Effect of ISO 14000 Certification on Sustainability: Evidence from the Indian leather industry

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Industrialization across major economies of the world has led to various economic, social, and environmental opportunities as well as challenges. Thus, the need to monitor and control economic activities keeping sustainability of system as the long-term goal has evolved. During the last few decades, the policy makers have developed many guidelines or standards and measurement frameworks to promote the concepts of sustainability across various industrial domains. Among them, ISO 14000 certification is the most commonly adopted Environment Management System (EMS) by business enterprises around the world. However, as literature suggests, the process of ISO certification is *entirely voluntary and non-governmental,* this study has been designed to empirically test the influence of ISO certification on sustainability performance of leading states of the Indian leather industry. The findings reveal that, except economic sustainability, Uttar Pradesh (UP) has performed the best among the selected states, which could be attributed to its higher proportion of ISO certified leather firms. However, it was found, using firm-wise unit data analysis, that there is insignificant difference in performance between certified and not certified firms in all the selected states. The field study supports this anomaly with the reason that firms acquire the certification under the pressure of overseas customers to meet the requirement of environmental compliance on paper only. Thus, though the Govt. of India has taken correct step by subsidizing 75% expense of certification for MSMEs, it failed to monitor its effectiveness among the leather processing firms.

Key Words: ISO 14000; Sustainability; Indian Leather Industry

1. Introduction

1.1 Sustainability: A tool for multidimensional performance assessment

The definition of Sustainability was introduced in "Brundtland Report", entitled "Our common future", published by the World Commission on Environment and Development (WCED), a UN body: "*Sustainable development is economic growth that meets the needs of present without compromising the ability of future generations to meet their own needs*." (WCED, 1987). Recently, the term has been re-defined more comprehensively as, "A *normative notion that indicates the way how humans should act towards nature and how they are responsible towards one another and future generations*" (Baumgärtner and Quaas, 2010).

Similarly, Friends of the Earth Scotland described sustainability in terms of a simple principle of harnessing the resources from the earth only what it can provide, while leaving future generations no less than has been taken out. The Thomas Jefferson Sustainability Council defined Sustainability in terms of "responsibility to proceed in a way that will sustain life that will allow our children, grandchildren and great-grandchildren to live comfortably in a friendly, clean, and healthy world." These definitions stress the need to create social and environmental values not just for the present generation but preserve them for future generations as well.

Allen defined Sustainable Development (SD) as, "the development that is likely to achieve lasting satisfaction of *human needs* and improvement of the *quality of life* under the condition that *ecosystems* and/or species are utilized at levels and in ways that allow them to *keep renewing* themselves." (Allen, 1980). Similarly, according to US National Research Council "Sustainability has been defined as the level of *human consumption* and activity which can continue into the *foreseeable future*, so that the systems which provide goods and services to humans persist indefinitely." (NRC, 2011)

As per World Business Council on Sustainable Development (WBCSD) — "Sustainable Development (SD) involves the simultaneous pursuit of *economic prosperity*, *environmental quality* and *social equity*. Companies aiming for sustainability need to perform not against a single, financial bottom line but against the *triple bottom line*." Likewise, Hamilton Wentworth Regional Council elaborates SD as, "positive change which does not undermine the *environmental* or *social* systems on which we depend. It requires a coordinated approach to plan-

ning and policy making that involves *public participation*. Its success depends on widespread understanding of the critical relationship between people and their environment and the will to make necessary changes." Interfaith Center on Corporate Responsibility (ICCR) defines SD as "the process of building *equitable*, *productive* and *participatory* structures to increase the economic empowerment of communities and their surrounding regions."

Sustainability concept has been applied across a wide range of industries and geographical regions to assess their relative strategies for performance and survival (Fussler & James, 1996; Kloepffer, 2008; Morse & Fraser, 2005; Nourry, 2008; NRC, 2011; Schmidt & Taylor, 2006). However, SD is much more critical for industries with high ecological footprint (Rees & Wackernagel, 1994; Wackernagel & Rees, 1996) in terms of either resource consumption and/or pollution intensiveness.

There are many frameworks for Sustainability Assessment (SA). Among them Triple Bottom Line (TBL) (Elkington, 1997) and Global Reporting Initiative (GRI, 2002) are prominent. TBL focuses on SD of a company in terms of the economic, social and environmental values it creates or destroys. This requires an inclusion of the needs and requirements of many stakeholders: customers, investors, employees, local communities, public at large, environmentalists and government. Figure 2.1 outlines this point.

Figure 1 Sustainable Development — Triple Bottom Line (TBL) Framework

As industrialization is in its full bloom across major economies of the world, its positive and negative impacts and their tradeoffs have also been catching attention of policymakers and academicians (Fussler & James, 1996; Gupta & Sharma, 1996; Berry & Rondinelli, 1998; Schmidt & Taylor, 2006; Kloepffer, 2008; NRC, 2011; Morse & Fraser, 2005; Nourry, 2008). The need for impact assessment has become urgent due to increasing frequency of natural calamities, like flood, drought, storm, famine just to name a few, and climate change due to global warming. It has been advised to use natural resources prudently to reduce ecological footprint (Rees & Wackernagel, 1994; Wackernagel & Rees, 1996).

To cope up with these environmental challenges, various management theories, monitoring and control guidelines or standards, and measurement frameworks have been proposed. The leading management theories are: stakeholder theory (Freeman, 1984), sustainability theory (WECD, 1987), corporate social performance theory (Wartick, and Cochran, 1985; Wood, 1991), Porter hypothesis (Porters and Linde, 1995). The most recent is Global Reporting Initiative (GRI), very commonly used for sustainability reporting (GRI, 2006).

Many measurement matrices have been propounded such as Environmental Sustainability Index (Esty et al., 2005; ESI, 2005), Well-Being Index (Prescott-Allen, R., 2001; Böhringer and Jochem, 2007), Environmental Performance Index (Esty, 2006, 2008), Environmental Vulnerability Index (SOPAC, 2005), Carbon Footprint (Wright, Kemp, and Williams, 2011), Ford Product Sustainability Index (Schmidt and Taylor, 2006), Eco-compass (Fussler and James, 1996), Eco-indicator 99 (Pre´ Consultants, 2000). To monitor and control the activities from their environmental impact point of view, since decades, policy makers have been advocating the concepts like Life Cycle Assessment (LCA) (ISO 14040:2006(E)) which imbibe the philosophy of cradle to cradle management. European Commission launched CALCAS (Co-ordinated Action for innovation in Life Cycle Analysis for *Sustainability*) project for promoting the spirit of LCA.

1.2 ISO 14000 certification: A tool for environment management in industry

It is an Environmental Management Systems (EMS) introduced in September 1996 by the International Organization for Standardization (ISO) for organizations.

Literature reveals that firms with ISO 14000 certification, generally, get competitive advantage due to various reasons (Bellesi et al., 2005;

IISD, 1996). It has been found that ISO 14000 certified firms reap certain internal benefits like improved process efficiency, Improved corporate culture, with external benefits like Regulatory relief, preference by its key customers, Market access, better Public image and community relations (IISD, 1996; Rondinelli & Vastag, 2000; Hillary 2004; Gavronski, Ferrer and Paiva 2008; Zeng, Tian and Shi, 2005). However, as we know that intensity of environmental impact of a firm depends on how a particular industrial activity interacts and pollutes surrounding environment, particularly air, ground and surface water bodies, and soil quality. As shown in Fig. 2, the impact of industrial activities then effect society living around and finally it influences economy which bears the cost for reclamation of nature in its pure form and for medication of diseased human beings. The intensity of impact, generally, varies with industry type, top management commitment, organization culture, demography, geography, so the effectiveness of ISO certification also varies with these factors (Quazi, 1999; Daily & Huang, 2001; Bansal & Bogner, 2002).

ISO 14000 provide guidelines for material and process management so that a firm can monitor and control the pollution at the innermost circle itself and avoid multiplying effects to the outer circles (Fig. 1). However, Corbett & Kirsch (2000; 2001) reported that "ISO 14000 certification does not mean that any local or national government has actually inspected or approved the company's environmental operations; as noted, the ISO 14000 system is *entirely voluntary and non-governmental*." A few empirical studies have also found that adoption of ISO 14000 and other EMS did not necessarily address issues related to sustainability, and materiality (Ball 2002; Priyadarshini & Gupta, 2003).

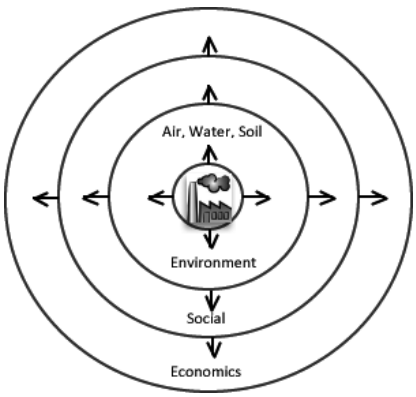

Figure 2 Impact of Industrial activities on the three dimensions of sustainability

1.3 Overview of Indian Leather Industry

The leather industry in India, like in many parts of the developing world, is known for creating employment for weaker sections of the society and generating foreign exchange. However, the industry is also well known for facing serious legal battles and public protests due to their suspicious waste management practices (MOEF, 2003; Sen, 2012).

During the past few decades, there have been studies reporting on the potentially adverse impact of tannery operations in India, on – tannery workers, people living in nearby community, the quality of soil, as well as surface and ground water (Schjolden 2000; Shukla et al, 1997; Khwaja et al., 2001; Rastogi, 2008; Mondol et al., 2005; Gowda et al., 2010; CPCB, 2014). Central Pollution Control Board of India has kept the leather industry at the top of its agenda on Corporate Responsibility for Environmental Protection. Presently the Government is following '*command and control'* strategy to check the externalities caused by various pollution intensive industries. Under this strategy, government supported the development of common effluent treatment plants (CETPs), and subsidized the modernization of manufacturing.

Despite such governmental efforts, a comprehensive national picture of how the major leather clusters of India are progressing in terms of creating economic, social, and environmental value is still lacking. Hence, today, there is an undeniable regulatory pressure from the government coupled with strong public suspicion of even the best performing leather firms of India, due to their opaque social and environmental practices.

Hence, in this paper we have made an attempt to find out the effect of ISO certification on triple bottom line based sustainability performance of Indian leather industry.

2. Research Methodology

The study is based on firm wise data of leather industry compiled by *Annual Survey of Industry (ASI), Government of India*, during 2008-2012. Due to data availability constraint, specifically related to environmental and social performance, sustainability index has been calculated based on data available from ASI. The proposed framework for sustainability assessment has been shown in Fig. 3. We applied Analytical Hierarchy Process (AHP) (Saaty, 1980) to find out the relative weights and priorities for the indicators, and integrated it to calculate the score for sustainability and its dimensions.

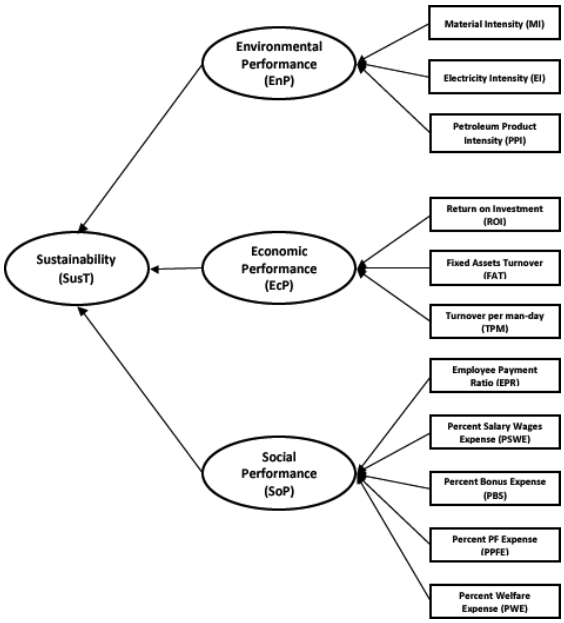

Figure 3 Framework for sustainability assessment

The study focuses on leather industry of three leading states — Tamil nadu (TN), Uttar Pradesh (UP) and West Bengal (WB), for analyzing the effect of ISO certification on sustainability performance. Fig. 4 shows the composition of sample states where ISO_Y indicates the number of firms having ISO certification whereas ISO_N for otherwise. To assess the difference between these two groups, Analysis of Variance (ANOVA) has been applied.

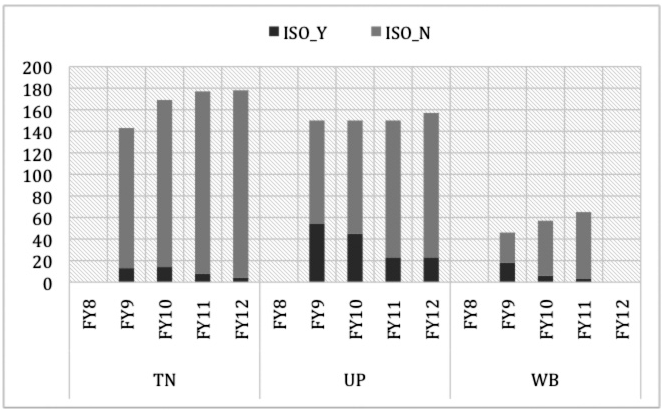

Figure 4 Composition of sample based on ISO certification

3. Results and discussion

We approached 9 industry experts and professionals for pairwise comparison of indicators and constructs for their weights assessment. Based on data, and standard AHP process, weights assigned by individual respondent have been calculated, as shown in Table 1. Using these weights and value of indicators, constructs values have been derived. While weights assigned to economic, social and environmental performance were 0.5, 0.3, and 0.2 respectively based on experts opinions.

Table 1 Weights assigned by individual respondent through pair-wise comparison

	Economic Performance									
Respondent	**R1**	**R2**	**R3**	**R4**	**R5**	**R6**	**R7**	**R8**	**R9**	**Weight**
ROI	0.503	0.400	0.524	0.570	0.400	0.490	0.537	0.620	0.407	**0.495**
ATR	0.348	0.367	0.304	0.259	0.400	0.312	0.268	0.224	0.329	**0.312**
LI	0.148	0.233	0.172	0.171	0.200	0.198	0.195	0.156	0.264	**0.193**
	Social Performance									
EPR	0.204	0.243	0.225	0.243	0.161	0.218	0.355	0.275	0.271	**0.253**
PBE	0.069	0.110	0.053	0.052	0.079	0.090	0.048	0.104	0.059	**0.079**
PPFE	0.204	0.216	0.128	0.310	0.191	0.300	0.122	0.253	0.229	**0.204**
PWE	0.429	0.356	0.328	0.290	0.434	0.300	0.345	0.272	0.308	**0.338**
PSWE	0.095	0.075	0.266	0.105	0.135	0.092	0.130	0.096	0.133	**0.126**
	Environmental Performance									
MI	0.122	0.158	0.225	0.252	0.236	0.120	0.206	0.146	0.429	**0.210**
EI	0.230	0.187	0.454	0.159	0.283	0.258	0.154	0.196	0.143	**0.229**
PPI	0.648	0.655	0.321	0.589	0.481	0.621	0.640	0.657	0.429	**0.560**

3.1 Descriptive Statistics about performance parameters

Fig. 5 demonstrates that WB, which contains the second lowest proportion of ISO certified firms, has performed the poorest in social performance, whereas, UP has got the highest median value to confirm its activeness in acquiring the ISO certification. Further, there is one more

attribute to highlight is that all the states have got outliers above fourth quartile (see Fig. 5), which could be a sign of increasing awareness towards strategic advantage of social sustainability.

However, in case of economic performance (Fig. 6), TN, which has got the least proportion of ISO certified firms, has performed the best with a lot of outliers on the upper side. This might lead to the conclusion that the firms from TN clusters are saving partially on environment management cost to make their economic performance better.

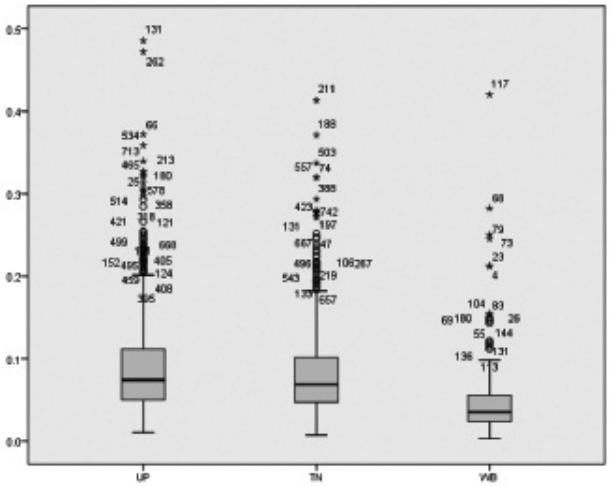

Figure 5 Box and whisker plots for social performance

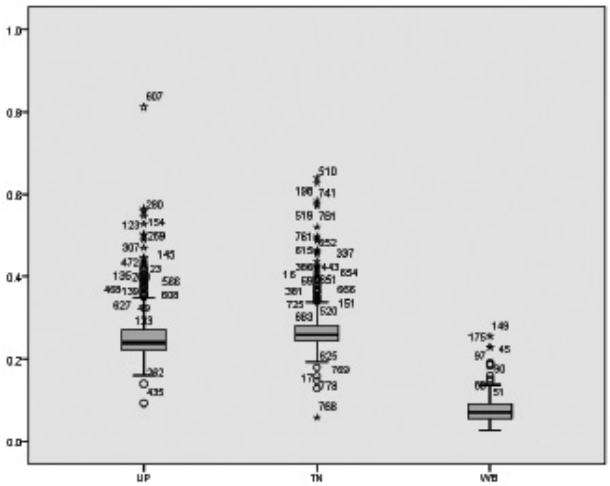

Figure 6 Box and whisker plots for economic performance

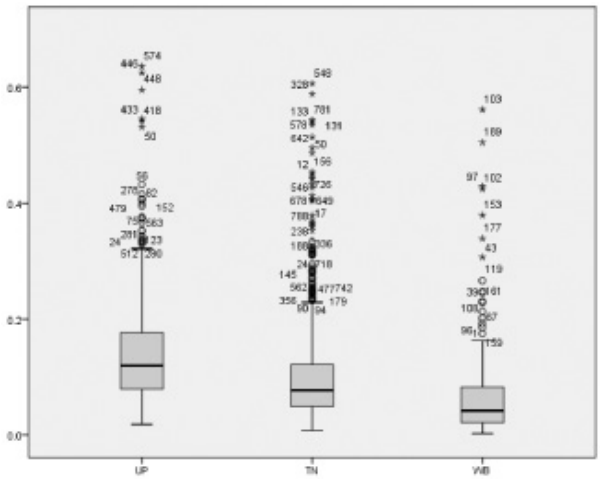

Figure 7 Box and whisker plots for environmental performance

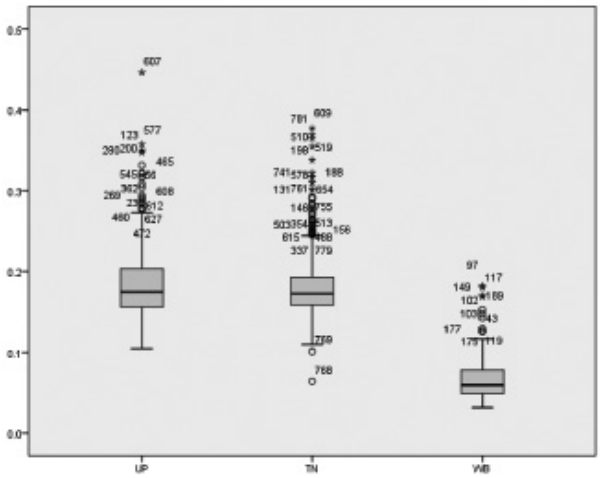

Figure 8 Box and whisker plots for sustainability index

Fig. 7 (above, top) depicts environmental performance which is expected to have direct effect of ISO certification. The aggregate data demonstrate that UP has got the highest quartile values which is supported by its higher proportion of ISO certified firms. Likewise, sustainability performance (Fig. 8, above) also demonstrates better performance of UP which is based on the assumption of weak sustainability (Daly, 1990; Pearce & Atkinson, 1993; Rennings & Wiggering, 1997).

3.2 Effect of implementation of ISO 14000

The results of ANOVA analysis reveal that there is no significant difference in the sustainability and its dimensions values across all the three states between ISO certified and not certified group, except at few data points (Table 2–5). One of reasons could be small proportion of ISO certified firms in all the sample states (Fig. 3). The other reason, which we got to know from industry experts and is also supported by literature (IISD, 1996; Bellesi et al. 2005), is pressure from overseas customers for environmental compliance. Nevertheless, Govt. of India's initiative to reimburse expense of acquiring ISO 14001 certifications by a Micro, Small & Medium Enterprise (MSME) to the extent of 75% of the expenditure subject to an upper limit of Rs. 75,000/-[1] is a decisive driver to mention.

Table 2 Effect of ISO certification on environmental performance

	UP		TN		WB	
	F value	Sig.	F value	Sig.	F value	Sig.
FY08	NA	NA	NA	NA	NA	NA
FY09	0.065	0.798	0.043	0.836	0.688	0.411
FY10	0.020	0.888	0.676	0.412	0.504	0.481
FY11	1.132	0.289	0.000	0.998	1.198	0.278
FY12	0.38	0.539	0.044	0.835	NA	NA

* significant at $p < 0.10$, ** significant at $p < 0.05$, *** significant at $p < 0.01$

Table 3 Effect of ISO certification on economic performance

	UP		TN		WB	
	F value	Sig.	F value	Sig.	F value	Sig.
FY08	NA	NA	NA	NA	NA	NA
FY09	0.011	0.917	0.001	0.975	0.162	0.689
FY10	4.760	0.031**	0.586	0.445	0.356	0.553
FY11	0.605	0.438	0.819	0.367	0.909	0.344
FY12	1.787	0.183	0.149	0.7	NA	NA

* significant at $p < 0.10$, ** significant at $p < 0.05$, *** significant at $p < 0.01$

1 http://www.dcmsme.gov.in/schemes/sciso9000.htm. Accessed on April 18, 2015.

Table 4 Effect of ISO certification on social performance

	UP		TN		WB	
	F value	Sig.	F value	Sig.	F value	Sig.
FY08	NA	NA	NA	NA	NA	NA
FY09	1.832	0.177	0.589	0.444	1.157	0.288
FY10	1.165	0.282	0.281	0.597	0.044	0.835
FY11	3.714	0.056*	1.056	0.305	0.044	0.835
FY12	0.157	0.692	0.063	0.801	NA	NA

* significant at $p < 0.10$, ** significant at $p < 0.05$, *** significant at $p < 0.01$

Table 5 Effect of ISO certification on sustainability index

ISO >>> Sustainability						
	UP		TN		WB	
	F value	Sig.	F value	Sig.	F value	Sig.
FY08	NA	NA	NA	NA	NA	NA
FY09	0.290	0.590	0.223	0.638	0.100	0.753
FY10	3.660	0.058*	1.042	0.309	0.195	0.660
FY11	0.204	0.652	0.000	0.995	0.515	0.476
FY12	1.173	0.28	0.161	0.689	NA	NA

* significant at $p < 0.10$, ** significant at $p < 0.05$, *** significant at $p < 0.01$

3.3 Status of ISO certification

The leather and leather product industry across leading countries has demonstrated quite differentiated trend (Table 6). Though India has the third largest share in the world leather export, its ISO certification rate is nowhere close to China and Italy which have got the highest and second highest share respectively.

Table 6 Trends in ISO certification acquired by leather industry

Leather and leather products							
	ISO 14001				ISO 9001		
	India	China	Italy		India	China	Italy
2009	3	262	75	2009	47	1147	352
2010	4	296	5	2010	48	1557	29
2011	4	389	11	2011	59	1682	72
2012	6	112	68	2012	50	1616	204
2013	9	345	108	2013	51	1643	278

Source of ISO table data: ISO[2]

4. Conclusion

Industrialization across major economies of the world has given impetus to development of many guidelines or standards and measurement frameworks to promote the concepts of sustainability across various industrial domains. Among them, ISO 14000 certification is the most commonly adopted Environment Management System (EMS) by business enterprises around the world. However, as literature suggests the process of ISO certification is *entirely voluntary and non-governmental,* this study has been designed to empirically test the influence of ISO certification on sustainability performance of leading states of the Indian leather industry. The findings reveal that, except economic sustainability, Uttar Pradesh (UP) has performed the best among the selected states, which could be attributed to its higher proportion of ISO certified leather firms. However, it was found, using firm-wise unit data analysis, that there is insignificant difference in performance between certified and not certified firms in all the selected states. The field study supports this anomaly with the reason that firms acquire the certification under the pressure of overseas customers to meet the requirement of environmental compliance on paper only. Thus, though the Govt. of India has taken correct step by subsidizing 75% expense of certification for MSMEs, it failed to monitor its effectiveness among the leather processing firms.

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