COMPARISON ANALYSIS IMPLICATIONS REPORT OF EMPLOYER AND MEMBER RESEARCH

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Society of Actuaries

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CONTENTS

1. INTRODUCTION

The SOA has recently concluded surveys that examine the actuarial profession from two perspectives. They are:

- *Member Preferences and Priorities 2003*, a membership survey conducted by Erin Research Inc;
- *Employer Market Survey Report 2003*, a survey of employers in both traditional and non-traditional markets conducted by Leading Solutions Group.[1]

This report presents major conclusions based on the results of these surveys, in order to facilitate decisions by SOA leaders.

The analysis has two main objectives:

- To compare actuaries' and employers' views of actuarial performance on skills that are valuable in today's market;
- To compare actuaries' and employers' images of the actuarial profession.

METHOD

The central measures in both the member survey and the employer survey are a set of eighteen skills and characteristics. These reflect both the qualities that actuaries are well known for in the business world and also desirable qualities that may be less characteristic of the profession, in the eyes of employers and other stakeholders. The set, which appears in Table 2, was developed in consultation with SOA staff, volunteers and Board members, and with reference to the 2002 Market Opportunities Research.

The 2003 survey asked SOA members to review actuaries' skills and characteristics and describe "actuaries you know in your area of employment". The focus is thus on members' direct experience, not on stereotypes. Members answered two questions about each trait:

- How do you view the performance of actuaries in this area?
- How important is it for actuaries to improve their performance in this area?

The employer survey presented the same eighteen skills and characteristics, and asked:

- How do you view the performance of actuaries?
- How do you view the performance of competing professionals such as MBAs or CFAs?
- How important is it for actuaries to improve their performance in this area?

[1] Both surveys are available on the SOA website, www.SOA.org.

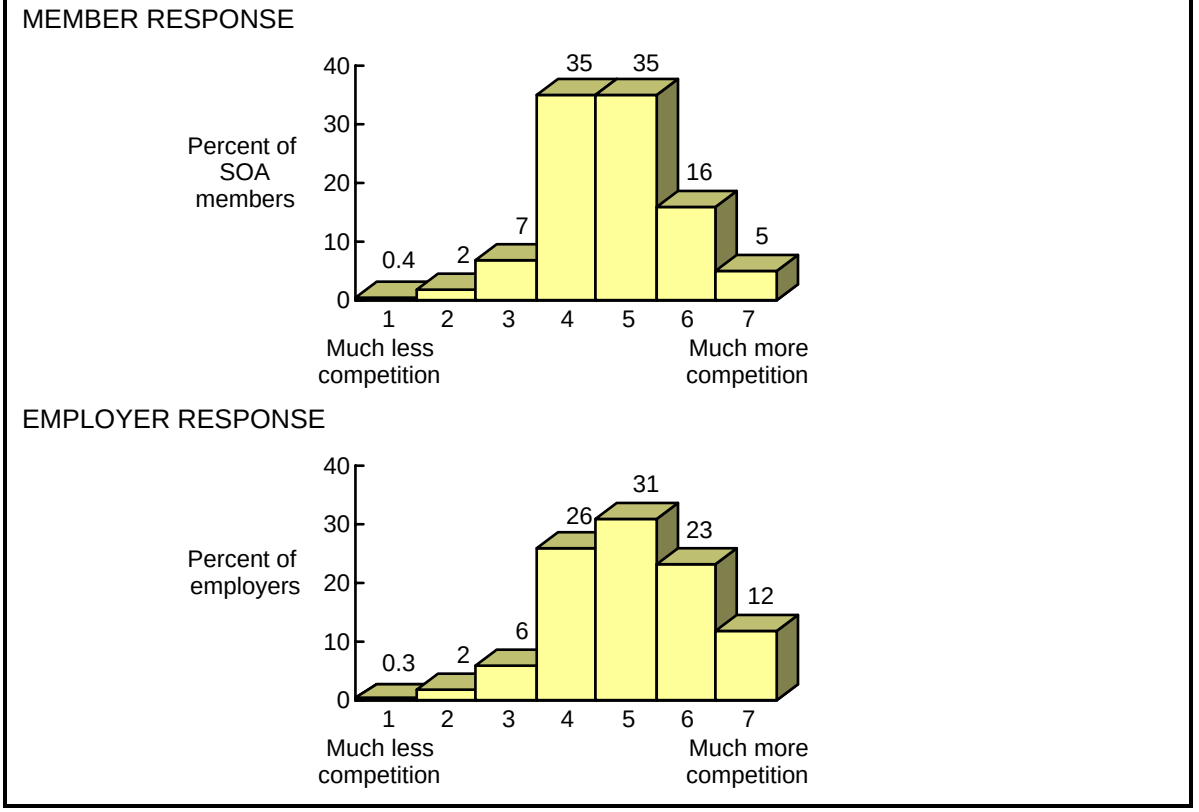
2. COMPETITION

Actuaries compete with other risk management professionals in two principal ways. MBAs, CFAs and other risk management professionals are encroaching to some degree on traditional actuarial markets and, conversely, actuaries are competing with these same professionals as they seek to enter new or non-traditional areas, such as financial services and enterprise risk management.

Figure 1 shows that a majority of both actuaries and employers perceive competition to be greater today than in the past. The employer sample sees actuaries as facing slightly more competition than members themselves perceive. On the question, "Are actuaries in your business facing more competition from related professions than they have in the past?" members' mean score is 62 out of 100 and employers' mean score is 67 out of 100.

Figure 1. Are actuaries in your business facing more competition from related professions than they have in the past?

SOA 2003



Competition may be taken for granted in non-traditional markets, but how different are the traditional and non-traditional areas in their experience of competition? The employer sample includes both traditional sectors (insurance, re-insurance, consulting) and what is termed the broader financial services (BFS) sector, which is a group of employers in mutual finds, investment banking and related fields.

Figure 2 shows two small but significant differences in perceptions of competition:

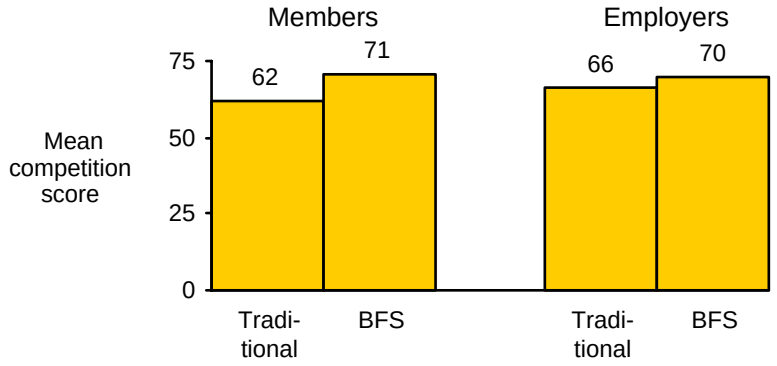
- Employers perceive more competition than members (Mean score for employers is 67 out of 100 and for members is 62 out of 100).
- Those in the broader financial services sector perceive more competition than those in traditional markets. (Mean score for broader financial services is 71 out of 100 and for traditional sectors is 62 out of 100).

The interaction is not statistically significant (the difference between traditional sectors and the BFS sector is similar for both members and employers).

What may be surprising about this analysis is the rather small degree of difference between the BFS and traditional markets: this factor accounts for just 1 percent of the variance in ratings of competition.

Figure 2. Perceptions of competition in traditional and other market sectors

SOA 2003



3. CREDENTIALS

Employers were asked to identify the three primary credentials that they looked for when hiring risk management professionals. Table 1 shows the result, distinguishing between employers in the traditional markets and those in the broader financial services sector.

There is a dramatic split between employers in the traditional and BFS sectors. Those in traditional sectors value SOA credentials above all others. Those in the BFS sectors place the greatest value on value the CFA and MBA, however the FRM and advanced degrees in finance also rank above SOA credentials.

Currently, four percent of actuaries hold a CFA and another 4 percent hold an MBA. These figures will likely increase, because the CFA and MBA are the two non-SOA credentials that actuaries are most likely to pursue. The 2003 Member Survey found that slightly less than one-third of actuaries are either studying toward a credential at this time or intend to enroll within two years. Of these:

- 39 percent are ASAs pursuing the FSA
- 23 percent are pursuing a CFA
- 14 percent are pursuing an MBA.

Table 1. Value placed on major credentials

SOA 2003

Credential	Percent of… Actuaries who currently hold the credential	Traditional employers who consider when hiring	BFS employers who consider when hiring
FSA	62	85	18
ASA	100	64	8
Chartered Financial Analyst (CFA)	4	22	63
MBA	4	14	59
Accountant	1	15	18
Masters or Ph. D in Mathematics	12	6	16
Financial Engineer or Master, Ph.D. in Finance	1	2	33
Financial Risk Manager (FRM)	<1	1	20

Note: The first column adds to more than 100 percent because actuaries may hold more than one credential. Columns 2 and 3 add to more than 100 percent because employers chose up to three credentials that they considered when hiring.

4. PERSPECTIVES ON ACTUARIAL PERFORMANCE

Table 2 compares ratings of actuarial performance by SOA members and employers. Actuaries consistently rate their own performance slightly lower than employers do. The top line of the table, for example, shows that actuaries rate their own performance on the "ethical" dimension at 82 out of 100 while employers rate performance at 87 out of 100. The difference ranges from 0 to 10 points out of 100, and the mean across the 18 scales is 5 points out of 100.

Table 2. Actuaries' and Employers' ratings of actuarial performance

SOA 2003

	Performance (0 - 100) rated by:		
Skill/attribute	**Actuaries**	**Employers**	**Difference**
Ethical *	82	87	-6
Solves complex problems	79	80	-1
Quantitative modelling skills *	77	84	-7
Industry knowledge	73	75	-2
Reliably gets the right solution	71	73	-2
Financial assessment and reporting *	70	77	-6
Intellectual agility *	65	74	-10
Advisor	60	61	-1
Team player *	60	67	-6
Can focus on the big picture	59	59	0
Innovative thinker *	59	64	-5
Leadership *	57	64	-8
Risk management skills (Global or Enterprise) *	54	64	-10
Proactive *	53	57	-4
Knowledge of financial institutions and markets *	53	59	-6
Business acumen *	52	59	-7
Business communication skills *	48	55	-7
Bold, takes informed risks	47	49	-2
Mean	62	67	-5

* Statistically significant difference, p<.003 for individual tests; p<.05 listwise.

Each table entry is rounded independently.

While members' ratings of actuarial performance are lower overall, the relationship between member ratings and employer ratings is very close. The correlation between member ratings and employer ratings in Table 2 is .96. The greatest discrepancies occur with regard to intellectual agility and risk management skills. Employers' estimate of performance averages 10 points higher than members' estimate on each of these measures.[2]

EMPLOYER RATINGS OF ACTUARIES AND COMPETING PROFESSIONALS

Table 3 compares how employers view the performance of actuaries and competing professionals. It suggests two general conclusions.

The first is that, averaging across all 18 traits, employers rate actuaries and other risk management professionals at a very similar level of performance. The mean rating for actuaries is 67 out of 100 and the mean for competing professionals is 68 out of 100. The difference is not statistically significant.

Secondly, employers view the performance of actuaries and other risk management professionals as very different on most of the 18 individual skills and attributes. Large differences – of greater than 10 points out of 100 – occur on eight measures.

Employers rate actuaries considerably higher than competing professionals on four dimensions.

- Solves complex problems
- Industry knowledge
- Financial assessment and reporting
- Quantitative modeling skills.

Employers rate competing professionals higher than actuaries on four other dimensions:

- Proactive
- Bold, takes informed risks
- Can focus on the big picture
- Business communication skills.

[2] Some SOA members are also employers; 54 percent of respondents to the member survey stated that they employed or managed other actuaries in their work. It is important, then to assess whether members who are also employers resemble respondents in the employer sample. In fact, this is not the case. The responses of SOA members who are also employers closely resemble the responses of other SOA members.

Table 3. Employer ratings of performance for actuaries and competing risk management professionals

SOA 2003

Skill/attribute	Performance (0 - 100) Actuaries	Competing professionals	Difference
Proactive *	57	72	-15
Bold, takes informed risks *	49	63	-14
Can focus on the big picture *	59	71	-13
Business communication skills *	55	67	-12
Business acumen *	59	66	-7
Team player *	67	73	-7
Knowledge of financial institutions and markets *	59	65	-6
Innovative thinker	64	69	-5
Leadership	64	66	-2
Advisor	61	63	-2
Reliably gets the right solution	73	73	0
Intellectual agility	74	72	2
Ethical	87	81	6
Risk management skills (Global or Enterprise) *	64	56	8
Solves complex problems *	80	69	11
Industry knowledge *	75	63	12
Financial assessment and reporting *	77	63	13
Quantitative modelling skills *	84	66	18
Mean	67	68	-1

* Statistically significant difference, $p<.003$ for individual tests; $p<.05$ listwise.

Each table entry is rounded independently.

THE NEED FOR IMPROVEMENT

Members and employers both indicated the degree of improvement that actuaries need to achieve on the 18 measures. As was the case with the performance scores, members and employers are largely in agreement— the correlation between the member and employer scores is .73 (Table 4).

There are three instances where members see a notably greater need for improvement than do employers. These are:

- Quantitative modeling skills
- Financial assessment and reporting
- Ethical.

On the other hand, members and employers perceive about the same need for improvement in areas where actuarial performance is not as strong, namely:

- Business communication skills
- Can focus on the big picture
- Business acumen
- Proactive
- Bold, takes informed risks.

Table 4. Actuary and Employer ratings: need to improve

SOA 2003

	Need to improve (0 – 100)		
Skill/attribute	**Actuaries**	**Employers**	**Difference**
Ethical *	69	55	14
Quantitative modelling skills *	73	60	13
Financial assessment and reporting *	73	62	11
Reliably gets the right solution *	70	62	8
Solves complex problems *	69	61	8
Intellectual agility *	75	69	6
Industry knowledge *	66	62	5
Innovative thinker *	75	71	4
Risk management skills (Global or Enterprise)	74	70	4
Advisor	70	67	3
Knowledge of financial institutions and markets	70	68	2
Leadership	76	75	1
Team player	67	66	1
Business communication skills	83	84	0
Can focus on the big picture	77	78	-1
Business acumen	75	76	-1
Proactive	75	75	-1
Bold, takes informed risks *	65	70	-5
Mean	72	68	4

* Statistically significant difference, p<.003 for individual tests; p<.05 listwise.

Each table entry is rounded independently.

5. EMPLOYERS' IMAGE OF THE ACTUARIAL PROFESSION

The 18 skills and attributes provide valuable information in their own right, however they overlap somewhat in meaning and the overall directions that they point toward are not always clear. For example, it would seem logical that "business communication" and "business acumen" are facets of a single larger dimension of business-related skills. A factor analysis was conducted to identify such underlying dimensions. Factor analysis is a technique within the general linear model that takes a set of related variables and identifies a smaller set of underlying constructs.

The employer ratings of actuarial performance reduce to five factors. We will refer to this factor structure as employers' image of the actuarial profession, as it is a reflection of the original 18 measures. The image is described beginning with the strongest factor, that is, the one that explains the most variance. They are:

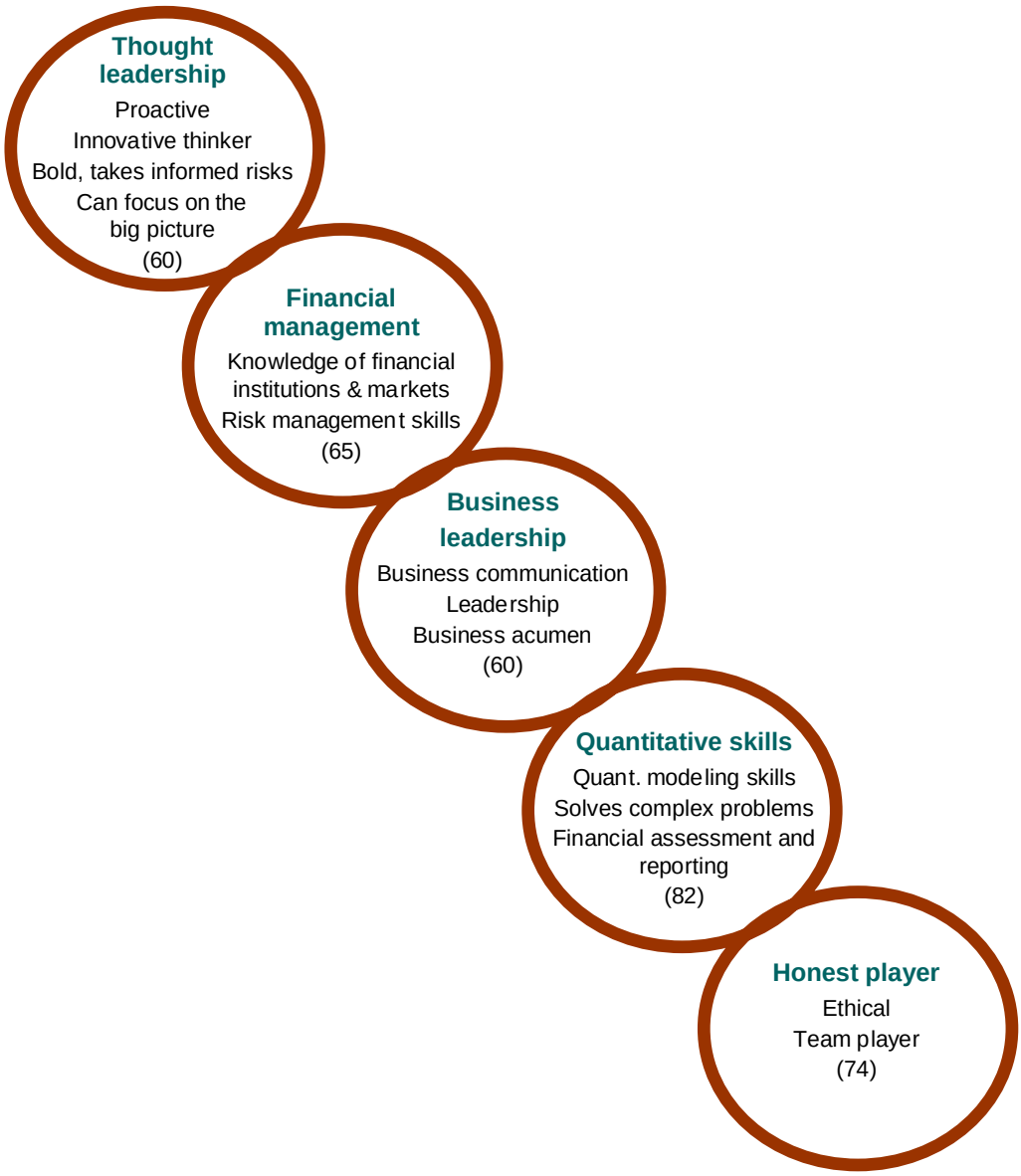
- **Thought leadership:** Proactive is the largest contributor to this factor, followed closely by innovative thinker, bold – takes informed risks, and can focus on the big picture.
- **Financial management**: Knowledge of financial institutions and markets; risk management skills.
- **Business leadership:** Business communication; leadership; business acumen.
- **Quantitative skills**: Quantitative modeling skills; solves complex problems; financial assessment and reporting.
- **Honest player**: Team player; Ethical.

Performance on these factors can be calculated as a weighted average of performance scores on the original variables. Because "proactive" is the largest contributor to thought leadership, it is weighted more heavily in calculating performance on the factor than are the other variables. The appendix presents additional detail on this.

Figure 3 illustrates the factors and includes employers' rating of performance on each factor. These performance ratings also appear as the middle column in Table 5.

Figure 3. Employers' image of the actuarial profession

SOA 2003



Note: Figures in brackets are mean performance ratings, weighted by factor loadings.

ACTUARIAL PERFORMANCE ON THE FIVE FACTORS

Table 5 shows how actuaries rate their own performance on the five factors. Since actuaries rated their own performance on the 18 original measures, we can calculate actuarial performance scores on the five factors. These scores appear in the first column of Table 5.

Actuaries rate their performance slightly lower on each factor than do employers. This is entirely consistent with the results in Table 2, where actuaries rated their performance slightly lower than employers on each of the original measures.

Table 5. Actuaries' and employers' ratings of performance

SOA 2003

	Performance (0 – 100)	
Dimension of the image	**Actuaries' rating of own performance**	**Employers' rating of actuarial performance**
Thought leadership	57	60
Financial management	57	65
Business leadership	54	60
Quantitative skills	77	82
Honest player	70	74

EMPLOYERS' IMAGE OF COMPETING PROFESSIONALS

As Table 3 reported, employers rate the performance of actuaries and competing professionals quite differently. It follows that employers' image of competing professionals, as revealed by factor structure, may differ from employers' image of actuaries.

Where employers' image of actuaries has five dimensions, their image of competing professionals has just three (see Appendix for details):

1. **Business skills:** This combines measures that, in the employer image of actuaries, make up the thought leadership and business leadership dimensions:

   Business acumen
   Business communication skills
   Leadership
   Bold, takes informed risks
   Can focus on the big picture
   Proactive.

2. **Financial skills:** This combines measures that, in the employer image of actuaries, make up the financial management and quantitative skills dimensions:

   Knowledge of financial institutions
   Financial assessment and reporting
   Risk management skills
   Quantitative modeling skills.

3. **Honest player:** This is similar to the honest player dimension in the employer image of actuaries:

   Ethical
   Team player.

OPPORTUNITIES

Employers' image of actuaries is more finely defined than their image of competing professionals. It contains dimensions that are unique to the actuarial profession, i.e. that do not occur in employers' image of competing professionals. These dimensions offer clear opportunities for marketing the differencing actuaries from competing professions.

A primary opportunity is with respect to "quantitative skills". Employers rate actuarial performance very high, 82 out of 100.

A second opportunity exists in the area of "thought leadership", which is distinct from general business ability. Actuarial performance is currently rated in the middle range, 60 out of 100. The SOA should consider ways to facilitate the development of members' skills in this area.

Business leadership is an area that actuaries may do well to develop, in that performance is seen as relatively low; but this area does not present an ideal route for marketing the profession. This field is somewhat crowded with MBAs and others professions having a business focus.

ACTUARIAL PERFORMANCE AMONG EMPLOYERS IN DIFFERENT SECTORS

Having defined five dimensions on which employers assess actuarial abilities, it is interesting to ask whether employers in the four market sectors have similar perceptions of actuarial performance. Table 6 compares the four employer groups. There are statistically significant differences on three of the five factors:

- Employers in the insurance industry rate actuaries higher on "thought leadership" and "honest player".
- Employers in the broader financial sector rate actuaries lower on "business leadership".

Each of these differences is relatively small, in that business sector accounts for less than 5 percent of the variance in performance ratings.

The important point here is that employers in the BFS sector rate actuarial performance in a very similar manner to employers in traditional markets. On the other hand, the recognition of actuarial credentials is vastly different in traditional and BFS sectors.

It would appear then, that a lack of profile or familiarity may be a much greater barrier to entry into non-traditional markets such as the BFS than is lack of skill.

There are two ways to overcome this lack of profile. One is to aggressively market the existing actuarial credentials in the BFS and other non-traditional markets; the other is to create a credential that contains core actuarial skills and that is oriented toward the specific needs of the new market.

Table 6. Employer ratings of actuarial performance, by business sector

SOA 2003

	Mean performance (0– 100)			
Factor	**Insurance**	**Reinsurance**	**Consulting**	**Broader Financial Services**
Thought leadership	62	56	59	56
Financial skills	65	62	65	67
Business leadership	61	60	62	53
Quantitative skills	83	80	84	83
Honest player	78	73	73	72

6. CONCLUSIONS AND IMPLICATIONS

The following summarizes the major conclusions. These are presented to enable astute planning and effective action by the SOA leadership as it continues its commitment to build the actuarial profession and to develop the profession's branding.

Value of the Credential

- Employers in traditional markets place higher value on SOA credentials than on any others. In the BFS market, other credentials, especially the CFA and MBA are valued more highly than SOA credentials.
- There is a need to create additional educational opportunities that will facilitate members' entry into non-traditional markets.
- The broader financial services market is less apt to turn to individuals with ASA and FSA credentials. Instead, it typically seeks out MBAs, MAs or PhDs in Finance, CFAs or Accountants. There is a need to address the perception of actuaries in this employer market.
- Members are pursuing other credentials such as the CFA and MBA. There is awareness among members that the market is calling for a variety of skills and preparation.

Skills

- Members and employers have highly similar perceptions of the skills that actuaries offer. Given this, addressing the image of actuaries is crucial. There is also a need to address actuarial education as part of the image.
- Employers perceive that actuaries need more development than competing professionals in business skills and thought leadership skills.
- Employers understand that actuaries have greater skill than competing professions in several key areas, especially:
    - Quantitative modeling
    - Financial assessment and reporting
    - Industry knowledge
    - Solving complex problems.

  These areas afford valuable marketing opportunities for the profession.

Members and employers perceive the need for improvement in areas where actuarial performance is not as strong:

- Business communication skills
- Can focus on the big picture
- Business acumen
- Proactive
- Bold, takes informed risks.

These are key areas for SOA education to address as actuaries enter the broader financial services market where actuaries are perceived to have less effective skills than competitors.

These areas underscore the members' and employers' image of the actuary— strong quantitative skills and ethics; less effective leadership and communication skills.

The broader financial services market identifies asset and fund management/investment and financial advising as additional major roles to be performed. Employers in the broader financial services market need additional technical skill in asset and liability management and credit risk management

Image

- Employers hold a finely developed image of actuarial skills. They perceive two dimensions that are unique to the actuarial profession, which do not occur in employers' image of competing professionals. These dimensions offer clear opportunities for marketing the actuarial profession.
    - The first dimension is "quantitative skills". Employers rate actuarial performance very high, 82 out of 100.
    - The second dimension is "thought leadership", which is distinct from general business leadership. Actuarial performance is currently rated in the middle range, 60 out of 100. The SOA should consider ways to facilitate the development of members' skills in this area.
    - The analysis further underscores the emphasis that employers place on development in the above areas. It is important for the SOA to further integrate these areas into its education system.

Given the strong agreement between SOA members and employers about the perception of actuaries in the workplace, both skills and image should be addressed for actuaries to be successful in traditional as well as non-traditional markets.

Competition

- Actuaries and employers agree that actuaries are facing increasing competition. This is true in both traditional and non-traditional markets.
- As traditional employment opportunities decline, actuaries are seeking non-traditional options and additional credentialing.
- To capture top-level positions in traditional markets and to compete in the broader financial services sector, greater emphasis must be placed on business leadership, thought leadership and developing broader risk management skills.
- Certain themes emerge from the employer survey in the areas of hiring and competition:
    - SOA needs to prepare the actuary for mitigating all kinds of risk— not just insurance.
    - Actuaries need to become more articulate and persuasive.
    - Risk management individuals will have to clearly communicate practical, efficient answers and focus less on theory.
    - Actuaries need to become problem solvers who can articulate their solutions to directors and analysts. They must communicate well and have the ability to see the big picture.
    - Competition is coming from multiple sources, including computer software programs, other competitors and other actuaries.
    - Competing professionals are perceived as striking a better balance between math skills, business acumen and leadership. Actuaries need to gain ground in the areas where CFAs and MBAs are practicing. The FSA credential must equip actuaries with additional skills in order that actuaries can compete successfully.

APPENDIX: FACTOR LOADINGS

The exploratory factor analyses reported here use principal components factoring with oblimin rotation. Given the oblique rotation, factor loadings are partial regression coefficients of the variables onto the factors. Loadings less than .40 are omitted for clarity.

The factors are listed in their order of extraction, i.e. from the strongest (e.g. thought leadership in Table 7) to the weakest (honest player). Within each factor, the component variables are listed beginning with those that contribute most to the factor and working down (Within though leadership, "proactive" contributes most).

The "performance on factor" score in the bottom row is a weighted average of the performance scores involved, i.e. performance scores weighted by factor loadings. Thus, in calculating the overall performance score for thought leadership, the score for "proactive" is weighted most heavily. In exploratory factor analysis, a factor is a combination of all its component variables, not just the major contributors, which appear in bold in Table 7. The "performance on factor" scores were constructed in this manner, using all variables in the analysis.

Table 7. Factor loadings: Employer perceptions of actuaries' performance

SOA 2003

Skill/attribute	Thought leadership	Financial management	Business leadership	Quant. skills	Honest player
Proactive	**.82**	–	–	–	–
Innovative thinker	**.77**	–	–	–	–
Bold, takes informed risks	**.76**	–	–	–	–
Can focus on the big picture	**.71**	–	–	–	–
Knowledge of financial institutions	–	**.86**	–	–	–
Risk management skills	–	**.81**	–	–	–
Business communication skills	–	–	**.88**	–	–
Leadership	–	–	**.81**	–	–
Business acumen	–	–	**.73**	–	–
Quantitative modeling skills	–	–	–	**.75**	–
Solves complex problems	–	–	–	**.67**	–
Financial assessment and reporting	–	**.43**	–	**.57**	–
Team player	–	–	–	–	**.84**
Ethical	–	–	–	–	**.71**
Performance on factor	60	65	60	82	74

The factor solution accounts for 72% of the variance in the initial correlation matrix of performance scores.

Table 8. Factor loadings: Employer perceptions of the performance of competing professionals

SOA 2003

Skill/attribute	Business skills	Financial skills	Honest player
Business acumen	**.92**	–	–
Business communication skills	**.82**	–	–
Leadership	**.76**	–	–
Bold, takes informed risks	**.76**	–	–
Can focus on the big picture	**.66**	–	–
Proactive	**.58**	–	–
Knowledge of financial institutions	–	**.84**	–
Financial assessment and reporting	–	**.75**	–
Risk management skills	–	**.75**	–
Quantitative modelling skills	–	**.75**	–
Ethical	–	–	**.89**
Team player	–	–	**.80**
Performance on factor	67	63	75

Solution accounts for 71% of variance in correlation matrix.