Exploratory Factor Analysis of the Effects of Design on Brand Strategy-Performance in Malaysian Furniture Firms

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Abstract: *To investigate the performance of the Malaysian furniture companies in the context of design and brand strategy, a self-administered questionnaire survey was conducted. This research was conducted to examine the effects of design on the brand strategy towards a better export performance among companies. It is an important strategic tool that can help firms to manage their business activities more efficiently as well as provide them with their competitive edge, has attracted significant research attention. Despite the increased research attention in recent years, limited numbers of empirical studies have investigated how small and medium-sized firms (SMEs) perceived design, in the Malaysian context. The subjects involved in the survey included 223 furniture companies participating in the Malaysian Furniture Fair (MIFF 2012) that are highly committed in exporting. Consequently, it resulted in a return of 116 questionnaires that were furthered analyzed. This study sought to address this research issue by examining the perceptions of owners and managers of 116 furniture SMEs concerning design and their branding strategy in the Malaysian furniture industry. The findings suggest favourable perceptions of design among the SMEs brand strategy surveyed.*

Keywords: *design, brand strategy, export performance, furniture*

1. Introduction

The Malaysian furniture industry gives out an impressive growth for the past nine years as it contributes from 2.6 billion in 1997 to 6.3 billion in 2009 (MIFF, 2010). In 2010, Malaysia still has to endure the fierce competition with low cost producers of China and Vietnam. Most buyers from all over the world craves for solid wood furniture from Malaysia. It is also cost-effective and this had enable Malaysia to be on the 10 of the most exported furniture in the world after China and Vietnam. 600 exporters ceased to exist with 50 of them contributes to 65 to 75 percent of the exports (Wong, 2011). However, the decline of raw materials and the rise of costs have forced companies to venture into branding and design. Not to be left behind, more companies has transformed from OEM (Original Equipment Manufacturing) to ODM (Original Design Manufacturing). However, the level of good design has drop among local furniture manufacturers. Designers and manufacturers have not been synchronized enough to meet the challenges in the global market. Malaysia is in fact between China and the Italian in terms of quality of products. In the propensity of being a branded furniture industry, a study of past literature indentified that originality, creativity and high-quality products will reach for branding as a whole. A synergy of government agencies as well as furniture producers will greatly enhance the competitiveness of local companies through branding. Agencies related to the furniture industry are committed and highly enthusiastic in giving support and overcome the challenges ahead. NATIP or National Timber Industry Policy has given is full guidance in drawing appropriate policies and for sufficient growth for the years to come.

Asian companies still consider branding as merely a logo design or as advertising(Roll 2008; Unit 2010).

"I felt that Asian business would never get anywhere if it didn't own brands. Partly this reflected the earlier experience in our family business of putting in the energy to build a brand as agent for an overseas principal, only to lose it when they eventually took the brand in-house. I also knew the problems of competing in commodity markets where the business disappear as soon as a cheaper supplier comes into the scene." Ho Kwon Ping

They are already plentiful in their own comfort zone in their short term profit mentality. There feel competent and bountiful in outsourcing for other global branded companies and remained as an OEMs (Original Equipment Manufacturers)(Unit 2010). Copying is accepted and considered conventional among Asian countries.

"Today the designer in Hong Kong or Taipei opens the magazine and looks at the best seller and copies that. But to be successful you have to find your own designs and energy." Phillip Starck.

This statement indicates the low importance of design among Asian companies. Design in fact determine a wide differentiation for products and changes a new outlook among customers(Roll 2008). A dramatic change as a whole is crucial as Asian companies need not only have to be fierce in being trendsetters by being closely linked to society, and the people and the culture (Dae-ryun and Roll 2011). Trendsetting must be carried out globally through branding, in being a role model for our nation's richness in culture and identity.

2. Literature Review

2.1 Defining Export Performance

Turbulence of global economy and changing of political conditions has forced companies to search for fresh ideas with lesser resources or in other words 'more with less'(Abbing 2010). Export performance is defined as a result of efficiency through geographic diversification. These both elements has a highly positive relationship(Beleska-Spasova and Glaister 2010). This relationship will benefit companies for years to come in terms of economic of scale, resource accessibility, the augmentation of global market power, decreasing of instability and more experience gained internationally.

The export figures of the industry are greatly influenced by incremental capital inputs (i.e. labor, raw materials) or production growth within the industry that spurs export performance(Ratnasingam 2003)**.** The growth may be hindered with the combination of a drop of resources and the rise of labour cost particularly in the Asian industry. Furniture trade gained more control of the market through design and marketing. There is a lack of training on designs and innovation regardless of the existence of national policies. There is a lower chance of the Asian furniture industry to elevate the design and marketing with less importance on formal education and training. (Ratnasingam 2003).

Figure 1.0 shows the sustainability of the export performance growth factors in the Southeast Asian furniture sector

Figure 1: Sustainability of the export performance growth factors in the Southeast Asian furniture sector

However, it is reported that actual productivity gains does not play a key role in increasing the exports, but by incremental capital gains. This indicate that factors that drive the furniture export growth is still not ascertain and this could lead to an industry that is accessed inaccurately with unreliable statistics(Ratnasingam and Ioras 2003).

2.2 Furniture Design

Design are perceived by different types of definitions be it among users, designers or the manufacturers themselves. Its definition is semantically 'fuzzy' and unclear although in everyday language it is closely associated with aesthetics and visual expression particularly in the furniture industry(Council 2010). A classic meaning of design was stated by Krippendorff (1989);

"The etymology of design goes back to the latin de+ signare and means making something, distinguishing it by sign, giving it significance, designating its relation to others, owners, users and goods"

Krippendorff(1989) cited from (Czarnitzki and Thorwarth 2009)

Even though Malaysia, China as some of the countries in South East Asia has the largest furniture exporting constituency in the world, still elements of innovation and original design are still weak and immature(Ratnasingam 2003). He also stressed that even though Malaysia, China as some of the countries in South East Asia has the largest furniture exporting constituency in the world; still elements of innovation and original design are still weak and immature. He also mentioned that customer when purchase furniture would consider the aesthetic appeal of the product, the branding and its competitive pricing.

IKEA for example uses a celebrity image which symbolizes products that are fashionable and elite but at the same time affordable. Their target market is the younger generation that is educated from students to urban professionals (Fulton, 2005). The most important element for the furniture industry to progress is design. Function and form that complement each other are regarded as the best design. In order to boost sales designers are urged to aspire with original ideas and be trend setters to new products in the market(Board 2010). Manufacturing and marketing are given more focus than design by some managers, as in Italy that gives out expressive design in comparison to Denmark that focuses on functionality. More furniture are related to functionality and this gives difficulty in branding to promote to the buyers to buy furniture(Walsh 2011).
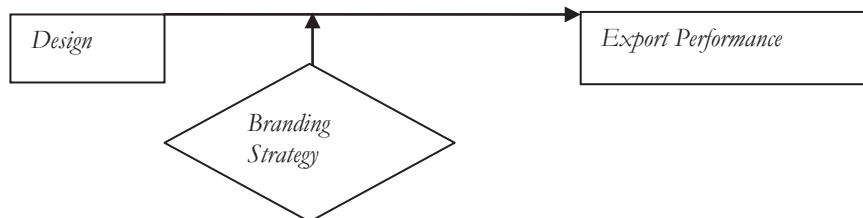
3. Research Methodology

Figure 1.2: Conceptual Model

This pilot study is based on a sample survey and it provides a great opportunity to assess the feasibility of large full-scale studies. This small scale study is also carried out to assist the preparation of a large, more comprehensive investigation. The sampling design used for the data collection was stratified random sampling as it was gathered via face-to-face survey involving Malaysian furniture companies. It is considered the most suitable and effective compared to other probability designs (Sekaran 2006). The primary data was collected from structured questionnaires in March 2012. The handing-in of the 223 questionnaires to the exporting furniture companies resulted in the return of 116 usable questionnaires. The 116 returned questionnaires represented a response rate of 52%.It is considered high and representative of the population studied and generalized(Sekaran 2006).

3.1 Survey Questionnaire

The structured survey questionnaire adapted in this study consisted of five sections with a total number of 31 questions. Questions 1 through 11 in section A and B were used to obtain the general information concerning the respondents' characteristics and the firms. The remaining 20 questions in sections C, D and E were designed to capture the respondents assessments of the export performance rate (5 questions), their branding strategy (9 questions), and their importance placed on design towards their branding strategy (6 questions). There are 3 open ended questions in this survey.

The 31 questions, which was an adaption from the earlier works by(Boehe and Cruz 2010) . The respondents were asked to rate each item on a five-point scale ranging from (1) almost always true (2) usually true (3) often true (4) occasionally true (5) sometimes but frequently true (6) usually not true (7) almost never true, and another five-point scale ranging from (1) excellent (2) very good (3) good (4) fairly good (5) average (6) poor (7) very poor. The questionnaire was tested prior to the handing in to the 116 respondents. The reliability of variables should have a Cronbach's alpha of 0.6 or more (Sekaran 2006). The coefficient alpha scores of the measures ranged from 0.69 to 0.98.

Table 1.: Coefficient alpha scores of measures

Variable	Alpha (µ)
Export Performance	0.94
Branding Strategy	0.79
Design	0.85

4. Empirical Findings

4.1 Information on the Respondents and Sample Firms

The following table summarizes the information gathered from firms surveyed. Table 1.0 below presents the personal characteristics of the respondents in the study. Following this, Table 1.0 indicates the positions of the respondents that participated in the study. Of the 116 respondents surveyed, 35 (30.2%) were under 30 years old, followed by the majority of respondents that are among 30-39 years old. 24 (20.7%) were ranged 40 to 49 years old, 11 (9.5%) were within 50-59 years old and the only one person were aged 60 years old and above. Most of the respondents were male and Chinese.

Table 1.1: Characteristics of Respondents

Respondents Characteristics (n=100)	Frequency	Percent
Age (years):		
Under 30 years old	35	30.2
30-39	45	38.8
40-49	24	20.7
50-59	11	9.5
60 and over	1	0.9
Sex:		
Male	60	51.7
Female	56	48.3
Race:		
Bumiputera		
Chinese	92	79.3
Others	15	12.9

The manager but not the owner constituted the majority of the respondents (61.2%), followed by owner and manager (20.7%) and owner and CEO (18.1%). As for prior work experience, the majority of the respondents (60.3%) have less than 10 years of experience.

Table 1.2: Respondents' Positions and Age in the Firms

Positions	Number	Percent
Owner and CEO	21	18.1
Owner and Manager	24	20.7
Manager but not owner	71	61.2
Years of Experience	Number	Percent
10 and below	70	60.3
11-20	30	25.9
21-30	12	10.3
31-40	4	3.4

4.2 Characteristics of Sample Firms

Table 1.2 displays the characteristics of the 116 firms that participated in the survey. Out of the 116 firms that responded, 90 firms or 78 percent had been in operation for more than ten years. In terms of employment, 14 of the 116 firms had more than 301 employees, 16 firms had between 201 to 300 employees, 33 firms employed between 101-200 employees and 53 firms had less than 100 employees which make the most employment within these firms.

Out of the total number of 116 firms, 86 were private limited, 13 were sole proprietors, and the remaining were partnerships and public listed. The 116 furniture companies represented various different sectors. Of the total 116 companies, 33 (28.4%) were office furniture, 32 (27.6%) represented bedroom furniture, 25 (21.6%) were involved in others, 17 (14.75%) operated door, and the remaining represent kitchen cabinet and outdoor furniture. Most of the firms involved were medium sized organization (56.0%), followed by small sized (18.1%), and the remaining (13.8%) and (12.1%) represent large and global organizations.

Furthermore, out of the 116 firms, 54 companies (46.6%) indicated that their companies produce RM1 Million to 10 Million in 2011. 28 companies (24.1%) reported having sales of more than RM10 Million, 20 companies (17.2%) represents sales of less than RM1 Million and the remaining companies has produced sales of more than RM50 Million.

Table 1.3: The Sample Firms Characteristics

Firm Characteristics (n=100)	Frequency	Percent
Size of Organization:		
Small	21	18.1
Medium	65	56.0
Large	16	13.8
Global	14	12.1
Legal Form:		
Sole Proprietorship	13	11.2
Partnership	8	6.9
Private Limited	86	74.1
Public Listed	9	7.8
Number of Employees		
1-100	53	45.7
101-200	33	28.4
201-300	16	13.8
301-600	14	12.1
Total Sales (2011)		
Less than RM1 million	20	17.2
RM1 mil-10mil	54	46.6
RM10 mil-50mil	28	24.1
RM50mil-100mil	9	7.8
RM100mil-500mil	5	4.3
Furniture category		
Office	33	28.4
Kitchen Cabinet	3	2.6
Outdoor	6	5.2
Bedroom	32	27.6
Door	17	14.7
Others	25	21.6
Age of company		
Less than 5 years	8	6.9
6-10 years	18	15.5
11-15 years	33	28.4
16-20 years	22	19.0
More than 20 years	35	30.2

4.3 Export Rate Performance among the Furniture Companies

The responses to the five Likert Scale questions about the rate of export performance obtained from the 116 furniture

companies showed that the respondents viewed as a moderate rate of their export performance. The mean and standard deviation (SD) scores for the export performance rate are summarized in Table 1.3. The overall mean scores ranged from 3.41 to 3.83. The high mean scores in Table indicate that most of the respondents agreed that their participation in global market abroad determines the export rate performance (3.83), viewed export profitability as an important measurement tool (3.82), would provide the details of performance (3.70), achieve export objectives in terms of revenue (3.64), and volume (3.41).

Table 1.4: Performance rate of main export product in 2011

Rate of Export Performance	Mean*	SD
Export volume	3.41	1.17
Export revenue	3.64	1.23
Export profitability	3.82	1.24
Market participation in the main market abroad	3.83	1.24
Overall export performance	3.70	1.22

*Scale: 1=Strongly Disagree, 2=Disagree, 3=Uncertain, 4=Agree, 5=Strongly Agree

4.4   Branding Strategy

A pre-pilot study were carried out which was initially 20 companies. Consequently, a reduction of an item from this variable is needed to make it unidimensional. As referred to Table 1.4, item 7 was deleted because its mean has a higher difference than the rest of the items. It is found out that all the variables are validated based on these 20 companies. As a result, other researchers can adopt from this questionnaire as this is a contribution of knowledge to the Malaysian furniture companies on branding strategy and furniture design towards a better export performance.

Table 1.5: Branding strategy of the Malaysian furniture firms

Branding Strategy	Mean*	SD
1. We actively carry out research what is important to our customers	2.84	1.31
2. Our communications, marketing, service delivery, finance, HR functions, are all aligned with our branding objective	2.97	1.43
3. We discount prices in order to attract customers	4.38	1.55
4. Branding is championed throughout our organization, from CEO down	3.27	1.52
5. Our branding strategies do not depend on what our customers are up to	3.20	1.57
6. Everyone in our organization knows what our brand mission/vision statement stands for	3.17	1.42
7. The brand is not suited for the market after investing it financially and emotionally	5.09	1.69
8. If our brand did not exist, the vast majority of our customers would notice our absence and really miss having us in their lives	3.69	1.56

*Scale: 1= Almost always true, 2=usually true, 3= often true, 4= occasionally true, 5= sometimes but frequently true, 6= usually not true, 7= almost never true

4.5 Design

Table 1.6*: Design strategy

Design	Mean*	SD
We believe that design plays a key role in determining if a product is marketable or not	2.62	1.32
Our design are the best when function and form complement each other	2.91	1.26
We believe that distinctive branding and strong design capability is what differentiate us than others	2.83	1.29
Our branding strategy stand tall with the consistency of design in the market	3.09	1.41
Our designers are trendsetters and only original design are made to boost sales of a new product in a market place	3.49	1.70

*Scale: 1= Almost always true, 2=usually true, 3= often true, 4= occasionally true, 5= sometimes but frequently true, 6= usually not true, 7= almost never true

Initially, the factorability of the 17 items was examined. Several well-recognised criteria for the factorability of a correlation were used. The Kaiser-Meyer-Olkin test (KMO) and Bartlett's test of Sphericity were applied on the collected data (see Table 1.6). Kaiser-Meyer-Olkin measure of sampling adequacy tests whether the partial correlations among variables are small or not. The results showed KMO is 0.842 and, according to the criteria suggested by (Pallant 2007), the criteria for KMO value must be 0.6 or above and that the Bartlett's Test of Sphericity value is significant which is 0.5 or smaller. Thus KMO Statistic suggests that we have sufficient sample size relative to the number of items/ attributes in our scale. We can also conclude from the Bartlett's Test of Sphericity value, the correlation matrix is not an identity matrix. Hence, the KMO statistic and Bartlett's tests of Sphericity (P<0) suggest that the correlation matrix is factorable.

   The significance Level (Sig) for Bartlett's test of Sphericity (135585.75), for the 15 attribute/item Correlation matrix was highly significant (p<.000). Thus, we can conclude that according to Bartlett's test, the correlation matrix is not an identity matrix. Hence, the KMO statistic and Bartlett's test of Sphericity (P<O)

Table 1.7: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.845
Bartlett's Test of Sphericity	Approx. Chi-Square	1.232E3
	Df	153
	Sig.	.000

Table 1.8: Descriptive Statistics

	Mean	Std. Deviation	Analysis N
C1	3.4138	1.17265	116
C2	3.6379	1.23286	116
C3	3.8190	1.24131	116
C4	3.8276	1.23904	116
C5	3.6983	1.22453	116
D2	2.8362	1.31178	116
D3	2.9741	1.42927	116
D4	4.3793	1.54726	116
D5	3.2672	1.52291	116
D6	3.1983	1.57270	116
D7	3.1724	1.42204	116
D8	5.0862	1.69177	116
D9	3.6897	1.56268	116
E1	2.6207	1.31649	116
E2	2.9138	1.26194	116
E3	2.8276	1.28723	116
E4	3.0948	1.40792	116

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D8	5.0862	1.69177	116
D9	3.6897	1.56268	116
E1	2.6207	1.31649	116
E2	2.9138	1.26194	116
E3	2.8276	1.28723	116
E4	3.0948	1.40792	116
E5	3.4914	1.70164	116

In Table 1.8 of the descriptive statistics table, item D4 and D8 have different means than others, which are 4.3793 and 5.0862.

Table 1.9: Communalities

	Initial	Extraction
C1	1.000	.867
C2	1.000	.809
C3	1.000	.791
C4	1.000	.704
C5	1.000	.894
D2	1.000	.502
D3	1.000	.591
D4	1.000	.588
D5	1.000	.693
D6	1.000	.624
D9	1.000	.531
E1	1.000	.675

E2	1.000	.655
E3	1.000	.790
E4	1.000	.739
E5	1.000	.506
D8	1.000	.627

Extraction Method: Principal Component Analysis.

All five extracted components account for 86.4% of the variance in variable C1 (h^2=0.864). The communality value for each variable should be more than 0.5 or higher.

Table 2.0: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.059	35.641	35.641	6.059	35.641	35.641	4.187	24.628	24.628
2	2.876	16.918	52.559	2.876	16.918	52.559	3.747	22.041	46.669
3	1.539	9.054	61.613	1.539	9.054	61.613	2.529	14.875	61.544
4	1.113	6.546	68.159	1.113	6.546	68.159	1.125	6.616	68.159
5	1.074	6.315	74.474						
6	.786	4.623	79.097						
7	.618	3.633	82.730						
8	.562	3.306	86.036						
9	.482	2.837	88.874						
10	.403	2.370	91.244						
11	.316	1.861	93.105						
12	.289	1.703	94.807						
13	.245	1.438	96.246						
14	.221	1.300	97.546						
15	.190	1.120	98.665						
16	.138	.811	99.477						
17	.089	.523	100.000						

Extraction Method: Principal Component Analysis.

Principal components analysis revealed the presence of five components with eigenvalues exceeding 1, explaining 34.4%, 16.9%, 9.0%, 6.4%, and 6.1% of the variance respectively in Table 2.0.
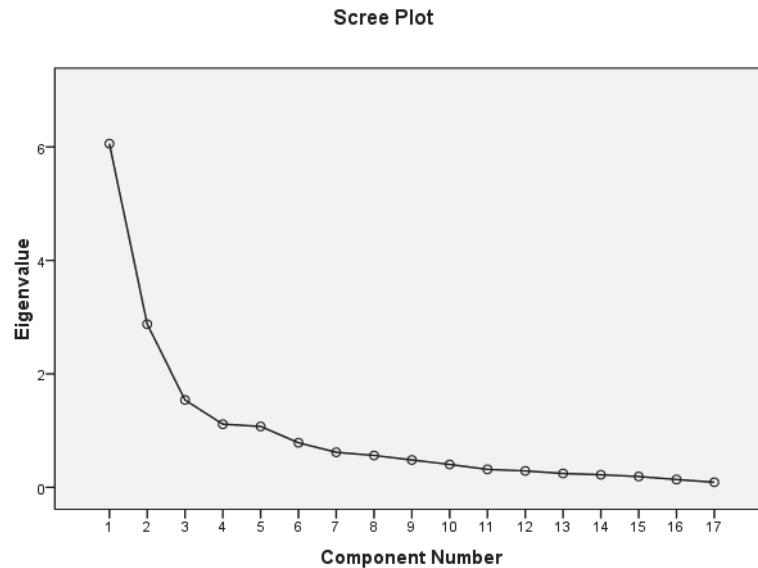
Scree Plot

Figure 1.3: Scree Plot

Figure 1.3 displays the point at which the curve begins to straighten out is considered to indicate the maximum factors to extract. In this case, the first 7 factors would qualify. Beyond 7, too large proportion of unique variance would be included; thus these factors would not be acceptable. In using latent root criterion, only 4 factors would have been considered.

Table 2.1: Component Matrix[a]

	Component				
	1	2	3	4	5
C1	.671	-.626	-.154	-.035	.024
C2	.686	-.577	-.066	-.039	.051
C3	.682	-.566	-.004	-.073	.032
C4	.652	-.521	.062	-.059	.108
C5	.757	-.558	-.095	.009	.008
D2	.515	.409	.246	-.092	.415
D3	.662	.276	.126	-.245	.273
D4	.343	-.040	.644	.234	-.263
D5	.579	.386	.427	-.163	-.052
D6	.513	.237	.547	.069	-.081
D9	.518	-.027	.156	.488	-.452
E1	.612	.429	-.331	-.088	-.163
E2	.661	.420	-.181	.097	.117
E3	.722	.459	-.221	-.092	-.078
E4	.713	.389	-.272	.071	.126
E5	.379	.273	-.483	.234	-.388
D8	-.022	.014	-.056	.790	.563

Extraction Method: Principal Component Analysis.

	Component				
	1	2	3	4	5
C1	.671	-.626	-.154	-.035	.024
C2	.686	-.577	-.066	-.039	.051
C3	.682	-.566	-.004	-.073	.032
C4	.652	-.521	.062	-.059	.108
C5	.757	-.558	-.095	.009	.008
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D4	.343	-.040	.644	.234	-.263
D5	.579	.386	.427	-.163	-.052
D6	.513	.237	.547	.069	-.081
D9	.518	-.027	.156	.488	-.452
E1	.612	.429	-.331	-.088	-.163
E2	.661	.420	-.181	.097	.117
E3	.722	.459	-.221	-.092	-.078
E4	.713	.389	-.272	.071	.126
E5	.379	.273	-.483	.234	-.388
D8	-.022	.014	-.056	.790	.563

Extraction Method: Principal Component Analysis.

a. 5 components extracted.

Table 2.1 displays each variable's loading on each component. From the output, there is one item (D8) which do not load on the first component (always the strongest component without rotation) but create their own retained component (also with eigenvalue greater than 1). A component should have, as a minimum, 3 items/variables; but deletion of items is reserved until it is discovered whether or not these components are related. A simple correlation is on these components. In Table 2.2 there is no relationship between the components which indicates orthogonal rotation strategy can be used. Therefore, D8 can be extracted among the components.

Table 2.2: Correlations

Correlations

		REGR factor score 1 for analysis 1	REGR factor score 2 for analysis 1	REGR factor score 3 for analysis 1	REGR factor score 4 for analysis 1	REGR factor score 5 for analysis 1
REGR factor score 1 for analysis 1	Pearson Correlation	1	.000	.000	.000	.000
	Sig. (2-tailed)		1.000	1.000	1.000	1.000
	N	116	116	116	116	116
REGR factor score 2 for analysis 1	Pearson Correlation	.000	1	.000	.000	.000
	Sig. (2-tailed)	1.000		1.000	1.000	1.000
	N	116	116	116	116	116
REGR factor score 3 for analysis 1	Pearson Correlation	.000	.000	1	.000	.000
	Sig. (2-tailed)	1.000	1.000		1.000	1.000

	N	116	116	116	116	116
REGR factor score 4 for analysis 1	Pearson Correlation	.000	.000	.000	1	.000
	Sig. (2-tailed)	1.000	1.000	1.000		1.000
	N	116	116	116	116	116
REGR factor score 5 for analysis 1	Pearson Correlation	.000	.000	.000	.000	1
	Sig. (2-tailed)	1.000	1.000	1.000	1.000	
	N	116	116	116	116	116

Table 2.3 displays the total variance explained. This value of 70.7% of the variance in the items (specifically variance-covariance matrix) is accounted for by all 4 components.

Table 2.3: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.059	37.866	37.866	6.059	37.866	37.866	4.135	25.843	25.843
2	2.876	17.974	55.841	2.876	17.974	55.841	2.875	17.968	43.811
3	1.538	9.614	65.455	1.538	9.614	65.455	2.839	17.744	61.555
4	1.087	6.795	72.250	1.087	6.795	72.250	1.711	10.694	72.250
5	.788	4.925	77.174						
6	.631	3.941	81.116						
7	.564	3.525	84.640						
8	.503	3.144	87.784						
9	.430	2.688	90.472						
10	.320	1.998	92.470						
11	.302	1.889	94.359						
12	.254	1.588	95.948						
13	.222	1.387	97.335						
14	.195	1.221	98.556						
15	.139	.867	99.423						
16	.092	.577	100.000						

Extraction Method: Principal Component Analysis.

Table 2.4 displays component loadings for each item (prior to rotation)

Table 2.4: Component Matrix[a]

	Component			
	1	2	3	4
C1	.671	-.626	-.154	-.041
C2	.686	-.577	-.066	-.064
C3	.682	-.566	-.006	-.070
C4	.652	-.521	.062	-.121
C5	.757	-.558	-.095	.000
D2	.516	.409	.250	-.384
D3	.662	.276	.124	-.365
D4	.343	-.040	.645	.350
D5	.579	.386	.422	-.059
D6	.513	.237	.548	.103
D9	.518	-.028	.161	.655
E1	.612	.429	-.336	.077
E2	.661	.419	-.176	-.035
E3	.722	.460	-.225	.007
E4	.713	.389	-.267	-.057
E5	.379	.273	-.483	.453

Extraction Method: Principal Component Analysis.

a. 4 components extracted.

A principle-components factor analysis of the remaining 16 items, using varimax was conducted, with the four factors explaining 72.25% of the variance. Table 2.4 shows the Rotated Component Matrix that displays the loadings for each item on each rotated component, again clearly showing which items make up each component.

Table 2.4: Rotated Component Matrix[a]

	Component			
	1	2	3	4
C1	.921	.133	.011	.035
C2	.887	.099	.088	.087
C3	.870	.062	.117	.123
C4	.816	.004	.179	.128
C5	.914	.186	.083	.131
D2	.041	.135	.786	.078
D3	.246	.235	.739	.042
D4	.138	-.109	.173	.773
D5	.041	.178	.669	.430
D6	.078	.064	.509	.601
D9	.256	.406	-.096	.696
E1	.095	.740	.347	.014
E2	.131	.616	.494	.062
E3	.139	.712	.501	.076
E4	.200	.677	.487	-.001
E5	.034	.794	-.131	.091

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Table 2.4: Rotated Component Matrix[a]

	Component			
	1	2	3	4
C1	.921	.133	.011	.035
C2	.887	.099	.088	.087
C3	.870	.062	.117	.123
C4	.816	.004	.179	.128
C5	.914	.186	.083	.131
D2	.041	.135	.786	.078
D3	.246	.235	.739	.042
D4	.138	-.109	.173	.773
D5	.041	.178	.669	.430
D6	.078	.064	.509	.601
D9	.256	.406	-.096	.696
E1	.095	.740	.347	.014
E2	.131	.616	.494	.062
E3	.139	.712	.501	.076
E4	.200	.677	.487	-.001
E5	.034	.794	-.131	.091

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 16 iterations.

Rotated Component Matrix shows the factor loadings for each variable. Based on these factor loadings, the factors represent:

Table 2.5: Rotated Component Matrix

	Component			
	1	2	3	4
Export volume	.921			
Export revenue	.887			
Export profitability	.870			
Market participation in the main market abroad	.816			
Overall export performance	.914			
We believe that design plays a key role in determining if a product is marketable or not		.740		
Our design are best when function and form complement each other		.616		
We believe that distinctive branding and strong design capability is what differentiate us than others		.712		
Our brand strategy stand tall with the consistency of design in the market		.677		
Our designers are trendsetters and only original design are made to boost sales of a new product in a market place		.794		
We actively investigate what is important to our customers using research			.786	
Our communications, marketing, service delivery, finance, HR functions, all aligned with our brand objective			.739	
Branding is championed throughout our organization, from the CEO down			.669	
Everyone in our organization knows what our brand mission stands for			.509	
Our brand strategy stands tall with the consistency of design			.501	
We don't have to discount prices in order to attract and keep customers				.773
Our brand strategies do not depend on what our competitors are up to				.601
If our brand did not exist, the vast majority of our customers would notice our absence and really miss us in our lives				.696

The questions that load highly on factor 1 seem to all relate to export performance of these firms. Therefore, this factor is labeled as factor *export performance.* The questions that load highly on factor 2 seem to relate to *design strategy*. The 5 questions that load highly on factor 3 all seem to relate with both *brand strategy and design strategy*. Finally, the questions that load highly on factor 4 all contain some component of brand strategy; therefore this factor is labeled as *brand strategy*. This analysis seems to reveal that the initial questionnaire, in reality composed of three scales: export performance, brand strategy and design.

    The Component Transformation Matrix displays the correlations among the components prior to and after rotation. This table is related with the SPSS performing the orthogonal rotation that was carried out earlier.

Table 2.6:Component Transformation Matrix

Comp	1	2	3	4
1	.639	.501	.508	.287
2	-.752	.452	.479	.039
3	-.108	-.623	.363	.685
4	-.121	.397	-.617	.669

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Number of items have been reduced from 18 to 16, reduced the number of components, and yet have improved the amount of variance accounted for in the items by our principal components.

5. Concluding remarks

The present study initiated an attempt to investigate the perceptions of small and medium-sized firms (SMEs) in the Malaysian furniture industry concerning the effects of design on their brand strategy. More specifically, the study attempted to examine how these companies viewed the importance of design to their firms and how is it related with their brand strategy.

    On the basis of the overall analysis of the results of the study, several interesting findings can be summarized. The questionnaire survey has 18 items and was run by factor analysis. Eigenvalue and scree plot show the questions are multidimensional. 18 items has been extracted and reduced to 16 items.

    Composite scores were created for each of the three factors, based on the mean of the items which had their primary loadings on each factor. Higher scores indicated export performance. Brand strategy was the factor that firms reported using the most, with a positively skewed distribution, whilst Design were used considerably less. All factors had positively skewed distributions. Descriptive statistics are presented in Table 2.7.

Table 2.7: Descriptive statistics for the three factors *(N =116);*

	No. of items	*M* (*SD*)	Skewness	Kurtosis	Alpha
Export Performance	5	3.68 (1.22)	.22	-.16	.94
Brand Strategy	8	3.58 (1.49)	.20	-.44	.79
Design	5	2.99 (.94)	.64	-.03	.85

Overall, these analyses indicated three distinct factors were determinants of the firms' performance and that these factors were moderately internally consistent. Two of the eighteen items were eliminated, however the 4 factors were retained. Table 2.5 displayed the Rotation component matrix which clearly shows the higher loadings on export performance on factor 1, higher loadings on both brand strategy and design on factor 2, and higher loadings of brand strategy on factor 3. An approximately normal distribution was evident in the current study, thus the data were well suited for parametric statistical analysis.

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