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BEST CAPTAINS – A SURVEY OF CHARACTERISTICS AND SKILLS OF AIRLINE CAPTAIN EXCELLENCE

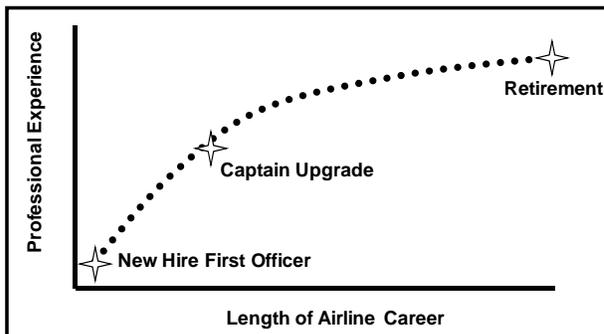
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One training development challenge in the air carrier industry today is the lack of sharing of best practices between pilots who hold the same seat position. Part of the difficulty is identifying traits, techniques, and practices of the best captains. To identify top-performing captains, this survey asked first officers to identify the best captains that they had flown with and to identify the characteristics that earned them that distinction. What emerged was a consistent description of the ideal captain – one who is technically competent, psychologically confident, and who promotes good CRM values. The best captains were then resurveyed to collect and share their best practices on a variety of traits, skills, and values.

Introduction

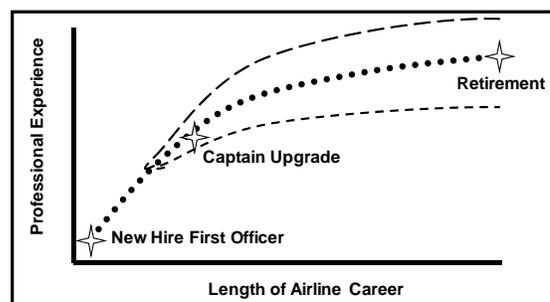
Much has been studied about the early development of pilot skills. Less attention has been devoted toward mature pilots who have arrived at the pinnacle of their career. Having spent many years striving to reach the top, what exactly happens during the many years of flying *after* they reach this milestone? Consider the following graph of a nominal air carrier pilot's career.

Graph 1
Average pilot – career professional experience growth



We reasonably assume that the average pilot demonstrates positive growth of professional knowledge and experience as he or she encounters learning events. As depicted by the dotted line, the growth is steep during the early years when learning events are plentiful and new, but begins to decrease as the pilot's experience grows – limited solely by exposure to new information or events. As pilots near retirement age, the depth of professional knowledge and experience reaches their personal peak.

Graph 2
Range of professional experience growth



On an individual scale, the growth of professional knowledge and experience varies between pilots. While the airline has strong control over the training and performance of new-hire first officers and upgraded captains, personal professional growth beyond this point is dependent largely on individual skill and motivation. Pilots who lack the personal learning skills or drive to continue their professional growth effectively stagnate (as depicted by the lower narrow-dashed line). Captains depicted by this line are not substandard performers. The depth of their knowledge and experience just stops growing. While their growth continues because of their daily exposure to more events and conditions, their assimilation and integration of this new information is often inefficient – resulting in very slow growth. There are two possible reasons why this occurs. First, many of us display a basic human tendency to reduce our level of effort and ambition following achievement of our goals. Having achieved the

Having achieved the

highest rung on their career ladder, there are no higher steps to achieve. The energy and focus that these pilots used to reach this career goal is often redirected toward other personal ventures, such as hobbies or side businesses. Second, there is very little outside stimulus to grow professionally as an aviator after reaching the top. FAA certification requirements focus on checking performance standards – accurately termed *performance minimums*. As the old adage goes, “if you aim for the minimum, you’ll hit it every time.” Those minimums do not appreciably change over a pilot’s career. Thus, pilots who choose to coast or stagnate for the many remaining years of their careers are empowered to do exactly that.

On the upper extreme of graph 2, some pilots continue a steep growth and learning curve, continuing to assimilate and integrate new knowledge to build their aviation wisdom (shown by the upper wide-dashed line). Their growth only tapers off as they reach the practical limits of exposure to new learning events and conditions. These pilots continue to seek and achieve personal growth even after reaching the captain seat.

What we see is a fairly wide range of potential growth throughout an average airline career, a range that widens after reaching the captain’s seat. Clearly, something very significant is happening between captains displaying high-end performance and low-end performance. This is the motivating question behind this study – what are the traits and characteristics demonstrated by the best captains.

Method

Objective

The objective of this study was to identify the characteristics, motivations, and techniques held by the captains who demonstrate high growth in professional experience and knowledge throughout their careers.

Survey Group

This study was conducted at a large passenger airline operating in the United States. All pilots were airline transport pilot (ATP) certified and type-rated in the Boeing 737. All pilots were qualified on all company aircraft. They were assigned to 7 crew bases for scheduling purposes. While pilots voluntarily move between crew bases for upgrade opportunities and personal reasons, the norm is for them to remain at a single crew base – often for their entire careers. So, captains within a crew base would typically fly with first officers from that crew base. Most pilots bid for a month-long flight schedule consisting of pairings lasting one to four days, with a three-day pairing being the statistical mode. Initial flight schedules are awarded in seniority order with a single captain and a single first officer assigned to all pairings for the month. While many pilots shuffle individual pairings to fulfill personal preferences, the same two pilots normally remain together for at least 2-4 days.

The first challenge of this study was identifying the best captains. Fellow captains, supervisory check airmen, and trained observers were deemed unsuitable because of their lack of opportunity to observe all the available captains across many flights. The most obvious survey group was the population of first officers. This was because first officers had the most opportunities to work with the most captains for multi-day pairings. At the time of the survey, the subject airline was flying about 3000 flights per day. In an average year, a first officer flies at least one multi-day pairing (6-20 flights) with 20-50 different captains – almost all from his or her crew base. Additionally, all first officers had served as captains, aircraft commanders, or instructors in their previous flying jobs, so their ability to identify desirable traits was well-established. Thus, a core assumption of this study is that first officers, individually and as a group, have the ability to identify the high-performance captains and that they can identify the character traits that set these captains apart.

First Officer Survey

The entire population of over 2500 first officers were given the opportunity to voluntarily and anonymously complete a single-page survey. The pilots were incentivized to receive a positive-space travel pass (essentially free tickets that they could use or give to anyone). The passes were awarded randomly to the survey respondents. Note: The surveys had a code number that identified the respondent’s relative crew base number – only used to identify the drawing winners. The survey asked the first officers for two things. First, “list the names/employee number/domicile of 1, 2 or 3 Captains that you consider exemplify the finest *line operational* skills and practices at [the airline]. Please consider the following areas: flight management, flying skills, situational awareness, open communications, team building, CRM environment, conflict resolution, decision making, instructional ability, and mentoring.” This listing of characteristics was included to focus the ratings on traits and characteristics instead of

personal popularity. Second, they were asked to “identify some of the specific outstanding qualities that these Pilots demonstrate. What makes them rise to the top of your list.”

The first officers were asked to complete some basic demographic data of their relative seniority within their crew base. This identified how long they had been a first officer and by extrapolation, how many different captains they had flown with over the years.

Results

Data Validation

The data was extracted in two ways. First, list by name and number-of-votes was tabulated for the best captains at each crew base. Second, a list of characteristics and attributes was collected across the entire population. Naturally, the most credible first officers were the ones who had flown with the most captains within their crew base. Demographic data was analyzed to ensure that newer first officers (ones who had flown with fewer captains) did not skew the totals away from selections made by more-experienced first officers (ones who had flown with the most captains). While no statistical tests were conducted to ensure consistency, the data appeared to be quite even across first officer groups. The only trait that seemed to show a difference was instructional ability, with newer first officers listing instructional ability much more often than experienced first officers. This is probably because the best captains found fewer opportunities to teach job skills and knowledge to experienced first officers than to new-hires. With that one exception, all other characteristics seemed to be universally distributed throughout the crew bases and between first officer experience levels. The consistency of the data supports the assertion that first officers, regardless of crew base, value the same traits and characteristics in the best captains.

Best Captains Lists

Over 380 captains (out of about 3000) received one or more votes (with the vast majority receiving only one vote). In almost every crew base, one or two names got multiple votes – in one case as high as six. The newest crew base did not have anyone with three or more votes. This was understandable since the crew base was recently formed with pilots drawn from the other 6 bases and insufficient time had elapsed to develop a consensus of who their best captains were. At the remaining 6 bases, any captain receiving 3 or more votes was selected for further survey in the second half of this study.

Best Captains Characteristics

Recall that the first officers were also asked to “identify some of the specific outstanding qualities that these Pilots demonstrate.” They were asked to “consider the following areas: flight management, flying skills, situational awareness, open communications, team building, CRM environment, conflict resolution, decision making, instructional ability, and mentoring.” By percentage, the reported characteristics broke out as follows:

Table 1

Reported characteristics of the best captains

CRM environment	13.8%	} First tier
<i>Personality</i> *	10.7%	
<i>Technical Expertise</i> *	10.3%	
Instructional ability	9.1%	} Second tier
Flying skills	8.8%	
<i>Easy-going nature</i> *	8.3%	
Professional	8.2%	
Team building	7.1%	} Third tier
Open communications	5.8%	
<i>Company asset</i> *	4.6%	
Flight management	3.1%	
<i>Sense of humor</i> *	3.0%	

Mentoring	2.7%	} Fourth tier
Situational awareness	2.1%	
Decision making	1.5%	
<i>Experience *</i>	1.0%	
Conflict resolution	0.0%	

The first officers were not limited by how many or few characteristics they could chose to list. Some provided simple listings, while others provided narratives. Specific characteristics were extracted in these cases.

Listed Characteristics

As stated before, each first officer survey sheet listed nine example characteristics (shown in Table 1- entries displayed with normal font). No effort was made to define these terms, but among professional aviators, there is general consensus in the meanings. Promoting a good CRM environment was the top characteristic with 13.8% of the votes and conflict resolution, didn't receive any votes.

Unsolicited Characteristics and Traits

Of significance is that the first officers added six additional characteristics (shown in italics font and with an asterisk in Table 1). Two of these, personality and technical expertise, ranked 2nd and 3rd overall. Easy-going nature, company asset, and sense of humor ranked in the middle.

Follow-on Best Captains survey

The identified best captains were then asked to complete a multi-page questionnaire. The questionnaire asked them to provide narrative perspectives to 8 trait-areas that the first officers seemed to value most highly: first impressions, open communications, team building, instructing/mentoring, personality, professionalism, and being deliberate/predictable. The captains were also asked to comment on how they would handle three situational line-flying problems. Finally, they were offered a chance to comment on an open-ended essay about their perceived role and goals as a captain. The results were compiled and shared with the entire pilot group through a series of articles in the union safety publication.

Discussion

Best Captains

Clearly, this experimental design did not yield a comprehensive list of best captains, nor was it intended to. Many extremely-talented newer captains were undercounted because they had flown with fewer first officers than high-timers. The survey tended to favor longer-serving captains who had flown with many first officers within a single crew base. Additionally, there was a concern that training check airmen would be over-counted because of their higher exposure to new-hire first officers. While several check airmen did make the list, their overall numbers were close to their relative population percentage. Of significance is that the best captains seemed to be cut from the same cloth. Regardless of crew base or relative seniority, they each seemed to hold the same values and approach their role as a captain in similar ways. In the series of articles that shared their actual questionnaire narratives, it was clear that, while there were differences in personality and technique, all the best captains held the same core values and professional growth ethic. These articles served as a way to spread the perspectives and practices of the best captains throughout the pilot group. These articles were very well received.

Characteristics:

Recall that the first officers were offered a list of 9 characteristics to guide their best captain selection. It is extremely significant that they generated 6 additional characteristics and that two of these, personality and technical expertise, rated in the top three – both first tier characteristics. That their collective group consciousness generated these categories and that they rated them so highly speaks to the high value that first officers placed on these traits.

Also significant, many of the buzz-word characteristics that we write about in the industry, like situational awareness, decision making, flight management, and mentoring ranked surprisingly low. Arguably, many of these do comprise components of the higher rated traits. So, perhaps these results only indicate the first officers' desire to identify more-descriptive traits over generalized traits. As general trend conclusions, technical expertise was valued over experience, flight management, situational awareness, and decision making; CRM environment was valued over open communications, team building, and conflict resolution; and personality was valued highly in all measures.

The Ideal Captain:

We should note that since the overwhelming majority of airline operations are routine, the results of this study paint the picture of the ideal, every day, normal-operations captain. As a single sentence summary of the results, first officers valued captains who were technically competent, psychologically confident and promote an effective CRM environment. What emerges is an image of a captain who creates and promotes a good work environment, knows the job, and is relaxed and comfortable in his or her own skin.

It is safe to extrapolate these results into emergency environments as well. What more can we ask of captains faced with severe emergencies than to calmly and confidently direct the efforts of the flight team to accurately handle the emergency?

Additionally, this study was completed at a single airline with a long and unique cultural history. While results may vary with other airlines, it is reasonable to assume that the characteristics and techniques discovered here can apply elsewhere.

Finally, while we cannot assume that we identified all the traits that typify high-end captains from Graph 2, we can safely conclude that this study did accurately identify a consistent subset that was valued by first officers – and certainly offer good role model traits to promote throughout the airline.

Best Captain Value Sharing:

The purpose of this study was to determine those characteristics that distinguish the high professional growth captains and to share them throughout the pilot group. To date, seven articles have been published in the pilots' union safety newspaper. Following is a selection of direct comments from the first officers. They further paint a picture of the ideal best captain.

professional competence: outstanding aviators who knew the procedures and the aircraft.

- "Knows how to fly by the book with excellence"
- "Phenomenal stick skills – passengers think they're riding a magic carpet"
- "Outstanding cockpit management"
- "Tremendous assets to the airline"
- "Excellent mission management"
- "Deliberate in actions and pace"
- "Knows the book cold"
- "Super situational awareness – flies a smooth airplane and keeps the passengers comfortable"
- "Professional approach to skilled piloting"
- "PhD in Boxology (Note: The onboard flight management computer is called "the Box".)"
- "The most standardized captain I've ever flown with"
- "The consummate professional pilot"
- "Takes the time to project cause-and-effect in everything"
- "Stays ahead of a developing situation and builds plans and contingencies"
- "Smoothest hands on the tiller and yoke of anyone I have flown with"

personality: easy-going and relaxed personality.

- "Calm experience" (two words that say so much)
- "Puts customer, crew, and others ahead of his own agenda"
- "Natural leader"
- "Laid back atmosphere"
- "Courteous and considerate"
- "Very proactive and an outstanding leader in the jet"

- “Super professional”
- “Egos don’t get in the way of their flying”
- “Grace under pressure”
- “Extremely personable and friendly – they enjoy getting to know you”
- “Fun, fun, fun to fly with”
- “Omits personal bias”
- “Relaxed demeanor is soothing in a stressful situation”
- “Always willing to give a helping hand”
- “No matter what phase of flight, he can make you laugh”
- “Patient and allows everyone to get the job done right”
- “I’d fly every trip for the rest of my career with any one of these captains”
- “They showed great personal integrity”
- “Attitude and professionalism was contagious”
- “They know their stuff, but show humility”
- “Excellent balance of professional knowledge, even-keeled personality, and airmanship”
- “Too much fun! Got banned from flying together by the chief pilot”
- “Not afraid to make tough decisions”

team building: made team building a high priority from the first moment everyone met them.

- “Exemplifies the golden rule”
- “His briefing at the beginning of the pairing is the best I’ve heard”
- “Excellent and open communicator”
- “Makes the pairing fun as well as a learning experience”
- “Goes the extra mile with not only first officers, but flight attendants the whole team”
- “Takes input with respect and grace, even if it’s wrong”
- “Promotes the environment of teamwork the moment you meet him”
- “Takes time to communicate – LISTEN!”
- “Not in a rush mentality”
- “Effectively integrates all inputs to make good decisions”
- “Looks after the whole crew – offers to buy food between flights”
- “Flying the aircraft is a team effort and inputs are truly desired”
- “You really want to do the best for him because you don’t want to let him down”
- “Exudes humble professionalism”
- “They want input, but these people are outstanding airmen and I rarely observe any errors”
- “Makes sure the entire crew is in-the-loop”
- “Keeps me informed of his intentions”
- “Creates a cockpit atmosphere that allows any first officer to do his best”
- “Care about the success of each individual and the company”
- “Treats other SWA employees with dignity and respect – buys McDonalds for the rampers!”
- “Stayed with me in the hospital all night while I was waiting for appendectomy”
- “No one does a better job creating a relaxed environment”
- “Gets to know all the SWA people he can (thus, more aware of whole operation)”
- “They are rapport builders”
- “Always gives a thorough briefing to the incoming crew”