MODEL OF CAREER CHOICE FOR CRAFTWORKERS

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ABSTRACT: A study was conducted to examine the problems created by the mismatch between supply and demand for construction craftworkers. The paper identifies that the supply and demand varies greatly by geographic region and should be analyzed by region. This paper presents the factors and a model of the influence of these factors on the career-choice decisions for the construction industry. The paper reviews the public perceptions of the construction industry and the demographics of the U.S. construction industry. The factors that affect decision making at the total work-force level leading or deterring an individual to or from a construction career include individual perceptions, family perceptions, wages, weather, the industry structure, family relations, overall industry image, and the individual's educational system. The model represents a first attempt to explain the prevailing paradigm under which the construction industry is able to attract new entrants. Several recommendations for future extensions to the current work are made.

INTRODUCTION

The Construction Industry Institute (CII), Austin, Texas, developed a task force and sponsored a research project to study the craft work force with the intent to develop long-term strategies to solve the problem of adequately matching the supply and demand of skilled labor for the construction industry over the next two decades. A part of this study was an examination of the factors affecting the career choice made by individuals who might consider a construction-industry career. The researchers developed a model of influence to guide the examination of the process that potential entrants to the craft work force follow in making their career-choice decisions. This paper presents the factors identified and presents the model of influence under which the construction industry appears to be operating. Areas of influence that can be modified to increase or decrease the availability of craftworkers in the future are identified. Future research areas to develop a more quantitative model and enhance worker availability are identified.

REGIONAL VERSUS NATIONAL PROBLEM

While many have predicted or identified shortages in construction workers for the coming decade (Forest 1990; Schriener 1990; "Immigration" 1990, "Worker Skills" 1990; 'More Evidence" 1989; *CIWF and Why* ND), the shortfalls represent national numbers across all segments and crafts within the construction industry. The swings in the construction economy move much faster than the industry's ability to provide training. The industry has

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a difficult time predicting or responding to the peak demand swings in work-force needs.

The shortage will likely be felt more severely in particular regions of the country and be more acute within particular crafts. At the same time that some geographic regions and individual crafts will experience shortages, other areas and crafts will experience no or only slight shortfalls. Other areas may also be experiencing surpluses within certain crafts. Although a national shortage could affect those contractors who work all over the country, it is more appropriate to study the work force on a regional level. If change is to be effective within the construction industry, the impetus for change could likely come from local contractors who no longer have the ability to obtain their craft work force through the hiring hall, newspaper advertisements, or word of mouth.

The issue of a shortage is unlikely to become critical in the near future due to two recent events. The impacts of the recession has had an enormous impact on construction employment, falling 14% in only two years (Gasperow 1992), thus reducing demand substantially. The second event has been the impact of the end of the Cold War, reducing the numbers of people previously employed in the defense of the country. This creates a potentially greater supply of individuals for the construction work force. Both of these unforeseen events have reduced the potential for any overall shortage substantially in the near term.

Even during this period, some states have seen a reduction in construction unemployment. The following states had a reduction in the unemployment rate of 1% or more between 1990 and 1991: Alabama (13.7% for 1990, 11.9% for 1991), Iowa (13.8%, 12.8%), Kansas (10.6%, 8.2%), Missouri (13.8%, 11.8%), North Dakota (18.6%, 16.5%), South Dakota (13.2%, 12.1%), and Tennessee (16.1%, 14.2%) (Gasperow 1992). Regional differences are evident even during the dramatic national trend of increased construction unemployment resulting from the recent deep recession.

Ohio and Missouri have undertaken studies to determine the potential for future shortages ("Data Base" 1989; *Missouri's Need* ND). Each study revealed shortages of varying magnitudes, depending on the craft jurisdiction of interest. The shortages were unique in each area and different from overall national data. This supports the idea that one must examine data at the local level rather than the national level to identify the supply and demand characteristics.

A national study for the Construction Industry Labor–Management Trust Fund of the National Joint Heavy Highway Construction Committee (*The Need* 1990) used 10 separate geographic areas to study the five crafts most frequently involved in heavy-highway construction. This study highlights the regional differences in the work-force shortages. This further supports a regional outlook rather than a national one for addressing the supply/demand imbalance.

Demographics of Future Entrants to U.S. Construction Work Force

The American white male, the traditional source of workers for the construction industry, will remain the largest single demographic class within the U.S. work force, comprising approximately 41% of the 140 million in the work force in the year 2000 (Johnston and Packer 1987). However, the work force will be growing more slowly, the average age of the work force will rise, the pool of young workers entering the labor market will shrink,

more women will enter the work force, minorities will be a larger share of the work force, and immigrants will increase in number (Johnston and Packer 1987). It is our opinion that the implication and issue for each of these facts is that the U.S. construction industry must decide whether the status quo with respect to diversity is sufficient and acceptable for the next decade. If the status quo will not be adequate, then changes or paradigm shifts, sweeping enough to attract women, minorities, and immigrants in larger numbers, will be required. If the status quo with respect to diversity will be adequate, then adaptation will still be needed to attract, train to new methods, and retain a higher percentage of young, white males than are currently in the industry. Increased recruitment and retention techniques, increased use of capital, or use of off-site production facilities may all be required to meet the anticipated increased demand for construction services. These adaptive stategies that influence the work force will be required to maintain a competitive industry.

Public Perceptions of Construction Industry

An interesting comparison for the construction industry of the 1990s is the U.S. armed forces of the 1970s. During this time period, the U.S. military suffered from an image problem, mainly from the issues surrounding the Vietnam War. The post-Vietnam all-volunteer army created a need to develop strategies to attract and retain high-quality personnel in an occupation deemed not very desirable at the time. The need for high-quality personnel was addressed through active advertising campaigns espousing such ideas as "Be all that you can be!" The writers would argue that the construction industry of the 1990s is in a similar situation as the military of the 1970s. Due to stereotyping, the construction industry is commonly perceived as a macho, rough, crude career, with little opportunity for personal growth. The youth of the 1990s do not aspire to construction careers. One recent study found:

> [T]he term "construction worker," embodied as the unskilled manual laborer, has negative connotations for young people. To youngsters, "construction workers" are ditch diggers they see calling obscenities to passerby[sic], loafing on the job. Most commonly associated with dirt, sweat, and a gruff demeanor, the construction worker lacks prestige, class, and respectability. (Rosenthal 1990)

In contrast to the current negative image that the construction industry has among today's youth, the military represents respectability while a construction job is considered merely a paycheck (Rosenthal 1990).

Unfortunately, it is not simply the youth of America who hold the construction industry in such low regard. *The Jobs Rated Almanac* rated 250 jobs or careers, with the generic title of construction worker finishing 248th out of 250 (Krantz 1988). Construction trades, as careers, comprised 33% of the worst 50 careers identified, with only three crafts rated above the bottom 50 (Krantz 1988).

These ratings provide a glimpse at what information the general public, through respected publishers, are provided. Given the uncertainty many youngsters have with regard to what job/career to pursue, it is clear that for most who consult *The Jobs Rated Almanac*, the choice is not likely to be a construction craftworker.

Model

The development of the model was the result of personal interviews with construction industry leaders, brainstorming sessions with the CII task-force members, and a review of literature concerning career choice. It is a hybrid of previously developed career-choice models (Van Maanen and Schein 1977; Sonnenfeld 1984; Feldman 1987; Holland 1966). The development of the model is also the result of brainstorming among the research team at Iowa State University and discussions with several human-resource directors and project managers of large contracting organizations. This model is presented in Fig. 1. The model represents a unique first attempt to classify the means of entrance to the construction industry. For the first time, three separate career paths for those interested in the construction industry are identified. This is the first step toward development of a more quantitative model.

Entire U.S. Labor Force

As the model shows, input to the work force begins with a pool of all available workers in the U.S. labor force, shown on the left side of Fig. 1. Some of the data available about this pool include the following. The traditional source of construction craft workers, the 18- to 24-year-old white male, is shrinking. Although this source of potential workers is growing smaller, the number of women, minorities, immigrants, and retirees will all be increasing as potential sources of workers (Johnston and Packer 1987). The growing subgroups are currently underrepresented members of the construction-craft work force and therefore present opportunities to contractors who view increased work-force diversity as a competitive necessity.

Influence Filter

From the U.S. labor-force pool, the individual enters a filter where the individual's values, interests, aspirations, perceived abilities, and perceptions about the construction industry influence whether the individual would consider a career in construction. The desire for an office position or a college degree and the concern for safety all act as filter for those individuals entering the next pool, the construction worker pool, or choosing a career in another industry (see the arrow leading to this career choice).

Construction Worker Pool

In addition to the influences that determine whether an individual would enter this pool, there are a number of influences that affect the relative size of the overall pool. These include individual perceptions, family perceptions, wages (both hourly and annual), weather, the industry structure, family relations, overall industry image, the educational system, and institutional factors. The arrows indicate whether the influences have the potential for increasing or decreasing the relative size of the worker pool.

One influence that the writers believe currently has a negative impact on the numbers within the pool is the industry structure, which currently treats craftworkers as a commodity to be brought for a specific job and then discarded. This exhibits a lack of concern for the individual and the need for individual improvement.

The public's image of the construction industry has been formed from a

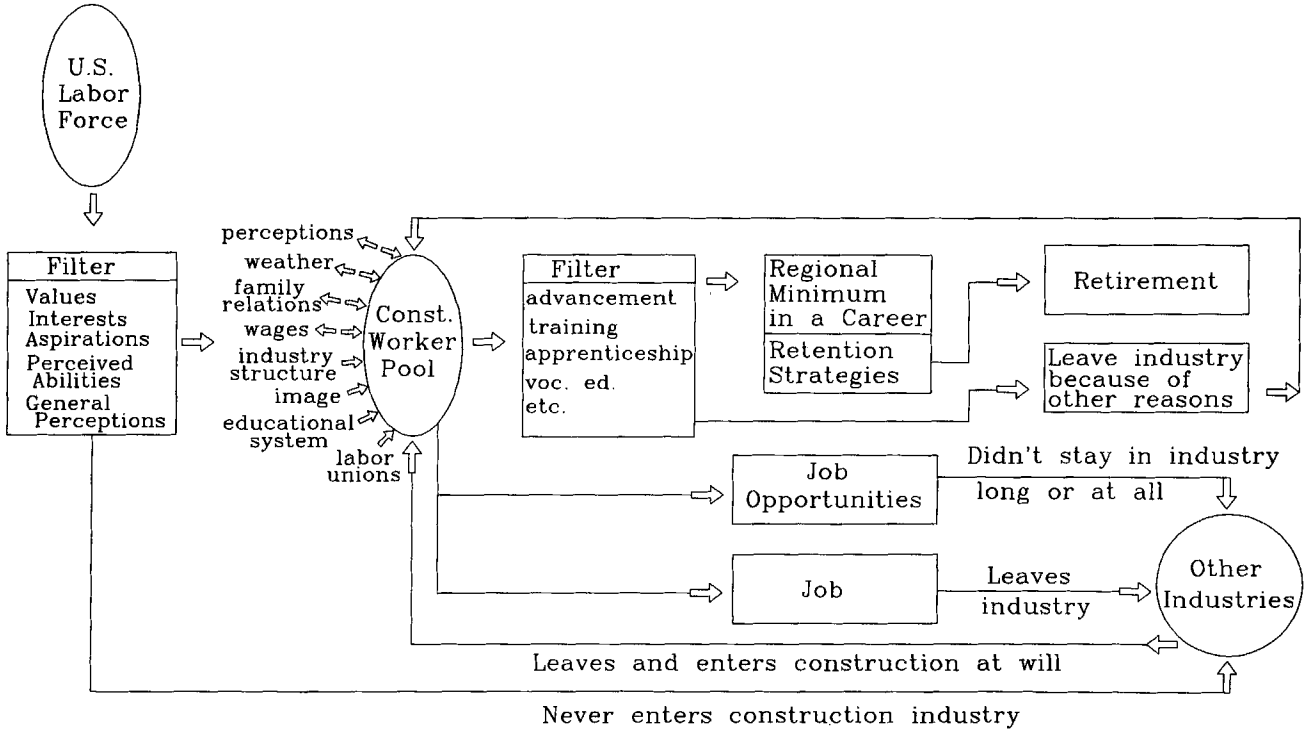

FIG. 1. Model of Work Force

series of publicized failures. Only when there are strikes or accidents does the construction industry make the evening news. The successes of a new high-rise or process plant are typically never celebrated, but an accident or an off-schedule project will make headlines.

The educational system effectively steers possible pool members away from the industry through a movement away from industrial arts (shop class) in the junior high and high schools and by the recommendations of career counselors at high schools encouraging other careers and discouraging a career choice in the construction crafts.

The adversarial relationship between the trade unions, to whom many craftworkers belong, and the contractors, who employ the workers, effectively reduces the number who consider working in such an environment. The negative stigma associated with union membership, primarily associated with television coverage of unions and portrayals in television shows of union activities, has produced this image. In some cases, there is a screening of those potentially qualified by unions attempt to limit the numbers who will eventually enter the pool (Mills 1972). According to recent estimates by the U.S. Bureau of Labor Statistics, however, only 26% of skilled craftworkers are union members (*Union/Nonunion* 1991).

The other influences may have a positive or negative effect on unions attempting to limit the numbers who will eventually enter the pool. Perceptions will vary from those who want to use their hands to create something to those who see this as menial and dirty work. The fact that construction workers only work an average of 1,350 h per year can be viewed as allowing time for an avocation or as a condition of high unemployment. Average hourly earnings, as reported by the Bureau of Labor Statistics, are higher for construction than for manufacturing, although the percentage difference between the two has been shrinking in recent years (*Handbook* 1989).

The physical challenges associated with many construction activities can be viewed as exciting and adventuresome or as health and safety risks. The weather can have positive influences, especially when it is pleasant outside; however, work still proceeds during extreme cold and heat, thus possibly having a negative impact.

In certain industry sectors, crafts, and geographic areas, many workers join the industry through a family relation. This has a positive effect for those with nearby relatives. It also limits those who would like to join but, due to a lack of relatives in the industry, may have to exert a great deal of effort to attain entrance into the industry. Finally, because some people enter and leave the construction industry at will or in response to a variety of factors, a return loop to the construction worker pool has been created. The model therefore provides for those individuals who enter, leave, and return to the industry for whatever reason.

Individual Choice

There are three paths through which an individual can leave the construction worker pool, with two leading to working in the construction industry as a craftworker. The other path (shown at the bottom of Fig. 1) is the identification of more attractive job opportunities in industries other than those available in construction. These individuals would then enter a different industry and very likely never consider a construction career again. They are effectively lost from the system. A second path (shown in the middle) is the most likely means of entrance within the construction industry. In this case, the individual is hired for a single job, typically relying on those

skills possessed at the time of hiring or those quickly learned, to determine which tasks are included within their opportunities. These single-project hires typically find a low organizational investment on the part of the firm that hired them. They very well may have low wages and only mandated benefits, and receive the bare minimum in terms of safety orientation and job training. These individuals are likely to work in the industry during the economic good times and leave during the economic downturns. Eventually, these individuals will either enter the career track in the construction industry or identify other career opportunities and pursue them.

The last option (shown at the top) is called the regional minimum in a career. These individuals have exhibited a willingness to make the construction industry a career. An organization, either a contractor or a union and a contractor, have also exhibited a willingness to make an investment in these individuals through a formal training program. The term *regional minimum* was chosen to describe the fact that despite the predictions of national shortages in the work force, the construction industry is still regionally and locally focused in structure and actions. While companies and training programs are willing to train workers, only a finite number of workers are typically allowed to enter the various programs. This indicates that there is a restricted number of entrants who would be allowed to join the industry in the career mode. This number is kept to a minimum by the use of travelers, (craftworkers brought into a region with a need from a region with a surplus), students (who only work during the busy summer season), temporary employees (brought from a temporary employment agency), unemployed workers in other industries, and advanced technology use (modularization of components off-site in a manufacturing-type environment, in lieu of on-site construction, which is becoming more popular). These regional-minimum individuals will likely receive training throughout their career and, for those qualified, are likely to advance through the supervisory ranks. These are the workers that construction firms attempt to retain through a variety of efforts during both the good times and the industry downturns.

Retention Techniques

In merit-shop construction, these individuals may be cross-trained, thus enabling the contractor to use them throughout the project because their diverse skills allow flexibility in job assignments. Vested profit-sharing is also being used to increase the likelihood that these individuals stay with the organization. Another attraction-and-retention technique is to work overtime in response to competition of weekly wages among local projects, even though the project schedule may not demand it.

Ultimately, these individuals either retire from working or choose to leave the industry due to a variety of reasons. The construction industry suffers from a tremendous loss of workers during their late 30s (*Handbook* 1989). If the cause of this separation is other than health reasons, it is highly likely that those who departed left during their most productive years within the industry. Reasons for the separation include undesirable job assignments, unacceptable annual wages, better opportunities in other industries, changes in values and perceptions, travel limitations due to family obligations, safety concerns, and the common lack of respect the public has for the construction industry.

Conclusions and Recommendations

The model presented is a first attempt to explain the prevailing paradigm under which the construction industry is able to attract new entrants. The numerous publications predicting a high need for construction craftworkers examine the shortage as a national problem. It has been proposed within this paper that the supply-and-demand issue needs to be addressed at a regional level first. This is not to say that many issues are not common on a national level. The image problem, which the industry currently has, provides vivid reminders of the need to change the general public's perception of the construction industry. This is definitely a national-level problem but likely will be solved through many local actions and programs over a long period of time. Contractors need to celebrate their successes publicly. A method of increasing positive public relations is to generate it within the industry through trade associations. It is painfully obvious that the national media will not publicize the positive aspects of construction without industry-driven prodding. This prodding will require some orchestration and effort on the part of industry through public-relations programs. Perhaps an organization such as the Construction Industry Workforce Foundation, Washington, D.C. will be able to provide the prod.

Entrance mechanisms need to be established within the construction industry. The U.S. armed forces were able to improve the overall quality of the servicemen and women through the use of national campaigns urging America's young to "do more before 9 A.M. than most people do all day." Construction needs to highlight the opportunity provided to craftworkers in creating tangible, large, viewable projects with their head and hands. Minimum entrance standards based on local high school competency standards should be required for entry to a trade or employment.

The perceptions of those who potentially have a large impact on the decisions of young people also need to be altered. The industry suffers from a misunderstanding of the opportunities on the part of high school career counselors. These individuals need to be persuaded that recommending construction craft work to an 18-year-old is a viable alternative that should not be dismissed categorically. Programs of awareness and contacts for entrance need to be established for guidance counselors and high school teachers. Several programs of this type have been tried for college entrants and these should be expanded to the craftworker level.

Programs to define task competencies for entry construction jobs with progressive education and training to develop craft-level skills should be expanded. This would allow for more rapid response to the increased demands brought on by a growing construction market. Programs for training and retention during the downturns in the construction economy will need to be addressed. Responsiveness to regional needs will likely become more critical in the future. The concept of using travelers may be replaced by the concepts of off-site prefabrication and modularization. This could provide one partial solution to the retention issue.

The diversity issue for the construction industry is not yet clear. At regional, local, and individual company levels, decisions about whether to target and recruit women and minorities actively will have to be made. Society through government may even require this recruitment within contract documents. Some firms may choose to circumvent increased recruitment and retention costs by offering ever increasing wages to the current worker pool, predominantly white males. This avoids the expense of incentive recruitment programs for women and minorities as well as the change

in the work environment that would be necessary to retain other classes of workers. Local trade associations and craft groups need to make similar decisions. If it is decided to attract and retain women, minorities, or immigrants, additional up-front costs and changes in the work environment are necessary to allow those individuals to feel welcome and stay in the industry.

Additionally, greater organizational investment is needed to ensure that those who enter the construction worker pool, as shown in Fig. 1, remain in the industry for their productive work lives. Ongoing and continuous training is but one type of organizational investment which is required. Employers and trade associations also need to work to raise the level of job security that an individual has in the industry. It may be necessary to change some of the nature of the tasks required to allow individuals as they age to continue to be able to perform. This likely would require changes in the design of tools, changes in the materials of construction and greater use of mechanization.

The model of influence presents only a starting point to a more analytical examination of the construction work force. The issues related to the recruitment, use, and retention are complex and dynamic. This model provides a point of departure for addressing the data needs to support a more quantitative decision-support model for addressing the inevitable convolutions in regional work-force supply and demand in the construction industry.

This paper presents an argument for a paradigm shift in the way things are done within the construction industry. The unions and contractors need to address the adversarial relationships to rebuild the industry's image. Regardless of the percentage of construction done by union labor versus merit shop, anything that detracts from positive perceptions should be eliminated. It is felt that the publicly displayed adversarial relationship does just that. The construction industry needs to try new and different ways to attract and retain workers who want to make construction a career.

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