

# THE EFFECTS OF ISO 9001 QUALITY MANAGEMENT SYSTEM ON INNOVATION AND MANAGEMENT CAPACITIES IN THE MALAYSIAN FURNITURE SECTOR

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**Abstract:** *Although the ISO 9001 quality management system is often perceived to be a marketing tool within the manufacturing industry, its implications on the innovation and management capacities of the furniture industry remain unknown. A survey of furniture manufacturers in Malaysia revealed that lack of innovation and ineffective management were among the main problems faced within the industry. Using a structured questionnaire, a survey of the ISO-certified manufacturers revealed that the ISO 9001 quality management system has a positive correlation on process innovation but not on product innovation. Therefore, ISO-certification would be beneficial for productivity improvement and identifying cost-cutting measures in furniture manufacturing enterprises. On the other hand, ISO-certification has a significant influence on the management of furniture enterprises, especially with regards to systematic decision-making and boosting the level of professionalism. Therefore, ISO-certification may be a useful tool to enhance the management competency and also improve the productivity within the furniture manufacturing sector.*

**Key words:** *ISO quality system, furniture, process innovation, management, working-culture.*

## 1. Introduction

The furniture industry is the faster growing sub-sector within the country's wood-based sector, which contributes almost 8% to the total gross domestic product (GDP) of Malaysia. Exports of furniture account up to 1/3 of the total export earnings of the wood-based industry in Malaysia, and the furniture produced has found worldwide market. The

socioeconomic importance of the industry is undeniable, bringing almost USD 2.5 billion in foreign exchange, while providing employment for a workforce of 75,000 (MIDA, 2011). It is therefore no surprise, that the industry has transformed itself from a cottage-based industry to a technologically advanced multi-billion dollars industry within a span of two decades (MATRADE, 2012).

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Malaysia exports nearly 80% of its furniture production and is ranked among the top ten largest exporters in the world (MATRADE, 2012). Malaysia has a strong position in the global furniture market, which include the US, Japan, Australia. Malaysian furniture exporters have also penetrated into new emerging markets, such as the UAE, Saudi Arabia, Philippines and Russia. Therefore, the Malaysian furniture industry is an important component of the country's manufacturing and exporting sector.

In recent years however, Malaysian furniture manufacturers have come under increasing competitive pressure from other cheaper furniture producing nations, particularly from China and Vietnam. Pan (2003) has shown conclusively that the ISO registration quality management system may help organizations improve and remain competitive. In fact, with more than 400,000 ISO-certified companies worldwide and the positive correlation reported between ISO-certification and company performance, ISO-certification has a significant impact on improving business competence (Pan, 2003). Therefore, it is important for Malaysian furniture manufacturers to embark on strategies that could boost their productivity and competitiveness through the adoption of management systems, such as ISO 9001, in order to remain competitive. However, the number of ISO certified manufacturers are still relatively small (Ratnasingam *et al.* (2010).

## 2. Quality Systems Management

Two of the most relevant ISO standards for the furniture manufacturing industry are the Quality Management System, ISO 9001 and the Environmental Management System, ISO 14001 (Ratnasingam *et al.*, 2010). It must be stated that the ISO 9000 series (quality management system) and

ISO 14000 (environmental management system) are known as generic management system standards. The ISO 9000 series comprises two basic types: (1) quality assurance, and (2) quality management. Complying with the quality assurance standard will demonstrate that the certified company has a certain capability to ensure that all the products and services meet customer requirements. According to the International Standards Organization (ISO), quality system is a simplified set of standards that will be similarly applicable to all types and sizes of organizations. The intention of the ISO 9001 quality management system is to provide an orderly and systematic way of providing quality products and services to the customers.

Despite the fact that there are more than 3,500 furniture manufacturers operating in the country, the industry is predominated by small and medium enterprises (SME) as reported by Ratnasingam *et al.* (2010) and Anuar and Yusuff (2011). Malaysian furniture manufacturers are generally categorized into three categories, i.e. small scale, medium scale, and large scale manufacturing enterprises. Almost, 30 percent of furniture manufacturers are categorized as large and medium sized furniture plants, with large exporting capacity (MATRADE, 2012). Large furniture manufacturing plants have a paid-up capital above RM 9 million, medium plants between RM 2.5 million to RM 9 million, while small manufacturers have a paid-up capital of less than RM 2.5 million (MIDA, 2011). In terms of ownership, it is estimated that about 70% of the furniture companies are either wholly or majority owned by Malaysian, while foreign ownership of furniture plants have been reduced over the years (MIER, 2011).

Although the furniture industry in Malaysia is showing robust growth, its adoption of ISO 9001 quality management

system remains lukewarm (Ratnasingam, 2010), as only 36 out of the 3850 registered furniture companies are certified. It has been argued that ISO quality management system retards the innovation in the resource-based manufacturing sectors, which discourages manufacturers from adopting the system (Prahogo and Sohal, 2006). Nevertheless, these findings are inconclusive for the fashion-sensitive furniture industry. Therefore, this study aims to evaluate the effects of ISO 9001 quality management system on the innovative and management capabilities of furniture companies in the country, which are crucial to ensure the competitiveness of the furniture manufacturing industry.

### 3. Methodology

The study was conducted in two parts. The first part involved direct-interviews of 100 randomly selected furniture manufacturers to establish their main problems faced with regards to their business competitiveness. The selection was done with the assistance of the Malaysian Furniture Promotion Council (MFPC) to ensure a fair representation of all sizes of furniture manufacturers. The respondent (usually the owner or senior manager of the company) was given a checklist which had 12 statements, which had to be ranked by its importance. These statements covered the full spectrum of issues often relevant to manufacturing companies such as raw materials supply, labor, market, technology, innovation, management, industrial policy and business climate. It was developed after consultations with industry-experts as well as trade associations, as reported previously by Ratnasingam, (2011). The responses were then tabulated and ranked by its importance.

The second part of the study involved a questionnaire-based survey of the 36 ISO-certified furniture manufacturers in the country. The interviews were conducted with the assistance of the trade association, and the companies were initially approached to seek their approval to participate in the actual survey. The questionnaire was pre-tested using a sample of 10 furniture companies, and the necessary modifications were made prior to the conduct of the survey. There were five parts to the questionnaire used. The first part covered the background of the company (i.e. ownership, size, annual turnover, number of employees, types of furniture produced, etc.). The second part, ranked the five furniture-marketing strategies employed within the industry on its importance to their respective companies. The third part assessed the effects of ISO-certification on the innovation characteristics of the company, based on six innovation elements on which the respondents had to reflect their degree of agreement based on the five-point Likert scale rating. The fourth part evaluated the effects the ISO certification on the management capabilities of the company, based on twelve attributes which the respondents had rate based on the five-point Likert scale. The last part of the questionnaire compiled comments and opinions on the state of innovation within the Malaysian furniture sector.

The data collected from the survey was compiled and analyzed using the SPSS software with relevant statistical tests as reported previously by Ratnasingam *et al.* (2010). Paired samples correlation was used to test the relationship between ISO certification and the innovation and management capacities of the companies. Comparison of the measures was checked in order to reduce measurement error using the Kruskal-Wallis test.

#### 4. Results and Discussion

##### 4.1. Challenges to Furniture Manufacturing in Malaysia

The study confirms the fact that the furniture manufacturing industry is under tremendous pressure to remain competitive by moving up along the value-chain. From the responses of the manufacturers, it was found that the main challenges faced in the order of decreasing importance are: (1) *lack of innovation/design*, (2) *workforce availability*, (3) *lack of skilled workers*, (4) *uncertainty in raw materials supply*, (5) *outdated technology*, (6) *inefficient management*, (7) *lack of new markets*, (8) *inconsistent industrial policy*, (9) *lack of supporting industries*, (11) *lack of research and development (R & D) activities* and (12) *poor linkages between universities and industry*.

The results from this study confirms that the furniture manufacturing industry in Malaysia competes primarily on price-points in the mass production global marketplace, as previously reported by Ratnasingam *et al.* (2011). Further, it must be emphasized that the uncertainty surrounding the production factors, particularly raw materials supply and workforce availability as well as quality is taking a toll on the ability of the furniture

industry to innovate and move along the value-chain, as reported by Ratnasingam (2011). Perhaps, this explains the reason for the dominance of traditional mass markets such as the United States of America, Australia, East Asia and Middle East as the main export destinations for Malaysian furniture exporters, where innovation is not a highly sought after furniture purchasing criterion compared to pricing (Table 1). Further, Van Gaugh *et al.* (2010) have shown that the application of quality management systems, such as the ISO 9001 may be beneficial if the target market is quality sensitive, such as in Japan. On the other hand, in price-sensitive markets quality management systems are often used to achieve the minimum quality standard to comply with the buyer's requirements, without much consideration given to innovation and productivity (Garvin, 1987; Sampaio *et al.*, 2009). These findings are also parallel to the reports by Dick *et al.* (2002) and Ratnasingam (2003), who have shown that furniture manufacturers who do not shift from having comparative advantage towards building competitive advantage may tend to lose out in the long-run due to their inability to move up the value-chain, which in turn will expose them to increasing competitive pressure from cheaper producers from all over the world.

Table 1

*Strategies used by Malaysian Furniture Manufacturers*

| Strategy                          | Overall Total Survey Score | Ranking | Target Market  |
|-----------------------------------|----------------------------|---------|--|
| Price                             | 429                        | 1       | United States of America, Middle East, South Asia, Australia |
| Single Item Shipment              | 389                        | 2       | United States of America, Australia                          |
| Mix Items Shipment                | 247                        | 6       | Middle East, Africa, South Asia                              |
| Quality                           | 326                        | 3       | Europe, East Asia  |
| Design                            | 217                        | 7       | Europe   |
| After-Sales Service / Reliability | 261                        | 5       | Europe, East Asia  |
| On-Time Delivery                  | 278                        | 4       | Europe, East Asia  |

#### 4.2. Effects of ISO 9001 Quality Management System on the Innovation Capacity of Furniture Companies

From the results shown in Table 2, it is apparent that the ISO 9001 quality management system has a strong positive effect on process innovations in furniture manufacturing. On the other hand, product

innovation was negatively correlated with the ISO 9001 quality management system, which reveals that the system does not encourage new product design activities. Ratnasingam *et al.* (2010) in a survey of ASEAN furniture manufacturers found that the regional furniture industry often thrived on competitive pricing, drawn from improvements in processing techniques and other cost-cutting measures.

*Effect of ISO 9001 System on Innovation Attributes*

Table 2

| Innovation   | Overall Total Survey Score | Ranking of Importance | Strength of Correlation (R <sup>2</sup> ) |
|--------------|----------------------------|-----------------------|---|
| Process      | 438                        | 1                     | 0.93                                      |
| Product      | 104                        | 6                     | -0.14                                     |
| Raw Material | 352                        | 2                     | 0.74                                      |
| Technology   | 233                        | 4                     | 0.48                                      |
| Design       | 117                        | 5                     | -0.11                                     |
| Market       | 241                        | 3                     | 0.52                                      |

According to a study by the World Bank (1997), a strong correlation existed between ISO 9001 certification and the export status of firms in the manufacturing sector. Nevertheless, the report stressed that the ISO 9001 certification is often used as a marketing tool, to assure potential buyers of the reliability and consistency in the product quality, rather than a reflection of the innovative capacity of the company. The fact that furniture is purchased on perceived value rather than actual value, suggest that the inherent diversity and variability in furniture is often a plus-point for furniture (Van Gaugh *et al.*, 2010). Efforts to curtail product diversity is often construed as a weakness in furniture manufacturing, which reflects the low profitability of mass production furniture so widely found in Malaysia (Ratnasingam *et al.*, 2010). Therefore, a systematic approach to furniture design is not appropriate, as design changes are often made to suit the potential buyer's taste and requirement, which may go against the principles of standardization as

advocated by the ISO 9000 quality management system (Goetsch and Davis, 1998). On the other hand, process innovations are often realized through systematic approach, with the aim of improving productivity and cost-cutting. This formalization of effective and efficient manufacturing activities for the total quality will eventually lead to the total quality management (TQM) system (Abdullah, 2010).

#### 4.3. Effects of ISO 9001 Quality Management System on the Management Capacity of Furniture Companies

Generally, the ISO 9001 Quality Management System has a positive correlation to the management capacity of furniture companies as shown in Table 3. The study showed that ISO-certification contributed positively towards the overall factory management, production planning, procurement/purchasing, stock-keeping, maintenance, quality control, financial

management, labor management and delivery timeliness of the furniture manufacturer (Attah *et al.*, 2011, Ioras *et al.*, 2006, Ratnasingham *et al.*, 2008, Ratnasingham *et al.*, 2011). Nevertheless, the respondents indicated that their level of satisfaction decreased in the order of overall management > production planning > procurement > stock-keeping > maintenance > quality control > financial management > labor management > delivery timeliness. The Kruskal-Wallis test showed that there was notable statistical significance for these characteristics of ISO-certified furniture manufacturers based on this survey

( $p < 0.05$ ). From the business dimension, ISO-certification uplifts the professionalism of the overall factory management, which allows timely and systematic problem-solving activities to take place, which at this point of time is often at a low level within the furniture industry. Ratnasingham *et al.* (2010) reported that the primary challenges faced by the furniture manufacturing sector in the ASEAN region is the ineffective management and low-quality human capital, which in combination have a negative impact on the overall degree of professionalism within the industry.

*Effect of ISO 9001 System on Management Attributes*

Table 3

| Attributes                 | Overall Total Survey Score | Ranking of Importance |
|----------------------------|----------------------------|-----------------------|
| Overall Factory Management | 295                        | 1                     |
| Production Planning        | 283                        | 2                     |
| Procurement                | 281                        | 3                     |
| Stock-Keeping              | 278                        | 4                     |
| Maintenance                | 273                        | 5                     |
| Quality Control            | 269                        | 6                     |
| Financial Management       | 267                        | 7                     |
| Labor Management           | 263                        | 8                     |
| Delivery Timeliness        | 260                        | 9                     |
| Product Costing & Pricing  | 255                        | 10                    |
| Research & Development     | 251                        | 11                    |
| Product Design             | 238                        | 12                    |

Note: The figures reflect the ranking of the attributes based on its importance

Although the paired samples t-test showed that ISO-certified furniture companies are more preferred by non ISO-certified companies on the basis of its management philosophy, the fact that most furniture manufacturing companies are family-owned small and medium enterprises, the extent of ISO-certification among these companies are relatively low. Hence, ISO-certification is often found in large enterprises, which have the financial and physical means to implement the system (Ratnasingam, 2003; Kotler and Keller, 2006).

#### 4.4. Implications for the Furniture Industry

The findings from this study have far reaching implications for the furniture manufacturing industry worldwide. Firstly, it reveals that ISO-certification has a positive effect on process innovations, but on the other hand, a negative influence on product innovations. Therefore, furniture design activities may be hindered in ISO-certified furniture companies, which is parallel to the previous researches by Prahogo and Sohal (2001) and Lopez-

Mielgo *et al.* (2009). Secondly, ISO-certification improves the overall factory management of furniture companies, but its implementation is wide among the large enterprises due to the high financial and physical resources demand. Inevitably, the small and medium enterprises, which make up the large proportion of manufacturing entities in the furniture sector, may lose out as they are constrained by the lack of physical resources to implement the ISO certification system. Consequently, the management performances of such enterprises appear to be stuck in the old family-owned mentality, which has an adverse effect on the level of professionalism in such organizations. This study also suggest that ISO-certification may not be successful in changing the working-culture in small and medium furniture manufacturing enterprises, unless the owners see the merit in adopting such a system (Ng and Kanagasundaram, 2011; Ratnasingam, 2012). Inevitably, it may be inferred that the benefits of ISO-certification towards the overall factory management appears to be not highly appreciated within the furniture sector, and hence, concerted efforts to improve the awareness among furniture manufacturers should be undertaken. Nevertheless, ISO-certification can improve the management effectiveness in the furniture industry, while contributing towards process improvements which could boost competitiveness.

## 5. Conclusion

It is apparent that ISO-certification can improve the overall performance of the furniture manufacturing industry, especially through its positive influence on process innovations and management competence. Despite the reluctance among small and medium sized furniture manufacturers to adopt the ISO-

certification system, its benefits in the long-run may help off-set the initial high implementation cost. Increasing the awareness about the benefits of the ISO 9001 quality management system should be concertedly undertaken, to enable the furniture sector to gain competitiveness.

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