

# Understanding the variations in Employment Strategies

*Dr. Peter Cappelli  
Frits K. Pil*

Wharton Business School  
Philadelphia, PA 19104

## RESUME

*Employers in the U.S. appear to be pursuing a wide range of alternative employment practices. We use a survey of over 800 U.S. employers to examine the fundamental issue of how firms are securing the workers and skills they need. This is a matter of ever increasing importance due to changing demographic patterns. These are resulting in a decreasing number of skilled entrants into the U.S. labour force.*

*The results of statistical analysis suggest that firms pursue five distinct paths for securing workers and skills. Two of these approaches target increasing the number of candidates for job openings. Firms can focus on the increasingly large proportion of "non-traditional" labour force participants, or they can increase recruitment efforts to attract traditional prospective employees.*

*The three other approaches identified deal with reducing the firms reliance upon the external market for their skilled labour requirements. The different approaches used have very different implications for society. For example, some firms invest in training to raise worker skills, while others "deskill" jobs.*

*After identifying and statistically establishing the approaches firms use to dealing with increasing shortages of skilled labour, further analysis identifies the characteristics of firms that are associated with these different paths. Firm characteristics that are analyzed include size, hiring needs, occupational mix of workforce, and managerial decision making. The results from this analysis are important for public policy debates about how to develop higher levels of skill in the workforce.*

The American labor force has started to undergo some very dramatic changes. The supply of labor grew at a healthy clip of 2% per year between 1976 and 1988, representing an increase in the total labor force of 25 million people. This rate of increase is declining to a more moderate 1.2%, and is expected to stay at this level until the year 2000. This has a very significant impact, not only on the age of the labor force, but also on its composition and expected education level.

The reduced influx of new employees into the work force and the changing characteristics of new employees has very significant implications for US corporations. We identify five approaches firms can take

in dealing with the reduced numbers of skilled entry level workers. Two of these approaches focus on increasing the supply of candidates from which the firm

can choose for its entry-level positions. The last three focus on reducing the demand within the firm for skilled new employees. Using data from a cross-sectional survey of over 750 major US corporations, we analyze what determines firms' choices of how to deal with the changes in the labor supply.

This paper is organized in five sections. First, we briefly review the changes that are taking place in the labor force. Next we identify five possible approaches firms could use in dealing with those changes. Thirdly, we discuss how we operationalized our constructs, and present confirmatory factor analysis in support of our approach. We then provide OLS regression results that help us understand what factors determine which firms will use which approach in dealing with the reduction in the number of skilled new entrants into the workforce. Lastly, we review the implications of our findings.

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### Changes in the Labor Force

The labor force growth is slowing to about 1.2% per year. In absolute terms, that means that the labor force will only increase by 19 million people in this decade. The main cause for the drastic decline in the American labor force growth is a reduction in the number of youths entering the work force.

The proportion of youths in the 16-24 age bracket declined from 24% in 1976 to 19% in 1988, and is expected to fall yet further to 16% in 2000. As a result, there will be no increase in the number of employees in the 16-24 age category (see table 1). Seven out of ten workers in the workforce in the year 2000 are already in the workforce today.

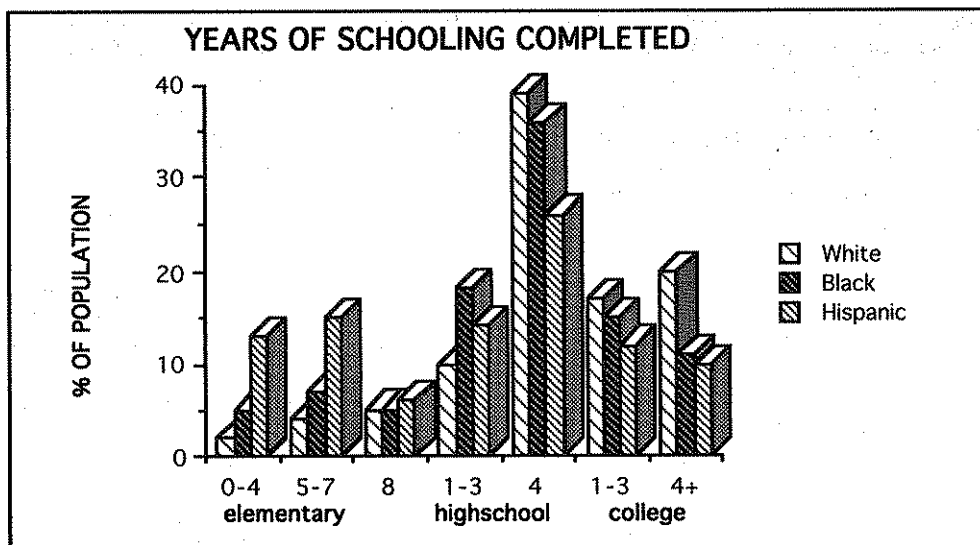
**TABLE 1**

Civilian Labor Force	Annual Growth Rates in Labor Force Share	
	1976-1988	1988-2000
Total, 16 and over	2.0	1.2
16-24	-3	0.0
25-54	3.1	1.6
55+	0.4	1.2
Men, 16 and over	1.3	0.9
Women, 16 and over	2.9	1.7
Black, 16 and over	2.7	1.9
Hispanic, 16 and over	6.4	4.0

Source : extracted from Kutscher (1989)

Table 1 also shows that the entrance into the labor force of blacks and Hispanics during this decade will be much greater than that of Caucasians. Indeed, blacks are entering the labor force at a rate almost twice that of Caucasians, and Hispanics are entering at a rate almost four times as great (proportional to their current presence in the work force). Another interesting change is the increased number of females entering the labor force.

Currently interracial differences in educational attainment are extremely great. As Graph 1 shows, Hispanics generally have a much lower educational attainment than whites or blacks. They are most likely to have only received an elementary education, and least likely to have received a high-school or college degree. Although blacks have a somewhat higher educational attainment, it is still extremely low compared with whites.



As a result of demographic trends, the educational attainment of new entrants, as well as the absolute

numbers of new entrants into the labor force, are expected to decline. At the same time, the overall trend

in the job market is toward skill/knowledge intensive production (Alfthan, 1985). As a result, the shortage of skilled new entrants into the workforce is further exacerbated.

#### Dealing with the shortage of skilled new workers

Firms have generally been viewed as passive victims in discussions of the reduction of skilled labor entering the labor force. However, there are several ways that firms can mitigate the impact that this reduction will have on their operations.

In order to deal with the decline in the quantity and quality of their labor supply, firms can focus on either the external supply of labor, or on changing their internal needs for such labor. There are two fundamental approaches that firms can use to increase the number of candidates for their job-openings. As we saw in table 1, an increasingly large number of the new work-force entrants are female, and minorities. Firms could take advantage of this, by expanding their recruiting efforts to target these groups, as well as other "non-traditional" labor force participants (e.g. retired or handicapped people).

An alternative to targeting non-traditional employees, would be to increase the firm's overall recruitment efforts. This could include recruiting outside the firm's immediate area, running job-fairs, using a marketing approach to "sell" the company to prospective employees, and raising entry-level salaries. All these would have as effect, an increased number of candidates for the firm's openings.

So far, we have discussed approaches that firms can use to maintain their labor supply in a period of overall declining supply. Alternative approaches exist that reduce the firms demand for skilled labor. In order to reduce their reliance upon outside sources of skilled labor, firms could provide skill development and general training themselves. Training in general skills could be provided either through on-site courses, or through partnerships with area schools. To further increase the labor pool that they could choose from, firms could also provide basic skills training (like basic verbal and math skills).

Another approach to reduce the reliance upon outside sources of skilled labor, is to redesign jobs, and restructure the jobs of employees so that less labor, or less skilled labor is needed. Changing the firm's business strategy could also serve that purpose.

The last approach firms could take to decrease the effects of the declining supply of skilled labor, is to make better use of the labor it already possesses. Gain sharing is one way to get the current workers to be more

productive. Encouraging increased worker participation and involvement by introducing self-managed work-groups and employee involvement teams, and by training supervisors to be more open to participation, has at least anecdotally been associated with increased productivity and commitment of the current workforce, thus decreasing the need for new employees (Robertson & Osuorah, 1991, Dumaine, 1990).

We have identified five approaches that firms could use in dealing with the reductions in the supply of skilled labor. Two center around expanding the reach of the firm's hiring efforts, so as to increase the supply of labor to the firm. The last three have as goal the reduction of the firm's need to hire skilled labor.

#### Data analysis.

Towers Perrin, a major HR/benefits consulting firm, in conjunction with the Hudson Institute, surveyed almost 3000 companies all over the United States to see how they are responding to changes in the labor force. Questions were asked about a range of employment issues, and human resource practices. Responses were received from 849 firms. Because some of these responses did not answer the questions used for the factor analysis discussed below, we were left with 776 usable questionnaires, for an effective response rate of 27.6%. The respondents represent a whole range of industries. However, the sample was skewed towards service companies with manufacturing firms representing only 25% of the final sample. The average respondent had just over 2000 employees, and hired about 100 new employees a year. Because of the predominance of service firms in the sample, 34% of the average company's employees were professionals or managers, and another 24% were administrative personnel.

In addition to basic employment information, companies were asked specific information about programs that they had in place to deal with the skill and labor shortages. A list of the programs that were associated with the five basic approaches firms could take to dealing with labor shortages, are provided in Table 2. Replies were coded based on the degree to which firms had, or were implementing the programs. If a firm did not have a program, their response was coded as one, and if they had a full-scale program, their response was coded as four. Plans for trial programs and pilot programs in progress were coded as two and three respectively. Looking at the means for the items for each approach, we see that the programs associated with the marketing approach are the most popular among respondents. The programs that appear to be used the least often, are those that relate to changing the role labor plays within the firm.

Table 2

ITEMS	MEAN	STANDARD DEVIATION
<b>FACTOR 1: Recruit alternate types of labor ("Nontraditional").</b>		
1. Recruit non-traditional workers	1.696	1.003
2. Explicit minority recruitment	2.088	1.344
3. Specific hiring programs for women	1.433	1.002
<b>FACTOR 2: Expand the pool of labor from which firm draws its new employees ("Marketing").</b>		
1. Recruit outside the local area	2.479	1.406
2. Run job fairs/career open houses	2.349	1.354
3. Use marketing approach to recruitment	2.102	1.311
4. Raise entry-level salaries	2.177	1.361
<b>FACTOR 3: Internal training of employees ("Training").</b>		
1. Partnerships with high schools/technical schools	1.902	1.142
2. On-site courses	2.173	1.365
3. Remedial verbal/writing/math training	1.555	0.96
<b>FACTOR 4: Change the role labor plays within the firm ("Change role")</b>		
1. Restructure job descriptions	1.734	1.157
2. Redesign jobs	1.349	0.8
3. Revised business strategy	1.165	0.572
<b>FACTOR 5: Find ways to motivate current workers to work harder and more efficiently ("Better use")</b>		
1. Gain sharing	1.427	0.932
2. Self-managed work groups	1.359	0.826
3. Supervisory training in greater worker participation and autonomy	1.862	1.253
4. Employee involvement teams	2.084	1.313

ITEM	A.	B.	C.	D.	E.	F.	G.	H.	I.	J.	K.	L.	M.	N.	O.	P.	Q.
A. Recruit non-traditional workers	1.000																
B. Explicit minority recruitment	0.194**	1.000															
C. Hiring programs for women	0.148**	0.369**	1.000														
D. Recruit outside local area	0.157**	0.182**	0.127**	1.000													
E. Run job fairs	0.306**	0.274**	0.152**	0.329**	1.000												
F. Marketing approach	0.333**	0.215**	0.226**	0.364**	0.478**	1.000											
G. Raise entry-level salaries	0.203**	0.065	0.104*	0.256**	0.258**	0.279**	1.000										
H. Partnerships with schools	0.179**	0.258**	0.149**	0.201**	0.322**	0.250**	0.118**	1.000									
I. On-site courses	0.175**	0.162**	0.101*	0.214**	0.236**	0.163**	0.123**	0.287**	1.000								
J. Remedial training	0.143**	0.204**	0.164**	0.051	0.118**	0.104*	0.070	0.330**	0.379**	1.000							
K. Restructure job descr.	0.203**	0.089	0.064	0.249**	0.249**	0.282**	0.368**	0.123**	0.108*	0.071	1.000						
L. Redesign jobs	0.196**	0.202**	0.131**	0.178**	0.221**	0.180**	0.138**	0.219**	0.228**	0.211**	0.281**	1.000					
M. Revise business strategy	0.156**	0.181**	0.131**	0.146**	0.229**	0.190**	0.102*	0.219**	0.170**	0.173**	0.145**	0.314**	1.000				
N. Gain sharing	0.029	0.154**	0.106*	0.065	0.028	0.081	0.047	0.139**	0.128**	0.191**	0.016	0.114**	0.046	1.000			
O. Self-managed work grps	0.057	0.165**	0.161**	0.083	0.059	0.051	0.040	0.244**	0.130**	0.215**	0.088	0.195**	0.025	0.283**	1.000		
P. Supervisory training in partic.	0.116**	0.168**	0.114**	0.120**	0.131**	0.163**	0.091*	0.210**	0.186**	0.227**	0.110*	0.200**	0.099*	0.288**	0.314**	1.000	
Q. Employee involvement grps	0.087	0.146**	0.123**	0.156**	0.026	0.108*	0.027	0.205**	0.165**	0.164**	0.099*	0.106*	0.076	0.288**	0.336**	0.402**	1.000

\* = .05 confidence level    \*\* = .01 confidence level

Lisrel VII was used to perform confirmatory factor analysis of the basic approaches we identified. Based on the recommendations of Codeck (1989), we analyzed both covariance and correlation matrices. The results for the two were essentially the same. Table 3 provides the standardized factor loadings.

The five factors we identified represent different approaches firms could take to handle the shortage of

new skilled entrants into the labor force. It is quite possible that firms that make use of one approach, also use one or more of the other approaches, and we therefore allowed for correlation between the latent variables. These are also reported in Table 3, and suggest that firms that use one approach are significantly more likely to use the other approaches as well.

ITEMS	FACTORS				
	NONTRADITIONAL	MARKETING	TRAIN	CHANGE ROLE	BETTER USE
Recruit nontrad'l	0.453	0.000	0.000	0.000	0.000
Minority Recruiting	0.570	0.000	0.000	0.000	0.000
Hiring programs for Women	0.464	0.000	0.000	0.000	0.000
Recruit outside local area	0.000	0.515	0.000	0.000	0.000
Run Job Fairs	0.000	0.685	0.000	0.000	0.000
Marketing Approach	0.000	0.686	0.000	0.000	0.000
Raise Entry-level Salaries	0.000	0.413	0.000	0.000	0.000
Partnerships with schools	0.000	0.000	0.602	0.000	0.000
On-site courses	0.000	0.000	0.549	0.000	0.000
Remedial training	0.000	0.000	0.572	0.000	0.000
Restructre job-descriptions	0.000	0.000	0.000	0.465	0.000
Redesign jobs	0.000	0.000	0.000	0.587	0.000
Change business strategy	0.000	0.000	0.000	0.468	0.000
Gain Sharing	0.000	0.000	0.000	0.000	0.476
Self-managed work groups	0.000	0.000	0.000	0.000	0.554
Supervisory training in particip.	0.000	0.000	0.000	0.000	0.621
Employee involvement teams	0.000	0.000	0.000	0.000	0.611
Phi Matrix standardized					
nontraditional	1.000				
Market	0.686	1.000			
Train	0.607	0.507	1.000		
Change needs	0.591	.662	0.592	1.000	
Better use	0.439	0.242	0.566	0.368	1.000
<b>GOODNESS OF FIT INDEX</b>					
<b>0.95</b>					
<b>ADJUSTED GOODNESS OF FIT INDEX</b>					
<b>0.93</b>					
<b>ROOT MEAN SQUARE RESIDUAL</b>					
<b>0.065</b>					

The factor loadings were all sizeable, and using both the goodness of fit index and the root mean-square residual, we see that our model provides a good fit to the data.

#### Choosing among different approaches.

Given the different approaches firms could take to deal with the shortage of skilled labor, it is interesting to determine when firms are more likely to use some approaches over others. In order to gain a better understanding of why some firms prefer to use certain approaches over others, we ran a set of regressions using the summation of the items in each factor as independent variables. The descriptive statistics of the variables we considered are reported in Table 4. The actual regression equations are reported in Table 5.

Variable	Mean	SD.	CORRELATIONS										
			A	B	C	D	E	F	G	H	I	J	
A. Log #Workers	7.63	1.80	1.00										
B. Log #New hires	4.58	2.14	.702**	1.00									
C. #Screened/hire	2.21	1.29	.013	-.161**	1.00								
D. %Mgmt&profess.	33.64	18.44	-.179**	-.333**	.050	1.00							
E. %Sales	9.15	15.44	.158**	.280**	-.126*	-.230**	1.00						
F. %Skilled/tech.	22.34	17.64	.020	-.115*	.153**	-.078	-.155*	1.00					
G. %Administrative	24.24	18.26	-.090	-.023	-.026	.057	-.101	-.208**	1.00				
H. Effect labor short.	2.28	1.01	.203**	.285**	-.061	-.025	.029	.006	-.074	1.00			
I. Skill mismatch inside	2.40	1.00	.163*	.111	.026	.036	-.043	.064	-.069	.487**	1.00		
J. Manufacturing	0.25	na.	.043	-.087	.008	-.268**	-.065	.100	-.275**	-.097*	-.000	1.00	

TABLE 5: REGRESSION RESULTS

INDEPENDENT VARIABLES	DEPENDENT VARIABLES				
	Nontraditional	Marketing	Training	Change Role	Better use
log US Workers	0.122*** -0.0335	0.038 -0.039	0.080*** -0.038	-0.0006 -0.028	0.113*** -0.033
log Annual new hires	0.062** -0.031	0.161*** -0.037	0.05 -0.035	0.061** -0.026	-0.0028 -0.031
Screened/entry level hire	0.074** -0.033	-0.0009 -0.039	0.05 -0.037	0.037 -0.027	0.0087 -0.033
Manufacturing	-0.038 -0.106	-0.1004 -0.125	0.196 -0.12	-0.011 -0.087	0.345*** -0.105
%empl. Mgmt & professional.	0.0009 -0.003	0.013*** -0.003	0.001 -0.0029	0.0037* -0.002	-0.0019 -0.003
%employees administrative	0.0012 -0.002	-0.0032 -0.0028	0.0009 -0.0027	-0.0001 -0.002	-0.0046* -0.0024
%employees sales	0.0004 -0.003	-0.0031 -0.0034	-0.0077** -0.0033	-0.0002 -0.002	-0.0074*** -0.0029
%employees skilled/technical	0.0012 -0.002	0.0009 -0.0029	0.0027 -0.0028	0.0033 -0.002	0.0017 -0.0025
Effect labor shortages on decisions	0.108** -0.049	0.193*** -0.057	0.068 -0.055	0.056 -0.04	0.109** -0.048
Response to skill-mismatch in comp.	-0.0015 -0.048	0.018 -0.056	0.179*** -0.054	0.066* -0.039	-0.0001 -0.047
R-Squared (adjusted)	0.22	0.27	0.19	0.1	0.2
* = sign 0.1      ** = sign 0.05      *** = sign .001					
All F-tests significant at .001 level					

The first variables in the equations are the logs of the number of workers in each firm, and the log of the number of new entry-level hires made by each firm. As can be seen from the correlation matrix, the correlation between these two variables is sizeable. We reran the equations using just one of the two but there was no significant change in the coefficients of the remaining variables. From the regression equations, it appears that larger firms are much more likely than small firms to focus on hiring non-traditional employees, provide training to off-set skill deficiencies of workers, and use programs to make better use of their existing employees. Firms that have to hire a large number of new employees every year, are more likely to use a marketing approach, or to alter the role of labor. They are also more likely to look to non-traditional employees for their hiring need.

The latter is also true for firms that screen a lot of employees per entry level hire<sup>1</sup>.

<sup>1</sup>note: Because our data is not longitudinal, it is not possible to infer causality only relations. It is possible, for example, that firms that hire non-traditional employees have to do more screening.

The employee mix in the firms did not seem to be strongly associated with whether the firm had programs for hiring non-traditional employees. The percent of employees that are managerial or professional was positively associated with the use of marketing approaches to hiring and to altering the way labor is used within the firm.

The percent of employees that are technical or skilled, or administrative is not strongly associated with any of the ways that firms deal with labor shortages. The only significant relationship that is even marginally significant is between the percent of employees that have administrative roles, and whether or not firms try to make better use of the employees they currently have. The relationship is a negative one, suggesting that as the percent of administrative employees increases, there is a decreased likelihood that the firm will make use of programs like gain-sharing, or employee involvement teams. The same was true for firms that have a relatively large sales force. Having a large sales force is also negatively related to whether or not firms provide internal training.

The firms were asked to what degree a shortage of skills was affecting managerial decision making, and to what degree skill mismatches within the company were affecting managerial decision making. The possible responses were: "has not yet become a concern," "Is a concern but plans have not yet been formulated," "has influenced certain management decisions," and "has been incorporated into the company's strategic plan." These were coded one to four respectively. Looking at the regressions, we see that firms where labor shortages have had a strong effect on decision are significantly more likely to focus on hiring non-traditional employees, use a marketing approach to hiring, or to make better use of current employees. Firms, on the other hand, that are experiencing skill mismatches, are more likely to alter their use of labor, or to provide training.

Lastly, we included in our regression equations, a control for whether or not the firm under analysis was a manufacturing firm. Manufacturing firms are significantly more likely to have programs that result in better employee use.

#### Discussion.

Analysis of the decline in the number of skilled employees entering the labor force, are not complete without a thorough understanding of how firms can deal with those shortages. If, for example, firms are reacting to the shortages by providing training themselves and hiring non-traditional employees, the problems resulting from the reduced number of skilled entrants is less acute, than if firms all rely upon a "marketing" approach to try to attract workers. We identified five fundamental approaches firms could use in dealing with a shortage of skilled labor: they can use a supply-oriented approach, and focus on hiring more non-traditional employees, or use programs to attract more workers (e.g. pay higher wages). Alternatively, firms can try to cut down their need for skilled labor. They can do this by providing training in-house, changing the role labor plays within

the firm so that skills are less critical, or take measures to increase the productivity and commitment of the employees they already have.

After validating our operationalization of those five approaches, we tried to determine why firms would be more likely to chose one approach over another. Our findings suggest that the size of the firm, and the number of entry-level hires it has every year, can be of great importance in determining which approach it will use. However, as mentioned earlier, a longitudinal analysis would help in determining whether the need to hire a large number of new employees results in firms adopting certain approaches to dealing with labor shortages, or whether some of the programs result in a need to hire more employees every year.

In general, the make-up of a firm's employee base bore relatively little relation to how firms choose to handle the shortage of skilled labor. The strongest results were for the percent of employees that were managerial and professional, and sales. If we can deduce that the mix of employees a firm hires is related to the make-up of its employee base, our results suggest that using the marketing approach is the best way to deal with the need to hire large numbers of managers and professionals in a shrinking labor market. On the other hand, providing training, and introducing programs that enhance productivity and commitment do not help firms looking to hire sales employees when the supply of skilled labor is declining. It is not clear why training is not used by firms that have large numbers of sales people. Perhaps the reason that programs like gain-sharing and self-managed teams are not used, is that most sales jobs require strong individualism, and may pay commissions based on individual performance.

We started off our research with the premise that there are five distinct ways that firms can deal with the shortages of skilled labor. However, our findings indicate a strong need to distinguish between shortages of labor, and skill mismatches. Hiring non-traditional employees, using a marketing approach to hiring, and making better use of the labor base currently in the firm are the approaches that are used to deal with the shortages of labor. The skill mismatches on the other hand, are dealt with through training and by altering the role of labor within the firm.

This paper has argued that there is more than one way in which firms can handle the changes that are taking place in the labor force. The approach firms take is affected not only by the size of the firm, and the number of employees it hires, but by its employee mix, and whether or not it is facing a labor shortage, or a skills-mismatch. The choices firms make have very significant implications, not just at the firm level, but also from a macro perspective. If most firms, for example, opt to focus much of their energy on the marketing approach (as mentioned, that approach is currently the most commonly used), the shortage of skilled labor will not be resolved. All that will happen is that firms will be vying more intensely for the same labor pool, and wages will increase.



If, by providing training themselves or hiring non-traditional employees, firms can reduce their dependency on outside sources of skilled labor, the shortage of skilled labor will be less of a macro problem. We feel that additional research efforts in this area will help further elucidate why firms choose one approach over another, and perhaps, how firms can be induced to take approaches that are more desirable from a macro perspective.

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