# IMPACT OF COLLABORATIVE WORK WITH WEB 2.0 TOOLS ON MANAGEMENT STUDENTS: A STUDY OF PERCEPTIONS AND BENEFITS

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***Abstract***
*This article presents the results of a study that explored the perspectives of students in a management program at a public university, examining how the curriculum addresses programmatic content that shapes future professionals. The methodology is then described, including the analysis of collected information and the presentation of results. Crucially, the research project was the result of collaboration between students and research professors, with the assistance of program coordinators, focusing on data collection and analysis through five sessions involving research professors and collective reflection (students - research professors) on the impact that collaborative work with Web 2.0 tools can have on management students. This analysis is approached from the perspectives and benefits that can also be found in any other university program, ultimately concluding what these perceptions and advantages are when engaging in collaborative work at the undergraduate level. Students advocate for the inclusion of workshops or group evaluations, especially those related to research topics, to enrich their knowledge. One way to promote these activities is through diversifying the course's thematic content by the professor.*
***Keywords****: Collaborative work, Web 2.0, education, students, learning*

**INTRODUCTION**

With the widespread diffusion of the internet and technological advances, there is a growing interest in collaborative work among people. This trend is based on the widespread use of technological tools and communication devices. The evolution of technology has facilitated collaboration, allowing individuals from different geographic locations to work together efficiently. This transformation in the way of working reflects a greater reliance on digital tools for communication and collaboration, which in turn drives the adoption and continuous development of new technologies in this area. We seek to employ an active methodology while maintaining the pedagogical principles of cooperation, collaborative work, and autonomy, and enhancing critical reflection through the exchange of ideas that encourages discussion on various topics (Palomares-Ruiz et al., 2020). The web 2.0 has empowered the entire social aspect by creating a culture that facilitates the rapid transmission of information while strengthening collaboration among users through a design focused on their individual needs.

Social networks (such as Facebook, Edmodo, Twitter, etc.) respond to these collaborative patterns as they are based on social interaction and communication among their members to create knowledge. In other words, they draw from the experience among their members (Acosta Corporan et al., 2020). The combination of technology with collaborative work naturally brings its advantages, and students can indicate which ones they feel are most prevalent, as new paradigms in education have been created, reinforced by learning theories. Collaborative learning has been of great interest in the field of educational research, driving the conduct of numerous studies that emphasize the potential of the collaborative process in student learning, knowledge acquisition, development of certain skills, and improvement of academic outcomes (Casillas Martín et al., 2017). It is important to consider that collaboration among students develops skills in them. Therefore, it is advisable to design an evaluation that allows measuring both individual and group competencies, and then compare the results obtained. When the collaborative model is used, it is important for evaluation to take place both individually and in groups to measure individual skills and abilities, as well as the ability to work in a group (Hanson and Deluliis, 2015).

Collaboration in research projects can be enhanced through academic seedbeds, where students have the opportunity to develop skills that enable them to improve their ability to create innovative products or processes. Undoubtedly, the collaborative development of production-study-research is an inevitable option to improve the innovation capacity of universities and achieve significant development, making the construction of these two mechanisms play an important role (Qiu and Liu, 2018). Collaborative work is necessary because it fosters skills in future professionals that companies require to face globalization where competition is increasingly stronger each day. Companies will hardly be able to compete if these new professionals are strong in collaborative work and in higher-order thinking for modern work. Similarly, along with collaborative work, the incorporation of technology is required. While Facebook has the potential to promote collaborative learning and student interaction, traditional online university learning environments, such as Learning Management Systems (LMS), deny such action through their closed system format (Wang et al., 2012). Generally, it has been used to deposit various web resources on which students opine and evaluate themselves; likewise, it can also contain links to blog-type materials or web pages, as well as videos and photographs, which develop and enhance collaborative learning (Román and Martín, 2014). Over the past few years, the use of various online collaborative writing tools, such as blogs and wikis, has been integrated into educational environments (Brodahl and Hansen, 2014).

ICTs are presented as an important resource serving career guidance professionals, favoring communication, collaborative work, or interaction with users, among other aspects (Martínez-Clares et al., 2020). By combining collaborative learning and online learning, students can seek a better learning method called online collaborative learning. In other words, it is a learning method that focuses on collaboration and is executed on an online platform (Hakim et al., 2020). The use of social networks provides teachers and students with the opportunity to be in continuous contact, transcending the conventional class and creating new teaching and learning environments (Ean and Lee, 2016, as cited in Froment et al., 2022).

Social networks in higher education present enormous didactic potential, within the framework of a didactic process that values communication between educational agents, collaboration as a teaching methodology, and active participation as a means to achieve more significant and contextualized learning (Solano-Fernández, 2021). Platforms such as blogs, wikis, YouTube, and, especially, social networks enhance significant and trustworthy interaction spaces that promote participation at all levels and allow for the reduction of the transactional distance between students and teachers (Giraldo Ospina et al., 2021). The use of social networks has emerged in recent years as a teaching tool of increasing interest (Martínez Salazar et al., 2021). As social networks become a consolidated reality and influence students' lives, education professionals are interested in understanding their impact, even from ages prior to adolescence (López and Cascales, 2019, as cited in Martín Martín et al., 2021). There is strong evidence that collaborative learning is beneficial for educational development. By participating in collaborative activities, students use the perspectives and experiences of others to solve problems and develop a shared understanding of meanings (Rutherford, 2014).

The use of social platforms such as WhatsApp, Facebook, Slack, and others allows for interaction and the exchange of experiences and interests in the web and are valuable for collaborative learning through constant internet connectivity (Ezequiel Makhoere et al., 2020). Over the past two decades, social networks seem to have influenced the way education is delivered in academic institutions and beyond classroom walls (Faizi and Fkihi, 2016). Technological innovation and increased Internet usage for e-learning by students in higher education institutions have brought revolutionary changes in communication patterns (Ansari and Khan, 2020).

**Methodology**

The purpose of this research was to investigate how students perceive collaborative work in classroom settings with the assistance of Web 2.0, also known as social web, aiming to identify the potential advantages. Information was collected through a survey designed on Google Forms and administered to management students. The data was analyzed by the research professors, and statistical formulas were applied, integrating both qualitative and quantitative research approaches. Data collection and analysis were conducted during the first semester of 2023, following the steps of quantitative analysis technique.

**Participants**

Following the steps outlined in the quantitative content analysis technique, with the intention of deliberately narrowing down the information by accurately measuring the study variables (Hernández Sampieri et al., 2014), the population consisted of students enrolled in the management program at Colegio Mayor de Cundinamarca University, totaling 1,700 students.

To obtain the sample, the formula from Figure 1 was applied, with a confidence level of 95% and a sampling error of 5%.

Figure 1.

Formula for calculating the sample size, considering the population.

$$n = \frac{N Z_a^{\,2} pq}{(N-1) d^2 + Z_a^{\,2} pq}$$

Source: Aguilar-Barojas (2005).

$$n = \frac{1700 \times (1.96)^2 \times (0.5 \times 0.5)}{(1700-1) \times (0.05)^2 + (1.96^2 \times 0.5 \times 0.5)}$$

n=314 students

Once the sample calculation was completed, we proceeded to design the survey, making adjustments to capture the potential benefits that may arise when the professor engages in collaborative work in or outside the classroom with the assistance of Web 2.0.

In this way, the survey design takes into account questions to collect information on age, gender, marital status, employment status, among other variables. The second part of the survey focused on specifying the potential advantages with the aim of addressing the research question.

**Results and Discussion**

The collected data were analyzed using Microsoft Excel, incorporating formulas to calculate selection percentages. Table 1 displays the demographic information of the students who participated in the sample.

Table 1. Demographic Information of Students in the Business Administration Program

| | Sample Participants n=314 |
|---|---|
| Gender: | Male=136<br>Female=178 |
| Age: | <18 = 4<br>Between 18 y 22 = 68<br>Between 23 y 27 = 82<br>Between 28 y 32 = 78<br>Between 33 y 37 = 70<br>>37 = 12 |
| Marital Status: | Single =196<br>Married = 23<br>Cohabiting = 92<br>Divorced = 3<br>Separated = 0<br>Widowed = 0 |
| loyment Status: | Full-time Employee = 234<br>Part-time Employee = 51<br>Unemployed - Seeking Work = 19<br>Unemployed - Not Seeking Work = 4<br>Self-employed = 6 |

Figure 2, the gender distribution within the administration program is depicted, showing a higher participation of female students among those included in the sample. This phenomenon may be related to various sociocultural, economic, and political trends and factors that have influenced women's enrollment in higher education. Historically, women have faced greater barriers to accessing education; however, in recent decades, there has been a notable advancement in female empowerment.

Government policies and international initiatives have played a crucial role in this progress. Specific programs to promote women's education, scholarships, and awareness campaigns about the importance of female education have significantly contributed to closing the gender gap. Additionally, the growing recognition of the vital role women play in economic and social development has led to increased investment in their education.

Culturally, there has also been a shift towards valuing education for women, challenging traditional norms that prioritized other roles. Access to education allows women not only to obtain a degree but also to acquire skills and knowledge that are essential in today's job market. This expanded access has led more women to opt for programs like administration, where they can acquire key competencies for leadership and management roles. Therefore, the higher female participation in the administration program reflects not only a shift in educational policies and the empowerment of women but also progress towards gender equality in education. This phenomenon is a positive indicator of social and economic progress, demonstrating how women are leveraging educational opportunities to contribute significantly to professional and personal development.

Figure 2. Percentage distribution of administration students by gender

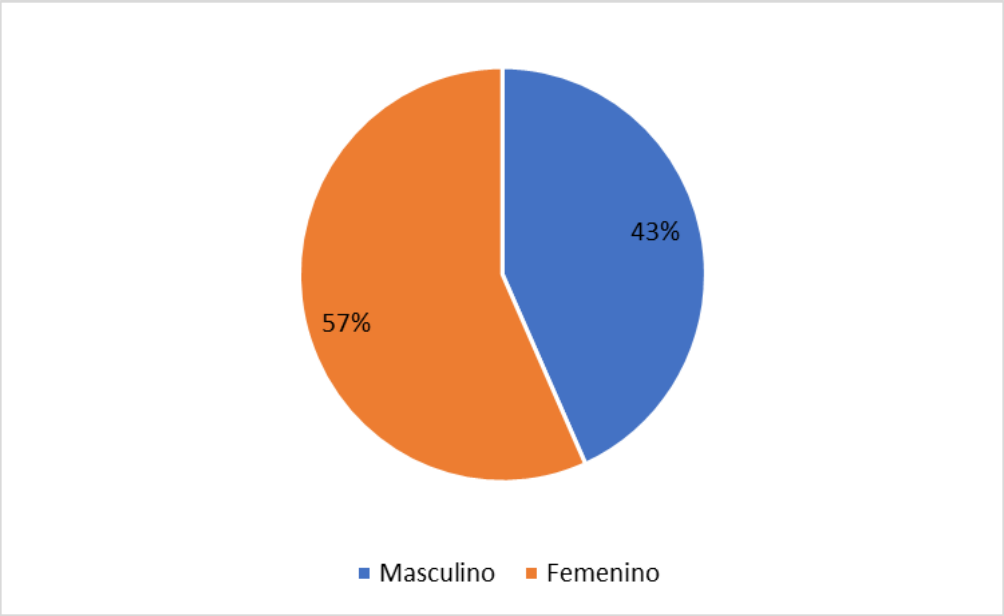


Figure 3, age distribution percentages of administration students reveal that the percentages of those aged between 18 and 37 are remarkably similar. This age group is where the majority of university students are concentrated, which is not coincidental. The high frequency of students in this range is largely explained by the structure of the academic program, which offers over 85% of its classes in the evening. This characteristic of the program is especially attractive to individuals within this age range, who often need to balance their studies with work responsibilities, family commitments, or other personal activities. The flexibility offered by the evening schedule facilitates access to higher education for those who cannot attend classes during the day, significantly increasing the participation of young adults and adults in the student body. In summary, the age distribution of students not only reflects the demographic characteristics of the student population but also the program's adaptation to the specific needs of its target audience.

Figure 3.Percentage distribution of administration students by age rango

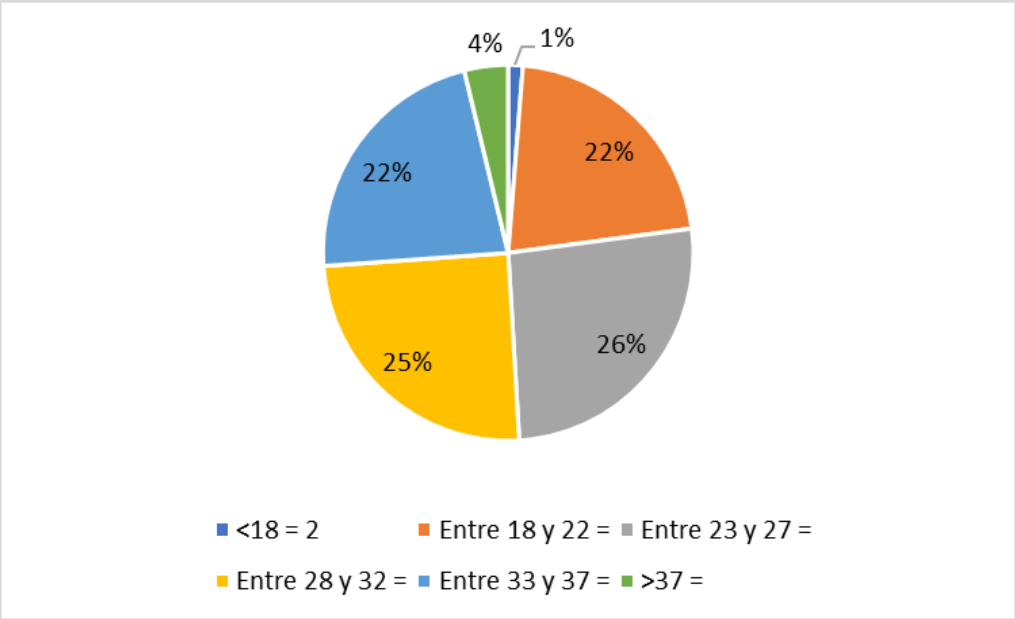


Figure 4, the analysis of the marital status of the administration students who participated in the sample reveals that the majority identify themselves as single, representing 62.4% of the total. This predominance suggests that the student population in this program is predominantly composed of young adults, who tend to be unmarried at this stage of their lives. It is worth noting that the option of separated was not selected by any participant, which could indicate a lower incidence of this marital status among students or a possible underrepresentation in the sample. The detailed distribution of percentages for each marital status category can be seen in Figure 4, providing a clear picture of the students' marital situation.

This information is relevant not only for a better understanding of the students' demographics but also for adapting university policies and services that respond to the specific needs of a predominantly single student body, such as extracurricular activities, emotional support services, and housing options. In summary, the high proportion of single students highlights a key characteristic of the demographic composition of the administration program, which has direct implications for planning and providing university resources.

Figure 4. Percentage distribution of administration students by marital status.

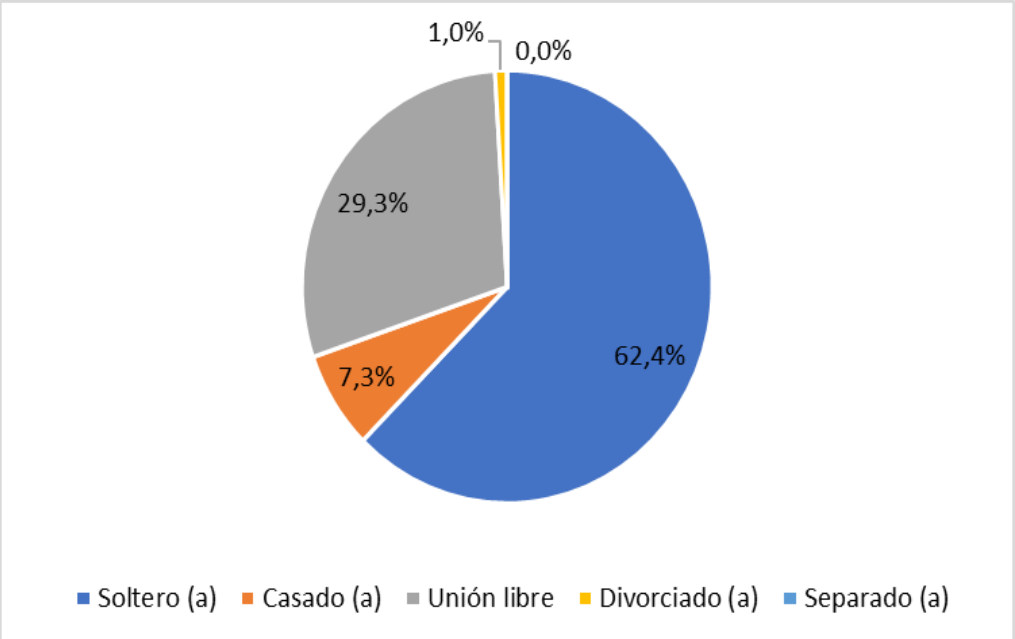

Figure 5, illustrates the analysis of the employment status of students in the administration program, revealing that a high percentage, specifically 75%, are employed full-time. This data is significant and suggests that the majority of students are balancing their studies with demanding work responsibilities. The ability to manage both commitments demonstrates the high motivation and discipline of these students. On the other hand, unemployed students who are not actively seeking work and those who are self-employed represent very small percentages, at 1% and 2% respectively.

These low percentages indicate that most students opt for the job stability provided by full-time employment, possibly to ensure steady income and relevant professional experience while completing their studies. Figure 5 clearly illustrates these percentages, providing a visualization of the employment distribution among students. This information is crucial for the university, as it underscores the need to offer programs and services that are compatible with the demands of full-time workers, such as classes with flexible schedules, access to online resources, and support in time management. In summary, the predominance of full-time employed students highlights a demographic profile that directly influences the needs and expectations of the student community in the administration program.

Figure 5. Percentage distribution of administration students by employment status

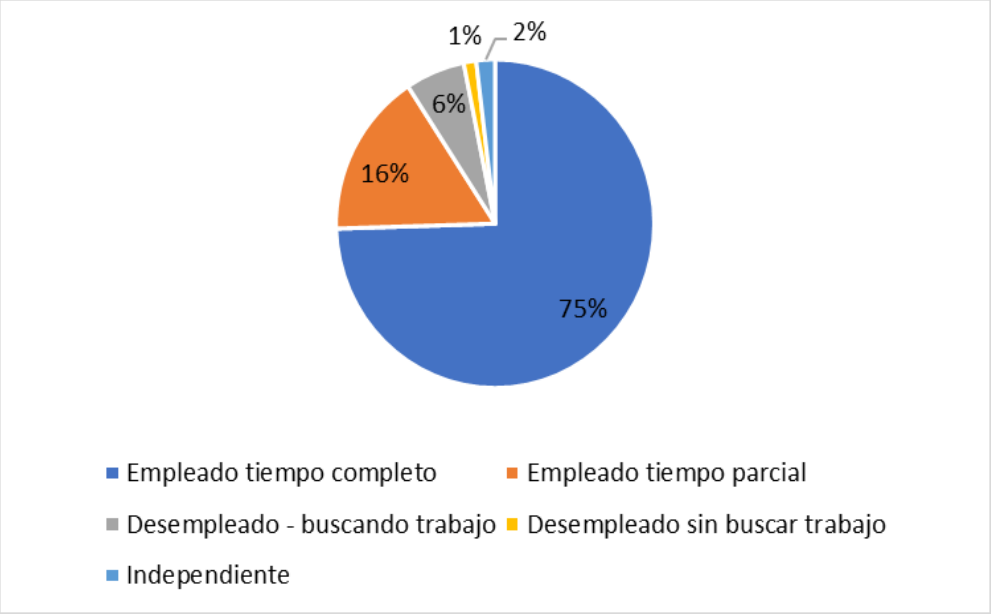


Table 2 presents the advantages that were selected by the administration students, defined by the research professors as the main group of advantages because they were the most selected by the students. It shows the participation percentages obtained for each of the advantages that students believe collaborative work and the use of social web provides.

The findings revealed that students selected three advantages they feel are the most prevalent: improvement of interpersonal relationships with 20.38%, development of social skills with 21.66%, and encouragement of critical thinking with 19.75%. Table 2 displays the percentages obtained for the skills selected by the students.

Table 2. Skills from Group 1

| Advantage | Number of students | Percentage |
|---|---|---|
| Improves interpersonal relationships | 64 | 20,38% |
| Increases satisfaction with one's own work | 41 | 13,06% |
| Develops social skills | 68 | 21,66% |
| Increases self-esteem and group integration | 48 | 15,29% |
| Encourages development of thinking | 62 | 19,75% |
| Values others | 31 | 10,00% |

**Conclusions**

The research reveals a series of advantages that students in a management program indicate are generated or strengthened when professors assign group work, which is enhanced by the use of tools belonging to Web 2.0. These advantages aid in their professional development as well as in their professional lives. Therefore, the research will be shared with all professors in the commercial business management program at the public university Colegio Mayor de Cundinamarca, with the aim of allowing them to understand their students' perspectives and make decisions to increase collaborative work activities aided by Web 2.0 tools within their courses.

Collaborative work using Web 2.0 tools is crucial in the education of management students. This approach not only improves students' ability to work in teams and develop social skills but also equips them with digital competencies and increased motivation for learning. The flexibility of these tools allows students to balance their academic and personal responsibilities, while preparing them to face the challenges of the modern professional world. Therefore, integrating these tools into the educational environment is essential to create a dynamic and relevant learning environment that responds to current technological and social demands. This also implies the need for professors to stay updated with new technologies to offer quality and relevant education.

Technological advances facilitate collaborative work as well as communication, particularly in relation to facilitating the exchange of information, especially in remote work settings. Therefore, one advantage that was not considered by students is the improvement of communication skills. Additionally, it fosters creative thinking because among students there will always be different types of personalities that, when combining perspectives, will ultimately strengthen creativity.

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