

## GLOBAL TECHNOLOGICAL CHANGE IMPACT ON FEMALE TEXTILE AND GARMENT WORKERS IN THAILAND

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### ABSTRACT

Global technological change has significant impact on lower skilled female textile and garment workers in Thailand, as it brings new machines and manufacturing processes into the company. This study aims at identifying the factors of global technological change on female textile and garment workers in Thailand. It covers three impact areas such as, job security, job satisfaction and work relations. 10 variables were identified from job security, 36 from job satisfaction and 10 from work relations' areas. Multivariate analysis such as, Factor Analysis and Multiple Regression was used to analyze the data. Factor Analysis has been performed to identify the factors of the technological change on the female workers. Using Multiple Regression analysis, the overall impact of the technological change on female textile and garment workers has been assessed. The results show that the impact factors are frustration, skill demands, downsizing, meaningful work, pride in job, supervision, benefits, bureaucracy, unclear work assignments, recognition, fairness in pay, workload, the change process, strikes, and personal control. Among these factors, frustration and downsizing are concerned with job security; benefits, bureaucracy are related to job satisfaction; and the work processes and personal control are concerned with work relations. These factors are significantly related to the overall impact of the technological change on Thai female textile and garment workers. Factors concerning job security, job satisfaction, work relations together are significantly related to the overall socioeconomic lives of female and garment workers in Thailand.

**Key Words:** Global Technological Change, Job Security, Job Satisfaction, Work Relations, Overall Impact.

### I. BACKGROUND

Textile and garment industry is undergoing a continuous change due to a number of environmental factors concerned with technological, economic, social, cultural, political, and legal changes. Technological change is the most important change that has negative impact on lower skilled workers (Levi, et. al., 1991 & 1992; Slem, et. al., & 1995). This change modifies manufacturing processes by bringing new machines and production processes into the company and demands newer skills to the workers 1998). Thus,

one of the challenges of business globalization for the least developed countries (LDC's) is that technology change erodes the advantages of labor-intensive technology. The negative impact is concerned with the attitudes of job security, job satisfaction, and work relations.

The level of technological change impact depends on the efficiency of change management process that includes human resource planning, work organization, training and development, worker participation, information sharing etc. (Walton and Susman, 1987). These processes act as mediating

factors between technological change and the negative impact on workers. Higher level of efficiency in change management processes lead to lower level of negative impact on workers. Thus, technology alone does not determine the acceptance or rejection of technological change, but it does determine by the ways of how it is managed.

Textile and garment is the leading export sector of Thailand. Textile has been an export earner, with garments being the biggest sector in terms of export value and employment. About 1.12 million workers are employed by this industry with 39% of the total industrial labor force in Thailand. This industry took only a decade to move from an import substitution business to an export-oriented one. There are over four thousand companies engaged in the business of exporting textile and ready-made garments in Thailand. Thai textile exports were the top foreign exchange earner from 1986 to 1990, growing at an average of 30 percent a year (Department of Export Promotion, 1997). Due to high demand in foreign markets, textile sector of Thailand has been growing very fast. It is highly labor-intensive and is able to take advantage of low production costs, as Thailand has a large and relatively cheap labor force. However, the companies are moving towards capital-intensive production. In order to shift from labor-intensive manufacturing to a more capital-intensive structure, government already arranged soft loans to the value of 25 billion baht for manufacturers to upgrade their machinery to make both textile and garment companies more competitive and ready for 2005 when the World Trade Organization (WTO) agreements become fully operational (Wichitrakorn, 1993). The purpose of the project is to integrate its upstream and downstream activities in order to be more competitive in the international markets. This modernization has been causing severe impact on the lower skilled workers in this sector of Thailand.

## II. METHODOLOGY

The analysis part of this study mainly covers the overall impact of technological change on female textile and garment workers in Thailand. Attitudes related to that overall impact are job security, job satisfaction, and work relations.

The hypotheses postulated in this study are: (i) job security, job satisfaction, and work relations have

positive relationships on the overall impact of technological change (ii) technological change creates higher level of downsizing for the female textile and garment workers (iii) as the magnitude of the technological change gets larger, skill demand goes up.

186 female workers were surveyed from 71 textile and garment companies located in Bangkok. Data has been collected from medium and large sized textile and garment companies, which are engaged particularly in production and the minimum employment is more than 250 workers. The sampled units were selected purposively and personally interviewed from July 2001 to December 2001. Without sticking out any of the items from the constructs in the scale, it satisfies the requirement of the reliability index (Hair, 1998). The alpha values of the three constructs are 0.7771 for job security, 0.8454 for job satisfaction, and 0.7844 for work relations. The overall alpha value ( ) of 56 items of the questionnaire concerning job security (10 items), job satisfaction (36 items), and work relations (10 items) is 0.8540. A structured questionnaire in a 7-point scale was developed for the variables relating to job security, job satisfaction, and work relations. For measuring the overall impact of technological change on female workers a seven- point scale ranging from positive (+3) to negative (-3) has been used. Multivariate analysis techniques such as, Factor Analysis, Multiple Regression Analysis, and ANOVA were used to analyze the relationships of the attitudes of textile and garment workers on the impact of technological change. The relationships of job security, job satisfaction, and work relations factors with the overall impact are assessed through Regression Analysis. The overall impact is defined as socioeconomic impact, which includes social status, income etc. of the female textile and garment workers in Thailand.

## III. RESULTS AND DISCUSSIONS

This section of the study includes the analysis of respondents' profile, relative importance of the factors, and relationships between attitudinal variables with the overall impact of technological change on Thai female textile and garment workers.

### A. Respondents Profile

The respondents of this study include 70.8% skilled

and 29.20% semi-skilled and or unskilled workers. 37.6% of the sampled workers work in office as clerks, followed by 28.5% as supervisors, 28% as hourly production basis, and 5.9% as professional assistants. The average age of the sample workers is 30.44 years with the average experience of 3.47 years (Table 1). 186 female workers were surveyed from 71 textile and garment companies located at Bangkok, of which 37% are textile and 63% are garment.

**Table 1 Respondents' Profile**

Particulars	Index
Number of companies	71
Number of female workers interviewed	186
Sample textile companies (%)	37
Sample garment companies (%)	63
Skilled workers (%)	70.80
Semi-skilled or unskilled workers (%)	29.20
Average work experience (in years)	3.47
Average age (in years)	0.44
Hourly production respondents (%)	28
Office and clerical respondents (%)	37.6
Professional respondents (%)	5.9
Supervisor respondents (%)	28.5

### B. Relative Importance of the Factors

Factor Analysis of the attitudinal variables identified 15 factors including 3 from job security, 9 from job satisfaction, and 3 from work relations. These factors are frustration, skill demand, and downsizing concerned with job security; meaningful work, pride in job, supervision,

benefits, bureaucracy, unclear goals, recognition, fairness in pay, and workload concerned with job satisfaction; and the change processes, strikes, and personal control concerned with work relations issues.

Based on eigenvalues, the most important attitudinal factors are frustration (3.458) in job security, meaningful work (7.303) in job satisfaction, and the change processes (3.623) in work relations. When technological change brings new machines and computerized working processes into the company, female workers feel frustrated, as they are not equipped with the new skills. Technological change in the company influences the level of job satisfaction of female workers in Thailand. Workers seek for the work, which is meaningful, that gives them job satisfaction. The higher level of frustration and job dissatisfaction the higher the important the change processes is likely to be.

### C. Job Security Factors

Factor analysis of 10 attitudes in the job security instrument indicates that the attitudes form 3 main factors and accounts for 63.24% of the variance (Table 2). It shows that factor one called frustration has the highest importance in measuring the impact of technological change on female garment workers in Thailand. As technological change demands newer skills and increases the work pressure that make them frustrated. The female workers feel that they are sacked due to their inability to work with the new machines and new manufacturing processes in such situation.

**Table 2 Security Impact of Technological Change**

Factors	Variables	C	L	E	Variance (%)
Frustration	New technology creates time pressure on employees;	.625	.788	3.458	34.58
	I do not know how does it will affect my job;	.467	.511		
	My job responsibilities will be confusing;	.605	.683		
	New technology makes me stressful in job;	.769	.861		
	New technology frustrates me in the job.	.802	.882		
Skill demand	New technology requires more ability/ skills;	.709	.829	1.772	17.72
	New technology requires me to learn new equipment/machine;	.646	.772		
	New technology creates a lot of extra works.	.628	.760		
Downsizing	New technology reduces the number of employees here;	.599	.772	1.094	10.937
	The future of my job is uncertain.	.473	.641		

Notes: C is Communalities, L is Factor Loadings, and E is Eigenvalue.

**D. Job Satisfaction Factors**

Factor analysis of 36 attitudes in job satisfaction instrument identified 9 factors that account for 68.41% of the variance. The first factor called ‘meaningful work’ that accounts for the most variance (20.29%) with an eigenvalue of 7.303 (Table 3). That means female workers’ concern is on the meaningful work. Thai female workers not only seek monetary benefits from the company but also eager to know the purpose of their works. The meaning of the works gives them job satisfaction, as they love works and look for work security. The second important factor for the workers is pride in job with and eigenvalue of 6.109. The variance of this factor is 16.97%. It indicates that the workers

prefer works, as they are loyal to their companies. The workers feel proud of being workers of the company. They expect fair supervision from the management for working with the new machines and production processes.

The higher level of workload, high bureaucracy, ambiguity in work goals, and unfairness in supervision make female workers dissatisfied. In such situation, they feel that they are doing unnecessary and meaningless works. Even if they perform harder job, supervisors do not appreciate them. Thai workers put importance on the benefit package of the company. They look for the equitable benefits from the companies.

**Table 3 Job Satisfaction Impact of Technological Change**

Factors	Variables	C	L	E	Variance (%)
Meaningful work	I sometimes feel my job is meaningless;	.731	.665	7.30	20.29
	My supervisor is unfair to me;	.698	.454		
	I do not feel that the work I do is appropriated;	.729	.594		
	The goals of this organization are not clear to me;	.637	.693		
	I feel unappreciated by the company when I think about what they pay me;	.666	.713		
	I have too much unnecessary work;	.658	.774		
	I do not feel my efforts are rewarded the way they should be.	.552	.515		
Pride in job	I like the people I work with;	.638	.523	6.11	16.97
	I like doing the things I do at work;	.648	.760		
	I enjoy my co-workers;	.745	.575		
	I feel a sense of pride in doing my job;	.785	.816		
	I am satisfied with my chances for promotion;	.740	.572		
	My job is enjoyable.	.671	.595		
Supervision	There is really too little chance for promotion on my job;	.601	.425	2.45	6.81
	My supervisor is quite competent in doing his or her job;	.774	.818		
	When I do a good job, I receive the recognition for it that I should receive;	.601	.510		
	Those who do well on the job stand a fair chance of being promoted;	.689	.484		
	I like my supervisor.	.815	.744		
Benefits	The benefits we receive are as good as most other companies offer;	.566	.561	1.99	5.53
	The benefit package we have is equitable;	.732	.810		
	There are few rewards for those who work here;	.634	.685		
	I am satisfied with the chances for salary increases.	.759	.608		
Bureaucracy	I am not satisfied with the benefit I receive;	.691	.479	1.69	4.70
	Many of our rules and procedures make doing a good job difficult;	.611	.704		
	My efforts to do a good job are seldom blocked by red tape;	.587	.632		
	I find I have to work harder at my job that I should because of the incompetence of the people I work with;	.587	.507		
	There are benefits we do not have which we should have;	.724	.560		
	There are too much bickering and fighting at work.	.727	.433		

Factors	Variables	C	L	E	Variance (%)
Unclear work assignment	Raises in salary are few and far between;	.685	.483	1.44	4.00
	People get ahead as fast as they do in other places;	.669	.548		
	Work assignments are often not fully explained.	.677	.750		
Recognition	Communications seem good within this company;	.713	.519	1.41	3.91
	My supervisor shows too little interest in the feelings of subordinates;	.765	.750		
Fairness in pay	I feel I am being paid a fair amount for the work I do.	.810	.824	1.14	3.17
Workload	I have too much to do at work;	.705	.623	1.09	3.03
	I often feel that I do not know what is going on with the company.	.607	.475		

Notes: C is Communalities, L is Factor Loadings, and E is Eigenvalue.

### E. Work Relations Factors

Factor analysis of 10 attitude variables in work relations constituted 3 main factors that account for about 60.84% of the variance. The first factor called the change process accounts for the most variation (36.23%) indicating the highest information content (Table 4). This factor reflects that female workers of Thailand are highly influenced by the change processes of the company. The change process is defined as the managerial processes for adapting new machines

and manufacturing processes into the company. The work relation is improved if the workers are empowered by allowing them personal control over the work and decision. Strike is the second important factor for Thai textile and garment workers as they are aware of their legal rights and privileges. The higher level of unfairness in supervision and the poor change processes lead them to go for strikes. Personal control is the third important factor for female garment workers as it helps them to manipulate the change processes in their favor.

**Table 4 Work Relations Impact of Technological Change**

Factors	Variables	C	L	E	Variance %
The change process	Workers participation in work decisions;	.692	.810	3.623	36.230
	Employee support in change implementation;	.705			
	Communicating work change plans widely among employees;	.566	.728		
	Conflict with management on the change.	.498	.528		
Strike	Adapt new machines, computers and manufacturing processes;	.464	.621	1.325	13.250 (49.480)
	Fire lower and semi-skilled employees;	.490	.691		
	Strikes for more benefits from the change;	.662	.794		
	Opportunity to participate in change				
	Implementation.	.616	.665		
Personal control	Training, educating, budget for training and expand training scope for skill development of employees;	.673	.677	1.136	11.359 (60.839)
	Personal control on work and quality.	.717	.807		

Notes: C is Communalities, L is Factor Loadings, and E is Eigenvalue.

**IV. RELATIONSHIPS BETWEEN THE FACTORS AND OVERALL IMPACT ON THAI WORKERS**

Technological change brings new production systems into the company that demand newer skills and ability to the workers. This proliferation of new skills creates high work pressure and heavy workload. Technological change makes the jobs of lower skilled workers more uncertain and vulnerable. The change even eliminates jobs of lower skilled workers from the company. All of the new changes and developments in the company frustrate Thai worker in their jobs. Multiple Regression of job security factors with the overall impact on workers shows that frustration (-0.468) is significantly and negatively related to the overall

lives of Thai workers (Table 5). The higher level of frustration leads to the less positive impact on the overall lives of workers. Downsizing (0.201) is also significantly related to the overall impact on female textile and garment workers in Thailand. The more downsizing in the job results in more negative overall impact on workers. The higher level of downsizing of lower skilled jobs has negative impact on the families and private lives of female workers. Skill demands (-0.126) have no significant relationship with the overall impact of technological change on Thai workers. Job security factors together have a significant relationship with the overall impact on female Thai workers despite the low correlation (0.383) and variance (0.147) explained.

**Table 5 Impact of job Security on the Overall Impact of Technological Change**

Factors	Regression Coefficient	Std. Error Coefficient	Computed t	Sig.
<i>Frustration</i>	-0.468	0.096	-4.889	0.000*
Skill demand	-0.126	0.096	-1.314	0.191
<i>Downsizing</i>	0.201	0.096	2.101	0.037*
Multiple Correction R-Square	0.383 0.147			
Source of variation (Sum of square)	df	Mean square	Computed F	Significance
Regression (48.963)	3	16.321	10.014	0.000*
Residual (285.216)	175	1.630		
Total (334.179)	178			

\* Significant at 5% level of significance.

In job satisfaction, the relationship of the factors with the overall impact is found to be significantly correlated (0.378) (Table 6). The Regression Analysis shows that factor called ‘benefits’ (.326) is significantly and positively related to the overall impact of technological change on workers. The change in this factor result in positive overall impact on female textile and garment workers. It indicates that the more benefits give the female workers more motivation at work. Regression

Analysis finds bureaucracy (- 0.196), recognition (- 0.199), and fairness in pay (-0.245) negatively related to the impact on overall lives of female workers. It means that more bureaucracy, more autocracy in supervision, and more unfairness in pay have less positive overall impact on workers. Job satisfaction factors, as a whole, are significantly related to the overall impact of technological change on female textile and garment workers in Thailand.

**Table 6 Impact of Job Satisfaction on the Overall Impact of Technological Change**

Factors	Regression Coefficient	Std. Error Coefficient	Computed t	Sig.	
Meaningful work	.0466	.096	.487	.627	
Pride in job	.0375	.096	.393	.695	
Supervision	.0698	.096	.729	.467	
Benefits	.326	.096	3.409	.001*	
Bureaucracy	-.196	.096	-2.049	.042*	
Unclear work assignment	-.0544	.096	-.568	.571	
Recognition	-.199	.096	-2.077	.039*	
Fairness in pay	-.245	.096	-2.2558	.011*	
Workload	-.0671	.096	-.701	.484	
Multiple Correction R-Square			0.378 0.143		
Source of variation ( sum of square )		df	Mean square	Computed F	Significance
Regression (46.596)		90	5.177	3.157	0.002*
Residual (278.798)		170	1.640		
Total (325.394)		179			

\* Significant at 5% level of significance.

Factors related to work relations include the change processes (0.241) and personal control (0.371) that are significantly related to the overall impact of technological change (Table 7). The rapid deployment of new technology and their adaptation processes create conflicts with the management of textile and garment enterprises.

Better change management processes might improve the work relations in the company. If workers are allowed personal control over the works and related decisions, they feel satisfied and the conflict is minimized. Strikes have no significant relationship with the overall impact on Thai female workers.

**Table 7 Impact of Work Relations on the Overall Impact of Technological Change**

Factors	Regression Coefficient	Std. Error Coefficient	Computed t	Sig.	
Change process	.241	.096	2.508	.013*	
Strikes	.106	.096	1.099	.273	
Personal control	.371	.096	3.860	.000*	
Multiple Correction R-Square		0.335 0.112			
Source of variation (Sum of square)		df	Mean square	Computed F	Significance
Regression (37.271)		3	12.424	7.466	0.000*
Residual (294.541)		177	1.664		
Total (331.812)		180			

\* Significant at 5% level of significance.

Although, the correlation is moderate (0.335), the relationship of work relations' variables explains 11.2% of the variance of the impact. Work relations factors are together significantly related to

the overall impact of technological change on female textile and garment workers in Thailand.

An analysis of variance (ANOVA) of job security,

job satisfaction, and work relations issues shows that all the factors are significantly related to the overall impact of technological change on female garment workers in Thailand. Together they explain 40.20% (14.7+14.3+11.2) of the variance in the overall impact of technological change. The remaining variance is likely to be the context factors, such as, industrial change, or company profitability etc.

## V. CONCLUSIONS

The overall impact of global technological change on female textile and garment workers in Thailand is associated with the factors of job security, job satisfaction and work relations. Frustration is the most important factor concerned with job security as technological change eliminates lower skilled jobs from the company. As such, any change related to technology in textile and garment companies frustrates female workers in Thailand. Hence, downsizing is a major concern for the Thai workers.

In case of job satisfaction, benefits, bureaucracy, supervision, recognition, and fairness in pay are the most important factors, which have significant impact on the overall socioeconomic lives of Thai female workers. The overall impact is defined as the socioeconomic status of the workers, which includes social status, income etc. Thai female workers believe that if there are changes in benefit package, monitoring system, supervision style, reward policy, and payment itself there would be change at their satisfaction level. If job security, job satisfaction, and work relations are improved there will be positive impact on the performance of female textile and garment workers in Thailand.

The specific relationships between the factors of job security, and job satisfaction with the overall impact shows that the higher level of frustration, frequent downsizing, higher level of bureaucracy, lower recognition of work, and unfairness in pay will result in much less positive overall impact on the performance of Thai female textile and garment workers. The efficient change management processes and personal control over the work will increase both job satisfaction and work relations in Thai textile and garment companies. The negative impact of technological change on female workers could be overcome through formulating appropriate human resource strategies including job design, reorganizing work, initiating

appropriate benefit package, fairness in pay, and arranging training to female textile and garment workers in Thailand.

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