

# External Analysis of the National Society of Black Engineers





### **Executive Summary**

The National Society of Black Engineers (NSBE) is a student run organization targeted towards enriching the lives of African American engineers on an academic, professional and social level. An external analysis was performed on the NSBE chapter at the University of Michigan.

A pivotal element of this analysis was the determination of the organizational structure, complexity, and inter-organizational relationships. NSBE is a flexible structure with a focus on the external environment. The environment can be classified as simple and unstable. The organization has strong inter-organizational relationships through collaboration with other student organizations with shared resources and interests.

Along with studying the above current characteristics, the future environmental trends were examined as well as NSBE's flexibility and adaptability. Since the organization is student-based, future university enrollment directly affects the prosperity of the organization.

NSBE's mission statement is "to increase the number of culturally responsible, black engineers who excel academically, succeed professionally, and positively impact the community." This has been the foundation of the organization since its establishment in 1975. The strategy by which this is achieved is dependent on the immediate environment of NSBE. For instance, NSBE is currently developing strategies to combat the recent low admission of black engineers.

### **Boundary**

The National Society of Black Engineers (NSBE) is an organization made up of over 15,000 members in more than 270 college and university chapters, 75 alumni



chapters and 75 pre-college chapters. These chapters are then broken up into six geographical regions. For the purposes of this project we will focus on the University of Michigan chapter in region four.

### **Key Inputs**

The key inputs to the system are the black engineers when they first join the organization, corporate funding, and the Executive Board ideas, efforts and skills. Black engineers are essentially “raw materials” because they have not been through the organization in order to benefit from any of its services. Corporate funding is used to finance programs and events that aid in the enhancement of the “raw materials” (black engineers). The Executive Board (E-board) can be considered the “employees” of the organization. The E-board inputs their energy and labor into managing and developing the raw materials into the “final product”.

### **History**

The society started as a six member group at Purdue University with the idea of creating a student organization to improve the recruitment as well as the retention of black engineering students. The mission of the NSBE is to “increase the number of culturally responsible Black engineers who excel academically, succeed professionally, and positively impact the community.”

On the aspect of improving recruitment, NSBE participates in many high school and junior high outreach programs. One example is the Pre-College Initiative (PCI) committee which hosts events such as a shadow day where high school students visit the campus and stay with a current student. NSBE as a national society also has junior chapters where high school students emulate a college chapter in their own schools. On



campus members are involved in recruiting other students at various events such as Festifall, Black Welcome Week, NSBE Barbeques, etc.

One main focus of NSBE on the College/University chapter level has always been to aid students in the pursuit of academic excellence. In terms of student retention, NSBE members strive to assist their fellow members in programs such as tutoring and group study sessions. NSBE members are given an abundance of support not only academically but also financially in the form of scholarships and opportunities of networking for career development. Members may participate in a variety of workshops and technical seminars to aid in furthering their academic and professional careers.

### **External Environment**

The key sectors of the environment that affect NSBE are the market, financial resources, human services and government sectors. The market, financial and human services sectors are all a part of the task environment whereas the government sector is a part of the general environment.

The market sector affects the organization directly. Since NSBE is a student organization, new members join every year from different majors and different academic classifications. Thus, every year NSBE must change its programs and events to benefit its members. For example, if one year 50% of the students were freshman, NSBE would have more programs focused on good study habits and mentoring. However, if 50% of the members were seniors, NSBE would implement programs and events dealing with life after college, graduate schools and professional engineering exams/certifications. Since the students change every year, NSBE has to change its goals and strategies each year such that the members will get the maximum benefit.



Another important sector that dramatically affects the organization is the financial resources sector. NSBE is a non-profit organization and thus, financial vitality is extremely important for success. The amount of money that NSBE has affects the quality of the programs that the organization can implement. It takes money for members to go to conferences, for publicity, refreshments at meetings, and quality speakers/presenters. The number of corporate sponsors and corporate partners that NSBE has determines what programs NSBE can implement. For instance, through corporate sponsorship, NSBE raised \$20,000 and was able to take 50 of its members to the National Convention last year at a discounted rate. If for example, NSBE had only procured \$10,000 they would not have been able to afford to take 50 members to the National Convention.

The human services sector is also very important. It is hard to find dedicated individuals to serve on the E-board. It takes true commitment and dedication to lead any organization. In the past, NSBE has had many of its positions go uncontested meaning that only one person ran for a position on the executive board. This is an indication that students were not willing to step to the forefront and take a leadership position. Additionally, some positions were left vacant after elections. If positions are unable to be filled, that leaves other members of the E-board with the responsibility of picking up the slack while searching for qualified candidates. Without quality leadership, NSBE's membership, finances and programs would be impacted in a negative manner. It is important to have leaders that truly believe in the mission of NSBE and believe in the service that it provides to its members. Organizational effectiveness begins at the top with good leadership.



The government sector affects the organization indirectly (i.e. it is a general sector). Here at the University of Michigan, there has been one undergraduate lawsuit contesting the affirmative action policies. The case went to the Supreme Court and the policies were upheld. However, there are individuals that continue to fight to get affirmative action on the ballot in Michigan. If this happens, it is likely that many qualified students in the under-represented African American community may not be admitted to the University of Michigan. Therefore, NSBE's membership numbers will be impacted significantly if a smaller number of black students are accepted. Also, even if students are admitted, they may choose not to attend because of the controversy surrounding affirmative action.

Using the contingency model in Daft chapter 4, NSBE on the chapter level is classified as an unstable simple environment where there is high to moderate uncertainty. It is a simple environment because there are few sectors and they are all interdependent. However, it is unstable because the students change every year and the needs of the students change every year. NSBE has to constantly adjust programs, events, and speakers to accommodate its members. With high to moderate uncertainty, NSBE is an organic horizontally organized structure with a strong emphasis on team work. There are seven members of the executive board who all work together and have equal authority within the organization to make decisions. The President of NSBE made it clear that nothing in the organization can be accomplished without teamwork. For example, if one E-board member is responsible for planning an event, all other board members lend their support. Additionally, planning and forecasting is an extreme part of the organization. The planning for each academic year occurs months before the first day of classes (e.g.



the 2005-2006 executive board planned the year in May 2005). Each year NSBE develops a long range plan (LRP) and adjusts it as necessary. There is a lot of boundary spanning because the organization is so unstable. E-board members are constantly communicating with the members and requesting the most up to date information on majors, grade point averages and interests in order to plan better programs and events. Surveys are given regularly to keep track of the changing environment. Due to this constant monitoring, NSBE is able to quickly react to immediate changes in the external environment. NSBE also has a website that members can visit in order to learn more about the organization and find contact information.

NSBE has established some interorganizational linkages through strategic alliances with other organizations. Just last month NSBE collaborated with SHPE (Society of Hispanic Professional Engineers) in a pre-career fair corporate mixer. Having SHPE a part of the planning allowed the costs to be split between the organizations, more members to attend and supply the labor needed to organize the event. Additionally, NSBE collaborates with other organizations such as OMIE (Outstanding Multicultural Industrial Engineers), UMME (Unified Minority Mechanical Engineers), UMEECS (Underrepresented Minorities in Electrical Engineering and Computer Science) and NOBCCHE (National Organization of Black Chemists and Chemical Engineers) planning study jams for their membership. The collaboration is successful because many members attend and there are tutors on hand for specific majors. Students are able to receive help in not only their college of engineering (COE) core classes but also their degree related courses.



In terms of exerting control over the external environment, NSBE does not use any illegitimate practices, trade associations, political regulation or changes in domain to control its environment. Although there is high to moderate uncertainty in NSBE, they do not have to depend on other organization in order to fulfill its mission.

### **Future Environmental Trends**

There are a variety of technological and social environmental trends that this NSBE chapter should pay attention to in order to successfully run the organization. Seeing that the individuals who make up the organization also are its customers, the way in which future environmental trends are acted upon has a two-fold effect on the organization.

The constant technological advances of e-communication will continue to change the way in which information travels throughout the organization. For instance, this year, an online database of old engineering exams in .PDF format will be easily accessible to members. In the past, old exams were collected and catalogued but were never delivered due disbursement complexity.

Likewise, the organization's website continually improves as web technology becomes more sophisticated. The website now contains up-to-date news, downloads (such as scholarship applications and meeting PowerPoint files), links to various helpful websites (both academic and social) and photo albums of various events. This is a far cry from the past, when the website only contained a brief history of the organization and officer contact information.

One major social trend that has and will continue to directly affect NSBE is the change in public perception of the University of Michigan towards minority students.





Undoubtedly due to the well-publicized Business School Affirmative Action lawsuit, the number of incoming black engineering freshman dropped to an alarmingly low 60 students last year. Less incoming black engineering students means a lower amount of new students joining the organization. To combat the low admission of black students, the visibility of NSBE amongst local black neighborhoods will be increased. An example of this is NSBE's national "Walk for Education," an event where NSBE members go door-to-door in black neighborhoods informing parents and students about NSBE and the importance of a college education.

### **Mission and Strategy**

The mission of the National Society of Black Engineers is to *increase the number of culturally responsible, black engineers who excel academically, succeed professionally and positively impact the community*. The three pillars of the mission (academic success, professional development and cultural responsibility) are reflected in all goals, programs and planning that the organization does. As evident from the mission, the "customers" are black engineering students at the University of Michigan. The mission is geared towards helping those students achieve academic success, professional success upon graduation and a continual willingness to give back to the community in a positive manner. The organization is designed to be a support system for the black engineering students. Statistically, under-represented minority students are behind other students in terms of academics (i.e. G.P.A.) and professional development. The retention rate for these students in the college of engineering at the University of Michigan are 40% compared to 77% for the college overall. Thus, NSBE sees itself as an organization deigned as a support system to ensure success for all of its members throughout their lifetime.



The goals for the National Society of black engineers at the University of Michigan fall under the following 4 categories: Membership numbers, Conferences, Academic Excellence and Professional Development. In terms of membership, NSBE has set a goal of 200 active members on their national website (15 of those graduate students and 20 non-engineering students). Last year, NSBE had 126 members registered on the website but only 75 of those members were active. This year the organization would like to have all of its registered members actively participating and benefiting from all that the organization has to offer. Although NSBE is geared towards black engineers, they want to make it known that other majors can gain from the organization (e.g. mathematics and the sciences). Another goal that NSBE has set this year is to keep track of its “active members” in order to reward them later for their service to the organization. In terms of NSBE conferences (where members from all NSBE chapters get together for career fairs, workshops and competitions), the chapter has set goals this year of taking 20 students to the Regional Conference and 100 members to the National Convention. NSBE has also set goals of making the cost of the regional conference \$50 (compared to \$120 last year) and the cost of the National Convention \$150 dollars this year (compared to \$250 last year).

In terms of academic excellence, NSBE has set a goal of increasing the chapter G.P.A. by 0.2. Currently, the chapter G.P.A. is 3.1 (102 people reporting). Additionally, NSBE would like to develop an internal mentoring program for its underclassman membership. Moreover, NSBE would like to acquire more assistance from the College of Engineering this year. In terms of Professional Development, NSBE has set goals of completing a resume book to be viewed by companies. Also, NSBE would like to



network with corporations to raise \$40,000 to help plan programs and events for their membership. NSBE has a goal that all of their members will have at least two internship/co-op offers for summer 2006. Lastly, NSBE wants all of its members to be able to sell themselves in 90 seconds to any corporate representative.

One of the main goals is to increase active membership. To help define “active members” NSBE implemented a point system. Each time a member attends a general body meeting, event or conference, they receive points which go toward a discount to the National Convention. To acquire 200 active members NSBE has implemented the “refer ten” and “just get one” initiatives. For the “refer ten” initiative, members that refer 10 or more people will get a prize and recognition in front of the entire membership. The “just get one” initiative encourages every NSBE member to bring at least one person to the meetings. Furthermore, letters were sent to all of the black freshmen telling them about NSBE and how they can benefit. In addition to letters, NSBE did heavy recruiting at Festifall, and Black Welcome week. Members from the executive board were on hand at those events to answer questions and disseminate information about meetings and programs. There is a newsletter that NSBE prints every two weeks called *NSBE TORCH* that highlights events, programs and meetings to get its members actively involved and the keep them informed.

For the conferences, NSBE wants to decrease the cost for its members this year by soliciting funds from the College of Engineering and the various departments. To increase member attendance at the conferences, NSBE strives to emphasize the benefits that the conference provides. For example, the Conference Planning Chair advertises the career fair heavily in which members can earn internships, co-ops and full-time positions.



NSBE has decided to implement many programs to assist its members in order to meet academic excellence goals. The Big Sib/Lil Sib is a program in which an underclassman and an upperclassman of the same major are paired up. The idea behind the program is that the upperclassman can mentor and tutor the underclassman. NSBE is also going to implement an exam database for every major so their members can have access to exams and study materials to help better prepare them. Also, during finals, study and conference rooms will be reserved for members. In order to acquire more assistance from the College of Engineering the NSBE president will ask the COE Dean to attend forums to discuss ongoing academic problems for minority students.

To meet the goal of having all members receive two internship/co-op offers, several actions were taken. For instance, ten companies came in before the career fair to recruit talent at a pre-career fair corporate mixer. To strengthen corporate bonds representatives are invited to attend general body meeting and give presentations. Discounts were given to members who submitted their resume to be compiled in a resume booklet delivered to interested companies.

As previously stated, NSBE has set the goal to raise \$40,000. In order to accomplish this, the Finance Chair is building corporate partnerships with many companies searching for students performing at high academic levels. He created a corporate sponsorship packet to give to companies that highlights all NSBE events and programs. NSBE's highest corporate sponsor to date is Abbot Laboratories, who has donated \$5,000. In addition to donating money, professionals have been invited to general body meetings to teach members how to sell themselves to corporate



representatives and discuss interviewing skills. Allowing corporate sponsors to attend meetings strengthens corporate relationships.

The goals and strategies for this organization are communicated to the E-board during bi-weekly board meetings. All E-board members are committed to working hard in their positions to see that the goals of the organization are fulfilled. A Chapter Development Packet (CDP) is submitted twice a semester to measure how well the organization is meeting its goals. Each executive board member is responsible for submitting documentation as evidence of goal accomplishment.

Using Miles and Snow's typology (from Daft chapter 2), NSBE's strategy is that of an analyzer. NSBE tries to maintain its current members yet try new strategies and allow more innovation to gain new members and help members become successful black engineers. In addition, some NSBE programs and events are kept stable and the focus is to improve efficiently over previous years. For example each year NSBE attends the Regional and National conferences. Also NSBE holds their meetings at the same time on the same day every year. Other programs are geared towards innovation and finding the most effective strategy. As a move toward innovation, NSBE launched seven new committees this year. The President would like to see the committees grow and try new, inventive things to recruit new members and groom leaders for the future. NSBE is also able to adapt to its "customers" (members). The E-board members are constantly planning new events and programs to benefit the membership. NSBE also launched a new academic program called the Big Sib/Lil Sib program.

Using Quinn's competing values framework, NSBE is more towards the Open Systems Model. The diagram shown in Figure 1 (appendix A) places the organization in



a flexible structure with a focus on the external environment. The reason for this is because NSBE is highly sensitive and adapts to its customer's needs. The organization is focused on growth in terms of generating members and establishing itself as a financially vital organization. The more money that the organization acquires, the higher quality programs and events it can organize for its members. As seen in Figure 1 (appendix A), a small section of the organization is in the human relations quadrant because one focus is on training leaders for the future. The executive board attends a retreat to sharpen their leadership skills. In addition to the retreat, the new committees set out to encourage consistent learning and development of "employees" to create more effective leaders. NSBE also has some degree of cohesion and morale. Throughout the organization it is evident that nothing can be accomplished without teamwork and commitment to its values. There is an emphasis on the E-board to be enthusiastic and promote high energy within its membership. NSBE also relies on documentation to pass to the new executive board each year and communication to keep its members updated on current events which links the organization to the internal process model.

The strategies that NSBE uses to become an effective organization are centered on its mission of "increasing the number of culturally responsible, black engineers who excel academically, succeed professionally and positively impact the community". The move towards more advanced technology (exam database in PDF format and a more advanced website) is consistent with helping NSBE fulfill its mission and goals. In a simple, unstable environment NSBE relies heavily on innovation and efficiency to acquire new members and retain old members. The technological trends that the organization has exhibited are consistent with its strategy of uniqueness and efficient



programming. However, the social trends that NSBE may face in the future are a barrier to fulfilling its mission and goals. If a low number of African American students continue to be admitted to the University, NSBE will struggle to produce black engineers. Therefore the goals of the organization are likely to shift if fewer students are admitted to the University.

### **Outputs**

At the organizational, individual and group levels the key output of NSBE, to quote the mission statement, is the production of “culturally responsible Black engineers, who excel academically, succeed professionally and positively impact the community.”

At the organizational level, this is largely accomplished by relationships with corporate sponsors who provide funding for semi-annual regional and national NSBE conferences. Due to these relationships, many sponsors specifically target NSBE members for internship and career opportunities.

At the group level through various committees, NSBE provides many services targeted towards its key output production. The PCI committee works with local schools by helping construct their own junior NSBE Chapters; thereby granting high school students invaluable leadership experience. An outstanding NSBE member who is now the current Treasurer/Membership chair of NSBE served on his school’s junior Executive Board and accredits his qualification for this position to that experience.

Furthermore, the newly implemented Academic Excellence Committee focuses solely on the improvement of NSBE members’ academic performance by providing study jams, tutoring, student mentorship programs and more. The Social Committee through a variety of activities such as the bowling “Battle of the Majors” competition helps forge



friendships among members. NSBE's friendly atmosphere in turn assists in making prospective members feel welcome when first becoming involved within the organization.

At the individual level, as stressed by the executive board, NSBE members understand the importance of acting with integrity and maturity at all times. As a result, professional skills are undoubtedly sharpened and because of this, members become positive role models for the young black community.

### **Differences Between Desired and Actual Outputs**

NSBE is adaptive and flexible to the environment in terms of anticipating future problems but every now and then there are undesirable results. For instance, even though NSBE actively supplies the resources for improving black engineers, not all of these are utilized to their full extent (e.g. lack of attendance at events and committee involvement). This results in having black engineers that are a part of the organization but do not embody the ideal engineer described in the mission statement.

One of the goals of this year's E-board is for every non-graduating NSBE member to have at least two internship offers. However, no matter how many programs, events or how much assistance is given to members, it is up to the members to take advantage of all these opportunities. Moreover, the availability of internships is directly dependent on the current state of the job market which is outside NSBE's control. NSBE can only focus on the preparation to achieving this goal but the true outcome relies on the efforts of the members and the external environment of the organization.

Another problem area is finding a way to get graduate students involved in the organization. NSBE has set a goal of having 15 graduate students join this year. This is a





struggle because many graduate students feel as though the programs and events are not beneficial to them. Graduate students are an important resource because they can mentor the undergraduate students and assist them in the graduate school application process should they decide to pursue advanced degrees. Therefore, NSBE struggles to find the right balance between providing services to undergraduate students and graduate students.

### **Environmental Sensitivity**

NSBE obtains feedback from its environment through surveys. After every general body meeting 15 surveys are given at random to those attending the meeting. The Communications Chair then analyzes the data and provides the feedback to the executive board. Before the school year began, NSBE generated a survey on its National Website for all members to take. The survey asked questions regarding the effectiveness of academic programs, professional programs, conference attendance, committee involvement and future leadership opportunities. The survey also asked members to provide qualitative feedback on how NSBE could improve upon its programs. After the results were compiled, the data was analyzed by the executive board and changes were implemented accordingly with a majority vote by the executive board. Additionally, committee chairs generate surveys monthly to effectively plan their events and make them more beneficial for members. The feedback is discussed during committee meetings and changes are made with a majority vote of the committee members. For example, the academic excellence committee gave out a survey asking students what classes they were taking this semester in order to have appropriate tutors during study jams.



### **Conclusion**

An integral portion of this study was the analysis of the organizational structure, complexity, and inter-organizational relationships. Using Quinn's competing values framework, NSBE is a flexible structure with a focus on the external environment. This is the open systems model of organizational effectiveness. Using Duncan's framework, the environment can be classified as simple and unstable. The organization has strong inter-organizational relationships through collaboration with other student organizations (e.g. NOBCCHE and UMME) with shared resources and interests.

In addition to classifying the organization into various frameworks, future technological and social trends were evaluated. It was determined that NSBE's flexibility and adaptability will aid them in handling possible threats from the environment such as a decrease in African American enrollment.

The original mission of NSBE has proven to continually be a solid foundation for the organization and embodies not only the founders' intended goals but also that of the present day leaders. However, to accomplish its goals, NSBE continues to adapt its strategies to its current environment.

NSBE struggles to obtain 100% membership utilization of its resources and persuading graduate students to be active in the organization. Additionally NSBE acquires feedback from its environment through the use of surveys. Despite these difficulties, NSBE continues to be a thriving organization in the African American community.

## Appendix A: Quinn Model of the NSBE Organization

**Figure 1: Competing Values Framework**

