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LOGISTICS EDUCATION AT HISTORICALLY BLACK COLLEGES AND UNIVERSITIES

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ABSTRACT

A review of research literature on logistics education reveals disparities between demand for and supply of logistics management skills. Racial minorities are relatively underrepresented in logistics education and professional careers. In order to meet the rising demand for college graduates and mitigate racial disparities in the field, a need arises to enhance logistics education at Historically Black Colleges and Universities (HBCU's). HBCU's are known to have a high rate of success in retaining and graduating African American students. Yet, only a few of these institutions offer logistics degree programs or concentrations within the business and social science majors. This article makes a case for enhancing logistics education at HBCU's through program development, recruitment, and retention strategies. It argues that the coordination of activities and partnerships between the institutions offering the programs, high schools/community colleges, and employers of the graduates and government are essential for the success of such strategies.

INTRODUCTION

The demand for professionals who can manage logistics¹ functions and processes has grown rapidly. At the same time, academic programs capable of producing such individuals have been slow to meet this need. As a result, there is a relative scarcity in the supply of college graduates with skills that allow them to manage logistics activities and to create and maintain partnerships with vendors, customers, and service providers (Closs and Stank 1999). Moreover, racial minorities have been underrepresented in logistics education and careers relative to the percentage of minorities in higher education and in the labor force, respectively (Addus and Lee 1992). The number of Historically Black Colleges and Universities (HBCU's) with logistics programs is very limited. Only a few HBCU's offer logistics degree programs or concentrations within business and social science programs (Addus and Lee 1992).

The purpose of this article is to enhance minority participation in logistics education and professional careers by improving logistics programs at HBCU's. It presents brief discussions on the demand for and supply of logistics education in the nation, and the role of HBCU's in logistics education. Based on these discussions, the paper recommends strategies for enhancing logistics education at HBCU's. These strategies aim at (1) developing new logistics degree programs at HBCU's with no such programs; (2) recruiting capable and informed potential minority logistics majors for these and existing programs at HBCU's and non-HBCU's; (3) raising the retention and graduation rates of minority students enrolled in logistics degree programs at HBCU's and non-HBCU's; and (4) producing minority graduates who are capable of effectively managing logistics activities in the globally competitive environment.

THE DEMAND FOR LOGISTICS EDUCATION

The demand for logistics education is divided into student demand for logistics education and employer demand for logistics graduates. In the mid 1980's, some studies reported that in spite of the growing demand for people in the logistics profession, the number of qualified students entering the field was diminishing, and this was primarily attributed to the lack of relevant information available to potential logistics majors on the nature of logistics degree programs and career opportunities (Roos 1985). Over the past two decades, the level of understanding regarding logistics, as it relates to managerial decision and government policy, has substantially increased. Accordingly, logistics has received increasing recognition as a vital business function and educational discipline. However, in many cases managers and policy makers continue to view logistics as a support function rather than a strategic tool, which suggests the need for continued progress in logistics education. It was suggested and widely accepted that a good understanding of the nature of logistics activities and cooperation between academia and industry would mitigate the problem (Roos 1985; Faucett, Vellenga and Truit 1995).

The last quarter of the 20th century has seen vast changes in the United States logistics system. The major factors driving such changes include deregulation of the transportation industry, the growing utilization of just-in-time inventory systems, competition based on high customer service levels, globalization, and the development of the Internet. By all indications, this trend will likely continue through the current century. The need to increase logistics professionalism will be one of the greatest challenges of the new millennium (Johnson et al. 1999; Coyle,

Bardi and Novack 2000; Chopra and Meindl 2001).

Following economic deregulation of the nation's transportation carriers, a massive restructuring in the transportation industry occurred. As a result, by 1990 the railroads dramatically improved their return on investment (Lynch 1998; Tyworth, Cavinato and Langly 1991). New forms of carriage, practices and freedom, coupled with the proliferation of the freight rate-service quality mix dramatically altered the transportation service selection and logistics decision-making framework (Tyworth Cavinato and Langly 1991). Further, the business focus has become increasingly global in scope. With the expected high rate of growth in world trade, moving resources and finished goods between sources of resources, production points and consumption centers presents significant logistics challenges (Ratliff and Nulty 1996). With the development of the Internet and e-commerce and the resulting home delivery of products, transportation costs have increased in retail businesses. On-line firms deliver products in small packages directly to their customers instead of large quantities (in truck loads with lower per unit transportation cost) to retail outlets. As a result, the proportion of transportation cost to the total delivered product cost has increased. Thus, the success of integrated logistics² is closely related to the appropriate use of transportation, and effective transportation is essential for the success of any on-line business. These businesses rely on effective and convenient transportation to satisfy their customer needs (Chopra and Meindl 2001).

These developments in logistics activities will no doubt lead to higher demand for college logistics graduates. The field of logistics is so large and complex that almost any private or public organization may be viewed as a

potential employer of the logistics manager. The types of organizations most likely to employ logistics professionals include transportation carriers, manufacturers, wholesale distributors, retailers, public warehouses, consulting firms, publishers, computer and other service firms, universities, and government (Johnson and Wood 1986).

THE SUPPLY OF LOGISTICS EDUCATION

The supply of logistics education can be divided into two parts: the supply of logistics degree programs and the supply of logistics graduates. Prior to the 1980's, logistics-related activities in business management, public administration, urban and regional planning, and other social sciences were often overlooked by the transportation community (Michael 1985). The total number of institutions offering logistics programs was limited in relation to other fields of study, and most of these programs have been relatively small in size. Faculty shortages and time constraints within program settings were two of the main factors precluding growth and improvements in logistics curricula (Spsychalski 1985; Southern 1986; Zinszer 1986).

The traditional business logistics functional perspective within the framework of higher education is increasingly changing along with changes in related economic forces. However, increasing demand has clearly exceeded the supply of qualified personnel in the area (Closs and Stank 1999). Senior logistics managers in various organizations cite obtaining individuals trained in integrated logistics as their major concern for the near future. The emergence of these fields as major business disciplines has led to an increase in the number of courses and programs specifically designed to teach

logistics management at the college/university level. However, logistics' significance to businesses, the economy and society as a whole has not been fully supported by the number of logistics programs and courses offered at higher learning institutions in the nation (Faucett, Vellenga and Truit 1995).

Although many firms seek logistics college graduates who can manage various logistics activities (such as transportation cost analysis, scheduling, pricing, warehousing, purchasing, materials management, and inventory control), a significant proportion of logistics jobs are filled by non-logistics-trained personnel due to shortages in the supply of logistics-trained individuals. Logistics career patterns indicate that most logistics professionals and executives do not hold degrees in logistics, but in various other areas of business administration (Zinszer 1986; Wood and Johnson 1996). In the new millennium, the most fundamental change affecting logistics operations will likely be a shift from the "downswing" business mentality of the 1980's and early 1990's to one of growth, which requires more qualified manpower to carry out essential logistics activities (Hale 1999). It has been predicted that the gap between the demand for and supply of logistics professionals will intensify unless the growing demand is matched by efforts to expand training programs. Businesses will have to compete fiercely for logistics graduates and, because of shortages of properly trained logistics personnel, some businesses could be forced to entice retirees back to work (Hale 1999).

THE ROLE OF HBCU'S IN LOGISTICS EDUCATION

HBCU's play a pivotal role in educating racial minorities, particularly African American students. A brief description of the status of logistics education at HBCU's

serves as a prelude to the justification of this role and strengthens the case for enhancing logistics education at these institutions.

The Status of Logistics Education at HBCU's

Historically, racial minorities had difficulty in achieving equal employment opportunities in transportation and logistics. Usually, the jobs available to them were at the entry level with lower pay (Johnson and Wood 1986). Over the past several years, job participation of minorities in the private transportation sector and related areas has improved. Yet they are not at par in logistics careers, particularly at professional and administrative levels. A major factor that has contributed to this situation is the underrepresentation of racial minorities in logistics education (Addus and Lee 1992).

Due to the U.S. Department of Transportation's initiatives of the 1970's and 1980's, specialized programs limited to a few HBCU's were mostly geared to careers in urban transportation. There was an emphasis on the need to establish and improve logistics programs at minority institutions (Dorsett and Benjamin 1984). Currently, there are about 115 HBCU's in the United States (Frieson 2001). Only six of these institutions offer transportation and/or logistics programs. Two of these institutions offer only bachelor's degree programs, two offer only master's degree programs, and two offer both bachelor's and master's degree programs. A total of 11 undergraduate and graduate programs are offered by these six institutions. Two of the programs are in air science, three in urban transportation planning, two in transportation engineering, and four in logistics. Three of the logistics programs are concentrations within the business management area. Thus, only one institution offers a full-fledged under-

graduate logistics degree program (see Tables 1 and 2). At the national level, about 85 of the estimated total of 1,500 four-year predominantly white colleges and universities offer logistics degree programs (Internet Search 1997; *Webster's Dictionary* 1989). The relative attention accorded to logistics education at HBCU's has been inadequate in addressing the issue of minority underrepresentation in the profession. Although it is considered to be an important and emerging discipline, logistics remains one of the least understood fields of

study for prospective students at higher learning institutions, particularly at HBCU's (Addus and Lee, 1992). The situation calls for more efforts to promote awareness among minorities, and improve logistics education at HBCU's, particularly at the undergraduate level. The efforts are warranted by the fact that logistics education equips college graduates with skills required for rewarding careers in modern society, thereby mitigating racial disparities in the nation's work force (Faucett, Vellenga and Truit 1995).

TABLE 1
UNDERGRADUATE TRANSPORTATION/LOGISTICS PROGRAMS AT HBCU'S

Institution	Program
Alabama A&M	Logistics Track in Business Administration
Delaware State	Airway Science
Hampton	Airway Science
North Carolina A&T	Transportation/Logistics
	Transportation Engineering

Source: Internet Search, <http://www.Endoline.com/hbcu>; and individual HBCU web sites.

TABLE 2
GRADUATE TRANSPORTATION/LOGISTICS PROGRAMS AT HBCU'S

Institution	Program
Alabama A&M	Logistics Track in Business Management
	Transportation
Morgan State	Transportation Planning
North Carolina A&T	Logistics Track in Management
	Transportation Engineering
Texas Southern	Transportation Planning

Source: Internet Search, <http://www.Endoline.com/hbcu>; and individual HBCU web sites.

The Case for Logistics Education at HBCU's

HBCU's have played a significant role in educating African-Americans throughout United States history. About 90% of HBCU's are four-year institutions. These institutions are willing to accept students with academic deficiencies and provide them with skills that qualify them to pursue careers in society. They offer a higher rate of success in graduating African-Americans with bachelor's degrees compared to the percentage of African-Americans graduating from predominantly white institutions. This success is attributed to the fact that (1) HBCU's are prepared to offer more remedial courses for freshman students with relatively poor high school academic background; (2) because of a more supportive environment, students at HBCU's are confident and more interactive with faculty than African-American students at other institutions; and (3) students at HBCU's exhibit lower rates of withdrawal than African-Americans at predominantly white institutions (Kourtellos 2001).

A survey of African-American scholars at HBCU's indicated that most of the scholars would recommend HBCU's to African American students for their higher education careers (Frieson 2001). Many of these scholars feel that these institutions provide social and psychological benefits to students that cannot be duplicated by predominantly white institutions. On the other hand, only 23% of African-American students enrolled in predominantly white institutions reported that counseling and advising services seemed sensitive to their needs, and about 32% of minority students said their campuses made special efforts to give them a sense of belonging (Frieson 2001). Thus, the enhancement of logistics education at HBCU's would have greater impact on the success of racial

minorities in the field than similar improvements at other institutions.

STRATEGIES FOR ENHANCING LOGISTICS EDUCATION AT HBCU's

Given the rising nationwide demand for and relative shortage of logistics professionals, the need for concerted efforts to develop and enhance logistics education is justified. Racial disparities in logistics education and the significance of HBCU's in the success of African-American students call for the design and implementation of effective strategies to develop, improve, and enhance logistics education at HBCU's. Such strategies should include effective program development, recruitment, and student retention policies that will result in producing highly skilled and competitive logistics graduates through internal coordination and external partnership.

Internal Coordination and External Partnership

The process of developing and implementing strategies for enhancing logistics education at HBCU's requires effective coordination of activities within the institution offering the degree program and sound partnerships with business organizations, educational institutions, and government agencies. In order to produce competitive logistics graduates, a relevant program has to be developed, qualified students have to be recruited, and these students have to be retained and trained appropriately. Logistics education is interdisciplinary in nature and is related to various fields of study in business, economics, engineering and other social sciences. The success of the program demands effective coordination between the program and other academic programs as well as institutional support services. In

addition, as the major training base for highly skilled professionals, the institution should work in close partnership with high schools and Parents and Teachers Associations (PTA's) as sources of qualified potential logistics professionals, and with transportation carriers, industry and government as supporters of the program and employers of the graduates. The activities involved in internal coordination and external partnership are essential for the implementation of the three strategies presented below, which are proposed to help enhance logistics education at HBCU's and achieve racial parity in the profession.

Program Development Strategy

For HBCU's with no logistics degree program, a gradual approach in a stage-development scheme is recommended. The stages in such a scheme include (1) developing logistics courses and integrating them into business administration and/or other relevant programs as required courses; (2) developing a logistics concentration within business administration and/or other relevant programs; and (3) developing logistics degree programs.

Federal and state funds are available for developing transportation and logistics programs, with federal funds being limited to urban transportation programs. Currently, federal funds (such as from Transportation Centers and Urban Transportation Institutes) are available for research and student scholarships. The availability of state funds for developing logistics programs depends largely on the state of the economy. In recent years, many states have experienced financial shortfalls due to economic difficulties. A case in point is a new master of science program with a concentration in logistics that was implemented at North Carolina A&T State University (NCA&TSU) in the

2001 fall semester without additional appropriations or faculty positions from the State. Therefore, financial support for development, faculty positions and assisting qualified students must be sought from private business organizations and related foundations.

Recruitment Strategy

Historically, logistics education at most universities has been primarily pursued by graduate students and/or returning professionals (Dorsett and Benjamin 1984). If a meaningful gain in undergraduate logistics enrollment is to be achieved, the pool of young potential logistics professionals must be expanded. Since the primary source of potential logistics majors are high schools, innovative recruiting efforts must be directed toward high school minority students, particularly at the junior level (Dorsett and Benjamin 1984).

Unlike many other fields of study such as economics, business administration, engineering, and other social sciences, logistics is not typically familiar to most high school students, their parents, teachers, and guidance counselors. Most people are simply not aware of logistics management programs or courses offered at higher education institutions, and of career opportunities in this field. Even many high school counselors and others who influence career directions of young people are apparently unaware of logistics degree programs and career opportunities available to college graduates (Roos 1985). Thus, an effective recruiting strategy for the logistics degree program should address the awareness of the program and career opportunities for the graduates among potential majors. A few states have begun to place more emphasis on technical education in the lower levels of the public school system. These initiatives can help

generate interest and awareness, but more efforts are needed at higher education levels to make more people aware of logistics activities and career opportunities available to young college graduates (Faucett, Vellenga and Truit 1995).

Traditional recruitment strategies, such as direct communications and high school visits, may not be overwhelmingly effective in enhancing logistics degree programs, particularly at the undergraduate level. For instance, since few students arrive on campus with knowledge about the logistics curriculum or potential careers, the transportation/logistics degree program at NCA&TSU has, to a large extent, been dependent on University students transferring from other academic programs after having been admitted to the University. These transfer students within the University are usually informed of the program by the faculty and/or logistics majors after arrival on campus.

In order to attract qualified high school graduates to logistics degree programs, efforts can be exerted to expose high school minority students by coordinating awareness programs in the form of summer training institutes. For example, in an effort to improve the logistics degree program at NCA&TSU, a five-week Summer Institute, funded by the U.S. Department of Transportation under the auspices of the Transportation Institute, was initiated in 1993.³ The training activities were conducted in cooperation with transportation carriers, shippers/receivers, and government agencies at local, state and federal levels. The University's logistics enrollment started growing in 1994 following the implementation of the first High School Summer Institute as indicated by the significant increase in freshman logistics enrollment during the 1995 spring semester (Annual Report 1995). The subsequent summer institutes helped further

increase logistics enrollment and improve the quality of student preparations in the program. Overall, the implementation of the Institute's program helped expand the pool of qualified minority students prepared to enter the logistics profession, strengthened the logistics program at NCA&TSU, and will help foster diversity in logistics education and career opportunities.

In addition to student awareness programs, a summer workshop may be coordinated on campus for selected high school teachers and guidance counselors. The workshop is to be geared toward continued education with the purpose of exposing these teachers to materials in logistics courses. A package can be prepared for high school social studies teachers to help them integrate the basic logistics education into the social studies curriculum. Similarly, high school counselors can be supplied with a general package containing relevant material for publicizing career opportunities in logistics for their advisees. In addition, PTA's may be provided with information that enlightens them on logistics career choices.

Community colleges can be used as another source for recruiting minority students who are interested in logistics careers. Many community colleges offer associate degrees in technical fields related to transportation. For example, in North Carolina, Guilford Technical Community College offers five such programs in auto body repair, automobile systems technology, heavy equipment and transport technology, aviation system technology, and aviation management and career pilot technology (Internet Search 2002). Information on logistics degree programs and careers may be disseminated to these colleges with particular attention to minority students who may be interested in pursuing a college degree after graduation. In addition, community colleges may be encouraged

to offer introductory logistics courses to expose minority students to logistics.

Within HBCU's and non-HBCU's offering logistics degree programs, awareness of the programs can be strengthened among minority students through academic advisors, instructors and logistics majors. Special attention can be directed toward students undecided on their majors and those who contemplate changing their majors. Moreover, as the logistics degree program is logically an integral part of the business curriculum, all business majors could be required to take at least one logistics course. Additionally, relevant logistics material should be covered in the business common body of knowledge. Such a scheme not only broadens the students' general knowledge of business, but also creates an awareness of logistics activities and opportunities in the field.

Student Retention Strategy

The logistics curriculum is naturally interdisciplinary, relating to disciplines within business administration, economics, engineering, and other social sciences. This calls for effective and close coordination of training and retention activities with other academic programs within the institution offering the logistics degree program. Student participation in research projects and internship programs with transportation carriers, industry and government are important components of academic training. These activities enable the students to understand complex logistics academic problems and practical applications. Logistics graduates can be tracked in order to assess the relationship between their academic training and progress in their careers. Also, the graduates can be invited back to their alma mater to address logistics majors regarding the role of their academic

background on their careers. Employers can be directly and regularly contacted for information on their specific employment needs. The curriculum may be reviewed/revised periodically to make sure that the changing needs of employers are met in the training process. Logistics is a dynamic field that changes rapidly. Accordingly, logistics degree programs at HBCU's should reflect these changes continually.

An effective retention program at each HBCU requires the coordination of efforts between all the units of the institution. Such a program may not succeed unless the entire university environment is conducive for student development. Students should be advised, consulted and monitored at departmental and school levels as opposed to the university level. In many cases, student counseling at the university level may not achieve the intended results. Adjustments and/or improvements in other non-logistics programs offering prerequisite and/or supporting courses may be required. Also, administrative support services relating to admission standards, registration requirements, financial aid programs, career planning, and overall student campus life affect student retention efforts. Effective coordination of activities between various institutional units and active participation by each unit are essential for the success of a retention program.

In summary, the success of retaining minority students and graduating the highest possible percentage of the students admitted into logistics degree programs depends on:

- (1) recruiting qualified students capable of meeting the requirements and challenges of completing the program within a reasonable time period;

- (2) academic remedial programs for students with academic deficiencies in specific areas;
- (3) instilling in students competitive skills and knowledge that will enable them to excel in their professional careers after graduation;
- (4) mentoring, counseling, and monitoring services;
- (5) financial aid services;
- (6) career services; and
- (7) student campus life, including housing and board, campus security and recreational facilities.

CONCLUSION

During the last two decades of the 20th century, the demand for logistics college graduates has been very strong relative to the supply. This demand is expected to be even stronger during the current century, providing great opportunities to minorities to increase their participation in logistics careers.

Historically, minorities were underrepresented in logistics education and careers. However, within the past decade, they have made some progress toward increased representation in the profession. Higher logistics education is essential for building on this progress and further enhancing minority opportunities in the industry. Since HBCU's are known to graduate a higher percentage of African-American students than non-HBCU's, they can play a vital role in increasing minority participation in logistics professional careers. Improvements in logistics education at HBCU's would enhance minority participation in the profession.

There is a need to encourage more HBCU's to develop logistics degree programs and aggressively recruit minority students to these and existing programs at HBCU's and non-HBCU's.

The use of program development, recruitment, and retention strategies at HBCU's based on strong partnership and cooperation within the logistics community, including educational institutions, industry and government, would lead toward achieving this objective. Such activities, with proper logistics curricula preparing graduates to succeed in the modern competitive and global environment, provide the solutions for more diversified future logistics manpower needs of the nation. Overall, the presence of minorities in the logistics profession will be enhanced if (1) more attention is given to logistics education, particularly at HBCU's; and (2) efforts are exerted to change the image of logistics among potential students and the general public.

ENDNOTES

1. Logistics is defined as the coordination of transportation and storage activities in order to achieve the efficient movement of materials, products, and information into, through, and out of a firm.
2. Integrated logistics or supply chain concept deals with the management of the flow of materials, products, and information from the source of raw materials to the final consumer, thus, linking logistics activities of different organizations.
3. The Transportation Institute is an interdisciplinary unit which draws faculty, staff, and students from various schools of North Carolina A&T State University. It conducts research, public

service and training programs in the field of transportation and logistics. It provides substantial financial assistance to students who are awarded research assistantships to help in developing and

conducting funded projects. The Institute also serves as a resource for planners, public officials, and community groups in helping them solve transportation problems.

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