16th COMBAT AVIATION BRIGADE:
ORGANIZATIONAL DYNAMICS AND HUMAN BEHAVIOR
DIMENSIONS OF ADOPTING ELECTRONIC FLIGHT BAGS

MSA 698 Directed Administrative Portfolio

Paper #2 MSA 601 Organizational Dynamics and Human Behavior

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Submission Date:
10 June 2017
Organizational Dynamics and Human Behavior

Implications of Adopting Electronic Flight Bags

Section 1: Organizational Dynamics & Human Behavior Aspects

This paper is a continuation of a series of studies analyzing 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 organizational dynamic and human behavior issues related to the 16th CAB’s adoption of EFBs.

Many general aviation pilots, as well as most commercial airlines, have adopted commercial off-the-shelf (COTS) tablets (e.g. iPads) as EFBs to replace paper publications. Despite many military aviation publications becoming exclusively digital, most elements of military aviation, to include the 16th CAB, are still utilizing paper publications. Adoption of EFBs by the 16th CAB would primarily impact the aircrews, and the flight operations departments that would oversee accountability, issuing, and support functions. EFB adoption could reduce aircraft fuel consumption, eliminate publication printing costs, and improve customer service to ground force commanders (GFCs). EFBs can also be used as knowledge sharing devices that improve efficiency.

There are multiple implications for the 16th CAB’s organizational dynamics and human behavior if EFBs are adopted. Despite potential improvements to information sharing, the 16th CAB may resist adopting a new technology that will require training and alterations to the organizational structure. On the other hand, mobile device use in the workplace can increase job satisfaction. This paper includes a brief literature review, implications for organizational dynamics, and answers the following questions:
1. What are reasons for resisting EFB adoption? What strategies can help overcome resistance?

2. What support structure do EFBs require (maintenance, updating, accountability)?

3. Will EFBs require training for use? What is the focus and objectives of the training?

4. Implications for pilot-management work relations and job satisfaction?

Information for this paper was collected from a number of sources. Scholarly literature was obtained from the Central Michigan University online library utilizing multiple databases. Search topics included “mobile device,” “job satisfaction,” “resistance to change,” “organizational dynamics,” and “human behavior.” Organizational and industry data was obtained from the 101st CAB standard operating procedures (SOP), the Federal Aviation Administration (FAA), and the Hong Kong Civil Aviation Department. Additional information was obtained from informal personal interviews. Interviewees included 16th CAB aircrew members and leaders, a commercial airline captain, and an aircrew member from the 101st CAB.

Section 2: Brief Review of the Literature

Mobile devices are no longer a novelty but a reality in most workplaces. By 2020, mobile devices will be the primary means of connectivity in the workplace (MacCormick, Dery, & Kolb, 2012). Some organizations have adopted a “bring your own device” policy in an effort to reduce costs and enable individuality (Garba, Armarego, Murray, & Kenworthy, 2015). Some organizations, like most commercial airlines, have adopted COTS tablets as an information access point to improve efficiency.

Integration of mobile devices (e.g. tablets, smartphones) must be taken seriously and changes to organizational structures must be put in place (Hess & Jung, 2012). There are
multiple ways to provide mobile device support. The selection of options depends on the needs of the individual organization. Organizations can hire information technology (IT) staffers, train current employees to handle mobile device responsibilities, or use existing manufacturer support systems like Apple Care (Murphy, 2012). One of the most important structural aspects is device security. Numerous devices connected to networks increases the risk of viruses, malware, and informational breaches. Therefore, policies for maintaining informational security, both organizational and customer, must be developed (Garba, Armarego, Murray, & Kenworthy, 2015; Murphy, 2012).

Mobile devices need to be tailored to the specific organization and its specific users. Device software, as well as the number and type of apps, must be specifically tailored to the organization’s mission and users. Failure to do so reduces the potential for improvements to customer service (Burford & Park, 2013; Hess & Jung, 2012).

Choosing the right device and tailoring it to an organization is important, but it is less important than the content on the device (Murphy, 2012). Organizations that properly integrate mobile devices see greater motivation in employees to share knowledge allowing organizations to adapt to challenging and dynamic environments (Hasgall & Shoham, 2015; Pitichat, 2013). Organizational cloud connectivity can increase the depth and speed of learning in an organization (Burford & Park, 2013). Additionally, greater access to applicable content increases autonomy among technologically engaged employees and subsequently improves customer service (Hasgall & Shoham, 2015; Pitichat, 2013).

Organizations that support mobile device usage tend to see improvements to operational efficiency and productivity (Burford & Park, 2013; Hess & Jung, 2012; Pitichat, 2013). Mobile device usage can promote positive relationships between employees and with superiors which
can lead to greater job satisfaction. It is easier to retain employees with high job satisfaction, which is linked to improved workplace efficiency (Burford & Park, 2013; Hess & Jung, 2012; Pitichat, 2013).

Mobile devices impact the possibilities for how people engage with each other and share information. Mobile devices provide the opportunity for continuous connectivity with work. Employees that are able to connect and disconnect to their work responsibilities at appropriate intervals provide value to an organization. However, for some employees, constant connectivity can be distracting, overwhelming, and result in burnout (MacCormick, Dery, & Kolb, 2012). Continuous connectivity to the workplace is one reason that some employees resist adapting to mobile devices (MacCormick, Dery, & Kolb, 2012).

People and hierarchical organizations like the military are naturally resistant to change (Price, 2014). Often times change means uncertainty which breeds fear and resistance. Implementing change still requires a certain level of stability and continuity within an organization (Price, 2014). Overcoming resistance should be done in a successive manner. Organizations need to find agreement on the problem and then the solution to the problem. Agreement helps create ownership of the solution for all involved parties (Umble & Umble, 2014). Organizations that find ways to continuously improve through project-like phases tend to have more success implementing change than through revolutionary means (Price, 2014; Umble & Umble, 2014).

**Section 3: Resistance to Change**

Much of the general and commercial aviation industry has adopted EFBs. In this regard, the military is behind the rest of the industry. Most CABs have not adopted EFBs, but interest is growing and there is at least one CAB that has successfully implemented EFBs into their
operations. The rise in EFB popularity, the benefits that they can provide, and the changing
digital publication landscape provide the 16th CAB with an opportunity to look more closely at
the decision to implement EFBs into its operations.

Precedent is a major reason for resistance to change within the military (Price, 2014). The
16th CAB has always used paper publications. Army aviation has made no overt effort to
promote EFBs. Consequentially, most CABs have not recognized a need for EFBs or view them
as a solution to the problem of paper publication unavailability. One battalion commander in the
16th CAB identifies the Army’s indifference to EFBs as the reason the organization has been
resistant to adoption, albeit not explicitly (D. R. Bunker, personal communication, May 10,
2017).

The 16th CAB leadership has overcome the first hurdle to resisting change, identifying
that the unavailability of paper publications is a problem. Agreement on the solution to a
problem is one of the subsequent hurdles to overcoming resistance to change (Umble & Umble,
2014). As of this writing, the 16th CAB is deployed to Afghanistan where GFCs have requested
aircrews to use tablets, temporarily provided by GFCs, in order to view ground operational
graphics and maps. This request requires aircrews to carry an extra piece of equipment during
missions in addition to paper publications. All pilots interviewed, to include those in senior
leadership, believe that EFBs would be a positive addition to 16th CAB operations. EFBs have
the potential to do more than just replace paper publications, but implementing all potential
benefits creates an overwhelming integration task.

Successful change implementation typically comes in incremental steps. A deliberate and
sequenced process of change can help overcome the uncertainty that creates fear and resistance
to change (Price, 2014; Umble & Umble, 2014). Senior training and standardization personnel
within the 16th CAB believe that initial EFB adoption should be specifically for paper publication replacement. As EFBs become more familiar to 16th CAB operations, further benefits will be exploited over time. This approach addresses the immediate problem of unavailable paper publications; it also reduces the uncertainty associated with using EFBs as a tactical tool (M. Smith, personal communication, May 30, 2017).

Section 4: Structural Impacts

There are a number of structural changes that are required when integrating EFBs. Training programs should be developed and administered. Additionally, some departments and personnel will acquire new responsibilities and taskings in order to properly support EFB operations. Although structural changes to the 16th CAB are minor, they are important for successful EFB implementation.

Training. The FAA requires EFB training for commercial pilots prior to operational use. Advisory Circular 120-76C establishes the minimum information standards for training (FAA, 2014). Military helicopter operations are not subject to these requirements; however, commercial airline precedent and human factors associated with EFB use suggest that training is not only beneficial but operationally sound (Joslin, 2013).

Aircrew training is conducted by the standardization sections of each battalion within the 16th CAB. Standardization sections are the logical choice for EFB training responsibility. Due to the human factors associated with EFB use, the 16th CAB’s safety sections should also be involved in the design and implementation of the training program. According to one standardization section manager, training should be conducted upon initial fielding of EFBs, and evaluation of EFB usage should be integrated into annual aircrew evaluations (M. Smith, personal communication, May 30, 2017).
Using an EFB in flight should help aircrews operate more efficiently. Excessive heads down time searching for information increases the likelihood of losing situational awareness (SA). Loss of SA in flight is dangerous. Developing proficiency in using the EFB in order to reduce information retrieval time is an important objective for training (FAA, 2014; Joslin, 2013).

**Management.** The introduction of EFBs into the 16th CAB will require oversight to ensure the devices provide the desired benefits. Management of an EFB program should have a designated program manager (HKCAD, 2015). The 101st CAB designated the aviation mission survivability officer, the mission planning software expert, as their program manager (101st CAB, 2017).

Organizations that integrate mobile devices have to decide whether to hire an IT staff, retrain employees, or use the manufacturer to provide the necessary support. The US Coast Guard uses Apple Care to support its EFB needs that cannot be handled internally (USCG, 2014). The 16th CAB has an internal IT department, S-6, that could provide support in regards to device security classification and software updates. Utilization of manufacturer support (e.g. warranty issues) could augment the S-6 support functions. Flight publication custodial responsibilities are administered by the flight operations section. Accountability, issuing, maintaining charging, and uploading new documents are tasks on which the flight operations section would need to be trained.

**Section 5: Job Satisfaction**

Organizations that integrate mobile devices into their operations improve their chances for higher job satisfaction among employees. High rates of job satisfaction are linked to workplace efficiency (Hess & Jung, 2012; Pitichat, 2013). Airline pilots have reported increased
job satisfaction since COTS EFBs have been adopted, and the same is true of pilots in other CABs (A. J. Fletcher, personal communication, 18 May, 2017; Hudson, 2017; P. Schneidau, personal communication, 8 May, 2017). Furthermore, Army aviation is facing a shortage of midgrade officers, but a surplus of senior aviators (Myers, 2017). Maintaining the retirement eligible population until the shortage is reduced could be impacted by aircrew job satisfaction.

A number of commercial and military aircrew members interviewed for this paper indicated positive feelings towards their leadership because of EFB adoption. EFB usage can make the job of aircrew members easier and more efficient. Leadership is regarded as caring about the welfare and workload of aircrew members because of EFB adoption. These feelings have positive implications for better employee-management relationships, which is another indicator of high job satisfaction within organizations (Pitichat, 2013).

Section 6: Conclusions and Recommendations

Conclusions

As with any potential change, there is some resistance. The 16th CAB is not overtly resistant to EFBs, but has not made any attempt to adopt EFBs despite strong support for them among 16th CAB aircrews. Tablet use, without the associated costs, should allow 16th CAB leadership to observe some of the benefits that tablets can provide as aircrews continue to use them throughout the deployment.

If the 16th CAB adopts EFBs the required structural changes would be relatively minimal. Integrating the devices into the training program and conducting evaluations is already within the scope of the standardization and safety sections responsibilities and capabilities. Standards for training have already been developed by the FAA. There are also options for outside entities to provide initial training for a fee (Advanced Aircrew Academy, 2016). New equipment training
would be required to ensure that personnel are able to execute their newly assigned duties. Tablets are generally familiar devices; therefore, the learning process would be relatively simple.

Responsibilities and processes need to be addressed in the SOP for the S-6 and flight operations sections to provide the required device support. An EFB program manager can connect the different support sections to ensure EFBs provide the desired benefits. Assuming the 16th CAB successfully integrates EFBs into its operations there should be a rise in job satisfaction among aircrews. Improvements to job satisfaction should improve efficiency in operations which is one of the more desirable outcomes of EFB adoption.

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

1. What are reasons for resisting EFB adoption? What strategies can help overcome resistance? Change usually means a certain level of uncertainty that makes people uncomfortable. Organizations like militaries tend to favor precedent. Instituting a program of continuous improvement is one proven strategy for overcoming change.

2. What support structure do EFBs require (maintenance, updating, accountability)? Organizations that integrate mobile devices have to train employees or outsource their IT needs. The 16th CAB requires most of its support to be internal and it possesses the necessary personnel and resources for most support.

3. Will EFBs require training for use? What is the focus and objectives of the training? Training is not a requirement, but research suggests that it is a smart investment for organizations. Any training program should be focused on improving individuals’ proficiency at information retrieval in order to increase SA.

4. Implications for pilot-management work relations and job satisfaction? Research indicates that organizations that integrate mobile devices tend to see an uptick in employee job
satisfaction. Some aircrews view their leadership as more caring and supportive because organizationally provided EFBs can make aircrews jobs easier.

**Recommendations**

The first recommendation is to implement an EFB program designed to replace paper publications in the cockpit. This solves the problem of required publications no longer available in print. As aircrews use EFBs, additional benefits can be realized organically rather than trying to integrate many changes at once.

The second recommendation is to appoint a program manager who serves to connect the different sections of the organization involved in device support. A single point of contact can coordinate between the organizations different support sections and manufacturer support.

The third recommendation is to implement a standardized training program. The program should be in line with FAA standards for commercial operations. Initial and continuation training should be conducted along with annual evaluations to ensure the training objectives are being met. The safety and standardization sections should implement the program.
References


