



# Facultad de Economía y Negocios

## Business and Economics School

### Working Paper

#### The decision making of commercial pilots seen from ethics

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The reference framework for decision-making from an ethical point of view has not been studied in depth in the commercial pilot industry (CPL). To do so, a survey with six scenarios is designed with the advice of the Mexican Pilots Union. The results indicate that CPLs do not apply the same ethical decision-making framework, 50% apply deontological rules, and the other 50% teleological theory rules, regardless of gender, age, experience, or crew position. Among the ethical approaches, most of the CPLs apply the personal moral approach, which is part of a deontological theory, as an ethical decision-making framework. The implication of the results is the recommendation that CPL training programs should promote ethics discussion groups.

*Keywords:* moral framework, ethical decisions, deontological, teleological, calibration training programs.

#### **La toma de decisiones de los pilotos comerciales visto desde la ética**

El marco de referencia para de toma de decisiones desde un punto de vista ético no ha sido estudiada a profundidad en la industria de los pilotos comerciales (CPL). A partir de una encuesta con seis escenarios, desarrollada con la asesoría de la Unión Mexicana de Pilotos. Se comprueba que los CPL

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no aplican el mismo marco de toma de decisiones éticas, el 50% aplica reglas deontológicas y el otro 50% teleológicas, independientemente del género, edad, experiencia o posición de la tripulación. La mayoría de los CPL aplican el enfoque moral personal para la toma de decisiones. La implicación de los resultados es la recomendación de que los programas de capacitación de CPL deben promover grupos de discusión sobre ética.

*Palabras clave:* marco moral, decisiones éticas, programas de entrenamiento, deontológico, teleológico, calibración.

### **A tomada de decisão dos pilotos comerciais vista a partir da ética**

O referencial para a tomada de decisão sob o ponto de vista ético não foi estudado a fundo na indústria da pilotagem comercial (CPL). Com base em uma pesquisa com seis cenários, desenvolvida com a assessoria do Sindicato Mexicano de Pilotos. Verifica-se que os CPL não aplicam o mesmo quadro ético de tomada de decisão, 50% aplicam regras deontológicas e os restantes 50% teleológicos, independentemente do género, idade, experiência ou cargo da tripulação. A maioria dos CPLs aplica a abordagem moral pessoal à tomada de decisões. A implicação dos resultados é a recomendação de que os programas de treinamento CPL devem promover grupos de discussão sobre ética.

*Palavras-chave:* quadro moral, decisões éticas, deontológicas, teleológicas, programas de treinamento de calibração.

### **La prise de décision des pilotes commerciaux vue de l'éthique**

Le cadre de référence pour la prise de décision d'un point de vue éthique n'a pas été étudié en profondeur dans l'industrie du pilotage commercial (CPL). Basé sur une enquête avec six scénarios, développés avec les conseils de l'Union des pilotes mexicains. Il est vérifié que les CPL n'appliquent pas le même cadre décisionnel éthique, 50% appliquent des règles déontologiques et les autres 50% téléologiques, quels que soient le sexe, l'âge, l'expérience ou la position de l'équipage. La plupart des CPL appliquent l'approche morale personnelle à la prise de décision. L'implication des résultats est la recommandation que les programmes de formation CPL devraient promouvoir des groupes de discussion sur l'éthique.

*Mots-clés :* cadre moral, décisions éthiques, programmes de formation, déontologiques, téléologiques, d'étalonnage.

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The awareness of the ethical dimension of companies has captured the attention of managers, academia, and government (Ma, 2009; Robertson & Athanassiou, 2009; Grant et al., 2017). Thinking ethically is a social concern and is of critical importance for the professions that serve society (Watson, 2003; Sama & Shoaf, 2008). Six hundred and twenty-five papers study the ethical decision-making framework that workers apply to sustain the judgment of their decisions at different industries (Ford & Richardson, 1994; Loe et al., 2000; O'Fallon & Butterfield, 2005; Craft, 2013; Lehnert et al., 2015) and none of them study this process in commercial pilots (CPLs). Their aim is to study the ethical decision-making frameworks of workers of different industries, jobs, and levels. Companies use the results of these studies to select candidates by matching their ethical thinking frameworks with the ethical values of the company to enhance the performance and productivity of the organization, create credibility and positive recognition by customers, and improve reputation.

For the case study of the air passenger transport industry, airlines can use the results with these purposes, but also both airlines and governments must recognize the CPLs ethical decision-making framework as critical to the safety operations of aircrafts since due to the *sui generis* of their actions, the decisions they make can have considerable impacts, especially because of the magnitude of their consequences, because CPLs take decisions every day, which do not necessarily imply imminent danger problems, but they have an *a priori* ethical background, since their routines are questioned by themselves (Hoppe, 2018; Butcher, 2016). Moreover, CPLs ethics could potentially influence dangerous situations, since vital values are the most urgent, if there is a reason why it is worth living (Mounier, 1972). Sicard et al. has established that CPLs decisions involve a complex series of processes influenced by several factors, including experience, context, cognitive factors, motivation, emotional state, personality traits and collective and social ethical factors (Sicard et al., 2003); and Butcher indicates that CPLs handle highly-tested ethical selection and training schemes (Butcher, 2016). However, it is important to study and discuss how the ethical decision-making process of CPLs works and how they could improve it, because it is difficult to identify, after an accident, if the CPLs issued an ethical post-hoc trial, or if they made a mistake that triggered the accident (Dekker, 2015). For this reason, the aim of this paper is to study the ethical decision-making framework of CPLs, and the research question is the following: What is the ethical decision-making framework that CPLs apply to sustain the judgment of their decisions?

The ethical decision-making frameworks are approaches that can be classified inside the deontological theory or inside the teleological theory. Both theories were the two dominant areas of moral philosophy during the last century (Murphy et al., 1981; Mayo & Marks, 1990; Allinson, 1998; Hunt & Vasquez-Parraga, 1993; Brady, 1999). Deontological approaches examine the inherent correction of a set of alternatives based on a set of predetermined personal beliefs or guidelines, which represent values of behavior. While the teleological approaches consider external aspects for the

person to examine a set of alternatives, such as the consequences, the probability of occurrence, the convenience, and the importance of each stakeholder (Hunt & Vitell, 1986). The deontological/teleological paradigm is equivalent to the idealism/relativism concepts of Forsyth, because both are two-dimensional personal moral concepts (Forsyth, 1980; Al-Khatib et al., 1997). However, people change their ethical decision-making frameworks from deontological to teleological, or vice versa when: they incorporate new cognitive elements (Nussbaum, 1989). Where the ability to be both an ethical and imaginative person has been called Moral Imagination (Schwartz & Hoffman, 2017); they feel dissatisfied with their current situation and their alternative conception is understandable and predictably functional to solve new problems (Strike & Posner, 1985); they do not internalize a reflective process about their beliefs and desires, becoming not firm; and because they can change their beliefs from a rational analysis, which also means that they can change their conceptual framework for making decisions about what is right or wrong (Boeri, 2008).

Hansson carries out a review of the schools of ethical thoughts. He provides the basis for understanding the frames of reference for ethical decision-making, among which six stand out: Utilitarianism, Normative or Contract-based Justice, Pragmatism, Egocentrism, Golden Rule, and the Personal Moral Approach (Hansson, 2013). The first four ethical decision-making frameworks are teleological approaches, and the last two ethical decision-making frameworks are deontological.

The Hansson (2013) frameworks are studied in this paper to determine the ethical decision-making framework of CPLs, however, Frisancho (1996) study is interesting, already tested the efficiency of an educacional program in order to improve moral reasoning and cognitive complexity. She didn't find structural advances in the moral reasoning, but she finded an increase of reasoning complexity and in the number of elements that were able to identify.

### *Literature Review*

Five papers summarize 625 empirical researches that study ethical models of decision-making from the 70's until today. None of these empirical studies has addressed the ethical decision-making framework of CPLs. Ford and Richardson (1994) reviewed approximately 41 articles on ethical decision-making between 1978 and 1992. Based on these papers, they classified the individual factors (nationality, religion, gender, age, education, employment, and personality) and situational factors (groups, rewards and sanctions, codes of conduct, type of ethical conflict, organization effects, industry, and business competitiveness) that are related to an individual decision maker. However, they do not find any significant relationship for the type of industry variable. They conclude that the industry variable is an important issue worthy of further investigation. Loe et al. (2000) published a literature review that summarizes the empirical research on ethical decision-making between 1992

and 1996, approximately 188 papers. They identify and group the variables analyzed in these studies into awareness, individual factors, organizational factors, intent, and the role of moral. They indicate that, in these papers, most of the analyzed variables fell into the category of individual factors, being gender and moral philosophy the most highlighted variables. They identify that the ethical decision-making process starts from deontological versus teleological perspectives, as an example, the ethical decision-making model of Hunt and Vasquez-Parraga (1993) is developed from the ethical decision-making model of Mayo and Marks (1990). Beneish and Chatov (1993) determine that the content of the codes of ethics varies according to the industry, their study reveals that individuals can decide to use different philosophies based on job experience. O'Fallon and Butterfield (2005) review 174 academic papers on the decision-making between 1996 and 2003 from an ethical perspective. They identify 9 papers that study the type of industry variable as one of its variables. Craft (2013) reviews 84 papers on the decision-making literature between 2004 and 2011. Craft (2013) classifies 357 individual factors according to Rest (1986) ethical decision-making model for organizational variables (awareness, intention, judgment, and behavior) and according to Jones (1991) ethical decision-making model based on the concept of moral intensity (individual factors, collective factors, and moral intensity). From 1996 to 2003, only one paper studies the industry variable, Forte (2004), which conclude a statistically significant relationship between industry types, gender, and moral reasoning capacity of managers. However, the article does not mention the turn of the industry, nor how it is measured. Finally, Lehnert et al. (2015) update and expand the investigation of Craft (2013) They extend the literature to a total of 141 articles. Unlike the previous reviews, they categorize the variables into four ethical decision-making topics: Consciousness, Behavior, Judgment, and Intention. Taking into consideration the relevance of the CPLs work and the recommendation of Loe et al. (2000) to perform studies on ethical decision-making framework with industry samples, this paper proposes to open a first discussion on this opportunity.

### ***Ethical Decision-Making Frameworks***

Many researchers have developed ethical models for making individual decisions. Rest (1986) develops, and Craft (2013) endorses an ethical model for making individual decisions and include four components. The first component is to recognize a problem or situation as moral. The second is to make a moral judgment, which means distinguishing between good and bad. The third is to put moral concerns before other concerns, that is, prioritize moral values over other values. The fourth component is to act on moral concerns, in other words, to establish a model as ethical. This requires the capacity of conscience, which rules out the inclusion of decisions affected by fatigue or illness (Jones, 1991). Randall and Gibson (1990) divide the ethical models for making individual decisions

into variables associated with the decision and into variables identified with the situation in which individuals make decisions.

Jones (1991) proposes a six social elements model for making the moral judgments described by Rest (1986). The first element is the magnitude of the consequences, in other words, the sum of damages or benefits that will be received by those involved. The second element is the consensus or degree of social agreement that a proposed act is good or bad. The third element is the probability of the effect. The fourth element is the temporality between the identification of the problem or situation and the beginning of the consequences. The fifth element is the proximity or feeling of closeness (social, cultural, psychological, or physical) between the decision maker and those involved; and the sixth and last element is the concentration of the effect, in other words, the number of people involved in the consequences. Hansson (2013) studied different schools of ethical thoughts and based on his review, he explains six ethical decision-making frameworks or ethical models for making individual decisions that are the basis for understanding ethical decision-making.

The first ethical decision-making framework is the utilitarianism. The utilitarian ethic is oriented towards a cost / benefit analysis (Hansson, 2013). As an example, the conceptual definition of utilitarianism by Harris (1989) is: "A person (or business) should act in such a way that maximizes good for the greatest number of people". However, there are criticisms of this moral standard, since when setting average situations, there is a possibility that the resulting alternative is not acceptable to all involved (Schimmerling, 2010).

The second ethical decision-making framework is the normative or contract-based justice. The normative ethics, based on contracts, go back to ancient Greece, and is framed in the discourse of the social contract of Hobbes, Locke, and Rousseau (Arnould, 2011). An example of a conceptual definition of normative justice is the one used by Wright et al. (2014): "In ethical matters, it is important to consider what is fair so that justice prevails". Two criticisms arise when: *a*) the potential affected parties have not given their consent in the contract, and *b*) the presumptions contractual, what is not written, can be considered as procedural, within a trial where legislative parts are overestimated or annulled (Langston, 2011).

Pragmatism is the third ethical decision-making framework. Pragmatism means focusing on the simple (Fern, 2003). The pragmatic attitude consists of establishing broad selection criteria, simple, and most naturally possible for decision-making. An example of the conceptual definition of pragmatism is presented in Wright et al. (2014): "It is ethically acceptable and important to do what comes easiest and most naturally to us as individuals". A criticism of this current is the lack of precise control over situations, which can lead to procedures not identified *a priori* (Argimon Pallas & Jiménez Villa, 2000).

Self-centeredness is the fourth ethical decision-making framework. Self-centeredness is defined as the tendency to see the world from a personal perspective, without requiring the recognition of different points of view (Schaffer, 2006). An example is the conceptual definition used in Harris (1989): "A person (or business) should act in a manner which will maximize his/her long-term interests even if it means suffering in the short run". A criticism of the egocentric model starts from the studies of Forsyth (1980), who argued that the perspective of subjectivist thought, centered on personal benefits, does not necessarily have a coincidence with social demands.

The fifth ethical decision-making framework is the Golden Rule. In philosophy, the modern Golden Rule "Treat others as you would want them to treat you" is linked to the categorical imperative of the ethics of philosopher Emmanuel Kant (18<sup>th</sup> century) which demands to consider "humanity, both in your person as in that of any other, always as an end and never merely as a means" (Lepold, 2007). An example of the conceptual definition of the golden rule presented in Harris (1989): "One should do unto others as you would have them do unto you". Finally, the sixth and last ethical decision-making framework is the Personal Moral approach. The conceptual definition of Personal Moral approach or moral principles in Harris (1989), is: "One should act in such a way that higher behavior reflects universal law or principle, applicable in all situations".

Decision makers must routinely resolve problems based on their value scales and priorities (Langston, 2016). The critique of this thinking is that decision-making based on a universal system of moral principles (justifiable expectations) is limited, since it generates conflicts when each person has their own universality (Arnould, 2011). Other of the main problems in decision-making is the Transfers Pattern, which is the perception of the lack of power, jurisdiction or competence on a matter. This pattern, in most cases, induces to postpone the decision making, or to transfer it to other people. (Luna & Laca, 2014). One way of reinforcing the decision making processes is to implement moral codes of conduct in companies (Hansson, 2013). However, the codes focus on the intention rather than the results. Professional and ethics committees, for example, offer perspectives based on duties for behavior (Arnould, 2011).

### *The Hypothesis*

Ethical judgments are fundamental to understand decisions in business (Sparks & Pan, 2010). Now, the study of ethical framework demands greater attention as the economy and business become increasingly complex (Marta et al., 2008; Burnaz et al., 2009; Strubler et al., 2012; Villatoro et al., 2014).

The commercial air transport industry, due to the increasingly volume and complexity that is experiencing, requires significant studies to understand the way of thinking of its personnel (Hansson,

2013). Therefore, understanding the ethical profiles for the decision-making of commercial pilots, aims to increase the discussion on human resources in this sector (Langston, 2016). Starting from this, it is desirable to know if most commercial pilots operate from the same ethical orientation, at least in Mexico, since they constantly participate in similar training processes, so it is suggested to analyze the following hypothesis: *H1: CPLs apply the same ethical decision-making framework for the different scenarios that are presented to them.*

The characteristics of gender and age seem to have not converged in any position regarding the frames of reference for ethical decision-making, since contradictory results have been presented (O'Fallon & Butterfield, 2005; Craft, 2013; Harris, 1989; Wright et al., 2014; Kidwell et al., 1987; Galbraith & Stephenson, 1993; McKinney & Davis, 2003). Therefore, it is proposed to analyze the following additional hypotheses.

a) Gender, from the research of the literature, identified that there is a marked difference of opinions. Craft (2013) indicates that the ethical judgment process of women is more severe than men, while the ethical judgment process of men is more consistent. On the other side, Kidwell et al. (1987), Harris (1989), Galbraith and Stephenson (1993), and O'Fallon and Butterfield (2005) do not identify significant differences in the ethical judgment process between genders. The differences in the results suggest testing the following hypothesis: *H2: CPLs apply the same ethical decision-making framework for the different scenarios that are presented to them regardless of their gender.*

b) Age: Regarding age, Wright et al. (2014), identify that the ethical judgment process of older employees are more moral criteria based than younger employees. But on the contrary, Craft (2013) concludes that the ethical judgment process does not show differences between ages. Since the results of these two studies are contradictory, the following hypothesis is analyzed: *H3: CPLs apply the same ethical decision-making framework regardless of their age.*

c) Job experience: McKinney and Davis (2003) identify that experience is significantly important. Their studies suggest that the ethical judgment process may or may not be affected by their experience. Therefore, the next hypothesis is analyzed: *H4: CPLs apply the same ethical decision-making framework for the different scenarios that are presented to them regardless of their total flying hours experience.*

d) Responsibility: The level of responsibility of commercial pilots is different for captains than for first officers. Captains are responsible for the safety of the passengers and cabin crew, and for the operation and safety of the aircraft, while first officers must assist captains. In this paper, we propose to analyze if: *H5: CPLs apply the same ethical decision-making framework for the different scenarios that are presented to them regardless of their cabin crew position.*

## **Methodology and Analysis**



### *The instrument*

Scenarios is the most used method to study business ethical decision-making. O'Fallon and Butterfield (2005) show that 95 of 174 papers (55%) apply this method. An important point to consider, when applying this method, is the number of scenarios to study (Marshall & Dewe, 1997). O'Fallon and Butterfield (2005) report that the average number of scenarios studied is 6.3 with a standard deviation (DS) of 4.6 in 95 papers. Knowing this, in this paper, six scenarios are designed to study the CPLs ethical decision-making framework. These scenarios are an adaptation of six scenarios that have been used to study ethical decision-making frameworks in different industries. One scenario is proposed by Wright et al. (2014), and the other five scenarios are proposed by Harris (1989). In exploratory studies where previous sources are scarce, a qualitative questionnaire is used via the content domain based on theory and similar studies in literature (Hernández-Sampieri, 2018). Therefore, in this paper, the scenarios are composed of scales based on previous studies. Three scenarios have been adapted with the advice of two professional CPLs to contextualize them to their professional practice. These scenarios are exposed to a sample of CPLs through a predesigned electronic questionnaire (survey) to assess the CPLs ethical decision-making framework using the Google forms platform. The electronic questionnaire or survey is distributed by the Mexican Pilots Union by email. Appendix A shows the electronic questionnaire or survey and the six scenarios under study.

Following the strategy of Harris (1989), CPLs are asked: to read and evaluate the six scenarios proposed in this paper; to think and indicate if they agree or disagree with the decision made in each scenario, the unique purpose of this question is to fix the CPLs concentration, their answers to this question are irrelevant for the purpose of this research; and finally, to select which of the ethical decision-making frameworks could support their decision. The objective is to know what ethical decision-making framework CPLs use to justify the judgment of their decisions, and if their ethical decision-making framework is consistent, or whether CPLs change their ethical decision-making framework against different scenarios (Galbraith & Stephenson, 1993; McKinney & Davis, 2003; Marshall & Dewe, 1997; Marshall & Dewe, 1997; Reidenbach & Robin, 1988). The aim of this paper is not to predict CPLs behaviors, the aim is to study the ethical decision-making frameworks that CPLs use to justify the judgment of their decisions.

The ethical decision-making frameworks or rules with a teleological approach are Utilitarianism, Normative or Contract-based Justice, Pragmatism, and Egocentrism; and deontological approaches are the Golden Rule and the Personal Moral Approach.

The scenarios under study and the conceptual definitions presented are an adaptation of the scenarios presented in the studies of Harris (1989) and Wright et al. (2014): a) Golden Rule: Treat others as

you want them to treat you. b) Moral Rules: It is important to have a moral code to differentiate what is right from what is wrong. c) Utilitarianism: The greatest welfare must be ensured for the greatest number of people. d) Justice: It is transcendental to consider the equality between people for justice prevails. e) Pragmatism: The right thing is to do things in the simplest and most natural way. f) Egocentrism: We must promote actions that generate the greatest personal interests during a long term.

The individual factors sex or gender (male or female), age, type of education (private or military school), and employment (airline business (full-service carrier or low-cost carrier) model and crew position (captain or first officer)) are gathered as control variables.

Two professional CPLs participated to adapt and contextualize the scenarios to the CPLs professional practice and validate the questionnaire or survey, and its reliability lies on using a proven method with an adequate sampler (Harris, 1989; Franchi & Llanos, 2017). The statistical analysis is based on methods to compare contingency tables.

### *The Sample*

The study sample is made up of CPLs, who are affiliated to the Mexican Pilots Union. The electronic questionnaire or survey was distributed by the Mexican Pilots Union to approximately 2003 of its active members by email. The questionnaire was answered voluntarily to a 100% and data were collected using the Google forms platform. In response to the invitation, of the 144 CPLs that responded the survey, just 134 (6.96%) are completed and useful. The sample size is validated because the calculated contingency tables shows that more than 80% of the expected values are bigger than 5 for all tests (McHugh, 2013). We attribute the low response rate, 6.96%, to the voluntary invitation. The profile of the CPLs that answered the questionnaire is: 125 men (93.28%), 133 Mexicans (99.25%); age 41.83 years (SD 10.77). The CPLs total average working hours per month (from the time the aircraft is closed before it takes-off until the time the aircraft is opened after landing) is 83.19 hours (SD 8.62). 116 studied in private schools (86.57%). 115 of them (85.82%) are pilots who work for a Mexican airline. 57% of the CPLs of the sample are captains and 43% are first officers. 14.9% of the CPLs of the sample have flown more than 20,000-hours experience, whilst 72.4% of the CPLs of the sample have flown between 5,000- and 20,000-hours experience, and 12.7% of the CPLs of the sample have flown less than 5,000-hours experience. 91.7% of the CPLs of the sample work for a full-service carrier and the rest for a low-cost carrier. 63.2% of the CPLs of the sample fly Boeing aircrafts, 13.9% of the CPLs of the sample fly Embraer aircrafts, and the rest fly Airbus aircrafts. Finally, 46.5% of the CPLs of the sample fly aircrafts with 100 and 200 seats.

## *The Analysis*

In this paper, the  $\chi^2$ -test of independence is applied to identify whether CPLs apply the same ethical decision-making framework for the different scenarios that are presented to them. This statistic test allows to analyze the results by CPLs gender, age, total flying hours experience, and cabin crew position. The  $\chi^2$ -test of independence allows to analyze the answers to each of the questions presented in individual scenarios (Brunton & Eweje, 2010) and conclude the five-hypotheses studied in this paper, because the  $\chi^2$ -test of independence describes the strength of association in a data set (Agresti, 2007).

The  $\chi^2$ -test of independence hypothesis null ( $H_0$ ) and alternative hypothesis ( $H_a$ ) are:

$H_0$ : there is no association between the categorical variables in the population; they are independent. Where the alternative hypothesis is  $H_a$ : there is an association between the categorical variables in the population; they are not independent.

When  $H_0$  is true, data follows an  $\chi^2$  distribution. Then,  $H_a$  is rejected, there is no association between the categorical variables in the population.

Equation 1 shows the statistical test of  $\chi^2$ -test of independence:

$$\chi^2 = \sum_{i=1}^k \left[ \frac{(O_i - E_i)^2}{E_i} \right] \quad (1)$$

Where:

O = Observed value [-]  
E = Expected value. [-]

The two assumptions needed to apply the  $\chi^2$ -test are accomplished. First, data comes from a random sample of the population of interest as explained in the study population subsection; and second.

## **Results**

The results of the six scenarios under study show that half of the CPLs (50.25%) apply a deontological rule, while 49.75% apply a teleological rule to support the judgment of their decision. Table 1, shows the accumulated results of the six ethical scenarios under study. The results indicate the distribution of decision rules selected for decision making.

**Table 1***Selection of ethical decision rules.*

| <i>Scenario</i> | <i>Deontological Rules</i> |                    | <i>Theological Rules</i> |                |                   |                    | <i>Total</i> |
|-----------------|----------------------------|--------------------|--------------------------|----------------|-------------------|--------------------|--------------|
|                 | <i>Golden Rule</i>         | <i>Moral Rules</i> | <i>Utilitarianism</i>    | <i>Justice</i> | <i>Pragmatism</i> | <i>Egocentrism</i> |              |
| 1               | 10                         | 60                 | 8                        | 32             | 16                | 8                  | 134          |
| 2               | 12                         | 77                 | 8                        | 14             | 18                | 5                  | 134          |
| 3               | 26                         | 32                 | 44                       | 11             | 12                | 9                  | 134          |
| 4               | 4                          | 47                 | 22                       | 6              | 36                | 19                 | 134          |
| 5               | 6                          | 76                 | 30                       | 5              | 14                | 3                  | 134          |
| 6               | 31                         | 23                 | 23                       | 38             | 1                 | 18                 | 134          |
| Total           | 89                         | 315                | 135                      | 106            | 97                | 62                 | 804          |
| Percentage      | 11.07%                     | 39.18%             | 16.79%                   | 13.18%         | 12.06%            | 7.71%              | 100%         |

$\chi^2$ -test of independence for Hypothesis H1: CPLs apply the same ethical decision-making framework for the different scenarios that are presented to them, where the alternative hypothesis is  $H_a$ : CPLs do not apply the same ethical decision-making framework for the different scenarios that are presented to them.

The hypothesis null is rejected when supposing a mass distribution for all the scenarios (Golden rule 11.07%, Personal Moral Approach 39.18%, Utilitarianism 16.79%, Justice 13.18%, Pragmatism 12.06%, Egocentrism 7.71%). A large Pearson statistic is obtained Chi-Square = 248.092, DF = 25, P-Value <0.001 which indicates that CPLs apply different ethical decision-making frameworks depending on the scenario presented.

However, the results of the analyses per ethical decision-making framework shows that CPLs preferred to apply the Personal Moral Approach to sustain the judgment of their decisions (39.18% of the total mentions) in scenarios 1, 2, 4 and 5. But CPLs preferred to apply the Utilitarianism (16.79% of the total mentions) in scenario 3, while CPLs preferred to apply the Justice (13.18% of the total mentions) in scenario 6. The ethical decision-making frameworks: Pragmatism, Egocentrism, and Golden Rule are not selected as the first choice of ethical decision-making framework in any of the scenarios.

$\chi^2$ -test of independence for Hypothesis H2: CPLs apply the same ethical decision-making framework for the different scenarios that are presented to them regardless of their gender, where the

alternative hypothesis is  $H_a$ : CPLs do not apply the same ethical decision-making framework for the different scenarios that are presented to them regardless of their gender.

Hypothesis 2 is accepted. Then, CPLs do not change their ethical decision-making framework to sustain the judgment of their decisions depending on their gender. However, the hypothesis is accepted with caution because the data collected has few female respondents ( $n < 92$ ) to make any statistical validation. Knowing this, a little Pearson statistic Chi-Square = 3.335, DF = 5, P-Value = 0.648 sustains this result. Table 2, shows the distribution of the selection of ethical decision rules regardless of the gender. The results assuming the same distribution for men and for women indicate that CPLs preferred to apply the Personal Moral Approach as first ethical decision-making framework to sustain the judgment of their decisions and utilitarianism as second ethical decision-making framework to sustain the judgment of their decisions.

**Table 2**

*Selection of ethical decision rules regardless of their gender.*

| <i>Gender subgroup</i> | <i>Deontological Rules</i> |                    | <i>Theological Rules</i> |                |                   |                    | <i>Total</i> |
|------------------------|----------------------------|--------------------|--------------------------|----------------|-------------------|--------------------|--------------|
|                        | <i>Golden Rule</i>         | <i>Moral Rules</i> | <i>Utilitarianism</i>    | <i>Justice</i> | <i>Pragmatism</i> | <i>Egocentrism</i> |              |
| Female                 | 4                          | 14                 | 7                        | 9              | 6                 | 2                  | 42           |
| Male                   | 85                         | 296                | 124                      | 97             | 89                | 59                 | 750          |
| Total                  | 89                         | 310                | 131                      | 106            | 95                | 61                 | 792          |
| Percentage             | 11.24%                     | 39.14%             | 16.54%                   | 13.38%         | 11.99%            | 7.70%              | 100%         |

Note: The gray cell indicates the second preferred rule. The total does not add 804 because two pilots did not declare their gender.

$\chi^2$ -test of independence for Hypothesis H3: CPLs apply the same ethical decision-making framework for the different scenarios that are presented to them regardless of their age, where the alternative hypothesis is  $H_a$ : CPLs do not apply the same ethical decision-making framework for the different scenarios that are presented to them regardless of their age.

Hypothesis 3 is rejected. Then, assuming the same distribution for different ranges of ages (21-30; 31-40; 41-50; over 50) indicates that CPLs change their ethical decision-making framework to sustain the judgment of their decisions depending on their age, and CPLs preferred to apply the

Personal Moral Approach ethical decision-making framework to sustain the judgment of their decisions. A large Pearson statistic Chi-Square = 28.973, DF = 15, P-Value = 0.016 sustains these results. Table 3, shows that CPLs under 40, prefer to apply the Personal Moral Approach as first ethical decision-making framework to sustain the judgment of their decisions, and utilitarianism as second ethical decision-making framework to sustain the judgment of their decisions. CPLs between 41 and 50 also apply the Personal Moral Approach as first ethical decision-making framework to sustain the judgment of their decisions, but they prefer to apply Justice as second ethical decision-making framework to sustain the judgment of their decisions. Finally, CPLs over 50 also apply the Personal Moral Approach as first ethical decision-making framework to sustain the judgment of their decisions, but they prefer to apply Pragmatism as second ethical decision-making framework to sustain the judgment of their decisions.

**Table 3**

*Selection of ethical decision rules regardless of their age.*

| <i>Age subgroup</i> | <i>Deontological Rules</i> |                    | <i>Theological Rules</i> |                |                   |                    | <i>Total</i> |
|---------------------|----------------------------|--------------------|--------------------------|----------------|-------------------|--------------------|--------------|
|                     | <i>Golden Rule</i>         | <i>Moral Rules</i> | <i>Utilitarianism</i>    | <i>Justice</i> | <i>Pragmatism</i> | <i>Egocentrism</i> |              |
| 21-30               | 19                         | 62                 | 47                       | 22             | 23                | 19                 | 192          |
| 31-40               | 21                         | 71                 | 33                       | 24             | 13                | 18                 | 180          |
| 41-50               | 27                         | 98                 | 23                       | 30             | 27                | 11                 | 216          |
| 51-60               | 22                         | 84                 | 32                       | 30             | 34                | 14                 | 216          |
| Total               | 89                         | 315                | 135                      | 106            | 97                | 62                 | 804          |
| Percentage          | 11.07%                     | 39.18%             | 16.79%                   | 13.18%         | 12.06%            | 7.71%              | 100%         |

Note: The gray cells indicate the second preferred rule.

$\chi^2$ -test of independence for Hypothesis H4: CPLs apply the same ethical decision-making framework for the different scenarios that are presented to them regardless of their total flying hours experience, where the alternative hypothesis is H<sub>a</sub>: CPLs do not apply the same ethical decision-making framework for the different scenarios that are presented to them regardless of their total flying hours experience.

Hypothesis 4 is rejected. Then, CPLs change their ethical decision-making framework to sustain the judgment of their decisions depending on their total flying hours of experience. A large

Pearson statistic Chi-Square = 17.433, DF = 5, P-Value = 0.004 sustains this result. Table 4, shows the distribution of the selection of ethical decision rules regardless of their total flying hours. On one hand, the CPLs that have less than 10,000 hours of flying experience prefer to apply the Personal Moral Approach as first ethical decision-making framework to sustain the judgment of their decisions, and Justice as a second ethical decision-making framework to sustain the judgment of their decisions. On the other hand, the CPLs that have more than 10,000 hours of flying experience prefer to apply the Personal Moral Approach as a first ethical decision-making framework to sustain the judgment of their decisions, and Utilitarianism as a second ethical decision-making framework to sustain the judgment of their decisions.

**Table 4**

*Selection of ethical decision rules regardless of their total flying hours.*

| <i>Flying hours of experience subgroup</i> | <i>Deontological Rules</i> |                    | <i>Theological Rules</i> |                |                   |                    | <i>Total</i> |
|--------------------------------------------|----------------------------|--------------------|--------------------------|----------------|-------------------|--------------------|--------------|
|                                            | <i>Golden Rule</i>         | <i>Moral Rules</i> | <i>Utilitarianism</i>    | <i>Justice</i> | <i>Pragmatism</i> | <i>Egocentrism</i> |              |
| Hours >10,000                              | 49                         | 194                | 62                       | 63             | 62                | 26                 | 456          |
| Hours < 10,000                             | 40                         | 121                | 73                       | 43             | 35                | 36                 | 348          |
| Total                                      | 89                         | 315                | 135                      | 106            | 97                | 62                 | 804          |
| Percentage                                 | 11.07%                     | 39.18%             | 16.79%                   | 13.18%         | 12.06%            | 7.71%              | 100%         |

Note: The gray cells indicate the second preferred rule.

$\chi^2$ -test of independence for Hypothesis H4: CPLs apply the same ethical decision-making framework for the different scenarios that are presented to them regardless of their cabin crew position, where the alternative hypothesis is  $H_a$ : CPLs do not apply the same ethical decision-making framework for the different scenarios that are presented to them regardless of their cabin crew position.

Hypothesis 5 is rejected. Then, CPLs change their ethical decision-making framework to sustain the judgment of their decisions depending on their cabin crew position, whether they are Captains or First Officers. A large Pearson statistic Chi-Square = 11.213, DF = 5, P-Value = 0.047 sustains this result. Table 5, shows the distribution of the selection of ethical decision rules regardless of their cabin crew position. Captains and First Officers prefer to apply the Personal Moral Approach as first ethical decision-making framework to sustain the judgment of their decisions. However,

captains prefer to apply Justice as a second ethical decision-making framework to sustain the judgment of their decisions, while first officers prefer to apply Utilitarianism as a second ethical decision-making framework to sustain the judgment of their decisions.

**Table 5**

*Selection of ethical decision rules regardless of their cabin crew position.*

| <i>Cabin crew position<br/>subgroup</i> | <i>Deontological<br/>Rules</i> |                    | <i>Theological Rules</i> |                |                   |                    | <i>Total</i> |
|-----------------------------------------|--------------------------------|--------------------|--------------------------|----------------|-------------------|--------------------|--------------|
|                                         | <i>Golden Rule</i>             | <i>Moral Rules</i> | <i>Utilitarianism</i>    | <i>Justice</i> | <i>Pragmatism</i> | <i>Egocentrism</i> |              |
| Captain                                 | 52                             | 188                | 62                       | 63             | 61                | 30                 | 456          |
| First Officer                           | 37                             | 127                | 73                       | 43             | 36                | 32                 | 348          |
| Total                                   | 89                             | 315                | 135                      | 106            | 97                | 62                 | 804          |
| Percentage                              | 11.1%                          | 39.2%              | 16.8%                    | 13.2%          | 12.1%             | 7.7%               | 100%         |

Note: The gray cells indicate the second preferred rule.

## Decisions and Conclusions

The results show that CPLs apply their own ethical decision-making framework in different scenarios because 50.25% of CPLs in the sample prefer to apply a deontological ethical decision-making framework to sustain the judgment of their decisions, while 49.75% of CPLs in the sample prefer to apply a teleological ethical decision-making framework to sustain the judgment of their decisions. Therefore, the main hypothesis (hypothesis 1) of this paper is rejected, and it is possible to conclude that pilots apply different ethical decision-making frameworks to sustain the judgements of their decisions regardless of the scenario. However, it is important to mention that out of the six ethical decision-making frameworks, CPLs prefer to apply the Personal Moral Approach, which is deontological, as a first ethical decision-making framework to sustain the judgment of their decisions, and utilitarianism as second, which is teleological.

The results of this paper are similar to the results reported by Harris (1989), Galbraith and Stephenson (1993), and Wright et al. (2014), meaning that CPLs apply ethical decision-making frameworks similar to the workers of other industries. Therefore, CPLs choose different ethical decision-making frameworks (not one of a universal way) to justify their decision, in some cases using external ethical resources (deontological) and internal in others (ontological). This is in line



with Haidt (2001), who states that the moral judgment is caused by fleeting moral intuitions and is followed by slow moral reasoning and *ex post facto*. The same result is reported by Galbraith and Stephenson (1993) in the use of ethical decision-making frameworks or rules for different scenarios. The results obtained in our paper also support the fact that ethics not only act to reduce the issues to a single correct answer, but it also provides different approaches and foundations for decision-making as Arnould (2011) explained.

In general, CPLs prefer to apply the Personal Moral Approach, which is deontological, as a first ethical decision-making framework to sustain the judgment of their decisions. But, as a second option, they choose different ethical decision-making frameworks considering age, flying hours of experience, and cabin crew position. Regarding age, CPLs apply different ethical decision-making frameworks to support the judgment of their decisions according to their age. CPLs 40 years old or younger apply as a second option Utilitarianism, which is teleological; CPLs between 41 and 50 years old apply as a second option Justice, which is teleological; and CPLs over 50 years old apply as a second option Pragmatism, which is teleological. This result is supported by a Jackson and Earl (2006) study, because they also conclude that CPLs change their paradigms due to age. Although they did not study CPLs ethical decision-making frameworks, but the fatigue of CPLs.

With respect to flying hours of experience, CPLs with less experience than 10,000 flying hours prefer to apply Utilitarianism, and CPLs with more experience than 10,000 flying hours prefer to apply Justice as a second option. Regarding cabin crew position, Captains prefer to apply Justice, while First Officers prefer to apply Utilitarianism as a second option. Finally, regarding gender, the number of female CPLs that answered the questionnaire is very low, perhaps because the proportion between female CPLs and male CPLs is very small, which may allow to conclude that this is an industry where not many women work. Hence, it is not possible to make any statistical valid claim about gender, no differences or similarities can be concluded.

The main implication, is that the training programs, need to start with two strategies: 1) to promote discussion groups, observing that the simple formation of work teams is not synonymous with learning, the presence and equitable distribution of arguments among colleagues is essential (Castellaro, Roselli, 2018), where it is predominant the exchange of points of view from an ethical framework (calibration) (Payne, 1991), and 2) to promote learning programs and effective consequences systems, where the teleological framework prevails (Kaufmann et al., 2005). Top management and HR practitioners prudent require a consolidation of social consciousness regarding decision-making and the ethical process (Greenwood & Simmons, 2004), better in prospective than retrospective terms (Ahmed, Kung, & Eichenseher, 2003).

It is important to clarify the limitations of this research. One limitation is that this study does not construct predictive behavior models on ethical rules, since hypothetical contexts are recreated

that not necessarily follow the reality (Nisbett & Wilson, 1977; Greenwald & Banaji, 1995; Liberman et al., 2004; Fernandez-Dols et al., 2010; Fraedrich, 1994). Other limitation is the sample concentration in terms of nationality and gender. This enhances the need to extend this research to study the same hypothesis using data from different countries and regions around the world, and conclude whether results are in line. Another possible line of research, despite the criticisms of low external validity (Bauman et al., 2014), is to design other scenarios based on the problem of trolley proposed by Foot (1967) where CPLs must make quick decisions about what to do in the matter of sacrificial dilemmas.

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## Appendix A. Ethical decision-making questionnaire for aviation pilots

This questionnaire is part of a university research. It is completely anonymous, no name or email or personal data is requested. Your answers will be confidential and will not be shared. They are for strictly academic purposes only. Your sincerity and truthfulness are indispensable to verify some hypothesis of investigation, the results will help to better understand the decision-making process in the aviation sector. Thank you very much in advance for your participation.

1. Are you an Airline Pilot? Yes; No.
2. Are you a Cargo Carrier Pilot? Yes; No.
3. Nationality:
4. In which country do you work (if you can answer)?
5. In which airline company do you work (if you can answer)?
6. Are you a Captain? Yes; No.
7. Are you a First Officer? Yes; No.
8. Flight hours
9. What type of business model is your airline made for?
10. Aviation School: Public; Private; Military.
11. What brand of aircraft do you fly? Airbus; Boeing; Other.
12. What aircraft do you fly?
13. What is the average number of seats of the aircraft you fly?
14. How much is your aircraft hourly wage in USD?
15. What is the average number of take offs and landings per working day?
16. Do you know how many available seats per mile (ASM) on average you produce per month?
17. What are your total average block hours per month? (Block hours means the time the aircraft is closed from take-off to landing)
18. What are your total average working hours per month? (Block hours + waiting time at airports)
19. Age
20. Gender

Next, we will present 6 scenarios in which some fictitious companies made some critical decisions. We ask you to rate whether you agree or disagree with the decision made, and what decision criteria did you use to construct your opinion? Remember, there are no right or wrong answers, we strongly ask that reflects your answer.



(Here are the six decision criteria options)

*Scenario 1* - Catering services Inc., a newly created airline food company with good growth prospects applied for a loan from the bank. The short credit history of this company does not meet the bank's credit requirements. However, the bank manager is a friend and plays golf with the owner of the company, so the credit manager approved the loan.

|                                                                 |             |                |         |            |             |    |
|-----------------------------------------------------------------|-------------|----------------|---------|------------|-------------|----|
| Do you approve the credit's manager decision?                   |             |                |         |            | Yes         | No |
| What is the best decision criteria that supports your judgment? |             |                |         |            |             |    |
| Golden Rule                                                     | Moral Rules | Utilitarianism | Justice | Pragmatism | Egocentrism |    |

*Scenario 2* - One of the largest US airlines is a sponsor of a popular TV show called "Reality USA." The airline was contacted by a national coalition of citizens concerned about the moral impact of TV programs on young people. The coalition demands that the company exert an influence against the show's producer to reduce the sex tone and violence in his programs. The airline responded to the coalition that in essence "their job is to fly planes, not to censor what the public wants to see on TV". Do you approve the US airline position?

|                                                                 |             |                |         |            |             |    |
|-----------------------------------------------------------------|-------------|----------------|---------|------------|-------------|----|
| Do you approve the airline's decision?                          |             |                |         |            | Yes         | No |
| What is the best decision criteria that supports your judgment? |             |                |         |            |             |    |
| Golden Rule                                                     | Moral Rules | Utilitarianism | Justice | Pragmatism | Egocentrism |    |

*Scenario 3* - Daily Fast Fly, Inc., is a leading commercial flight company. They anticipate that the market will move towards faster flights. So recently they bought a fleet of small jets to capture this trend, despite the fact that these aircrafts generate a large noise pollution, much more than a traditional commercial aircraft. This decision has caused complaints from the neighbors where the airplanes pass by. Do you approve the new airplanes investment?

|                                                                 |             |                |         |            |             |    |
|-----------------------------------------------------------------|-------------|----------------|---------|------------|-------------|----|
| Do you approve the airplanes investment?                        |             |                |         |            | Yes         | No |
| What is the best decision criteria that supports your judgment? |             |                |         |            |             |    |
| Golden Rule                                                     | Moral Rules | Utilitarianism | Justice | Pragmatism | Egocentrism |    |

*Scenario 4* - XLParts, Inc., is a manufacturer of commercial aircraft parts. Aware of the change in the market towards cheaper airplanes, it recently opened a line of carbon fiber parts to take advantage of this trend. The company asks its advertising agency for a campaign to promote the use of carbon fiber as a means of reducing the weight of an aircraft in order to make them more profitable. Although

there is no scientific evidence for or against to accept or refute this material. Do you approve the XLParts initiatives?

|                                                                 |             |                |         |            |             |    |
|-----------------------------------------------------------------|-------------|----------------|---------|------------|-------------|----|
| Do you approve XLParts initiatives?                             |             |                |         |            | Yes         | No |
| What is the best decision criteria that supports your judgment? |             |                |         |            |             |    |
| Golden Rule                                                     | Moral Rules | Utilitarianism | Justice | Pragmatism | Egocentrism |    |

*Scenario 5* - State AirPlains, Inc. is a publicly owned air transport company, which faces the rapid increase in jet fuel costs. This is purchased from suppliers in Middle Asia. Reliable estimates show that this trend in prices will continue for the next five years. And this may cause a possible increase in customer rates prices. There is a jet fuel you can get; but its use increases global carbon emissions, and therefore the greenhouse effect would increase by 25%. The company opted to buy the cheap highly polluting jet puel instead of increasing the cost per mile to customers. Do you approve the State AirPlains initiatives?

|                                                                 |             |                |         |            |             |    |
|-----------------------------------------------------------------|-------------|----------------|---------|------------|-------------|----|
| Do you approve the State AirPlains initiatives?                 |             |                |         |            | Yes         | No |
| What is the best decision criteria that supports your judgment? |             |                |         |            |             |    |
| Golden Rule                                                     | Moral Rules | Utilitarianism | Justice | Pragmatism | Egocentrism |    |

*Scenario 6* - Some commercial airlines, worried about the constant loss of their profits, allocated a percentage of their sales to create a fund to finance lobbying actions to negotiate certain concessions with the pilot's union. As a result of this initiative, the commercial pilots have had to accept more flight hours within their same working day, a reduction in their travel expenses, and a reduction in their paid training hours.

|                                                                 |             |                |         |            |             |    |
|-----------------------------------------------------------------|-------------|----------------|---------|------------|-------------|----|
| Do you approve the commercial airlines initiatives?             |             |                |         |            | Yes         | No |
| What is the best decision criteria that supports your judgment? |             |                |         |            |             |    |
| Golden Rule                                                     | Moral Rules | Utilitarianism | Justice | Pragmatism | Egocentrism |    |