Due Diligence Questions About A Risk Tolerance Test

Advisors must satisfy themselves that any tool used in formulating advice is both fit for purpose and true to label

Whatever role you have in an advisory business, be it advice, sales, compliance, audit or general management, it makes commercial sense, even if there is no specific legal requirement, to undertake a rigorous due diligence of the processes and tools used in formulating advice. Failure to do so leaves the business open to claims of negligence, and incompetence. In the case of risk profiling, poor processes add professional and reputation damage. Further, there is a high risk of clients being given advice that doesn't meet their needs. Unhappy clients, with unsuitable investments, have in many jurisdictions around the world access to formal complaints processes, such as Financial Ombudsman Services as well as the Courts. The consequence of complaints about advisory businesses in terms of direct costs, opportunity cost and damage to morale can be high.

Over the years we have been asked by subscribers and prospective subscribers how best they might compare FinaMetrica's risk profiling provenance to the alternatives available to them. In 2014 we engaged Stuart Erskine MA, a leading UK financial services consultant and economist, to develop a due diligence framework we could share with prospects and clients. We also enlisted specialists in the field of psychometrics, Professor Irinini Moustaki and Dr. Myrsini Kasitkatsou, from the London School of Economics to both review the integrity of the Due Diligence process and assess the FinaMetrica platform against its standards. The latter is designed to assist those undertaking a FinaMetrica Due Diligence.

Due Diligence Check List
Due Diligence Check List Completed For FinaMetrica

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Due Diligence Check List

Created by Stuart Erskine, MA, Financial Services Specialist and Economist.
Reviewed by Irini Moustaki, Professor in Social Statistics, London School of Economics, and Dr. Myrsini Kasitkatsou, PhD, London School of Economics.

Company/Tool: ________________________________________________________________

Section 1: Simple questions that require less technical knowledge

1. **Face Validity**
   - On reading the questions in the questionnaire:
     a. Do they make sense to you? Can you understand them? If not then there may be an issue; clients may struggle to interpret the questions, the report will likely be inaccurate and the final advice possibly flawed.
       □ YES □ NO

     ________________________________________________________________

     b. Does the content and wording of the questionnaire appear valid in as much as the questions actually relate to financial risk tolerance? The questions should be related to the topic of financial risk, if not then the test may not be valid.
       □ YES □ NO

     ________________________________________________________________

     c. Are there a variety of questions? Do they differ from each other? Is there any repetition? You need to see variety, not the same or similar question asked multiple times, otherwise the questionnaire will not be valid.
       □ YES □ NO

     ________________________________________________________________

2. **Design Provenance**
   - Has the questionnaire been designed by relevant field experts/academics (i.e. with financial sector and statistical experience)? It is a concern if the questionnaire does not have relevant expert origins.
     □ YES □ NO

     ________________________________________________________________

   - Can those academics be referenced and verified? Check their existence and relevance of their academic achievements.
     □ YES □ NO

     ________________________________________________________________
3. **Academic Research and Independent Testing and Scrutiny**
Having multiple academics reviewing the questionnaire provides further evidence of the questionnaires' good provenance.

a. Have academic researchers used the questionnaire or data set for any documented research, preferably published in internationally recognised peer-reviewed journals?
   - YES
   - NO

b. Does this research support the integrity of the questionnaire?
   - YES
   - NO

c. Are their academic papers available for scrutiny?
   - YES
   - NO

d. Has the questionnaire been checked or tested by an independent academic? It is important that there is independence in testing outside of the provider and that the results of testing were positive.
   - YES
   - NO

e. Ongoing development and analysis: How and by whom is the performance of the questionnaire monitored, tested and updated?

f. How regularly has it been tested? This should happen at (a minimum of) 5 yearly intervals.

g. Are any changes made to the questionnaire documented and communicated to the users. Have there been a number of different versions, if yes why have there been changes. If there have been no changes, why not?

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**Section 2: More technical due diligence questions that require perhaps a little more technical knowledge, the answers to these questions should be found in the supporting technical manual that should cover the questionnaire.**

4. **Assumptions Underpinning the Questionnaire**
What are the origins of the questionnaire? Is it empirically constructed or based on theory? Look for reference to academic papers or references. It is a good indicator if the questionnaire has a sound theoretical or empirical basis as opposed to been constructed or invented purely in-house.
b. What are the assumptions underpinning the questionnaire? Do these assumptions seem intuitively reasonable? For example, are there any assumptions about human nature or behaviour that seem unreasonable?

______________________________________________________________________________________________________

c. Is the questionnaire heavily influenced by a particular academic research paradigm (e.g. psychology and psychometrics)? Do your own research online to see if this paradigm is criticised or has any areas of weakness.

☐ YES  ☐ NO

______________________________________________________________________________________________________

5. **Relevance: Norms and Test Sample**
   a. Has the questionnaire been tested against a sample population that is real and relevant. For example is the age group that it has been tested with similar to the age group that you may use the test.

☐ YES  ☐ NO

______________________________________________________________________________________________________

b. Do the norms tables listed contain the scores of individuals from comparable groups to those to which the test will actually be given? Is there thorough information about the norms and standardisation process to develop an acceptable norm group?

☐ YES  ☐ NO

______________________________________________________________________________________________________

6. **Usability Testing**
   a. What testing has been undertaken to make sure that the questionnaire is useable? For example, is there any timing data showing how long on average it takes to complete the questionnaire? Many people have limited concentration so average completion time of less than 30 minutes would be a positive.

______________________________________________________________________________________________________

b. Can clients complete the questionnaire on their own without the help of an advisor?

☐ YES  ☐ NO

______________________________________________________________________________________________________

7. **Are You able to Articulate and Demonstrate an Understanding of the Questionnaire**
   a. Scoring: What is the Scoring Procedure? Can you understand and articulate it so you can demonstrate both your understanding and the transparency of the questionnaire? For example are all the questions equally weighted, that is within the test are all the questions of equal importance?

______________________________________________________________________________________________________
b. Mapping from a score to risk group: Is the approach to mapping from score to the risk group detailed? Do you understand this, can you articulate how and why it works?
   □ YES  □ NO

______________________________________________________________________________

c. Risk groups: Are the risk group descriptors easy to understand, well defined and use non-emotive language?
   □ YES  □ NO

______________________________________________________________________________

d. Are you provided with enough information to explain how the questionnaire results can be linked to an asset allocation/portfolio parameter? Can you understand the thinking behind the methodology? For example, is it based on volatility of the asset classes?
   □ YES  □ NO

______________________________________________________________________________

8. Technical Support
   a. What technical support is provided?

______________________________________________________________________________

b. Is there a technical manual available to you?
   □ YES  □ NO

______________________________________________________________________________

c. Is the technical manual written to be understandable and useful tool for you the advisor?
   □ YES  □ NO

______________________________________________________________________________

9. Component (factor) Analysis
   The questionnaire should be designed to assess risk tolerance. This is a latent construct also known as a "factor" i.e. the factor being tested in this case is risk tolerance. Therefore, if a scale in the questionnaire is constructed to measure risk tolerance then a single factor model should be adequate to explain the associations among the corresponding questionnaire items. Those items should be expected to strongly correlate with the factor of interest i.e. risk tolerance.
   a. Is the questionnaire measuring a single factor (or single construct)? i.e. is the questionnaire just measuring risk tolerance? If yes this can be viewed as positive and indicates it is well constructed.

______________________________________________________________________________

b. If the risk tolerance questionnaire technical manual states it is a multi-factor model what other factors is it measuring/picking up? Are these relevant to your requirements? If not then this may indicate poor construction, undermining the validity of the output.

______________________________________________________________________________
10. The Correlation Matrix
   This shows the strength of relationship between the questions.
   a. Are the individual questions/items strongly correlated with each other (ideally any correlations above 0.4 will be ok and preferably some will be in the higher range closer to 1)?
      □ YES  □ NO

11. Reliability
   Look for the Cronbach Alpha score of internal consistency. This assesses the overall relationship of the questions.
   a. Look for a score above a minimum of 0.5, with 0.8 viewed as a good test.

   b. Including test-retest reliability (i.e. the same test re-tested overtime) analysis to see if the scores are stable over time.

12. Further Evidence of Construct Validity
   Further evidence you can look for to provide the questionnaire actually measure financial risk tolerance (construct validity). There are several approaches for measuring construct validity; convergent, concurrent and discriminant validity. Do the scores based on the answers to the questionnaire:
   a. correlate with scores derived from other tests that measure similar concepts to financial risk tolerance (convergent validity)?
      □ YES  □ NO

   b. show close-to-zero correlation with scores derived from other tests that measure dissimilar concepts to financial risk tolerance (discriminant validity)?
      □ YES  □ NO

   c. correlate with scores derived from other tests that also measure financial risk tolerance at the same time point (concurrent validity)?
      □ YES  □ NO
Due Diligence Check List Completed For FinaMetrica

Completed by Dr Myrsini Katsikatsou, PhD, London School of Economics.

The due diligence check list points are addressed to a large extent in the FinaMetrica technical manual which includes extensive data analysis and independent testing and contribution since 1997. You can access the FinaMetrica technical manual from:

Section 1: Simple questions that require less technical knowledge

1. **Face Validity**
   - On reading the questions in the questionnaire:
     a. Do they make sense to you? Can you understand them? If not then there may be an issue; clients may struggle to interpret the questions, the report will likely be inaccurate and the final advice possibly flawed.
       ☑ **YES**
       "The FinaMetrica questions are understandable and make intuitive sense. They have been tested over 10 years with over 1.2 million responses."

     b. Does the content and wording of the questionnaire appear valid in as much as the questions actually relate to financial risk tolerance? The questions should be related to the topic of financial risk, if not then the test may not be valid.
       ☑ **YES**
       "Again the level of scrutiny the FinaMetrica questionnaire has been subjected to has been significant. Combined with an extensive database of completed responses, further demonstrates the stability and relevance of the tool and the mapping methodology."

   Are there a variety of questions? Do they differ from each other? Is there any repetition? You need to see variety, not the same or similar question asked multiple times, otherwise the questionnaire will not be valid.
     ☑ **YES**
     "There is plenty of variety in the FinaMetrica questionnaire."

2. **Design Provenance**
   a. Has the questionnaire been designed by relevant field experts/academics (i.e. with financial sector and statistical experience)? It is a concern if the questionnaire does not have relevant expert origins.
     ☑ **YES**
     "The FinaMetrica questionnaire origins are from work undertaken by Dr. Michael J. Roszkowski, who was an Associate Professor of Psychology at The American College, Bryn Mawr, Pennsylvania. Dr. Roszkowski is an acknowledged expert in the relationships between psychological and financial variables. Subsequently the test has been independently assessed by Dr Myrsini Katsikatsou of London School of Economics and Stuart Erskine Commercial Economist."

   b. Can those academics be referenced and verified? Check their existence and relevance of their academic achievements.
     ☑ **YES**
3. **Academic Research and Independent Testing and Scrutiny**

Having multiple academics reviewing the questionnaire provides further evidence of the questionnaires' good provenance.

a. Have academic researchers used the questionnaire or data set for any documented research, preferably published in internationally recognised peer-reviewed journals?

  ☑ YES

  *Academic research are listed under References and in Appendix 14 of the FinaMetrica Technical Manual 2012. In particular, see the article of Gerrans et al. (2013; 2015).*

b. Does this research support the integrity of the questionnaire?

  ☑ YES

  *This is implied by reporting the results of the research in sections 4, 5 and 7 of the FinaMetrica Technical Manual 2018.*

c. Are their academic papers available for scrutiny?

  ☑ YES


d. Has the questionnaire been checked or tested by an independent academic? It is important that there is independence in testing outside of the provider and that the results of testing were positive.

  ☑ YES

  *The FinaMetrica questionnaire has been subjected to independent assessments at various stages since 1998 including certification from the University of New South Wales. http://www.riskprofiling.com/Downloads/UNSWFinaMetricaCertification.pdf*

e. Ongoing development and analysis: How and by whom is the performance of the questionnaire monitored, tested and updated?

  *FinaMetrica monitors, tests, and updates the performance of the questionnaire on a regular basis as part of an ongoing quality assurance program. These include*

  I. an annual review of score distribution across time, country and demographic factors,

  II. test-retest analysis every two to three years or when sufficient data is acquired, and

  III. rescaling review every three to five years or when sufficient data is acquired.

c. How regularly has it been tested? This should happen at (a minimum of) 5 yearly intervals.

  *There is an ongoing quality assurance program for the quality of the FinaMetrica questionnaire. As the questionnaire is distributed to more countries and customers, various analyses take place to ensure that the questionnaire along with the scoring method are relevant, valid, and reliable.*

d. Are any changes made to the questionnaire documented and communicated to the users. Have there been a number of different versions, if yes why have there been changes. If there have been no changes, why not?

  *The FinaMetrica questionnaire has undergone a process of real world testing and evaluation. The questionnaire initially had 57 questions. Based on the results of further research conducted by Chandler & Macleod Consultants, the current scale has 25 items. Decisions to alter the scale were based primarily on the relevance and psychometric performance of an item, the clarity as measured by user responses and feedback and of course the usability of the tool.*
Section 2: More technical due diligence questions that require perhaps a little more technical knowledge, the answers to these questions should be found in the supporting technical manual that should cover the questionnaire.

4. Assumptions Underpinning the Questionnaire
   a. What are the origins of the questionnaire? Is it empirically constructed or based on theory? Look for reference to academic papers or references. It is a good indicator if the questionnaire has a sound theoretical or empirical basis as opposed to been constructed or invented purely in-house.
   The FinaMetrica questionnaire has its beginnings in The Survey of Financial Risk Tolerance (SOFRT) authored by Dr. Michael J. Roszkowski (Roszkowski, M. J., 1993-97), who was Associate Professor of Psychology at The American College, Bryn Mawr, Pennsylvania and is an acknowledged expert in the relationships between psychological and financial variables.

   b. What are the assumptions underpinning the questionnaire? Do these assumptions seem intuitively reasonable? For example, are there any assumptions about human nature or behaviour that seem unreasonable?
   The origins of the questionnaire are in evaluation of the performance of the psychometric question set. This approach does not require restrictive assumptions of human behaviour.

   c. Is the questionnaire heavily influenced by a particular academic research paradigm (e.g. psychology and psychometrics)? Do your own research online to see if this paradigm is criticised or has any areas of weakness.
   ☑ YES
   The FinaMetrica questionnaire is devised under a psychometric framework. The mapping and scoring approach has been influenced by empirical study over the years of the tools existence.

5. Relevance: Norms and Test Sample
   a. Has the questionnaire been tested against a sample population that is real and relevant. For example is the age group that it has been tested with similar to the age group that you may use the test.
   ☑ YES
   The FinaMetrica questionnaire has initially (1999) been tested against a sample of 4,000 participants from Australia and New Zealand. This seems a relevant sample especially in the beginning where the questionnaire was administered only in these countries. As the questionnaire has started being used in other countries, FinaMetrica carries out tests of the questionnaire using the complete data set from relevant countries. The demographics of the data are presented in technical manuals.

   b. Do the norms tables listed contain the scores of individuals from comparable groups to those to which the test will actually be given? Is there thorough information about the norms and standardisation process to develop an acceptable norm group?
   ☑ YES
   The technical manual provide detail of the distribution of the scores for the complete contemporary (international by country) data set.

6. Usability Testing
   a. What testing has been undertaken to make sure that the questionnaire is useable? For example, is there any timing data showing how long on average it takes to complete the questionnaire? Many people have limited concentration so average completion time of less than 30 minutes would be a positive.
   FinaMetrica administered the questionnaire to 250 individuals initially (1998) to ensure its usability. Chandler & Macleod Consultants conducted further research on the questionnaire for the same reason. The data we have collected suggests the majority of respondents complete the
questionnaire in 15-20 minutes.

b. Can clients complete the questionnaire on their own without the help of an advisor?
   ☑ YES

7. Are You able to Articulate and Demonstrate an Understanding of the Questionnaire
   a. Scoring: What is the Scoring Procedure? Can you understand and articulate it so you can demonstrate both your understanding and the transparency of the questionnaire? For example are all the questions equally weighted, that is within the test are all the questions of equal importance?
   This is clearly articulated in the FinaMetrica Technical Manual 2018 under section 8: Risk Tolerance Scales and Scoring Algorithm. All the questions are all equally weighted to create risk score.

   b. Mapping from a score to risk group: Is the approach to mapping from score to the risk group detailed? Do you understand this, can you articulate how and why it works?
      ☑ YES
      This is clearly articulated in the risk group descriptions guides:

   c. Risk groups: Are the risk group descriptors easy to understand, well defined and use non-emotive language?
      ☑ YES

   d. Are you provided with enough information to explain how the questionnaire results can be linked to an asset allocation/portfolio parameter? Can you understand the thinking behind the methodology? For example, is it based on volatility of the asset classes?
      ☑ YES
      The thinking behind the methodology is clear. It is understandable that, based on the risk score, the appropriate asset allocation will be advised, see the asset allocation mappings guide:

8. Technical Support
   a. What technical support is provided?
      Technical support is provided via multiple channels (email, phone, live chats, FAQs on website).

   b. Is there a technical manual available to you?
      ☑ YES

   c. Is the technical manual written to be understandable and useful tool for you the advisor?
      ☑ YES

9. Component (factor) Analysis
   The questionnaire should be designed to assess risk tolerance. This is a latent construct also known as a “factor” i.e. the factor being tested in this case is risk tolerance. Therefore, if a scale in the questionnaire is constructed to measure risk tolerance then a single factor model should be adequate to explain the associations among the corresponding questionnaire items. Those items should be expected to strongly correlate with the factor of interest i.e. risk tolerance.
   a. Is the questionnaire measuring a single factor (or single construct)? i.e. is the questionnaire just measuring risk tolerance? If yes this can be viewed as positive and indicates it is well constructed. Based on the results of principal component analysis reported in the technical manual the questionnaire has been reviewed and concluded to measure one factor.
b. If the risk tolerance questionnaire technical manual states it is a multi-factor model what other factors is it measuring/picking up? Are these relevant to your requirements? If not then this may indicate poor construction, undermining the validity of the output.

_The FinaMetrics questionnaire is a single factor tool._

10. **The Correlation Matrix**
This shows the strength of relationship between the questions.

a. Are the individual questions/items strongly correlated with each other (ideally any correlations above 0.4 will be ok and preferably some will be in the higher range closer to 1)?
   
   ☑️ **YES**

_The Pearson correlations are reported in table 18 of the Technical Manual 2018. Apart from the three excluded questions all items are well correlated to each other. However the following caveat applies: Pearson correlation assumes interval/continuous variables while all the items in the questionnaire are ordinal. For this, the Pearson correlations should be interpreted with caution._

11. **Reliability**
Look for the Cronbach Alpha score of internal consistency. This assesses the overall relationship of the questions.

a. Look for a score above a minimum of 0.5, with 0.8 viewed as a good test.
   
   _Cronbach’s alpha are strong and reported to be greater than 0.8, in most cases it reaches 0.9, see section 7: Reliability Analysis of the Technical Manual 2018._

b. Including test-retest reliability (i.e. the same test re-tested overtime) analysis to see if the scores are stable over time.
   
   _The test-retest reliability is stable and strong, see section 7: Reliability Analysis of the Technical Manual 2018._

12. **Further Evidence of Construct Validity**
Further evidence you can look for to provide the questionnaire actually measure financial risk tolerance (construct validity). There are several approaches for measuring construct validity; convergent, concurrent and discriminant validity. Do the scores based on the answers to the questionnaire:

a. correlate with scores derived from other tests that measure similar concepts to financial risk tolerance (convergent validity)?

b. show close-to-zero correlation with scores derived from other tests that measure dissimilar concepts to financial risk tolerance (discriminant validity)?

c. correlate with scores derived from other tests that also measure financial risk tolerance at the same time point (concurrent validity)?

_The technical manual does not refer at all to other questionnaires; direct comparison with other tools on the market is problematic due to commercial and intellectual property concerns for FinaMetrical to undertake. However, this may be possible for your organisation doing your due diligence by comparing different providers proposition as you trial different systems - caution however should be taken as the tools may not be like-for-like and comparisons and conclusions therefore may be spurious._