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BUSINESS SUSTAINABILITY-AN AUTOMOBILE INDUSTRY PERSPECTIVE

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ABSTRACT

The Automobile sector is expanding globally with a steady growth rate. The sector is one of the most stable sectors over the last century, despite significant changes taking place in the industry in the last decade. The purpose of this paper is to understand these major changes in the context of overall sustainability perspective of corporations. The study analyzes internal strategic drivers influencing the sustainability performance and its linkage with the role of the investors. The study compares corporations listed in the Global100 most sustainable corporations (G100) and those not listed in the G100. The major focus is on superior sustainability performance by analyzing the difference between the content of the sustainability drivers of G100 and non G100 automobile corporations. With the help of one way ANOVA test, this study also investigates the significance of the impact of these strategic drivers of sustainability on the frequency of getting listed in the G100. This is the first study of this kind on the automobile industry with an emphasis on the G100 sustainability performance. The findings imply that getting listed in the G100 indices has positive correlation with the content of social and environmental values addressed in the strategic sustainability drivers identified in this study. The study is limited to the automobile sector as a single industrial sector and can't be directly extrapolated to other industries in general.

KEY WORDS- *G100, Automobile, Sustainability, Performance, Drivers, Strategy*

INTRODUCTION

Automobile products consist of assembly of more than thousand components and it demands very high initial capital investment. As a result, the sector has the largest manufacturing set up across the globe as a single sector and a small number of corporations dominate the global market. The sector is frequently in discussion in relation to the climate change and business sustainability due to its impact on the environment (Orsato and Wells, 2007).

In this study, an attempt is made to cover the global automobile industry and the context of overall business sustainability. Sixteen leading automobile corporations which contribute more than eight five percent by volume are studied. An empirical study was carried of the sustainability data published between 2005 to 2014. Performance across economic, social and environmental dimension is studied to understand the major changes in the global automobile industry. G100 performance is considered as a measure of superior sustainability performance. An important observation is made during this study, that all sixteen corporations publish their annual sustainability report as per global reporting guidelines and report sustainability programs, however a few are listed in the G100 and a few are never listed in the G100.

An attempt has been made to identify the factors supporting corporations to get listed in the G100 by studying the content of their sustainability reports. These internal driving factors identified in this study are taken from the content of leadership statements like Vision/ Mission statement, Sustainability roadmap and are termed as sustainability drivers. A correlation between the content of sustainability drivers and the sustainability performance was also examined. Their significance is checked with the help of one way ANOVA analysis by comparing corporations listed in the G100 versus the corporations never listed in the G100.

The findings will guide corporations to design, plan and review their sustainability programs, and increase their chances of getting listed in the G100 list. It will also help the Chief Executive Officers and the Business Leaders in improving their sustainability performance and investors perception about their corporation. The findings cannot be directly

extrapolated to other industries in general. Similar assessment may be carried out for other sectors. Overall study will also help corporations to improve their long-term sustainability with respect to the global changes in a particular sector.

LITERATURE REVIEW - Automobile sector and sustainability

The Automobile sector is one of the oldest sectors which consist of few corporations serving more than a century to fulfill the global needs of society for road transportation. A consistent rise in the demand of automobiles has enabled the sector to remain economically stable. Large manufacturing setup and higher initial capital investment have made it challenging for the new corporations to enter into this sector (Orsato and Wells, 2007).

Higher material cost has made the role of supply chain critical for the corporations. The nature of business demands huge supplier base and generates global employment opportunities. The sector is criticized mainly for negative environmental impacts of its products and social issues across its supply chain. These factors directly impact reputation of the corporation and hence sustainability initiatives become important (Koplin *et.al.*, 2006).

To cater to the expansion of business in the global market, automobile corporations have adopted multiple manufacturing locations as a strategic move. However, the major problem arising out of this was the need to maintain standardization across these multiple locations. The Management system standards like ISO14001 have helped the automobile corporations to achieve the standardization and efficiency across these multiple locations (Evans and Dean, 2003).

Changing environment encouraged innovation in corporations to prepare their long-term strategic plans. These corporations have played a leading role in publishing their sustainability reports (Nieuwenhuis *et. al.,* 2003). The major challenges include timely launch of new products, manufacturing inflexibility and management of extensive logistics network (AA1000). Some of the major issues faced are providing different features in the premium segment and remaining cost competitive while maintaining the thin profit line in the value segment. At the same time, the corporations need to maintain a balance between global expansion and local adaptations. These challenges have made "Materiality matrix' an important exercise for this sector. In the materiality matrix, the key issues related to either corporation or its stakeholders with prime importance are prioritized (Gerrard and Kandilkar, 2006). Corporations need to prioritize key material issues relevant to automobile sector and can refer document sector supplement by GRI G4 guidelines as seen in the table 1

Table 1 – Automobile sector supplements - material issues

Sr.	Dimension	GRI- Sector supplements	Specification expected
1	Environmental	Materials in product	Recyclable material in vehicles
2	Environmental	Materials in production	Green supply chain policy
3	Environmental	Energy consumption	In operations and value chain
4	Environmental	Fuel consumption	Vehicles usage
5	Environmental	GHG emission	Production and products
6	Environmental	Volatile organic compounds	Production process
7	Environmental	End of life of product	Product recovery process
8	Environmental	Toxic substances	Lead , Mercury
9	Social	Labor conditions	Local hiring, migrant workers
10	Social	Product safety	In operations for employees
11	Social	Human rights	In operations and supply chain
12	Social	Quality control	Product in use and supply chain
13	Social	Recall process	Customer complaints
14	Social	Vehicle design	Energy efficiency, Green car
15	Economical	Corporate governance	Management system standards
16	Economical	Profitability	Profit to Revenue Ratio

(Source: GRI G4 Guidelines, Sector Supplements)

The automobile corporations also face technological pressures mainly due to the country wise difference in regulations and norms (Hammond et al., 1998). The European Union has comparatively stricter environmental regulations and considers accountability of the producer till the end of life of vehicle (ELV). The European union has encouraged automobile corporations to focus on the lifecycle approach as one of their sustainability issues (Webster and Mitra, 2007).

Automobile corporations create load on the natural resource base because of their huge supply chain and heavy material consumption in its production. It has triggered corporations to adopt recycling, and remanufacturing of components. However the remanufacturing concept has not proven to be a sustainable alternative in the absence of government policy (Gerrard and Kandlikar, 2007). The overall sustainability performance of the corporations in the global sustainability indices represents a balanced approach and it helps investors in safeguarding their investors' decision making (Weber, 2008; Sadowski et al., 2010).

Over the years, to maintain cost competitiveness in market, leading automobile corporations have taken strategic steps to welcome merger and acquisition for their economic sustainability (Prillwitz and Barr, 2011). Corporations are adopting a business model approach to create value and align their key stakeholders (Beattie & Smith, 2013). A business model approach with the declared sustainability vision and mission statements support achievement of the business goals and encourages innovation by creating different opportunities (Chesbrough,2010, Boons and Freund, 2013, Rauter et al., 2015).

A sustainable business model has enabled corporations to achieve better environmental performance over a longer period of time. It supports corporations to sustain in changing environment without significant impact on the business performance (Bocken *et.al.*2014). Framework of strategic sustainable model supports corporations to achieve multidimensional performance with proper balance and integrated approach (Broman & Robert,2017).

Sharing of business strategy helps alignment of business stakeholders. Among all stakeholders, role of the Investors has become very crucial to the environmental impacts of the products. Automobile corporations are progressive, however why some are listed in G100 and some are not listed is subject of curiosity. Impact of the strategic internal drivers of sustainability like sustainability vision/ mission, sustainability roadmap, materiality matrix is an area of interest. What is the impact of establishing a linkage between sustainability performance and executive performance pay also needs to be understood with respect to G100 performance. These questions led us to design an empirical research based on the secondary data of automobile corporations.

METHODOLOGY

Automobile corporations with a contribution of more than 85% by volume of the global market are categorized into two groups based on their G100 performance. Group 1are those listed in the G100 and Group 2 are those not listed in the G100. Being listed in G100 global sustainability index is considered as a measure of superior sustainability performance in this study. Sustainability data and strategic leadership statements are studied using content analysis. Significance of the difference between Group 1 and Group 2 is checked with ANOVA analysis. Methodology is presented in the figure 1.

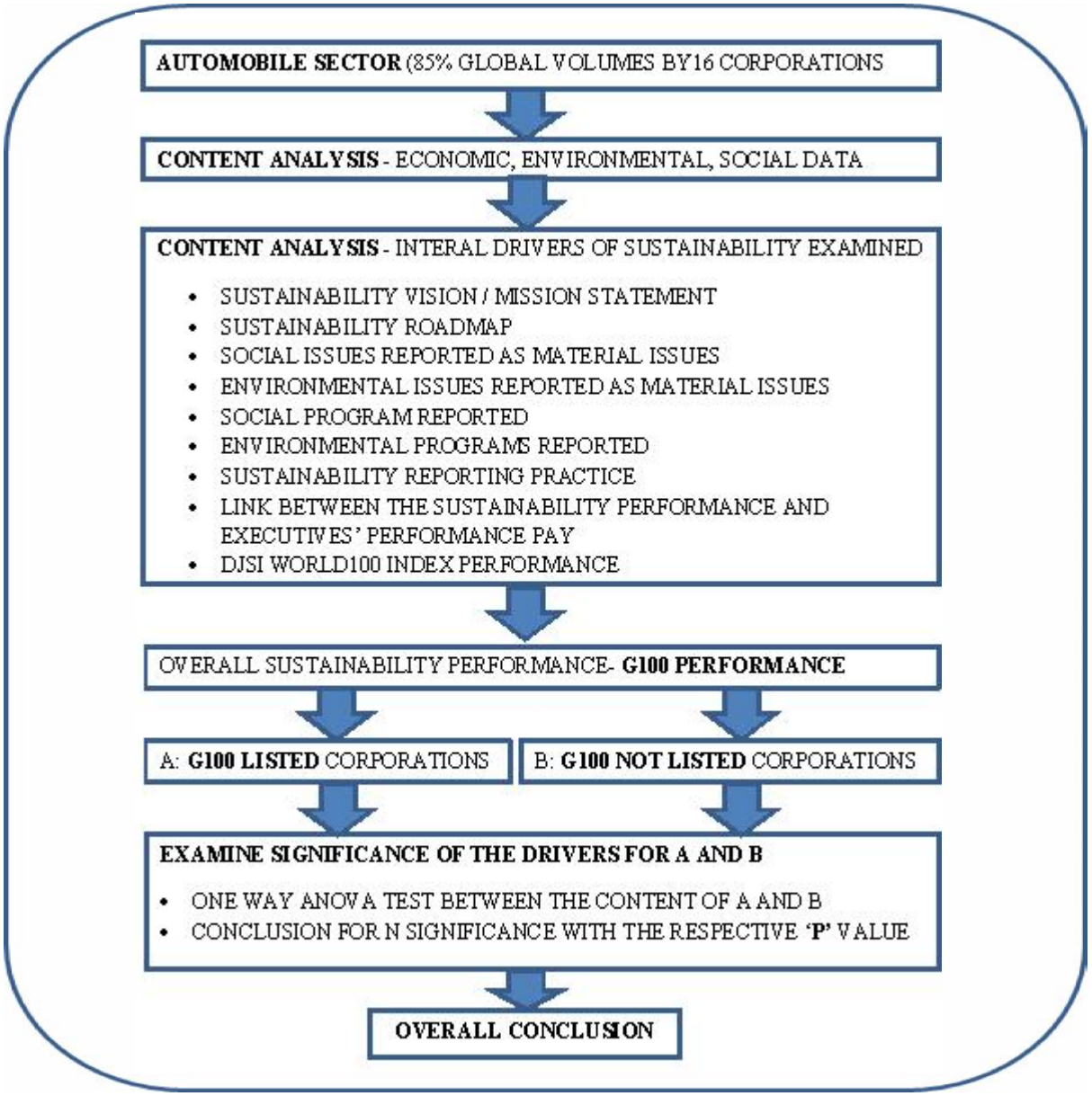

Figure 1 - Methodology of study on global automobile corporations

FINDINGS AND DISCUSSIONS

To sustain the changing environment, automobile corporations have taken major strategic decisions. Study considered economic, environmental and social initiatives according to their value addition and impact on the respective performance.

Economic sustainability

In order to sustain economically, the global automobile industry has undergone a major shift in the last decade. Corporations have expanded their base from developed to developing countries with mergers and acquisitions. Role of the investors must have played important role and enable industry to maintain 4% CAGR rate as shown in the figure 2.

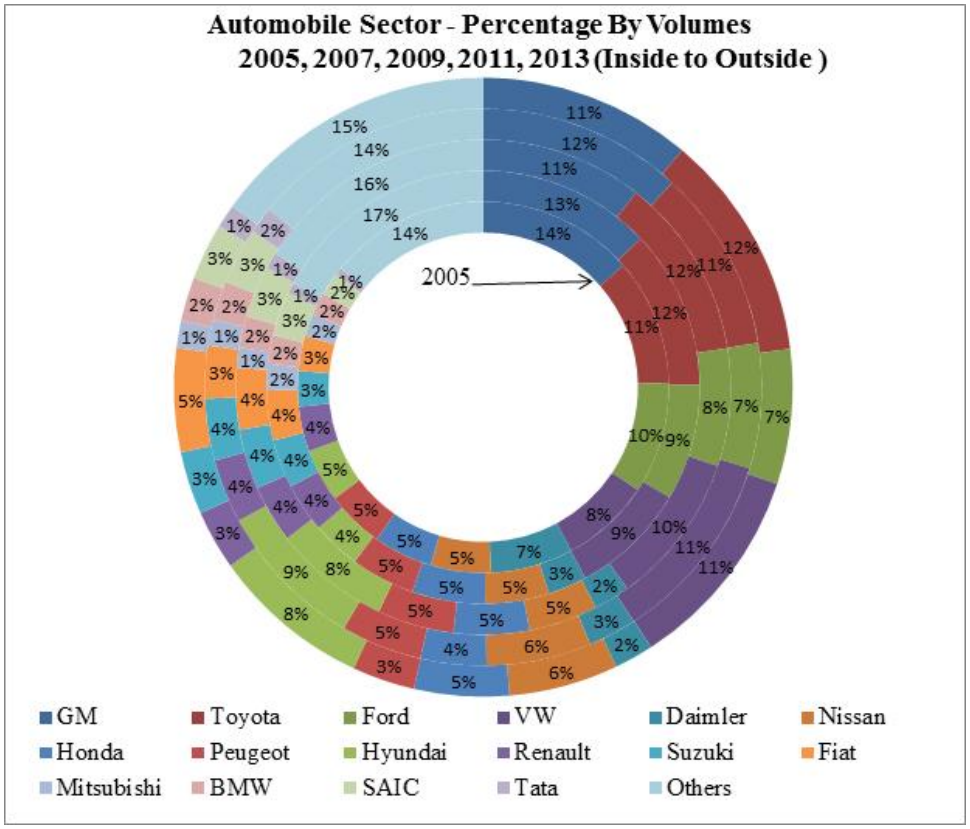

Figure 2 – Economic sustenance of global automobile industry and corporations

Automobile corporations have taken major decisions to shift their production units from developed countries like US, UK, Germany, Japan to developing countries like China.. Significant change observed in the country specific volumes as shown in figure 3

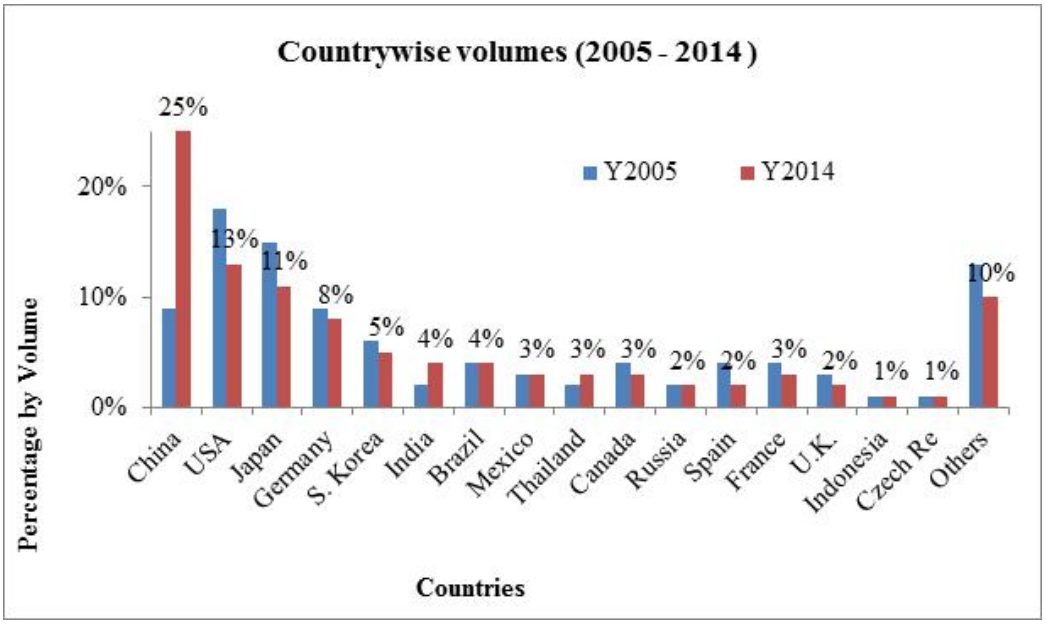

Figure 3 – Automobile industry global shift

All automobile corporates mentioned economic value addition in terms of profit and revenue generated. For comparison Profit to revenue ratio is considered in this study. Ratio varies in the band of 1% to 21% percent and investors have played a critical role in decision making which impacted the economic sustainability of these automobile corporations. Automobile industry growth in China as seen in figure 3 is mainly due to the mergers and acquisitions and collaborative working of corporations from US and Germany like GM, Ford, BMW and Daimler, VW respectively. It enabled sustenance of profit to revenue ratio between 4% to 10%. Corporation like Peugeot with highest active 137 years, seems lacking policy decisions to manage the changing environment. It has resulted in degrowth in their market and lowest profit

to revenue ratio of 1%. Koeran corporations with more than 40 active years like Hyundai and Honda are exceeding 20% profit to revenue ratio as shown in column L of table 2. Number of active years shown in column J of table 2 and these measures represent economic sustainability.

Environmental sustainability

We have seen how management system standards enabled standardization across different manufacturing units. It also enabled reduction in variation and hence environmental projects undertaken by these automobile corporations are similar in nature. Due to this similarity, mapping of various environmental initiative is carried out with major programs like emission reduction, water consumption reduction, waste reduction, energy saving, resource efficiency, efficiency in production, percentage of material recycled, green supply chain and alternative fuel options. These programs are mapped as shown in figure 4. Even though many programs are similar in nature Toyota, BMW, VW, Daimler, Nissan have reported commitments to extend ISO 14001 in their supply chain. BMW reported their commitment of use of renewable energy in their operations. Due to product stewardship compliances in European market corporations like BMW, Toyota, VW, Daimler, Fiat, Renault have reported percentage of material recycled. Graphical representation of environmental programs reported by automobile corporations is shown in figure 4.

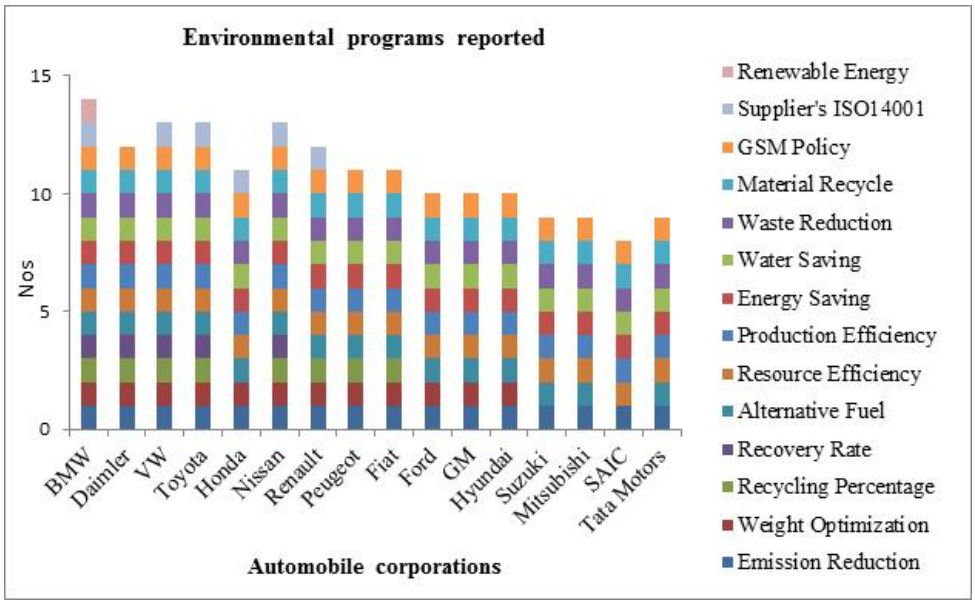

Figure 4 - Environmental programs reported

Percentage of number of environmental programs reported to total number of programs is considered as one of the internal driver as shown in the column G of table 2

Environmental material issues reported

Automobile corporations have used GRI G4 sustainability reporting guidelines and have addressed key environmental material issues based on sector supplement document of GRI G4. This led to similarity of material issues however number of issues varies as seen in figure 5.All sixteen corporations have identified climate change, resource efficiency, waste reduction and water consumption reduction as their key material issue and differ for other material issues selection. BMW differentiates by addressing a measurable commitment for renewable energy and HONDA has mentioned their commitment to reduce volatile organic compounds (VOC). Sustainable mobility, LCA and supply chain standards are addressed by leading corporations like BMW, Daimler, VW, Toyota, Nissan, Renault. GM, Ford, Tata Motor, SAIC have reported comparatively lesser number of issues. Study considered percentage of the issues reported to total issues of the sector as one of the measure as mentioned in column E of the table 2

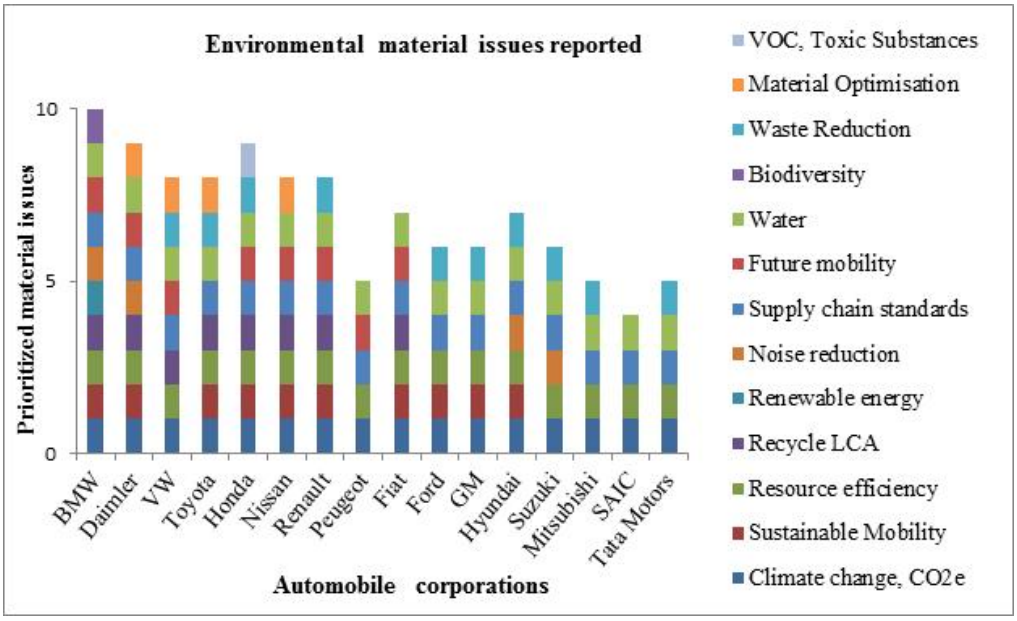

Figure 5 - Environmental material issues report

Social sustainability

Social value addition addressed in sustainability report address content on different social programs. Social material issues are reported based on stakeholder engagement practice. Automobile corporations have reported social programs based on value addition to important stakeholders like employees, customers, supply chain partners and the community. Social data indicators commonly reported address issues like product safety, safety in operations, product recall, human rights in the supply chain, community programs for health, education and environment as seen in figure 6. Toyota, BMW, Daimler, VW, Honda, Nissan have reported their product recall policy, process and actual recall details. Toyota, BMW have reported research-based road safety programs to create strategic social value. Total social programs initiated by automobile corporations are mentioned in column F of table2.

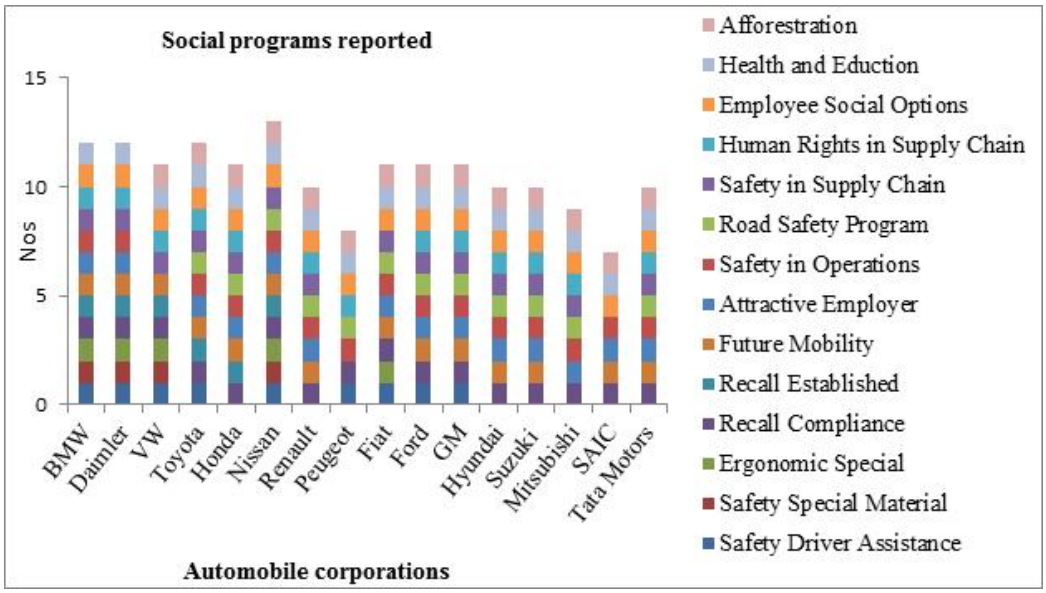

Figure 6 - Social programs reported

Social material issues

Social material issues reported by automobile corporations have been identified based on respective engagement practice with respective stakeholder like employees, customers, supply chain partners, community. Study considered percentage of the issues reported to total issues of the sector as one of the measure as mentioned in column D of the table 2. Social material issues reported by automobile corporations in their sustainability reports are as seen in the figure 7.

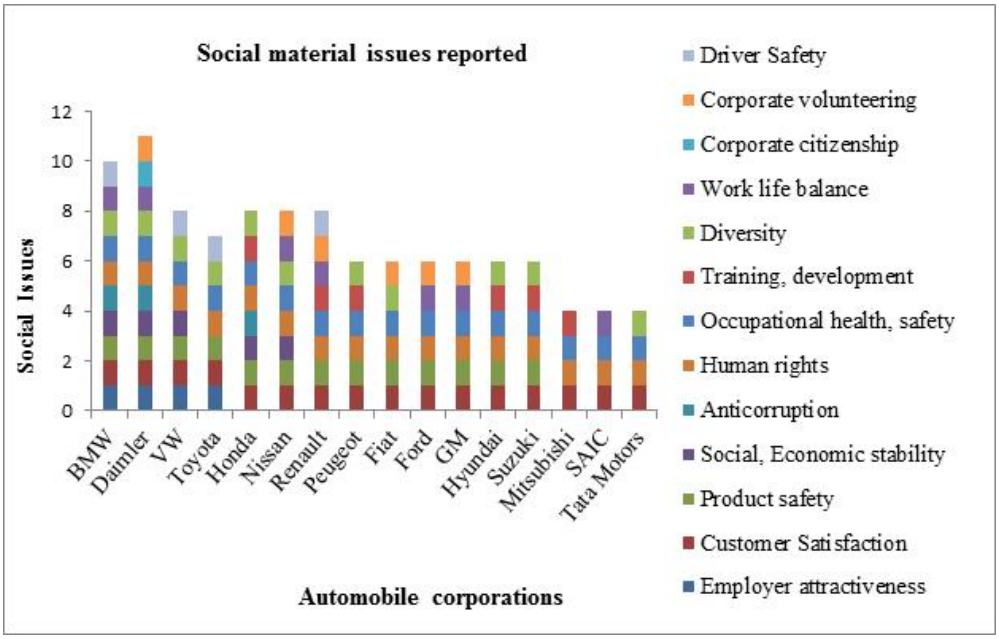

Figure 7 - Social material issues reported

Role of management system standards

Maintaining standardization across multiple locations was biggest challenge for automobile corporations. Few corporations have reported multiple production units up to 100 plants across the globe. Sustainability reports have addressed following management system standards like ISO 9000, ISO 14000, ISO 14064, ISO 14040, ISO 50001, ISO 27000, ISO 30000, OHSAS 18001, ISO 45001, SA 8000 and ISO 26000 guidelines. BMW sustainability report mentioned implementation of all of these standards. SAIC from China with active years less than 20 has reported only two basic standards like ISO 14001 and OHSAS 18001. Year on year, corporations are reporting more such standards like social responsibility ISO 26000 voluntary guidelines. Study considered content in number of standards reported as one of the variable supporting overall sustainability and shown in column K of table 2.

Overall sustainability

Automobile industry has played leading role in the sustainability reporting due to its nature of business. All sixteen automobile corporations publish annual sustainability report as per global reporting guidelines and the average size of sustainability reports is more than hundred pages. Content analysis exercise made us understand the flow of the content of the sustainability reports which address leadership document, narration of good governance practices like code of conduct and robust management systems and various awards achieved. G100 evaluates and ranks corporations based on multidimensional performance. For this reason we have considered frequency of getting listed in G100 as the measure of superior sustainability performance. Automobile corporations like BMW, Daimler, VW, Toyota, Honda, Nissan, Renault and Peugeot are listed at-least once in G100 whereas Fiat, Ford, GM, Hyundai, Suzuki, Mitsubishi, SAIC, Tata Motors are not listed in G100. To be precise Toyota is listed for 8 years during the period 2005 to 2014 as shown in the column A of table 2.

Sustainability vision and/or mission statement

The content of sustainability vision and/or mission statement addresses economic, social and environmental issues of different stakeholders. In this study, three dimensions economic, social and environmental are given scale of 0, 0.5, 1 and statements are mapped as seen in the column B of table2. Peugeot, Mitsubishi and SAIC address economic dimension, GM, Suzuki, Tata Motors, Hyundai address economic and social dimension whereas BMW, Daimler, VW, Toyota, Honda, Nissan, Renault, Ford declare three dimensional statement to achieve sustainable development.

Sustainability roadmap

Sustainability roadmap address future commitments declared by the corporation and shares the path of various social, environmental programs. It helps business stakeholders to align their future plans being proactive and builds confidence amongst the investors. Content mapped on the scale of 0, 0.5 and 1 respectively for no future commitments reported, future commitments reported without tangible measures and future commitments reported with a timeline as seen in the column C of table 2. BMW, Daimler, VW, Toyota, Honda and Nissan have reported sustainability targets with detailed plan to achieve it and reported process to measure it. SAIC and Mitsubishi has shared only economic performance and not shared future targets whereas other corporations have shared commitment targets without plans.

Sustainability performance linked to performance pay of the executives

The sustainability performance if linked to the performance pay of the executive, leads to good governance and integration of the sustainability measures across the organization. A binary scale was used to rate the link between the sustainability performance and executive performance pay as shown in the column H of table2. The sixteen automobile corporations were segregated in two groups based on whether they were listed in G100 (Group1) or not (Group2). The data from the sustainability report was mapped with the aid of content analysis on suitable scales as shown in table.6.2

ANOVA analysis conducted to check the significance of these elements and variation in group1and group 2. This data mapped in the table 2 was considered for ANOVA analysis of these automobile corporations to check the impact of reporting these variables in sustainability reports and on superior sustainability performance.

Table 2 – Outcome of Content analysis of the sustainability data as per developed scale

	Column	A	B	C	D	E	F	G	H	I	J	K	L
Sr.	Automobile Corporation	Years in G100	Sustainability Vision / Mission Statement	Sustainability Roadmap	Social Material Issues Reported	Environmental Material Issues Reported	Social Programs Reported	Environmental Programs Reported	Sustainability Performance Linked To Performance Pay	Years in DJSI	Number of Active Years	Management System Standards	Profit To Revenue Ratio
1	BMW	**4**	1	1.0	78%	77%	93%	100%	1	14	99	10	10
2	Daimler	**4**	1	1.0	76%	70%	87%	80%	1	12	88	7	8
3	VW	**1**	1	1.0	65%	62%	87%	93%	1	11	78	9	9
4	Toyota	**8**	1	1.0	62%	62%	80%	93%	1	9	78	9	4
5	Honda	**2**	1	1.0	57%	62%	67%	80%	1	8	66	7	21
6	Nissan	**4**	1	1.0	62%	62%	73%	93%	1	9	81	8	5
7	Renault	**4**	1	0.5	60%	62%	67%	87%	1	8	116	7	4
8	Peugeot	**1**	0	0.5	48%	48%	67%	80%	0	8	132	7	1
9	Fiat	**0**	0	0.5	46%	54%	60%	73%	1	8	106	9	4
10	Ford	**0**	1	0.5	40%	46%	40%	73%	0	8	110	6	5
11	GM	**0**	0.5	0.5	46%	46%	40%	60%	0	8	106	5	4
12	Hyundai	**0**	0.5	0.5	46%	46%	60%	73%	1	5	47	9	21
13	Suzuki	**0**	0.5	0.5	40%	46%	53%	40%	0	4	58	4	7
14	Mitsubishi	**0**	0	0.0	30%	30%	40%	53%	0	0	44	5	6
15	SAIC	**0**	0	0.0	30%	30%	28%	35%	0	0	15	2	9
16	Tata Motors	**0**	0.5	0.5	30%	30%	60%	53%	0	0	69	5	4

Results of one way ANOVA - G100 listed and G100 never listed

One way ANOVA test conducted to compare the data of automobile corporations listed in G100 verses corporations never listed in G100. P-value less than 0.05 represent perceptible difference in the content of independent variables of two groups as mentioned in the table 3.

Table 3 - One way ANOVA analysis of G100 listed vs. never listed corporations

Sr.	Content of independent variables	P-Value	R-Square	Standard deviation
1	Sustainability Vision/ Mission Statement	**0.033**	40%	**1.97**
2	Sustainability Roadmap	**0.011**	50%	1.81
3	Social Material Issues	**0.048**	90%	1.27
4	Environmental Material Issue	**0.050**	99%	0.41
5	Total Social Programs	**0.009**	90%	1.14
6	Total Environmental Programs	0.259	66%	2.01
7	Sustainability Performance Linked To Performance Pay	**0.011**	50%	1.81
8	Number of years listed in DJSI	**0.049**	75%	1.61

CONCLUSION

It is clear that, the automobile corporations reporting sustainability vision and/or mission statements, sustainability roadmap are able to take alignment of their key stakeholders like major investors and supply chain partners. It is helping them achieve superior sustainability performance in the global sustainability indices.

Material issues selection represents integration of social and environmental issues with strategy. Automobile corporations can improve their sustainability performance by reporting materiality matrix and refer guidance document like sector supplement to maximize its impact.

Though sustainability is multidimensional approach, initially it was linked to environmental dimension. It resulted in similarity among environmental programs like emission reduction, waste reduction, alternative fuel etc. There is no significant impact due to environmental programs due to this similarity. BMW and Toyota report their commitment for

renewable energy in manufacturing and life cycle approach right from design state till product disposal. There is no significant difference Automobile corporations are creating competitive advantage with the help of social programs. BMW, Daimler, Toyota have reported need based, researched based road safety, driver assistance programs, ensure human rights across value chain members, build confidence in society about their products by declaration of product recall policy.

Peugeot is an exception which was once listed in G100 and not listed again. It seems it did not make any attempt to change its geographic footprint and incurred losses. It is good example of how investors' decision making impacts corporations' sustainability performance.

Honda and Hyundai mentioned about sustainability driven innovation and wide product range to serve all segments of society with their low cost production. It is probably the reason for their superior economic performance with profit to revenue ratio more than 20%. .

Future of mobility and sustainability of automobile industry

Global automobile industry is facing challenges due to the multiplicative impact of internal and external factors. In order to sustain growth in the next decade, automobile corporations may have manufacturing plants in one continent serving the markets in different continents. Major industry rise is likely to take place in the developing countries from Asia Pacific, Africa, and South America. Due to the demographic dividend, Automobile industry may support aftersales market growth in countries like China and India. Policy pressure from regulatory authorities and the product innovation with alternative fuels are likely to drive the next decade with increasing number of hybrid, electric and fuel cell vehicles.

The overall presence of automobile corporations over 100 years is the backbone of the manufacturing industry and latest shift into developing country is going to need product stewardship programs incorporating innovative technology. Growing demand of the investors will force all automobile companies to publish sustainability report with more transparency following guidelines like integrated report and ISO26000. Transparency is published report and media reports will have higher impacts. VW has lost its credibility post media report in the recent past. Alignment and partnership with supply chain partners will also play a critical role. Role of investors and Government policy makers will play critical role in automobile industry's future plan of business sustainability.

REFERENCES

1. *AA1000 - Accountability setting the standards for Sustainability, http://www.accountability.org/standards/, (Accessed in June2016).*
2. *Beattie, V. & Smith, S.J. (2013). Value creation and business models: refocusing the intellectual capital debate. The British Accounting Review, 45(4), 243-254.*
3. *Bocken, N. M. P., Short, S. W., Rana, P., & Evans, S. (2014). A literature and practice review to develop sustainable business model archetypes. Journal of Cleaner Production, 65, 42-56.*
4. *Boons, F. & Lüdeke-Freund, F. (2013). Business models for sustainable innovation: state-of-the-art and steps towards a research agenda. Journal of Cleaner Production, 45, 9-19.*
5. *Broman, G. I. & Robèrt, K. H. (2017). A framework for strategic sustainable development. Journal of Cleaner Production, 140, 17-31.*
6. *Carbon Disclosure Project, Climate resilient stock exchanges, CDP (2014), https://www.cdp.net/en , Accessed in August, 2016.*
7. *Chesbrough, H. (2010) - Business model innovation: opportunities and barriers. Long range planning, 43(2), 354-363.*
8. *Collins, D.J. and Rukstad, M.G. (2008).- 'Can you say what your strategy is?', Harvard business review, 86(4), pp.82-90*
9. *Corporate Knights, Most Sustainable Corporations in the World Ranking, Featuring 2014 Global 100, http://www.corporateknights.com/magazines/2014-global-100-issue/ (Accessed in April, 2016)*
10. *Corporate Sustainability Assessment (2015), http://assessments.robecosam.com/FF*
11. *(Accessed in March2016)*
12. *Corporate Sustainability Assessment Method http://www.robecosam.com/en/sustainability-insights/aboutsustainability/corporate-sustainability-assessment/index.jsp Accessed in May, 2016)*
13. *Deloitte report, A new era, accelerating towards 2020, automotive industry transformed https://www2.deloitte.com/content/dam/Deloitte/mx/Documents/manufacturing/a_new_era_2020_12oct09.pdf (Accessed in December, 2016)*
14. *Driving Value, 2014 Automotive M&A Insights, PWC Report, (Accessed in December, 2016) http://www.pwc.com/gx/en/industries/automotive/publications/m-and-a-insights-2014.html*
15. *Evans, J. R. & Dean, J. W. (2003). Total quality: Management, organization and strategy 3rd ed. Mason, OH: South-Western*
16. *Fortune Global 500 List, http://fortune.com/global500/ (Accessed in March 2016)*
17. *Fowler, S. J.& Hope, C. (2007). A critical review of sustainable business indices and their impact. Journal of Business Ethics, 76(3), 243-252.*
18. *FTSE4Good Index Series for companies demonstrating strong ESG practices, http://www.ftse.com/products/indices/FTSE4Good, (Accessed in December, 2016)*
19. *Gerrard, J.& Kandlikar, M. (2007). Is European end-of-life vehicle legislation living up to expectations? Assessing the impact of the ELV Directive on 'green'innovation and vehicle recovery. Journal of Cleaner Production, 15(1), 17-27.*
20. *Gibson, K. (2012). Stakeholders and sustainability: An evolving theory. Journal of Business Ethics, 109(1), 15-25.*
21. *Global100- An Index of The Global 100 most sustainable corporations in the world, http://www.corporateknights.com/reports/global-100/, (Accessed in November 2016)*
22. *Global Reporting Initiative , GRI, www.globalreporting.org, (Accessed in September 2016)*
23. *European Automobile Manufacturers' Association Statistics http://www.acea.be/images/uploads/files/20100311_ER_1003_2010_I_Q1-4.pdf (Accessed in November 2016)*
24. *Hammond, G. P. (2000) - Energy, environment and sustainable development: a UK perspective. Process Safety and Environmental Protection, 78(4), 304-323.*
25. *Integrated Reporting, http://integratedreporting.org/, (Accessed in December 2016)*

26. *Koplin, J., Seuring, S., & Mesterharm, M. (2007). Incorporating sustainability into supply management in the automotive industry–the case of the Volkswagen AG. Journal of Cleaner Production, 15(11), 1053-1062.*
27. *Nieuwenhuis, P. A. H. F. (2003). Social responsibility and the auto industry. Automotive Environment Analyst, 100, 22-23.*
28. *Orsato, R. J. & Wells, P. (2007). U-turn: the rise and demise of the automobile industry. Journal of Cleaner Production, 15(11), 994-1006.*
29. *Osterwalder, A., & Pigneur, Y.(2010) Business model generation: a handbook for visionaries, game changers, and challengers. John Wiley & Sons. Pg. (14)*
30. *Prillwitz, J., & Barr, S. (2011). Moving towards sustainability? Mobility styles, attitudes and individual travel behaviour. Journal of Transport Geography, 19(6), 1590-1600.*
31. *The Future of Car, KPMG Report, https:// assets.kpmg.com/content/dam/kpmg/pdf (Accessed in August, 2016)*
32. *Rauter, R., Jonker, J., & Baumgartner, R. J. (2017). Going one's own way: drivers in developing business models for sustainability. Journal of Cleaner Production, 140, 144-154.*
33. *Sadowski, M.; Whitaker, K.; Buckingham, F. (2010). Rate the Raters: Phase One e Look Back and Current State. Sustainability, London, UK.*
34. *Social Accountability International, SA8000 Standards, http://www.sa-intl.org/ (Accessed in February, 2017)*
35. *Social Responsibility, International Organization for Standardization http://www.iso.org/iso/home/standards/ iso26000.htm, (Accessed in December, 2016)*
36. *Sustainability Accounting Standards Board, https:// www.sasb.org, (Accessed in April, 2016)*
37. *Sustainability Indices, http://www.sustainability-indices.com/http://www.sustainability-indices.com/ (Accessed in November, 2016)*
38. *Sustainability Management Tools, CSRHUB, https:// blog.csrhub.com/ (Accessed in May, 2016)*
39. *The Magazine for Clean Capitalism, Corporate Knights, http://www.corporateknights.com/us/about-us/ (Accessed in March, 2016)*
40. *United Nations Environment Programme (UNEP), 2013, GEO-5 for Business Impacts of a changing environment on the corporate sector. UNON, Nairobi.*
41. *Vehicles by 1000 people by country (http:// mecometer.com/topic/vehicles-per-thousand-people/ Accessed in March, 2016)*
42. *Webster, S.,& Mitra, S. (2007) Competitive strategy in remanufacturing and the impact of takeback laws. Journal of Operations Management, 25(6), 1123-1140.*
43. *Wells, P. (2013), 'Sustainable business models and the automotive industry: A commentary', IIMB Management Review, 25(4), pp.228-239*
44. *Weybrecht, G. (2010), 'The sustainable MBA: The manager's guide to green business' John Wiley & Sons.*
45. *World Business Council For Sustainable Development, http://www.wbcsd.org (Accessed in June, 2016)*
46. *World in figures, Industries, Automotive http:// www.economist.com/news/21566556-automotive (Accessed in April, 2016)*
47. *World motor vehicle production world ranking http:// www.oica.net/wp-content/uploads//ranking-2013s-2.pdf (Accessed in May, 2016)*