INCORPORATING INTANGIBLE BENEFITS INTO A MORE HOLISTIC DSS APPLICATION DEVELOPMENT PROCESS

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ABSTRACT

The focus of this paper is to provide supporting evidence that a Personalized Decision Support System (PDSS) can serve as an outlet for creativity and professional advancement by student software writers and developers. We envision that such a system promotes students' self-esteem and enhances the quality of outreach programs encouraged by many universities. Our findings demonstrate that students who have a passion to incorporate real world applications to address real problems tend to have greater appreciation of self worth and self image. This is because they feel that they are sharing their knowledge, skills, and time with their immediate community and giving something back. The presenters will demonstrate two examples of such projects.

INTRODUCTION

The focus of this paper is to provide supporting evidence that a Personalized Decision Support System (PDSS) can serve as an outlet for creativity and professional advancement by student software writers and developers. We envision that such a system promotes students' self-esteem and enhances the quality of outreach programs encouraged by many universities. By providing intangible benefits and values, a PDSS can be an important motivating factor for job success and satisfaction and does serve as a catalyst for broadening social skills that students need to have a happy and fulfilling life.

BACKGROUND

After several decades of teaching decision support systems and expert systems (DSS/ES) and a variety of economics classes, we have observed that many students who take these courses are unlikely to discover their full academic and personal potentials through working on *just* "impersonal" projects which are detached from their family background, social mores and personal convictions. In addressing some of the shortcomings of conventional pedagogy, we strive to assign projects that would enable student opportunity and the autonomy to accomplish their goals and provide tangible support to their clientele so that they may be able to draw some satisfaction and a sense of accomplishment from the end results.

In preparing the groundwork for the term projects, we interview students to explore their desire to engage in projects that are self-enhancing and compatible with their backgrounds, career goals and personal aspirations. Students may work individually or in groups of no more than two. The instructor meets with each individual or group several times a semester to further conduct a "discovery" or "interest session" dialog. The purpose of such meetings is to explore and clarify new ideas or reveal new areas of research in an effort to identify more relevant application projects and implications for self-enhancement. Generally speaking, these meeting are referred to as "counseling/getting to know/exploration of ideas/exploration of interest" discourses. As we go through this discovery phase many students express ideas, interests or concerns that have not been examined in other classes. Ordinarily, most students' projects tend to focus around typical applications which are geared to business needs and applications. What is germane to our approach is to show how students can incorporate their personal traits and social values into a project and how the application of such a project contributes to the fulfillment of the developer's notion of self worth and self actualization. In addition, we seek to clarify how such projects may augment their interest in the IT or economics field.

Balancing Competing Goals

Like others, we have discovered that many of our students have had difficulty in striking a sound balance among their competing goals and needs. Such imbalances, according to widely known research, are a major source of personal stress, poor health and possibly job failure. One of our paramount objectives in assigning custom-made projects is to empower students to identify and prioritize their goals in life, school, and work environment by formally integrating these goals in their projects. Specifically, we work with the student to explore the following intangibles:

Why have you chosen this field? What do you hope to accomplish? Where do you see yourself after graduation? Where do you see yourself in 5 or ten years? What is the perfect fit for you in the IT world? What knowledge and skills would you like to exploit that would allow you to become more of the individual you would like to be? Do you achieve personal satisfaction from sharing your knowledge and skills with others or groups?

The Relevance of Rational Choice Theory

Most importantly, we explore the extent to which the theory of Rational Choice (i.e. comparing costs and benefits of one's action) are applicable to a college course setting. Since this theory rests on unambiguous calculations of the monetary rewards and costs of an activity and is casted predominately in the context of a quantifiable model, it does not address the intangible benefits that could emanate from the development and implementation of a PDSS project. In the discipline of economics, where the theory of rational choice has been developed and refined, intangible benefits have been described and analyzed in many ways. Generally, economists refer to intangible benefits as positive externalities which are present in many phases of human activity. To illustrate, when the consumption or production activities of an economic agent generates benefits over and above its private costs, it is referred to as "positive externality". In these circumstances, the activity in question is "under-supplied" and ought to be subsidized so that it reaches a greater number of consumers and or producers. The classical example given to illustrate positive externality is the pollination of plants and fruit trees that occur in spring time by honey-bees who are just doing their assigned chores—i.e. collect pollen for the hive. Yet, many farmers, growers and consumers benefit from the activity of this ordinary creature.

Below we describe the development process for two nontraditional PDSS applications carried out by students from a DSS/ES class. In both instances, meetings were conducted with the developers/students to discuss and discover areas of interest. We sought to identify areas about which they had passion but may not have had the opportunity to address in earlier studies.

The first example describes the application of a PDSS project designed to assist members of a local church to discover how they could raise their sense of self worth and belonging in their church community. The application provided members a way to engage in "soul searching" by identifying tasks within areas that would give them new channels to give back to the church and community beyond their customary monetary or material contributions. The second project describes an application tailored to assist elderly individuals in determining their eligibility for residency in a subsidized low income assisted living facility.

Project 1: Ministry Giving

After meeting with the developer/student to determine the direction of his project we realized that he had more of a desire to address issues that went beyond the requirements described in a typical DSS project. The developer expressly wanted to give back to the community and more specifically to his community based church. He was actively involved in church and wanted to create a DSS project that would allow church members some mechanism for identifying areas and tasks they could pursue to help their church community and be able to identify those areas and tasks without the influence of peer pressure.

With an active membership of 300 who regularly attended the Sunday services, the challenge was to create a user friendly "online instrument" that would be convenient to administer and evaluate in a timely fashion. The project also enabled the church staff to incorporate questions that would give them sufficient information to better align members' skills with ministry areas already in existence in the church. The application enabled members to complete it on their own time with results trickling down over the course of the week. Once all the tests were completed, the results were compiled into an administration module that showed who scored best in each of the areas which helped to discover "hidden" gifts of the membership.

The church he attended had just completed a series of study of self reflection based on materials and the book by Rick Warren, *The Purpose Driven Life*. The student drew some inspiration from the book and applied some of the suggestions and materials suggested by Mr. Warren. The developer believed that many parishioners possessed valuable personal qualities that could be identified and utilized to further the ideals of the church. Among others, this project provided many benefits such as:

- Provide nonintrusive means for members to identify tasks by conducting a self assessment with less emphasis on ones financial abilities.
- Provide a way for members to identify tasks within areas of outreach and ministry in which they could participate and feel comfortable in doing so.
- Identify areas of participation where people with similar interests could work together for common goals.
- Identify tasks in which members could participate that would enable them to feel more a part of the church community when giving back in ways they perceive to have value.
- Provide a channel for members to increase their perceived self worth by participating in communal activities.
- Present an even better image of the church in the community through member involvement.
- Increase total membership participation thereby allowing the parishioners to better identify with the church community.
- Provide new members an avenue through which they could identify ministry areas in which they could participate with members of similar interests.
- Provide a positive image for the university through community involvement.

The online instrument assessed 10 areas where one could discover their areas of interests based on responses to 40 questions. Respondents were asked to indicate their level of agreement with each of the questions using a five point scale ranging from 0 to 4 with 0 indicating "no interest at all" to a 4 denoting a "strong" level of interest. The instrument included such areas as: teaching, mercy, giving, craftsmanship, music, administration, service, hospitality, leadership, and assisting others. Upon the completion of the assessment, an overall score was assigned to each area with an operational definition of each specific area. The premise was that the higher the score the greater the likelihood of success by the respondent if he/she participated in that area. In addition, the instrument sought to identify existing tasks in which respondents could participate. For example, if one scored highest in the "teaching" area", the DSS provided an operational definition of "teaching" as: the ability to apply a logical and systematic approach to Biblical study such that relevant information regarding the message of the ministry could be easily communicated to parishioners. Moreover, within the area of "teaching", the end user was provided the opportunity to choose from existing activities to participate. Such tasks included: "purpose driven life ministry" or the "children's church ministry". If the end user had an equally high score in another area, or another area ranked second such as "mercy", then the respondent could choose to be associated with the task of "celebrate recovery ministry". Obviously, there was substantial subjectivity in analyzing the results.

The application of the assessment was met with much success. There has been more involvement and participation by members and a greater willingness to become involved in church directed activities. In addition, the assessment allowed new members an outlet through which they could identify areas they could participate in with other members of similar interests.

Project 2: Qualifying Applicants for Residency in a Low Income Subsidized Assisted Living Facility

The second project was also completed as a senior level DSS semester project. The focus of the project was to provide a web based DSS to assist low income elderly persons or their care givers with a web site to determine whether or not they financially qualified for residency in a subsidized low income assisted living center.

There were other objectives to be realized as well. The assisted living center is a "for profit" institution and seeks to maintain the number of residents as close to capacity as possible. As one would expect, the developers included some marketing aspects in the application as a sales tool as per the request of the facility. As part of the development process, the developers visited the residency, took pictures, and interviewed staff and residents.

With those objectives in mind, the web site allowed prospective residents or their care givers to view the facility and complete a requirements eligibility test. Visual images of the facility provided prospective clients with a good overall view of the institution including amenities and sample room layouts as well as other features. The project provided other benefits such as:

- Provide a real world application through which the developers could provide assistance in meeting the needs of a particular population.
- Allow potential residents to get a first hand view of residency eligibility from the privacy of their current residence.
- Help elderly persons to feel comfortable in disclosing their current financial status to strangers in a confidential manner.
- Enable potential clients to disclose additional personal information from what they perceive to be their own private comfortable environment.
- Allow for follow up by staff to discuss concerns with potential clients.

- Give the institution a marketing tool.
- Provide information to care givers who are planning for extended care of loved ones.

This project was met with much success and is currently being used by the facility. The residency has reported a noted increase in inquiries about the facility and has had an increase in applications from qualified applicants. In addition, the developers are in the process of developing other such sites for similar institutions.

SUMMARY AND IMPLICATIONS

The purpose of this paper was to provide two examples of how intangible benefits can be incorporated into DSS projects. Students want to achieve results and be productive in their chosen areas of study. We believe incorporation of personal values and mores by the project developer provides a sense of ownership and greater involvement throughout the project development process. Students who create real world applications targeting real problems are more passionate about their projects and tend to have greater feelings of self worth and job satisfaction.

SELECTED REFERENCES

- Balakrishnan, N., Render, B., & Stair, Jr., R. M. (2007) *Managerial Decision Modeling with Spreadsheets*. Upper Saddle River, NJ: Pearson Education, Inc.
- Duggan, E. W., & Reichgelt, H. (2006). *Measuring Information Systems Delivery Quality*. Hershey, PA: Idea Group Pub.
- Kavanagh, M. J., & Thite M. (2009). Human Resource Information Systems: Basics, Applications, and Future Directions. Los Angeles: Sage
- Kros, J. R. (2008) Spreadsheet Modeling for Business Decisions. New York: McGraw-Hill.
- Post, G. V., & Anderson, D. L. (2006). Management Information Systems: Solving Business Problems with Information Technology (Fourth Ed.). New York: McGraw-Hill.
- Rainer, Jr., R. K., Turban, E., & Potter, R. E. (2007). Introduction to Information Systems: Supporting and Transforming Business. Hoboken, NJ: John Wiley & Sons, Inc.
- Turban, E., Aronson, J. E., Liang, T-P., & Sharda, R. (2007) Decision Support and Business Intelligence Systems (Eighth Ed.). Upper Saddle-River, NJ. Pearson Education, Inc.

Turban, E., Leidner, D., McLean, E., & Wetherbe. J. (2008). Information Technology for Management: Transforming Organizations in the Digital Economy (Sixth Ed.). Hoboken, NJ: John Wiley & Sons, Inc.