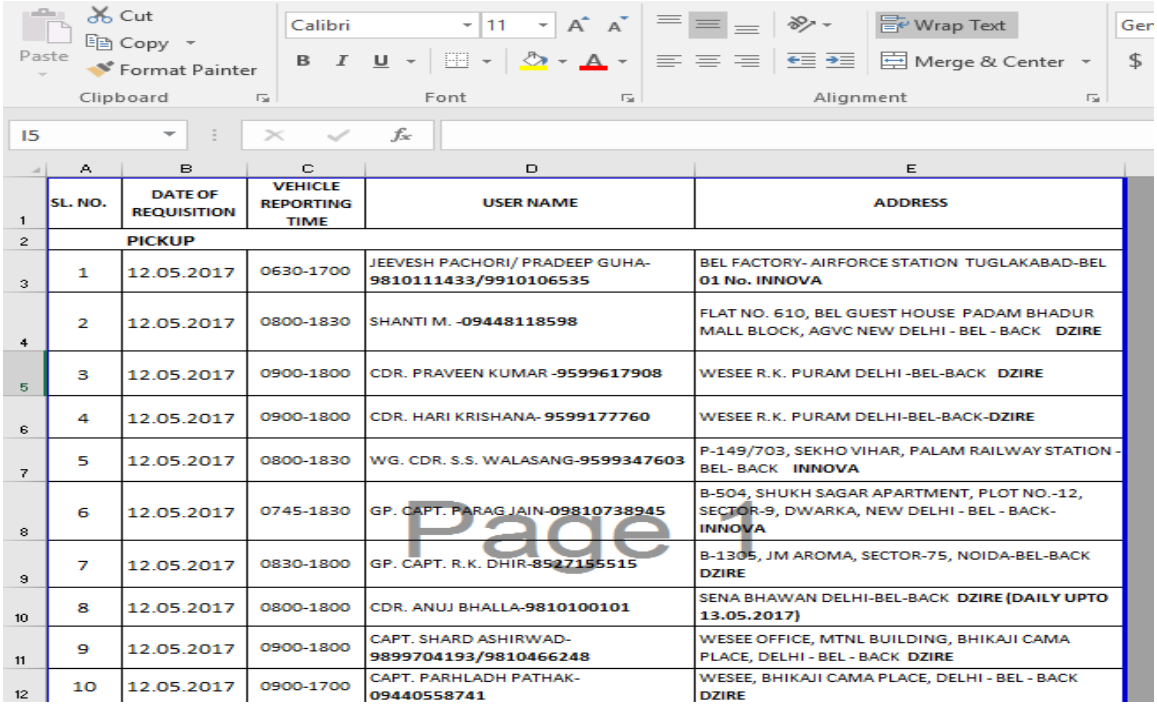
Screen shot of output generated automatically in excelsheet format for employees asking transport from BEL



	A	B	C	D	E	F
100	**Cost Centre**	**Date**	**Name & Contact No.**	**Deptt.**	**Period**	**Address for pick up**
101	13102080	**22/03/16**	ARMY DUTY-S.C. AGGARWAL	**SCCS**		**BEL-BRIJ VIHAR-BEL**
102	13403040	**22/03/16**	J.S.KONDAL	SCCS	830-	BEL-DELHI
103	13204010	**22/03/16**	P.K. GUHA-**9910106535 (1)**	**COM-RADAR**	0830-1700	BEL-AHQ/NHQ/AF/HQ
104	13204010	**22/03/16**	P.K. GUHA-**9910106535 (2)**	**COM-RADAR**	0830-1700	BEL-AHQ/NHQ/AF/HQ
105	13108032	**22/03/16**	ROOPA SUHAG-**4178**	D&E-NCS2	0830-1830	BEL SIF INTERNAL MOVEMENT
106	13108031	**22/03/16**	SMITA PUROHIT-**4167,9871278343**	D&E-NCS1	0830-1830	BEL- VAYU SENA BHAWAN-BEL
107	13309040	**22/03/16**	SUNIL KOHLI-**9811412341**	VIGILANCE	0830-1800	BEL-CENTRAL VIGILANCE AYOG I.N.A MARKET NEW DLEHI
108	13403040	**22/03/16**	DINESH KUMAR-**4813**	SCCS-PM3	0830-1630	BEL-**GURGAON,** PALAM
109	13306033	**22/03/16**	VANITA BHANDARI-**4018**	WELFARE	1030-1600	BEL -DADAR BAZAR DELHI-BEL
110	13202084	**22/03/16**	H.P. KEDIYAL-**4440**	PS-R-3	1000-1600	BEL-AIR HQ PB DELHI-BEL
111	13105010	**22/03/16**	MUKUL SRIVASTAV -**4047**	MKTG -NCS	0930-1900	BEL-SENA BHAWAN, VAYU BHAWAN ATVP NEW DELHI-RAJ NAGAR EXT.
112	13101010	**22/03/16**	RAJESH KUMAR-**3618**	PUR-NCS	0930-1830	BEL-DELHI-BEL
113	13101050	**22/03/16**	P K THAPAR-**3752**	NCS-SC	0900-1800	BEL-NOIDA-DELHI-GAD
114	13108032	**22/03/16**	SUSHMA MEENA-**4125**	D&E-NCS2	1100-1700	BEL-WESEE R.K. PURAM-BEL
115	13108033	**22/03/16**	RUCHI GARG-**4141**	D&E-NCS3	1200-1800	BEL-DRDO (DEV ENCLAVE)-NARAYANA VIHAR
116	13108031	**22/03/16**	B.L. PALIWAL-**4154**	D&E-NCS1	0900-1700	BEL-IAF VAYU BHAWAN DELHI
117	13202083	**22/03/16**	KAMAL SARYAM-**9910803644**	PA-R2	0830-1630	BEL-DELHI CANTT-BEL

Annexure-V

Picture above shows the Transport helpdesk created at DLY parking area



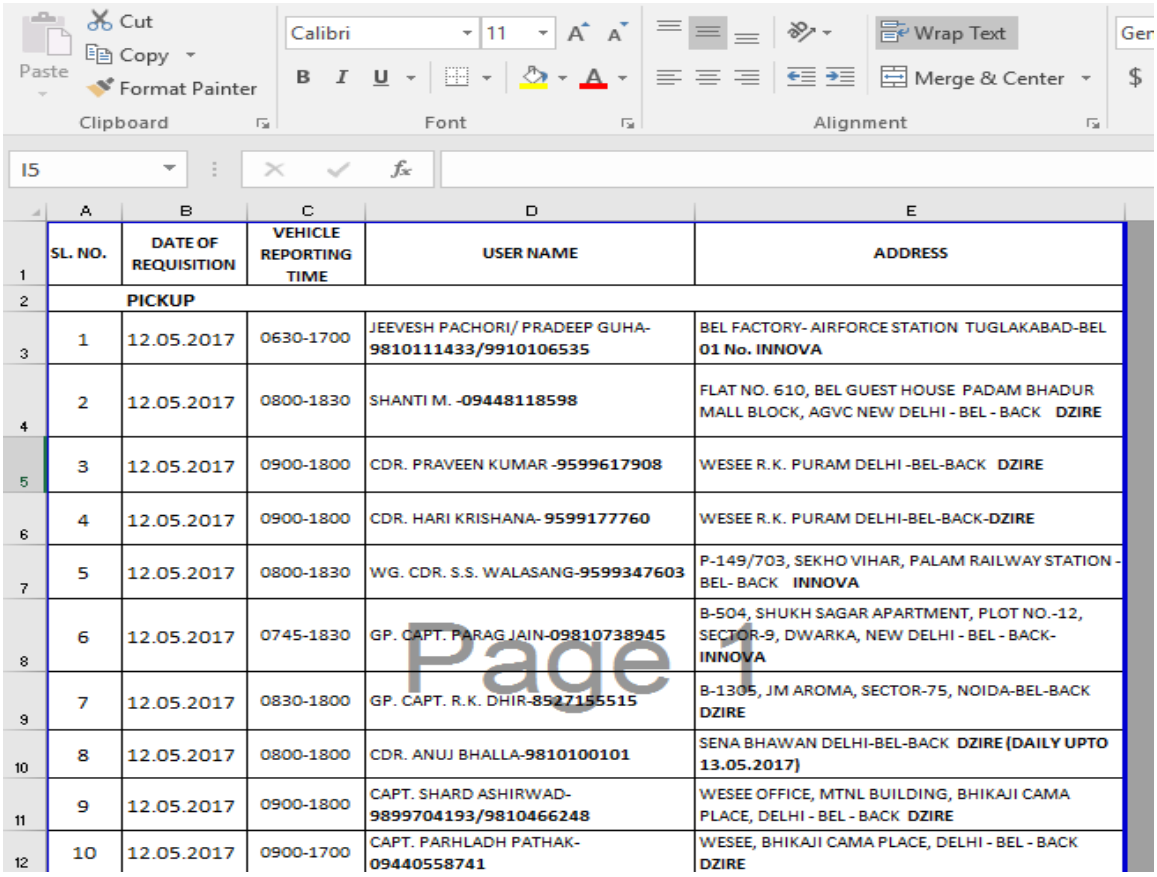
Cut
Copy
Format Painter
Paste
Clipboard
Calibri
11
Font
Wrap Text
Merge & Center
Alignment

I5

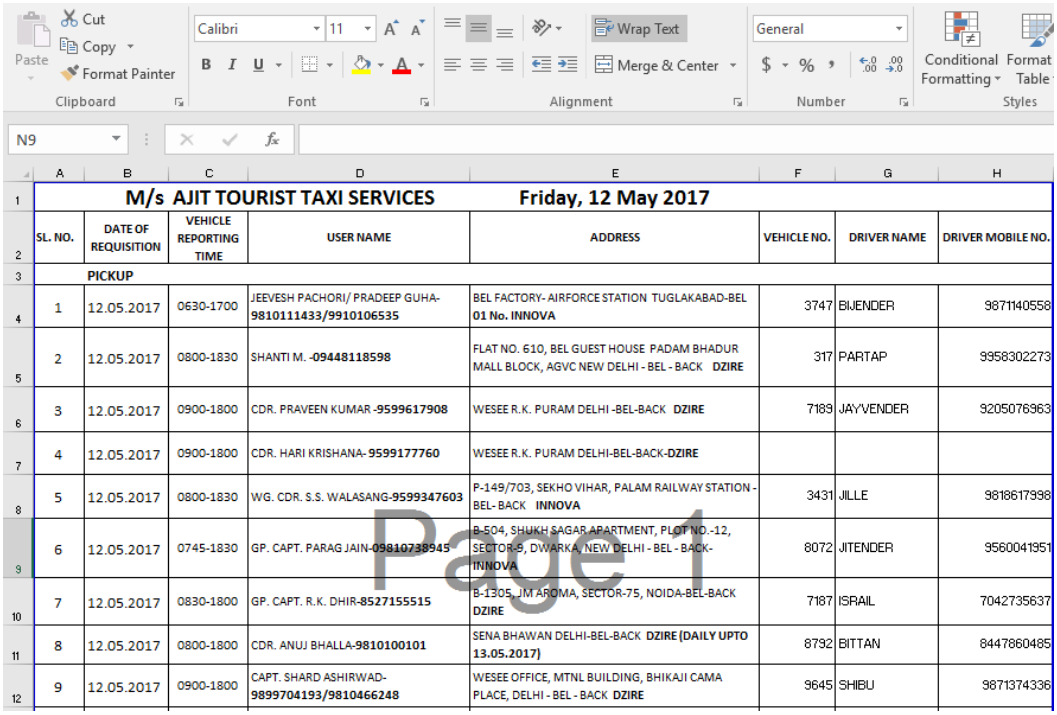
	A	B	C	D	E
1	SL. NO.	DATE OF REQUISITION	VEHICLE REPORTING TIME	USER NAME	ADDRESS
2		PICKUP			
3	1	12.05.2017	0630-1700	JEEVESH PACHORI/ PRADEEP GUHA-**9810111433/9910106535**	BEL FACTORY- AIRFORCE STATION TUGLAKABAD-BEL **01 No. INNOVA**
4	2	12.05.2017	0800-1830	SHANTI M. **-09448118598**	FLAT NO. 610, BEL GUEST HOUSE PADAM BHADUR MALL BLOCK, AGVC NEW DELHI - BEL - BACK **DZIRE**
5	3	12.05.2017	0900-1800	CDR. PRAVEEN KUMAR **-9599617908**	WESEE R.K. PURAM DELHI -BEL-BACK **DZIRE**
6	4	12.05.2017	0900-1800	CDR. HARI KRISHANA- **9599177760**	WESEE R.K. PURAM DELHI-BEL-BACK-**DZIRE**
7	5	12.05.2017	0800-1830	WG. CDR. S.S. WALASANG-**9599347603**	P-149/703, SEKHO VIHAR, PALAM RAILWAY STATION - BEL- BACK **INNOVA**
8	6	12.05.2017	0745-1830	GP. CAPT. PARAG JAIN-**09810738945**	B-504, SHUKH SAGAR APARTMENT, PLOT NO.-12, SECTOR-9, DWARKA, NEW DELHI - BEL - BACK- **INNOVA**
9	7	12.05.2017	0830-1800	GP. CAPT. R.K. DHIR-**8527155515**	B-1305, JM AROMA, SECTOR-75, NOIDA-BEL-BACK **DZIRE**
10	8	12.05.2017	0800-1800	CDR. ANUJ BHALLA-**9810100101**	SENA BHAWAN DELHI-BEL-BACK **DZIRE (DAILY UPTO 13.05.2017)**
11	9	12.05.2017	0900-1800	CAPT. SHARD ASHIRWAD-**9899704193/9810466248**	WESEE OFFICE, MTNL BUILDING, BHIKAJI CAMA PLACE, DELHI - BEL - BACK **DZIRE**
12	10	12.05.2017	0900-1700	CAPT. PARHLADH PATHAK-**09440558741**	WESEE, BHIKAJI CAMA PLACE, DELHI - BEL - BACK **DZIRE**

Screen shot of output generated automatically in excelsheet format for employees asking transport from other than BEL

Annexure-VI



SL. NO.	DATE OF REQUISITION	VEHICLE REPORTING TIME	USER NAME	ADDRESS
	PICKUP			
1	12.05.2017	0630-1700	JEEVESH PACHORI/ PRADEEP GUHA-**9810111433/9910106535**	BEL FACTORY- AIRFORCE STATION TUGLAKABAD-BEL **01 No. INNOVA**
2	12.05.2017	0800-1830	SHANTI M. **-09448118598**	FLAT NO. 610, BEL GUEST HOUSE PADAM BHADUR MALL BLOCK, AGVC NEW DELHI - BEL - BACK **DZIRE**
3	12.05.2017	0900-1800	CDR. PRAVEEN KUMAR **-9599617908**	WESEE R.K. PURAM DELHI -BEL-BACK **DZIRE**
4	12.05.2017	0900-1800	CDR. HARI KRISHANA- **9599177760**	WESEE R.K. PURAM DELHI-BEL-BACK-**DZIRE**
5	12.05.2017	0800-1830	WG. CDR. S.S. WALASANG-**9599347603**	P-149/703, SEKHO VIHAR, PALAM RAILWAY STATION - BEL- BACK **INNOVA**
6	12.05.2017	0745-1830	GP. CAPT. PARAG JAIN-**09810738945**	B-504, SHUKH SAGAR APARTMENT, PLOT NO.-12, SECTOR-9, DWARKA, NEW DELHI - BEL - BACK- **INNOVA**
7	12.05.2017	0830-1800	GP. CAPT. R.K. DHIR-**8527155515**	B-1305, JM AROMA, SECTOR-75, NOIDA-BEL-BACK **DZIRE**
8	12.05.2017	0800-1800	CDR. ANUJ BHALLA-**9810100101**	SENA BHAWAN DELHI-BEL-BACK **DZIRE (DAILY UPTO 13.05.2017)**
9	12.05.2017	0900-1800	CAPT. SHARD ASHIRWAD-**9899704193/9810466248**	WESEE OFFICE, MTNL BUILDING, BHIKAJI CAMA PLACE, DELHI - BEL - BACK **DZIRE**
10	12.05.2017	0900-1700	CAPT. PARHLADH PATHAK-**09440558741**	WESEE, BHIKAJI CAMA PLACE, DELHI - BEL - BACK **DZIRE**



M/s AJIT TOURIST TAXI SERVICES **Friday, 12 May 2017**

SL. NO.	DATE OF REQUISITION	VEHICLE REPORTING TIME	USER NAME	ADDRESS	VEHICLE NO.	DRIVER NAME	DRIVER MOBILE NO.
	PICKUP						
1	12.05.2017	0630-1700	JEEVESH PACHORI/ PRADEEP GUHA-**9810111433/9910106535**	BEL FACTORY- AIRFORCE STATION TUGLAKABAD-BEL **01 No. INNOVA**	3747	BIJENDER	9871140558
2	12.05.2017	0800-1830	SHANTI M. **-09448118598**	FLAT NO. 610, BEL GUEST HOUSE PADAM BHADUR MALL BLOCK, AGVC NEW DELHI - BEL - BACK **DZIRE**	317	PARTAP	9958302273
3	12.05.2017	0900-1800	CDR. PRAVEEN KUMAR **-9599617908**	WESEE R.K. PURAM DELHI -BEL-BACK **DZIRE**	7189	JAYVENDER	9205076963
4	12.05.2017	0900-1800	CDR. HARI KRISHANA- **9599177760**	WESEE R.K. PURAM DELHI-BEL-BACK-**DZIRE**			
5	12.05.2017	0800-1830	WG. CDR. S.S. WALASANG-**9599347603**	P-149/703, SEKHO VIHAR, PALAM RAILWAY STATION - BEL- BACK **INNOVA**	3431	JILLE	9818617998
6	12.05.2017	0745-1830	GP. CAPT. PARAG JAIN-**09810738945**	B-504, SHUKH SAGAR APARTMENT, PLOT NO.-12, SECTOR-9, DWARKA, NEW DELHI - BEL - BACK- **INNOVA**	8072	JITENDER	9560041951
7	12.05.2017	0830-1800	GP. CAPT. R.K. DHIR-**8527155515**	B-1305, JM AROMA, SECTOR-75, NOIDA-BEL-BACK **DZIRE**	7187	ISRAIL	7042735637
8	12.05.2017	0800-1800	CDR. ANUJ BHALLA-**9810100101**	SENA BHAWAN DELHI-BEL-BACK **DZIRE (DAILY UPTO 13.05.2017)**	8792	BITTAN	8447860485
9	12.05.2017	0900-1800	CAPT. SHARD ASHIRWAD-**9899704193/9810466248**	WESEE OFFICE, MTNL BUILDING, BHIKAJI CAMA PLACE, DELHI - BEL - BACK **DZIRE**	9645	SHIBU	9871374336

Screenshot of return mail received from transporter with vehicle details

Annexure-VII

S.No	Start Date	Start Point	End Date	End Point	Movement Duration	Parked Duration	Idle Duration	Max Speed	Avg Speed
1	April 1, 2017, 12:00 am	24, Jasola, Jasola Village, New Delhi, Delhi 110025, India	April 2, 2017, 12:00 am	G 130, Post Office Marg, Govind Puri, Kalkaji Extension, Kalkaji, New Delhi, Delhi 110019, India	2:01	19:08	2:01	74km/hr	16km/hr
2	April 2, 2017, 12:00 am	G 130, Post Office Marg, Govind Puri, Kalkaji Extension, Kalkaji, New Delhi, Delhi 110019, India	April 3, 2017, 12:00 am	Building, Jasola, Jasola Vihar, New Delhi, Delhi 110025, India	2:18	0.836111111	2:18	89km/hr	19km/hr
3	April 3, 2017, 12:00 am	Building, Jasola, Jasola Vihar, New Delhi, Delhi 110025, India	April 4, 2017, 12:00 am	Building, Jasola, Jasola Vihar, New Delhi, Delhi 110025, India	2:53	18:04	2:53	71km/hr	16km/hr
4	April 4, 2017, 12:00 am	Building, Jasola, Jasola Vihar, New Delhi, Delhi 110025, India	April 5, 2017, 12:00 am	24, Jasola, Jasola Village, New Delhi, Delhi 110025, India	3:31	16:08	3:31	77km/hr	21km/hr
5	April 5, 2017, 12:00 am	24, Jasola, Jasola Village, New Delhi, Delhi 110025, India	April 6, 2017, 12:00 am	G 129, Post Office Marg, Govind Puri, Kalkaji Extension, Kalkaji, New Delhi, Delhi 110019, India	3:21	17:58	3:21	73km/hr	16km/hr
6	April 6, 2017, 12:00 am	G 129, Post Office Marg, Govind Puri, Kalkaji Extension, Kalkaji, New Delhi, Delhi 110019, India	April 7, 2017, 12:00 am	Building, Jasola, Jasola Vihar, New Delhi, Delhi 110025, India	3:42	0.719444444	3:42	78km/hr	16km/hr
7	April 7, 2017, 12:00 am	Building, Jasola, Jasola Vihar, New Delhi, Delhi 110025, India	April 8, 2017, 12:00 am	Building, Jasola, Jasola Vihar, New Delhi, Delhi 110025, India	2:49	0.793055556	2:49	79km/hr	16km/hr
8	April 8, 2017, 12:00 am	Building, Jasola, Jasola Vihar, New Delhi, Delhi 110025, India	April 9, 2017, 12:00 am	Building, Jasola, Jasola Vihar, New Delhi, Delhi 110025, India	2:26	19:48	2:26	79km/hr	19km/hr
9	April 9, 2017, 12:00 am	Building, Jasola, Jasola Vihar, New Delhi, Delhi 110025, India	April 10, 2017, 12:00 am	Building, Jasola, Jasola Vihar, New Delhi, Delhi 110025, India	1:34	20:02	1:34	67km/hr	10km/hr
10	April 10, 2017, 12:00 am	Building, Jasola, Jasola Vihar, New Delhi, Delhi 110025, India	April 11, 2017, 12:00 am	Building, Jasola, Jasola Vihar, New Delhi, Delhi 110025, India	5:16	0.588888889	5:16	83km/hr	25km/hr
11	April 11, 2017, 12:00 am	Building, Jasola, Jasola Vihar, New Delhi, Delhi 110025, India	April 12, 2017, 12:00 am	Building, Jasola, Jasola Vihar, New Delhi, Delhi 110025, India	3:36	0.727777778	3:36	67km/hr	12km/hr
12	April 12, 2017, 12:00 am	Building, Jasola, Jasola Vihar, New Delhi, Delhi 110025, India	April 13, 2017, 12:00 am	Building, Jasola, Jasola Vihar, New Delhi, Delhi 110025, India	5:48	0.544444444	5:48	72km/hr	14km/hr

Screen shot of GPS output for a vehicle