Moral Judgment Competence Between Systems and Administration Students

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1. Introduction

Ethics is a subject matter, which can be learned and experienced like any other subject matter. Most studies related to practical training investigate the development of technical and soft skills, but not ethical development (Mohamed Saat, Porter, & Woodbine 2012). In fact, ethics education and training may not guarantee moral behavior, but at the very least such education and training will create a cognizance of moral issues, and most importantly, an associated responsiveness that immoral conduct will not be allowed at the university, the organization, the community, and society (Venezia, Venezia, Cavico, & Mujtaba 2011). Business schools, therefore, must take every measure to ensure that they are fulfilling the moral duty to their students, the business community, and society as a whole by integrating ethics into the business student's education (Venezia, Venezia, Cavico, & Mujtaba 2011).

Although ethics instruction has become an accepted part of the business school curriculum at both the undergraduate and graduate levels, some scholars have questioned its effectiveness, and research results have been mixed (Wang & Calvano 2015). Regarding the ethics course, Mohamed Saat, Porter, and Woodbine's research findings (2012) show that there are no significant changes in students' ethical judgment in an experimental group. Also, they emphasize that an ethics course and practical training together explain improvements in cognitive moral development. About education effect on raising the recognition of the ethical issues, Cohen, Pant and Sharp's findings (2001) suggest that the education has minimal influence. Their results show that the graduated student's scores are marginally lower than those of the entry-level students, and the professionals are viewed as significantly less ethical than the graduated students.

Regarding to moral principles reasoning, a research about liberal arts students and other ones, outscored business students (Thomas & Dunphy 2014). Also, perceptions about norms and cheating behaviors, dishonesty in high school was a strong predictor of cheating in college and engineering students reported cheating more frequently than students in the humanities areas (Harding, Mayhew, Finelli, & Carpenter 2007).

Alpay (2013) thinks that ethical education in engineering curriculum could be problematic due to the student's perception on its subjectivity, ambiguous and philosophical content, although involving students for proposing task for ethics education might have a positive effect. On the other hand, Finelli (*et al.* 2012) proposes that both formal engineering curricular experiences and co-curricular experiences are related to students' ethical development. Using survey data collected from nearly 4,000 engineering undergraduates at 18 institutions across the U.S., Finelli highlights opportunities for improving the engineering undergraduate's level curricula in order to have a greater impact on students' ethical development. And he proposes that the quantity and quality of Engineering students' formal curricular experiences and their co-curricular experiences related to ethics is high. He also recommend that universities must integrate ethics throughout the formal curricula, adding varied approaches that foster important experiences, and leverage both influences of co-curricular experiences and students' desires for participating in positive ethical behaviors (Finelli *et al*. 2012).

Guerrero and Gomez (2013) compared 120 curricula and courses in law, medicine and engineering in Latin America, they observed that moral education is absent from university curricula and further, although the teaching of ethics has gained a little space, they showed that ethical educational development has been withheld. Also, they showed that 52% of the compared programs included a little over an ethics course where the normative moral and the informative vision were predominant.

The purpose of the present research was to compare the moral judgment competence between systems and administration students, and their respective curricula. The student's moral judgment competence is the relationship between moral ideals and moral decisions daily taken (Lind 2004), it is the ability to make decisions and acting in accordance to internal principles (Kohlberg 1964). So, this students' ability was evaluated and compared at a public University, in Hidalgo, Mexico.

This research was guided by the following questions:

i) What are the patterns of moral judgment competence of a population of systems colleges and administration students in Hidalgo, Mexico?

Wang and Calvano (2015) provided interesting results regarding certain factors that influence the ethicality of business students and may impact the effectiveness of business ethics instruction. Thomas and Dunphy's results (2014) indicate statistically significant relationships involving moral judgment with college major and liberal arts and other students outscored business students on the moral judgment stage. Also, Harding, Mayhew, Finelli and Carpenter (2007) observed more unethical behaviors in engineering students than others.

Some background about it in Mexico established that management students of a University had 18 points of moral judgment competence (C index) (Robles 2010). In this sense, hypothesis 1 was established as following:

The moral judgment competence of a population of systems (C_S) and management (C_M) university students score 18 points in the C-index and there are not differences between them.

$$HI: C_S = C_M = 18$$

ii) Are there significant differences in the moral judgment competence between systems and management students from different scholar year?

The new students, without taking classes related to profession formation, have a lower level than persons who had already taken some classes and also the students of intermediate semesters have a lower level than individuals coursing the last year. So, hypothesis 2 was set as following: The moral judgment competence MJC of the first year students (C_{S1}) is less than the MJC of the second year students (C_{S2}) and so on until the MJC of the last year (C_{S4}). This performance is the same between systems and management students:

$$H2: \ C_{S1} < C_{S2} < C_{S3} < C_{S4}$$
$$C_{M1} < C_{M2} < C_{M3} < C_{M4}$$

iii) Are there significant differences in the moral judgment competence between systems and management students from different gender? The literature about gender and ethics is diverse, some of the last researchers report that gender does not affect the moral reasoning of individuals, others conclude that males and females go through different stages of moral development at different age categories (Buell 2009) and gender does not affect moral reasoning in Mexican students (Barba 2002; Barba & Romo 2005; Robles 2008). So, hypothesis 3 was set as following: There are not significant difference in moral judgment competence between female (C_{Sf}) and male (C_{Mm}) students from systems and management college careers.

$$H3: \ C_{Sf} = C_{Mm}$$

2. Method

A descriptive and comparative process was done in this research, which was applied at a public University in Hidalgo, México. This research contrasted student populations from two careers, management and systems, where all of students were analyzed and compared. The moral judgment competence of 272 management and 79 systems students was assessed. The Moral Judgment Competence was evaluated by C-index and the participants answered the Moral

Judgment Test. Data were registered by SPSS and the ANOVA analysis was executed.

2.1. Participants

To protect of human research subjects, the Institutional Review Board criteria were fulfilled by this investigation, which researched on the effectiveness of university years into improvement of students' moral judgment competence. Participants were Systems and Management students at a public university in Hidalgo, state of the Mexico country.

In Mexico, the elementary school consists of six years, the middle school of three years, the high school of three years, and the academic achievement is evaluated from zero to ten. So, for starting university studies, scholars have 12 educational years. Both of the careers have 9 semesters, the systems career includes professional practices at 9th semester (management career does not). These two careers include social service from eighth and just the management career integrates professional ethics in the ninth.

According to the examined University the systems students profile says that they have knowledge about math and logic reasoning, skills of abstract reasoning. By other side, the management students have basic knowledge on administration, the oral and written communication skills, and they can analyze complex situations.

Provinces			Gender		
	Systems	Adm.		Systems	Adm.
Lost	17	4	Lost	1	---
Hidalgo	59	266	Female	31	200.0
Estado de Mexico	3	2	Male	47	72.0
Total	79	272	Total	79	272.0

Table 1: Provinces and gender of the systems and administration students.

All students were selected from the first until the last semester. Participants were 351 students from two careers: Management and Systems. The test was applied in the final period from May to June 2015. The 79 Systems students' provinces were the follows: Hidalgo 59, Mexico State 3 and 18 participants did not write theirs; 47 male, 31 female, 1 lost. The 272 Management students' provinces were: 266 Hidalgo, 2 Estado de Mexico and 4 lost; 200 female and 72 male participants.

		Age		Experience		Scholar achievement		Scholar years	
		Sys.	Ges.	Sys.	Ges.	Sys.	Ges.	Sys.	Ges.
N	Valid	73	267	56	271	66	267	75	272
	Lost	6	5	23	1	13	5	4	0
Mean		21.48	20.80	1.57	0.65	8.20	8.46	14.15	14.20
Std. Dev		3.46	2.37	3.50	1.55	0.54	0.52	1.65	1.34

Table 2: Academic years mean of the systems students and administration students.

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Systems students' mean values and standard deviation (sd) were: age 21.48, 3.46, labor experience 1.57, 3.50, academic achievement 8.20, 0.54, academic years 14.15, 1.65. Administration students' mean values and standard deviation (sd) were: age 20.80, sd 2.37, labor experience 0.65, 1.55, academic achievement 8.46, 0.52, academic years 14.20, 1.34

3. Materials and Procedure

The Moral Judgment Test (MJT) was applied. This test is a validated instrument in Mexico by Lind (2001). In this instrument, the participant's judgment is in conflict with nonconventional behavior. The MJT items are constituted into a multivariate experiment N = 1 (Lind 2008), which consists of two stories written as dilemmas, pro and against arguments about the protagonist's decision, where each argument represents a moral stage of the six described by Kohlberg (1992). In the questionnaire, the most important objective is to record the quality of arguments and decisions and not the pro's or con's. The participants are asked to judge the arguments: Six sentences in favor and six against on the protagonist's decision, on a -4 to +4 scale. The MJT contains 24 items, 12 for each of the two dilemmas that individuals must analyze. Before judging each one of the arguments, the individual is asked to judge how right or wrong was the protagonists' decision (Lind 2008). The Moral Judgment Competence was evaluated by C-index and this index was quantified by a SPSS algorithm, similar to the variance analysis of a factor. After the descriptive statistics, the analysis of variance was executed to accept or reject the null hypothesis.

4. Results

i) Hypothesis 1. The moral judgment competence of a population of university systems (C_S) and management (C_M) students score 18 points in the C index and there are not differences between both of them. This hypothesis, HI: $C_S = C_M = 18$, was not supported: The Systems students' mean %C-index was 13 and for Management students was 16. So the proposition demonstrated was:

$$C_S < C_M < 18$$

Educational years	Management		Systems	
	N	%C-index mean	N	%C-index mean
12.00	3	22	25	14
13.00	88	16	0	----
14.00	71	18	5	8
15.00	54	15	23	16
16.00	56	15	22	12
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Total	272	16	79	13

Table 3: Academic years and C index% means of the systems and administration students.

The 3 freshman students in administration career with 12 educational years got 22% of C-index, while the 25 who started the systems career, with the same educational year, scored 14%. The 88 who completed one year of management career had 16% and, in the same category, the systems career had not registered students. The 71 students who have completed two years of management career, with 14 educational years, obtained 18% and the 5 systems students, in the same category, scored 8%. 54 students with three years of management career, 15 educational years, had 15%, while the 23 systems students in the same category, 16%. The 56 participants with four years of management career, 16 educational years, had 15%, and in turn, the 22 participants of systems got 12 points. Only four participants of the systems career who missed, on the academic year category, had 11%.

	Sum of square	df	Square mean	F	Sig.
Between grups	.047	1	.047	4.290	.039
Within groups	3.812	349	.011		
Total	3.859	350			

Table 4: The moral judgment competence ANOVA between systems students and administration students.

The moral judgment competence between both careers had significant differences. The one-way analysis of variance (ANOVA) was used for comparing the means between groups of two careers and determined that means are significantly different from each other. Specifically, the null hypothesis tested was $C_S = C_M = 18$. A statistically significant result was obtained, Sig-score (0.039) was lower than 0.05 and then the null hypothesis was rejected. Therefore, the C-index is different for system and management students.

ii) Are there significant differences in the moral judgment competence between systems and management students from different scholar year?

	Sum of squares	df	Mean square	F	Sig.
Between groups	.053	4	.013	1.219	.303
Within groups	2.879	267	.011		
Total	2.932	271			

Table 5: The moral judgment competence ANOVA between systems students and administration students and academic years.

The moral judgment competence, C-index, among academic years of the management students had not significant differences. The one-way analysis of variance (ANOVA) determined that means are equals. Specifically, the null hypothesis tested was: H2: $C_{M1} = C_{M2} = C_{M3} = C_{M4}$. A statistically significant result was obtained, Sig-score (0.303) was higher than 0.05 and then the null hypothesis was accepted. Therefore, the C-index is equal among the academic years in the management students.

	Sum of squares	df	Mean square	F	Sig.
Between groups	.029	3	.010	.852	.470
Within groups	.815	71	.011		
Total	.844	74			

Table 6: Systems students' academic years ANOVA.

The moral judgment competence, C-index, among academic years of the Systems students had not significant differences. The one-way analysis of variance (ANOVA) determined that means are equals. Specifically, the null hypothesis tested was: $C_{S1} = C_{S2} = C_{S3} = C_{S4}$. A statistically significant result was obtained, Sig-score (0.470) was higher than 0.05 and then the null hypothesis was accepted. Therefore, the C index is equal among the academic years in the Systems students.

iii) Are there significant differences in the moral judgment competence between systems and management students from different gender? This hypothesis, H3: $C_{Sf} = C_{Mm}$, was partially supported.

Career	Gender	N	Mean C-Index	Standard Deviation
Management	Female	200	.1552	.09965
	Male	72	.1820	.11368
	Total	272	.1623	.10401
Systems	Female	31	.1619	.09925
	Male	48	.1185	.10781
	Total	79	.1355	.10605
Total	Female	231	.1561	.09941
	Male	120	.1566	.11523
	Total	351	.1563	.10492

Table 7: Mean C-index and standard deviation of careers and genders.

The management career female students obtained 15.52% and the male students 18.20% in C index. While the systems female students obtained 16.19% and the male 11.85%. The Systems students observed a lower value in male and slightly higher in female. Also, the entire 231 female population got a value of 15.61% and the total 120 male 15.66%.

	Sum of squares	df	Square mean	F	Sig.
Between groups	.044	1	.044	4.028	.046
Within grupo	3.809	349	.011		
Total	3.853	350			

Table 8: C index ANOVA between careers and genders.

The moral C-index, among genders of the Systems students had significant differences. The one-way analysis of variance (ANOVA) demonstrated that means are not equals. Specifically, the null hypothesis tested was: H3: $C_{Sf} = C_{Mm}$. A statistically significant result was obtained, significance score (0.046) was lower than 0.05 and then the null hypothesis was rejected. Therefore, the C-index is different between genders in the Systems and Management students.

	Sum of squares	df	Square mean	F	Sig.
Between groups	.000	1	.000	.002	.968
Within groups	3.853	349	.011		
Total	3.853	350			

Table 9: C-index between genders ANOVA.

Grouped exclusively by gender, the students' C-index had not significant differences. The one-way analysis of variance (ANOVA) verified that means are equals. Specifically, the null hypothesis tested was: H3: $C_f = C_m$. A statistically significant result was obtained, Sig-score (0.968) was higher than 0.05 and then the null hypothesis was accepted. Therefore, the C-index is equal between the genders.

5. Discussion

The Moral Judgment Competence MJC, C index, was different between Systems and Management students. The MJC was higher in Management than Systems students. The studied careers did not improve the Moral Judgment Competence in senior students; more university years were not associated with C index scores of senior students. C index score of senior students was lower or equal than the freshman. In addition, the C index of intermediate semesters students had scores high and also low.

The findings agree with the Park's *et al.* (2012) argument, planned moral judgment competence in curricula is necessary to improve moral reasoning of students. More credits, hours and the modification of learning technics are necessaries to advance the moral judgment competence into all semesters of the curricula. Learning activities, as cases analysis, solve problems, discussion of dilemmas or short stories, about moral issues, experiences in the systems and management fields and the university context can help to improve the senior students' moral judgment competence.

Also, no significant gender differences were found in this research, supporting other previous studies as Nwankwo's (2013) who found that gender was not significantly associated with moral judgment. This contradicts the Wang and Calvano's (2015) findings who analyzed the relationships between gender and business ethics education and their results indicated that women are generally more inclined to act ethically than men.

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Abstract: It is assumed that the university education positively impacts the student's moral reasoning. The purpose of this research was to examine the Moral judgment competence MJC between systems and management students at a public university in Hidalgo, Mexico. The effectiveness of their curricula and the university years have impact on students' moral judgment competence. Data was collected through survey exploration with the Moral Judgment Test completed by 272 administration students and 79 systems students of all semesters. The moral judgment competence was evaluated by C index. The C index score was higher for the management than the systems students. The C index score was slightly lower for senior than freshman students. The scholar years did not improve the senior students' C index, more years of university career were not associated with the senior students' C index score. Additionally, the results indicated that moral judgment Competence is the same in any gender of the students. Planned moral judgment competence in university curricula is necessary to improve students' moral reasoning. In this paper, background, theoretical framework, results are discussed.