

# Students competences in Business Administration subjects

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## Abstract

The evaluation of the competences acquired by the students in the context of a university education system is needed to enable professors to develop teaching-learning processes tailored to students' needs. The main goal of this paper is to analyze in depth the profile of the acquired competences of the bachelor students in Business Administration subjects.

In that sense, this paper explains an experience in assessing bachelor student's competences by applying an ICT-based digital platform designed for the self-assessment of personal and social competences. In particular, we apply an evaluation tool which was specifically designed for self-evaluating the project managers' generic and specific competences.

The authors of this research have previous experience in implementing this evaluation tool in the subjects of Business Administration, Operations Management and Strategic Management taught in the Faculty of Economics and Business of the University of Barcelona. In this paper, the results show that there exist significant differences in the self-evaluation of competences depending on the respondent gender.

This kind of tools benefits the three parties involved: students, university managers and organizations, and should be applied along the Bachelor as a transversal project and adapt the programs to achieve graduate students with higher levels of social and personal competences, as demanded by the labour market.

## Keywords

University Education; Student competences; Competences evaluation; Business Administration; Business Education.



## 1. Introduction

The evaluation of the competences acquired by the students in the context of a university education system is needed to enable professors to develop teaching-learning processes tailored to students' needs. In that sense, the main goal of this paper is to analyze in depth the profile of the acquired competences of the bachelor students in Business Administration subjects.

This paper explains an experience in assessing bachelor student's competences of the Faculty of Economics and Business of the University of Barcelona by applying a digital platform called *Evolute* developed by Tampere University of Technology in Finland (Achcaoucaou et al., 2012, Kantola, 2009; Kantola et al. 2005; Vanharanta, 2005). This is an ICT-based digital platform designed for the self-assessment of personal and social competences, and it uses different models of competences for a range of specific work role profiles. In particular, we apply an evaluation tool called *Cycloid*, which was specifically designed for self-evaluating the project managers' generic and specific competences. Tools as the *Cycloid* benefits the three parties involved: students, university managers and organizations, and should be applied along the Bachelor as a transversal project and adapt the programs to achieve graduate students with higher levels of social and personal competences, as demanded by the labour market.

In this paper we have used the *Cycloid* tool to assess competences of the Business Administration students of University of Barcelona. Specifically, it has been implemented to a total of 496 voluntary students during the 2011/2012 academic year taking compulsory subjects. Indeed, 174 students of the sample were enrolled in the Business Administration first year course, 209 students were from Operations Management and 113 came from the Strategic Management. These two last subjects belonged to the third year course.

The results show that there exist significant differences in the self-evaluation of competences depending on the respondent gender in personal competences (like self-control and cognitive capability). Additionally, students of different courses level –first year students vs. third year students- consider to be different in competences such us self-



motivation and empathy. Therefore, so far we find that females and first year students display the major difference between current and desired competences perceived.

## **2. Literature Review**

Changes in the degree planning in the great majority of European universities have been implemented to better adapt to the demands of the European Higher Education Area (EHEA). Among other changes and challenges, the evaluation processes have become less passive and students are evaluated both for their knowledge and competences. Different attempts to define competence have been presented, such as in Abad Guerrero and Castillo Clavero (2004) according to who a competence integrates the knowledge, know-how and know-being (see also Bikfalvi et al., 2007, Bikfalvi et al., 2013, Montoro-Sanchez et al., 2012, among others).

At the European level, competences have been classified into generic and specific Tuning Education Structures in Europe (2003). Other national governments have also adopted this classification (ANECA, 2005). As their labels show, generic competences are acquired by all university students, regardless the degree they are studying. In addition, these competences could be classified into: instrumental (e.g., capacity for analysis and synthesis, information management skills, problem solving and decision-making), interpersonal (e.g., teamwork, interpersonal skills, appreciation of diversity and multiculturalism and ethical commitment), systemic (e.g., capacity for applying knowledge in practice, capacity to adapt to new situations, leadership, ability to work autonomously, initiative and entrepreneurial spirit, concern for quality and will to succeed) (Tuning Educational Structures in Europe I, 2003). On the other side, a specific competence differ from one degree to another (for other classifications see e.g., Gangani et al. 2006, Marzo-Navarro et al., 2006, García Manjón and Pérez López, 2008, Berdeow and Evers, 2010, Ennis 2010, Montoro-Sanchez et al. 2012, Gonzalez et al., 2014).

Competence acquisition has been analyzed in specific degrees. For example in medical and nursing degree (Sedgwick et al., 2013), engineering (Marin-Garcia et al., 2008, Garcia-Garcia et al., 2011), accounting (Ciudad Gómez and Valverde Berrocso, 2012)



and final year projects (Mateo et al., 2012). Business and management, of interest in this paper, has also been studied. One side of the analysis has been valuing the competence acquisition.

Regarding the labor market's point of view, Montoro-Sanchez et al. (2012) found out that the organization's most demanded competences are, among others: autonomous learning, creativity, leadership, entrepreneur spirit, and designing and managing projects. Regarding students' opinion, De la Iglesia (2011) concluded that analytic thinking, searching information, multiarea knowledge, multidisciplinary teamwork, leadership and applying knowledge into practice, are among others, the most important.

Another point of view could be labeled the competence acquisition planning. In the existing literature about students' competence development measurement, in which current and future levels of competence levels are compared using an ICT-based tool. For example, in Achcaoucaou et al. (2012) the competences of master students are analyzed and found that students improved in self-control and cognitive capacity competence. In Bernardo et al. (2013), the same tool was used to analyze bachelor's students, specifically those in the Operations Management subject, concluding that social competences should be more monitored than the personal competences. The study was also applied to the Strategic Management subject (Guitart-Tarrés et al., 2013) and the results show that *"students feel more confident in competences linked to Group Capabilities, Self-assessment, Leveraging diversity, Organizational savvy and Understanding others"*. In Cruz-Casares et al. (2013) a comparison between competence acquisition in first and third year students is presented. The authors found significant differences regarding the degree level (first or third year) as third year students have been able to develop a higher level of competences. They also found, although at a lower level, differences between genders and in this case, females are willing to achieve a greater level in some of the competences analyzed. Regarding the former, gender differences were also found in Parahoo et al. (2013) when analyzing the factors of students' satisfaction in universities. González-Moreno (2012) also found differences in graduated students, as *"female students place higher value on graduate school, while male students hold higher expectations of success"*.



### 3. Methodology

#### 3.1. The *CYCLOID* tool

To carry out the assessment of the students' competences we drawn on a tool named *Cycloid*, which was developed in the department of Industrial Administration at the Tampere University of Technology at Pori in Finland. This University, as part of the project known as *Evolute*, has developed a method and tools for assessing students' competences.

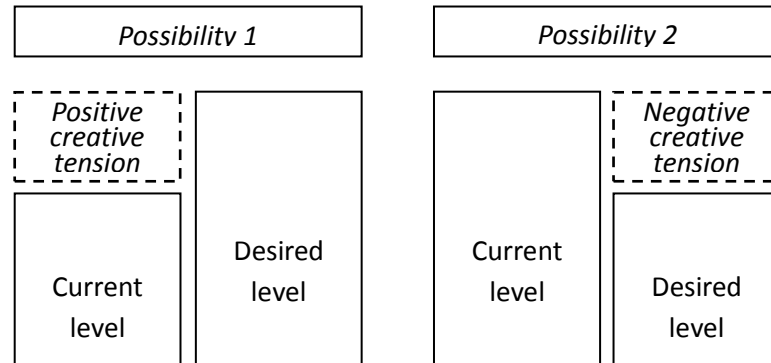
*Evolute* platform offers several applications designed to evaluate the desirable competences in a range of professional roles (for example, project managers or occupational health and safety managers) and organisational processes (knowledge creation, innovative culture, managing the value chain, etc.). It should be noted that these applications are distinct and tailored to each professional role and organisational process. All *Evolute* applications have been constructed as the web-based applications [Kantola et al, 2005]. The *Evolute* System is a platform that supports building and using co-evolutionary applications on the internet.

One of such applications is *Cycloid* -bachelors' competencies-, an ICT-based tool that enables the self-assessment of an individual's project management skills. Other *Evolute* applications are, for example, Astroid, Cardioid, Conchoid, Deltoid, Epitrochoid, Helicoid, Nephroid or Tricuspid.

The evaluation with *Cycloid* is based on the indirect self-assessment of broad competences. Students are asked to respond to a series of statements related to their daily work, answering based on their perceptions rather than performance. For each statement they are asked to identify their current level of competences and indicate the level they would like to achieve (desired level). Statements are graded using a fuzzy scale, with labels such as always, often, sometimes or never. The difference between the two levels (current and desired) is defined as the creative tension (see Figure 1). Two situations are possible: (1) to identify competences for which the student perceives the need to learn,

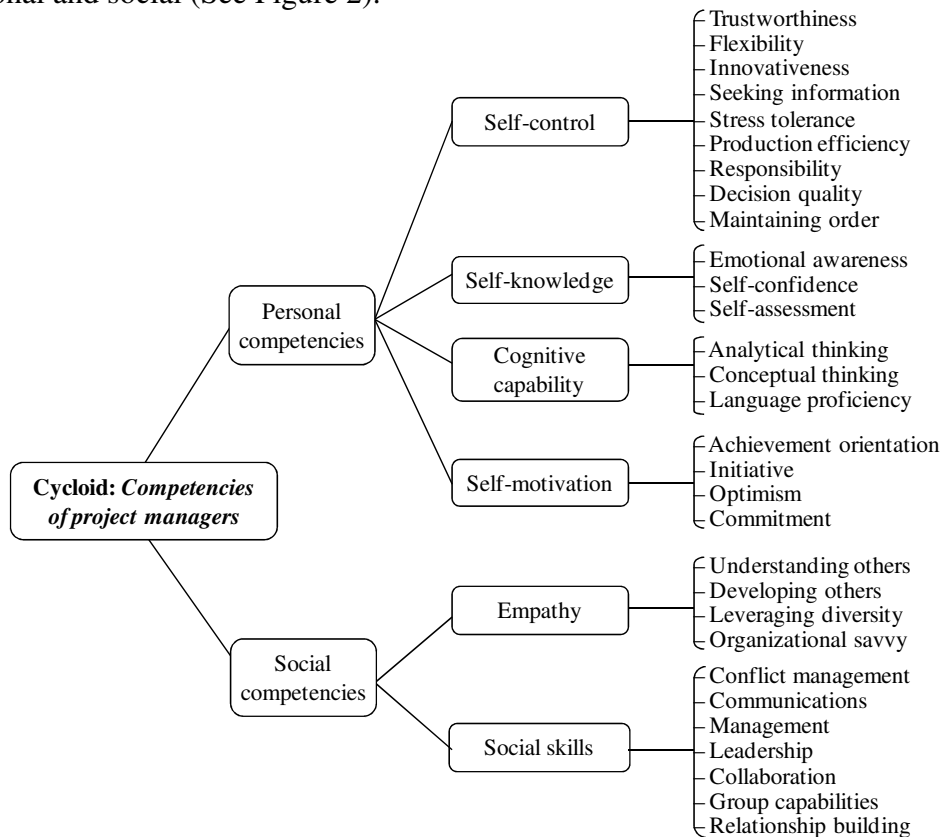


then further teaching and training could usefully be focused, and (2) to identify competences in which the students considered they have the level required.



**Figure 1.** Creative tension.

The *Cycloid* questionnaire contains 130 items. The scores derived from the responses given, for both the current and desired levels, provide an immediate evaluation of 30 broad competencies. These competences can be grouped in two main dimensions; personal and social (See Figure 2).



**Figure 2.** CYCLOID model.



### 3.2. Implementation

The authors of this research have previous experience in implementing *Cycloid* in different subjects of the Bachelor of Business Administration held in the Faculty of Economics and Business at the University of Barcelona. Particularly, its implementation in the subjects of Business Administration [Miravittles et al., 2012, Núñez-Carballosa et al., 2012], Operations Management [Bernardo et al., 2013] and Strategic Management [Guitart-Tarrés et al., 2013] explored the students' perceptions regarding the importance of the competences assessed, the validity of the tool for evaluating these competences, and their opinions about the extent to which their contents have helped them to develop their social and personal competences.

In this faculty, the aforementioned courses are compulsory subjects: Business Management course is offered in the first year and Operations Management and Strategic Management courses are offered in the third year. Business Administration course is designed to give a broad knowledge of the functional areas of a company, and their interconnection. Meanwhile, Operations Management has the usual contents of tactical and strategic decisions of production management and Strategic Management the usual contents of strategic decisions of corporate management.

All in all, the competence evaluation was implemented to 496 voluntary students during the 2011/2012 academic year. Specifically, 174 students were enrolled in the Business Administration course, 209 students were from Operations Management course and 113 came from the Strategic Management course. The results of its implementation yielded interesting results in three senses: First, students ascribe considerable importance to the social and personal competences described in the model. Second, the results obtained from the evaluation of each of the six competence groups illustrate that students regard the tool as an appropriate and valid measure of their competences. Finally, the students believe that the Bachelor of Business Administration programme makes a substantial contribution to the development of their broad competences.

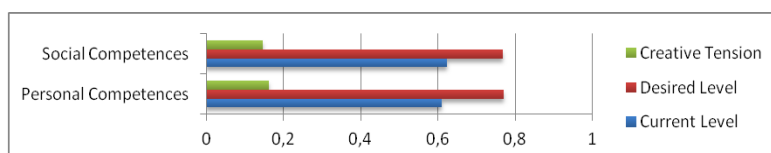


These results prompt us to analyse whether teaching/learning processes within a specific academic programme aid the development of the student's competences. Hence, in the present study, we compare differences based in the course level and the respondents' gender.

## 4. Results of the implementation

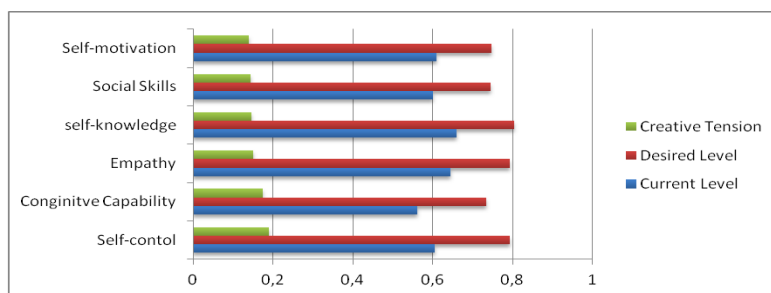
### 4.1. Descriptive

Figure 3 shows, the two main dimensions of the competences, being personal competences and social ones. It is presented the descriptive of the current and desired levels and creative tension of competences for the full sample. The competences are ordered according the creative tension value. As explained before, the students make a self-evaluation of the competences giving a grade between 0 and 1, being the latter the highest. As shown, their actual and desired levels are balanced but there is a light positive tendency towards social competences; observe that that creative tension is smaller. When we disaggregate the competences in six groups (self-control; self-knowledge; cognitive capability; self-motivation; empathy and; social skills) it can be perceived (Figure 4) that self-control is the competence with the highest creative tension. On the other hand, students felt more comfortable with their actual level in self-motivation competences. Self-knowledge is the competence with the highest actual and desired levels but it is not the one with the highest creative tension. That means that they are not so dissatisfied with their actual knowledge level.



**Figure 3.** Current and desired levels and creative tension of personal and social competences dimensions.





**Figure 4.** Current and desired levels and creative tension of clusters of competences.

In Figure 5 shows the thirty different individual competences. The competence of group capabilities is the one with the highest value of actual level (0.724), followed by self-assessment (0.720) and leveraging diversity (0.691). On contrary, management competence is the one with the lowest value of actual level (0.515) followed by stress tolerance (0.519) and conflict management (0.532). Regarding the desired level, it can be observed that the competence students consider the most important is the self-assessment one (0.915), the group capabilities competence (0.887) is the second one on their importance list, followed by relationship building competence (0.863). Interestingly, none of the most important competences, evaluated as desired level, is among the competences with the highest creative tension. In fact, self-assessment has the lowest creative tension, indicating that students have already almost the desired level.

The fact that the competences with the highest creative tension are not the ones evaluated with the highest desired level is a positive result. This indicates that students have been able to develop, at sufficient levels, those competences that are more important according to their criteria.

As observed in Figure 5, stress-tolerance is the competence with the highest creative tension (0.319). Language proficiency has the second place (0.244) and responsibility the third place (0.207). Recall that this creative tension indicates the gap between the desired and the actual level of competences. Therefore, these students, and professors, would put a strong emphasis on these competences since they are the most lagged ones. Instead, the collaboration, developing others and emotional awareness competences are have the lowest creative tension levels.



**Figure 5.** Current and desired levels and creative tension of competences for the full sample.

## 4.2 Exploring significant differences between groups and gender

In this section we aim to observe whether there are significant differences in the creative tension among students in the first year and students in third year. In addition, we also aim to explore the potential significant differences between genders. The t-test was carried out to discover significant differences in the mean values between groups. We focus only on differences in the creative tension since this measure is the one that represents the unmatched desired levels of competences.

Table 1 presents the significant differences between group and gender for the personal and social dimensions of competences. As observed, third year students have a significant lower level of creative tension than first year students in both personal and social competences, and females register a significant larger value of creative tension in personal competences. However, there are no significant differences between genders referring to the social competences.

**Table 1.** Significant differences between grade and gender of creative tension in the personal and social dimensions.

Competences	1rst Degree	3rd Degree	T-test	Males	Females	T-test
Personal	0.182	0.151	3.777***	0.152	0.173	-2.565**
Social	0.166	0.136	3.661***	0.144	0.151	-0.976

Table 2 presents the clusters of competences and also explores significant differences among groups and genders. There are more differences between courses than between genders. Table 1 indicates that there are significant differences in the all the six competences between groups and that creative tension levels decrease in the third year. Males have significantly less creative tension in self-control, cognitive capability, self-motivation and social skills. There are no significant differences in the clusters of self-knowledge and empathy by gender. Therefore, so far we could argue the higher levels of creative tension are females and first year students.

**Table 2.** Significant differences between grade and gender of creative tension in the clusters of competences.

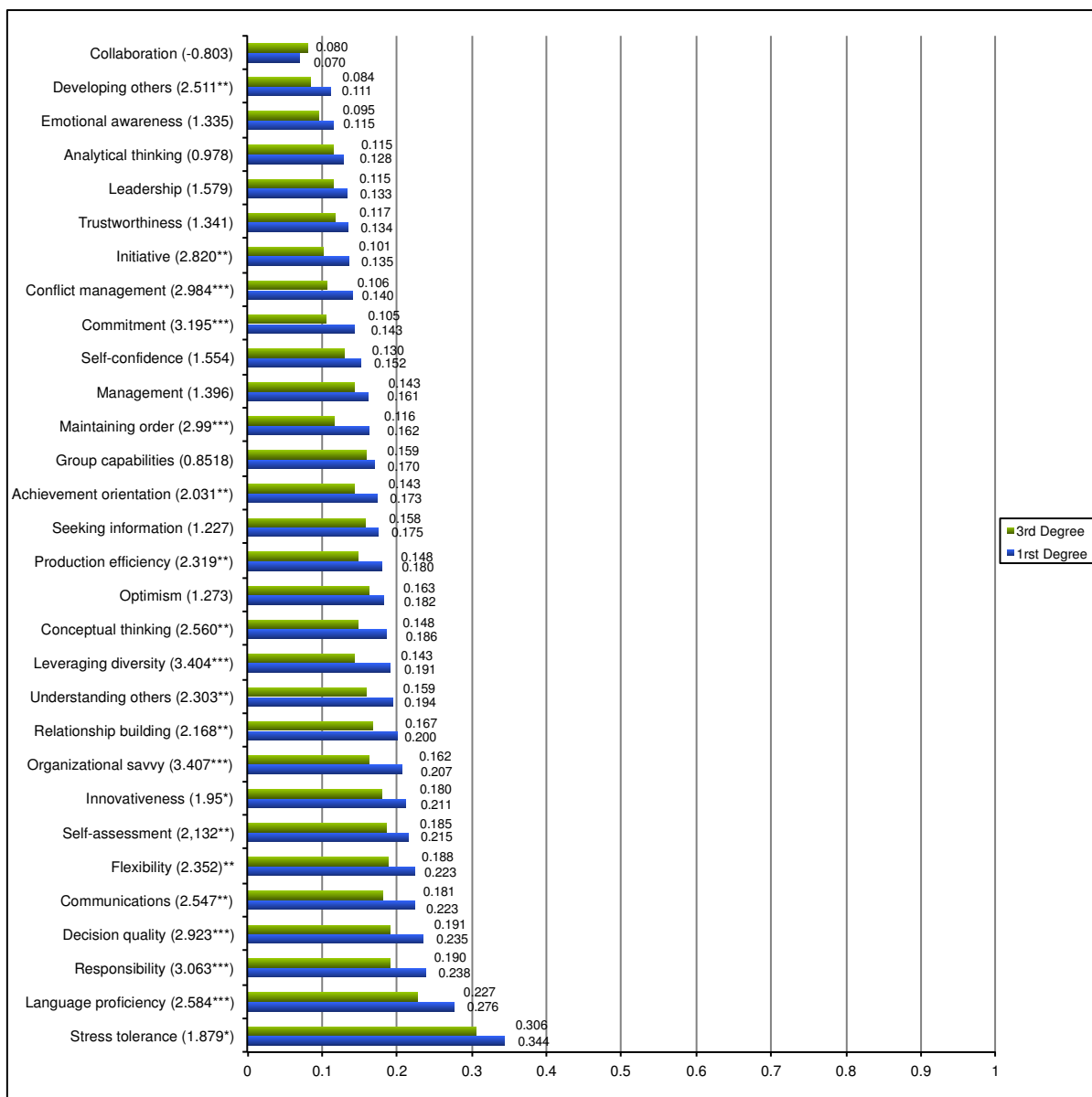
Competences	1rst Degree	3rd Degree	T-test	Males	Females	T-test
Self-control	0.211	0.177	3.621***	0.178	0.202	-2.641***
Self-knowledge	0.161	0.136	2.345**	0.141	0.149	-0.793
Cognitive capability	0.197	0.163	2.959***	0.159	0.192	-2.989***
Self-motivation	0.158	0.128	3.354***	0.131	0.147	-1.826*
Empathy	0.176	0.137	4.197***	0.151	0.150	0.1334
Social skills	0.157	0.136	2.459**	0.136	0.153	-2.047**

In Figure 6, is shown the significant differences between courses of the creative tension for each of the 30 competences. The competences are ordered according to the creative tension of the 1st degree.

At a first sight it is perceived that in 20, out of 30, competences there are significant differences in the mean values of creative tension between the groups. Remarkably, in all the competences, except for cooperation, there was a decrease in the creative tension values for third year students. This shows that students do stimulate, create, and increase their competences levels during two academic years. This is an interesting result to encourage the current academic programs followed at the University. However, it has to be kept in mind that the decrease in the creative tension is not significant in all the competences numbered.

An encouraging result is that there are significant differences for the stress tolerance, language proficiency and responsibility competences as they were evaluated with the highest creative tension by the full sample. Further, self-assessment, relationship building and leveraging diversity competences were ranked among the three most important competences (higher desired level) for the full sample and in Figure 6 it can be perceived that the creative tension of these competences significantly decreases on time.

Interestingly, in the empathy cluster all the competences that compose it (understanding others, developing others, leveraging diversity and organizational savvy) registered significant differences between first and third course. The remaining clusters registered, at least, one competence without significant difference between grades.



Note: T-test indicated in brackets.

**Figure 6.** Significant differences between grades of creative tension in the competences.

Figure 7 shows the creative tension of male competences in decreasing order. Complementary, figure 8 shows the creative tension of females competences also in decreasing order. Similar to figure 6, the t-test is indicated in brackets. At a first sight, we observed that there are significant differences in 11 competences. Surprisingly, for all competences with significant differences the level of the creative tension is higher for

females, except for understanding other competence. This could indicate that women are unhappier with their current levels of competences and they want to excel them.

Stress tolerance, is the competence that registered the largest value of creative tension for both males and females and it presents significant differences between genders. That is, on average females registered a higher level of creative tension (0.370) and males (0.272). Language proficiency is second competence with higher level of creative tension for both genders. However, the levels of that creative tension are significantly higher for females (0.270 vs. 0.219). The communication competence registered the third higher creative tension for females but for males it is located in ninth position and the test indicates significant differences.

Innovativeness is the fourth variable with the highest creative tension for females (0.223) with significant differences between males for whom it is located in the eleventh position (0.164). Optimism is another competence with significant variance between females and males. It is located in the tenth position for females while it stands for the fifteenth location in the male group. It is also perceived that females have a significantly higher level of dissatisfaction with their current level of conceptual thinking than males. As mentioned before, females are significantly more satisfied than males with their understanding other competence. The creative tension of this competence is in the nineteenth position for the formers while for the latter it is located in the seventh place.

For the males group, the third and fourth competences with the higher level are responsibility and decision quality. However, there is no significant difference between the mean of the creative tension for males and females. For both genders, the competence with the lower creative tension is collaboration. Nevertheless, the levels are significantly higher for females than for males.

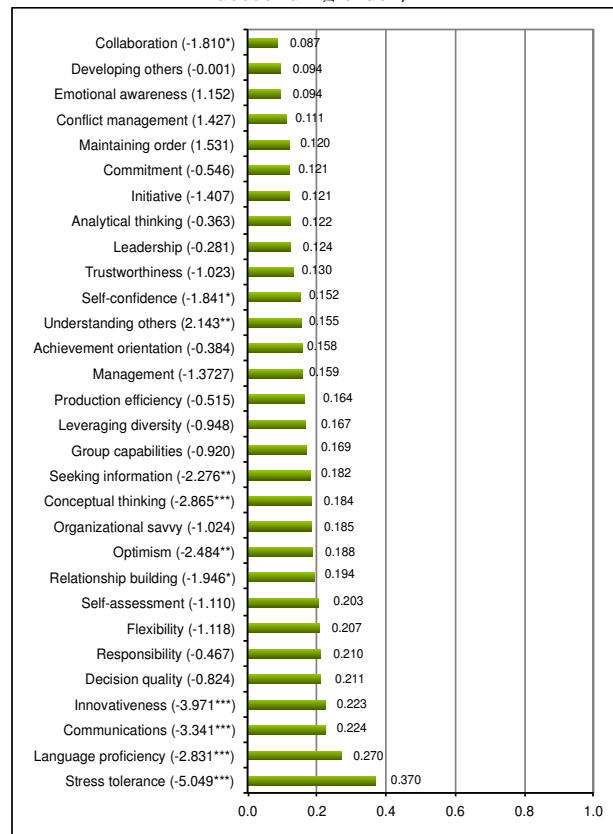
These results open a door to a new debate whether the programs would be tailored towards males and females in a different way.

**Figure 7.** Significant differences between genders of creative tension in the competences (male descending order)



Note: T-test indicated in brackets

**Figure 8.** Significant differences between genders of creative tension in the competences (female descending order)



Note: T-test indicated in brackets

## 5. Conclusions

The present paper assesses cross-disciplinary competences by means of the *Cycloid* tool of students attending to compulsory subjects of the Business Administration Bachelor at the University of Barcelona during the academic year 2011-2012. This competence evaluation permits lecturers to improve and design new didactic tools and contents according to students' needs.

The main results show that students feel more confident in competences linked to Group Capabilities, Self-assessment and Leveraging diversity. On the contrary they feel less



prepared in aspects such as Management competence, Stress Tolerance and conflict management.

As regards the creative tension, the competences with the highest gap between the current and the wanted levels are Stress tolerance, Language proficiency and Responsibility. In contrast, we find other competences such as Emotional awareness, Collaboration, Developing others, are competences in which students believe their current level is near the desired level for the future. Therefore, in order to improve student's future professional development, social competences should be paid more attention and in turn need to be more worked than the personal ones.

Also if we compare these results with ones of students at first year at the same bachelor we observe that third year students have a significant lower level of creative tension in both personal and social competences than first year students. Students of different courses level –first year students vs. third year students- consider to be different in competences such as maintaining order, innovativeness, responsibility, conceptual thinking, language proficiency, achievement orientation, understanding others, developing others, communications, conflict management, relationship building, etc. However the analysis by gender shows that there are only differences in the perception of personal competences not in social ones. Indeed females have a higher creative tension than males in competences such as self-control, cognitive capability, self-motivation and social skills.

Therefore it can be assumed that there are more differences in all the competences between year students than between genders. And additionally, we can argue that the higher levels of creative tension are assumed by females in first year.

In consequence, the contribution of this article is to show that a tool as the *Cycloid* is useful in designing academic programmes since allows to evaluate the initial students' competence level when beginning the bachelor and to compare it with the level required for their future professional development. An efficient assessment system as this is needed to enable managers to develop teaching-learning processes tailored to students' needs.





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