
Research Program to Sustain the FM Professional

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Arizona State University has been involved in identifying the future Facility Manager (FM) paradigm which results in a sustainable FM profession. The \$16M, 20-year international research program has identified, created and tested out a solution to the almost impossible task of replacing the aging FM professionals. The research has identified the future FM as one who is leadership based and leads the entire supply chain from inside the organization. This paper will cover the three year results of finding the future FM by accessing the top 10% of ASU's 85,000 students through Barrett's Honors Program, 7th – 10th graders through the Barrett's Summer Honors Program, and culminating this year in placing the education in one of the top private schools in the state of Hawaii for high school students, testing the approach on 116 Brazilian engineering undergraduate students and getting approval for testing a 14 week program in the Tempe High School. The model is proposed as a prototype for future FM professionals and how the FM professional can become sustainable.

Keywords: Facility management, leadership education, IFMA, Best Value, construction management.

Introduction

Traditionally, facility managers have been engineers, construction managers or technical construction/facility personnel. They have been educated in engineering, architecture, management, business or construction/facility management. Many have come up through the ranks of facility management. They are usually technically oriented, responsible for one of the technical areas in maintaining a facility. The International Facility Management Association (IFMA) has created a profession and professional path by ensuring that facility management personnel are trained in all the technical areas of facility management (Earn must-have FMP credential!, n.d.). With the proliferation of green/sustainability products and systems, the number of technical areas have expanded. It becomes more difficult for FMs to be the expert in all areas of facility management. The expansion of products, systems and new materials and the constant effort of reducing costs and improving quality have resulted in an environment where the FM is trying to survive by being more educated, knowing more and attempting to manage, direct and control the services that are required to maintain a facility.

There is another challenge facing the FM community. The International Facility Management Association (IFMA) has identified that a large group of FMs in upper level management/leadership roles are in the twilight of their career and that there is a perceived shortage of FMs who can fill their leadership/management positions once they retire (Hightower & Highsmith, 2013; Sullivan, Georgoulis and Lines, 2010). However, there are troubling signs in the FM profession (Kashiwagi, Turnbull, Gunnoe and Rivera, 2015):

1. The FM function is being outsourced by facility owners to real estate management based firms.
2. FM services are being procured at the lowest cost.
3. There is a movement in the IFMA chapters where FM vendors of services instead of FM professionals are more active and are taking leadership roles.
4. A large percentage of IFMA chapter members are FM vendors of services.
5. There are few university programs that offer FM undergraduate and graduate education and have done significant FM research. The only one identified is at Arizona State University (Hurtado, Sullivan, Okamura & Kashiwagi, 2014).
6. One of the major activities of the IFMA chapters is to network and help find jobs for unemployed FM personnel. Leadership/management jobs are not plentiful.

This is being caused by:

1. FMs are being viewed as a cost of doing business and not a core expertise of their organization.
2. FM and FM services are being viewed as a commodity technical service that can be acquired for the lowest price.
3. FM is being observed as a “non-value added” cost by the organizations.

FM leaders are faced with the following issues:

1. The technical materials/systems, political/regulatory constraints and FM requirements are changing faster than the education and certification programs can be developed and implemented.
2. FMs who desire to lead the FM efforts in the future, do not have the time to become the expert in every technical area.
3. Administration and human resource issues have become a larger part of an FM’s responsibilities.
4. Forced to hire experts to assist the FM do the FM’s job, so the FM’s actual value is diminished.
5. The facility owners do not understand FM. If the FM’s skills remain technical in nature, they are a target for cost reduction and outsourcing.
6. Once outsourced, the major emphasis of FM services is lower prices. The physical distance from the facility owner is “farther” and their influence is “less” and their emphasis is “cost”. The outsourced FM is a FM who utilizes their expertise less, who emphasizes low price and has fewer benefits associated with their job position.

The Traditional FM Leader is not the FM of the Future

Many in the FM community are distracted by the obvious fact that the FM professionals are getting older and there is a lack of younger FMs who can have the knowledge and experience to take their place. They are concerned that this situation will end the profession of the FM because there are not enough knowledgeable, experienced FMs ready to take their place (Hightower & Highsmith, 2013; Sullivan, Georgoulis and Lines, 2010). Logic and observation of the current

job and education situation proposes a different perspective. The traditional FM of today (technical based, expert who is employed by a facility owner and manages, directs and controls a facility) may be unsustainable in a quickly changing, increasingly technically complex and competitive environment.

The need for this traditional FM is diminishing over time. This is observable as the FM function is being outsourced to real estate based vendors. The problem that the FM is facing, is the FM must change in the following ways to add value to the facility owner:

1. Must become physically closer to the facility owner (FO).
2. Must talk the language of the FO (value and facility capability, cost, time).
3. FM expertise must increase value provided by showing dominant metrics in terms of decreased cost, decreased time and increased capability for the organization.
4. Must decrease overhead costs associated with FM technical services.
5. The successful FM leader of the future is a totally different type of person.

Proposed Solution of the FM Leaders of the Future

The FM leader of the future must have the following characteristics:

1. Create dominant value for the facility owner in terms of lower costs, increased facility capability and quality of life for the facility's core operations.
2. Communicate in non-technical terms to the facility owner.
3. Value must be understood by the facility owner (capability of facility/organization, cost, time).
4. Must utilize FM expertise to cut costs and increase value. There is no other way to increase value while cutting cost.
5. Must be a professional to be recognized by the facility owner.

The FM leader must observe and accept the reality that the FM leadership function is being outsourced, that FM services are being procured based on the lowest price and facility owners view FM functions as a cost.

By observation, the Industry Structure model (Figure 1) identifies the following:

1. The difference between low and high performance, is that when management, direction and control (MDC) is utilized along with minimum standards, the result is low performance.
2. High performance (high value) requires the "utilization of expertise."
3. The movement from low performance (where the expert FM uses MDC to minimize risk) to high performance and value can only be done by utilizing expertise.
4. The FM being the technical expert to the FM being a leader and utilizing expertise is a paradigm shift.

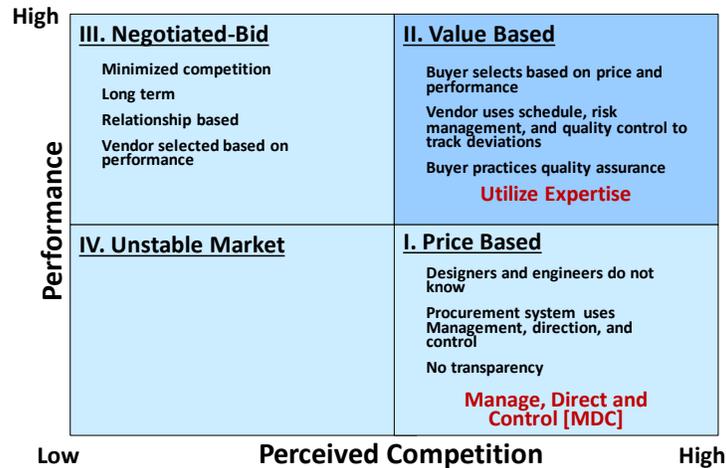


Figure 1: New FM Paradigm Requires Change

By observation and logic of the Industry Structure model, as shown in Figure 1, the FM Leader of the Future must be leadership based instead of management based (MDC). This is resisted by today’s traditional FM for the following reasons:

1. It is easier to try to MDC than it is to lead and utilize experts to create value.
2. The traditional FM is the technical expert.
3. MDC is reinforced by education and certification programs.

In the new paradigm, there are three major roles: the new FM leader, the expert vendor and the FM technical expert. All other roles will be minimized. In the new environment, the new FM will identify and align expertise and the expert vendors will create transparency to minimize risk. Risk will be defined as risk that the technical expert does not control, and experts will minimize risk (risk mitigation) that they do not control by creating transparency (not MDC).

Challenges for IFMA

The challenge for IFMA and their membership is to add another area of certification, the FM leader certification. The FM leader must transition from being the traditional expert to a totally different paradigm. The IFMA leadership, the IFMA foundation, the IFMA membership are professionals who are from the traditional model, teaching that the FM is the technical expert. The industry will still need the technical expert (more on the supply side). IFMA Foundation’s current effort is to sustain the FM technical expert pool. IFMA must also find a supply of leadership based profession and to find people who want to become the FM of the Future. The FM leadership model of the Future will be a different role in ten years, requiring a leadership based FM who utilizes the entire supply chain and who creates value for the organization. The characteristics of today’s traditional FM leader include:

1. Technical expert with technical interests and communications.
2. Detail oriented.
3. MDC.

4. Form relationships based on trust.
5. Work together to solve problems.
6. Thinking and decision making.
7. High stress.
8. Non-changing (do what their predecessors did).
9. Reactive, cost-cutting to survive.

Research results now shows that this traditional FM management model has increased stress and risk in the changing environment that is highly competitive and cost driven. Research shows that all forms of management models (project management, risk management and micromanagement) results in low performance and higher cost and risk in a cost driven environment. The new FM leadership role of the future will have the following characteristics:

1. Leadership-based, non-technical.
2. Vision at 30K feet. Looking at dominant ways to improve value and quality, while minimizing cost.
3. Not interested in technical details. That is the responsibility of FM technical experts.
4. Transparent environment which makes every participant accountable.
5. Form relationships based on performance and value instead of trust.
6. Allows FM technical experts to take responsibility and accountability for solving problems.
7. Allows FM technical experts to create transparency which minimizes the need for the FM to think and make decisions. The mantra of the FM Leader of the Future is “don’t make me think. It is not a good thing.”
8. Low stress but very exciting.
9. Always changing.
10. Proactive, always allowing change.

This future leadership based FM model is not technically based. It requires leaders and individuals who have a leadership approach and structure to their job. It requires individuals who can utilize the capability of the entire supply chain of FM technical experts and who can integrate their efforts.

Performance Based Studies Research Group (PBSRG) at Arizona State University (ASU)

PBSRG was started by IFMA Fellow, Dean Kashiwagi (Educator of the Year in 2009 and Fellow in 2012), to transform the role of the FM manager from a management, direction and control (MDC) role to a leadership role which would replace MDC with the utilization of the FM technical experts in the supply chain. It was members of the local Phoenix IFMA chapter that assisted finding the opportunities for the first tests. They also became sounding boards for the continual changing concepts.

Metrics that describe PBSRG include (PBSRG, 2015; Duren & Doree, 2008; State of Hawaii, 2002):

1. Longest running construction management (CM), facility management (FM), project management (PM), risk management (RM), research group in the world (23 years).
2. Highest funded research group studying CM, FM, PM and RM (\$16M).
3. Conducted procurement tests (1,800) delivering \$6B of services in six countries and 31 different states in the U.S.
4. Changed the delivery of services from the traditional to a futuristic FM model in the largest university in the U.S. (ASU) and the most forward thinking country, the Netherlands (Kashiwagi, 2013; Van de Rijt & Santema, 2012).
5. Issued the most intellectually property licenses at ASU (45) (ASU Technology Transfer, 2015).
6. Created Information Measurement Theory (IMT), the Performance Information Procurement System (PIPS), and the Kashiwagi Solution Model (KSM) (Kashiwagi, 2014a; Kashiwagi, 2014b).
7. Client customer satisfaction at 95% of services delivered.
8. Increased FM/PM capability 10 times by utilizing expertise (Smithwick, Schultz, Sullivan & Kashiwagi, 2013; Arizona Department of Environmental Quality, 2015).
9. Published approximately 300 journal and conference papers.

Over the 23 years of research, PBSRG objectives have been to identify the FM leadership model and practices of the future. The objective was to transform the traditional FM manager of today to the FM Leader of the Future. For 23 years, PBSRG has identified that FM Leader of the Future must be a utilizers of FM technical expertise and an integrator of the supply chain. This is defined by an FM leader who is:

1. Leadership based and not management and technical based (Best Value technology).
2. Not a technical FM expert, but a utilizer of FM technical expertise. When an FM leader is the technical expert, they will MDC. They focus on cutting cost. They treat the expert vendors like a separate silo with a “win-lose” relationship.
3. Identifies risk as what is not in the control of the expert.
4. Utilizing expertise and encouraging the vendor to create transparency to minimize risk using the language of metrics.
5. Minimizes cost and increases quality and facility capability at the same time.
6. Brings dominant value that minimizes the need for the facility owner to think or make decisions.

The FM professional of the future is the FM who is leadership based and who is an expert in Best Value technology. The Best Value technology defines the role of a leader as a professional career and job description (Kashiwagi, 2014a). The 20+ years of research was to prove that the FM of the future could make a dominant value contribution while cutting cost. The research was kept alive by calling it the Best Value technology and not the FM of the future, simply because the traditional FM would have identified the research as abrasive and counterproductive to the strengthening of the traditional FM model.

In 1992, PBSRG along with a few visionary FMs in the IFMA Greater Phoenix Chapter, made the following assumptions about facility managers and their leadership-based environment (Kashiwagi, Turnbull, Gunnoe and Rivera, 2015):

1. An increase in complexity.
2. An increase in the number of new systems, products and materials.
3. Owner organizations would increase the political, legal, regulatory and human resource requirements of the FM.
4. The other organizations in the company that the FM was working in would become silos, resisting any attempt by the traditional FM to create efficiency and get the best technical solutions.
5. If the FM continued to be a technical expert, they would be viewed as a cost and a problem, and not an essential core function of the owner, and if possible would be outsourced.
6. The impact of a FM professional working for the owner would decrease unless he could get closer to and more integrated in the core operations of the organization by bringing dominant change (not the technical operations of the facility).

PBSRG research identified a potential sustainable “FM of the future” model and its increased role in the facility owner’s operations. PBSRG began looking for FM visionaries who understood this future model. It quickly realized that:

1. Most FMs were not willing to change their paradigm.
2. The majority of FMs were technical based and thinking about how the new model would affect their job and their business and not capable or interested in helping the profession.
3. Most FMs did not know how to change their paradigm. They thought it was someone else’s job to change their paradigm.
4. Most FMs did not have the depth of experience in complex FM roles to realize that the FM of the future was a leader and an integrator of expert services.
5. Most FMs were going to attempt to survive and die in the traditional model of being the technical expert.
6. Many FMs were discontinued by their owner and worked as outsourced services or found a government job.
7. Many FMs knew that the value in FM is leadership, but could not parlay that into an actual professional career or operational model.

PBSRG realized that to help the FM professional community, it would be required to do the following research:

1. To clearly define the FM Leader of the Future Model.
2. Ensure that the FM of the future could bring dominant value.
3. Find a method and source of young students who would be the “FM Leader of the Future.”
4. Create an educational program for the “FM Leader of the Future.”

PBSRG then made a startling discovery. If they found a visionary student who would qualify as the FM Leader of the Future, they could also be a visionary leader and executive in any profession or industry. The educational and professional opportunity would not be controlled by the constraints of the FM community. These visionaries would follow opportunities. If the opportunity to be a visionary FM was not there, they could easily find another opportunity. The FM community would have to provide FM opportunities to keep the visionary FM of the future.

Therefore, the education program did not have to identify the FM of the future as the end product, but a leadership based person who can utilize and align expertise to create dominant value.

FM Leader of the Future Research Program

PBSRG was faced the following challenges in designing and testing the new research proposal:

1. They understood they would receive no support from the university engineering or management programs. These programs saw little value in any research that did not bring large government grants in their core technical area of engineering and were not open to “out of the box” and huge changes in paradigm. The business school approach to business was so steeped in MDC; it would take 20 years to get any type of support from the WP Cary School of Business at Arizona State University.
2. In 2010, IFMA Foundation and Research and education group was still emphasizing technical core competencies and had limited funding and did not know how to fit in this research approach. Many saw this effort as a competing effort that would compete with their limited funding.
3. The current construction management students were not quick enough to understand and embrace the new model.
4. PBSRG would have to find its own funding, create the education, find leadership based students and continue its successful research at the same time.

In 2010, the PBSRG visionaries, made a calculated and bold move. They planned to do the following:

1. Continue to do their research testing of the FM Leader of the Future model (Best Value technology).
2. Increase the number of IFMA presentations and also presentations to PMI, NIGP and ISM chapters to find visionaries who could validate through testing the capability of the FM of the future.
3. Gain access to more visionary students.
4. Create a FM of the future education program. Develop a dominant education program that would be so successful that it would not be stopped by the university bureaucracy.
5. Attempt to gain access to students even before they reached the university level.

Best Value Technology is the FM of the Future Model

The FM of the future model is defined as an FM with the following characteristics:

1. Leadership based instead of technical-based.
2. Not the expert, but a utilizer of expertise of experts.
3. Replaces the MDC of the traditional FM with the utilization of expertise of experts.

The results of over 20 years of testing (1,800 tests delivering \$6B of services) include (PBSRG, 2015):

1. 98% customer satisfaction.
2. Minimize cost by 5 – 50%.

Dominant case studies in the 20 years include:

1. The reshaping of the delivery of services at Arizona State University (Kashiwagi, 2013; Kashiwagi, 2014b).
2. The changing of the delivery of services in the country of the Netherlands, starting with a \$1B infrastructure test and resulting in the 2012 Dutch Sourcing Award (DSA) (Van de Rijt & Santema, 2012).
3. The delivery of the housing facilities at the University of Utah for the 2002 Winter Olympics (Kashiwagi & Byfield, 2002).
4. The test at Harvard University that resulted in the 2005 Corenet Global Innovation of the Year Award (Kadzis, 2005).

Access to Visionary Students and the Education Program for Leadership-Based Students

PBSRG research resolved the access to visionary students and development of the educational program in one step. IT took the Best Value technology research to the ASU Barrett's Honors College. The Barrett's Honors College at Arizona State University is a program of innovation and impact. It was identified by the New York Times as the "gold standard" of honors education and the Best Value in today's university education systems (Bruni, 2015). Students come to ASU to participate in the honors program and pay an additional \$1,000 per year to take additional honors designated classes outside of their core concentration. Honors classes aim to broaden students' worldview and help them innovate and impact society (Barrett Honors College, 2015). The majority of the honors students are in the top 1 - 5 percent of the ASU students and number around 8,000 students annually (~10% of the ASU students) (Barrett Facts and Figures, 2015). In 2008, honors students were given the opportunity to take a Best Value education that did the following:

1. Taught a new way of learning that exchanges the learning of massive amounts of technical information to a process based on logic and observation of natural laws.
2. Taught students to quickly learn almost everything, without knowing almost anything.
3. Emphasized the acceptance of what someone observes with minimal thinking and a minimized need for decision making.
4. Mimicked the characteristics of the new age leaders.

The following concepts are taught in the leadership and deductive logic class:

1. All events happen only one way.
2. There is no such thing as randomness or chance in reality.
3. Everything can be predicted if you have enough information.
4. Everything is subject to laws of nature.

5. The concept of influence or control is not accurate. When people attempt to influence or control others, their risk increases, and many times the results are contrary to what was expected.
6. People who can see into the future are experts in their area.
7. We can create an environment that helps the “blind” or inexperienced people see.
8. Everyone is in a silo, and by understanding reality, they can remove themselves from the silo and understand all things.

As a result of the course, students become much more logical in their thinking. In the span of one semester, students can understand seemingly complex concepts that are outside of their degree concentration. They become leadership oriented. They understand themselves, their families, their peers, their teachers, and their industry in a new light. The instructors document significant changes that the students make in their personal life as a result of the class. If the leadership approach can have significant results that are easily observed, the instructors propose that the logic can be used to create value and change paradigms of people. The following have been significant documented results of the class:

1. A student taking antidepressants for 3.5 years, stopped taking medication, stopped receiving counseling, and became proactive, stabilized, and is now planning on graduate school in counseling (Student #1 Presentation (Video File)).
2. An alcoholic engineering student, identified his genetic disposition to being an alcoholic, ceased drinking, and changed his outlook on life (Student #2 Interview (Video file)).
3. A Navajo student who hated her life and her mother, became transparent, happy, and a successful nursing graduate (Student #3 Presentation (Video file)).
4. A student on the suicide watch list, became confident with himself, happy, productive, and needs no further counseling (Student #4 Presentation (Video file)).
5. An emotionally unstable, depressed single mother with two kids, changed her entire life and became a top graduate from the school of construction management. She received multiple offers from construction management firms and a full scholarship offer from the George Washington Law School (Student #5 Interview (Video file)).

The move to expose the Barrett’s Honors College 8,000 students to the FM leader of the future model has resulted in the following:

1. The class went from exposing 25 students to 175 students a semester (PBSRG, 2015).
2. The instructors are the highest rated (5.0 and 4.8 out of 5.0 points) instructors at ASU (instructors with over 50 ratings) on Rate My Professor (Rate My Professor, 2015).
3. The class registration closes within 15 minutes of early registration for honors students.
4. Students wait for up to 2 to 3 semesters to get into the class.
5. It has become one of the favorite honors classes at ASU for engineering, business and liberal arts students.

PBSRG/ASU has also accessed potential FM leaders of the future through the following programs:

1. ASU Barrett's Summer Honor's Program for 7th, 8th and 9th grade students.
2. Tempe School District, Tempe, AZ.
3. St Louis High School, Honolulu, Hawaii.
4. 2016 BSMP Program (116 undergraduate engineering students).

Barrett's Summer Honors Program is run every summer to attract the highest performing students to Arizona State University. For the past three summers, two research assistants (PhD students in the CM/FM area of study) have been teaching in the program. Their performance in conveying the leadership concepts and acceptance by the young students has been amazing. They have scored the same or higher in all the metrics against very experienced professors (PBSRG, 2015; Rivera, 2014).

These results have caught the attention of the ASU coordinator of relations with high schools in the Tempe AZ school district. The leadership education is now being taught for an 11-week period to the Tempe High School on a trial basis to identify if the success from the Barrett's Honors Program can carry over to the High School. If successful, it will be placed in every high school in the Tempe School District (S. Pachuta, personal communication, September 09, 2015).

For the first time, the college honors class "Leadership and Deductive Logic" is being taught at St Louis High School (SLS), a private high school in Honolulu, Hawaii that produced the 2014 Heisman Trophy Winner Marcus Mariotta. The school is testing the "Leadership and Deductive Logic class." PBSRG transferred the curriculum and trained the SLS teachers. The preliminary results have been very encouraging (Arizona Science and Technology Enterprises, 2015).

In the summer of 2015, 116 undergraduate engineering students, who were studying under the BSMP scholarship program of the Brazilian government, did a two-month internship program at PBSRG/ASU. The program was one of the most successful academic engagements by the PBSRG. In a two-month duration, the Brazilian students not only gained an understanding of the leadership technology, but participated in research documentation of research tests that were ongoing in PBSRG. The Brazilian students matched the performance of the ASU honors program in the understanding of the logic (PBSRG, 2015).

PBSRG over the past 20 years has developed a FM based undergraduate and graduate (masters and PhD program). The undergraduate program is the construction management program that is connected to a master's program (known as a 4+1 program). The undergraduates are serviced by the local Phoenix FM chapter and have their own student chapter. The graduate program is developing FM research capability. The FM targeted students are mentored through their education by three professors (FM Fellow/Educator of the Year, Educator of the Year, FM researcher), an FM coordinator, and six FM based graduate/undergraduate students. It is the deepest staffed undergraduate/graduate/research program in the U.S.

Conclusion

PBSRG has identified that the FM role has been changing and will be different in the near future. It will be more of a leadership-based role, requiring a different type of FM Leader. It will be a

high level leadership based professional, and not one requiring years of technical experience and training. The FM Leader of the Future will be required to:

1. Utilize expertise instead of being the expert.
2. Integrate many different expert services.
3. Utilize expert services which dominantly improve the value of FM knowledge while reducing cost.
4. Align the expert services to minimize overhead, administrative and management costs.
5. Lead the entire supply chain instead of managing, directing and controlling internal workforces.

The traditional FM role is being outsourced and the number of slots will be minimized. However the number of FM Leaders of the Future slots will increase. The system to replenish the FM profession has to be different than in the past. It not only has to target the FM technical expert, but also the FM Leader of the Future. It must use different methods, different incentives and target a different type of individual.

1. PBSRG over the past 20 years has developed a pipeline for future FMs. The pipeline includes:
2. A feeder program that attracts high performance high school students.
3. A FM based undergraduate and graduate education program.
4. A research program that continues to help the FM professionals increase their value.
5. Integrated education and research program.

The authors recommend that the IFMA organization not only target students who will be technically oriented for FM work, but also the FM Leader of the Future who will sustain the professionalism of the FM community.

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