
ARTICLES

Success of Business Plan Development Course Offered to Physicians Enrolled in a Master's in Medical Management Program: A Pilot Educational Project

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ABSTRACT

Business Plan Development (BPD) is an integral part of the Master of Medical Management (MMM) degree offered at Carnegie Mellon University. Physicians enrolled in the MMM program are required to submit a proposal for an entrepreneurial or intrapreneurial business plan (BP). We designed this survey-based pilot educational project to assess the frequency with which MMM students succeeded in implementing their BPs. Of 82 respondents, 39% reported implementation of their BP; 88% reported a favorable outcome on at least one of six pre-defined measures of success. Intrapreneurial (versus entrepreneurial) nature of the business project, being more than two years post-graduation from the MMM program, and female gender were independent correlates of success of implementation of the plan.

INTRODUCTION

It is commonly believed that physicians know how to solve many of healthcare's clinical problems but fall short in their understanding of the business of healthcare delivery. In a provocative article, Ham, Clark, Spurgeon, Dickinson, and Armit (2011) interviewed 22 physicians who became chief executives of National Health Service organizations in the United Kingdom. They aimed to understand their career paths and the facilitators and barriers encountered along the way. They found that the training and development accessed en route to becoming chief executives was highly variable. Although the interviewees were positive about the opportunity to bring about organizational

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and service improvement on a bigger scale than is possible in clinical work, they emphasized the insecurities associated with being a chief executive. The authors concluded that physicians who become chief executives are self-styled 'keen amateurs' and there is a need to provide more structured support to enable them to become skilled professionals. These findings are not surprising, given that medical school and residency curricula do not teach business skills. This has been increasingly recognized in the lay press. In a September 7, 2011 article in the *New York Times*, a physician commented, "They do not teach business in medical school. When physicians go into private practice, they learn about profits and losses on the job, in a complex industry that is subject to large-scale forces beyond the control of most individuals" (Lewis, 2011). Similarly, Mark Lyles, MD, MBA, senior director of healthcare affairs at the Association of American Medical Colleges, recalls his days in medical school that "Whenever we asked a business question, we were always told, "Don't worry about that; you need to learn the medical side first before you ever worry about the business side" (Diamond, 2011).

Like other professionals, physicians need the education and training to tackle business issues that often face the practice of medicine. Years after completing medical school, Lyles created an elective lecture series called the business of medicine, which was taken by more than 75% of the medical students at the University of South Carolina, School of Medicine. Because of the growing recognition of this gap in education, formal business training programs in medical school have proliferated. Meyers (2011) reports that over 75 medical schools now offer combined MD/MBA programs, and it is estimated that more than 400 MDs each year graduate with dual degrees. Graduate schools are offering a host of degrees at high prices designed to attract doctors who have business interests. The American College of Physician Executive lists four academic master's programs in Medical Management (MMM): Carnegie Mellon University, Pittsburgh, PA; Thomas Jefferson University, Philadelphia, PA; University of Massachusetts, Amherst, MA; and University of Southern California, Los Angeles, CA.

Business Plan Development (BPD) has been an integral part of Master of Business Administration (MBA) programs. BPD is also offered to physicians enrolled in the Master of Medical Management (MMM) courses. At Carnegie Mellon University, one of the authors has led the development of lectures and assignments and taught the BPD course. Physicians enrolled in the MMM program at our institution are required to submit a proposal for an entrepreneurial or intrapreneurial BP. MMM students are generally full-time physicians engaged in clinical and/or administrative practices. Whether these busy physicians find the time from their practice to follow through on their BPs has not previously been studied.

LITERATURE REVIEW

A review of the literature regarding entrepreneurial education aimed at physicians reveals that there has been little focus on this target audience. We believe that entrepreneurship education targeting physicians is a viable approach to giving them a toolkit of problem-solving skills to address the complex issues involved in healthcare. To better determine how entrepreneurship education can benefit physicians, we initially looked at general entrepreneurial education. Since the first entrepreneurship class in 1947, the academic discipline of entrepreneurship's growth is described in the literature using a chronology of three domains—courses, supplemental infrastructures and publications (Vesper, 1987). In the 1980s, entrepreneurship was not considered an essential part of an academic program such as the MBA (Chusimir, 1988). This has changed as a result of the rise of entrepreneurship and the common knowledge of its impact on the economy. The popularity of entrepreneurship and entrepreneurial academic programs has resulted in a vast increase of course offerings at many colleges and universities, particularly focused around business school offerings.

Vesper (1987) reported that these courses are appealing to young students because the idea of being creative and doing your own thing for your career is highly attractive. The increase of such programs and course offerings could be attributed to student demand. As a result of the increased number of course and program offerings, entrepreneurship has taken on some of the characteristics of a legitimate academic field. Entrepreneurship courses and programs have been widely adopted by business schools. Vesper's (1987) work shows that while such courses and programs have expanded beyond business schools, this has happened slowly, and has not gone as far as it possibly could.

A 100+ item chronology of entrepreneurship education in the USA from 1876 through 1999 was conducted by Katz (2003). One of his major findings was that growth in the field is likely to occur outside business schools. While some schools have focused on new entrepreneurial offerings in entrepreneurship in engineering and other professions, MMM programs have cropped up targeting physicians. Using data from a survey of 1855 past students at Wichita State University who took a course in entrepreneurship, Clark, Davis and Harnish (1983) found that the teaching of entrepreneurial and small business management skills does indeed aid new venture creation. Similarly, Gorman, Hanlon & King (1997) reviewed literature spanning over 10 years (1985-1994) and concluded that "...entrepreneurship can be taught, or at least encouraged, by entrepreneurship education."

Our survey of physicians who graduated from our program attempts to quantify the success of studying BPD in the context of the MMM program. Assessment of the economic impact of entrepreneurship education aimed at

physicians is elusive and, to the best of our knowledge, has not hitherto been performed. Further, how physicians with business or management backgrounds will contribute to the healthcare system has not been documented. But programs like the MMM enable more physicians to try new ventures, or start new initiatives within existing organizations. Some observations from studies involving entrepreneurship education in other fields are relevant to our work in physicians.

Focusing on adult students learning entrepreneurship for the first time, Weinrauch (1984) concluded that it was essential that the educator/professor be a partner in the learning process, as opposed to a boss, which might be more appropriate in traditionally-aged student programs. He suggests that student-teacher interaction and a strong feedback loop are important to establish an atmosphere of mutual trust. Further, flexibility in course timetables, locations and educational materials is paramount to the adult learning process. Sexton and Bowman (1987) have argued that students' entrepreneurial inclinations be taken into account in devising content and teaching methods. Zeithalm and Rice (1987) have emphasized that the effectiveness of entrepreneurship education may be compromised if it is not based on practical experiences. The BPD program at our institution has embraced these tenets of entrepreneurship education.

PURPOSE OF THE STUDY

Despite the growing interest in offering entrepreneurship education to medical students and physicians, there is currently no data on the impact of such education on the business skills of physicians. This represents a significant gap, since physicians choosing such education, and their sponsors alike, should have a tool to assess the effectiveness of entrepreneurship education. We conducted a pilot educational evaluation project to answer some of these questions. The purpose of this project was to assess the success of the BPD offering at our institution and to identify independent correlates of success. Using a survey-based methodology, we documented that 88% of our respondents reported a favorable outcome in at least one of six pre-determined measures of success. Further, we identified three independent correlates of success: the intrapreneurial nature of the BP, being more than two years post-graduation from the MMM program, and female gender. We believe these findings will be of significant use to physicians considering formal education in management, to educators involved in development of business courses for physicians, as well as to institutions that sponsor business education for physicians. Our paper addresses a critical issue that merits the attention of academics and educators, and provides the first objective evidence on the effectiveness of entrepreneurial training in the setting of MMM programs.

METHODS

DESCRIPTION OF THE BPD COURSE: GOALS AND BROAD OVERVIEW

The BPD course is designed with the following goals in mind: understand the value of innovation both to new ventures and to existing organizations; know what a good BP is; know first-hand how to write a BP; know first-hand how to present a BP to optimize success. The BPD course is comprised of three sections: first, an overview of BPs and how to create one; second, the development of a BP by each of the participants; and last, presentation of the BP to the instructor and other physicians in the MMM cohort.

DESCRIPTION OF THE BPD COURSE: CONTENT, METHODS, AND GRADING

The course provides an in-depth look at the content of a BP, specifically addressing the following topics: coming up with an idea for a BP; determining whether the idea is entrepreneurial or intrapreneurial; evaluating the business opportunity; validating the opportunity through market research; conducting competitive analysis; understanding competitive barriers; initiating a marketing strategy; putting the right management team in place; creating a financial model; outlining the necessary milestones for successful implementation; and finally, understanding how to analyze others' BPs. During the course of two on-site visits and three courses (Business Planning I, II, and III, compiled as BPD), MMM students must develop their idea into a viable business offering complete with a business plan and presentation to target constituents.

Business Planning I consists of an onsite where, over the course of three four-hour sessions, the clinicians are exposed to the core concepts behind entrepreneurship, intrapreneurship, innovation, and the business planning process. Distance learning follow-up consists of each physician submitting for approval a project summary outlining the problem that they are trying to solve, the solution, and a high-level overview of the market opportunity and benefits to constituents.

Business Planning II is a distance course over the course of several months dedicated to market research, analysis, competition, and finance. In our program, one month during this period is set aside for the business plan course and no other MMM courses are taken at that time so that the course participants can focus exclusively on their entrepreneurial or intrapreneurial venture. At the end of Business Planning II, a complete and comprehensive business plan is delivered to the instructor. Preceding this are numerous drafts submitted for comments by the instructor, thus ensuring a robust feedback loop.

Business Planning III is the culmination of the entrepreneurial/intrapreneurial process where, during three four-hour sessions, the class participants present their plan to their colleagues as if they are presenting to their relevant target audience: board, partners, funders, etc. Once again, feedback is provided by the instructor on each presentation. In addition, there is often lively discussion in the Q&A portion of the presentation.

Throughout the six-month process of Business Planning I, II and III, there is significant interaction between participants, and between participants and instructor, through discussion boards, email, phone, Skype, and face-to-face meetings.

The students are graded as 'pass' or 'fail' based on the merits of their BP and the final presentation. The grade does not depend on the actual implementation of the BP.

DESIGN AND IMPLEMENTATION OF THE SURVEY

This survey-based study was designed to assess the success of implementation of entrepreneurial and/or intrapreneurial BPs submitted by physicians enrolled in the MMM program at the Heinz College. An entrepreneur is a person who organizes and operates a business or businesses, taking on financial risk to do so. On the other hand, an intrapreneur is a person *within a large corporation* who takes direct responsibility for turning an idea into a profitable finished product through risk-taking and innovation.

STUDY CONCEPT AND SURVEY QUESTIONS

The study idea was conceived and survey questions selected by the authors. One of the authors is an experienced entrepreneur and has developed the BPD course offering at our institution; the other author is an experienced physician who was enrolled in the MMM program from 2009-2011. The selection of questions for the survey was performed by the authors based on our collective experiences in the field of entrepreneurship, education relating to entrepreneurship, medical education, and clinical practice. We selected questions and success measures keeping in mind the relevant demographic, clinical setting (e.g. single-specialty versus multispecialty), and BP characteristics most likely to affect the success of implementation of the BP.

CONDUCT OF SURVEY

One of our research collaborators, a student enrolled in the Master of Arts Management program at our institution, created the online survey tool through Qualtrics. The survey was sent by electronic mail in December 2010 to all 147 MMM students enrolled in the six cohorts that graduated between 2006 and

2011. Completion of the survey was voluntary. Questions on the web-based survey platform included multiple choice, text entry, and constant sum types on post-graduate entrepreneurial and intrapreneurial ventures and business planning activities. These questions and the possible responses are listed in Appendix 1. Survey respondents completed the questionnaire and returned it by electronic mail. A reminder electronic mail request was sent in January 2011 to those who had not responded.

DEFINITIONS OF SUCCESS

The primary measure of success was implementation of the BP proposed by the MMM candidate. In addition, we used five supplementary questions to determine the effectiveness of the BPD Course. These included the following: engagement in other BPs, development of other BPs, review of BPs proposed by others, investment in other entrepreneurial projects, and finally, whether the BP opened up new opportunities for the candidates in their current practice situations. The secondary measure of success was an affirmative response to any one of the above six parameters of success (i.e. implementation of the plan or a 'yes' response to any of the five supplementary questions).

STATISTICAL ANALYSIS

Continuous variables are described as mean \pm one standard deviation and categorical variables as counts and percentages. We performed contingency tables analysis to assess the relation of the independent categorical variables with the primary and secondary success measures, and the Mann Whitney U test to assess the relation of the independent continuous variables with the primary and secondary success measures.

We used multiple logistic regression analysis to assess the multivariable relation of the independent variables with the success measures. The initial model included all independent variables [age, gender, specialty (primary care versus sub-specialist); practice situation (hospital-employed, multispecialty, single specialty, university-bases, other); annual income (\$101K-250K, \$251K-500K, >\$500K); percent of professional time devoted to clinical, administrative and other activities; nature of the BP (entrepreneurial versus intrapreneurial); self-reported interest in entrepreneurship expressed on a scale of 1 to 5; and years since graduation from the MMM program (classified as 0-1, 2 or > 2)]. Backward stepwise regression was performed, eliminating variables which showed no significant association ($p < 0.10$) with the success measures. Two separate multivariate analyses were performed; one for the primary success measure (implementation of the BP) and another for the secondary success measure. Adjusted odds ratios and 95% confidence intervals for each variable were estimated from the final models.

RESULTS

CHARACTERISTICS OF STUDY COHORT

Of 147 students surveyed, 82 (55.8%) returned completed surveys. The respondents were a mean age of 48.5 ± 7.3 years (Table 1). The majority was male and engaged in practice in primary care specialties. Approximately a third was hospital-employed. Administrative activities consumed 54% and clinical activities 42% of the professional time of the respondents. Over a half of the respondents earned an annual salary of US\$251,000-500,000. Two-thirds of the respondents undertook intrapreneurial business projects and one-third undertook entrepreneurial projects.

MEASURES OF SUCCESS

Over a third of all respondents (39%) reported implementation of their BP. Among those who had graduated from the MMM program more than one year ago ($n=25$) and more than two years ago ($n=11$), the BP was implemented by 44% and 64%, respectively.

Of the 81 respondents who reported complete answers to the six measures of success questions, 71 (88%) reported success on at least one of the six measures of success. Among those who had graduated from the MMM program more than one year ago and more than two years ago, success in at least one of the six measures was achieved by 96% and 99%, respectively.

Table 2 shows the incidence of success in the various measures in all respondents. Figure 1 shows the number of measures for which respondents reported success. Success in at least two of the six measures was reported by 63% of the respondents, and success in at least three of the six measures was reported by 38% of the respondents.

PREDICTORS OF IMPLEMENTATION OF BP

In bivariate analysis, the intrapreneurial (versus entrepreneurial) business projects and being more than two years post-graduation from the MMM program showed a positive correlation with implementation of the BP (Table 3).

In multivariable analysis, intrapreneurial (versus entrepreneurial) nature of the business project (adjusted odds ratio, OR = 2.87; 95% confidence intervals, CI = 1.0-8.25) was the only significant predictor of implementation of the BP. Two additional variables showed a marginal correlation with implementation of the BP: >2 years since graduation from the MMM program (OR = 3.08; CI = 0.78-12.2) and female gender (OR 2.76, CI = 0.76-10.0). The adjusted R-squared for the final multivariable model was 0.083.

Table 1

Characteristics of Study Respondents

Characteristic	
Age	48.5 ± 7.3 years
Male Gender	69 (82%)
Primary Care Specialist	61 (74%)
Practice Setting*	
Hospital-employed	25 (31%)
Multispecialty practice	16 (20%)
Single specialty practice	15 (18%)
University-based	5 (6%)
Other	21 (26%)
Percent of time spent in various activities	
Clinical	42 ± 36%
Administrative	54 ± 36%
Research	1.8 ± 5.1%
Other	2.1 ± 11.6%
Annual salary (X 1000 dollars)	
101-250	30 (37%)
251-500	43 (52%)
>500	9 (11%)
Nature of Business Plan	
Intrapreneurial	53 (65%)
Entrepreneurial	29 (35%)
Interest in entrepreneurship (Scale 1-5)*	
1 (least)	4 (5%)
2	14 (17%)
3	32 (40%)
4	20 (25%)
5 (most)	11 (14%)
Years Since Graduation from MMM Program	
0-1	57 (70%)
2	14 (17%)
>2	11 (13%)

Primary care was defined as any one of the following specialties: internal medicine, pediatrics, family medicine, obstetrics/gynecology, psychiatry, emergency medicine, or general surgery

*Percentages do not add to 100 because of rounding

Table 2

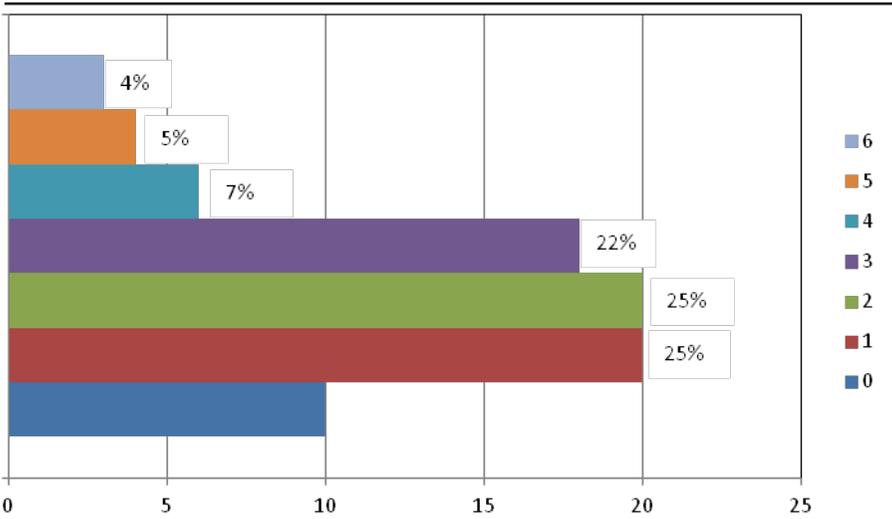
Self-Reported Success Measures

Measure	Incidence of Success
Implemented BP	32 (39%)
Engaged in Subsequent Business Projects	40 (49%)
Developed Subsequent Plans	24 (29%)
Reviewed BPs of Others	52 (64%)
Invested in Other Entrepreneurial Projects	15 (19%)
BP Opened New Opportunities	15 (19%)
Composite Six-Measure Outcome*	71 (88%)

*Success in the Composite Six-Measure Outcome is defined as an affirmative response to any of the six measures of success.

Figure 1

Numbers of Measures for Which Respondents Reported Success



SIX MEASURES

In bivariate analysis, older respondent age and greater percent of time spent in administrative work showed a positive correlation, while multispecialty practice and percent of time spent in clinical work showed a negative correlation with success in the six measure outcome. Interest in entrepreneurship showed a marginal positive correlation with success in the six measure outcome (Table 3).

Table 3

Bivariate Correlates of Success

Success in Implementing Plan			
Independent Variable	Implemented Plan N=32	Did Not Implement Plan N=50	P
Intrapreneurial Plan	25 (78%)	28 (56%)	0.04
>2 Years since graduation	7 (22%)	2 (8%)	0.07
Success in Six-Measure Outcome*			
Independent Variable	Success (+) N=71	Success (-) N=10	P
Age	49 ± 7	44 ± 6	0.03
Multispecialty status	12 (17%)	4 (40%)	0.09
Percent time in administrative work	56 ± 35%	34 ± 39%	0.075
Percent time in clinical work	39 ± 35%	65 ± 39%	0.049
Interest in entrepreneurship	3.3 ± 1.1	2.8 ± 1.0	0.10

*Data on success in six-outcome measure was available in 81 of 82 respondents.

In multivariable analysis, age (OR = 1.14; CI = 1.02-1.29) and interest in entrepreneurship (OR 2.52, CI = 1.12-5.67) showed a positive independent relation while multispecialty practice (OR 0.16, CI 0.03-0.91) showed a negative independent relation with success in the six measure outcome. The adjusted R-squared for the final multivariable model was 0.20.

DISCUSSION

The principal findings of our study are as follows. A fair proportion—39% of physicians—enrolled in the MMM program successfully implement their proposed BP. An even larger proportion report success in a combined parameter of success (‘the composite six-measure outcome’) which combines success in completing one’s own BP with other perceived measures of successes, such as development of other BPs. The success of implementation of one’s BP as well as success in the composite six-measure outcome increase significantly in the years after graduating from the MMM degree. This is intuitive since the implementation of BPs can often take several months or longer. Thus, among those who had completed the MMM degree more than two years prior to the survey, the BP was implemented by 64% and success in the composite six-measure outcome was attained by 90%.

In addition to years since graduation, certain other factors seem to correlate with success. For example, intrapreneurial BPs were more likely to be

implemented than entrepreneurial plans. This may be explained by the fact that implementation of intrapreneurial plans often occurs on top of existing infrastructure while entrepreneurial projects may require significant fund raising and development of basic infrastructure before implementation of the plan. Besides, intrapreneurial plans, often suggested by organizational leadership, may have existing project sponsors and champions within an organization in addition to the physician who writes the BP. Similarly, success in the six-measure outcome of success seemed to have a positive correlation with older age and greater amount of time spent in administrative activity. This is not unexpected; older age and greater administrative role in one's practice are good surrogate markers of having reached a certain degree of seniority within one's medical practice.

Our findings support the continuation of business teaching in medical management programs. When studied in the context of businesses planned within the context of their management training, physicians appear to be quite effective in implementing their BPs. Management educators and program developers can utilize these findings to further refine the course curricula of their training programs. Physicians' employers often serve as sponsors by defraying some or all of the costs associated with management education of their leaders. Our findings indicate that such sponsorship is indeed worthwhile and brings value to the sponsoring organizations.

LIMITATIONS

Our study is a pilot educational project and has several limitations. We developed a survey tool based on our judgments about the relevancy of questions posed. The authors have complementary backgrounds: one of us is an educator/entrepreneur and the other one is a physician. The reliability and validity of the survey tool was not tested before implementation. It is quite likely that future studies of this nature will use more sophisticated survey tools with proven reliability and validity. The number of responses was somewhat limited, particularly amongst the cohorts that had graduated from the MMM program for more than two years.

Thus, our results likely over-represent the more recent cohorts and under-represent less recent cohorts. It is significant, but intuitive, that the parameters of success were reported more often by those who had graduated from the MMM program more than one year ago or more than two years ago, compared to the total cohort. Yet, our results are skewed towards responses from more recent cohorts, which appeared to be more responsive to the survey. Another limitation of our study is the use of self-reported measures of success. It is possible that respondents are likely to over-report success in the implementation

of the plan as well as in the six measures of success. Since the respondents' responses were not verified by their employers, we do not have access to the perceptions of their organizations or practices.

One could question whether the success of the surveyed physicians is truly attributable to the BPD course. It is possible that an 'attribution error' crept into our observational study; such an error can only be prevented in an intervention trial where physicians are randomly assigned to undergo BPD training or not. Finally, our findings cannot be generalized to the entire population of physicians since the MMM cohorts represent only a narrow slice of the physician population that has gravitated towards studying business.

CONCLUSIONS

Our study quantifies the success of the BPD course offered during the MMM degree at our institution and identifies three independent predictors of success: intrapreneurial (versus entrepreneurial) nature of the business project, more than two years since graduation from the MMM program, and female gender. These findings should be cautiously interpreted, and considered to be hypothesis-raising rather than confirmatory, given the self-reported nature of the indices of success and the possibility of attribution error.

IMPLICATIONS

To the best of our knowledge, this is the first attempt to define and quantify success in the context of BPD course offered to physicians enrolled in a MMM program. Our findings set the standard against which future BPD course offerings—in executive MBA programs or MMM programs—will be assessed. Thus, our study may have significant implications for MMM educators and program developers. Specific attributes of the BPD course may be likely to enhance the measured success of BPD courses; this will hopefully be addressed in future studies quantifying the success of BPD courses. BPD educators at our institution or other institutions could compare their course content and structure with ours to fine tune course offerings in the future.

Physicians with an interest in entrepreneurship, management or leadership—whether they serve predominantly in clinical or non-clinical roles—will strive to improve healthcare through innovation and enterprise. Physicians considering enrollment in executive MBA or MMM programs and their sponsoring institutions currently do not have a way to assess or compare the objective success of different programs. This is rather unfortunate since there are high personal and institutional costs associated with obtaining such education. We believe that physicians and their sponsoring institutions should be able to compare various programs based on objective criteria so that they can

make rational choices. Our findings provide a starting point that will enable more objective comparisons between executive MBA or MMM programs in the future.

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APPENDIX 1

MMM SURVEY

1. Age _____

2. Gender (Please check one)

Male _____

Female _____

3. Specialty _____

4. Which of the following terms best describes your practice situation?
(Please check one)

Solo practice _____

Single specialty physician group _____

Multi-specialty physician group _____

Hospital-employed _____

University-based _____

Other (please describe) _____

5. What percentage of our total time do you spend on clinical, administrative, research, or other work?

(Please fill in numbers below; total should equal 100%)

Clinical _____

Administrative _____

Research _____

Other _____

6. What is your current income level?

(Please check one)

<100k _____

101-250k _____

251-500k _____

>500k _____

7. What year did you complete the CMU MMM program? _____

8. Did you implement the business plan which you wrote in the MMM course?

Yes _____ When? _____ Results? _____
No _____

9. Was your MMM project (please check one):

Entrepreneurial _____

Intrapreneurial? _____

10. Did you engage in subsequent projects that are entrepreneurial or intra-preneurial?

Yes _____ Please describe _____

No _____

11. Did you develop subsequent business plans?

Yes _____ Please describe briefly _____

No _____

12. Did you review other people's business plans?

Yes _____

No _____

13. Have you invested in any entrepreneurial projects?

Yes _____ Type of investment? _____

No _____

14. On a scale of 1 to 5, how would you rate your interest in entrepreneurship?

(1 = I am not entrepreneurial at all, 5 = I am highly entrepreneurial)

15. Has the course in entrepreneurship/business planning offered during your MMM training opened up new avenues or opportunities for you in your current job?

Yes _____ Please briefly describe _____

No _____