

COMMUTING TO WORK: RELATIONSHIP TO THE MOTIVATION, PRODUCTIVITY AND COMMITMENT OF PORTUGUESE AIR FORCE PERSONNEL ¹

MOVIMENTOS PENDULARES: RELAÇÃO COM A MOTIVAÇÃO, PRODUTIVIDADE E COMPROMETIMENTO DOS MILITARES DA FORÇA AÉREA PORTUGUESA

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ABSTRACT

Every day, the military personnel of the Portuguese Air Force commute from home to work and back. But at what cost? This study analyses the relationship between commuting and motivation, productivity, and commitment in a sample of 790 Air Force personnel on active duty and on the active duty reserves (673 CS and 117 VP / CP). The study used a deductive reasoning methodology supported by a quantitative research strategy and a case study research design. The data were collected using a questionnaire that assessed commuting, absenteeism and presenteeism, work motivation and organizational commitment. The results revealed that: absenteeism increases with commuting distance and commuting time, and decreases when the route conditions improve; route conditions have a positive effect on intrinsic motivation and identified motivation; commuting distance and commuting time influence extrinsic motivation; poor route conditions have a negative effect on affective commitment and commuting distance negatively influences affective and normative commitment.

Keywords: Commuting; Motivation; Productivity; Commitment.

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RESUMO

Diariamente os militares da Força Aérea realizam movimentos pendulares de modo a movimentarem-se entre a sua residência e o seu local de trabalho e no percurso inverso. Mas a que custo? Este estudo, analisa os movimentos pendulares e a sua relação com a motivação, produtividade e comprometimento, com base numa amostra de 790 militares da Força Aérea no ativo ou na situação de reserva na efetividade de serviço (673 do QP e 117 do RV/RC). Alicerçado numa metodologia de raciocínio dedutivo, assente numa estratégia de investigação quantitativa e num desenho de estudo de caso, recolheram-se os dados através de questionário, focado na caracterização dos movimentos pendulares, no absentismo e presentismo, na motivação no trabalho e no comprometimento organizacional. Dos resultados obtidos, concluiu-se que: o absentismo aumenta com a distância percorrida e o tempo gasto em viagem, e diminui com a melhoria das condições do percurso; as condições do percurso têm um efeito positivo na motivação intrínseca e motivação resultante da identificação com o trabalho; a distância percorrida e tempo gasto em viagem influenciam a motivação externa; as más condições do percurso têm um efeito negativo no comprometimento afetivo e a distância percorrida influenciam negativamente o comprometimento afetivo e normativo.

Palavras-chave: *Movimentos Pendulares; Motivação; Produtividade; Comprometimento.*

1. Introduction

Commuting (travelling to work and returning home) takes up a part of service members' daily, weekly and annual time. It is a constant in their lives and affects all of them to some degree. Due to their commitment to the military, service members may be assigned to posts distant from their area of residence. The reason for this is that military units are distributed across a wide geographic area, and that those units must be staffed according to the provisions of Article 132(1)(a) of Decree Law 90/2015 of 29 May, Status on the Armed Forces Military Personnel (EMFAR).

Usually, the organization does not have any complaints regarding the mobility of its military personnel. The military career implies mobility due to the need to appoint and deploy personnel according to the distribution of the system of forces (Article 123(1)(g) of Decree-Law 90/2015) and to the duty of availability required of military personnel (Article 12(1)(g) of Decree-Law 90/2015). However, this means that service members' daily commute can sometimes have a negative impact on both them and their families.

The financial crisis in Portugal, especially in the period between 2010 and 2014, led to several changes and challenges for the Military Institution. One of the most important changes was the amendment to the eligibility requirements to receive a residence supplement introduced in 2013 (Article 8 of Law 51/2013 of 24 July). The right to a Residence Supplement is set out in the EMFAR: "when, for reasons of service, military personnel are stationed in an area other than the one in which they reside, they and their household are entitled to a residence provided by the State or, if none is available, to a residence supplement under the terms of the applicable law" (Article 23(2) of Decree-Law 90/2015). The latest amendments to the law increased the minimum commuting distance to be eligible for this supplement

and reduced the period during which the supplement is granted. Since the cost of fuel and transport has not dropped, nor have the road networks been significantly improved, in most cases the impact on service members' income was far greater than the cuts to their wages. In addition to all the negative aspects associated with commuting, which will be analysed to assess if they apply in the context of the PoAF, this change could have a significant impact on the motivation, commitment and productivity of a diminishing pool of service members, who are nevertheless always available and willing to sacrifice themselves for the organization they serve.

This study aims to assess the commutes of PoAF military personnel and to analyse to what degree commuting influences their individual performance. People are the greatest asset for any organization, therefore, the military should assess their well-being and the impact of their commute to and from work on service members' motivation, productivity and commitment.

Therefore, this study aims to describe the Commuting Movements (CM) of the PoAF's military personnel and to analyse the relationship between commuting and motivation, commitment and productivity. The present investigation will contribute to optimise the PoAF's human resource management processes so a balance can be found between the interests of the organization and those of its staff.

The object of study is the relationship between commuting and motivation, commitment and productivity. As advised by Santos and Lima (2016), the study is delimited in terms of:

- Time, to the present moment (June 2019);
- Space, to the PoAF's military personnel;
- Content, to Commuting and to the relationships between the concepts under analysis: Motivation, Commitment and Productivity.

The general objective (GO) of this study is *to analyse the relationship between the commuting movements of PoAF personnel and their motivation, commitment and productivity*, which the following specific objectives (SO) will help achieve:

SO1: To describe the commuting movements of Air Force personnel;

SO2: To determine the relationship between commuting and productivity among Air Force personnel;

SO3: To determine the relationship between commuting and motivation among Air Force personnel;

SO4: To determine the relationship between commuting and commitment among Air Force personnel;

The above objectives will be achieved by answering the following research question (RQ), which will serve to guide the research: *"What is the relationship between the commuting movements of PoAF military personnel and their motivation, commitment and productivity?"*

2. Theoretical and conceptual framework

This chapter presents the key concepts and the analysis model.

2.1. Literature review and key concepts

2.1.1. Commuting

The concept of Commuting, which is commonly used in geographical analysis, has undergone conceptual updating by some authors (Branco et al., 2005), while others continue to use it in the original sense. As commuting is not the object of this study, but rather its relationship with the motivation, commitment and productivity of PoAF personnel, the concept will be defined here as the “[...] movements between the place of residence and the workplace [...]” (INE, 2003) and vice versa, bearing in mind the requirement specified by Pereira (2007, p.12) that, in order for the concept to apply, “[...] there must be a distance to be travelled.”

This study aims to assess the impact of these daily movements on different aspects of service members’ lives, in general, and especially on their motivation, productivity and commitment.

2.1.2. Motivation at work

According to Rocha (2005, p.77) “motivation is a complex phenomenon that is not entirely personal because it results from the interaction between people and situational variables”. Due to its somewhat subjective nature, the concept has been addressed in numerous theories over the years.

For Reis e Silva (2012, p.180) “[...] motivation is directly related to feelings of productivity and appreciation [...]. Motivation [...] is significantly associated with performance [...] a motivated employee [...] is a more productive employee [...]”.

The concept is intrinsically linked to productivity through a cause-and-effect relationship. Also intrinsic to motivation is the satisfaction of a set of personal needs that, according to Rocha (2005, pp.78-79) and Herzberg’s “two-factor theory” (1968), “affect motivation because they foster dissatisfaction, including (in order of importance): the organization’s administration and policies, working conditions, wages, personal life and safety.

To measure organizational behaviour, Gagné et al. (June 2012) validated the *Motivation At Work Scale* (MAWS) for 10 languages. This multidimensional scale measures work motivation, assessing not only the degree but also the type of motivation, in line with Deci and Ryan’s *Self-Determination Theory* (SDT) (1985).

Gagné and Deci (2005, p.336) postulate that self-determination is described by a *continuum* on which a person’s motivation can be measured, and that it can be classified in three broad groups: demotivation, extrinsic motivation, and intrinsic motivation. The first and last groups consist only of themselves, while extrinsic motivation can be divided into four types of behaviour regulation: intrinsic, identified, introjected and extrinsic. However, when devising a scale based on the questionnaire to measure motivation, the demotivation group was excluded, as was the integrated regulation subscale of extrinsic motivation. The reason for this is that the goal was to “create a short, practical measure”. The demotivation group, which refers to complete lack of motivation, or, as described by Leal, Miranda and Carmo (2012) “the person has no aims or proactive behaviours”, was not included because the study focuses on active types of motivation. The integration items were not included “because it has proved difficult to psychometrically distinguish integration from

identification". Therefore, the motivation at work construct is assessed through intrinsic motivation (Intri 1, 2 and 3) and three types of behaviour regulation within extrinsic motivation: extrinsic motivation (Ext 1, 2 and 3), introjected motivation (Intro 1, 2 and 3) and identified motivation (Ident 1, 2 and 3). In SDT (Deci & Ryan, 1985), intrinsic motivation is defined as doing something simply because it is interesting and enjoyable, whereas extrinsic motivation is defined as doing something for instrumental reasons. Leal et al. (2012) describe the three subscales of extrinsic motivation:

- Extrinsic regulation: "It is the least autonomous form of motivation because the person acts to obtain rewards or to avoid punishment";
- Introjected regulation: "The person manages external consequences according to internal pressures such as guilt and anxiety";
- Identified regulation: "It is more autonomous than the previous types of regulation because it involves some internalisation even though the motives for a person's actions have an external origin".

2.1.3. Productivity

According to Silva and Queirós (2005, p.24), the concept of productivity:

[...] measures the effectiveness of production and the efficiency of resource use in a productive activity or organization. However, not many sectoral and global productivity indicators are available for PA [Public Administration] organizations because public goods are not traded in a market and their valuation is a matter of contention.

Despite the difficulties posed by this gap in knowledge, two dimensions can be used to measure productivity, presenteeism and absenteeism. Rego et. al (2015, pp.780-784) describe them as organizational dysfunctions which are intrinsically linked since, as Macedo (2017, p.12) states, "both [...] stem from the same decision: to go to work, or not to go to work". Therefore, these phenomena cannot be separated. Ferraz et. al (2016, p.2) define absenteeism as the worker being absent from the workplace, while presenteeism consists in being at work but not performing to the fullness of one's abilities. Additionally, presenteeism is "[...] an emerging construct in the organizational literature, which influences workers' performance and organizational productivity [...] generating significant costs that [...] are not as visible as those associated with absenteeism" (Macedo, 2017, p.12). The causes for presenteeism can be "[...] related to health problems, problems with the organization or personal problems not related to health" (Ferraz et. al., 2016, p.2).

Thus, presenteeism can be defined as a silent, covert phenomenon that costs organizations more than absenteeism, not only because of the direct effects of low productivity but also the indirect effects of work overload on other employees and the subsequent impact on the production process.

Van Ommeren and Gutierrez-i-Puigarnau (2009, p.4) explain that, in addition to fact that not having to commute saves money, there are two explanations for why commuting distance influences absenteeism:

The first explanation is that the benefit of an additional day absent is an increasing function of the commute because workers not only gain in leisure time while being absent [...] also enjoy a larger reduction in commuting time. [...] The second explanation is that workers' length of the commute decreases the workers' health which induces absenteeism.

2.1.4. Commitment

With regards to commitment, Thomson (1998, cited in Camara, Guerra & Rodrigues, 2016, pp.667-668) “[...] identified ten dynamic emotions and ten fatal emotions in companies,” defining commitment as a dynamic emotion (emotional credit) that can be described as “[...] dedication to or engagement with a particular action or cause” and other aspects such as stress, anxiety, fear and apathy as fatal emotions (emotional debt). Stress is defined as “mental, physical or emotional pressure, or tension”, anxiety as “uneasiness or tension caused by the anticipation of a negative event”, fear as “feelings of apprehension, anguish or alarm caused by a sense of imminent danger” and apathy as “lack of motivation”. According to the author, negative emotions have an adverse effect on the organization as they can lead to “poor internal and external behaviour, low productivity and absenteeism [...]”.

Although often used interchangeably, commitment and engagement are “[...] two constructs that allow us to analyse the ties that bind an employee to the organization in which they work”. The first refers to “[...] the psychological / affective bond [...] between an employee and the organization”, whereas the second focuses on the work aspect, that is, the “[...] degree of focus / engagement at work [...]”, and is not a tie to the organization but to the job itself” (Camara et al., 2016, p. 698).

Nascimento, Lopes and Salgueiro (2008) validated the Three-Component Model of Commitment by Meyer and Allen (1991) for the three proposed dimensions of organizational commitment: affective, continuance and normative commitment. The authors postulated that organizational commitment was multidimensional: the affective commitment dimension, according to this model, refers to the fact that “the employees of an organization are committed through emotional relationships” (Nascimento et al., 2008, p.116). The continuance commitment dimension refers to “transactional relationships in which personal investments are expected to wield a particular return” (Nascimento et al., 2008, p.117). Finally, the normative commitment dimension refers to “feelings of obligation and moral duty towards the organization” (Nascimento et al., 2008, p.117).

2.2. Analysis model

The present study was guided by the concept map in Table 1.

Table 1 – Concept Map

GENERAL OBJECTIVE	To analyse the association between Air Force military commuting and their motivation, commitment and productivity.		
SPECIFIC OBJECTIVES	CENTRAL QUESTION	How are commuting movements associated with the motivation, commitment, and productivity of the Air Force military?	
	DERIVED QUESTIONS	CONCEPTS	DIMMENSIONS
SO1 Characterize the commuting of the Air Force military.	DQ1 What are the commuting movements of the Air Force military?	Commuting	Travelled distance
			Travel Time
			Way of travel
			Route conditions
			Feeling towards the conditions of the route
SO2 Analyse the relationship between commuting and productivity of the Air Force military.	DQ2 What is the relationship between commuting and productivity of the Air Force military?	Productivity	Absenteeism
			Presentism (Perceived Performance and Physical and Mental State)
SO3 Analyse the relationship between commuting and motivation of the Air Force military.	DQ3 What is the relationship between commuting and the motivation of the Air Force military?	Motivation	Intrinsic motivation
			Identified motivation
			Introjected motivation
			External motivation
SO4 Analyse the relationship between commuting and commitment of the Air Force military.	DQ4 What is the relationship between commuting and the commitment of the Air Force military?	Commitment	Affective commitment
			Nornative commitment
			Continuance commitment

3. Methodology and method

This chapter describes the research methodology and methods used in the study.

3.1. Methodology

The study used a deductive reasoning methodology supported by a quantitative research strategy and a case study research design.

The methodology was developed in three phases: an exploratory phase (defining the issue and delimiting the object of study; reviewing the state-of-the-art and describing the key concepts; GO, SO and research questions); an analytical phase (collecting, analysing and presenting the data); and a conclusive phase (assessing and discussing the findings; presenting the conclusions and assessing the contributions to knowledge; limitations and recommendations).

3.2. Method

The next section describes the participants, the procedure, the data collection instrument, and the data processing techniques.

3.2.1. Participants and procedure

Participants. An accidental non-probabilistic sample of participants was used for the empirical study (Maroco, 2010). The survey obtained 790 responses, which corresponds to 12.6% of the universe of Career Staff personnel (CS) and Contracted / Voluntary personnel (CP/ VP) on active duty or in the active duty reserves (N=6249). Although in terms of gender the sample is in line with the trend of the universe under study, in terms of age, category, type of service contract and area of work, the sample does not fully match the universe. While this does not diminish the merits of this investigation, it means that it might not be possible to extrapolate the results to the entire universe. Most respondents are in the age segment 31-40 years old (n=301, 38.1%), are in the Officer category (n=365, 46.2%), are part of the Career Staff (CS), are married, have two children (n=539, 68.2%; n=251, 31.8%), and perform roles in the support area (n=450, 57%). Most respondents are male (n=640, 81%), which is in line with the gender trend in the universe under study. As for their academic qualifications, most hold at least a bachelor degree (n=678, 53.5%) (Table 2), which is as expected, considering that most are in the Officer category.

Table 2 – Descriptive analysis of the global sample

	Frequency (n=790)	% of sample	% of universe (N=6249)
Q1 – Gender			
Male	640	81.0	85.6
Female	150	19.0	14.4
Q2 – Age			
Less than 20 years	3	0.4	1.8
20 to 30 years	178	22.5	32.6
31 to 40 years	301	38.1	26.4
41 to 50 years	176	22.3	15.6
More than 50 years	132	16.7	23.6
Q3 – Marital status			
Married / de facto union	539	68.2	-
Bachelor/ Divorced/ Widower	251	31.8	-
Q5 – Category			
Officer	365	46.2	32.0
Non-Commissioned Officer	363	45.9	48.3
Airmen	62	7.8	19.7

Q6 – Type of service			
Permanent Staff	673	85.2	68.9
Contracted	117	14.8	31.1
Q7 – Area of work			
Operational	340	43.0	24.9
Support	450	57.0	75.1
Q8 – Qualifications			
PhD	4	0.5	0.0
Master	234	14.7	4.1
Degree	371	29.6	20.8
Bachelor	69	8.7	6.2
Technological/ Professional Course	84	10.6	12.7
High School	261	33.0	41.6
11th year	16	2.0	5.2
9th year	6	0.8	9.4

Source: IBM Corp. (2015).

Procedure. After obtaining the proper authorisation, a link to the questionnaire “Commuting Movements of Air Force Personnel: Relationship to Motivation, Productivity and Commitment” was posted on the PoAF website and sent individually by email to all PoAF service members. The questionnaire was available between 15 April and 10 May 2019. Respondents were also informed of the purpose of the questionnaire and assured of the anonymity and confidentiality of their answers. For that reason, respondents were not asked to state their specialty or rank.

3.2.2. Data collection instruments

The questionnaire included a first part to collect the respondents’ socio-demographic and professional data, and the next four parts analysed: (1) *Commuting*; (2) *Productivity*; (3) *Motivation*; and (4) *Organizational Commitment*. The questionnaire was based on English and Portuguese scales, which have been validated and are available in open access resources. The scales in English were translated according to the procedure proposed by Bates (2018), which is developed in five steps: (1) translation into Portuguese; (2) back translation into English; (3) subjective assessment; (4) objective assessment; and (5) pre-test using a convenience sample (n=23).

Commuting. Fourteen items (Table 3) were used to assess commuting distance, commuting travel time, mode of transport, route conditions and satisfaction.

Table 3 – Commuting Scale Items

Dimension	Items	Response scale
Commuting distance	Q13 What is the length of your home – work commute?	1 – less than 5 km
	Q14 What is the length of your work – home commute?	2 – 5 to 10 km 3 – 11 to 20 km 4 – 21 to 30 km 5 – 31 to 50 km 6 – 51 to 100 km 7 – more than 100 km
Commuting time	Q15 How long it take you, on average, to commute from home to work?	1 – less than 15 minutes
	Q16 How long it take you, on average, to commute from work to home?	2 – 15 to 30 minutes 3 – 31 to 45 minutes 4 – 46 to 60 minutes 5 – 61 to 90 minutes 6 – more than 90 minutes
Mode of transport	Q17 How do you commute to work and from work?	1 – On foot 2 – Public transport 3 – Military transport 4 – Own transport
	Q18 At your home-work-home trips, you travel...	1 – Alone 2 – By van pool 3 – Sometimes alone, others by van pool 4 – Not applicable
Route conditions	Q19.1 In my home to work commute, in the morning, I encounter a lot of heavy vehicle traffic.	1 – Never 2 3 4 5 – Always
	Q19.2 In my work to home commute I encounter a lot of heavy vehicle traffic.	
	Q19.3 I have to leave home early due to traffic congestion.	
	Q19.4 I consider traffic congestion an inconvenience.	
	Q19.5 I consider home-work-home commute unpleasant.	
	Q19.6 In my hom-work-home commute I often encounter accidents.	
	Q19.7 The roads I use in my home-work-home commute are in good condition.	
	Q19.8 My home-work-home commute has a lot of noise or environmental pollution.	

Productivity. Productivity was measured on 10 items that assessed absenteeism and presenteeism in terms of perceived performance and health. (Table 4).

Table 4 – Productivity Scale Items

Dimension	Items	Response scale
Absenteeism	Q22 In the last 30 days how many times did you miss work for reasons related to your home-work commute?	1 – None 2 – 1 to 3 times 3 – 4 to 6 times 4 – more than 6 times
	Q23 In the last 30 days how many times were you late for work for reasons related to your home-work commute?	
	Q24 In the last 30 days how many times did you leave work early for reasons related to your home-work commute?	
Perceived performance	Q25.1 In the last 30 days did you work in a less conscientious way than you should have?	1 – Never 2 3 4 5 – Always
	Q25.2 In the last 30 days was the quality of your work lower than expected?	
	Q25.3 In the last 30 days did you “day-dream” instead of focusing on your work?	
	Q26 From 1 (very low) to 5 (very high), how do you rate your overall work performance on the days you’ve worked over the last 30 days? (R)	
Health	Q25.4 In the last 30 days did you have relationship problems with other people at work?	1 – Never 2 3 4 5 – Always
	Q25.5 In the last 30 days did you have trouble controlling your emotions near other people at work?	
	Q25.6 In the last 30 days did you have health problems that limited the type or amount of work you could do?	

Motivation at work. Work motivation was measured on the Motivation at Work Scale (MAWS) devised by Gagné et al. (2010), which has been validated for the French and English languages. The scale is a seven-point Likert scale with 13 items, ranging from *Nothing* (1) to *Totally agree* (7) (Table 5).

Table 5 – Motivation at Work scale items

Dimension	Items	Response scale
Intrinsic	Q27.1 Because I enjoy this work very much.	1 - Not at all 2 - Very little 3 - A little 4 - Moderately 5 - Strongly 6 - Very strongly 7 - Exactly
	Q27.2 Because I have fun doing my job.	
	Q27.3 For the moments of pleasure that this job brings me.	
Identified	Q27.4 I chose this job because it allows me to reach my life goals.	
	Q27.5 Because this job fulfills my career plans.	
	Q27.6 Because this job fits my personal values.	
Introjected	Q27.7 Because I have to be the best in my job, I have to be a “winner”.	
	Q27.8 Because my work is my life and I don’t want to fail.	
	Q27.9 Because my reputation depends on it.	
Extrinsic	Q27.10 Because this job affords me a certain standard of living.	
	Q27.11 Because it allows me to make a lot of money.	
	Q27.12 I do this job for the paycheck.	

Note: The stem is “Using the scale below, please indicate for each of the following statements to what degree they presently correspond to one of the reasons for which you are doing this specific job”.

Source: Adapted from Gagné et al. (2010).

Organizational Commitment. Organizational commitment was measured using the Portuguese version of Allen and Meyer’s Organizational Commitment Scale (1990) by Nascimento et al. (2008), which was adapted to the Portuguese military context by Fachada (2015). The scale consists of 18 questions (Table 6) answered on a seven-point Likert scale ranging from *Strongly disagree* (1) to *Strongly agree* (7).

Table 6 – Organizational Commitment scale items

Dimension	Items	Response scale
Affective	Q28.1 I would be very happy to spend the rest of my career with this organization.	1 - Totally disagree 2 3 4 5 6 7 - Totally agree
	Q28.2 I really feel as if this organization’s problems are my own.	
	Q28.3 I do not feel like ‘part of the family’ at my organization. (R)	
	Q28.4 I do not feel ‘emotionally attached’ to this organization. (R)	
	Q28.5 This organization has a great deal of personal meaning for me.	
	Q28.6 I do not feel a ‘strong’ sense of belonging to my organization. (R)	
Normative	Q28.7 I don’t feel any kind of obligation to my current employer organization. (R)	
	Q28.8 Even if it was for my own personal gain, I don’t feel it would be right to leave my organization now.	
	Q28.9 I’d feel guilty if I got out of my organization right now..	
	Q28.10 This organization deserves my loyalty.	
	Q28.11 I would not leave my organization now because I feel a duty of obligation to the people who are in it.	
	Q28.12 I owe this organization a lot.	
Continuance	Q28.13 It would be very hard for me to leave my organization right now, even if I wanted to.	
	Q28.14 Too much in my life would be disrupted if I decided to leave my organization now.	
	Q28.15 It wouldn’t be too costly for me to leave my organization now. (R)	
	Q28.16 Right now, staying with my organization is a matter of necessity as much as desire.	
	Q28.17 I feel that I have very few options to consider leaving this organization.	
	Q28.18 One of the few serious consequences of leaving this organization would be the scarcity of available alternatives.	

Source: Adapted from Allen e Mayer (1990), Nascimento et al. (2008) and Fachada (2015).

3.2.3. Data processing techniques

The data were processed using the Statistical Package for Social Sciences software (SPSS V23.0) to conduct reliability analyses (Cronbach's alpha), Spearman's correlations, and an exploratory factor analysis (EFA), as well as to obtain centre, scatter and correlation measures (means, standard deviations, etc.)

Internal consistency. The scale's internal consistency was assessed by calculating Cronbach's alpha and was considered: very good ($\alpha > 0.9$); good ($0.8 < \alpha < 0.9$); reasonable ($0.7 < \alpha < 0.8$); weak ($0.6 < \alpha < 0.7$); unacceptable ($\alpha < 0.6$) (Pestana & Gageiro, 2014).

Spearman's correlation. Spearman's correlation was calculated and rated as defined by Franzblau (1958): if $|r| < 0.20$, the correlation is negligible; if $0.20 < |r| < 0.40$, the correlation is weak; if $0.40 < |r| < 0.60$, the correlation is moderate; if $0.60 < |r| < 0.80$, the correlation is strong; and if $|r| > 0.80$, the correlation is very strong.

Exploratory Factor Analysis. The EFA was carried out using the principal components method with Varimax rotation.

4. Data presentation and discussion of results

This chapter presents the results that provided the answers to the SQ and the RQ.

4.1. Description of the commuting movements of PoAF military personnel

This section analyses and answers SQ1.

4.1.1. Characterisation of the context

Table 7 – Characterisation of the context of the global sample

	1 – Never		2		3		4		5 – Always	
	N	%	N	%	N	%	N	%	N	%
19.1 - At my shift from home to work, in the morning, there is much heavy vehicle traffic.	84	10,6%	206	26,1%	242	30,6%	185	23,4	73	9,2%
19.2 - On my return home, after work, there is a lot of heavy vehicle traffic.	82	10,4%	204	25,8%	231	29,2%	204	25,8%	69	8,7%
19.3 - I have to leave home early because of traffic congestion.	177	22,4%	145	18,4%	100	12,7%	166	21,0%	202	25,6%
19.6 - In home to work and work to home journeys I often encounter accidents.	65	8,2%	294	37,2%	228	28,9%	179	22,7%	24	3,0%
19.7 - The roads I use in the home to work and work to home route are in good condition. (R)	37	4,7%	99	12,5%	197	24,9%	339	42,9%	118	14,9%
19.8 - My home to work and work to home route has a lot of noise or environmental pollution.	74	9,4%	184	23,3%	202	25,6%	203	25,7%	127	16,1%
	Terrible		Bad		Reasonable		Good		Excellent	
	N	%	N	%	N	%	N	%	N	%
Route conditions	51	6,5%	303	38,4%	281	35,6%	145	18,4%	10	1,3%

Source: IBM Corp. (2015).

As the data in Table 7 shows, most respondents have been in their Unit / Service / Corps of preference for more than three years (n=529, 67%) and never stay in their Unit overnight (n=454, 57.5%). However, 42.5% report that they stay in their Unit overnight at least once a week, and only 19.1% of those who stay overnight do so for Service-related reasons. These results suggest that the importance of military quarters and housing remains high.

Another important finding is that 47.4% (N=375) of respondents spend more than 11% of their wages on average on Commuting. Also very significant is the fact that 26.9% (more than a quarter of respondents) spend at least 16% of their wages on these trips. If we account for the fact that only 8% report that they receive a residence supplement, we will have a more complete picture of the situation.

On the other hand, 36.7% of respondents report that they do not have children, which constitutes a trend. Only 4.5% stated that they have three or more children.

4.1.2. Commuting distance

The *Commuting distance* variable measures the total distance travelled in a single home-work-home commute. Table 8 shows the absolute and relative distribution frequency. The trend is between 21 and 40 km (N=161; 20.4%) and the median is between 61 and 100 km, that is, about 50% of respondents travel more than 61 km per commute.

On the other hand, only 17.7% reported travelling less than 20 km, whereas 34% reported travelling over 100 km in their commute.

Table 8 – Commuting distance

	Less than 10 km		10 to 20 km		21 to 40 km		41 to 60 km		61 to 100 km		100 to 200 km		More than 200 km	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Distance travelled	61	7,7%	79	10,0%	161	20,4%	86	10,9%	134	17,0%	125	15,8%	144	18,2%

Source: IBM Corp. (2015).

4.1.3. Commuting time

The *Commuting time* variable measures the total time it takes to complete one home-work-home commute. Table 9 shows the absolute and relative distribution frequency. The trend is between 91 and 120 minutes (N=216; 27.3%) and the median is between 61 and 90 minutes, that is, about 50% of respondents report a commuting time of more than 1 hour.

The percentage of respondents who report a commute of less than 30 minutes is the same as the percentage of respondents who report a commute of more than 180 minutes (15.8%).

Table 9 – Commuting time

	Less than 30 minutes		31 to 60 minutes		61 to 90 minutes		91 to 120 minutes		121 to 180 minutes		More than 180 minutes	
	N	%	N	%	N	%	N	%	N	%	N	%
Travel time	125	15,8%	176	22,3%	133	16,8%	216	27,3%	140	17,7%	125	15,8%

Source: IBM Corp. (2015).

4.1.4. Mode of transport

The data for the variable *Mode of transport* (Table 10) show that most respondents use their own car to commute (N=570; 72.2%), that they usually travel alone (N=434; 54.9%) or by van pool (N=131; 16.6%).

The second most common mode of transport is a combination of public and own transport; however, the number of responses was much lower (only 47). Most respondents who marked this option travel alone (N=18) and a few always travel by military transport (N=3).

About 30 respondents report always using Public Transport and 12 always travel on foot.

It is noteworthy that about 8.4% (N=66) report using military transport in their commute, be it exclusively or in combination with other modes of transport. These findings confirm the importance of maintaining this service.

Table 10 – Mode of transport

Transport	Accompanying				Total
	Alone	Crew	Alone / Crew	Not applicable	
1 – On foot	12	0	0	0	12
1.1 – On foot and Public transport	1	0	0	1	2
1.2 - On foot and own transport	13	1	1	0	15
1.3 - On foot, Public and Military transport	6	0	1	2	9
1.4 - On foot, Public and own transport	5	0	0	0	5
1.5 - On foot, Military and own transport	2	0	1	0	3
1.6 - On foot, Public, Military and own transport	5	0	3	0	8
2 – Public transport	19	2	4	5	30
2.1 - Public and Military transport	6	0	1	4	11
2.2 - Public and own transport	24	3	18	2	47
2.3 - Public, Military and own transport	15	0	4	2	21
3 – Military transport	14	5	0	10	29
3.1 - Military and own transport	15	2	10	0	27
4 - Own transport	434	55	76	5	570
Total	572	68	119	31	790

Source: IBM Corp. (2015).

4.1.5. Route conditions

Regarding the route environment in service members' commute (Table 11), two variables were created combining, on the one hand, traffic conditions, traffic congestion, road conditions, and noise and environmental pollution (*Route conditions*), and, on the other, the feelings that such conditions elicit (*Feeling towards route conditions*).

The respondents answered several questions designed to assess the variable *Route conditions*.

With regards to the statement “In my home to work commute, in the morning, I encounter a lot of heavy vehicle traffic” the trend is “Sometimes” (N=242, 30.6%), with

36.7% (N=290) of respondents reporting that it “Never” or “Rarely” happens and, at the other end of the spectrum, 32.6% of respondents (N=258) report that it “Often” or “Always” happens.

As for the same question regarding the return journey home, the response trend is similar, with the same number of respondents reporting that they “Rarely” and “Often” encounter heavy vehicle traffic (N=204, 25.8%).

On the other hand, more than a quarter of respondents (N=202, 25.6%) report “Always” leaving their home early due to traffic congestion, and 46% do so “Frequently” or “Always” (N=368).

Regarding how often they encounter accidents in their commute, 25.7% (N=103) report doing so “Often” or “Always”. In contrast, 45.4% (N=364) report that they “Never” or “Rarely” see traffic accidents.

Most surveyed service members state that the roads they use in their commute are “Sometimes” or “Often” in good condition (N=536, 67.8%). The number of “Always” responses (N=118; 14.9%) was greater than the number of “Never” responses (N=37, 4.7%).

Table 11 – Route conditions

	1 – Never		2		3		4		5 – Always	
	N	%	N	%	N	%	N	%	N	%
19.1 - In my home to work commute, in the morning, I encounter a lot of heavy vehicle traffic.	84	10,6%	206	26,1%	242	30,6%	185	23,4	73	9,2%
19.2 - In my work to home commute I encounter a lot of heavy vehicle traffic.	82	10,4%	204	25,8%	231	29,2%	204	25,8%	69	8,7%
19.3 - I have to leave home early because of traffic congestion.	177	22,4%	145	18,4%	100	12,7%	166	21,0%	202	25,6%
19.6 - In home-work-home commute I often encounter accidents.	65	8,2%	294	37,2%	228	28,9%	179	22,7%	24	3,0%
19.7 - The roads I use in my home-work-home commute are in good condition. (R)	37	4,7%	99	12,5%	197	24,9%	339	42,9%	118	14,9%
19.8 - My home-work-home commute has a lot of noise or environmental pollution.	74	9,4%	184	23,3%	202	25,6%	203	25,7%	127	16,1%
	Terrible		Bad		Reasonable		Good		Excellent	
	N	%	N	%	N	%	N	%	N	%
Route conditions	51	6,5%	303	38,4%	281	35,6%	145	18,4%	10	1,3%

Source: IBM Corp. (2015).

With regards to noise or environmental pollution, 41.8% (N=330) report that they encounter it “Often” or “Always”. On the other hand, 32.7% (N=258) state that this “Never” or “Rarely” happens.

Overall, with regard to route conditions, the trend lies in the answers that consider them bad (N=303, 38.4%) followed by those that consider them reasonable (N=281, 35.6%).

Regarding the variable *Feeling towards route conditions* (Table 12), almost half of respondents (N=393, 49.7%) consider traffic congestion to be an inconvenience. However, a significant number (N=376, 47.6%) do not (“Never”), or “Rarely” consider their commute unpleasant. At the other end of the spectrum, some respondents (N=313, 39.6%) feel that those journeys are “Often” or “Always” unpleasant. Most (N=522, 66%) feel that the route conditions are “Pleasant” or “Very Pleasant”.

Table 12 – Feeling towards route conditions

	1 – Never		2		3		4		5 – Always	
	N	%	N	%	N	%	N	%	N	%
19.4 - I consider traffic congestion an inconvenience.	95	12,0%	164	20,8%	72	9,1%	66	8,4%	393	49,7%
19.5 - I consider my home-work-home commute unpleasant.	202	25,6%	174	22,0%	101	12,8%	144	18,2%	169	21,4%
	Very Unpleasant		Unpleasant		Indifferent		Enjoyable		Very enjoyable	
	N	%	N	%	N	%	N	%	N	%
Feeling towards route conditions	50	6,3%	63	8,0%	155	19,6%	261	33,0%	261	33,0%

Source: IBM Corp. (2015).

4.1.6. Brief overview and answer to SQ1

With regards to commuting distance, 50% of respondents report that they travel more than 61 km, and the same percentage reports a commute time of more than one hour. Most respondents use their own car (72.2%) and travel alone (54.9%). As for route conditions, 38.4% (the trend) of respondents consider them “Bad”. However, when asked about their feelings towards the route conditions, more than half of respondents (66%) stated that they are “Pleasant” or “Very Pleasant”.

4.2. Commuting and productivity among PoAF military personnel

This section analyses and answers SQ2.

4.2.1. Absenteeism

Productivity was measured using the two indicators described above, absenteeism and presenteeism frequency.

Table 13 shows the data on *Absenteeism* (measured in the number of days that service members missed work, were late for work, and left work early over the last 30 days). Although most respondents reported no or low absenteeism, 22.0%. (N=174) scored “High” and “Very High” on absenteeism.

Table 13 – Absenteeism

	None		1 to 3 times		4 to 6 times		More than 6 times	
	N	%	N	%	N	%	N	%
22 - In the last 30 days how many times you missed work for reasons related to home-work travel?	765	96,8%	23	2,9%	1	0,1%	1	0,1%
23 - In the last 30 days how many times have you arrived late at work for reasons related to home-work travel?	514	65,1%	198	25,1%	49	6,2%	29	3,7%
24 - In the last 30 days how many times have you left work early for reasons related to home-work travel?	552	69,9%	138	17,5%	35	4,4%	65	8,2%
	Inexistent		Low		High		Very high	
	N	%	N	%	N	%	N	%
Absenteeism	151	19,1%	465	58,9%	163	20,6%	11	1,4%

Source: IBM Corp. (2015).

4.2.2. Presenteeism

Presenteeism was measured on a five-point Likert scale ranging from “Never” to “Always”, which assessed service members’ *Perceived Performance* (Table 14) and *Physical and Mental State* (Table 15) over the last 30 days.

Table 14 – Perceived performance

	1 – Never		2		3		4		5 – Always	
	N	%	N	%	N	%	N	%	N	%
25.1 - In the last 30 days did you work in a less conscientious way than you should have?	293	37,1%	321	40,6%	147	18,6%	25	3,2%	4	0,5%
25.2 - In the last 30 days was the quality of your work lower than expected?	295	37,3%	360	45,6%	114	14,4%	17	2,2%	4	0,5%
25.3 - In the last 30 days did you “day-dream” instead of focusing on your work?	293	37,1%	288	36,5%	157	19,9%	48	6,1%	4	0,5%
	1		2		3		4		5	
	N	%	N	%	N	%	N	%	N	%
26 – From 1 (very low) to 5 (very high), how do you rate your overall performance on the days you’ve worked for the last 30 days? (R)	7	0,9%	14	1,8%	68	8,6%	433	54,8%	268	33,9%
	Very low		Low		Normal		High		Very high	
	N	%	N	%	N	%	N	%	N	%
Perceived performance	13	1,6%	35	4,4%	198	25,1%	437	55,3%	107	13,5%

Source: IBM Corp. (2015).

Health	Q25.4	In the last 30 days did you have relationship problems with others at work?	1 – Never 2 3 4 5 – Always
	Q25.5	In the last 30 days did you have trouble controlling your emotions when close to people at work?	
	Q25.6	In the last 30 days did you have health problems that limited the type or amount of work you could do compared to the usual?	

The trend for *Perceived Performance* is “High” (N=437, 55.3%), followed by “Normal” (N=198, 25.1%).

As for their *Physical and Mental State*, most respondents reported not having had any relationship problems with other people at work (N=428, 54.2%) during the period in question, that they had no trouble controlling their emotions near other people at work (N=458, 58.0%) and that they had no health issues that limited the type or amount of work they could do (N=443, 57.3%). Therefore, regarding how most respondents assess their Physical and Mental State, the trend is “Good” (N=376, 47.6%).

Table 15 – Physical and mental state

	1 – Never		2		3		4		5 – Always	
	N	%	N	%	N	%	N	%	N	%
25.4 - In the last 30 days did you have relationship problems with other people at work?	428	54,2%	266	33,7%	72	9,1%	19	2,4%	5	0,6%
25.5 - In the last 30 days did you have trouble controlling your emotions near other people at work?	458	58,0%	240	30,4%	69	8,7%	17	2,2%	6	0,8%
25.6 - In the last 30 days did you have health problems that limited the type or amount of work you could do?	453	57,3%	222	28,1%	82	10,4%	28	3,5%	5	0,6%
	Very bad		Bad		Normal		Good		Very good	
	N	%	N	%	N	%	N	%	N	%
Physical and mental state	10	1,3%	20	2,5%	101	12,8%	376	47,6%	283	35,8%

Source: IBM Corp. (2015).

4.2.3. Relationship between commuting and productivity among Air Force personnel

The data presented in Table 16 show moderate positive correlations between the subscales *Commuting Distance* (CM-CD) ($r=.440$; $p<0.01$) and *Commuting Time* (CM-CT) ($r=.441$; $p <0.01$) of *Commuting Movements* and the *Absenteeism* (PROD-ABS) subscale of *Productivity*. Moderate negative correlations were also observed between the *Route Conditions* (CM-RC) ($r=-.414$; $p<0.01$) and *Feeling Towards Route Conditions* (CM-FTRC) subscales ($r=-.423$; $p<0.01$) of *Commuting Movements* and in the *Absenteeism* (PROD-ABS) subscale of *Productivity*.

Table 16 – Commuting and Productivity correlations

	MP-DP	MP-TV	MP-CP	MP-SFCP	PROD-ABS	PROD-DP	PROD-EFM
MP-DP	1						
MP-TV	,894**	1					
MP-CP	<u>-,405**</u>	<u>-,461**</u>	1				
MP-SFCP	<u>-,393**</u>	<u>-,443**</u>	,670**	1			
PROD-ABS	<u>,440**</u>	<u>,441**</u>	<u>-,414**</u>	<u>-,423**</u>	1		
PROD-DP	<u>-,184**</u>	<u>-,199**</u>	,272	,243**	<u>-,230**</u>	1	
PROD-EFM	<u>-,097**</u>	<u>-,087*</u>	,198**	,169**	<u>-,178**</u>	<u>,454**</u>	1

Note: correlations ≥ 0.600 in bold and correlations in the interval [0.400; 0.600] underlined.

** Significant correlation at level 0.01 (bilateral).

* Significant correlation at level 0.05 (bilateral).

Source: IBM Corp. (2015).

Positive, albeit weak, correlations were observed between CM-RC ($r=.272$; $p<0.01$) and CM-FTRC ($r=.243$; $p<0.01$) subscales of Commuting Movements and the *Perceived Performance* (PROD-PP) subscale of Productivity.

The remaining cases showed a significant but negligible correlation.

4.2.4. Brief overview and answer to SQ2

The results show that absenteeism increases with commuting distance and commuting time and decreases as both route conditions and the feeling towards those conditions improves. It was also found that there was a slight (although not very significant) improvement in perceived performance and physical and mental state as commuting distance and commuting time decreased.

4.3. Commuting and motivation among PoAF personnel

This section analyses and answers SQ3.

4.3.1. Validation of the Motivation at Work scale

In this study, reasons that motivate service members to serve in the PoAF were assessed using the *Motivation at Work Scale* (MAWS) elaborated by Gagné et al. (2010). The scale was validated for the Portuguese military context through an analytic procedure in which the validity of the items is assessed using measures of central tendency, the reliability (precision) is assessed by analysing the internal consistency of the items, and the construct validity is determined by evaluating the factor structure.

Factor analysis. The relational structure of the *Motivation at Work* scale was assessed by conducting an EFA of the correlation matrix, and the factors were extracted using the principal components method, followed by a Varimax rotation. Three latent factors (3F) were obtained with an *eigenvalue* greater than 1, which explained 72.38% of the total variance. However, after analysing the items, it was decided that the 4-factor structure (4F) of the original scale would be maintained. The validity of the EFA was tested and obtained a KMO of 0.870, which is rated “Good” according to Maroco (2010, p.368). Table 17 summarises the

factor weights of each item for each of the 3 factors, their *eigenvalues*, the communality of each item, and the percentage of the variance explained by factor.

Table 17 – Motivation at Work scale: factor weights

Items	Factor				Communalities
	1	2	3	4	
Q27.2	,897				,917
Q27.3	,858				,880
Q27.1	,753				,790
Q27.5		,738			,807
Q27.4		,697			,792
Q27.6		,694			,734
Q27.9			,852		,760
Q27.8			,821		,745
Q27.7			,788		,709
Q27.11				,866	,780
Q27.10				,739	,741
Q27.12 (R)				,359	,664
Eingenvale	5,691	1,775	1,220	0,663	
Explained variance	47,4%	14,8%	10,2%	5,3%	72,38%

Legend: 1-Intrinsic motivation; 2-Identified motivation; 3-Introjected motivation; 4-Extrinsic motivation

Source: IBM Corp. (2015).

The first factor, *Intrinsic Motivation*, had high factor weights in items Q27.1, Q27.2, and Q27.3, accounting for 47.4% of the total variance. The second factor, *Identified Motivation*, had high factor weights in items Q27.4, Q27.5 and Q27.6, accounting for 14.8% of the total variance. The third factor, *Introjected Motivation*, had high factor weights in items Q27.7, Q27.8, and Q27.9, accounting for 10.2% of the total variance. The fourth factor, *Extrinsic Motivation*, had high factor weights in items Q27.10, Q27.11 and Q27.12 (R), accounting for 5.3% of the total variance. Furthermore, all communalities were high, which shows that the four retained factors are appropriate to describe the latent correlation structure.

Internal consistency. A Cronbach's alpha of 0.891 indicates that the items appropriately measure the construct under analysis. No negatively correlated items were identified. (Table 18).

Table 18 – Motivation at Work scale: Cronbach's alpha coefficients

Factor	Items	Cronbach Alpha
Intrinsic motivation	Q27.1, Q27.2, Q27.3	,915
Identified motivation	Q27.4, 27.5, Q27.6	,878
Introjected motivation	Q27.7, Q27.8, Q27.9	,815
External motivation	Q27.10, Q27.11, Q27.12	,724
Motivation at Work Scale		,891

Source: IBM Corp. (2015).

4.3.2. Intrinsic Motivation

Table 19 shows the values for *Intrinsic Motivation*, scored on a seven-point Likert scale ranging from “Nothing” to “Totally”. The trend in the answers to the statements “Because I enjoy this work very much”, “Because I have fun doing my job” and “For the moments of pleasure this job brings me” is “Strongly”, with 28.4% (N=224), 24.3% (N=192) and 22.4% (N=177) of responses, respectively.

Overall, 64.3% of respondents feel that they are “Strongly”, “Very strongly” or “Fully” motivated (N=508). However, the fact that 18% (N=142) of respondents feel that they are “A little”, “Very little” or “Not at all” motivated should not be overlooked. Of all respondents, 17.7% (N=140) show moderate intrinsic motivation.

Table 19 – Intrinsic motivation subscale

Not at all		Very little		A little		Moderately		Strongly		Very strongly		Exactly		M	SD
N	%	N	%	N	%	N	%	N	%	N	%	N	%		
27.1 - Because I enjoy this work very much.															
24	3,0%	40	5,1%	42	5,3%	136	17,2%	224	28,4%	189	23,9%	135	17,1%	5,03	1,500
27.2 - Because I have fun doing my job.															
41	5,2%	81	10,3%	69	8,7%	200	25,3%	192	24,3%	150	19,0%	57	7,2%	4,39	1,571
27.3 - For the moments of pleasure that this job brings me.															
55	7,0%	85	10,8%	87	11,0%	197	24,9%	177	22,4%	128	16,2%	61	7,7%	4,25	1,636
Intrinsic motivation subscale															
18	2,3%	46	5,8%	78	9,9%	140	17,7%	233	29,5%	186	23,5%	89	11,3%	4,82	1,455

Note: The stem is “Using the scale below, please indicate for each of the following statements to what degree they presently correspond to one of the reasons for which you are doing this specific job”.

Source: IBM Corp. (2015).

4.3.3. Identified motivation

Overall, with regards to *Identified motivation*, Table 20, the trend is “Strongly” (N=219, 27.7%) followed by “Very Strongly” (N=166, 21, 0%) and “Moderately” (N=163, 20.6%).

Upon closer analysis, it can be observed that one of the three questions that appraise this type of motivation, “Because this job fits my personal values”, positively influences identified work motivation, with 27.7% of respondents reporting that they feel “Strongly” motivated, 21% stating that they feel “Very strongly” motivated, and 20.6% stating that they are “Moderately” motivated.

As for the option “Because it allows me to reach my life goals”, most respondents consider this to be untrue (“Not at all”) (N=60, 7.6%) when compared to those who consider it to be “Exactly” (N=44, 5.6%) true. The statement “Because this job fulfills my career plans” obtained similar responses, with more than twice the number of respondents choosing the lower end option, “Not at all”, (N=101, 11.1%) than those who chose the upper end option, “Exactly” (N=40, 5.1%).

Table 20 – Identified motivation subscale

Not at all		Very little		A little		Moderately		Strongly		Very strongly		Exactly		M	SD
N	%	N	%	N	%	N	%	N	%	N	%	N	%		
27.4 - I chose this job because it allows me to reach my life goals.															
60	7,6%	84	10,6%	92	11,6%	218	27,6%	176	22,3%	116	14,7%	44	5,6%	4,13	1,589
27.5 - Because this job fulfills my career plans.															
88	11,1%	101	12,8%	96	12,2	187	23,7%	172	21,8%	106	13,4%	40	5,1%	3,93	1,686
27.6 - Because this job fits my personal values.															
40	5,1%	57	7,2%	70	8,9%	140	17,7%	220	27,8%	170	21,5%	93	11,8%	4,68	1,605
Identified motivation subscale															
29	3,7%	57	7,2%	96	12,2%	163	20,6%	219	27,7%	166	21,0%	60	7,6%	4,55	1,498

Note: The stem is “Using the scale below, please indicate for each of the following statements to what degree they presently correspond to one of the reasons for which you are doing this specific job”.

Source: IBM Corp. (2015).

4.3.4. Introjected motivation

Overall, the trend for *Introjected Motivation* is “Moderately”, with 23.9% (N=189) of responses, followed by “Strongly” with 23.5% (N=186).

With regards to the statement “Because I have to be the best in my job, I have to be a “winner””, about a quarter of respondents (N=198) “Moderately” agree, 19.1% (N=151) “Strongly” agree, and 14.9% (N=14.9%) “Very strongly” agree. On the other hand, there were slightly more responses at the lower end, “Not at all”=76, 9.6%), than at the upper end “Totally” (N=69, 8.7%).

As for the statement “Because my work is my life and I don’t want to fail”, the trend is “Moderately”, with 21.4% (N=169) of responses, followed by “Strongly” (N=139, 17.6%). As in the previous statement, the “Not at all” (N=103, 13%) responses outnumbered the “Totally” (N=72, 9.1%) responses.

Most respondents identify “Moderately” (N=170, 21.5%) with the statement “Because my reputation depends on it”, immediately followed by those who identify “Strongly” (N=158, 20%) with it. Interestingly, the trend is the same as in the previous statements, with more respondents stating that they do not identify with this option (“Not at all”) (N=95, 12%) than those that “Totally” (N=73, 9.2%) identify with it. (Table 21).

Table 21 – Introjected motivation subscale

Not at all		Very little		A little		Moderately		Strongly		Very strongly		Exactly		M	SD
N	%	N	%	N	%	N	%	N	%	N	%	N	%		
27.7 - Because I have to be the best in my job, I have to be a "winner".															
76	9,6%	91	11,5%	87	11,0%	198	25,1%	151	19,1%	118	14,9%	69	8,7%	4,12	1,732
27.8 - Because my work is my life and I don't want to fail.															
103	13,0%	102	12,9%	101	12,8%	169	21,4%	139	17,6%	104	13,2%	72	9,1%	3,94	1,828
27.9 - Because my reputation depends on it.															
95	12,0%	81	10,3%	85	10,8%	170	21,5%	158	20,0%	128	16,2%	73	9,2%	4,13	1,808
Introjected motivation subscale															
37	4,7%	68	8,6%	114	14,4%	189	23,9%	186	23,5%	129	16,3%	67	8,5%	4,36	1,561

Note: The stem is “Using the scale below, please indicate for each of the following statements to what degree they presently correspond to one of the reasons for which you are doing this specific job”.

Source: IBM Corp. (2015).

4.3.5. Extrinsic motivation

The trend for *Extrinsic Motivation*, Table 22, is “Moderately” (N=164, 20.8%) in regards to the statement “Because this job affords me a certain standard of living”. Furthermore, 25.1% of respondents selected the option “Not at all” or “Very little” (N=221), that is, they disagree with the statement, whereas, at the opposite end, only 11.4% agree “Very strongly” or “Exactly” (N=93).

When asked if they are in the military because it allows them to “make a lot of money”, nearly half of the respondents (N=373, 47.2%) selected the option “Not at all”. The percentage reaches 67.8% (N=536) if we account for those who agree “Very little” with the statement. In contrast, no service members “Exactly” agree (N=0) and only 0.9% (N=7) agree “Very strongly” that their job allows them to earn a lot of money.

On the other hand, 39.0% of respondents state that they are not in the AAFP only “for the paycheck” (N=308) and 20.3% (N=160) state that it is of “Very little” importance. At the opposite end, only 8.5% (N=67) agree “Very strongly” or “Exactly” with the statement.

Overall, the trend for *Extrinsic Motivation* is “Moderately”, with 36.2% (N=189) of responses, followed by “Strongly” with 29.6% (N=186).

Table 22 – Extrinsic motivation subscale

Not at all		Very little		A little		Moderately		Strongly		Very strongly		Exactly		M	SD
N	%	N	%	N	%	N	%	N	%	N	%	N	%		
27.10 - Because this job affords me a certain standard of living.															
93	11,8%	105	13,3%	116	14,7%	219	27,7%	164	20,8%	74	9,4%	19	2,4%	3,70	1,565
27.11 - Because it allows me to make a lot of money.															
373	47,2%	163	20,6%	103	13,0%	117	14,8%	27	3,4%	7	0,9%	0	0,0%	2,09	1,280
27.12 - I do this job for the paycheck. (R)															
308	39,0%	160	20,3%	88	11,1%	123	15,6%	44	5,6%	26	3,3%	41	5,2%	2,59	1,762
Extrinsic motivation subscale															
17	2,2%	41	5,2%	166	21,0%	286	36,2%	234	29,6%	41	5,2%	5	0,6%	3,10	1,072

Note: The stem is “Using the scale below, please indicate for each of the following statements to what degree they presently correspond to one of the reasons for which you are doing this specific job”.

Source: IBM Corp. (2015).

4.3.6. Relationship between commuting and motivation among Air Force personnel

The data presented in Table 23 reveal significant positive correlations (considered negligible) between the subscales *Commuting Distance* (CM-CD) ($r=.082$; $p<0.05$) and *Commuting Time* (CM-CT) ($r=.082$; $p <0.05$) subscales of *Commuting Movements* and the *Extrinsic motivation* (MOT-EXT) subscale of *Motivation at Work*. Significant but negligible positive correlations were also found between the *Intrinsic Motivation* (MOT-INTRINS) ($r=.076$; $p<0.05$) and *Identified Motivation* (MOT-IDENT) ($r=.095$; $p <0.01$) subscales of *Motivation at Work* and the *Route Conditions* (CM-RC) subscale of *Commuting Movements*.

The remaining cases show no significant correlations.

Table 23 – Commuting and Motivation correlations

	MP-DP	MP-TV	MP-CP	MP-SFCP	PROD-ABS	PROD-DP	PROD-EFM	MOT-EXT
MP-DP	1							
MP-TV	,894**	1						
MP-CP	<u>-,405**</u>	<u>-,461**</u>	1					
MP-SFCP	<u>-,393**</u>	<u>-,443**</u>	,670**	1				
MOT-INTRINS	-,046	-,062	,076*	,050	1			
MOT-IDENT	-,045	-,061	,095**	,062	,667**	1		
MOT-EXTINT	-,013	-,020	,003	-,024	,372**	,432**	1	
MOT-EXT	,082*	,082*	-,058	-,014	-,020	-,149**	,210**	1

Note: correlations ≥ 0.600 in bold and correlations in the interval $[0.400; 0.600[$ underlined.

** . Significant correlation at level 0.01 (bilateral).

*. Significant correlation at level 0.05 (bilateral).

Source: IBM Corp. (2015).

4.3.7. Brief overview and answer to SQ3

The correlations show that route conditions have a positive effect on intrinsic motivation and identified motivation, and that commuting distance and commuting time influence extrinsic motivation.

4.4. Commuting and commitment among PoAF military personnel

This section analyses and answers SQ4.

4.4.1. Validation of the Organizational Commitment scale

In this study, the reasons that bind service members to the PoAF were analysed using the Portuguese version of Allen and Meyer’s Organizational Commitment Scale (1990) by Nascimento et al. (2008), comprising 18 items grouped into three subscales: Affective Commitment (6 items), Normative Commitment (6 items) and Continuance Commitment (6 items).

Factor analysis. The relational structure of the *Organizational Commitment* scale was assessed by conducting an EFA of the correlation matrix, and the factors were extracted using the principal components method, followed by a Varimax rotation. Four latent factors (4F) were obtained with an *eigenvalue* greater than 1, which explained 65.28% of the total variance. However, after analysing the items, it was decided that the 3-factor structure (3F) of the original scale would be maintained. The validity of the EFA was tested and obtained a KMO of 0.893, which is rated “Good” according to Maroco (2010, p.368).

Internal consistency. A Cronbach’s alpha of 0.888 indicates that the items appropriately measure the construct under analysis. No negatively correlated items were identified. (Table 24).

Table 24 – Organizational Commitment scale: Cronbach’s alpha coefficients

Factor	Items	Cronbach Alpha
Affective commitment	Q28.1, Q28.2, Q28.3, Q28.4, Q28.5 Q28.6	,876
Normative commitment	Q28.7, 28.8, Q28.9, Q28.10, Q28.11, Q28.12	,816
Continuance commitment	Q28.13, Q28.14, Q28.15, Q28.16, Q28.17, Q28.18	,781
Organizational commitment scale		,888

Source: IBM Corp. (2015).

4.4.2. Affective commitment

Overall, service members scored high in Affective Commitment to the organization they serve, with more than half feeling “Very Strongly” or “Strongly” affectively committed (N=407, 51.5%) (Table 25).

A considerable percentage, which represents the trend, agree “Exactly” with the statement “I would be very happy if I spent the rest of my career in this organization” (N=177, 22.4%). This percentage gradually decreases to the other end of the spectrum, the option “Not at all”, with 8.6% (N=78) of responses.

With regards to the statement “I really feel as if this organization’s problems are my own”, 22.2% of respondents agree “Strongly” (N=175), 18.7% (N=148) agree “Moderately” and 19.5% (N=154) agree “Very strongly”. On the other hand, the two extremes obtained similar values, with 9.2% (N=73) of respondents selecting the option “Not at all” and 9.4% (N=74) agreeing “Exactly”.

In the responses to the statement “This organization has a great deal of personal meaning for me”, the trend is “Very strongly” (N=211, 26.7%), with 65.5% (N=518) of respondents stating that they agree “Strongly”, “Very strongly” or “Exactly”.

As for the reverse statements, “I don’t feel like ‘part of the family’ at my organization”, “I do not feel ‘emotionally attached’ to this organization” and “I do not feel a ‘strong’ sense of belonging to my organization”, the trend is “Not at all” with 30.6% (N=242), 34.3% (N=271) and 32.7% (N=258) of responses, respectively.

Table 25 – Affective commitment subscale

Not at all	Very little	A little	Moderately	Strongly	Very strongly	Exactly	M	SD
N	%	N	%	N	%	N	%	
28.1 - I would be very happy to spend the rest of my career with this organization.								
68	8,6%	78	9,9%	86	10,9%	111	14,1%	124 15,7%
						146	18,5%	177 22,4%
28.2 - I really feel as if this organization’s problems are my own.								
73	9,2%	82	10,4%	84	10,6%	148	18,7%	175 22,2%
						154	19,5%	74 9,4%
28.3 - I do not feel like "part of the family" at my organization. (R)								
242	30,6%	184	23,3%	116	14,7%	84	10,6%	64 8,1%
						56	7,1%	44 5,6%
28.4 - I do not feel "emotionally attached" to this organization. (R)								
271	34,3%	199	25,2%	92	11,6%	82	10,4%	57 7,2%
						47	5,9%	42 5,3%
28.5 - This organization has a great deal of personal meaning for me.								
31	3,9%	65	8,2%	73	9,2%	103	13,0%	151 19,1%
						211	26,7%	156 19,7%
28.6 - I do not feel a "strong" sense of belonging to my organization. (R)								
258	32,7%	198	25,1%	97	12,3%	92	11,6%	63 8,0%
						53	6,7%	29 3,7%
Affective commitment subscale								
8	1,0%	25	3,2%	63	8,0%	119	15,1%	168 21,3%
						210	26,6%	197 24,9%

Source: IBM Corp. (2015).

4.4.3. Normative commitment

Six questions were used to assess Normative Commitment (Table 26).

As for the reverse statement, “I don’t feel any kind of obligation to my current employer organization”, 38.2% of responses were at the lower end of the scale (“Not at all”) (N=302), and 23.4% agreed “Very little” (N=185), which corresponds to 61.6% (N=387) negative responses. At the opposite end of the spectrum, 10.4% of respondents (N=82) stated that they agree “Very strongly” or “Exactly” with the statement.

The statement “Even if it were to my advantage, I do not feel it would be right to leave this organization right now” showed a similar trend, “Not at all” (N=235, 29.7%). The trend gradually decreases to the opposite end, with 35 respondents stating that they “Exactly” agree.

Furthermore, 63.6% of respondents selected “Not at all” or “Very little” when asked if they would feel guilty if they left the organization right now (N=502), whereas only 9.5% (N=75) stated that they would feel this “Very strongly” or “Exactly”.

As for the statement “This organization deserves my loyalty”, 21.8% totally agree (N=172) and 8.1% selected “Not at all” (N=64). Broadening the analysis to the three lower options “Not at all” / “Very little” / “A little” reveals that more than a quarter (26.7%) of respondents do not feel much loyalty to the organization (N=219).

Table 26 – Normative commitment subscale

Not at all		Very little		A little		Moderately		Strongly		Very strongly		Exactly		M	SD
N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Q28.7 - I don't feel any kind of obligation to my current employer organization. (R)															
302	38,2%	185	23,4%	92	11,6%	80	10,1%	49	6,2%	41	5,2%	41	5,2%	2,59	1,802
Q28.8 - Even if it was for my own personal gain, I don't feel it would be right to leave my organization now.															
235	29,7%	156	19,7%	117	14,8%	115	14,6%	80	10,1%	52	6,6%	35	4,4%	2,93	1,800
Q28.9 - I'd feel guilty if I got out of my organization right now.															
338	42,8%	164	20,8%	75	9,5%	84	10,6%	54	6,8%	48	6,1%	27	3,4%	2,50	1,773
Q28.10 - This organization deserves my loyalty.															
64	8,1%	69	8,7%	86	10,9%	121	15,3%	135	17,1%	143	18,1%	172	21,8%	4,66	1,900
Q28.11 - I would not leave my organization now because I feel a duty of obligation to the people who are in it.															
221	28,0%	155	19,6%	76	9,6%	126	15,9%	84	10,6	88	11,1%	40	5,1%	3,15	1,922
Q28.12 - I owe this organization a lot.															
87	11,0%	103	13,0%	96	12,2%	165	20,9%	142	18,0%	117	14,8%	80	10,1%	4,07	1,821
Normative commitment subscale															
8	1,0%	69	8,7%	168	21,3%	234	29,6%	168	21,3%	104	13,2%	39	4,9%	4,21	1,340

Source: IBM Corp. (2015).

The service members surveyed in this study tend to state that feeling an obligation to the people in the organization is not what makes them remain in the military (Q28.11), with 28% (N=221) selecting “Not at all” and 19.6% (N=155) answering “Very little” when asked to rate the truthfulness of the statement.

As for the statement “I owe this organization a lot”, 20.9% agree “Moderately” (N=165),

24% disagree (“Not at all”) or agree “Very little” (N=190), and 24.9% agree “Very strongly” or “Exactly” (N=197), that is, the extremes obtained similar values.

Overall, respondents are moderately (29.6%) normatively committed to the organization. The number of respondents who are “A little” normatively committed (N=168, 21.3%) is equal to those who are “Strongly” (N=168, 21.3%) normatively committed.

4.4.4. Continuance commitment

Six statements were used to assess *Continuance Commitment* (Table 27).

In the statement “Even if I wanted to, it would be very difficult for me to leave my organization now” the trend is “Not at all” with 22.2% of responses (N=175), followed by “Very little” with 15.9% (N=126). At the other end, 9% (N=71) agree “Exactly” with the statement and 14.9% agree “Very strongly” (N=118).

As for the statement “Too much of my life would be disrupted if I decided to leave my organization now”, the trend is also the lower end, with 26.8% selecting the option “Not at all”. This trend gradually decreases to the opposite end, with 5.4% (N=43) of responses.

Table 27 – Continuance commitment subscale

Not at all		Very little		A little		Moderately		Strongly		Very strongly		Exactly		M	SD
N	%	N	%	N	%	N	%	N	%	N	%	N	%		
28.13 - It would be very hard for me to leave my organization right now, even if I wanted to.															
175	22,2%	126	15,9%	90	11,4%	104	13,2%	106	13,4%	118	14,9%	71	9,0%	3,61	2,034
28.14 - Too much in my life would be disrupted if I decided to leave my organization now.															
212	26,8%	155	19,6%	94	11,9%	109	13,8%	95	12,0%	82	10,4%	43	5,4%	3,17	1,915
28.15 - It wouldn't be too costly for me to leave my organization now. (R)															
124	15,7%	177	22,4%	111	14,1%	110	13,9%	79	10,0%	94	11,9%	95	12,0%	3,64	1,996
28.16 - Right now, staying with my organization is a matter of necessity as much as desire.															
96	12,2%	93	11,8%	122	15,4%	198	25,1%	122	15,4%	108	13,7%	51	6,5%	3,87	1,728
28.17 - I feel that I have very few options to consider leaving this organization.															
247	31,3%	191	24,2%	106	13,4%	76	9,6%	55	7,0%	77	9,7%	38	4,8%	2,85	1,870
28.18 - One of the few serious consequences of leaving this organizations would be the scarcity of available alternatives.															
87	11,0%	103	13,0%	96	12,2%	165	20,9%	142	18,0%	117	14,8%	80	10,1%	4,07	1,821
Continuance commitment subscale															
27	3,4%	100	12,7%	205	25,9%	214	27,1%	153	19,4%	63	8,0%	28	3,5%	3,84	1,372

Source: IBM Corp. (2015).

The reverse statement, “It wouldn't be too costly for me to leave my organization now”, the trend is “Very little” with 22.4% of responses (N=177).

On the other hand, most service members selected the options “Not at all” or “Very little” when asked if they feel that they have few options if they decided to leave the organization (N=447, 56.6%). As for the statement “One of the few serious consequences of leaving this organization would be the scarcity of available alternatives”, most service members selected “Not at all” or “Very little”, with 56.6% of responses (N=447).

The overall trend for Continuance Commitment is “Moderately”, with 27.1% (N=214). If we add the second most marked option (“A little”), the value exceeds 50% (N=419, 53%).

4.4.5. Relationship between commuting and commitment among Air Force personnel

The data presented in Table 28 reveal significant negative correlations (considered negligible) between the Route Conditions (CM-RC) ($r=.085$; $p<0.05$) subscales of Commuting Movements and the Normative Commitment (OC-NC) subscale of Organizational Commitment. Significant but negligible negative correlations were also found between the Affective Commitment (OC-AC) ($r=-.073$; $p<0.05$) and Normative Commitment (OC-NC) ($r=.079$; $p<0.05$) subscales of Organizational Commitment and the Commuting Distance (CM-CD) subscale of Commuting Movements.

The remaining cases show no significant correlations.

Table 28 – Commuting and Organizational Commitment correlations

	MP-DP	MP-TV	MP-CP	MP-SFCP	CO-CA	CO-CN	CO-CC
MP-DP	1						
MP-TV	.894**	1					
MP-CP	<u>-.405**</u>	<u>-.461**</u>	1				
MP-SFCP	<u>-.393**</u>	<u>-.443**</u>	.670**	1			
CO-CA	-.703*	-.050	.038	-.006	1		
CO-CN	-.079*	-.05	.085*	.055	-.631**	1	
CO-CC	-.004	.010	.026	.048	.247**	.413**	1

Note: correlations ≥ 0.600 in bold and correlations in the interval $[0.400; 0.600]$ underlined.

** Significant correlation at level 0.01 (bilateral).

* Significant correlation at level 0.05 (bilateral).

Source: IBM Corp. (2015).

4.4.6. Brief overview and answer to SQ4

Poor route conditions have a negative effect on affective commitment, and both affective and normative commitment are negatively influenced by commuting distance.

4.5. Brief overview and answer to the RQ.

To answer the research question (RQ) “What is the relationship between the commuting movements of PoAF military personnel and their motivation, commitment and productivity?” three subsidiary questions were formulated. The answers to these questions were discussed in the subchapters above.

Overall (Table 29), this study’s analysis of the relationships between *Commuting Movements*, *Productivity*, *Motivation* and *Organizational Commitment* does not confirm the findings of previous studies. The only correlations observed were a weak positive correlation between *Commuting Movements* and *Productivity* ($p=0.01$; $r=0.322$), negligible negative correlations between *Productivity* and *Motivation* ($p=0.01$; $r=-0.256$) and between *Productivity*

and *Organizational Commitment* ($p=0.01$; $r=-0.234$), and a moderate positive correlation between *Motivation* and *Organizational Commitment* ($p=0.01$; $r=0.554$).

Table 29 – Commuting Movements, Productivity, Motivation and Organizational Commitment correlations

	Commuting	Productivity	Motivation	Organizational Commitment
Commuting	1			
Productivity	<u>.322**</u>	1		
Motivation	-.028	-.256**	1	
Organizational Commitment	-.063	-.234**	.554**	1

Note: correlations ≥ 0.600 in bold and correlations in the interval $[0.400; 0.600]$ underlined.

** . Significant correlation at level 0.01 (bilateral).

Source: IBM Corp. (2015).

These results were obtained despite the fact that: 26.9% of respondents spend more than 16% of their wages on their home-work-home commute; only 8% of respondents receive a residence supplement, with 17% of respondents reporting that they travel between 61 and 100 km, 15.8% travel between 100 and 200 km and 18.2% over 200 km daily; more than 50% of respondents take more than one hour and 15.8% take more than 180 minutes in their commute.

These findings suggest that the fact that the organization provides accommodation in many of its units, not only for service members but also for their families; that it provides military transport interfacing with civil transports; that it provides a residence supplement; and that the fact that some service members are able to commute by van pool helps to minimise the impact of commuting, a finding that is in line with the culture and sense of mission expected of military personnel (B. Ferreira, face-to-face interview, 10 July 2019).

On the other hand, the fact that the DP has all service members fill out a statement of preference and uses that data to appoint them to their preferred Unit when possible is an example of excellent planning. Also noteworthy is the fact that service members already know the geographical location of the different units when they join the Air Force. To minimise the impact of commuting for service members, protocols with transport companies could be established to reduce transport costs. In terms of policy, the adoption of less stringent requirements for eligibility to a residence supplement was suggested (A. Temporão, email interview, 10 July 2019).

These results are interesting in that they raise some relevant questions that can be addressed in future studies: Why did this study not confirm the findings of previous studies on commuting? Is it a consequence of the specific characteristics of the military context? Perhaps the uniqueness of the military condition and the oath that service members take to defend their country, at the cost of their own lives if necessary, influences their behaviour on a daily basis, even if they do not experience life and death situations. The richness of the data collected and the size of the sample allow for further analyses to correct for any biases in the sample and / or the analyses carried out.

5. Conclusions

Commuting is part of the daily routine of military personnel. First, the present study was delimited to the military personnel of the Portuguese Air Force. This study is relevant because it focuses on one of the essential pillars of the military organization, its staff. That is, the service members who serve the military and the country they swore to defend by sacrificing themselves on a daily basis to perform the roles that the organization expects of them, whatever their Unit / Service / Corps, even in the face of the latest budget cuts to the residence supplement. But at what cost? The general objective (GO) of this study is *To analyse the relationship between the commuting movements of PoAF personnel and their motivation, commitment and productivity.*

The study's methodological approach included three phases (exploratory, analytical, and conclusive) and used hypothetical and deductive reasoning, a case study research design, and a quantitative research strategy, as advised by the methodological guidelines developed by Santos and Lima (2016).

The following research question (RQ) was formulated to guide the research: "What is the relationship between the commuting movements of PoAF military personnel and their motivation, commitment and productivity?" The RQ was divided into the following Subsidiary Questions:

SQ1: What are the commuting movements of Air Force personnel?

SQ2: What is the relationship between commuting and productivity among Air Force personnel?

SQ3: What is the relationship between commuting and motivation among Air Force personnel?

SQ4: What is the relationship between commuting and commitment among Air Force personnel?

To answer these questions, a survey was elaborated and delivered to a sample of respondents. After the pre-test phase, the final version of the questionnaire was posted on the PoAF website and sent to each service member via GroupWise. The survey obtained 790 valid responses.

Due to reasons related to the access to the questionnaire, the frequency distribution of the sample regarding the type of service contract, area of work and educational qualifications does not match the distribution of the universe under study, therefore, it might not be possible to fully extrapolate the results. However, the findings provide a very reasonable approximation to the general views of PoAF personnel on this topic.

The data collected in the questionnaire, whose respondents correspond to 12.6% of the universe of CS and CP/VP on active duty or in the active duty reserves, were analysed using SPSS and some conclusions were drawn.

With regards to SQ1 and to the distance service members travel in their commute, 50% of respondents report travelling more than 61 km, and the same percentage report a commute of more than one hour. Most respondents use their own car (72.2%) and travel alone (54.9%). As for route conditions, 38.4% of respondents (the trend) consider them "Bad". However, when asked about their feelings towards those conditions, more than half of respondents

(66%) stated that they are “Pleasant” or “Very Pleasant”.

However, this superficial analysis does not reveal all the facts and begs further exploration. The study revealed that 26.9% of respondents spend more than 16% of their wages on commuting, that only 8% receive a residence supplement, and that 17% reporting travelling between 61 and 100 km, 15.8% between 100 and 200 km, and 18.2% over 200 km daily. More than half of respondents take more than one hour and 15.8% take more than 180 minutes in their daily commute.

As for the two indicators used to measure productivity, absenteeism and presenteeism, 22% of respondents scored “High” or “Very High” on absenteeism. More than half (55.3%) marked the option “High” in perceived performance and 47.6% rated their physical and mental state as “Good”. The answer to SQ2 is that absenteeism increases with commuting distance and commuting time and decreases as both route conditions and the feeling towards those conditions improves. It was also found that there was a slight (although not very significant) improvement in perceived performance and physical and mental state as the commuting distance and commuting time decreased.

In terms of Motivation at Work, the overall trend is positive. The trend in intrinsic motivation is “Strongly” (29.5%), however, 18% of respondents state that they are “Little” or “Very Little” motivated. With regards to Identified Motivation, most service members feel “Strongly” (27.7%) or “Very Strongly” (27.7%) motivated. The trend for Introjected Motivation is “Moderately” (36.2%). The answer to SQ3 is that the correlations show that route conditions have a positive effect on intrinsic motivation and identified motivation, and that commuting distance and commuting time influence extrinsic motivation.

In the analysis of Organizational Commitment, it was found that Affective Commitment obtained very positive scores, with 26.6% of respondents selecting the option “Very Strongly” and 24.9% choosing “Exactly”. The trend for Normative Commitment is “Moderately” (29.6%). Finally, the trend for Continuance Commitment is also “Moderate” (27.1%). The answer to SQ4 is that poor route conditions have a negative effect on Affective Commitment, and both Affective and Normative Commitment are negatively influenced by commuting distance.

The following final reflection aims to provide a better understanding of the reasons for these results and to identify possible ways to optimise them. Therefore, the role of military culture and the military sense of mission must be accounted for, as well as some factors that mitigate the effects of commuting:

The fact that the organization provides accommodations not only for service members but also for their families in many Units;

The fact that it provides military transport that interfaces with civil transport;

The fact that it provides a residence supplement;

The fact that some service members are able to commute by van pool;

The fact that the DP has service members fill out a statement of preference and uses that data to assign them to their preferred Unit, when possible, which is an example of excellent planning;

The fact that service members already know the geographical location of the different units when they join the Air Force;

The fact that any organization benefits from knowing its employees better means that

this should be a permanent concern for organizations. Improving the conditions provided to service members will have, to a greater or lesser degree, repercussions in terms of productivity, motivation and commitment. This study's *contribution* to knowledge is undeniable because it provides the opportunity to make adjustments in order to obtain the results the organization desires.

These findings contribute to the advancement of science by raising new questions that can be addressed in future studies. How do the specific features of the military condition, such as the oath service members take to defend their country and military culture influence the results of this study when compared to other studies conducted in civilian contexts? What would be the impact on motivation, productivity and commitment of reducing commuting by decreasing the commuting distance or by implementing more flexible work schedules to avoid traffic congestion?

A **limitation of this study** is that although the number of respondents represents 12.6% of the universe of service members, the use of an accidental non-probabilistic sample limits the possibility of extrapolating the results. Furthermore, as the study is delimited to Air Force personnel, it covers only about 18% of the total universe of Armed Forces personnel.

Future studies may broaden the analysis to the Army and Navy, and compare the results to those of studies conducted on military personnel from countries of similar size to Portugal, in order to ascertain if the military condition is a factor that mitigates the consequences of Commuting. It would also be of interest to understand if the geographic location of military units / services / corps has had a negative effect on recruitment.

In terms of **practical considerations**, recent studies have addressed and continue to explore the impact of commuting on workers due to its potentially negative effects. Therefore, it would be important to disseminate this research to the entities in charge of managing the Air Force's military personnel.

For many people, commuting is the worst part of the day, and policies that can make commuting shorter and more convenient would be a straightforward way to reduce minor but widespread suffering.

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