



RESOURCE ACCOUNTING ON A BUSINESS PERSPECTIVE WITH VALUE STREAM MAP

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Abstract

Understanding the tangible and intangible benefits contributions to business development is vital for sustainable future success of the organization. Resource accounting tools can quantify the benefits of investment by accounting and valuation methods, optimizing business performance through human capital building strategy responding to changing business needs. Enterprise progresses with a focus on waste elimination and the customer's needs in all parts of its operations, manufacturing, and administration; emphasis to lean structures and processes, flexibility of response, and methods and techniques to continually seize new opportunities arise to become LEAN. VSM is for understanding the current organization and begin directing resources to high-leverage areas, re-evaluates the purpose to lean benefit the future state of the organization.

Keywords: Just-in-Time Inventory, Decision-Making, Human Resources, Quality Risk Assessment, Organizational Learning, Knowledge Management.

Introduction

Background Situation to the Development of the Manuscript

In our company Nelcast Ltd., we rolled out an organization development intervention named Vision2020 during the third quarter of financial year 2016-17, so that the whole organization operates with a reasonably aligned goal over a considerably monitored and guided time period of 3 years, unlike every year performance setting; which was not impactful in employee's engagement. Recovering from the onslaught of recession, change management in people-process-market orientations mirrored us to refix our thinking towards being agile on all fronts of the resources.

Resource Accounting enable managers to take appropriate decisions on investment and provide comparative information regarding costs and benefits associated with these assets (Reza *et al.*,2009; Singh *et al.*, 2009; Edom *et al.*,2015; Sanghani, 2016) . Resource Accounting evolved as one of the tools among, replacement cost model, stochastic rewards valuation model, historical cost model, Economic Value Added (EVA), competitive bidding method, and capitalization of future benefit, to carry out the DIP STICK analysis for realization of vision, mission and critical business decisions. It is one of the better scientific tools to quantify the benefits of investment on resource management. It includes accounting and valuation methods, for optimizing business performance by building a human capital strategy responding to changing business needs. Organizations need to ensure that they have a value-based (Gardner *et al.*, 2005, Hoog *et al.*, 2008), coherent strategy (Patterson, 2003; Luthan, 2009) to support the execution of their business goals. Understanding the tangible and intangible benefits contributions to business development is vital for sustainable future success of the organization. Businesses had started to recognize human resource's goodwill, an intangible asset with willingness allowed for valuation like any other traditional tangible assets (Shamim *et al.*, 2014).





Organizational effectiveness conceptualizes the effectiveness of an organization is in achieving its goals. Every employee in a company contributes to organizational effectiveness (Appendix Format I, II, III). Rationale perspectives on goal attainment, focuses on output variables such as quality, productivity, and efficiency. Natural system perspectives concentrate on the support goals of the organization such as employee satisfaction (Lebans, 2005; Baker et al., 2008, Saloni Devi, 2017), morale (Mangham, 2007; John, 2014), interpersonal skills (Pierchy, 2001; Luca *et al.*, 2001; Sundara, 2015).

Open system perspectives focus on the exchanges with the environment -- this includes information processing, profitability, flexibility, adaptability. Considering skills, experience, motivation and rank, some employees play a bigger role than others. Resource Accounting is basically a Management information system (MIS) that tells management what changes are occurring over time to the resources of the business, which account for the return on investment, their replacement costs, and the economic value of living and nonliving assets in an organization. Resource Accounting focuses on the effectiveness (Jennings, 2004; Satava *et al.*, 2006; Azeta *et al.*, 2014) of accounting information systems in enhancing the organizational effectiveness. Accounting information gives the decision maker the capacity to predict future actions, as it increases the knowledge of the users to identify similarities and differences

Analytics to Issue

The Western Management styles initiated by Taylor was more Quantitative such as on time measurement and thereby evolve an efficient allocation or movement of resources. Then the industrial revolution had Gilberts Dexterity (Chantal *et al.*, 2013) in Work though "THERBLIGS", which further was holistic combination of both Hard & Soft controls such as Work Flow Analysis (Lopez *et al.*, 2002; Maier *et al.*, 2011; Hattab, *et al.*, 2016) & Hawthorne's Experiment (Kozlowski *et al.*, 2000; Munteanu, 2014). These studies further evolved and crystallized as Mass Management Skills which were further nurtured and groomed towards contribution, productivity increase, efficiency increase, defects reduction, better layout designs, facilities improvement and maintenance kits (tools, equipment's & wearable).

Further refinement led to single minute exchange of dies & tools (SMEDT), modernizations at work place, scheduling of operations and maintenance, enriched supervisory development & controls, flat or matrix styled project based organizational structures, cost reductions in all layers, product weight reductions aimed at savings, and finally leader accountabilities based on cost or profit center management.

The Japanese much disciplined as a necessity, emotionally contained themselves to manage the work force though team management skills. They appreciated team goals, encouraged subordination to team, seniority in leadership, cleanliness at work place (5S), error proofing at work (Poke-Yoke), work sharing practice analysis (5WH?, Why-why?), towards zero defects and micro controls, productivity multiplications, unit replacements, suggestion schemes, quality circles, plan-do-check-act (PDCA), small group activities (SGA), vision-mission dream state exercises, policy deployment (Hoshin Kanri) etc., These techniques later found-bound as Total Quality Management (TQM) (Zhang, 1997; Hellsten, 2000; Terziowski, 2000; Forslund, 2006; Acta, 2011; Yadollah, 2012) and Total Productive Maintenance (TPM) (Ireland *et al.*, 2001; Ahuja *et al.*, 2008; Aaditya, 2012; Kumar *et al.*, 2012; Yash *et al.*, 2014).

Basic Issues Involved

As the volumes fell, being a tier one supplier to all leading Commercial trucks and Tractors industry in India and also playing a prominent part in export market – demanded a quick and multiple change over of various types of casting production and timely cater to every customer schedules, required us to prune on inventories, control costs, reduce wastages; and rethink on our value stream.

Enterprise Oriented Approach

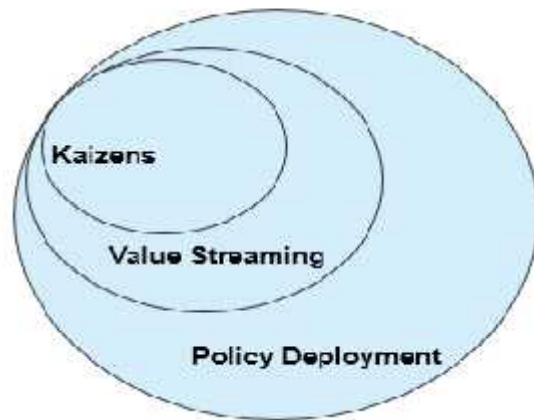
Enterprise which progress towards with a focus on waste elimination and the customer's needs in all parts of its operations, manufacturing, and administration; emphasis to lean structures and processes, flexibility of response, and methods and techniques to continually seize new opportunities arise to become LEAN. Strategizing in favor of investing in AIS and favoring their use needs a management support in the controls, and well-trained human resources accompany it, even the short- term allocating resources to AIS may lessen performance and this factor in times of crisis may act as an entry barrier for making investments in this type of technology. Lean deals with the elimination or reduction of many types of Non-Value-Added activities, often referred to as waste. The driving force for waste elimination is improved value in the products and services of customer purchase. In short anything that DOES NOT add VALUE is termed as waste.



DMAIC Process Tools



PDCA



Positives of Lean (Holmes, 2007; Serrano et.al., 2008; Peter et.al., 2011; Andrea, 2011) include understanding customer value, appreciating a Pull system, deploying Value stream mapping, following the principle of “Flow”, aiming at perfection, leadership when based on customer demand, safe orderly and clean work environment, design & build quality, team work culture, visual management tools and continuous improvement.

Waste Removal Process has the following

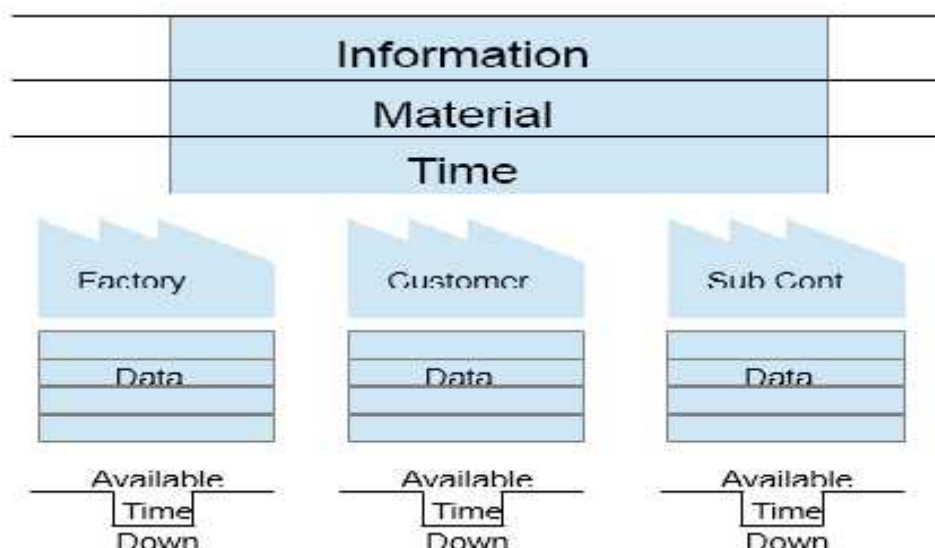
- “as-is” Mapping
- “to-be” Mapping
- Gap Analysis
- Select changes and improve towards Ideal
- Continuous improvement

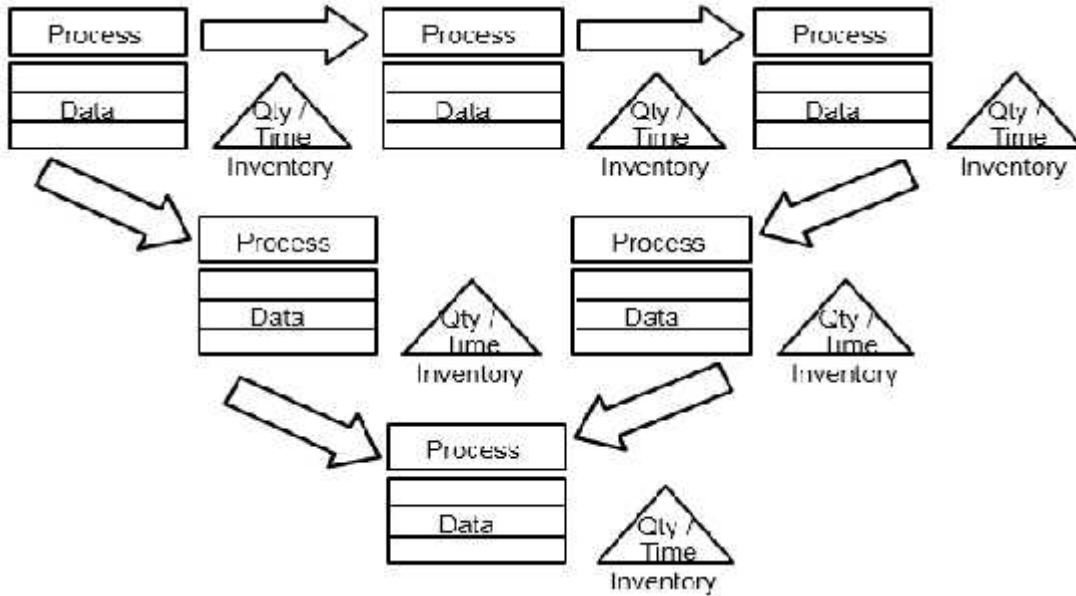
Methodology Used

Organization wide intervention spanning all areas and departments, through Value Stream mapping for organization gap analysis and strategizing lean with implementation of TPM/TQM.

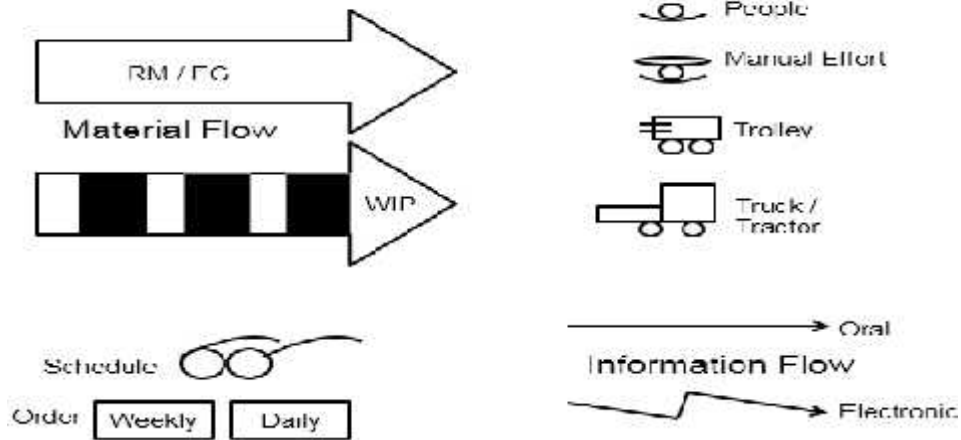
Value Stream Mapping

VSM (Womack et.al., 2003; Emiliani, 2004; Alves et.al., 2005; Achanga et.al., 2005) study in alignment with senior executives on the content viewed as strategic to the core success of the business through capture and measurement of the value addition propositions, compared components, drivers (enablers) and then determine the gaps.





Material Movement



Measurement	Description
Cycle Time (CT)	Work Completion from load to unload time
Wait Time (Wait)	Time spent by the item in a queue.
Value Add Time (VAT)	Time required for desired output
Non Value Add Time (NVAI)	Time wasted by the item other than wait time
Setup Time (ST)	Time for setting up the operations till first time right output
Available Time (AT)	Maximum time available for each process (minus break, meeting, and clean up)



Process Step Worksheet		
Process _____		
Start time: _____	End time: _____	Distance: _____
Activity	Time	Number of People
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____
Number of touches	:	_____
Touch time (secs)	:	_____
Type of Movement (manual / Others)	:	_____
Distance (meters)	:	_____
Waiting time (sec)	:	_____

Latent Knowledge Impact

The Knowledge management practices are better thought of during the design stage in these individual modules, to part knowledge transfer to the younger generations through documentation of practices. Therefore, the VSM started with documenting the “as-is” process over a chronology.

Value Stream Map

A pictorial representation of the Flow of

- Material
- People
- Processes
- Information

Specific data associated with each step

- Touch Time and Cycle Time
- Volume
- Resources
- Errors/rework

Resource Potential is an unknown and unexplored strength. It varies with people, process, systems and situations. The limits are limitless and unique to situations, which are constrained as the strength in the weaker link. SWOT or Potential periodical analysis are part of the health check processes which would facilitate the organization to take critical decisions as part of organizational development plans. The measurement of abilities of all resources, at every level of the value chain needs to be accountable in the system to add value affecting the current capabilities, knowledge and investments; it should also impact the future investments and returns year-on-year by increase in revenue turnovers and EBITDA.

Key to Performance

Organizations can evaluate the contribution per individual employee and support the growth with intellectual and skill development assets which can have a tangible book value. Consultant services may be hired to provide services to financial planning, identify value on demand which is required in comparison with the market expectations. Investment in intellectual capital for both current and future states should be facilitated with relevant information taking care for the realistic environments. Every opportunity is a learning opportunity which would facilitate the learning unexplored (mystical); with an expected scenario to be faced, with enough time frame to be better prepared with the resources, aging assets, changing times, situations and scenarios.

The assets of an organization could be broadly classified into tangible and intangible assets. However, the tangible asset is referred to as all the physical assets which could be presented in the balance sheet including plant and machinery, investments in securities, inventories, cash, cash equivalents and bank balance, marketable securities, accounts and notes receivables, finance receivables and equipment on operating leases. In the past, lesser importance was given by organizations



to value their human assets. Moreover, it was also considered difficult to evaluate them, as there were no defined parameters. Organizations did not value human resources, as these were never treated as an asset in the past. All investments related to employees, including salary as well as recruitment and training costs were considered as expenditures. It is evolving now that there is a large and growing body of evidence that demonstrates a positive linkage between the development of human capital and organizational performance. The emphasis on human capital in organizations reflects the view that market value depends less on tangible resources, but rather on intangible ones, particularly human resources. Recruiting and retaining the best employees, however, is only part of the equation. The organization also must leverage the skills and capabilities of its employees by encouraging individual and organizational learning and creating a supportive environment, in which knowledge can be created, shared and applied. In this review, we will assess the context in which human capital is being discussed and identify the key elements of the concept, and its linkage to other complementary forms of capital, notably intellectual, social, and organizational.

Activities Cost

Best organizational practices observe that there is an identifiable universal, positive effect on the performance along with the sheer number of contingencies that organizations experience, impacting

- Cost per employee
- Human capital investment ratio
- The amount of wealth created by each employee
- The profit created by each employee
- The ratio of salary paid to the total revenue generated
- Average salary of each employee
- Employee absenteeism rates
- Employee turnover rate and retention rate

Engagement

Organizations with internal systems to capture and measure data are better equipped not only to report, but also to make better decisions about workforce management (engagement and enrichment). Most information systems represent a significant investment which remains as an under-utilized resource, partly because they are not linked to other enterprise information system modules (finance, operations, customers). Implementing measures help an organization 'join up the dots' to more effectively managing its resource. Increase the understanding of the current organization and begin directing resources to high-leverage areas, re-evaluates the purpose of understanding the tangible and intangible benefits contributions to business development is vital for sustainable future success of the organization. Supplementing the study with interviews, focus group discussions and cross group interactions provide a more in-depth picture of strengths and weaknesses. Identified gaps enhances the study validity to include missing measurement areas, or introduce a separate target to focus leaders on more strategic elements of business performance.

Summary of Research

Refocusing the benefit contributions to business development for sustainable future success of the organization through detailed accounting and well communicated practice.

Conclusion

Value Stream Mapping implementation is thus a problem solver within our organization, identifies real problem and simplifies analysis involving contributors to the problem who eventually become solution providers to the support construct of the organization. VSM application in our organization demonstrated itself as an industrial application of relevance in identifying leads that affect the manufacturing process variability and its significant impact on costs and several wastages. These inputs served us as a foundation for revisiting our performance evaluation system. Therefore, to our organization, Value Stream was a simple and quick method to prepare, manage, share and present clarity on the existing gap which needed to be addressed in the process of achieving the Vision 2020 goals and reorient our performance tool which can overcome and sustain through the dynamic market vagaries.



Appendix

Format I

People Map

Employee -
 Department -
 Immediate Superior -
 Super / Head -
 Supplier / Work Input From
 ▪ Within Department
 ▪ Inter Department
 ▪ External
 Customer / Work output to
 ▪ Within Department
 ▪ Inter Department
 ▪ External
 Subordinates (Names when span <7)
 ▪
 ▪
 ▪
 ▪
 ▪

Format II

Responsibility Map (Describe & Quantify)

- Daily
 ▪
 ▪
 ▪
- Weekly / Fortnightly
 ▪
 ▪
 ▪
- Monthly
 ▪
 ▪
 ▪
- Quarterly / Half yearly
 ▪
 ▪
 ▪
- Annual
 ▪
 ▪

Format III

Support Map (Describe & Quantify)

Issue	Contributor	Suggest Solution



References

1. Aaditya choubey (2012), The Initiation Steps Of Total Productivity Maintenance In An Organization And Its Effect In Improvement Of Overall Equipment Efficiency, International Journal of Engineering Research and Applications (IJERA) ISSN: 2248-9622 www.ijera.com Vol. 2, Issue4, July-August 2012, pp.1709-1713 1709.
2. Achanga, P., Shehab, E., Roy, R., Nelder, G. (2005) Critical success factors for lean implementation within SMEs. Journal of Manufacturing Technology Management, Vol. 17.
3. Acta Wasensia (2011), Quality and Customer Satisfaction Perspective in Organisations by Gap and Total Quality Improvement Methods, UNIVERSITAS WASAENSIS.
4. Al Hattab, M., Hamzeh, F. (2016). "Modeling Design Workflow: Integrating Process and Organization." In: Proc. 24th Ann. Conf. of the Int'l. Group for Lean Construction, Boston, MA, USA, sect.5 pp. 53–62.
5. Alves, T. D. C. L., Tommelein, I. D. & Ballard, G. (2005) Value stream mapping for make-to-order products in a job shop environment. Construction Research Congress 2005: Broadening Perspectives - Proceedings of the Congress.
6. Andrea Bonaccorsi, Gionata Carmignani, Francesco Zammori (2011), Service Value Stream Management (SVSM): Developing Lean Thinking in the Service Industry, Journal of Service Science and Management, 2011, 4, 428-43
7. Azeta Tartaraj, Elira Hoxha (2014), CULTURE, AN IMPORTANT FACTOR IN DETERMINING THE ACCOUNTING SYSTEM, Interdisciplinary Journal of Research and Development, Alexander Moisiu University, Durrës, Albania Vol (I), No.1, 2014.
8. Baker W, Schaufeli WB. Positive organizational behavior: Engaged employees in thriving organizations. Journal of Organizational Behavior. 2008.
9. Chantal Gauvin, Jaime Lara, (2013), Worker Evaluation of Manual Dexterity, Tactile Sensitivity and Comfort When Wearing Needlestick-Resistant Gloves – Exploratory Study.
10. De Hoogh, A., & Den Hartog, D. (2008). Ethical and despotic leadership, relationships with leader's social responsibility, top management team effectiveness and subordinates' optimism: A multi-method study. The Leadership Quarterly, 19(3).
11. Edom, Godwin Onyam, Inah, Egu Usang, Adanma Eyisi S., 2015, THE IMPACT OF HUMAN RESOURCE ACCOUNTING ON THE PROFITABILITY OF A FIRM: EMPIRICAL EVIDENCE FROM ACCESS BANK OF NIGERIA PLC. European Journal of Accounting, Auditing and Finance Research Vol.3, No.7, pp.76-94, July 2015, Published by European Centre for Research Training and Development UK (www.eajournals.org).
12. Emiliani, M. L. (2004) Using value-stream maps to improve leadership. The Leadership & Organization Development Journal, Vol. 25.
13. F. Holmes, "Is Your Office as Lean as Your Production Line?" Manufacturing Engineering, Vol. 139, No. 3, 2007, pp. 20-21.
14. Forslund, H. (2006). Performance gaps in the dyadic order fulfilment process. International Journal of Physical Distribution & Logistics Management.
15. H. K. Singh and Vivek Singh, (2009) "Human Resource Accounting Practices in Infosys Technologies Limited- An Evaluation", SMS Varanasi, Vol V , No 1, June 2009.
16. Serrano, C. Ochoa and R. De Castro, (2008) "An Evaluation of the Value Stream Mapping Tool," Business Process Management Journal, Vol. 14, No. 1, 2008, pp. 39-52. doi:10.1108/14637150810849391.
17. I.P.S. Ahuja, J.S. Khamba, (2008) "Strategies and success factors for overcoming challenges in TPM implementation in Indian manufacturing industry", Journal of Quality in Maintenance Engineering, Vol. 14 Issue: 2, pp.123-147, doi: 10.1108/13552510810877647.
18. Ireland, F. and Dale, B.G. (2001), "A study of total productive maintenance implementation", Journal of Quality in Maintenance Engineering, Vol. 7 No. 3.
19. Jennings, M. (2004). Parmalat: Ethical collapse goes global. Corporate Finance Review, 8(5).
20. John Benson Chipeta (2014), Factors That Affect Staff Morale in Tertiary Hospitals in Malawi: A Case Study of Kamuzu Central Hospital, Journal of Human Resource and Sustainability Studies, 2014, 2, 230-238 Published Online December 2014 in SciRes. <http://www.scirp.org/journal/jhrss>, <http://dx.doi.org/10.4236/jhrss.2014.24024>.
21. Kozlowski, S. W. J., & Klein, K. J. (2000). A multilevel approach to theory and research in organizations: Contextual, temporal, and emergent processes. In K. J. Klein & S. W. J. Kozlowski (Eds.), Multilevel theory, research and methods in organizations: Foundations, extensions, and new directions (pp. 3-90). San Francisco, CA: Jossey-Bass.
22. Kumar, P., Varambally, V. M., and Rodrigues, L. R., (December 2012), "A Methodology for Implementing Total Productive Maintenance in Manufacturing Industries – A Case Study", International Journal of Engineering Research and Development, Vol. 5 No. 2.
23. Lebens M, Euske K. A conceptual and operational delineation of performance. Business Performance Measurement, Cambridge University Press, 2006.



24. Lopez, L., Mendes, J. F., and Sanjuan, M. A. (2002). Hierarchical Social Networks and Information Flow. *Physica A*, 316, 695-708.
25. Luca, J., & Tarricone, P. (2001). Does emotional intelligence affect successful teamwork? Proceedings of the 18th Annual Conference of the Australasian Society for Computers in Learning in Tertiary Education at the ASCILITE, Melbourne: University of Melbourne.
26. M. Terziovski and D. Samson, "The Effect of Company Size on the Relationship between TQM Strategy and Organizational Performance," *The TQM Magazine*, Vol. 12, No. 2, 2000.
27. Maier, A. M., & Storrle, H. (2011). What Are the Characteristics of Engineering Design Processes? International Conference on Engineering Design, ICED11, Denmark.
28. Mangham, L. (2007) Addressing the Human Resource Crisis in Malawi's Health Sector: Employment Preferences of Public Sector Registered Nurses. ESAU Economic and Statistical Analysis Unit, London, March 2007.
29. Md. Shamim Hossain Md. Rofiqul Islam, Md. Majedul Palas Bhuiyan, 2014, Recognition, Measurement and Accounting Treatment of Human Resource Accounting, ISSN: 2308-5096(P) ISSN 2311-620X (O) [International Journal of Ethics in Social Sciences Vol. 2, No. 2, December 2014].
30. Patterson, K. A. (2003). Servant leadership: A theoretical model. Servant Leadership Research Roundtable Proceedings, School of Global Leadership & Entrepreneurship, Regent University, Virginia Beach, VA.
31. Peter K., Lanza G. (2011), Company-specific quantitative evaluation of lean production methods, *Production Engineering*", Vol. 5, No. 1.
32. Pierchy N, Cravens D, Lane N (2001) Sales manager behavior control strategy and its consequences: the impact of gender differences, *Journal of Personal Selling and Sales Management*.
33. Reza Kouhy, Rishma Vedd, Takeo Yoshikawa, John Innes (2009), Human resource policies, accounting and organisational performance Research executive summaries series Vol 5, Issue 4.
34. Saloni Devi (2017), Impact of employee engagement on organizational performance: A study of select private sector banks, IMS Business School Presents Doctoral Colloquium – 2017 ISBN: 978-93-85895-57-9.
35. Sanghani Amisha R (2016), An Analysis of Human Resource accounting practices in Cement Corporation of India, *INDIAN JOURNAL OF APPLIED RESEARCH*, Volume : 6 | Issue : 3 | March 2016 | ISSN - 2249-555X | IF : 3.919 | IC Value : 74.50.
36. Satava, D., Caldwell, C., & Richards, L. (2006). Ethics and Auditing Culture: Rethinking the Foundation of Accounting and Auditing. *Journal of Business Ethics*, 64(3).
37. Sundara Rajan CR, (2015), Interpersonal Skills for Sales Force Effectiveness- A Survey on Indian Pharmaceutical Industry, *International Journal of Economics & ISSN: 2162-6359 Management Sciences*.
38. U. Hellsten and B. Klefsjö, "TQM as a Management System Consisting of Values, Techniques and Tools," *The TQM Magazine*, Vol. 12, No. 4, 2000.
39. Womack, J. P. & Jones, D. T. (2003) *Lean Thinking: Banish waste and create wealth in your corporation.*, New York, Simon & Schuster.
40. Yadollah Karimi, Sharifah Latifah, Syed Abdul Kadir, (2012), The Impact of Organisational Culture on the Implementation of TQM: Empirical Study in the Iranian Oil Company, *American Journal of Industrial and Business Management*, 2012, 2, 205-216.
41. Yash Parikh, Pranav Mahamuni, (2015), Total Productive Maintenance: Need & Framework, *International Journal of Innovative Research in Advanced Engineering (IJIRAE) ISSN: 2349-2163 Issue 2, Volume 2 (February 2015)*
42. Zhang, Z. 1997, Developing a TQM quality management method model.