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Importance of Design Innovation for Small and Medium Enterprises of the Jewellery Industry in Sri Lanka

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Abstract— **The purpose of this paper is, to discuss the importance of 'Design innovation' to increase gem set jewellery exports focusing small and medium enterprises of gem and jewellery industry in Sri Lanka. The gem and jewellery industry is a very important sector in Sri Lanka which is among the major sectors contributing to foreign exchange earnings. A huge potential has been emerged for the Sri Lankan jewellery industry due to increasing global demand for gem set jewellery, yet untapped.**
A comprehensive literature analysis done since there is no literature could be found depicts the direct relationship between design innovation and the jewellery industry.

Keywords- SMEs; design-innovation; jewellery; export

I. INTRODUCTION

The gem and jewellery industry of Sri Lanka possess a big opportunity to elevate its exports revenue with greater profitability. But, great potential remains untapped. Large quantities of gemstones make their way to other countries without setting in jewellery. To attain the premium value for the Sri Lankan gemstones, the final step of the industrial value chain which is finished gem studded jewellery should be encouraged and developed (Ekanayake & Abeysinghe, 2010). The positive government policy, business affable environment, the industrial goals and the increasing global jewellery consumption, altogether provide an optimistic platform to attain the premium value by developing the jewellery industry in Sri Lanka. Thus to attain the industrial goals effectively and efficiently, most suitable and direct path should be identified.

The collected data revealed that the most appropriate path to be focused is the sector of Small and Medium Enterprises (SMEs) to boost up gem and jewellery industry in Sri Lanka (Abor & Quartey, 2010). Considering jewellery exports sector in Sri Lanka, it was evident that the innovativeness of design should be improved when designing jewellery for the international consumer. Thus, to develop the sector of small and medium enterprises with available resources, the most appropriate implication to be applied is, 'design innovation', since it can be utilized with a minimal investment.

II. DESIGN INNOVATIN FOR THE ENTERPRISE DEVELOPMENT

Organization for Economic Co-operation and Development (OECD, 2000) concluded that the relationship between design innovation and Small Enterprises through the report titled 'Enhancing the Competitiveness of SMEs through Innovation';

- Most SMEs operate in medium to low technology environments and innovate without using formal R&D inputs.
- In a more systematic approach to understanding innovation in SMEs, the European Community Innovation Survey (CIS) distinguished the difference between R&D and non-R&D based innovation. The CIS has shown that the pattern of innovation in SMEs is mostly non-R&D investment based. For SMEs, non-R&D inputs are more important and can be of two types: Capital equipment or input-embodied innovation, and Design innovation.

In capital equipment based innovation, firms acquire new process technologies or intermediate products which allow them to benefit from innovations developed elsewhere. Design innovation, on the other hand, refers to incremental improvements in products that do not radically change their function or technological base, but allow firms to better meet customer requirements. Thus, the role of design innovation for SMEs must be stressed (OECD, 2000).

Design innovation refers to incremental improvements in products. Incremental innovation is the improvement of existing products or services (Dosi, 1982; Nelson and Winter, 1977). Mutlu (2003) argued 'design innovation' is comprised of:

- The incremental novelties in the design of an existing product or service, or

- Radically new products or services obtained by design effort with no or minimal technical novelty.

Recent research indicated that companies, who use design in their business, perform better economically in the marketplace (Cox, 2005; Mozota, 2003; Dell'Era, Marchesi & Verganti, 2010; Livesey & Moultrie, 2009; Nussbaum, 2006 as cited in Bucolo & Matthews, 2011). Design enhances the outcomes of numerous innovation activities, bringing benefits such as increased quality of goods and services, improved production flexibility and reduced material costs (Cox, 2005; DTI, 2005 as cited in Bucolo & Matthews, 2011). Design is increasingly being viewed as a vital and important strategic business resource (Dell'Era, et al., 2010; Gemser & Leeders, 2000 as cited in Bucolo & Matthews, 2011) and many companies worldwide look to design to help them innovate, differentiate and compete in the global marketplace (Bucolo & Matthews, 2011).

Branded companies are genuinely design-based and they have turned design into their primary asset, based all strategic decisions affecting their competitiveness, production and organization on it (Lojacono, 2000). These companies manufacture and sell products with a powerful artistic content, and by acting as trend-setters in taste and consumption patterns, maintain a high degree of autonomy in the process of creating and assigning meaning to their products. However, the companies who follow this route towards product differentiation are few; their number is likely to increase dramatically. This area of business innovation is an important test bench for SMEs. The value that the consumer perceives from these products, have more to do with their style content, exuberant and extreme form, and elegant, sophisticated design than with their functionality (Jarvinen & Koskinen, 2002; Lloyd & Snelders, 2003).

III. The Global Application of Design Innovation into SMES

A. The SME sector in the global context

The performance of small and medium enterprises (SMEs) for the economic development is becoming important in the global market arena. They are often described as efficient and prolific job creators, the seeds of big businesses and the fuel of national economic engines. Even in the developed industrial economies, it is the SME sector rather than the multinationals that is the largest employer of workers (Mullineux, 1997 as cited in Abor & Quartey, 2010).

There is no particular, apparent and universally accepted definition for SMEs and such definitions vary from country to country, sector to sector and even among institutions within the country (International Finance Corporation, 2006 as cited in Abor & Quartey, 2010). Hallberg (1999) cited that the small and medium-scale enterprises are a very heterogeneous group. They include a wide variety of firms which possess a wide range of sophistication skills and operate in very different markets and social environments.

B. Application of design-innovation for the continuous development in SMEs

In the knowledge-based economy, innovation is a key driver of firm creation, employment generation and, more broadly, economic growth. Small and medium-size enterprises (SMEs) play a critical role in supporting innovation and its diffusion across the economy, contributing to the creation of high-wage employment and enhancing productivity growth. SMEs play an important role in the flow of knowledge within innovation systems, not just as knowledge exploiters, but also as knowledge sources, and, increasingly, as 'bridges of innovation', which interact with other players as knowledge purchasers, providers and partners (OECD, 2011).

There is an uneven distribution of small firm innovation, between a few highly innovative firms with high growth potential, and the great majority of SMEs that innovate very little compared to their large counterparts. In certain high-technology sectors such as semiconductors, biotechnology; emerging sectors such as green industries; creative industries such as film production, publishing, architecture, innovative SMEs and start-ups are key players and drivers of innovation, largely based on the combination of intangibles, new technologies and design skills. (Business council of Australia, 1993).

The innovation policy in small and medium enterprises is a fundamental issue for their survival. Design has been considered as an important facet of their innovation policy and when introducing new products, designers are considered as an essential resource. Design has proved its impact on companies and nations performance (Walsh, 1995; Hertenstein & Platt, 1997 as cited in De Mozota, 2003).

The relationship between innovation and exporting has been investigated for many countries. Innovative firms will obtain and sustain their competitive advantage not only in the domestic market as well as in the global market. Thus there is a positive linkage can be identified in between innovation and exports (Anh et al., 2007). A plenty of evidence can be found to attest the positive link between, a country's export performance and its innovation activities (Greenhalgh, 1990; Verspagen & Wakelin, 1997; Narula & Wakelin, 1998; Leon & Ledesma, 2005 as cited in Anh et al., 2007). A number of authors have reported a positive and significant impact of innovation on export performance.

The importance of SMEs for innovation can be regarded as a major topic in the innovation literature. Size is a main advantage of SMEs for innovative activities. Most of the small and medium sized businesses are flexible and have strong relationships with customers, enabling rapid response to technical and market shifts. Small firms usually have good internal communications and many have a dynamic and entrepreneurial management style (Rothwell, 1994 as cited in Crowston et al., n.d.). Innovations in these firms can be less expensive (Cooper, 1964 as cited in Crowston et al., n.d.). In summary, innovation in small firms can be efficient and effective (Vossen, 1998 as cited in Crowston et al., n.d.).

Conversely, most of the SMEs are not innovative at all. Researchers have stressed the differences between a limited number of high innovative small firms and a large number of non-innovative firms (Acs & Yeung, 1999; Hadjimanolis & Dickson, 2000 as cited in Crowston et al., n.d.). The lack of financial resources, inadequacy of management and marketing, lack of skilled workers, weakness in external information and linkages, and difficulty in coping with government regulations are factors that limit their competitiveness (Buijs, 1987; Freel, 2000; Rothwell, 1994 as cited in Crowston et al., n.d.). SMEs may be unable to exploit new products because of the limited organizational and marketing capabilities. Other studies discuss cultural barriers to innovation, such as reluctance to change, tendency to ignore procedure, focus on short-term requirements, and lack of strategic vision (Filson & Lewis, 2000; Freel, 2000 as cited in Crowston et al., n.d.). SMEs' main problems are due particularly to the scarce attention devoted to organizational and managerial problems especially in the field of innovation (Cobbenhagen, 1999 as cited in Crowston et al., n.d.).

IV. Characteristics of SMES in Developing Countries

Most of the enterprises in transition and developing countries are SMEs. These firms typically account for more than 90% of all firms outside the agricultural sector, constitute a major source of employment and generate significant domestic and export earnings (OECD, 2004).

V. The Sector of Small and Medium Enterprises in Sri Lanka

The Small and Medium Enterprises (SMEs) have been identified as a significant strategic sector to promote economic growth and social development in Sri Lanka. Thus, it is important to be recognized and boost this sector's potential to achieve its maximum benefit for the country's development.

SMEs account for a large share of any economy. Sri Lanka is no exception; they constitute 80-90% of the total number of establishments, 40% of employment, and 20% of industrial value addition (Technical Assistance Consultant's Report, 2007). It is estimated that around 16,000 manufacturing enterprises operate in urban areas and over 600,000 in rural areas (the rural enterprises employ over 1,500,000). It is noteworthy to see that over 40% of these enterprises are engaged in production (Nanayakkara, 2011).

A. The significance of the development in SME sector of Sri Lanka

SMEs have been noted to be one of the major areas of concern to many policy makers in an attempt to accelerate the rate of growth in low-income countries including Sri Lanka. These enterprises have been recognized as the engines through which the growth objectives of developing countries can be achieved (Abor & Quartey, 2010). According to the annual report of the Central Bank of Sri Lanka (2009), the SME sector plays an important role in economic development and therefore, institutional facilities for SMEs development continued in year 2009 (Karunanada & Jayamaha, n.d.).

Sri Lanka, as a developing country with less financial resources, it is important the development of the SME sector regarding the country's economic growth because, it requires relatively less capital per unit and relatively less infrastructure to sustain. Since SMEs are labour intensive, they are more likely to succeed in smaller urban centers and rural areas, where they can contribute to a more even distribution of economic activity in a region and can help to slow the flow of migration to large cities (Abor & Quartey, 2010). The SME sector provides high value addition in view of its greater utilization of indigenous machinery, equipment and raw materials (Gamage, 2003).

B. Constraints faced by the SME sector in Sri Lanka

Despite the potential role of SMEs to accelerate growth and job creation in developing countries, a number of bottlenecks affect their ability to realize their full potential. SME development is hampered by a number of factors, including finance, lack of managerial skills, equipment and technology, regulatory issues, and access to international markets. Based on these and the information collected by the consultants, the following were identified as the main constraints by the project handled with the financial support from the Japan Special Fund in 2007 for the Ministry of Finance and Planning, Government of Sri Lanka (Technical Assistance Consultant's Report, 2007).

- Financial Constraints
- Marketing Constraints
- Technological Constraints
- Absence of Technical and Management Skills

VI. Setting of the SME Sector in Sri Lankan Jewellery Industry

The jewellery industry is complicated and diverse than the other industries in Sri Lanka. The value generates from different sectors of the gem and jewellery industry show higher variations than the other industries. It is extremely difficult to compare the companies based on the annual turnover because the organizations who are involved in diamond industry produce extremely higher margins even the quantity they produced is smaller. And also, the companies involved in gem business show very higher margins than the ones who involved in gem set jewellery because, the production capacity of cut and polished gemstones is extremely higher than the production capacity of gem set jewellery, which is the basic observation of the research study. Along with, the companies who are involved in gold jewellery production make lower margins comparing to coloured gem set jewellery category even the gold jewellers produce higher quantity than the gem set jewellery producers. The reason behind this issue is the value of a precious gem could not be fixed as the price of gold. Thus, when it comes to define the

jewellery SME sector, it is extremely difficult to deviate it from the large companies because, numerous overlies becoming visible. On the other hand, the definitions that have been used to define the jewellery SME sector in other countries could not be directly applied or compare with the one exist in the Sri Lankan context due to geographical and economic differences. Thus, no directly applicable definition could be found to define the jewellery SME sector in Sri Lanka.

National Gem and Jewellery Authority (NGJA) defines the Sri Lankan jewellery SME sector under three aspects;

- Total turnover (local and overseas) bellow LKR 100 million per annum;
- Export sales below LKR 60 million per annum;
- Investment excluding land and building below LKR 40 million;

The Export Development Board (EDB) of Sri Lanka defines the export jewellery SME sector as; the firms who obtain annual turnover less than LKR 150 million of which 60% should be export turnover.

VII. Importance of Design Innovation for the Jewellery SME sector in Sri Lanka

The previous literature supports the importance of design innovation for small and medium enterprises due to several factors including lack of finance, lack of R&D, and lack of technology and skill. This scenario is well harmonized with the jewellery industry in Sri Lanka. As mentioned earlier, most of the Sri Lankan jewellery companies are included to the SME sector. On the other hand, this industry is mostly involved aesthetic innovation. Aesthetic innovation is vastly bound with incremental innovations. Since the design innovation involves minimal technology, which means incremental innovation, the jewellery industry is bound with design innovation instinctively. International trade models developed by Vernon (1966) and Krugman (1979), suggested that, innovation is the driving force behind exports. Krugman (1979) argued through his pioneering work that the causation run from innovation to export. Imitation is mostly done by the developing countries and the developed countries need to maintain a continuous innovation process for sustain their business (Anh et al., 2007). When it comes to design-innovation, the developing countries need not to depend on the developed countries as imitators since they have the advantage to do innovations without technological improvements. Since, the field of jewellery is mostly concerned the design, the approach of design-innovation can be directly utilized. It is apparent that Sri Lanka is being a developing country; the concept of design innovation can be well utilized specially into its jewellery industry.

Jewellery being an aesthetic based industry, the approach of design innovation mostly based on the aesthetic innovations. Simultaneously, as per the present day user requirements it is essential to consider the meaning of the particular design. Thus, it was evident that the most important design segments to be focused are 'Visceral Design' which appeals to the senses and the 'Reflective Design' which is about the message, culture and the meaning of the product (refer Chapter 02, section 2.5.1.). Through the application of design innovation, both of the design segments can be effectively covered. The data revealed that the jewellery industry in Sri Lanka is entirely comprised of incremental innovations without the involvement of technological innovations which is a characteristic of the industries in developing countries.

VIII. Conclusion

It can be concluded that the approach of design innovation can be applied to the small and medium enterprises in Sri Lankan jewellery industry through the expansion of design education, skill development programmes, providing international exposure, and providing the suitable sources to obtain required information. It has confirmed that the application of design innovation can increase the product competitiveness. It can be argued that the product competitiveness supports to expand the market opportunities. Thus, it can be also argued that the application of design innovation can increase exports via facing successfully for the global competitiveness. Accordingly, gem set jewellery exports can be increased through the application of design innovation to attain the premium status through the gem and jewellery industrial value chain in Sri Lanka. The government policy and the decisions mainly affects for the economy of a country. Considering the gem and jewellery industry in Sri Lanka, the policy should be modified to encourage gem set jewellery exports. Concurrently, the exports of gemstones need to be discouraged. 'Design' must be included into the national policy as an essential component.

Consequently, to become a jewellery hub in the region is not an unattainable target as a rich gem bearing country. Accordingly, the approach of design innovation has identified as the only avenue to enhance our natural resource - the Sri Lankan gemstones.

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