16TH COMBAT AVIATION BRIGADE:
ADMINISTRATION, GLOBALIZATION, AND MULTICULTURALISM
DIMENSIONS OF ADOPTING ELECTRONIC FLIGHT BAGS

MSA 698 Directed Administrative Portfolio
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Administration, Globalization, & Multiculturalism Implications for
Adopting Electronic Flight Bags

Section 1: Administration, Globalization, & Multiculturalism Aspects of the MSA 698 Issue

This paper is a continuation of a series of studies analyzing the strategies and feasibility of adopting electronic flight bags (EFB) for aviation activities conducted by the 16th Combat Aviation Brigade (CAB) at Joint Base Lewis-McChord, WA. This paper examines specific administrative, globalization, and multiculturalism aspects related to the 16th CAB’s adoption of EFBs.

Paper aviation publications have been replaced by commercial off-the-shelf (COTS) tablets (e.g. iPads) by much of the aviation industry. Military aviation is discontinuing the physical printing of many publications, but the 16th CAB primarily utilizes paper. EFB adoption will have the biggest impact on aviation crewmembers (ACM), but other members of the organization may also be affected depending on the implementation process. Using EFBs can reduce fuel consumption, printing costs, as well as improve organizational knowledge sharing internally and externally.

There are multiple implications for the 16th CAB in regards to globalization and multiculturalism. If EFBs are not implemented carefully, the CAB risks alienating members of the organization and negating the positive impact that EFBs can bring. This paper includes a brief literature review, implications for globalization and multiculturalism, and answers the following questions:

1. What are the challenges associated with integrating new technology for men and women?
2. What are the reasons new technology is rejected by older and younger persons?
3. How will supplying aircrews with EFBs affect relationships with maintenance personnel?

4. What issues will the 16th CAB face by integrating outsourced EFB tech support?

Scholarly literature for this paper was obtained from the Central Michigan University online library utilizing multiple databases. Search topics included “technology adoption,” “gender differences,” “age,” “military culture,” “outsourcing,” and “envy.” Additional information was obtained from informal personal interviews. Interviewees included 16th CAB ACMs and leaders, commercial airline crewmembers and ACMs from the 101st CAB.

Section 2: Brief Review of the Literature

Gender and age are two factors that play an important role in employees’ adoption of technology. Men and women’s technology adoption decisions can be considerably different.

Positive attitudes towards technology is the primary driver for men on whether or not to adopt. Men’s attitudes are typically formed by the perceived usefulness of the technology, but not by the perceived ease of use (Morris, Venkatesh, & Ackerman, 2005; Venkatesh & Morris, 2000). Men report greater external pressure to adopt; however, men do not report this pressure as a factor in their adoption decision (Venkatesh & Morris, 2000). The decision process for men is very one-dimensional, but multi-faceted for women.

Women are driven by the process of adopting technology, whereas men are more driven by the usefulness of the technology (Venkatesh & Morris, 2000). Women report feeling less external pressure to adopt technology compared to men, but women place a greater importance on the pressure (Venkatesh & Morris, 2000). Women’s need for affiliation is greater than men’s. The need for affiliation makes women more likely to conform to the subjective norm of the
organization. If conformity is an easy and simple process, women are more likely to adopt technology. This conformity is known as behavioral control (Morris, Venkatesh, & Ackerman, 2005). Technology’s ease of use is also an important influencer on women’s adoption decision.

In regards to technology adoption decisions, age consideration should be applied to gender differences. Gender becomes a relatively unimportant factor for workers younger than 40 years old as there are far more commonalities than differences (Morris, Venkatesh, & Ackerman, 2005). Forty is the typical dividing age between younger and older workers in relation to technology adoption (McCausland, King, Bartholomew, Feyre, Ahmad, & Finkelstein, 2015). An organization’s probability of successful technology adoption is negatively associated with a higher worker population of over 30 employees (Meyer, 2011).

The factors that influence men and women are the same factors that influence younger and older workers. Like men, younger workers are influenced most by attitude (Morris, Venkatesh, & Ackerman, 2005). Older workers are heavily influenced by perceived behavioral control in addition to external pressure (Meyer, 2011; Morris & Venkatesh, 2000). Older worker attitudes are influenced by their proximity to retirement and their view of technology as a replacement for their skills. These two factors may encourage attitudes resistant to adoption (Meyer, 2011).

Older workers have a lower desire to learn new technology skills and have lower confidence in their ability to do so than younger workers (McCausland, King, Bartholomew, Feyre, Ahmad, & Finkelstein, 2015). Lower desire and confidence may be associated with older people being further removed from learning environments, (e.g. college) and natural physical changes to mental capabilities (McCausland, King, Bartholomew, Feyre, Ahmad, & Finkelstein, 2015; Morris & Venkatesh, 2000).
Younger workers have negative perceptions of older workers in relation to technology use. These perceptions negatively influence the quality of training they give to older workers. Technological training is often a negative experience for older workers (McCausland, King, Bartholomew, Feyre, Ahmad, & Finkelstein, 2015). When trainees are perceived as older, negative stereotypes negatively influence the quality of training that trainers provide. This results in less objective evaluations of older workers learning.

Overcoming the challenges in addressing gender and age differences is easier for organizations that are more team oriented. These organizations have higher rates of technology adoption (Meyer, 2011). Teamwork is also an important element in determining how workers deal with envy (Tai, Narayanan, & McAllister, 2012).

Envy occurs when individuals identify unfavorable comparisons with coworkers (e.g. an organization issues iPads to pilots, but not to maintenance personnel). Envy can motivate workers to undermine their organization and coworkers or it can motivate prosocial behavior. Workers with higher levels of self-esteem and self-efficacy tend to deal with envy with prosocial behavior. Self-esteem and self-efficacy is higher in workers who believe their organization cares for their well-being (Tai, Narayanan, & McAllister, 2012).

Envy can also be triggered by comparisons with civilian employees integrated into military organizations. Regardless of the amount of contact with civilian coworkers, service members tend to view their comparative employment status as disadvantaged due to the level of control exerted by the military concerning work schedules, duties, and pay. The negative comparison can lead to lower job satisfaction, lower job performance, and reduced organizational commitment (Kelty, 2005).
Section 3: Gender and Age

The 16th CAB is a diverse military organization, but ACMs within the organization are overwhelmingly white, male, and in their early 30s. Despite the homogeneity of this subset, multicultural issues of gender and age must be addressed in order to successfully implement EFBs.

Men’s technology adoption decisions are primarily influenced by the instrumentality of technology (Morris, Venkatesh, & Ackerman, 2005). Women are more concerned with how easy the technology is to use (Venkatesh & Morris, 2000). Women are also heavily influenced by other’s perceptions of technology and external pressures to adopt. The desire for affiliation in an ACM community where women are approximately 10% of the population may increase the perceived external pressure to adopt new technology (Morris, Venkatesh, & Ackerman, 2005).

The differences in gender decision making has implications for an EFB training program. Technological training programs are helpful to employees (McCausland, King, Bartholomew, Feyre, Ahmad, & Finkelstein, 2015). The 16th CAB’s training program will need to emphasize those aspects that are most important to men (usefulness) and women (ease of use) in order to positively influence attitudes for EFB acceptance (Morris, Venkatesh, & Ackerman, 2005).

Despite gender differences, men and women under 40 have far more in common than not. The gender differences that become pronounced at age 40 are the same differences relative to younger and older workers (Morris, Venkatesh, & Ackerman, 2005). A vast majority of the ACM population is under 40, making the differences between older and younger workers more salient to technology adoption than gender differences.
Older workers are stereotyped as being unable and unwilling to learn technological skills. (McCausland, King, Bartholomew, Feyre, Ahmad, & Finkelstein, 2015; Morris & Venkatesh, 2000). Those 16\textsuperscript{th} CAB ACMs older than 40 are generally close to retirement or already retirement eligible. With retirement looming, older ACMs may resist EFBs, because they do not see a need to adopt (Meyer, 2011). The proximity to retirement may also counter the influence that social pressure plays in the adoption process for older ACMs.

Although older workers do face technological learning challenges not yet faced by younger workers, stereotypes are detrimental to older worker’s potential for learning technological skills. Younger workers are biased by stereotypes and may provide lower quality technology training to older workers. (McCausland, King, Bartholomew, Feyre, Ahmad, & Finkelstein, 2015).

Trainers need to be made aware of this tendency to ensure that all ACMs receive the same quality of training. However, older ACMs may also benefit from additional tutoring because of their lack of recency in a learning environment (Morris & Venkatesh, 2000; Morris, Venkatesh, & Ackerman, 2005).

Organizations that frequently utilize teams are more successful in adopting technology. Teaming older ACMs with younger ACMs, who are more comfortable with technology, for training may improve training for both age groups. Older ACMs are influenced by the ease of use and perceived behavioral control which can be modeled by younger ACMs. Inversely, younger ACMs, who are influenced by attitude, can develop positive attitudes towards EFBs by learning with experience and knowledgeable ACMs (Meyer, 2011). The success of this strategy has been demonstrated in military and civilian settings (A. Fletcher, personal communication, May 6, 1017; P. Schneidau, personal communication, 8 May, 2017).
Section 4: Pilot Maintenance Relationships

As with any organizational change, EFB adoption may have unintended consequences (Umble & Umble, 2014). One such consequence is the potential to engender envy among different segments of the 16th CAB. COTS tablets have a number of potential applications within the CAB, not just as EFBs. Providing such devices to only ACMs could create a sense of inequality and produce an undesirable comparison between ACMs and maintenance personnel (Tai, Narayanan, & McAllister, 2012).

Envy in the workplace can result in lower job satisfaction, lower job performance, and even subversive behavior. EFB adoption may be perceived as creating inequality and an indicator of the 16th CAB’s lack of concern for maintenance personnel’s well-being. These undesirable consequences are mitigated in organizations that have a strong sense of teamwork and self-efficacy among its employees (Tai, Narayanan, & McAllister, 2012).

Interviews with 16th CAB maintenance personnel indicate that EFB adoption would create envy of ACMs in a small minority. A majority indicated they felt a strong sense of teamwork at the lowest echelons of the 16th CAB, but the sense of teamwork throughout the greater organization as a whole was mixed. Additionally, feelings of the 16th CAB caring for their well-being were mixed but predominantly negative (16th CAB maintenance personnel, personal communication, June 27-29, 2017).

Section 5: Outsourcing

COTS EFBs are not designed by or specifically for the military. EFB technical support may need to be outsourced to civilian tech support. Contracting civilians would essentially make them part of the 16th CAB (Kelty, 2005). This melding of two cultures has implications for both sides.
Most civilians are not accustomed to military organizational dynamics. Service members have little influence on their taskings, are expected to obey all lawful orders, be ready to work at any time any day, and accept that superiors have greater control and influence over them. Civilian contractors have contracts that detail the work expected of them, their work hours, work environment, as well as when and how infractions are handled. It is almost inevitable that civilians will have to be treated differently than service members because of the many differences. Differential treatment may create resentment among civilians, especially if the differential treatment is perceived as negative (Kelty, 2005).

In addition to the differences in expectations, there is the concern of how the presence of civilians affect service members. Service members who work with contract civilians, regardless of the amount of contact, tend to view their situation as disadvantaged compared to contractors. These comparisons are especially prevalent among junior enlisted service members who tend to be younger, less experienced, and lower on the military pay scale. Contractors tend to agree with service member’s self-assessment. The negative self-evaluation has the effect of lowering morale and impacting retention desires (Kelty, 2005).

As of this writing, the Army is offering cash bonuses to grow the ranks of Soldiers with special skills to include computer repair (US Army, 2017). A communication and technology support section, S-6, is organic to every battalion within the 16th CAB. Outsourcing tech support may not be necessary because of the CAB’s existing and growing capabilities. However, if outsourced tech support is necessary, the CAB may consider contracting tech support only as needed. Outsourcing work to civilians that perform functions that Soldiers already perform may result in the negative consequences of lowered morale and lowered retention. Outsourcing tech support for those situations that exceed the CABs organic capabilities would allow a single
liaison, the EFB program manager, to have EFBs serviced at a local support center. This arrangement ensures necessary support, but reduces potential negative influences on retention at a time when the Army is trying to increase its ranks, not shrink them.

Section 6: Conclusions and Recommendations

Conclusions

Men adopt technology they deem useful, and women adopt technology they deem easy to use. Older workers also prefer technology to be easy to use. Additionally, older workers are aware of stereotypes and perceptions of their technology skills. The technology strengths of younger ACMs should be paired with the experience and knowledge of older ACMs.

If EFB implementation is not handled with the whole organization in mind, the CAB may inadvertently pit ACMs against maintenance personnel. Organic tech support personnel may also experience negative feelings in regards to contracted tech support personnel.

Answers to the aforementioned questions in Section 1 are as follows:

1. What are the challenges associated with integrating new technology for men and women? Men want new technology to be useful, but women want new technology to be easy to use. The 16th CAB needs to adopt an EFB platform that is perceived as useful and easy to use. Training programs need to emphasize both factors.

2. What are the reasons new technology is rejected by older and younger persons? Older workers are resistant if they view new technology as a threat to their organizational relevance. Additionally, if there is no perceived benefit to adoption, older workers are more resistant. Younger workers reject new technology due to negative attitudes toward the technology.

3. How will supplying aircrews with EFBs affect relationships with maintenance
personnel? If maintenance personnel perceive EFB adoption as creating unnecessary inequality then envy may lead to reduced work performance and lower morale.

4. What issues will the 16th CAB face by integrating outsourced EFB tech support?

Service members’ negative self-evaluations derived from comparisons with civilian coworkers could lower morale and hurt retention.

**Recommendations**

The first recommendation is for the EFB training program to emphasize the factors that are salient to not only men and women but also younger and older workers.

The second recommendation is to train aircrew members as a crew rather than individuals. Emphasis on teamwork and mixing older aircrew members with younger aircrew members can allow the strengths of both groups to complement each other and enhance the success of training outcomes.

The third recommendation is to communicate the rationale behind EFB adoption to the entire organization. If EFB implementation is successful, then integrating technologies that benefit other elements of the organization should be investigated as well.

The fourth recommendation is to utilize organic S-6 departments for EFB tech support. However, if outsourced tech support is required, services should only be used on an as needed basis and work should be conducted at the contractor’s site. The EFB program manager should be the point of contact to handle outsourcing needs.
References


