GUIDELINES FOR THAILAND'S TEXTILE INDUSTRIAL DEVELOPMENT FOR SUSTAINABILITY

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ABSTRACT

The purposes of this research were to investigate Guidelines for Thailand's textile industrial development for sustainability among different sizes of businesses. The practice was expected to increase the management efficiency and to develop a structure equation model.Quantitative and qualitative research methods were employed in this study. The quantitative data were obtained from interviewing 500 accountable managers.

As results, contributing factors were established; Knowledge Management Factor, i.e. employee willingness to learn new skills; Resource Management Factor, i.e. motivating employees to act in accordance with the organization's culture and values; cultivating a strong corporate culture; Technology Management, i.e. applying high speed internet connections for enhancing performance of textile manufacturing; Marketing Management, i.e. customer-centricity and maintaining a positive attitude among those involved from the beginning of production through delivery to the consumer. For hypothesis testing, no differences were found among business sizes and guideline concepts for strategic development of national textile industry towards sustainability.

The analysis of the developed model showed thai the outcomes were in accordance and in harmony with the empirical data and they passed the evaluation criteria. Chi-square Probability level, relative Chi-square, goodness of fit index and root mean square error of approximation were 0.138, 1.120, 0.965, 0.016, respectively (p<0.50).

Keywords: Textile Industry Development, Sustainability, Knowledge Management Technology Management, Resource Management, Marketing Management.

INTRODUCTION

From the past, the textile industry has played an important role in the development of the country, and is involved in other businesses from raw materials, cotton, silk to weaving and tailoring of ready-made garments. In the past 10 years, during 2007 - 2011, the average textile export value was approximately 150,000 million baht per year. This is considered an industry that is very important to the Thai economy. In 2011, Thailand had an export value of USD 8,365.2 million of textiles. The export value of the textile industry is 12th in the world.

Since the textile industry has a long supply chain linking many industries. This resulted in continuous employment of 1,023,000 people, accounting for 19 percent of the workers in the manufacturing sector. (Textile Industry Development Institute, 2011). Nowadays, the export of Thai textiles has to face the increasingly intense competition. Especially competitors in the lower market which has the advantage of lower labor cost Thailand's major competitor in the textile

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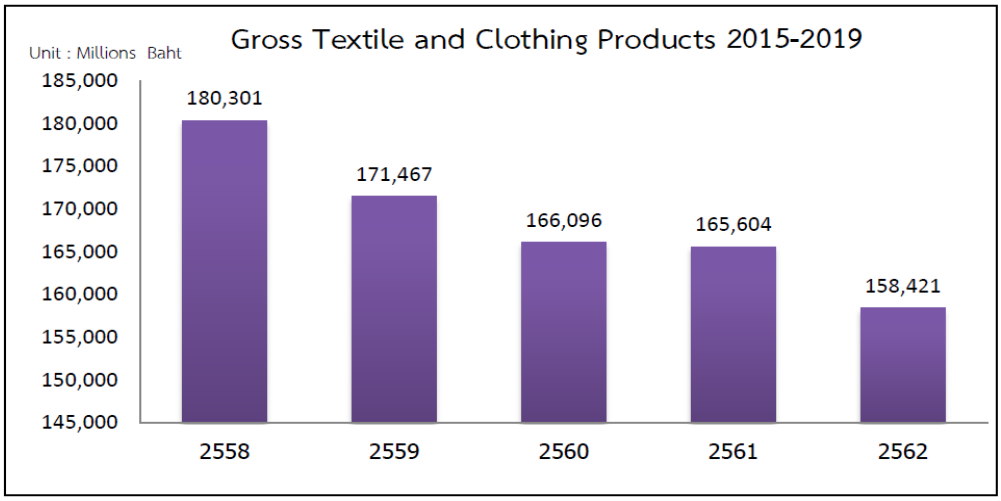
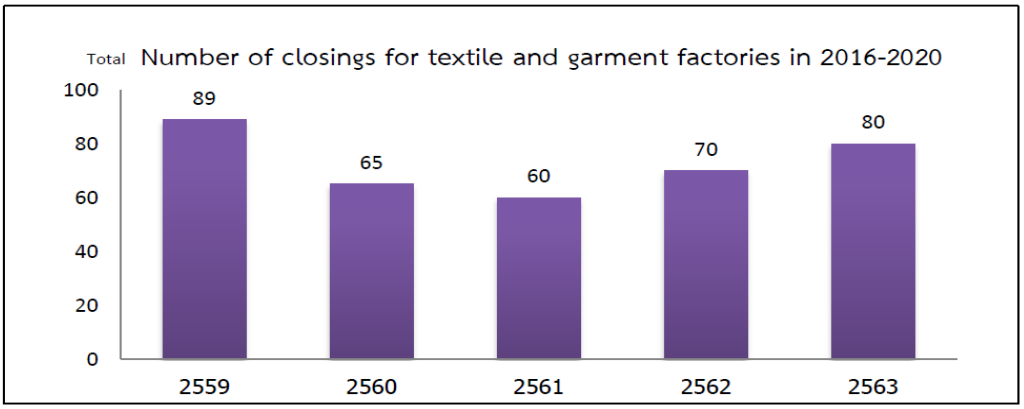
export market today is Vietnam and Indonesia. However, due to the problem of rising wages, the employment rate of the textile industry began to decline. Gross textile and clothing products continued to decline. The factory gradually closed due to loss as shown in Figure 1 and Figure 2.



Source: Industrial Development Institute Textiles (2019)

FIGURE 1
GROSS DOMESTIC PRODUCT, TEXTILES AND GARMENTS IN 2019



Source: Textile Industry Development Institute (2020)

FIGURE 2
THE NUMBER OF BUSINESS CLOSURES IN THAI TEXTILE FACTORIES IN 2020

Research Objectives

1. To study the general structure and operation of the textile industry.
2. To study the elements of the sustainable development of the textile industry in Thailand
3. To develop a structural equation model, a guideline for the development of the textile industry in Thailand to sustainability.

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Research Hypothesis

From research objectives and related literature, the researcher then determined the hypothesis of the theoretical research which can be summarized as a hypothesis of 6 research items as follows;

The research hypothesis for testing the causal influence between the latent variables in item 1.

H_1 *Knowledge management elements directly influence marketing management elements.*

The research hypothesis for testing the causal influence between the latent variables in item 2.

H_2 *Knowledge management elements directly influence technology management elements.*

The research hypothesis for testing the causal influence between the latent variables in item 3.

H_3 *Knowledge management elements directly influence resource management components.*

The research hypothesis for testing the causal influence between the latent variables in item 4.

H_4 *Technology management elements directly influence resource management components.*

Research hypothesis for testing of causal influences among latent variables, item 5.

H_5 *Technology management elements directly influence resource management components.*

The hypothesis that needs to test the difference the importance of approaches to the development of the textile industry in Thailand to sustainability. Overall by business size

H_6 *The level of importance of the textile industry development approach in Thailand to overall sustainability classified by business size is no different.*

Research Method

This research creates new knowledge by using integrated research.

1. Qualitative research with in-depth interview techniques 9 experts consist of 3 industry business management specialists, 3 government executives or related agencies, and 3 academic experts, interviewed with open-ended questions based on 4 elements reviewed from theories and related literature, which are 4 components: 1) knowledge management component 2) resource management component 3) technology management component and 4) marketing management component. Index examination result, the consistency between the questions and the research objectives (Index of Item Objective Congruence: IOC) was between 0.60–1.00 (accepted at> 0.5). When the 100 questions of each of the four components were tested, the questionnaire's confidence was analyzed by finding the alpha coefficient . Cronbach's results were obtained at 0.991 (accepted at> 0.8). The standard deviation is between 0.49–3.08 and the estimate scale question. The Corrected Item – Total Correlation was analyzed between 0.36–0.91, respectively.

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2. Quantitative research by sending a questionnaire to the executives of the textile industry for three-month period to collect data from a total of 1850 population, of which 500 sample sizes (Comrey & Lee, 1992 cited in Thanin, 2017) consisted of 250 from small and medium sized industrial businesses and 250 from large industrial businesses. The questionnaire was a checklist and an estimation scale. The weighting criteria were defined in 5 levels according to the Likert method. Data analysis was used in descriptive statistics that reference statistics by SPSS software. For Multiple statistical analysis and develop a model of structural equation by using the AMOS software package, there were 4 criteria for Evaluating the Data-Model Fit which were considered: (1) the chi-square probability greater than 0.05, (2) the relative chi-squared value less than 2, (3) the relative chi-square value greater than 0.90, and (4) the root index of the square mean. Of estimation, error less than 0.08.
3. A qualitative research using techniques from Focus Group, where 11 experts certified the model, structural equation, guidelines for the development of the textile industry in Thailand to sustainability.

RESULTS

Table 1
THE RESULTS OF THE RESEARCH ON THE IMPORTANCE OF THE APPROACH TO SUSTAINABLE DEVELOPMENT OF THE TEXTILE INDUSTRY IN THAILAND

Industry development approach Textiles in Thailand Towards sustainability as a whole	Small and medium size			Large size		
	$\bar{X}$	SD.	Degree	$\bar{X}$	SD.	Degree
Overall	4.00	0.48	Most	4.01	0.46	Most
1. Knowledge management	3.91	0.55	Most	3.92	0.52	Most
2. Resource management	3.96	0.54	Most	3.98	0.54	Most
3. Technology management	4.06	0.52	Most	4.06	0.52	Most
4. Marketing management	4.05	0.54	Most	4.07	0.49	Most

Table 1 shows the overall significance and factors of the 4 aspects of the structural equation model, approaches to the development of the textile industry in Thailand to sustainability. In which small and medium industrial businesses found Overall, the importance is at a high level. The mean is 4.00 and when considered on each side. Found that all aspects were of great importance. Technology management had the highest average ($\bar{X}$=4.06) followed by marketing management ($\bar{X}$=4.05), resource management ($\bar{X}$=3.96) and knowledge management ($\bar{X}$=3.91) respectively. For large industrial businesses, it was found that Thai Textile Industrial Development for Sustainability was of great importance. The mean is 4.01 and when considered on each side. Found that all aspects were of great importance by marketing management The highest mean ($\bar{X}$= 4.07) followed by technology management ($\bar{X}$=4.06), resource management ($\bar{X}$=3.98) and knowledge management ($\bar{X}$=3.92), respectively.

The results of comparing the significance of the textile industry development approach in Thailand to overall sustainability, when classified by the size of the industrial business, did not differ significantly at the level 0.05.

The criteria for assessing the conformity of the structural equation model to the sustainable development of the textile industry in Thailand are shown in Table 2.

Therefore, the researcher has worked to improve the model according to the advice of Arbuckle (2011) by considering the value of the results obtained from the package. To exclude some of the inappropriate observational variables one by one. After the model improvement, the chi-square probability value was 0.138, which> 0.05, the relative chi-square was 1.120, which <2, the consistency index was 0.965 > 0.90 and the root index of the mean square of the error estimation was 0.016, which <0.08 was concluded that the model passed the evaluation criteria

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and consistent with the data that appears as shown in Figure 3.

Table 2 CRITERIA FOR ASSESSING THE CONFORMITY OF THE STRUCTURAL EQUATION MODEL		
Evaluating the Data–Model Fit	**Criteria**	**Reference**
1. CMIN–p	Value > 0.05	Arbuckle (2011) IBM SPSS AMOS v.20
2. CMIN/DF	Value < 2	Arbuckle (2011) IBM SPSS AMOS v.20
3. GFI	Value > 0.90	Arbuckle (2011) IBM SPSS AMOS v.20
4. RMSEA	Value < 0.08	Arbuckle (2011) IBM SPSS AMOS v.20

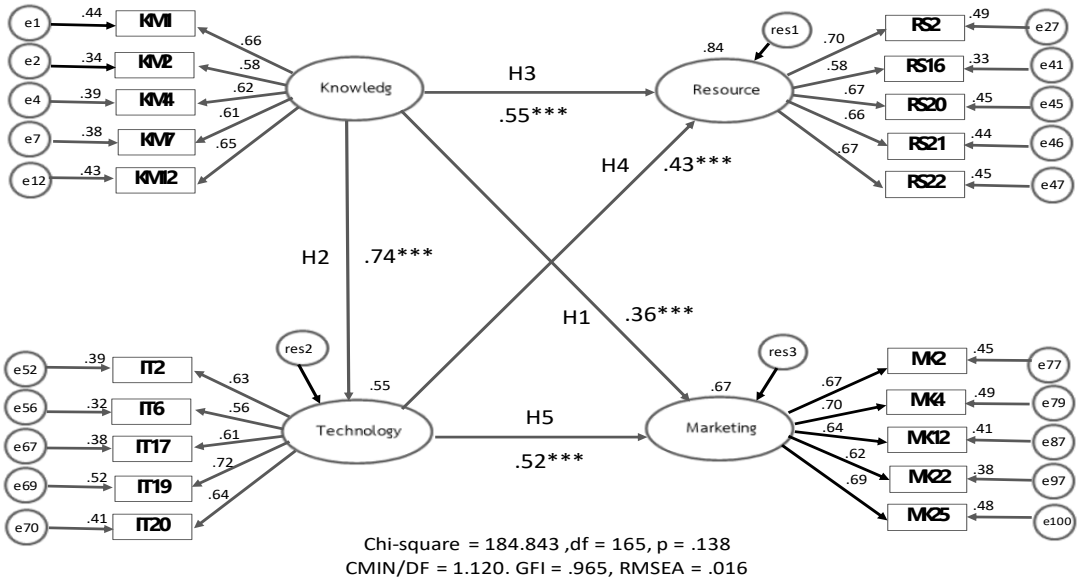

FIGURE 3
STRUCTURAL EQUATION MODEL GUIDELINES FOR TEXTILE INDUSTRY DEVELOPMENT IN THAILAND TO SUSTAINABILITY IN STANDARDIZED ESTIMATE MODE

From Figure 3, the results of the analysis of causal influences between variables in the structural equation model. The development approach of Thai Textile Industrial Development for Sustainability in the Standardized Estimate mode was found that the research hypothesis 1: Knowledge management variables directly influences marketing management variables. Statistically significant at the level of 0.001 with a weight of 0.36. Research hypothesis 2: Knowledge management variables directly influence technology management variables. Research hypothesis 3: Knowledge management variables directly influences resource management variables. Statistically significant at the level of 0.001 with a weight of 0.55. Research hypothesis no.4: Technology management variables directly influence resource management variables. Research hypothesis No. 5: Technological management variables directly

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influences marketing management variables. Significantly The statistical value at the level of 0.001 had a weight of 0.52, the statistical values obtained from the model analysis after the model improvement are as shown in Table 3.

Table 3
STATISTICAL VALUES OBTAINED FROM STRUCTURAL EQUATION MODEL ANALYSIS AFTER MODEL IMPROVEMENT

Variables	Estimate		R^2	Variance	C.R.	P
	Standard	Unstandard				
Knowledge				0.32		
Technology	0.74	0.62	0.55	0.10	9.90	***
Resource	0.55	0.55	0.84	0.05	6.67	***
Marketing	0.36	0.32	0.67	0.09	4.26	***
Technology				0.10		
Marketing	0.52	0.56	0.67	0.09	5.84	***
Resource	0.43	0.51	0.84	0.05	5.46	***
Knowledge				0.32		
KM1	0.66	1.00	0.44	0.41		
KM2	0.58	0.86	0.34	0.46	11.13	***
KM4	0.62	0.96	0.39	0.47	11.77	***
KM7	0.61	0.98	0.38	0.52	11.6	***
KM12	0.65	0.93	0.43	0.38	12.28	***
Resource			0.84	0.05		***
RS2	0.70	1.00	0.49	0.34		
RS16	0.58	0.87	0.33	0.50	11.65	***
RS20	0.67	0.98	0.45	0.37	13.51	***
RS21	0.66	0.91	0.44	0.34	13.31	***
RS22	0.67	0.96	0.45	0.37	13.42	***
Marketing			0.67	0.08		
MK2	0.67	1.00	0.45	0.33		
MK4	0.70	1.05	0.49	0.31		
MK12	0.64	0.94	0.41	0.34	12.20	***
MK22	0.61	0.93	0.38	0.38	11.82	***
MK25	0.69	1.04	0.48	0.31	13.03	***
Technology			0.55	0.10		
IT2	0.63	1.00	0.39	0.36		
IT6	0.56	0.93	0.32	0.43	10.49	***
IT17	0.61	1.11	0.37	0.46	11.21	***
IT19	0.72	1.17	0.52	0.29	12.65	***
IT20	0.64	1.07	0.41	0.38	11.58	***

Note: *** Statistically significant at the 0.001 level.

From Table 3, the variables of knowledge management directly influence technology management variables at the Standardized Regression Weight 0.74 was statistically significant at the level of 0.001, the quadratic multiple correlation (R^2) 0.55, the variance of 0.10, and direct influence on resource management variables at Standardized Regression Weight 0.55 was statistically significant at the 0.001 level. The squared multiple correlation (R^2) 0.84, the variance of 0.05, and direct influence on the marketing management variables at Standardized Regression Weight 0.36 was statistically significant at level 0.001, the quadratic multiple correlation (R^2) 0.67, variance 0.09.

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Knowledge management variables direct influence on resource management variables at Standardized Regression Weight 0.55 was statistically significant at the level of 0.001, the quadratic multiple correlation (R^2) 0.84, the variance of 0.05, had a direct influence on the variables of marketing management at Standardized Regression Weight 0.36 was statistically significant at the 0.001 level. The quadratic multiple correlation (R^2) 0.67, variance 0.09 and directly influences technology management variable at tandardized Regression Weight 0.74 was statistically significant at level 0.001, the quadratic multiple correlation (R^2) 0.55, variance 0.10.

Technology management parameters direct influence on marketing management parameters at Standardized Regression Weight 0.52 was statistically significant at the level of 0.001, the quadratic multiple correlation (R^2) 0.67 and variance of 0.09 directly influenced resource management variables at the standardize regression weight of 0.43, it was statistically significant at the level of 0.001, the quadratic multiple correlation (R^2) 0.84, the variance of 0.05.

Knowledge management variables consisted of 5 observational variables as follows: The variables were assigned the knowledge necessary to perform the work in accordance with the organizational goal (KM1), the weight value 0.66, the variables were used to increase the efficiency of work (KM12) at weight 0.65. The executive variable cooperated in determining the Establish knowledge to develop production processes (KM4), weight value 0.62. Variable personnel can use information technology to generate new knowledge for use in practice (KM7), weight value 0.61, executive variable, lead the determination of knowledge necessary to work (KM2), weight value 0.58.

Resource management variables consisted of 5 observational variables as follows: Variables encouraged employees to have a positive attitude towards the organization by encouraging. Provide loyalty to the organization. Cultivate awareness of ownership participation (RS2), weight 0.70 variable, create a network of cooperation from external organizations with the same goal and learn together (RS20) weight 0.67 variable. Participate in the internship program of the target school. In order to get students to work at the workplace Students will be given the opportunity to understand and become familiar with the actual work. For the acquisition of target workers in the demand of future establishments (RS21) weight value 0.66 motivation variable by rewarding key stakeholders in production development (RS22) weight 0.67. Variable has a system for searching and purchasing quality materials according to demand (RS16), weight value 0.58

Marketing management variables consists of 5 observational variables as follows: Product delivery variables must be fast. Keeping up with customer needs and accurate (MK4) weight 0.70 variable, looking for new markets to expand business opportunities (MK25), weight 0.69, customer demand-oriented variable (MK2), weight 0.67. Textile development variant that can be useful in various applications according to customer needs (MK12) Weight 0.64 Variable Strict adherence to promise and conditions given to customers (MK22) Weight 0.61

Technology management parameters consists of 5 observational variables as follows: Textile manufacturing technology development variables under the Environmental Regulation Regulation (IT19) weight value 0.72. Variable has cooperated to support technology development from government agencies such as the Textile Industry Development Institute (IT20), weight 0.64. Learning organization promotion variables brings the crystallization of knowledge and capabilities to be used in the production of low-cost and technological textiles

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(IT2), the weight value of 0.63 variables, brings the existing technology in the organization to the maximum benefit (IT17) weight value 0.61, material research and development parameters To achieve low-cost manufacturing technology (IT6), weight 0.56.

Discussion of Research Findings

Important points found from the research results on Thai Textile Industrial Development for Sustainability is an organization management approach that focuses on building a sustainable competitiveness under today's rapidly changing technology environment. To create long-term success from the results of this research , the researcher has brought the discussion to summarize the solution, with the following 7 relevant research papers cited, supporting or contradicting;

1. Based on research results when comparing the elements and approaches to Thai Textile Industrial Development for Sustainability, small, medium and large. In the overall and in each aspect, there was no significant difference at 0.05 level due to businesses of all sizes with good management. It is learned that technology continues to develop for sustainability (Jawad Abbas & Mustafa Sagsan, 2019; Noorit et al., 2020).
2. From the hypothesis testing results, it was found that the knowledge management components directly influences the technology management components. There was a standarized regression weight of 0.74, showing the empirical data that knowledge management led to the development of technology. Making machinery and systems to be developed in technology from gaining knowledge Making the organization a success (Suriyokanha, 2015). Therefore, organizations with leaders who are intelligent, idealistic, avoid power and have the ability to inspire. This will result in employee morale and work efficiency (Sawangrat, 2020a).
3. Guidelines for Thai Textile Industrial Development for Sustainability in terms of technology management. The mean is 4.06, which is the side with the highest mean. Reflecting the importance of technology management, resulting in business development towards sustainability (Kosol, 2018).
4. Guidelines for Thai Textile Industrial Development for Sustainability in terms of technology management, it was found that The introduction of high-speed internet networks to play a role in the development of textile production technology was 4.17 of the highest importance. The technology will enable devices to communicate and send information to each other by themselves. Without humans having to command equipment (Kittisast, 2016). In addition, the organization has encouraged employees to have the ability to use a variety of technologies to come up with new innovations to use in decision-making and to assist in production planning to create added value for the organization (Sawangrat, 2020b).
5. From the analysis of the relationship between the variables, Thai Textile Industrial Development for Sustainability after the improvement of the structural equation model, it was found that the variables had a sufficient power rating system for every production process. Maximum relationship at .530, manpower planning must be consistent with the plan for production, sales, use of equipment Research and others as well as the financial status of the organization and plan various facilities as well (Wattanakorn, 2009)
6. Guidelines for Thai Textile Industrial Development for Sustainability in terms of resource management, it was found that creating values of personnel in accordance with the corporate culture had an average of 4.07, which is very important. Have a positive attitude Optimism powers work (Heskett et al., 2008).
7. Guidelines for Thai Textile Industrial Development for Sustainability in terms of marketing management. It was found that the concept of customer-centeredness creates a positive attitude for stakeholders from production to delivery of products or services. The mean of 4.26 is very important. Staying customer-centric isn't just about delivering great customer service. It is also a customer-first strategy and the heart of the business (AR Research, 2019).

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CONCLUSION

The approach to Thai Textile Industrial Development for Sustainability consists of 4 main parameters with priorities as follows.

Marketing management variables with a customer-centric concept, build a positive attitude, Make a difference or an advantage to textile products and have activities to build relationships between the organization and the customer.

Technology management parameters exchange and learn to use modern technology from related industries. Sensing technologies such as Sensor are used in conjunction with the mechanical brain to analyze the loss of work and improve product quality and study the work on domestic and foreign technology management related to the production of textiles.

Knowledge management variables have training to educate personnel before working. Gaining cooperation from personnel to learn new things and have efficient technology that helps to store knowledge.

Resource management variables have environmentally friendly materials, equipment and production processes. There is a follow up of news information, new government regulations to be adapted to be more consistent with the organization and has invested in a modern textile production system.

Suggestions for Further Research

1. According to research studies, it is found that small and medium businesses with potential lack of working capital to do business and access to technology so should study the success factors of small and medium textile businesses.
2. Information from in-depth interviews found that the textile experts were few and were running out so should study the development of experts to develop the textile business further.
3. From research research and in-depth interviews found that the textile business is not attractive to new businessmen and personnel who want to work. It should be studied in comparison with other businesses such as automotive and food whether the textile business is still interesting to do business or not so that bring information to find textile turning points to return to being the main business as it used to be.

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