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Employment Enhancing Integrative Graduate Education Model

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ABSTRACT

There is a strong call to look for approaches to integrate business and engineering education across disciplines to provide a more coherent system for students with the job market. As graduates fail to find satisfying employment, the value of college education is questioned. The unemployment of the highly educated has economic, social and political ramifications. Worst is when the highly educated unemployed takes up lower status jobs, ever reducing the quality of the job market with future consequences. In this study, we concentrate on ways to enhance students' competitiveness in the post-graduate environment by proposing a curriculum to yield viable business proposals. Our model is for business or engineering students willing to pursue a master's degree without PhD. We go beyond the compartmentalization of the current educational system to increase employability, particularly self-employment. Rise in productivity is a side benefit since there is a strong correlation between productivity and welfare.

Keywords: Integrated business education, Graduate business-engineering curriculum, Team teaching, Course design

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INTRODUCTION

Unemployment has long been one of the most challenging problems to tackle for any government in any country. As education has been suggested to increase potential employability, the surge in demand for education has been on the rise all over the world. While education over time is found to increase one's value at the workplace, it is natural to suppose that the marginal contribution of education to one's earning wanes as competition gets stiff in countries where we have high participation in the educational endeavor. That, as well as failure to attain satisfactory employment opportunities would also exacerbate frustration among the rookie graduates, with even political consequences for sitting governments. The educational institutions are not spared from the blamed for the ineffectual job hunt in the market, eventually leading to a serious soul searching exercise questioning the value added of a college degree.

The issue is accentuated within the framework of Turkey where higher ladders of educational structure does not necessarily bring about relief in the job market. Unfortunately, just the opposite seems to be the case. In this study, we first briefly review the unemployment problem in relation to the educational attainment, for the special case of Turkey. Then we suggest that perhaps the observed phenomenon in the unemployment crisis is an indicator in the inadequacy of the education. Consequently, we propose an employment enhancing employment model, which integrates components of business and engineering curricula. The paper will conclude in the last section with final thoughts.

UNEMPLOYMENT IN TURKEY

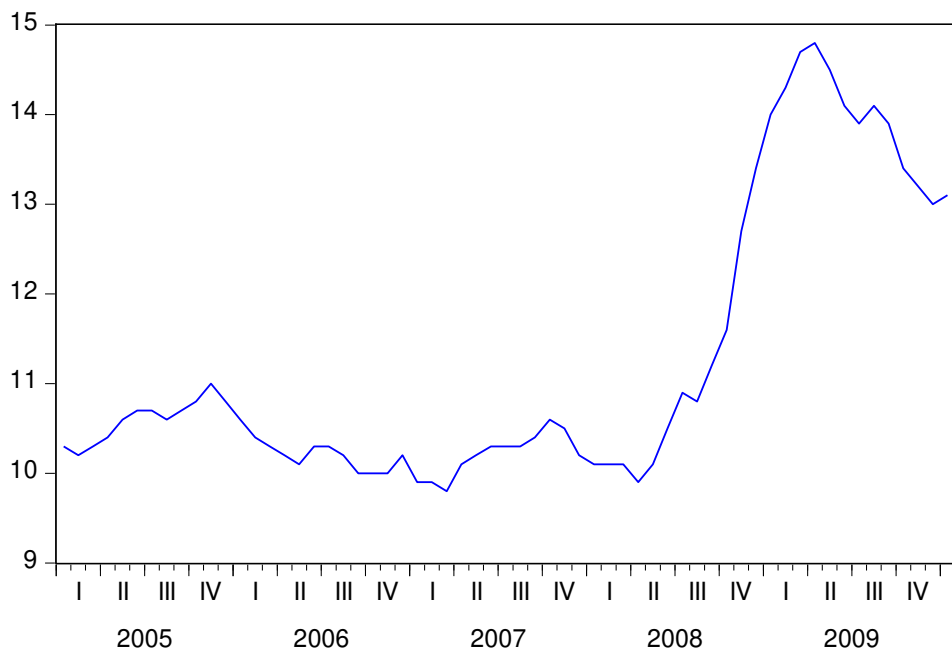
Turkey has been envy of the whole world with its tremendous success in coming out of the recent economic crisis of 2008 relatively unscathed. What is even more commendable is that the recent growth in GDP is accompanied by a record decline in inflation. Nevertheless, unemployment has long been an intractable quandary in the country. As shown in Figure 1, the initial effect of the current economic crisis is a rapid jump in the unemployment rate, which has taken a reverse course, especially since mid-2009.

Table 1. Turkish Youth Unemployment Rate According to Education Levels

year	primary	Middle	high	vocation	college
2000	8.3	13.7	20.6	20.8	28.3
2001	10.6	17.7	24.0	25.5	30.7
2002	12.4	20.7	26.8	28.0	38.3
2004	13.4	19.6	26.6	29.3	39.8
2005	14.1	19.2	25.3	25.6	30.5
2006	14.7	17.9	25.2	21.1	27.2
2007	14.7	19.3	23.5	22.6	28.5
2008	14.3	18.7	25.0	20.8	29.8
2009	17.9	21.6	30.6	27.6	33.2
2010	14.9	10.9	27.2	23.1	32.5

Unemployment with respect to the educational attainment over time for person at the age group of 15-24. Source: TUIK.

Figure 1. Overall Turkish Unemployment Rate



Seasonally adjusted unemployment rate for people of 15+ age. Source: TUIK.

However, what is worse for the unemployment problem of the country is the inconsistency between unemployment and the educational attainment for the young people, who are the most concerned about the said relationship. Table 1 reveals that among the holders of a degree, the highest portion of the unemployed is college graduates. As a matter of fact, there is a positive relationship between the level of the degree held and unemployment rate; the higher the degree, the higher the unemployment! A curious observation in Table 1 is that vocational school graduates are much more successful than their counterparts among ordinary high schools. Even more curiously, vocational school graduates have achieved lower unemployment rates than college graduates. To put the issue in perspective, we observe in Table 2 that the unemployment rate declines in the US as level of the degree held. Additionally, Turkey seems to be lagging behind in many aspects compared to the European Union countries (Genc, 2008).

Table 2. US Unemployment Rate for February 2011

Less than a high school diploma	13.9
High school graduates, no college	9.5
Some college or associate degree	7.8
Bachelor's degree and higher	4.3

Source: Bureau of Labor Statistics.

In sum, there is a peculiar employment situation in Turkey with respect to the educational attainment. Bleak prospect for higher degree holders may discourage young people from pursuing more and more education, but instead they may choose to seek opportunities in the job market with less education. In Europe, however, young people may refuse to go to school as they can find jobs with less education (Funkhouser, 1999; Jacob, 2002; Ishikawa and Ryan, 2002), thus they reduce the opportunity cost of attending school where school is a “normal good,” (Tansel, 2002). It is also possible that in the future higher degree holders will be taking up the positions which were previously occupied by lower degree holders, thus further undermining the value of a certain degree. Putting it differently, an oversupply of higher degrees would reduce the “price” thereof. The problem is accentuated in a bleak employment

market, especially in the aftermath of the global economic crisis, with too many applicants for too few positions, a higher education degree serves as a common denominator instead of signaling the existence of more intensive human capital on the part of the degree holders.

Given that education is considered to be an undeniable source of economic growth and development in economic theory (Romer, 1990), young people's disenchantment with education is worrisome for the policy makers. In the meantime, this issue may bring to the forefront the significance of academia-industry-government cooperation in the globalized competitive world (Dur, Ozkul and Genc, 2009).

CALL TO INTEGRATIVE COLLEGE EDUCATION

As the aforementioned statistics make it clear, the unemployment, and particularly the unemployment problem of the highly educated stratum of society in Turkey, has economic as well as social and political ramifications. The predicament is exacerbated by the fact that highly educated unemployed becomes content with the lower status jobs, thus ever reducing the quality of the job market with future consequences.

It is not totally out of reason to think that college graduates are unable to find jobs because they are not equipped with the knowledge base to tackle the challenges of the current job market. The business world has long been calling for more cross-disciplinary education as in line with the actual business environment. This is integrative education, which combines education horizontally and cross-sectionally (vertically). The call for integration in business schools came from one of the most prestigious accreditation institutions in the US, i.e. the American Assembly of Collegiate Schools of Business, AACSB, (Smith, 1995). The mismatch between the college education and managerial positions in the business world has also brought to the attention of stake holders of business school, where the graduates of business schools are parachuted into mid-level companies with authority over people who have vast knowledge in business and customer relations, and thus creating two tier employees. In other words, what we produce is a boss with education, but not enough knowledge on one side, and an employee who knows the customers, market conditions, and business

environment on the other (Mintzberg, 1992). Ignoring all these calls to action may spell the doomsday for business schools.¹

In the same sense, the Accreditation Board for Engineering and Technology (2000) requires engineering programs to go behind mere technicalities but incorporate ways to understand ethics, communication, team-work and a number of other societal issues. The idea of cross-disciplinary functionality has already been incorporated in the business world in small as well as big companies. For example, companies such as Boeing, Coca-Cola, DuPont, Ford, Hewlett-Packard, Siemens, General Electric, Toyota, IBM and Xerox, use cross-functional teams to conduct their business (Aurand, DeMoranville and Gordon, 2001; and Malekzadeh, 1998).

Universities and research institutions have been increasingly perceived as engines of economic development by governments around the world (Al Karam and Ashencaen, 2006; and Kapur, 2007). Their impact of public health is also acknowledged (OECD, 2004). Therefore, many academic institutions as such have revised their mission statements to incorporate that emerging feature (Markman, Phan, Balkin and Gianiodis, 2005). While engineering schools lead the product development scene, business schools are regarded as the suitable venues to market the ideas materialized by the engineers (Lockett, Wright and Franklin 2003; Wright, Lockett, Tiratsoo, Alferoff and Mosey, 2004). University scientists play a significant role in productivity growth in the US and Japan (Zucker, Darby and Armstrong 1998; Zucker, Darby and Brewer 1998; and Zucker and Darby 2001).

EXAMPLES OF INTEGRATIVE EDUCATION

Therefore, to address the aforementioned demands from the business as well as academic corners, we propose here an integrative business-engineering education model. We should be quick to add that our model is not without any precedent. We propose a method in which a number of subjects/courses are taught in the form of modules. Thus, the horizontal integrative

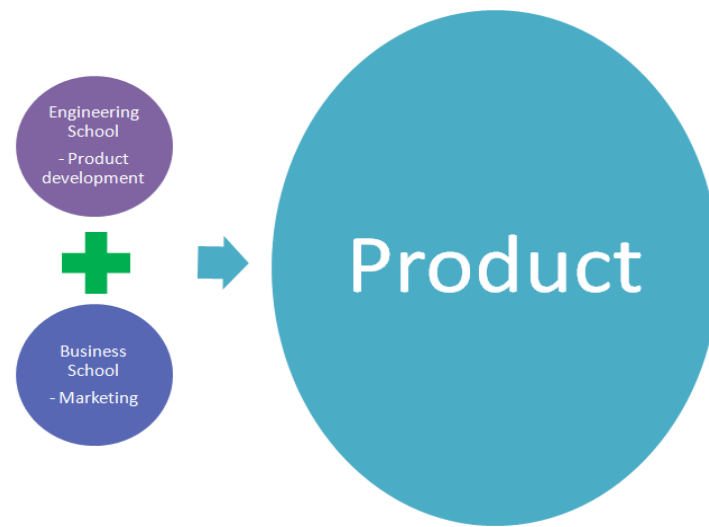
¹ The literature on the integration in business school is voluminous. See on that, inter alia, (Cotton, 1982; Jacobs, 1991; Lataif, 1992; Leonard, 1992; St. Clair and Hough, 1992; Byrne, 1993; Mason, 1996; Pharr and Morris, 1997; Stover et al., 1997; Arredondo and Rucinski, 1998; Pharr et. al. 1998; Hamilton, McFarland and Mirchandani, 2000; Miller, 2000; Braun, 2004; Genc, Bekmez and Miller, 2004; Bowett, 2005; Hawawini, 2005; Reuben and Festervand, 2005; Campbell, Heriot, and Finney 2006; McCarthy and McCarthy, 2006; Moratis and Hoff, 2006; Pharr and Lawrence, 2007; Genc and Bekmez, 2008; and Genc, 2009).

education combines a number of courses within a unified format streamlined along the general mission of the school/college. Examples are the IBC (Integrative Business Curriculum) in the College of Business and Economic at the University of Idaho (Pharr and Morris, 1997; Stover, et al., 1997; Pharr, et al. 1998; Miller, 2000; Genc, Bekmez and Miller, 2004; Pharr and Lawrence, 2007; Genc and Bekmez, 2008; and Genc, 2009). Cross-sectional education brings together cross-disciplinary subjects to repack the college education. For example, the dual degree programs at the Butler University collaborates with the Purdue School of Engineering and Technology at Indianapolis to offer engineering degrees with minors in mathematics, computer science, science technology and society, economics or one of the natural sciences (physics, chemistry, and biology). This is a 10 semester undergraduate program. Likewise, at the Ohio State University, the College of Business and the College of Engineering teamed up to offer a graduate program to lead to the Master in Business Logistics Engineering (MBLE). Additionally, a specially program called the Integrative Graduate Education and Research Traineeship (IGERT) is developed with the support of the National Science Foundation in the US aiming at enhancing interdisciplinary research culture at the doctoral level studies (Martin and Umberger 2003). Also, the University of Iowa, the University of Michigan and MIT offer integrated business/engineering graduate programs directed at certain aspects of early to mid level engineering professionals (Brown and Haynes, 2004).

Cross disciplinary education is certainly not only confined to the US. See, among others, (Winter, 2002; Aladekomo, 2004; Lubis, 2004 and 2006; Gill, Kreisel and Verma, 2009; Florea and Oprean, 2010; and Goi and Lau, 2010).

A MODEL OF INTEGRATIVE BUSINESS-ENGINEERING EDUCATION

Figure 2. Cooperation among Different Schools at a University



We propose here a graduate level integrative program to combine business and engineering across college, which can be considered as a form of vertical integration. To start with, the incoming students to this program are supposed to be firmly grounded in the fundamentals of their own fields, be it business or engineering. Engineering students are supposed have a comparative advantage in product development, and students with business backgrounds would bring in the skills required to market the product. The program itself will expose the students to several study areas of business and engineering to enable them to

- i. identify entrepreneurial opportunities for viable needs in niche markets (*need identification*)
- ii. develop technical proficiencies and abilities to comprehend complex scientific and practical business ideas and issues (*risk measurement*)
- iii. develop effective business plans for viable products in niche markets (*product development*)
- iv. communicate these ideas and issues to diverse stake holders such as suppliers, customers, investors and employees to attract financial and human resources for the long life of the present or potential company (*value generation*)
- v. work well in teams while not shying away from undertaking individual initiatives to

evolve the strategy, organization, and leadership model as the business grows
(*team building and management*)

Finally the graduates of this program will be eventually equipped with a concrete business idea for the post graduate phase. This philosophy behind the program believes that the final product (the whole), i.e. the student with familiarity with both backgrounds, is bigger than the sum of the pieces, business or engineering individually. Our program is tended for students seeking employment (paid or self employment) following graduation from the program without pursuing a terminal degree in their fields. That is why; the students in the program are exposed to practical issues of business engineering with just a satisfactory coverage of theory. The technical matters of the program can be broadly specified along the incoming students, faculty, and the program itself.

The Incoming Students

The incoming students to this program are exposed to have interest in starting and/or running viable business along the philosophy outlined above. Therefore, students with business or engineering undergraduate degrees should be selected based on their interest and/or experience in management and business projects rather than on grades or standardized tests (e.g. GRE or GMAT or purely based on GPA). Structured interviews may play a crucial role in choosing potential students. Students should be considered for interviews and/or admission after providing with a statement of purpose in which a product/project or the idea thereof is extensively discussed. Statement of purpose which includes a well structured project idea. It should also shed light on graduate study goals and plans, experience, etc. with a special emphasis on post-graduate phase career plans.

Faculty

Faculty teaching in this program should have competency in applied business and/or engineering research. Exclusive focus on teaching or pure academic research would prove inadequate to educate the students in this program. It would not be a rewarding experience for the faculty either.

It is conceivable to also think that this mode of education would necessitate co-operation/joint work among faculty across disciplines. We are naïve to deny the challenges involved in such an endeavor. Like degree programs, faculty are also housed in silos usually with little or no academic contact with each other. Coaching faculty to cooperate across disciplines in teaching and/or research could potentially take time and more resources than isolated (stand alone) teaching or research.

Because of the very nature of the model proposed here, the instruction cannot be exclusively confined to university faculty. Teaching staff should be beefed up by the support provided by experienced practitioners and business leaders. Governmental organizations can pitch in to complement the picture especially on matters pertaining to legal environment and regulations that prospective graduates will be operating in.

In sum, instructors should be willing to experience with non-conventional and less autonomous teaching schemes.

Administrators

Because faculty from different departments, and even from industry, participate in this program, the role undertaken by the administrators in different departments in the university becomes particularly important. Those who lead our program have to be versatile in communication with different stake holders, especially industry to sell the program and projects, but also with students and faculty. Like faculty, administrators, too, should be with more constraints and less autonomy than traditional educational settings.

Mentors

Industry representatives are the ideal mentors for student projects where experience is instilled in students by the mentor. Needless to say, university faculty could take part in this endeavor as well, but it is crucial that mentors champion the cause of each project.

Program

The program can be based on many existing executive MBA programs with necessary modifications required by the market. One such example is the Executive MBA in Business

Engineering program of University of St. Gallen (HSG), Switzerland. It is a part time program which rotates between campus learning and industry practice. Their program takes approximately 18 months to complete, which corresponds to 200 weeks.

On the other hand, the specialized master's program of logistic engineering at the Ohio State University, which is composed of 45 credit hours, may be completed in 9 or 12 months. In the program, innovation and entrepreneurship are stressed.

In general, in programs which can be adopted for this purpose, students are given business/economic/engineering courses during the course of the program about:

- How to develop a viable project?
- How to raise funding for a project?
- Courses related to the micro and macro environment of business

In the first half of the program, students are trained in project evaluation by considering engineering and business perspectives. This should lead to business creation and management where innovation is stressed. Students produce business projects during their education in the first half of the program. At the end of the first phase, viable projects are chosen in cooperation between industry and academia. The projects must be financially and technologically viable.

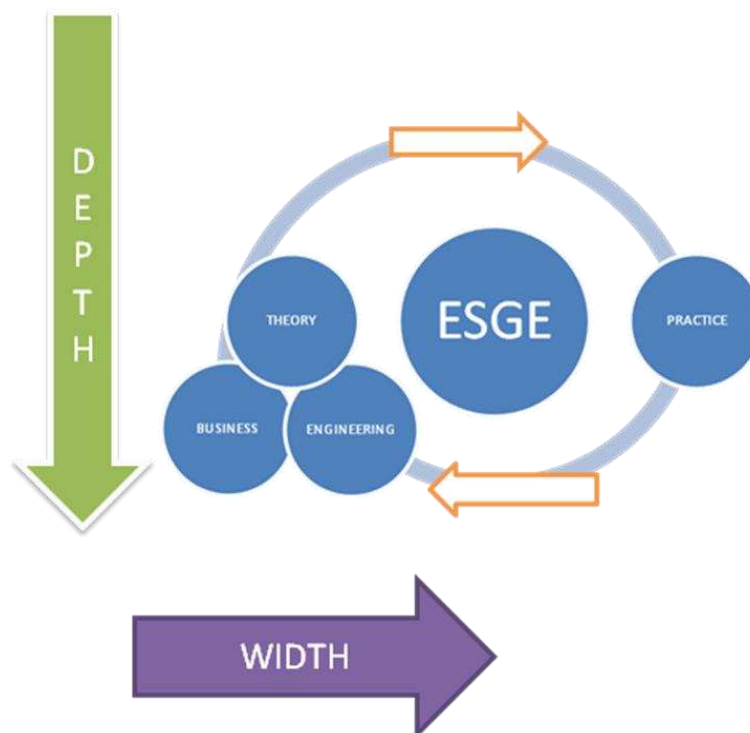
The next phase involves a professional practicum (incubation) for chosen projects either on or off campus. In case of failure to find suitable industry partners, this phase could very well be virtual instead. This phase is finalized with the defense of the projects incubated during the second phase of the education. This phase is followed by the graduation.

FURTHER THOUGHTS ON THE MODEL

The model we propose strives to equip its graduates with entrepreneurial spirit so that they can be leaders in business either working for someone else, or starting their own business. That is why, we would like to call our program the “entrepreneurial spirit in graduate

education,” ESGE. As alluded to in Figure 3, we would like to merge the theory of business and engineering to yield entrepreneurs, who are not only compelled to look for jobs in the public sector, but potentially capable of generating employment for others. As shown in the figure, our aim is not to dwell deeply on the depth of each field, i.e. business and engineering, but instead to explore more on the opportunities to expand the integration along the different fields (width axis). We also wish that there is a constant interaction between theory and practice during the program to refine skills in business management and related issues.

Figure 3. The Program Mix



In a sense, our program strives to generate a new breed of professionals who combine strong managerial and technical skills. Mixing business and engineering capabilities will turn out team-work friendly, individually confident, leaders to manage complex technical ventures in the ever growing and fast globalizing modern world. One obvious job market track for the graduates of such a program could be careers as managers operating in technology-based industries. Given the fast incursion of technology in our everyday lives demand for qualified

managers in that field could only be expected to grow. It goes without saying that the modern education needs to meet the regional, global, and national challenges of the 21st century. Hence, educational institutions, in order to avoid being aloof to changes in society, have to turn out graduates with the necessary skills to deal with the issues of the modern world. Graduates of our program are expected to be managers for the modern world.

On the other hand, if the entrepreneurship spirit rightfully is instilled in students during the program, the bigger gain will be in self employment which is going to reduce the burden on the public sector to generate employment opportunities to ever growing applicants' pool. Again the model program proposed here intends to generate people who innovate and/or utilize already available research and development in business applications in order to keep competitive new products and services coming. Enabling college graduates with skills to start their own business after graduation can greatly facilitate massive youth unemployment.

To this end, our program emphases:

- i. engineering fundamentals and practice
- ii. business fundamentals and practice
- iii. individual and team based business skills for effective management of engineering projects
- iv. innovation and entrepreneurial orientation
- v. ethics in engineering and business

Therefore, graduates of this program must be capable of conducting market research to identify the needs, and be able to conceive and propose products to satisfy the identified need in the market. Also necessary of the graduates is to foresee the future trends and preempt the rivals with products ahead of competition.

CRAFTY SKILL VILLAGE

On a side note, a similar attempt to reduce unemployment among the least educated segments of society may be organized in the form of, what we wish to call, "crafty skill village," a name

we coined after Dubai Knowledge Village (Village). Launched in 2003, Village introduces the idea of the “shared campus,” where food court, classrooms, auditorium, conference facilities, retail outlets, and sports grounds are used by all institutions in the Village, based upon the need thereof. Joint usage of a number of facilities surely saves valuable fixed cost in terms of heating/cooling, rent etc. It also reduces the cost by increasing the occupancy of the facilities. A further benefit in terms of cost saving for the incoming institutions is the fact that the infrastructure, which is already provided by the Village management, makes the launch of educational programs possible in a relatively short period of time. While Village aspires to have full-fledged universities on its site, most institutions are in the form of branches of parent institutions with the same programs abroad. On the other hand, the Dubai Academic City (City) is designed to attract larger establishments where the City will include student dormitories, a sports stadium, and accommodation for university staff, for an enhanced academic experience.

We, however, believe that such a set-up is more appropriate for vocational educational institutions as the university education has its own culture as part of the process. As such, most of the institutions established at Village are largely small professional training centers. Given that the universities aim at generating not only graduates with textbook knowledge, but also with a unique culture, Village does not render itself for such a purpose. Because in shared quarters, it is almost impossible to set your own identity as a separate institution apart from everybody else, neither theoretically not practically. You all share the same campus grounds, the same facilities, and mostly the same rules and regulations. The universities wish to have long term relationships with their student body, also after graduation, as a source of income and pride. Home-comings and mascots and the like are almost impossible to institutionalize in a Village-like environment. Even the for-profit/private universities have this broad perspective in mind.

Conversely, the training centers are mainly interested in churning out as many graduates as possible in as little time as possible to generate a stream of income for the for-profit training institutions. They are not necessarily in the “education” business, but simply in “business.”

We, therefore, believe that Village-like establishments should be considered for what they are best at, that is, the training centers which train people to learn certain skills such as secretarial jobs, legal clerks, and other apprenticeship required professions. This might be better served under the jurisdiction of the Ministry of Education. It goes without saying that these kinds of jobs are crucial for the maintenance of industry and services in any country.

CONCLUSIONS

Unemployment, especially educated youth unemployment in Turkey, which has a high young population, is an intransigent political and social challenge for decision makers. Theoretically, employment would increase one's chances of finding jobs, but it seems that, at least among the young people, the higher the educational attainment the higher the unemployment. This calls into question the value of a college degree given the costs attached to such a process in terms of time spent in pursuing the degree and financial burden involved. A college degree, under these circumstances, loses its function as a distinguishing feature in the job market, but instead becomes a must for everybody to attain as jobs turn to difficult to come by with it. It only becomes clear that college education thus could be converted into a common denominator among all job market participants where applicants would be content to take up jobs originally went to lower educated.

Also in the light of the current trends in the business and academia, we believe the observation for the Turkish job market requires rescaling, maybe upscaling, the college education. We intend to come up with an entrepreneurial project based learning scheme, which we call Entrepreneurial Spirit In Graduate Education (ESGE). Our model is designed for students with either business or engineering backgrounds willing to pursue a master's degree but no intention to go for doctoral studies. In our proposed model, students are admitted to the program after writing a statement of purpose in which a product/project is depicted. After an initial phase of covering principles of starting and running a business along the engineering fundamentals, the rest of the program is dedicated to the discussion and development of student projects into viable business proposals in collaboration with the

industry. Students graduate following the defense of a project where the evaluation committee includes business representatives, as well.

All in all, our idea is to enable students to graduate with a concrete project at hand ready to be developed. We believe this program will increase its graduates' employability, and particularly self-employment, which will hopefully reduce unemployment in the ranks of highly educated members of the labor force. One should note that the reduction of unemployment among the educated members of society would contribute more to the productivity of the country than a comparable reduction in unemployment among the less educated folks. It becomes all the more important once we consider the strong correlation between productivity and economic welfare.

This model intends to develop a theory supported – practice oriented education where students graduate with sound professional competence to increase chances of paid employment or to be capable for self employment. In the process, students learn to apply their skills in opportunity seeking, goal setting, and strategy formulation.

We did not discuss at great extend the costs and benefits of such an educational package²: Students should be ready to reorient their mind for a non-traditional educational experience. Faculty from different schools have to relearn to cooperate across disciplines and business professionals. Administrators should be flexible to accommodate faculty, and also be cheer leaders for the program in the business world. The whole process should adopt an unforgiving professional attitude to enrich the program to the utmost levels. However, similar programs around the world have successfully passed the stage of infancy, and we have to do the same to be competitive in the global market.

² See Genc, Bekmez and Miller (2004) for costs and benefits of integrative education.

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