Determining the Return on Workplace Investment

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Contents

Foreword

For many years workplace and facilities management professionals have discussed how best to demonstrate the value of their work with the hope that this could boost their credentials within organisations and to help position themselves as a strategic discipline worthy of the elusive 'seat at the board'.

However, desirable this has been it is yet to materialise. Partly due to a laser guided focus on cost management, for a variety of reasons, and due to the difficulty of providing quantifiable evidence of impact leading to many referring it as the 'golden egg'.

Workplace management's evolution has been stunted by this lack of scientific evidence since its early mentions as part of the very first definitions of facilities management. It is that lack of evidence that allowed the outsourcing, cost reduction, 'non-core' narrative to thrive over for more than thirty years. But in the last decade that body of work has developed exponentially with a wealth of work exploring various parts of the workplace experience and their impact on individual and collective performance.

This presented the research team at IWFM and the authors of this paper with an opportunity to see whether this golden egg was now within reach. Could the collective intelligence of these scientific works be brought together to create a practical and accessible tool that would allow workplace teams and their supporting services to finally map their investment and the likely returns to support ongoing strategy development and to plot organisation impact?

We entered into this project knowing that the answer might be 'no' but that was as important to understand as finding a solution. It was important that we removed the mystery around this particular problem and perhaps inspired the next team of researchers in this endeavour.

But the work has been encouraging and we're pleased to bring you the first chapter in our work and the progress that has been made. We were keen to showcase the findings, the methodology that got us there and what the plans are for the future. More importantly, though, we wanted to bring the profession along on the journey because it is only in the practical use of any such tool that any tool would have a true impact.

So, this represents the first steps of an exciting adventure and one that I hope you can join us on. It's one that I truly believe will get us closer to the practical data that can start to show organisations the wonderful work that this professional community leads.

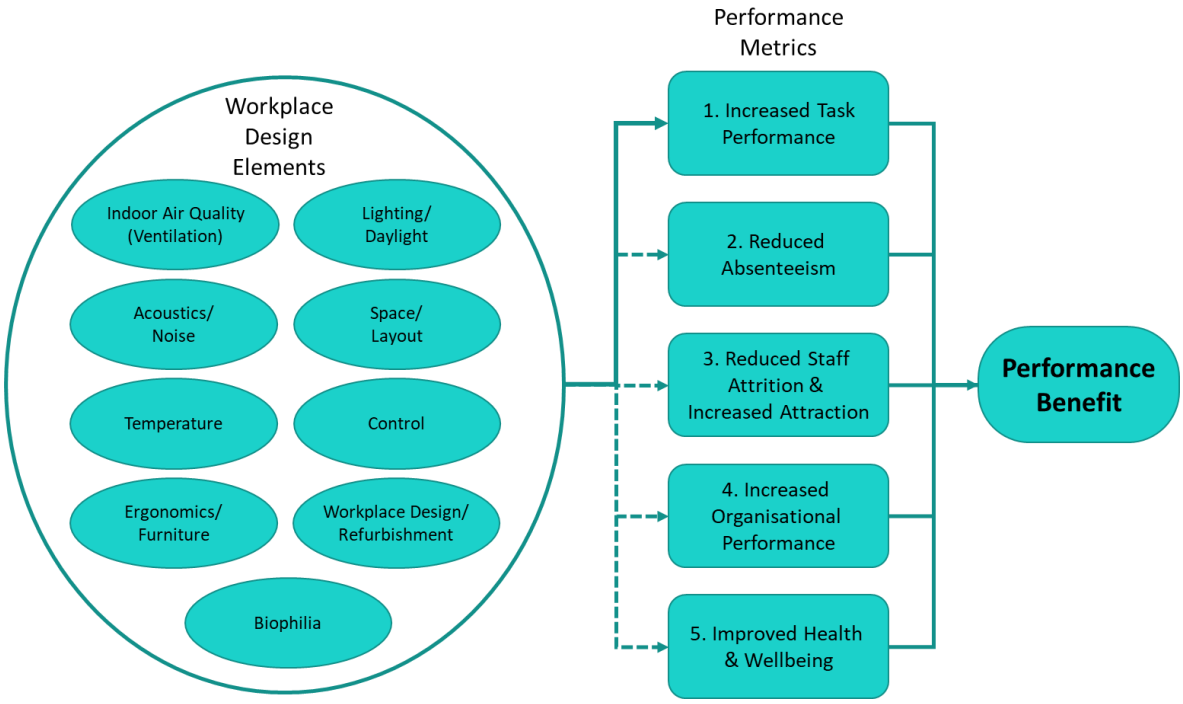
Chris Moriarty
Director of Insight and Engagement, IWFM

Summary

Over the years the Facilities Management (FM) and Corporate Real Estate (CRE) industries have become increasingly focussed on cost reduction, often viewing property as a cost burden rather than an investment that enables the workforce to perform to their maximum potential. Productivity is often defined as the ratio of output to input, with the output being sales, deliverables, ideas etc., and the input being time effort and cost. A focus on cost by professionals involved in workplace design and operation are therefore only considering one side of the productivity equation. Furthermore, as staff costs are far greater than property costs by a factor of up to 10:1, a small negative impact on performance could easily outweigh any property savings.

One reason for a focus on cost is that performance and quality are less tangible and much more difficult to quantify. Furthermore, there are established cost databases with benchmarks for capital projects, but historically no such database exits of the performance benefits associated with workplace planning, design and operation. Nevertheless, there is overwhelming evidence which demonstrates that the design of a workplace impacts the health, wellbeing and productivity of its occupants. However, as well as ease of accessibility and interpretation, there is lack of faith in productivity research, possibly because the studies are conducted in laboratories, rather than the real world, and result in a range of performance benefits for the same design parameter. Consequently, the impact of workplace investment is not considered in design, finance and leasing decisions made by the mainstream corporate real estate sector.

The Institute of Workplace and Facilities Management (IWFM) research team, Liverpool Business School and Workplace Unlimited therefore collaborated and developed the ROWI Tool. The ROWI Tool is intended as a 'ready reckoner' for calculating the impact of workplace projects (including planning, design or operation) on employee performance. It can be used as part of a high-level cost-benefit analysis for new fit-out or refurbishment projects, rather than depend on cost alone.



The first step to developing the ROWI Tool was to conduct an extensive literature review to determine the performance metrics that could be used to calculate a return on workplace investment. Some 105 unique and robust literature sources, with a total of 194 individual assessments of performance, were selected. The core variables relating to the workplace parameters and benefit were then identified. Five dominant and recurring performance metrics were identified, see figure. In addition, nine recurring broad workplace design elements were identified in the task performance studies.

The percentage change in the performance metrics that were identified in each study were extracted. Where possible the impact of each of the nine workplace interventions on a performance metric was also extracted. All the studies were then grouped according to each of the five key performance metrics and the median, lower quartile (LQ) and upper quartile (UQ) of the performance calculated for those grouped studies. This data formed the basis of the potential benefits due to the workplace design and operation used in the ROWI Tool.

As mentioned, there is little confidence in productivity research due to the range in performance data that various studies produce. Therefore, a unique aspect of the ROWI Tool is that the performance data is weighted to make it more relevant to office work. The observed change in performance, was weighted according to the confidence in the quality of the data. To weight the data, three categorical scales were used: i) the objectivity of metrics, ii) job task relevance and iii) real-world relevance. Using weighted data means that the ROWI Tool is quite conservative, realistic and pragmatic in its estimations of workplace benefits. It is therefore more likely to be accepted by finance directors when used in as part of a business case for workplace projects.

The ROWI Tool is fundamentally a cost-benefit analysis spreadsheet. The two upper sections are quite standard and represent a high-level cost sheet, allowing capital costs and operational costs to be entered covering a five-year period. The lower section incorporates the unique aspect of the ROWI Tool because it is where the impact of the workplace design on various performance benefits are calculated. The combined median and quartile performance benefits for each of the five key categories and nine workplace parameters form the primary input to the Benefit section of the ROWI Tool. The lower quartile figure is used to reflect low confidence in the impact of the workplace project on performance and the upper quartile to reflect high confidence.

Up to five workplace design elements can be added in order of investment. The confidence levels are also entered for the selected design elements and the other potential benefits. The total percentage benefits are then automatically calculated. Many productivity researchers use salary data to convert a percentage performance increase into additional income. To monetise the performance benefits and allow them to be offset against cost, some basic organisational data (staff and salary) needs to be added.

Once the organisational data is completed, the equivalent monetary value of each performance benefit is calculated. These are then totalled up to show the accumulated benefit over a five-year period. The "net cost" is calculated and represents the total benefit minus the project cost, which is a quick and easy method for comparing different project options. The Return on Workplace Investment is also calculated for a one and five-year period. The ROWI is the total monetised benefit minus the capital costs expressed as a percentage of the capital cost. A simple payback period is also provided.

This report provides an overview and user guide for the beta version of the ROWI Tool. The beta version is formatted in Excel, but next phase is to create an on-line version that ultimately captures project information to validate the tool and to allow benchmarking and trend analysis. In the meantime, we ask that you try the ROWI Tool, inform your colleagues of it and send your feedback to IWFM. In return, you will be informed of future updates to the tool.

This report details the development of the Return on Workplace Investment (ROWI) Tool and offers guidance on how to use the beta version.

1 Background

1.1 The productivity debate

Over the years the FM and CRE industries have become increasingly focussed on cost reduction, often viewing property as a cost burden rather than an investment that enables the workforce to perform to their maximum potential. Productivity is often defined as the ratio of output, such as deliverables, sales, ideas etc., over input, like time and effort. For the CRE and FM industries, the input may be more related to the workplace provision, such as the amount of space, its design and the facilities, and the related property costs. Similarly, value may be viewed simply as the ratio of quantity and quality to cost. A focus on cost therefore only represents one side of the productivity and value equation.

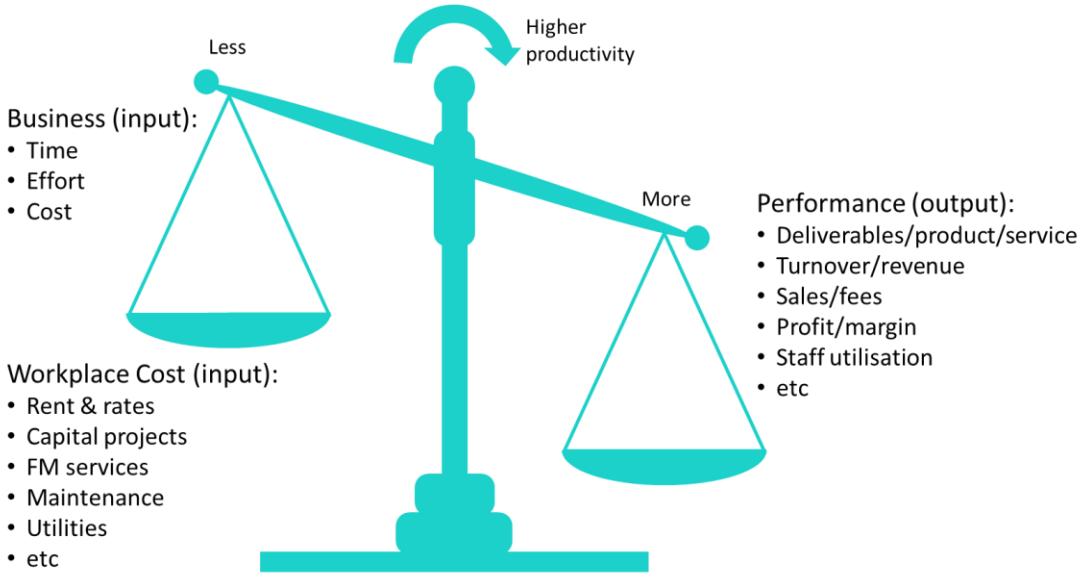


Figure 1.1 Productivity is the ratio of output (performance) to input (cost) (Oseland, 2021)

Reducing cost whilst maintaining performance, and quality, is technically an increase in productivity, in other words "getting more for less". The problem arises when the performance, or quality, also drop with the decrease in costs. This problem is exacerbated by the fact that staff costs (and their monetised performance) are far greater than the property costs (like rent and energy) by a factor of 6:1 and possibly up to 10:1 (Alker *et al*, 2014). Therefore, a small negative impact on performance could easily outweigh any property savings. On the other hand, an increase in performance as little as 5% to 10% could offset the annual property costs (Oseland, 2021). When making changes to the workplace planning, design and operation it is therefore critical to monitor the impact on worker performance.

One reason for a focus on cost, and correspondingly the amount of office space, is that performance and quality are less tangible and much more difficult to quantify. The measurement of performance is particularly more difficult in the modern workplace, because for many sectors their workers' performance is more ambiguous than the clearly defined outputs in other industries, such as manufacturing or telesales. Furthermore, regarding workplace projects, there are established cost databases with benchmarks for small and large capital projects. In contrast, historically no such database exits of the performance benefits associated

with workplace planning, design and operation. Nevertheless, there is overwhelming evidence which demonstrates that the design of an office impacts the health, wellbeing and productivity of its occupants. Despite this, the impact of workplace investment has not yet had a major influence on the mainstream corporate real estate sector, and has not adequately translated into design, finance and leasing decisions (Alker *et al*, 2014).

As well as ease of accessibility and interpretation, lack of faith in the productivity research may because the studies are conducted in laboratories, rather than the real world, and result in a range of performance benefits for the same design parameter. Oseland and Burton (2012) attempted to compile such research and to weight the results according to their relevance to the modern office. They went on to use the performance data as part of a cost-benefit analysis of workplace projects.

1.2 Tool concept

In general, it is not acceptable in the UK to include productivity benefits in financial investment appraisals. Although previous researchers have attempted to quantify workplace performance, there is no tangible "tool" to assist workplace professionals in making major decisions regarding changes to their workplace environment.

The Institute of Workplace and Facilities Management (IWFM), researchers at the Liverpool Business School, of Liverpool John Moores University, and Nigel Oseland of Workplace Unlimited discussed the merits and practicality of developing a tool for workplace professionals. Their conversation and subsequent collaboration resulted in the concept of a Return on Workplace Investment (ROWI) methodology and tool. This was subsequently developed and is presented in this report. The ROWI Tool is intended as a ready reckoner for calculating the impact of workplace projects (including planning, design or operation) on worker performance. This can then be used as part of a relatively straight-forward cost-benefit analysis, rather than depend on cost alone, for new fit-out or refurbishment projects.

Figure 1.2 ROWI Tool development

The following sections describe the numerous performance metrics identified through an extensive literature review and corresponding research studies that use those metrics to determine an impact of workplace planning, design and operation. The ROWI Tool is then introduced with guidance on how to use it in practice. An early version of the ROWI Tool was presented in several workshops with practitioners and their suggestions have now been incorporated to create a spreadsheet-based beta version. The next phase is to disseminate and trial the beta version before creating a full on-line live version.

2 Performance metrics and workplace parameters

2.1 Context

According to Pinder and Ellison (2018), the workplace is a triangulation of the physical space, its culture, and the ability to enable technology. There is much evidence demonstrating that workplace design impacts on the health, wellbeing and productivity of its occupants (see Alker *et al*, 2014). Furthermore, Oseland and Burton (2012) quantified environmental conditions on worker performance to create a business case for workplace design changes. Through a comprehensive literature review of 75 studies, they were able to demonstrate performance metrics for various environmental factors in the workplace. However since then i) the workplace has undergone many changes physically, technologically, socially and environmentally (Clements-Croome, 2017), ii) many new studies on the impact of the workplace on performance have been conducted and iii) there is a broader understanding of productivity benefits including wellbeing and other emerging performance metrics.

2.2 Literature review

The first step to developing the ROWI Tool was to conduct an extensive literature review to better understand the variables that should be measured to calculate a return on workplace investment. This was achieved in the form of a scoping review (Arksey and O'Malley, 2005) where literature was identified and reviewed through the following sources:

- *Electronic databases* – using a systematic search strategy.
- *Hand-searching of key journals* – for specific priority journal titles.
- *Existing networks and organisations* – to identify industry reports and artefacts.

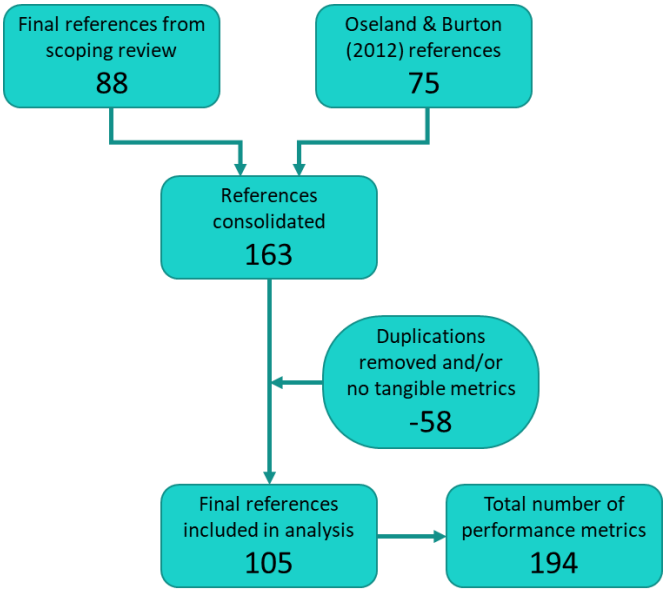


Figure 2.1 Selection of relevant studies

A final list of 88 literature sources were identified and combined with the 75 literature sources from Oseland and Burton's (2012) original study. Once the sources were combined, a number of

duplications (58) were detected and removed, giving a total of 105 final literature sources, see the Bibliography. From the 105 identified unique research sources, a total of 194 individual assessments of performance were uncovered, as some studies used multiple means of measuring performance.

A detailed investigation of the 105 selected studies revealed five dominant and recurring performance metrics relevant to calculating a return on workplace investment. Each research study was then categorised according to those five overarching performance metrics identified in the literature review, as below.

1. *Increased task performance* – Refers to changes in cognitive performance tests such as memory/recall, mental arithmetic, concentration and proof-reading tasks etc.
2. *Reduced absenteeism* – Studies that monitored, or calculated, changes in absence from work due to sickness and other factors.
3. *Reduced staff attrition and increased attraction* – Relates to studies that measured the impact of the workplace parameters on staff attrition (turnover rates) or increased attraction of new staff (recruitment).
4. *Increased organisational performance* – This refers mostly to high-level embedded hard business metrics like sales, income/turnover and profitability, or softer metrics like customer satisfaction and repeat business. Team performance was also monitored in a few isolated studies.
5. *Improved health and wellbeing* – Some research studies, mostly high-level reviews, highlighted the link between the workplace design elements and wellbeing or physical health.

Some 158 of the 194 performance assessments identified in the research studies related to task performance. Evaluating the impact of specific environmental parameters on task performance appears to be particularly favoured by productivity researchers. This allowed task performance to be sub-categorised according to the key workplace intervention. Nine recurring broad workplace design elements were identified in the task performance studies, as below. It is assumed that these workplace design elements would also impact on the other four performance metrics.

1. *IAQ/ventilation* – For example, changes to the fresh air ventilation rate or CO_2 levels.
2. *Lighting/daylight* – For example, access to windows or changes in lighting balustrades or bulbs.
3. *Acoustics/noise* – For example, improved sound absorption, partitions offering acoustic privacy or other acoustic solutions.
4. *Space/layout* – For example, a reconfiguration of the desk layout, a decrease in desk density or enhanced visual privacy.
5. *Temperature* – For example, matching the ambient temperature to optimal thermal comfort or provision of cooling in summer.
6. *Control* – For example, personal control of (task) lighting, choice of openable windows, local control of temperature or provision of desk fans.
7. *Ergonomics/furniture* – For example, better ergonomic chairs and desks.

8. *Workplace design/refurbishment* – For example, a move to a newly fit-out or recently refurbished office, including design, furniture, building services etc.
9. *Biophilia including views* – For example introducing biophilic design elements such as plants, natural features (like water), landscaping or views out onto greenery.

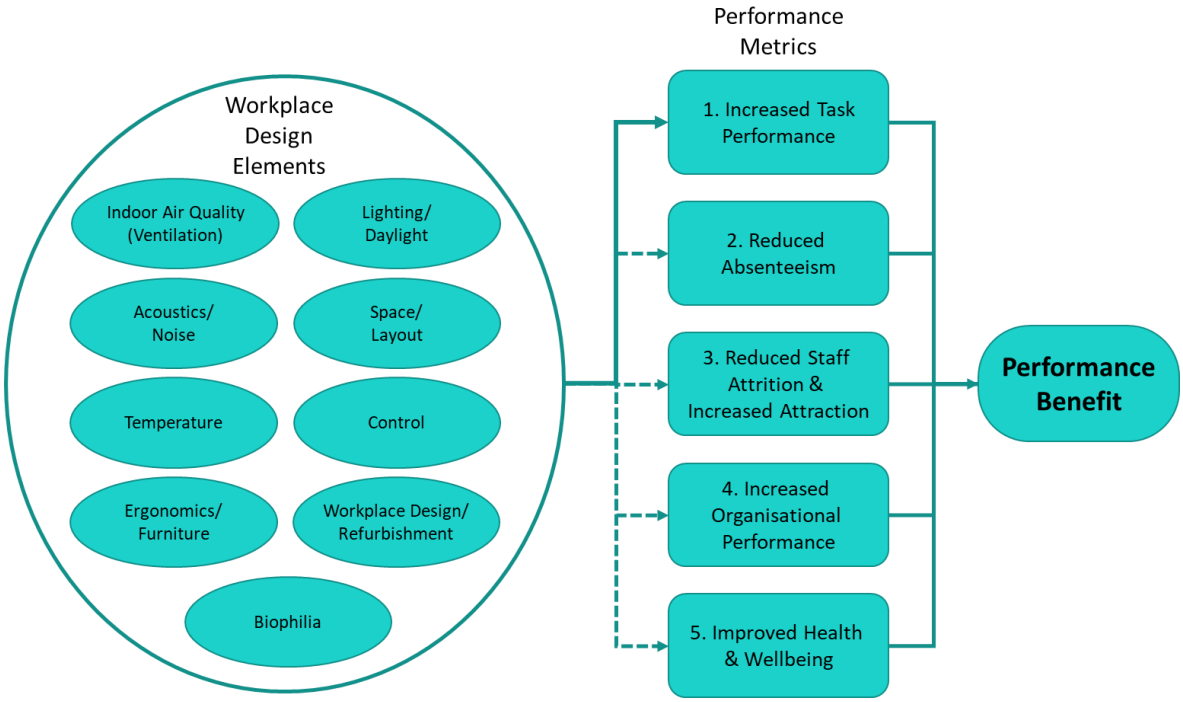


Figure 2.2 Five performance metrics and nine workplace design elements

3 ROWI Tool key variables

As mentioned, following on from the identification of the reliable research projects, the corresponding five core performance metrics and nine workplace parameters were identified. These formed the key variables that were considered could be used in practice to calculate the return on workplace investment.

The percentage change in any of the performance metrics used in each study was determined by extracting any data identified during the literature review process. Due to the variety of data collected and the range of performance metrics, it was decided that the observed change in performance, should be weighted according to the confidence in the quality of the data. To weight the data, three categorical scales were used as below.

i. The objectivity of metrics – refers to the level of independent quantification of the performance metric used in the research. For example, a cognitive performance task like remembering a series of numbers, or typing speed and errors, would weight higher than perceived or self-rated performance.
ii. Job task relevance – is the amount of time that the metric would be used during a typical office workday. For example, computer tasks used in a research study would be weighted higher than a mental arithmetic task.
iii. Real-world relevance – relates to where the study was conducted and how relevant the place is to a real-world office environment. For example, a study conducted in an actual office environment was given a higher weighting than a simulated office or laboratory.

All the possible categories for each of the three scales were identified. For example, for real-world relevance, the studies were categorised as: office, call centre, simulated office, lab study, not workplace, manufacturing, light industry, survey/poll, retail/store and literature review. The weighting associated with each of these categories was independently assigned by the authors of this report and any discrepancies agreed in advance. The weightings of the categories were based on previous research (Oseland & Burton, 2012), recent workplace usage statistics and a further review by the authors of this report.

Author(s)	Performance metric Workplace parameter	Objectivity of metric Objectivity weighting	Job task relevance Job task weighting	Real-world elevance Relevance weighting	Total Weight-ing	Mean perform-ance	Weighted perform-ance
Banbury, S. & Berry, D. C. (1998)	Task performance	Performance task	Concentration/ cognitive ability	Simulated office	16.8%	16.0%	2.7%
	Acoustics/ noise	80%	35%	60%			
Kroner *et al* (1992)	Task performance	Business metric	PC work	Real office	45%	2.8%	1.3%
	Control	100%	45%	100%			
Vernon, H.M. *et al* (1926)	Task performance	Manual task	Manual task	Manu-facturing	0.2%	27.0%	0.1%
	Temperature	80%	1%	30%			

Table 3.1 Examples of the theme sub-categories and associated weightings

For each metric identified in the individual research studies, the most relevant category for the three weighting scales were assigned. An overall weighting was then automatically calculated based on the pre-agreed weighting for each category. The weighting was then applied to the reported change in performance, providing a weighted mean change in performance for each study. Table 3.1 illustrates how the weightings were applied to the performance results of several research studies.

The next step was to group all the studies according to each of the five core performance metrics. The median, lower quartile (LQ) and upper quartile (UQ) of the weighted performance was then calculated for those grouped studies. This high-level data, reported in Table 3.2, was incorporated into the ROWI Tool as key variables.

Core performance metric	Median	LQ	UQ
1. Increased task performance	1.5%	0.3%	3.5%
2. Reduced absenteeism	0.1%	0.1%	0.4%
3. Reduced staff attrition & increased attraction	1.9%	0.3%	4.5%
4. Increased organisational performance	4.0%	2.4%	5.0%
5. Improved health & wellbeing	0.2%	0.1%	0.6%

Table 3.2 The median and quartiles of weighted performance metrics

The variables relating to the workplace design elements that affected the performance metric, i.e. the cause or workplace intervention, were also identified for the studies of task performance studies. The median and quartiles of the corresponding weighted task performance were then calculated for each workplace parameter, as shown in Table 3.3. The data extracted from the research studies therefore allows for the identification of specific workplace investment areas (parameters) that influence performance and therefore offer a potential return on workplace investment. These are included as key variables in the ROWI Tool.

Workplace parameter	Median	LQ	UQ
1. IAQ/ventilation	0.5%	0.1%	2.0%
2. Lighting/daylight	0.5%	0.1%	1.8%
3. Acoustics/noise	2.7%	1.2%	6.7%
4. Space/layout	3.9%	2.7%	5.2%
5. Temperature	0.4%	0.1%	1.8%
6. Control	1.3%	0.6%	2.6%
7. Ergonomics/furniture	5.0%	4.5%	5.4%
8. Workplace design/refurbishment	2.8%	0.9%	8.2%
9. Biophilia including views	2.9%	1.7%	4.3%

Table 3.3 The median and quartiles of task performance by workplace parameter

In summary, for each of the five key metrics and the nine workplace parameters, the median along with the lower and upper quartile weighted performance was extracted to form the bases of the ROWI Tool. The whole process is illustrated in Figure 3.1.

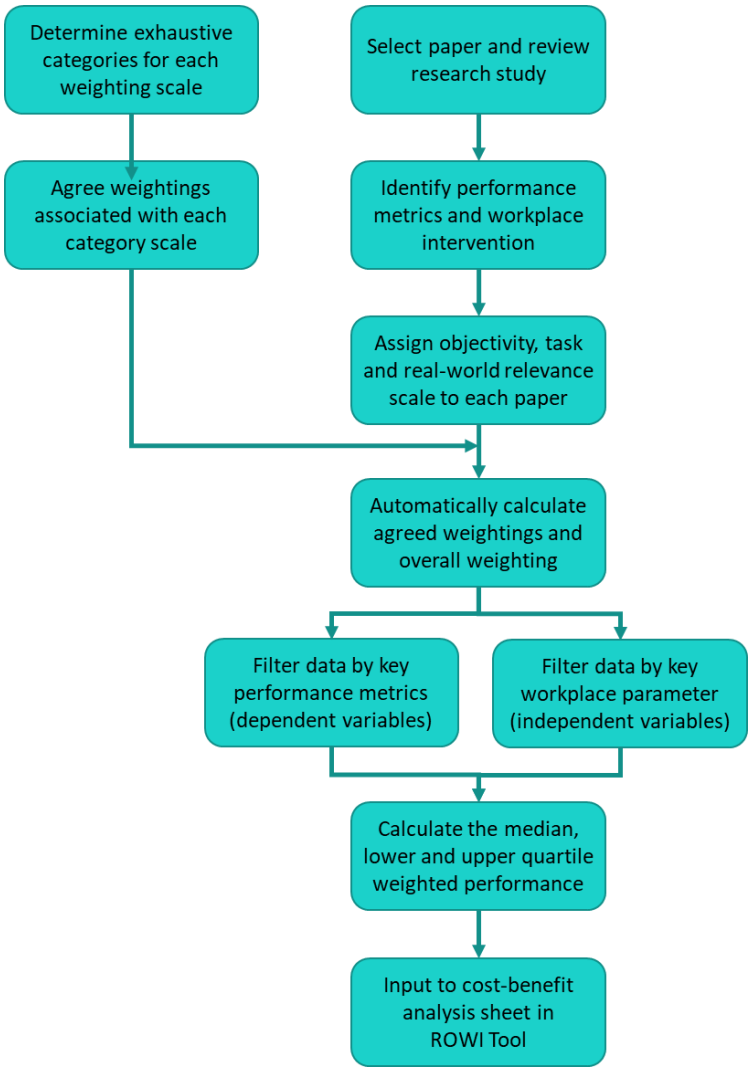


Figure 3.1 Process for converting research data into ROWI Tool

4 ROWI Tool development

This section provides a high-level overview of the ROWI Tool, a process for conducting cost-benefit analyses of workplace projects. Detailed guidance on how to use the tool is provided in the next section.

The ROWI Tool is fundamentally an enhanced cost-benefit analysis spreadsheet. The two upper sections are quite standard and represent a high-level cost sheet, allowing capital costs (Figure 4.1, Box 1) and operational costs (Box 2) to be entered covering a five-year period.

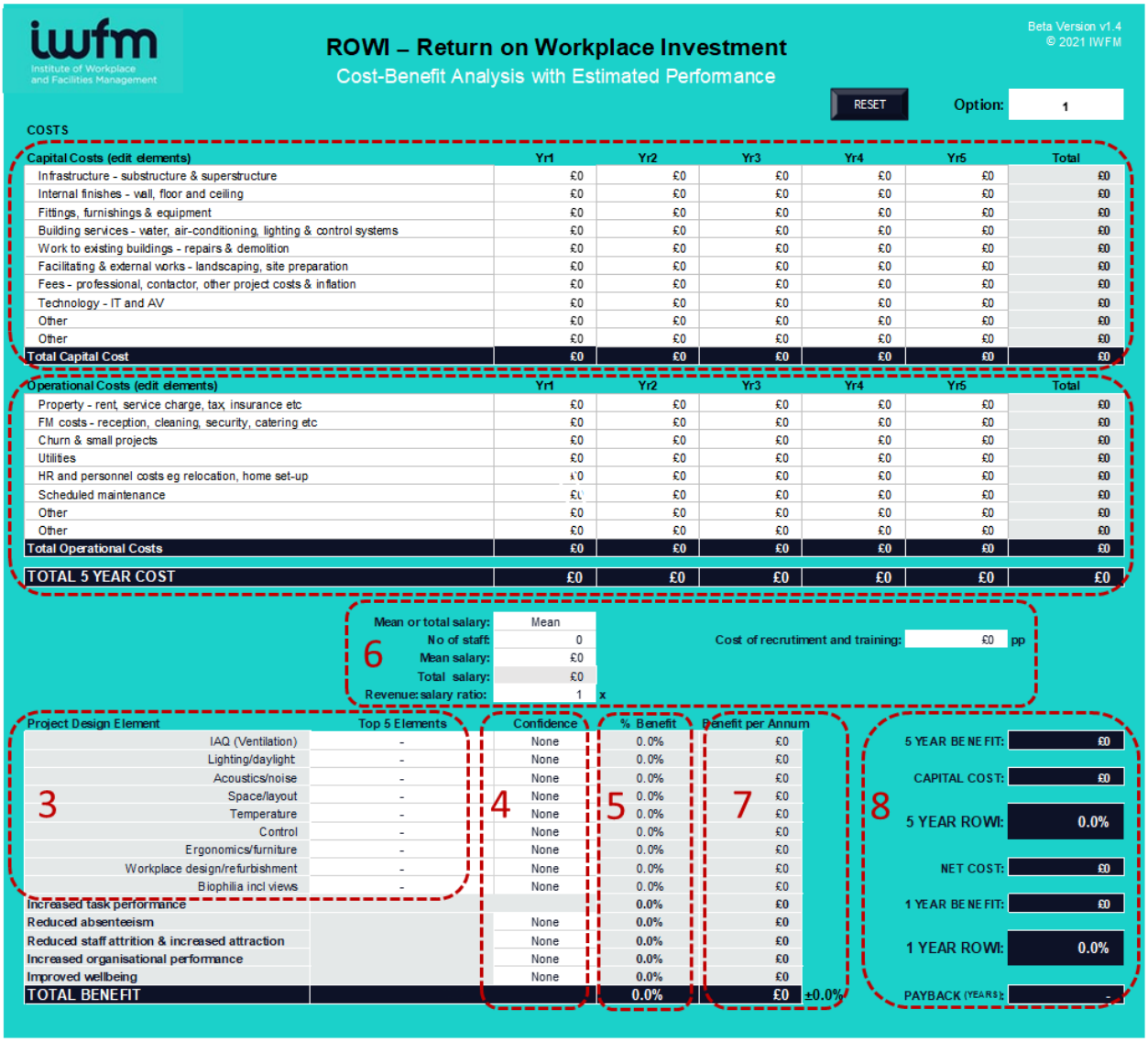


Figure 4.1 Key components of the ROWI Tool

The lower section incorporates the unique aspect of the ROWI Tool where the impact of the workplace design on various performance benefits are calculated. The combined median and quartile performance benefits for each of the five key categories and nine sub-categories, mentioned in the previous section, form the primary input to the Benefit section of the ROWI

Tool. The lower quartile figure is used to reflect low confidence in the impact of the workplace project on performance and the upper quartile to reflect high confidence.
Up to five workplace design elements can be added in order of investment (Box 3). The confidence levels are also entered for the selected design elements and the other potential benefits (Box 4). The total percentage benefits are then automatically calculated (Box 5).

Many productivity researchers use salary data to convert a percentage performance increase into additional income, for example see Attema *et al* (2018). Therefore, to monetise the performance benefits and allow them to be offset against cost, the organisation's number of staff (affected by the project), their total (or average) salary and the cost of recruitment and training need to be added (Box 6). For many businesses, the staff are expected to generate revenue that is higher than their salary, typically three times more. A revenue to salary ratio can therefore be entered to reflect this.

Once the organisational data is added then the equivalent monetary value of each performance benefit is calculated (Box 7). These are then added up to show the accumulated benefit over a five-year period (Box 8). The calculated "net cost" represents the total benefit minus the project cost, which is a quick easy method for comparing different project options. The Return on Workplace Investment is also calculated for a one and five-year period. The ROWI is the total monetised benefit minus the capital costs expressed as a percentage of the capital cost. A simple payback period is also provided.

5 ROWI Tool guide

As mentioned, the ROWI Tool is a unique cost-benefit analysis spreadsheet for evaluating workplace projects. This section provides step-by-step guidance on how to use the ROWI Tool for evaluating your workplace projects.

The ROWI Excel workbook contains several of the same spreadsheet so that multiple workplace projects or "Options" can be evaluated and compared. The results are presented in the "Summary" spreadsheet, shown in Figure 5.1. The "Summary" sheet cannot be edited but the options can be named using the cell on the top right-hand side of each of the individual cost-benefit "Options" spreadsheets.

iwfm Institute of Workplace and Facilities Management

ROWI – Return on Workplace Investment

Cost-Benefit Analysis with Estimated Performance

Beta Version v1.4 © 2021 IWFM

SUMMARY OF OPTIONS		Capital Costs	All 5 Year Costs	5 Year Benefits	Net Cost	5 Year ROWI	1 Year Benefits	1 Year ROWI
1.	Small Project	£850,000	£850,000	£5,160,944	-£4,310,944	607%	£1,032,189	21%
2.	Do Nothing	£0	£12,200,000	£0	£12,200,000	607%	£0	0%
3.	Low Cost	£1,890,000	£13,890,000	£3,169,964	£10,720,036	607%	£633,993	-66%
4.	High Cost	£2,300,000	£14,300,000	£4,565,048	£9,734,952	607%	£913,010	-60%
5.	5	£0	£0	£0	£0	607%	£0	0%

Figure 5.1 Example summary sheet in the ROWI Tool

5.1 Capital Costs

The capital costs of the workplace project being evaluated are entered into the white-coloured upper cells (Figure 4.1, Box 1). Some default category names for the cost elements are provided, based on RICS elemental cost planning, but they can be overwritten with your own categories, especially when evaluating smaller or simpler projects. Note the <RESET> at the top of the spreadsheet can be used to reset the categories to the default setting (RICS categories) but be warned any cost data entered will also be reset to zero.

Capital Costs (edit elements)	Yr1	Yr2	Yr3	Yr4	Yr5	Total
Structural Alterations	£20,000	£0	£0	£0	£0	**£20,000**
Floor/ceiling	£90,000	£0	£0	£0	£0	**£90,000**
Partitions/walls	£170,000	£0	£0	£0	£0	**£170,000**
Finishes/decorations	£345,000	£0	£0	£0	£0	**£345,000**
M&E/fire/security	£500,000	£0	£0	£0	£0	**£500,000**
Cablng/AV	£125,000	£0	£0	£0	£0	**£125,000**
Acoustic ceiling/panels	£40,000	£0	£0	£0	£0	**£40,000**
Furniture	£0	£300,000	£0	£0	£0	**£300,000**
Fees	£200,000	£0	£0	£0	£0	**£200,000**
Contingency	£100,000	£0	£0	£0	£0	**£100,000**
Total Capital Cost	**£1,590,000**	**£300,000**	**£0**	**£0**	**£0**	**£1,890,000**

Figure 5.2 Example capital costs input to the ROWI Tool

Capital project costs can be entered for just one year or split over several years. Capital spend may all be in one year but for larger projects it may spread over several years, with for example furniture or technology costs scheduled later. In addition, there may be follow-up costs planned for later due to commissioning or a post occupancy evaluation etc. For example, Figure

5.2 illustrates the capital costs entered for a project, using tailored named elements, in which furniture costs fall into the second year of the project.

The total capital, and operational, costs for each project element (grey cells) and the total cost per year over a five-year period (black cells) are automatically calculated.

5.2 Operational Costs

The operational costs, such as rent, service charge, maintenance, utilities, churn etc., can also be entered into the white-coloured cells for a five-year period (Figure 4.1, Box 2). This part of the spreadsheet is unlikely to be required when evaluating the benefits of small workplace projects. However, it is useful when comparing either a major fit-out or a relocation project where the ongoing operational costs may vary considerably over time.

For example, a move to a new building may result in lower property, utility and maintenance costs. In contrast, staying in the same location may incur ongoing and new operational costs such as maintenance and refurbishment. When moving to a new location, the landlord may also offer a rent-free period, see the example in Figure 5.3.

Operational Costs (edit elements)	Yr1	Yr2	Yr3	Yr4	Yr5	Total
Property - rent, service charge, tax, insurance etc	£0	£2,250,000	£2,250,000	£2,250,000	£2,250,000	**£9,000,000**
FM costs - reception, cleaning, security, catering etc	£500,000	£500,000	£500,000	£500,000	£500,000	**£2,500,000**
Churn & small projects	£0	£0	£0	£0	£0	**£0**
Utilities	£100,000	£100,000	£100,000	£100,000	£100,000	**£500,000**
HR and personnel costs eg relocation, home set-up	£0	£0	£0	£0	£0	**£0**
Scheduled maintenance	£0	£0	£0	£0	£0	**£0**
Dilapidations	£0	£0	£0	£0	£0	**£0**
Other	£0	£0	£0	£0	£0	**£0**
Total Operational Costs	**£600,000**	**£2,850,000**	**£2,850,000**	**£2,850,000**	**£2,850,000**	**£12,000,000**

Figure 5.3 Example operational costs input to the ROWI Tool

As, with the capital costs, the total cost for each element is calculated over the five-year period (grey and black cells). At this stage, the "Summary" spreadsheet of the ROWI Tool can be used to compare the costs of different workplace projects, such as "do nothing", "stay and refurbish" or "relocate and fit-out"[1].

5.3 Benefits: Project Design Elements

Once all the costs are entered, we shift to focussing on the potential benefits. The first step is to consider the individual elements of the workplace project and their impact on performance (Figure 4.1, Box 3).

The ROWI Tool allows for nine workplace design elements, each of which have been clearly demonstrated to affect performance by numerous research studies. However, previous research (Oseland & Burton, 2012) indicates that the individual performance benefit of multiple workplace parameters cannot simply be added; the benefits are more likely to follow a law of diminishing return with little benefit after considering five individual design elements.

[1] Note that, due to the complexity and different circumstances of each organisation, the Discounted Cash Flow (DCF) or Net Present Value (NPV) are not calculated. If being used as part of the business case, the ROWI Tool data should be passed on to qualified finance personnel to take account of the future value of the investment.

Therefore, you should select the top five design elements in order of relevance (1 = highest relevance, 5 = lowest relevance) to the workplace project. Simply click on the cell containing the dash and use the pull-down menu to select 1 to 5. The "relevance" may be based on the investment cost or the project objectives etc. Note fewer than five design elements can be selected but do not select more than five.

Figure 5.4 represents an example workplace refurbishment project with a focus on acoustics, but the project also includes changes to the office layout and to some extent the overall design, plus the balancing of the mechanical ventilation system, which is expected to improve temperature and indoor air quality.

Project Design Element	Top 5 Elements	Confidence	% Benefit	Benefit per Annum	
IAQ (Ventilation)	3	Low	0.0%	£6,579	
Lighting/daylight:	-	None	0.0%	£0	
Acoustics/noise	1	Medium	2.7%	£483,840	
Space/layout	2	Low	1.8%	£324,324	
Temperature	4	Low	0.0%	£2,203	
Control	-	None	0.0%	£0	
Ergonomics/furniture	-	None	0.0%	£0	
Workplace design/refurbishment	5	Low	0.1%	£9,032	
Biophilia incl views	-	None	0.0%	£0	
Increased task performance			**4.6%**	**£825,979**	
Reduced absenteeism		Low	**0.1%**	**£15,390**	
Reduced staff attrition & increased attraction		Low	**0.3%**	**£30,787**	
Increased organisational performance		Low	**0.0%**	**£0**	
Improved wellbeing		Low	**0.1%**	**£21,038**	
TOTAL BENEFIT			**5.1%**	**£893,193**	**±4.6%**

Figure 5.4 Example design elements and confidence levels input to the ROWI Tool

5.4 Benefits: Confidence Level

This step requires a little more thought. For each of the selected workplace design elements, and the key performance metrics, you should consider how confident you are that they will improve worker performance (Figure 4.1, Box 4). Clearly this part of the ROWI Tool spreadsheet is highly subjective and impacts on the final return. It is recommended that the project team confer on the confidence levels and enter the consensus agreed confidence level. However, if unsure, selecting "Low" is recommended as this will result in the most conservative return on workplace investment.

As previously mentioned, the literature review and resulting database were used to calculate the median, lower and upper quartiles of each performance benefit. The lower quartile figure reflects low confidence and the upper quartile high confidence in the impact of the workplace project on performance. Consequently, the lower quartile figure is extremely conservative.

The example in Figure 5.4 shows "Low" confidence entered for each performance benefit, except for Acoustics which is the primary focus of the project instilling higher confidence.

5.5 Benefits: Percentage Benefit

Figure 5.4 shows the expected percentage performance increase due to each of the five core performance metrics (Figure 4.1, Box 5). The "% Benefit" is automatically calculated based on the selected design elements and confidence levels.

The "Increased task performance" is the total of the expected increased performance from the five (or fewer) selected workplace design elements. For the workplace design elements, the percentage benefit is calculated using the order entered for the top five elements and their confidence level. The impact of the five elements on "Increased task performance" is not simply additive but based on a law of diminishing returns. As such, the higher ordered elements are assigned a higher weighting with a corresponding higher impact on performance.

The research shows some overlap between individual task performance and organisational performance. The calculated task performance is therefore subtracted from the estimated organisational performance to ensure there is no double counting.

The percentage benefit of the "Increased task performance" and four other performance metrics are added to produce the Total Benefit. While the performance increases are based on an extensive literature review, the Percentage Benefit is nevertheless an estimate. A range (plus or minus figure) is therefore applied, which is derived from the highest figure of the five core performance metrics.

5.6 Benefits: Organisational Data

Figure 5.4 shows the corresponding monetary value of the performance benefits (Figure 4.1, Box 7). However, for these figures to be calculated more input is required.

As mentioned, productivity researchers use worker salaries to convert the percentage performance to a monetary value. This requires the number of staff affected by the workplace project and their salary to be entered (Figure 4.1, Box 6). The ROWI Tool allows the approximate mean (average) salary per worker to be input or the total salary for all impacted workers to be entered. Select the "Mean" cell and select "Mean" or "Total" before entering the corresponding salary. If the mean salary is input then the total salary will be automatically calculated, and the mean salary will be calculated if the total is entered.

Note the average salary is used in the ROWI Tool when monetising the performance benefits. If the impact of the workplace project is required on specific teams within the workforce, with different salaries etc., then you could use a copy of the spreadsheet for each team. However, this is not recommended, and it is better to use the average salary as the ROWI Tool is intended as a high-level indicator of performance benefits.

Mean or total salary:	Mean			
No of staff:	300		**Cost of recrutiment and training:**	£30,000 **pp**
Mean salary:	£60,000			
Total salary:	£18,000,000			
Revenue:salary ratio:	1	**x**		

Figure 5.5 Example organisational data input to the ROWI Tool

Figure 5.5 illustrates an example of organisational data, entered for a group of 300 staff affected by a workplace project. The mean salary was used, and the total salary calculated. A "Revenue salary ratio" of 1 and a "Cost of recruitment and training" have also been entered into the ROWI Tool spreadsheet.

The productivity researchers monetise using salaries, such that a 1% increase in performance is equivalent to 1% extra effort with no extra staff costs or alternatively it means the same output can be produced with a 1% saving on staff costs. The other associated staff costs should be considered such as national insurance and sick leave etc. Furthermore, in most organisations (excluding public sector) staff are expected to generate more revenue than their salary. This expected revenue could be 3 to 6 times the salary, with the highest ratios for consultants, lawyers and investment bankers etc. Therefore a "Revenue salary ratio" can be input to the ROWI Tool to reflect the higher revenue generation. If unsure, then it is recommended that the ratio is left as 1.

The research shows how workplace design can help reduce attrition, the number of staff leaving, and increase attraction, the number of new staff. There are costs associated with recruiting and training new staff. The "Cost of recruitment and training" can be added to the ROWI Tool spreadsheet and is used to monetise the percentage benefit due to "Reduced staff attrition & increased attraction".

5.7 Benefits: Monetary Value

With all the other sections completed, the ROWI Tool converts the percentage benefits into monetary values (Figure 4.1, Box 7). The values are totalled to estimate the overall benefit per annum, in pounds, that can help offset the project costs.

5.8 Cost-benefit Analysis and ROWI

The final section of the spreadsheet is where the ROWI is calculated (Figure 4.1, Box 8). This section presents the following measures.

- *5 Year Benefit* – The total monetised "Benefit per annum" multiplied by five.
- *Capital Cost* – The total capital cost across the five years, repeated from the upper section of the spreadsheet.
- *5 Year ROWI* – The net savings, i.e. the "5 Year Benefit" minus the "Capital Cost", expressed as a percentage of the "Capital Cost". The higher the ROWI the better the investment, and projects with a negative ROWI should be avoided. So, the ROWI is based on the capital project costs and performance benefits only. It does not take account of other savings, such as lower rate and maintenance. This can be done by using a separate spreadsheet for the various options and comparing them on the "Summary" spreadsheet.
- *Net Cost* – This is a basic metric to account for the performance benefits of the workplace project along with other property savings. The "Net Cost" is the "Total 5 year cost" minus the "5 year Benefit". Clearly, the smaller the figure the better value the project, and a negative number indicates particularly good value. This metric is useful for comparing different project options.
- *1 Year Benefit* – This is simply the total monetised "Benefit per annum"

- *1 Year ROWI* – It may be considered excessive to evaluate a small, or shorter-term, project over a five-year period. Therefore, the "1 Year ROWI" is the net savings, i.e. the "1 Year Benefit" minus the "Capital Cost", expressed as a percentage of the "Capital Cost". Despite it being a 1-year ROWI, the capital costs are the 5-year ones, just in case the project spills over two or more years.
- *Payback (Years)* – This simple payback period calculation is the "Capital cost" divided by the "1 Year Benefit".

Figure 5.6 illustrates the key outputs of the ROWI Tool. In this example, the total (5-year) capital costs are a fraction of the benefits gained over five years producing a good ROWI of 236%. However, the one-year ROWI is not so good at -53% and a payback period of just over two years of benefits is required to recover the capital project investment.

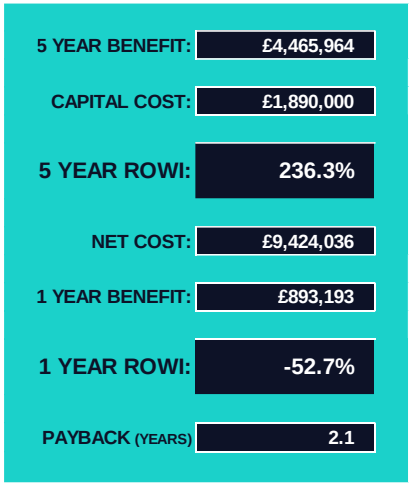


Figure 5.6 Example ROWI metrics presented in the ROWI Tool

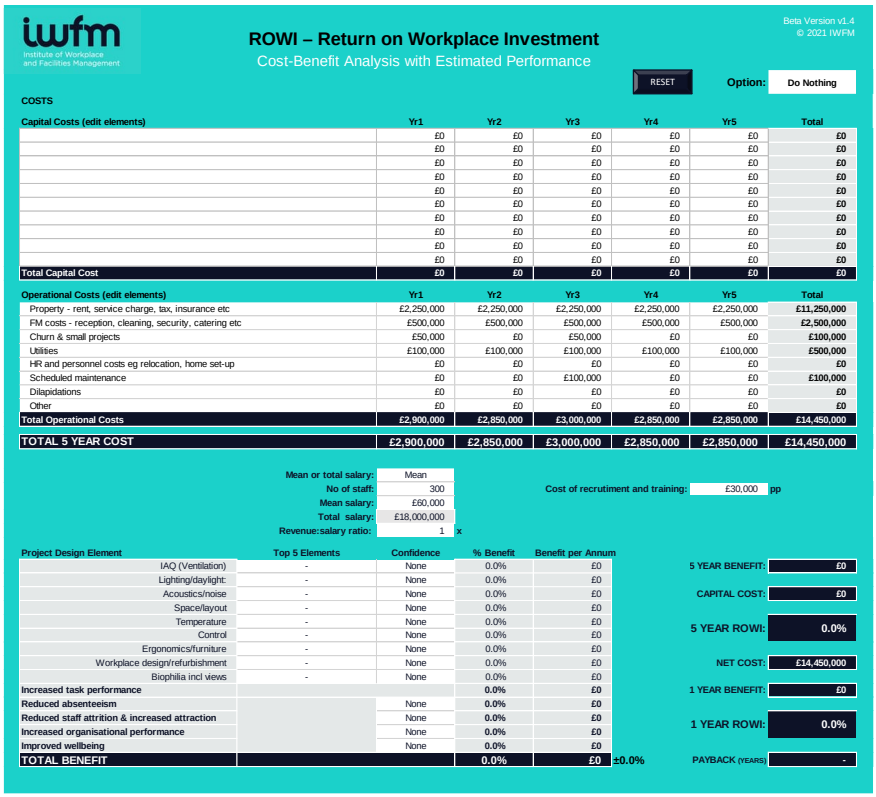
5.9 Worked example

The following figures illustrate how the ROWI Tool may be used to compare a series of workplace options faced by one organisation. The organisation is unsure whether to continue with business as usual ("Do Nothing") in their current building or move to a new building with a typical ("Basic Fit-out") or more extensive fit-out with more spend on the acoustics and M&E system ("Enhanced Fit-out").

- *Do nothing* – Figure 5.7 presents the "Do Nothing" option, so no capital costs are input. However, the operational costs for the current building are entered along with the organisational data. The five-year total cost is £14,450K allowing for property, FM and utilities costs plus a little churn and some planned maintenance. The benefits section is left empty as there are no anticipated additional performance benefits from doing nothing.
- *Basic fit-out* – The "Basic Fit-out" option is shown in Figure 5.8. This spreadsheet itemises the capital costs of fitting-out a new office. It also shows the new operational costs over a five-year period. The property costs are similar but the landlord is offering a rent-free period and there is no required maintenance. The total five-year cost is £13,890K, so a saving of £560K due to property costs alone (and this will be higher if the Net Present Value is accounted for). Furthermore, the performance benefits section is completed, and it is

estimated that the fit-out will result in a conservative performance increase of 3.7% and a return of £634K per annum. This is equivalent to an ROWI of 168% over five-years and a net cost of £10,720K, if the benefits are subtracted from the costs.

- *Enhanced fit-out* – Figure 5.9 shows the "Enhanced Fit-out" option. The operational costs remain the same as the "Basic Fit-out" but the capital costs show more spend on acoustics and the mechanical ventilation system (under M&E). This additional investment offers higher confidence in the impact of the fit-out on "Acoustics/noise" and "IAQ (Ventilation)". This results in the estimated performance benefit increasing to 5.2% and a corresponding £913K per annum. Consequently, the 5-year ROWI rises to 199% and the net cost is reduced to £9,735K. The spreadsheet also highlights that a 1-year ROWI is not viable and a 2.5 year payback period is anticipated.
- *Summary* – The summary sheet, shown in Figure 5.10, provides an easy comparison of the three options. Option 3, the "Enhanced Fit-out" is the better long-term option, because the ROWI is higher, the net cost is lower, and the payback period is shorter.



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RESET | Option: Do Nothing

COSTS

Capital Costs (edit elements)	Yr1	Yr2	Yr3	Yr4	Yr5	Total
	£0	£0	£0	£0	£0	£0
	£0	£0	£0	£0	£0	£0
	£0	£0	£0	£0	£0	£0
	£0	£0	£0	£0	£0	£0
	£0	£0	£0	£0	£0	£0
	£0	£0	£0	£0	£0	£0
	£0	£0	£0	£0	£0	£0
	£0	£0	£0	£0	£0	£0
	£0	£0	£0	£0	£0	£0
	£0	£0	£0	£0	£0	£0
Total Capital Cost	£0	£0	£0	£0	£0	£0

Operational Costs (edit elements)	Yr1	Yr2	Yr3	Yr4	Yr5	Total
Property - rent, service charge, tax, insurance etc	£2,250,000	£2,250,000	£2,250,000	£2,250,000	£2,250,000	£11,250,000
FM costs - reception, cleaning, security, catering etc	£500,000	£500,000	£500,000	£500,000	£500,000	£2,500,000
Churn & small projects	£50,000	£0	£50,000	£0	£0	£100,000
Utilities	£100,000	£100,000	£100,000	£100,000	£100,000	£500,000
HR and personnel costs eg relocation, home set-up	£0	£0	£0	£0	£0	£0
Scheduled maintenance	£0	£0	£100,000	£0	£0	£100,000
Dilapidations	£0	£0	£0	£0	£0	£0
Other	£0	£0	£0	£0	£0	£0
Total Operational Costs	£2,900,000	£2,850,000	£3,000,000	£2,850,000	£2,850,000	£14,450,000
TOTAL 5 YEAR COST	£2,900,000	£2,850,000	£3,000,000	£2,850,000	£2,850,000	£14,450,000

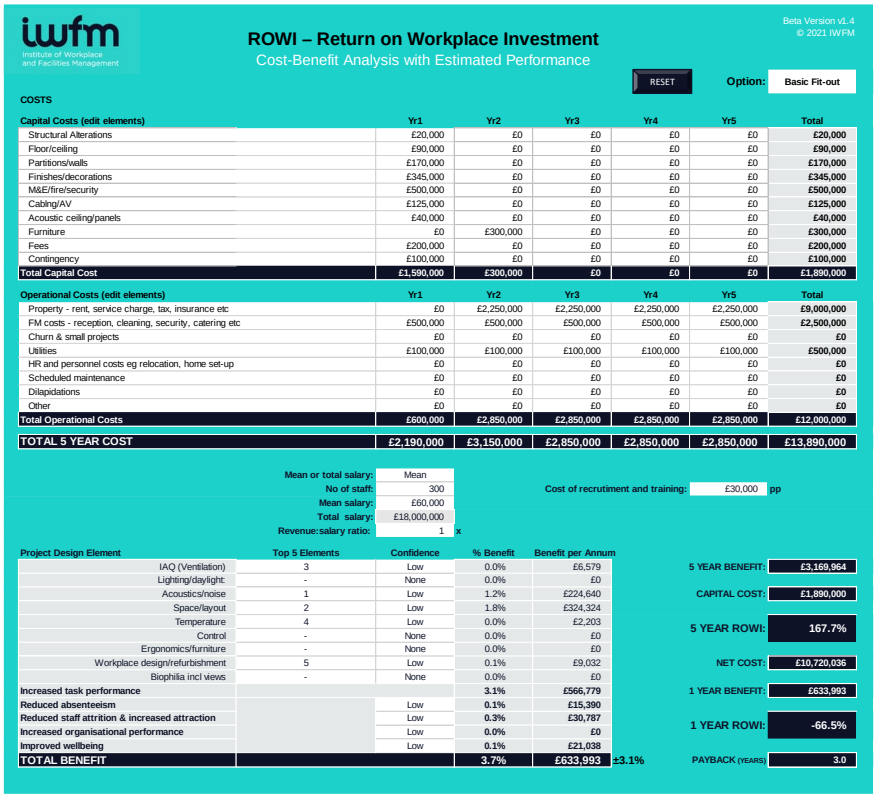
Mean or total salary:	Mean
No of staff:	300
Mean salary:	£60,000
Total salary:	£18,000,000
Revenue:salary ratio:	1 x

Cost of recrutiment and training: £30,000 pp

Project Design Element	Top 5 Elements	Confidence	% Benefit	Benefit per Annum
IAQ (Ventilation)	-	None	0.0%	£0
Lighting/daylight:	-	None	0.0%	£0
Acoustics/noise	-	None	0.0%	£0
Space/layout	-	None	0.0%	£0
Temperature	-	None	0.0%	£0
Control	-	None	0.0%	£0
Ergonomics/furniture	-	None	0.0%	£0
Workplace design/refurbishment	-	None	0.0%	£0
Biophilia incl views	-	None	0.0%	£0
Increased task performance			0.0%	£0
Reduced absenteeism		None	0.0%	£0
Reduced staff attrition & increased attraction		None	0.0%	£0
Increased organisational performance		None	0.0%	£0
Improved wellbeing		None	0.0%	£0
TOTAL BENEFIT			0.0%	£0 ±0.0%

5 YEAR BENEFIT:	£0
CAPITAL COST:	£0
5 YEAR ROWI:	0.0%
NET COST:	£14,450,000
1 YEAR BENEFIT:	£0
1 YEAR ROWI:	0.0%
PAYBACK (YEARS)	-

Figure 5.7 Example completed ROWI Tool for "Do Nothing" option



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RESET | Option: Basic Fit-out

COSTS

Capital Costs (edit elements)	Yr1	Yr2	Yr3	Yr4	Yr5	Total
Structural Alterations	£20,000	£0	£0	£0	£0	£20,000
Floor/ceiling	£90,000	£0	£0	£0	£0	£90,000
Partitions/walls	£170,000	£0	£0	£0	£0	£170,000
Finishes/decorations	£345,000	£0	£0	£0	£0	£345,000
M&E/fire/security	£500,000	£0	£0	£0	£0	£500,000
Cabling/AV	£125,000	£0	£0	£0	£0	£125,000
Acoustic ceiling/panels	£40,000	£0	£0	£0	£0	£40,000
Furniture	£0	£300,000	£0	£0	£0	£300,000
Fees	£200,000	£0	£0	£0	£0	£200,000
Contingency	£100,000	£0	£0	£0	£0	£100,000
Total Capital Cost	**£1,590,000**	**£300,000**	**£0**	**£0**	**£0**	**£1,890,000**

Operational Costs (edit elements)	Yr1	Yr2	Yr3	Yr4	Yr5	Total
Property - rent, service charge, tax, insurance etc	£0	£2,250,000	£2,250,000	£2,250,000	£2,250,000	£9,000,000
FM costs - reception, cleaning, security, catering etc	£500,000	£500,000	£500,000	£500,000	£500,000	£2,500,000
Churn & small projects	£0	£0	£0	£0	£0	£0
Utilities	£100,000	£100,000	£100,000	£100,000	£100,000	£500,000
HR and personnel costs eg relocation, home set-up	£0	£0	£0	£0	£0	£0
Scheduled maintenance	£0	£0	£0	£0	£0	£0
Dilapidations	£0	£0	£0	£0	£0	£0
Other	£0	£0	£0	£0	£0	£0
Total Operational Costs	**£600,000**	**£2,850,000**	**£2,850,000**	**£2,850,000**	**£2,850,000**	**£12,000,000**
TOTAL 5 YEAR COST	**£2,190,000**	**£3,150,000**	**£2,850,000**	**£2,850,000**	**£2,850,000**	**£13,890,000**

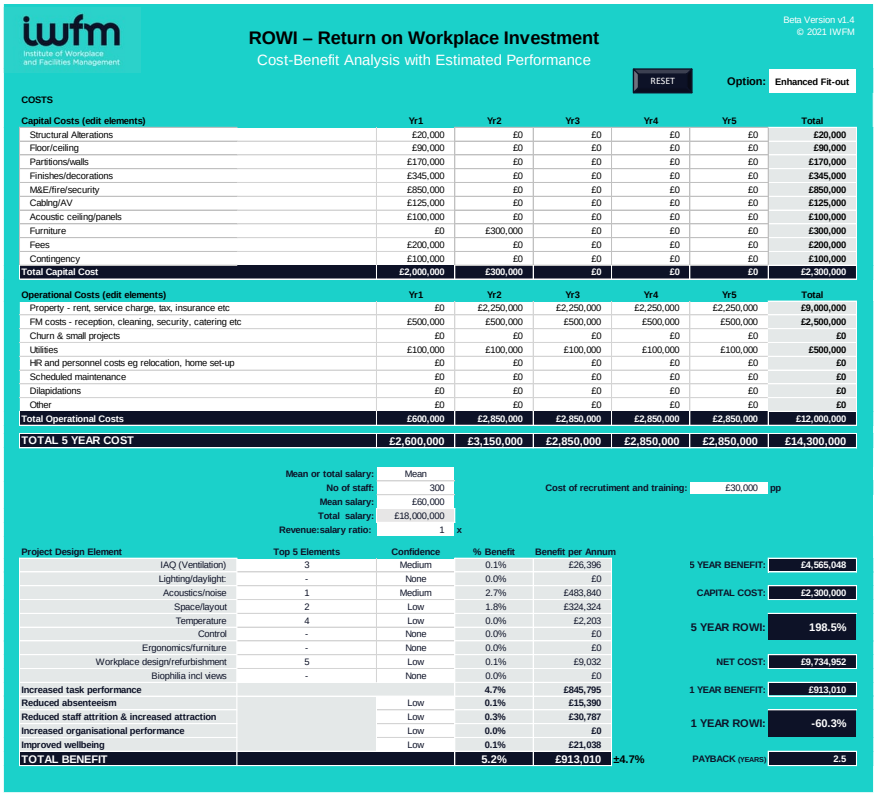
Mean or total salary: Mean
No of staff: 300
Mean salary: £60,000
Total salary: £18,000,000
Revenue:salary ratio: 1 x

Cost of recruitment and training: £30,000 pp

Project Design Element	Top 5 Elements	Confidence	% Benefit	Benefit per Annum
IAQ (Ventilation)	3	Low	0.0%	£6,579
Lighting/daylight:	-	None	0.0%	£0
Acoustics/noise	1	Low	1.2%	£224,640
Space/layout	2	Low	1.8%	£324,324
Temperature	4	Low	0.0%	£2,203
Control	-	None	0.0%	£0
Ergonomics/furniture	-	None	0.0%	£0
Workplace design/refurbishment	5	Low	0.1%	£9,032
Biophilia incl views	-	None	0.0%	£0
Increased task performance			**3.1%**	**£566,779**
Reduced absenteeism		Low	**0.1%**	**£15,390**
Reduced staff attrition & increased attraction		Low	**0.3%**	**£30,787**
Increased organisational performance		Low	**0.0%**	**£0**
Improved wellbeing		Low	**0.1%**	**£21,038**
TOTAL BENEFIT			**3.7%**	**£633,993** ±3.1%

5 YEAR BENEFIT:	£3,169,964
CAPITAL COST:	£1,890,000
5 YEAR ROWI:	167.7%
NET COST:	£10,720,036
1 YEAR BENEFIT:	£633,993
1 YEAR ROWI:	-66.5%
PAYBACK (YEARS)	3.0

Figure 5.8 Example completed ROWI Tool for "Basic Fit-out" option



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RESET | Option: Enhanced Fit-out

COSTS

Capital Costs (edit elements)	Yr1	Yr2	Yr3	Yr4	Yr5	Total
Structural Alterations	£20,000	£0	£0	£0	£0	£20,000
Floor/ceiling	£90,000	£0	£0	£0	£0	£90,000
Partitions/walls	£170,000	£0	£0	£0	£0	£170,000
Finishes/decorations	£345,000	£0	£0	£0	£0	£345,000
M&E/fire/security	£850,000	£0	£0	£0	£0	£850,000
Cabling/AV	£125,000	£0	£0	£0	£0	£125,000
Acoustic ceiling/panels	£100,000	£0	£0	£0	£0	£100,000
Furniture	£0	£300,000	£0	£0	£0	£300,000
Fees	£200,000	£0	£0	£0	£0	£200,000
Contingency	£100,000	£0	£0	£0	£0	£100,000
Total Capital Cost	**£2,000,000**	**£300,000**	**£0**	**£0**	**£0**	**£2,300,000**

Operational Costs (edit elements)	Yr1	Yr2	Yr3	Yr4	Yr5	Total
Property - rent, service charge, tax, insurance etc	£0	£2,250,000	£2,250,000	£2,250,000	£2,250,000	£9,000,000
FM costs - reception, cleaning, security, catering etc	£500,000	£500,000	£500,000	£500,000	£500,000	£2,500,000
Churn & small projects	£0	£0	£0	£0	£0	£0
Utilities	£100,000	£100,000	£100,000	£100,000	£100,000	£500,000
HR and personnel costs eg relocation, home set-up	£0	£0	£0	£0	£0	£0
Scheduled maintenance	£0	£0	£0	£0	£0	£0
Dilapidations	£0	£0	£0	£0	£0	£0
Other	£0	£0	£0	£0	£0	£0
Total Operational Costs	**£600,000**	**£2,850,000**	**£2,850,000**	**£2,850,000**	**£2,850,000**	**£12,000,000**
TOTAL 5 YEAR COST	**£2,600,000**	**£3,150,000**	**£2,850,000**	**£2,850,000**	**£2,850,000**	**£14,300,000**

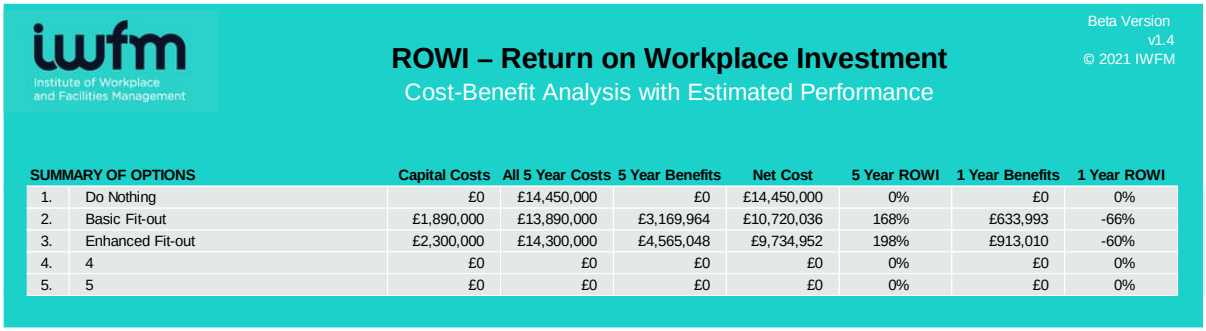
Mean or total salary: Mean
No of staff: 300
Mean salary: £60,000
Total salary: £18,000,000
Revenue:salary ratio: 1 x

Cost of recruitment and training: £30,000 pp

Project Design Element	Top 5 Elements	Confidence	% Benefit	Benefit per Annum
IAQ (Ventilation)	3	Medium	0.1%	£26,396
Lighting/daylight:	-	None	0.0%	£0
Acoustics/noise	1	Medium	2.7%	£483,840
Space/layout	2	Low	1.8%	£324,324
Temperature	4	Low	0.0%	£2,203
Control	-	None	0.0%	£0
Ergonomics/furniture	-	None	0.0%	£0
Workplace design/refurbishment	5	Low	0.1%	£9,032
Biophilia incl views	-	None	0.0%	£0
Increased task performance			**4.7%**	**£845,795**
Reduced absenteeism		Low	**0.1%**	**£15,390**
Reduced staff attrition & increased attraction		Low	**0.3%**	**£30,787**
Increased organisational performance		Low	**0.0%**	**£0**
Improved wellbeing		Low	**0.1%**	**£21,038**
TOTAL BENEFIT			**5.2%**	**£913,010** ±4.7%

5 YEAR BENEFIT:	£4,565,048
CAPITAL COST:	£2,300,000
5 YEAR ROWI:	198.5%
NET COST:	£9,734,952
1 YEAR BENEFIT:	£913,010
1 YEAR ROWI:	-60.3%
PAYBACK (YEARS)	2.5

Figure 5.9 Example completed ROWI Tool for "Enhanced Fit-out" option



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SUMMARY OF OPTIONS		Capital Costs	All 5 Year Costs	5 Year Benefits	Net Cost	5 Year ROWI	1 Year Benefits	1 Year ROWI
1.	Do Nothing	£0	£14,450,000	£0	£14,450,000	0%	£0	0%
2.	Basic Fit-out	£1,890,000	£13,890,000	£3,169,964	£10,720,036	168%	£633,993	-66%
3.	Enhanced Fit-out	£2,300,000	£14,300,000	£4,565,048	£9,734,952	198%	£913,010	-60%
4.	4	£0	£0	£0	£0	0%	£0	0%
5.	5	£0	£0	£0	£0	0%	£0	0%

Figure 5.10 Example completed ROWI Tool "Summary" of options

6 Next steps

This report provides an overview and user guide for the beta version of the ROWI Tool. The beta version is formatted in Excel, but next phase is to create an on-line version that ultimately captures project information to validate the tool and to allow benchmarking and trend analysis. In the meantime, we ask that you try the ROWI Tool, share with your colleagues and send your feedback to IWFM at research@iwfm.org.uk. In return, you will be informed of future updates to the tool.

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