

Employee Engagement Survey Analysis

Executive Summary

DecisionWise is a leadership-consulting firm headquartered in Provo, Utah. The company offers four main services: organization development, leadership coaching, 360° feedback surveys, and employee engagement analysis. Employee engagement analysis begins with administering employee engagement surveys to employees and managers within the organization. Engagement scores are calculated based on specific “anchor questions” within the engagement survey, and a company engagement profile is generated. DecisionWise presents the engagement profile to their client, with recommendations about how engagement can be improved within the organization.

Engagement survey data is entered into Excel in a standard format. Previously, DecisionWise has done the engagement score calculation and engagement profile generation using only the basic functionality of Excel. This project has automated the engagement profile-generation process. When the survey data is uploaded into the program, engagement scores can be calculated and the engagement profile generated with the click of a button. Engagement profile generation previously took several hours for each company; this project allows it to be done in a few seconds.

Implementation Documentation

This project has three main functions: engagement score calculation, general engagement profile generation, and gender-specific engagement profile generation. Each of these functions can be performed by clicking a button on the “ANALYSIS” tab I have added to the Excel ribbon (see figure below). The program first requires both the survey data and the accompanying survey questions to be uploaded in the standard DecisionWise format on tabs called “Data” and “Survey,” respectively.



Engagement Score Calculation

The first task is to calculate the engagement scores for both managers and employees. This process is initiated by clicking the “Calculate Engagement Scores” button on the Analysis tab. Clicking this button initiates a four-step process.

- (1) Sort the data – The data is easier to read when sorted alphabetically by manager name. The initial survey data is not alphabetical and is listed by

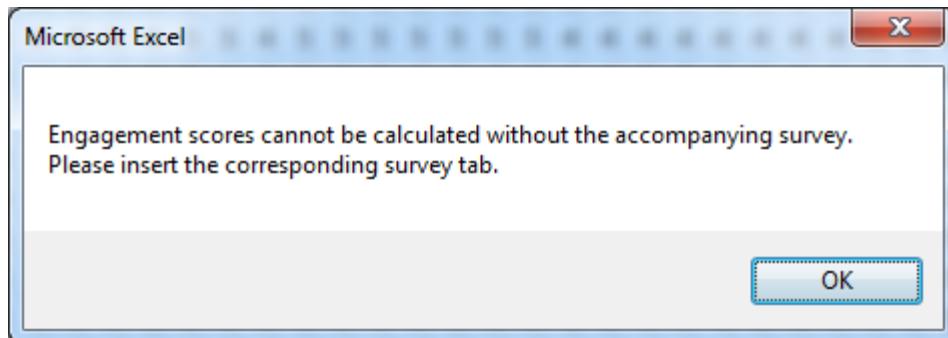
employee name. The first portion of the code sorts the entire sheet alphabetically by manager last name. The images below show the data before and after the sort.

The screenshot displays two Microsoft Excel windows side-by-side, illustrating the sorting process. Both windows show a table with four columns: Manager, ManagerEmail, Rater, and RaterEmail. The rows are numbered from 1 to 39. In the left window (before sorting), the data is listed in a seemingly random order. In the right window (after sorting), the data is sorted alphabetically by the Manager's last name. The Manager column shows names like McLaughlin, Holman, Ferreira, Benson, Berkowicz, Penn, Verhage, Shaw, Thompson, Leake, Nielsen, Olsen, Varoz, Spruill-Kires, Turner, Shanna Shore, Whitney Kesler, Hunter, Nielsen, Olsen, Michelle R. Hou, Sanchez, Bennett, Rice, Prine, Matera, Whitney Kesler, Bilic, Watson, Coleman, Clarke, Snyder, Huntsman, Werter, Cattani, Whitchurch, Wagner, and so on. The ManagerEmail, Rater, and RaterEmail columns provide corresponding email addresses for each manager.

- (2) Determine the anchor questions – The code then completes an analysis of the actual survey questions. DecisionWise standard format requires the anchor questions to be highlighted in yellow. This facilitates the following process:

- Scan each line of the “Survey” tab to determine if the line has been turned yellow.

- If the operator of the program has forgotten to insert the survey questions along with the data, a message box prompts the user to insert the “Survey” questions tab in the workbook.



- For each yellow line, record the question number from column C in a string of anchor questions.

(3) Calculate the employee engagement scores – Once the anchor questions are determined, the code will call a separate subprocedure to calculate the engagement score for each person through the following steps:

- Split the string of anchor questions and place each value in an array.
 - Some questions in the survey may have been answered “N/A” or been given a value outside the acceptable range as an indication of that “N/A.” The code scans the data output to find any such occurrences and standardize them.

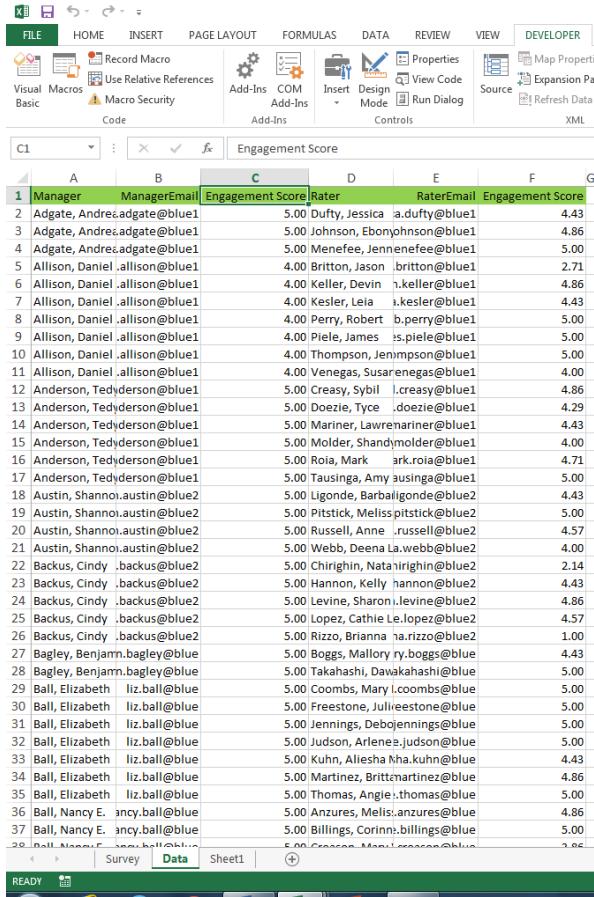
- For each employee, the code scans the survey responses, picking out the question numbers saved in the array of anchor questions. The anchor question responses are then averaged to calculate the engagement score.
- A new column is inserted after the employee emails containing the engagement scores for each employee.

	A	B	C	D	E	F
1	Manager	ManagerEmail Rater	RaterEmail	Engagement Score		
2	Adgate, Andrea	adgate@blue1	Duffy, Jessica	a.duffy@blue1	4.43	
3	Adgate, Andrea	adgate@blue1	Johnson, Ebony	johnson@blue1	4.86	
4	Adgate, Andrea	adgate@blue1	Menefee, Jennifer	j.menefee@blue1	5.00	
5	Allison, Daniel	.allison@blue1	Britton, Jason	britton@blue1	2.71	
6	Allison, Daniel	.allison@blue1	Keller, Devin	d.keller@blue1	4.86	
7	Allison, Daniel	.allison@blue1	Kesler, Leia	l.kesler@blue1	4.43	
8	Allison, Daniel	.allison@blue1	Perry, Robert	b.perry@blue1	5.00	
9	Allison, Daniel	.allison@blue1	Piele, James	j.s.piele@blue1	5.00	
10	Allison, Daniel	.allison@blue1	Thompson, Jen	j.thompson@blue1	5.00	
11	Allison, Daniel	.allison@blue1	Venegas, Susarene	s.venegas@blue1	4.00	
12	Anderson, Ted	yderson@blue1	Creasy, Sybil	s.creasy@blue1	4.86	
13	Anderson, Ted	yderson@blue1	Doezie, Tyce	t.doezie@blue1	4.29	
14	Anderson, Ted	yderson@blue1	Mariner, Lawren	mariner@blue1	4.43	
15	Anderson, Ted	yderson@blue1	Molder, Shandy	molder@blue1	4.00	
16	Anderson, Ted	yderson@blue1	Roa, Mark	m.roia@blue1	4.71	
17	Anderson, Ted	yderson@blue1	Tausinga, Amy	a.tausinga@blue1	5.00	
18	Austin, Shannon	austin@blue2	Ligonde, Barbal	b.ligonde@blue2	4.43	
19	Austin, Shannon	austin@blue2	Pitstick, Melissa	m.pitstick@blue2	5.00	
20	Austin, Shannon	austin@blue2	Russell, Anne	a.russell@blue2	4.57	
21	Austin, Shannon	austin@blue2	Webb, Deena	d.webb@blue2	4.00	
22	Backus, Cindy	.backus@blue2	Chirighin, Nata	n.chirighin@blue2	2.14	
23	Backus, Cindy	.backus@blue2	Hannon, Kelly	k.hannon@blue2	4.43	
24	Backus, Cindy	.backus@blue2	Levine, Sharon	s.levine@blue2	4.86	
25	Backus, Cindy	.backus@blue2	Lopez, Cathie	c.lopez@blue2	4.57	
26	Backus, Cindy	.backus@blue2	Rizzo, Brianna	b.rizzo@blue2	1.00	
27	Bagley, Benjamin	.bagley@blue2	Boggs, Mallory	m.boggs@blue2	4.43	
28	Bagley, Benjamin	.bagley@blue2	Takahashi, Dawa	k.takahashi@blue2	5.00	
29	Ball, Elizabeth	liz.ball@blue	Coombs, Mary	m.coombs@blue	5.00	
30	Ball, Elizabeth	liz.ball@blue	Freestone, Julie	j.freestone@blue	5.00	
31	Ball, Elizabeth	liz.ball@blue	Jennings, Debra	d.jennings@blue	5.00	
32	Ball, Elizabeth	liz.ball@blue	Judson, Arlene	a.judson@blue	5.00	
33	Ball, Elizabeth	liz.ball@blue	Kuhn, Aliesha	a.kuhn@blue	4.43	
34	Ball, Elizabeth	liz.ball@blue	Martinez, Britt	b.martinez@blue	4.86	
35	Ball, Elizabeth	liz.ball@blue	Thomas, Angie	a.thomas@blue	5.00	
36	Ball, Nancy	ancy.ball@blue	Anzures, Melis	m.anzures@blue	4.86	
37	Ball, Nancy	ancy.ball@blue	Billings, Corinne	c.billings@blue	5.00	
38	Ball, Nancy	ancy.ball@blue	Cranson, Marly	m.cranson@blue	2.00	

(4) Retrieve the manager engagement scores – Each manager is also listed as an employee, and their engagement scores were calculated in the previous step. Manager engagement scores are retrieved in the following process:

- A new column is inserted after the manager emails and labeled appropriately.
- Calling on the VLOOKUP worksheet function, the code scans the list of employees for each manager's name and pulls their

engagement score into the appropriate box, completing the engagement score calculation process.



	A	B	C	D	E	F	G
1	Manager	ManagerEmail	Engagement Score	Rater	RaterEmail	Engagement Score	
2	Adgate, Andre	a.adgate@blue1	5.00	Dufty, Jessica	a.dufty@blue1	4.43	
3	Adgate, Andre	a.adgate@blue1	5.00	Johnson, Ebony	j.ebonyjohnson@blue1	4.86	
4	Adgate, Andre	a.adgate@blue1	5.00	Menefee, Jenne	j.menefee@blue1	5.00	
5	Allison, Daniel	a.allison@blue1	4.00	Britton, Jason	j.britton@blue1	2.71	
6	Allison, Daniel	a.allison@blue1	4.00	Keller, Devin	d.keller@blue1	4.86	
7	Allison, Daniel	a.allison@blue1	4.00	Kesler, Leia	l.kesler@blue1	4.43	
8	Allison, Daniel	a.allison@blue1	4.00	Perry, Robert	r.perry@blue1	5.00	
9	Allison, Daniel	a.allison@blue1	4.00	Piele, James	j.piele@blue1	5.00	
10	Allison, Daniel	a.allison@blue1	4.00	Thompson, Jenimpson	j.thompson@blue1	5.00	
11	Allison, Daniel	a.allison@blue1	4.00	Venegas, Susarengas	s.susarengas@blue1	4.00	
12	Anderson, Tedy	d.andyerson@blue1	5.00	Creasy, Sybil	s.creasy@blue1	4.86	
13	Anderson, Tedy	d.andyerson@blue1	5.00	Doezie, Tyce	t.doezie@blue1	4.29	
14	Anderson, Tedy	d.andyerson@blue1	5.00	Mariner, Lawren	l.mariner@blue1	4.43	
15	Anderson, Tedy	d.andyerson@blue1	5.00	Molder, Shandy	s.molder@blue1	4.00	
16	Anderson, Tedy	d.andyerson@blue1	5.00	Roia, Mark	m.roia@blue1	4.71	
17	Anderson, Tedy	d.andyerson@blue1	5.00	Tausinga, Amy	a.tausinga@blue1	5.00	
18	Austin, Shanno	a.austin@blue2	5.00	Ligonde, Barbaligonde	b.ligonde@blue2	4.43	
19	Austin, Shanno	a.austin@blue2	5.00	Pitstick, Meliss	m.pitstick@blue2	5.00	
20	Austin, Shanno	a.austin@blue2	5.00	Russell, Anne	a.russell@blue2	4.57	
21	Austin, Shanno	a.austin@blue2	5.00	Webb, Deena	d.webb@blue2	4.00	
22	Backus, Cindy	b.backus@blue2	5.00	Chirighin, Nata	n.chirighin@blue2	2.14	
23	Backus, Cindy	b.backus@blue2	5.00	Hannon, Kelly	k.hannon@blue2	4.43	
24	Backus, Cindy	b.backus@blue2	5.00	Levine, Sharon	s.levine@blue2	4.86	
25	Backus, Cindy	b.backus@blue2	5.00	Lopez, Cathie	c.lelopez@blue2	4.57	
26	Backus, Cindy	b.backus@blue2	5.00	Rizzo, Brianna	b.rizzo@blue2	1.00	
27	Bagley, Benjamin	b.bagley@blue	5.00	Boggs, Mallory	m.boggs@blue	4.43	
28	Bagley, Benjamin	b.bagley@blue	5.00	Takahashi, Dawa	k.takahashi@blue	5.00	
29	Ball, Elizabeth	b.ball@blue	5.00	Coombs, Mary	m.coombs@blue	5.00	
30	Ball, Elizabeth	b.ball@blue	5.00	Freestone, Julie	j.freestone@blue	5.00	
31	Ball, Elizabeth	b.ball@blue	5.00	Jennings, Deb	d.jennings@blue	5.00	
32	Ball, Elizabeth	b.ball@blue	5.00	Judson, Arlene	a.judson@blue	5.00	
33	Ball, Elizabeth	b.ball@blue	5.00	Kuhn, Aliesha	a.kuhn@blue	4.43	
34	Ball, Elizabeth	b.ball@blue	5.00	Martinez, Brittn	b.martinez@blue	4.86	
35	Ball, Elizabeth	b.ball@blue	5.00	Thomas, Angie	a.thomas@blue	5.00	
36	Ball, Nancy E.	b.nancy.ball@blue	5.00	Anzures, Mellis	m.anzures@blue	4.86	
37	Ball, Nancy E.	b.nancy.ball@blue	5.00	Billings, Corinn	c.billings@blue	5.00	
38	Ball, Nancy E.	b.nancy.ball@blue	5.00	Conner, Marissa	m.conner@blue	3.86	

General Engagement Profile Generation

The second task performed by the program is to generate a general engagement profile for the company. This process is initiated when the user clicks the “General Analysis Reports” button on the Analysis tab. This button performs the following steps:

- (1) Insert a sheet of only engagement scores – To remove extraneous data, the code inserts a new worksheet and copies only the names and engagement scores for managers and employees onto the new sheet. This sheet is manipulated through the rest of the process to remove “unqualified” responses according to DecisionWise’s standards.

	A	B	C	D	E
1	Manager	Engagement Score Rater	Engagement Score		
2	Adgate, Andrea	5.00	Dufty, Jessica	4.43	
3	Adgate, Andrea	5.00	Johnson, Ebony	4.86	
4	Adgate, Andrea	5.00	Menefee, Jenn	5.00	
5	Allison, Daniel	4.00	Britton, Jason	2.71	
6	Allison, Daniel	4.00	Keller, Devin	4.86	
7	Allison, Daniel	4.00	Kesler, Leia	4.43	
8	Allison, Daniel	4.00	Perry, Robert	5.00	
9	Allison, Daniel	4.00	Piele, James	5.00	
10	Allison, Daniel	4.00	Thompson, Jen	5.00	
11	Allison, Daniel	4.00	Venegas, Susar	4.00	
12	Anderson, Ted	5.00	Creasy, Sybil	4.86	
13	Anderson, Ted	5.00	Doezie, Tyce	4.29	
14	Anderson, Ted	5.00	Mariner, Lawre	4.43	
15	Anderson, Ted	5.00	Molder, Shandy	4.00	
16	Anderson, Ted	5.00	Roia, Mark	4.71	
17	Anderson, Ted	5.00	Tausinga, Amy	5.00	
18	Austin, Shanno	5.00	Ligonde, Barba	4.43	
19	Austin, Shanno	5.00	Pitstick, Meliss	5.00	
20	Austin, Shanno	5.00	Russell, Anne	4.57	
21	Austin, Shanno	5.00	Webb, Deena L	4.00	
22	Backus, Cindy	5.00	Chirighin, Nata	2.14	
23	Backus, Cindy	5.00	Hannon, Kelly	4.43	
24	Backus, Cindy	5.00	Levine, Sharon	4.86	
25	Backus, Cindy	5.00	Lopez, Cathie L	4.57	
26	Backus, Cindy	5.00	Rizzo, Brianna	1.00	
27	Bagley, Benjamin	5.00	Boggs, Mallory	4.43	
28	Bagley, Benjamin	5.00	Takahashi, Daw	5.00	
29	Ball, Elizabeth	5.00	Coombs, Mary	5.00	
30	Ball, Elizabeth	5.00	Freestone, Juli	5.00	
31	Ball, Elizabeth	5.00	Jennings, Debra	5.00	
32	Ball, Elizabeth	5.00	Judson, Arlene	5.00	
33	Ball, Elizabeth	5.00	Kuhn, Aliesha	4.43	
34	Ball, Elizabeth	5.00	Martinez, Britta	4.86	
35	Ball, Elizabeth	5.00	Thomas, Angie	5.00	
36	Ball, Nancy F.	5.00	Anzures, Melis	4.86	

(2) Clean the data – This portion of code calls a separate subprocedure to clean the data. Due to non-response, some managers and employees do not have an engagement score and must be removed. DecisionWise also only considers managers with three or more subordinates, so the following process is executed:

- The engagement score columns are scanned, and the entire row is deleted for any column containing an “N/A” response.

121	Bowles, Ramea	4.86	Lunt, Andrew	4.57
122	Bowles, Ramea	4.86	Palmer, James	4.00
123	Bowles, Ramea	4.86	Ricci, John	5.00
124	Bowles, Ramea	4.86	Terry, Alissa	5.00
125	Bowles, Ramea	4.86	Zeigler, Isaac	4.86
126	Bradley S. Hopk	N/A	LaPoint, Kelle	5.00
127	Bradley S. Hopk	N/A	Nelson, Melani	4.43
128	Bradley S. Hopk	N/A	Parker, Phil	2.86
129	Browning, Mist	4.00	Aukerman, Alic	4.57
130	Browning, Mist	4.00	Boyles, Jessica	4.86
131	Browning, Mist	4.00	Lathan, Michell	3.86
132	Browning, Mist	4.00	Monroe, Arthur	4.57
133	Byington, Melis	5.00	Beer, Allison	5.00
134	Byington, Melis	5.00	Hill, David M.	4.86
135	Byington, Melis	5.00	Kollman, Jessie	5.00
136	Byington, Melis	5.00	Packer, Amy	5.00
137	Byington, Melis	5.00	Rollheiser, Stev	4.71
138	Byington, Melis	5.00	Washburn, Gav	5.00

123	Bowles, Ramea	4.86	Ricci, John	5.00
124	Bowles, Ramea	4.86	Terry, Alissa	5.00
125	Bowles, Ramea	4.86	Zeigler, Isaac	4.86
126	Browning, Mist	4.00	Aukerman, Alic	4.57
127	Browning, Mist	4.00	Boyles, Jessica	4.86
128	Browning, Mist	4.00	Lathan, Michell	3.86
129	Browning, Mist	4.00	Monroe, Arthur	4.57
130	Byington, Melis	5.00	Beer, Allison	5.00
131	Byington, Melis	5.00	Hill, David M.	4.86
132	Byington, Melis	5.00	Kollman, Jessie	5.00
133	Byington, Melis	5.00	Packer, Amy	5.00
134	Byington, Melis	5.00	Rollheiser, Ste	4.71
135	Byington, Melis	5.00	Washburn, Gav	5.00
136	Call, John N.	5.00	Avery, Jeanne	3.71
137	Call, John N.	5.00	Devlin, Holly B.	4.71
138	Call, John N.	5.00	Gregory, Polly S	5.00

- The code reads each manager name and compares it to the manager name on the previous row. Each unique manager name is inserted into an array.
- The number of employees under each manager is counted by counting the number of occurrences of each manager's name in the "Manager Name" column. This number is placed in an array.
- A loop goes through the employee numbers array and deletes all managers on the worksheet who have fewer than 3 subordinates.

(3) Count the number of managers – DecisionWise includes the number of managers in their engagement profile analysis. They also want to count the number of managers within each engagement category. The number of managers in the company are counted using the following steps:

- A new worksheet is created and all manager names and engagement scores are placed in it.

The screenshot shows a Microsoft Excel spreadsheet. The ribbon at the top has tabs for FILE, HOME, INSERT, and PAGE LAYOUT. Under the HOME tab, there are icons for Calculate, General, Gender Analysis Reports, and Engagement Reports. The Engagement tab is selected. The main area displays a table with two columns: 'Manager' and 'Engagement Score'. The 'Manager' column contains 36 entries, and the 'Engagement Score' column contains 36 entries, all of which are 5.00. The table is titled 'Engagement Scores' and is located under the 'Engagement' tab. The status bar at the bottom shows 'READY'.

	A	B
1	Manager	Engagement Score
2	Adgate, Andrea	5.00
3	Adgate, Andrea	5.00
4	Adgate, Andrea	5.00
5	Allison, Daniel	4.00
6	Allison, Daniel	4.00
7	Allison, Daniel	4.00
8	Allison, Daniel	4.00
9	Allison, Daniel	4.00
10	Allison, Daniel	4.00
11	Allison, Daniel	4.00
12	Anderson, Ted	5.00
13	Anderson, Ted	5.00
14	Anderson, Ted	5.00
15	Anderson, Ted	5.00
16	Anderson, Ted	5.00
17	Anderson, Ted	5.00
18	Austin, Shanno	5.00
19	Austin, Shanno	5.00
20	Austin, Shanno	5.00
21	Austin, Shanno	5.00
22	Backus, Cindy	5.00
23	Backus, Cindy	5.00
24	Backus, Cindy	5.00
25	Backus, Cindy	5.00
26	Backus, Cindy	5.00
27	Ball, Elizabeth	5.00
28	Ball, Elizabeth	5.00
29	Ball, Elizabeth	5.00
30	Ball, Elizabeth	5.00
31	Ball, Elizabeth	5.00
32	Ball, Elizabeth	5.00
33	Ball, Elizabeth	5.00
34	Ball, Nancy E.	5.00
35	Ball, Nancy E.	5.00
36	Ball, Nancy F.	5.00

- The code compares each row to the previous row. If the names match, the row is deleted. This leaves each manager in the sheet one time.

	A	B
1	Manager	Engagement Score
2	Adgate, Andrea	5.00
3	Allison, Daniel	4.00
4	Anderson, Teddy	5.00
5	Austin, Shannon	5.00
6	Backus, Cindy	5.00
7	Ball, Elizabeth	5.00
8	Ball, Nancy E.	5.00
9	Barker, Richard	5.00
10	Barlow, Jennifer	5.00
11	Beals, Michael	5.00
12	Beck, Scott M.	5.00
13	Beckman, Cort	4.86
14	Beer, Allison	5.00
15	Beiser, Jeff G.	5.00
16	Bennett, Matthew	5.00
17	Benson, Selena	5.00
18	Berkowicz, Anna	4.57
19	Bilic, Imaan	4.71
20	Black, Tyler T.	5.00
21	Blackburn, Sam	5.00
22	Bowers, Brooke	5.00
23	Bowles, Ramea	4.86
24	Browning, Misty	4.00
25	Byington, Melis	5.00
26	Call, John N.	5.00
27	Call, Justin	5.00
28	Cano, Alexander	5.00
29	Carpenter, Marissa	5.00
30	Cisar, Paul J.	4.86
31	Clarke, Drew J.	5.00
32	Cleary, Kimberly	4.57
33	Cleverly, Chad	5.00
34	Coleman, Eric	4.14
35	Collier, Susan H.	5.00
36	Cosby, Erica L.	5.00

- The code enters Select mode to determine which engagement category each manager fits in.
- A new “Reports” worksheet is created and the number of managers within each engagement category is placed in the appropriate cell.

A	B	C	D	E
Manager Category	Employee Category	Count	Percentage	
1 Fully Engaged	Fully Engaged			
2 (n=183)	Key Contributor			
3	Opportunity Group			
4	Fully Disengaged			
5	Fully Engaged			
6 Key Contributor	Key Contributor			
7 (n=20)	Opportunity Group			
8	Fully Disengaged			
9	Fully Engaged			
10 Opportunity Group	Fully Engaged			
11 (n=4)	Key Contributor			
12	Opportunity Group			
13	Fully Disengaged			
14 Fully Disengaged	Fully Engaged			
15 (n=1)	Key Contributor			
16	Opportunity Group			
17	Fully Disengaged			
18				

(4) Count the number of employees – Employees will now be classified according to their own engagement score and the engagement score of their manager so that correlation can be shown. The following process is run:

- The code enters Select mode to place the employees within their appropriate category.
- Using an ElseIf structure, the manager engagement category is determined for each employee within his or her engagement category.
- The counts for each category are inserted in the proper cells on the “Reports” tab.

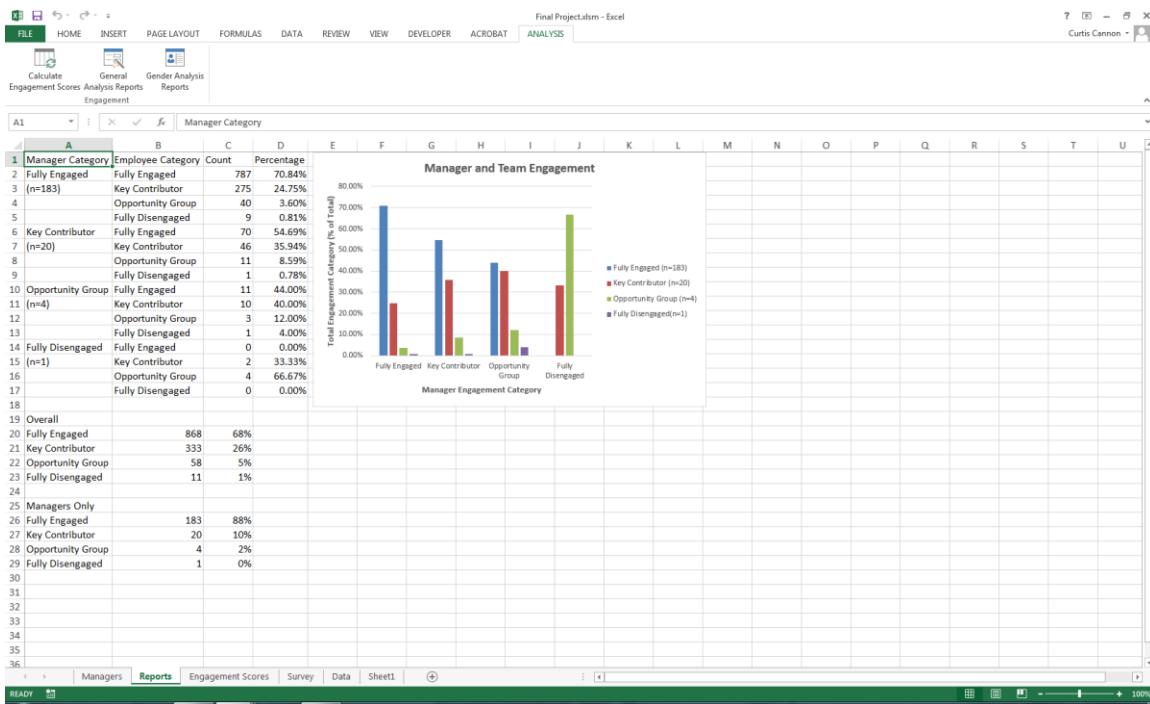
A	B	C	D	E
Manager Category	Employee Category	Count	Percentage	
1 Fully Engaged	Fully Engaged	787		
2 (n=183)	Key Contributor	275		
3	Opportunity Group	40		
4	Fully Disengaged	9		
5	Fully Engaged			
6 Key Contributor	Fully Engaged	70		
7 (n=20)	Key Contributor	46		
8	Opportunity Group	11		
9	Fully Disengaged	1		
10 Opportunity Group	Fully Engaged	11		
11 (n=4)	Key Contributor	10		
12	Opportunity Group	3		
13	Fully Disengaged	1		
14 Fully Disengaged	Fully Engaged	0		
15 (n=1)	Key Contributor	2		
16	Opportunity Group	4		
17	Fully Disengaged	0		
18				
19 Overall				
20 Fully Engaged		868		
21 Key Contributor		333		
22 Opportunity Group		58		
23 Fully Disengaged		11		
24				
25 Managers Only				
26 Fully Engaged		183		
27 Key Contributor		20		
28 Opportunity Group		4		
29 Fully Disengaged		1		
30				

(5) Calculate percentages – Engagement profiles are generated using percentages. The next block of code calculates the percentage of employees within each engagement category for each manager category. This is done using simple algebraic constructions with the variables each count was assigned to.

Engagement				
A1	:	X	✓	f _c
Manager Category				
A	B	C	D	E
1 Manager Category	Employee Category	Count	Percentage	
2 Fully Engaged	Fully Engaged	787	70.84%	
3 (n=183)	Key Contributor	275	24.75%	
4	Opportunity Group	40	3.60%	
5	Fully Disengaged	9	0.81%	
6 Key Contributor	Fully Engaged	70	54.69%	
7 (n=20)	Key Contributor	46	35.94%	
8	Opportunity Group	11	8.59%	
9	Fully Disengaged	1	0.78%	
10 Opportunity Group	Fully Engaged	11	44.00%	
11 (n=4)	Key Contributor	10	40.00%	
12	Opportunity Group	3	12.00%	
13	Fully Disengaged	1	4.00%	
14 Fully Disengaged	Fully Engaged	0	0.00%	
15 (n=1)	Key Contributor	2	33.33%	
16	Opportunity Group	4	66.67%	
17	Fully Disengaged	0	0.00%	
18				
19 Overall				
20 Fully Engaged		868	68%	
21 Key Contributor		333	26%	
22 Opportunity Group		58	5%	
23 Fully Disengaged		11	1%	
24				
25 Managers Only				
26 Fully Engaged		183	88%	
27 Key Contributor		20	10%	
28 Opportunity Group		4	2%	
29 Fully Disengaged		1	0%	
30				
31				

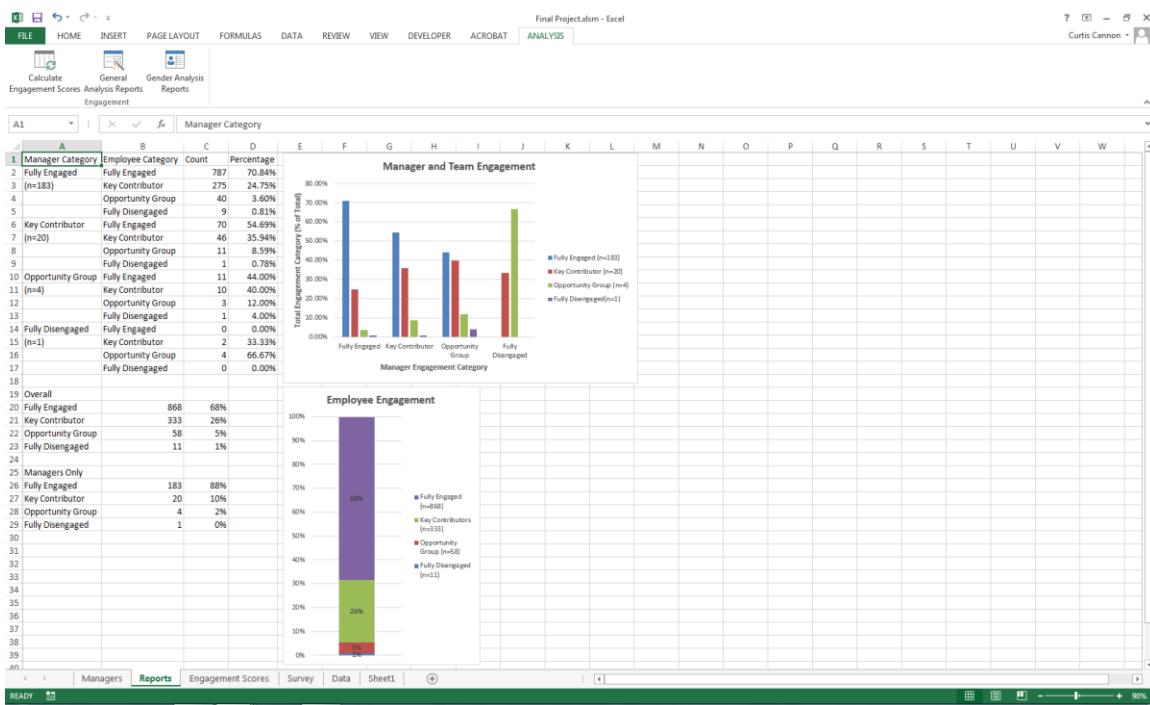
(6) Insert a general engagement profile graph – DecisionWise has a standard graph to illustrate the engagement profile for a client organization, with the number of employees within each engagement category for each manager engagement category shown. The graph is generated through the following steps:

- A column chart is inserted using code drawn from recording myself inserting the appropriate type of chart.
- The code has been altered to pull the appropriate values for the graph from the correct cell location on the spreadsheet.
- The format of the graph is altered to display the proper titles.
- The size of the graph is altered to be the standard size for DecisionWise.
- The code moves the graph next to the data.



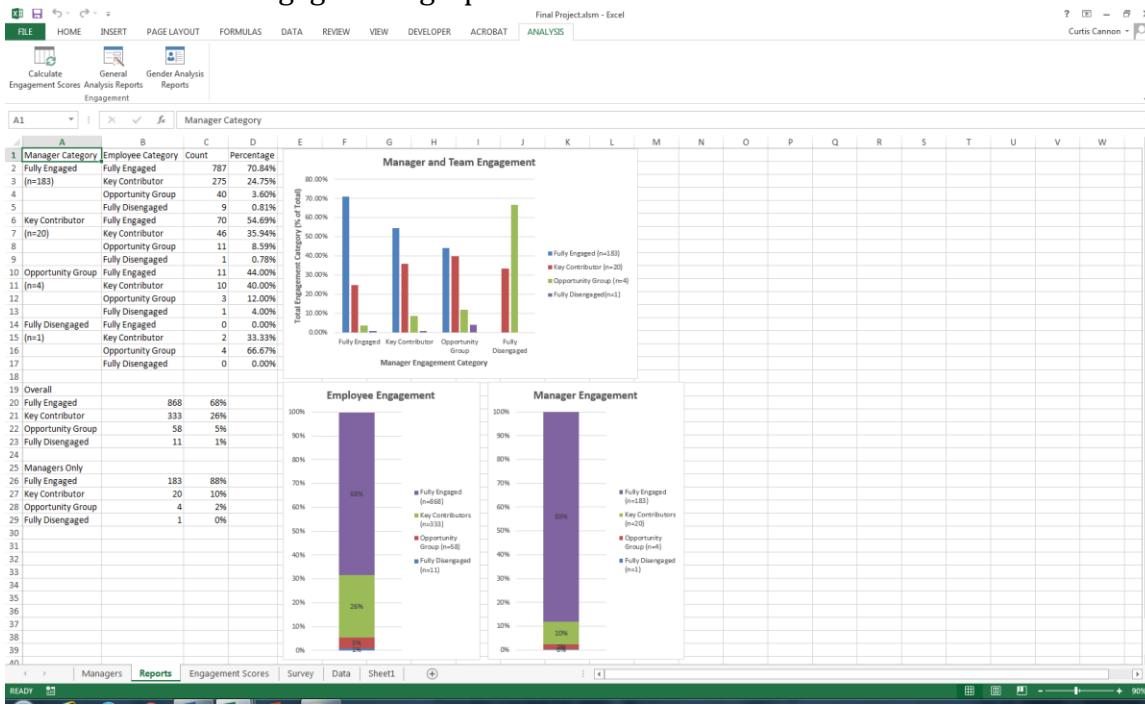
(7) Insert an overall engagement graph – The second graph shows the general engagement profile for the organization, regardless of manager status. This graph follows these steps:

- A 100% column chart is inserted using code from a recorded macro.
- The aggregate data is pulled from the appropriate cells on the “Reports” worksheet.
- The format of the graph is altered to display the proper titles according to DecisionWise standards.
- The size of the graph is altered, and the graph is placed below the general engagement profile graph.



(8) Insert a manager engagement profile – DecisionWise also generate a manager-only engagement graph to compare to the overall engagement graph. This graph is inserted as follows:

- A 100% column chart is inserted using code from a recorded macro.
- The manager data is pulled from the “Managers” tab and placed in the appropriate cells on the “Reports” worksheet.
- The graph draws the values from the appropriate cells on the “Reports” tab.
- The format of the graph is altered to display the proper titles according to DecisionWise standards.
- The size of the graph is altered, and the graph is placed below the general engagement profile graph and next to the overall engagement graph.



(9) Delete sheets – All sheets that were created in this process are deleted, leaving only the “Reports” sheet with the company engagement profile.

Gender-Specific Engagement Profile Generation

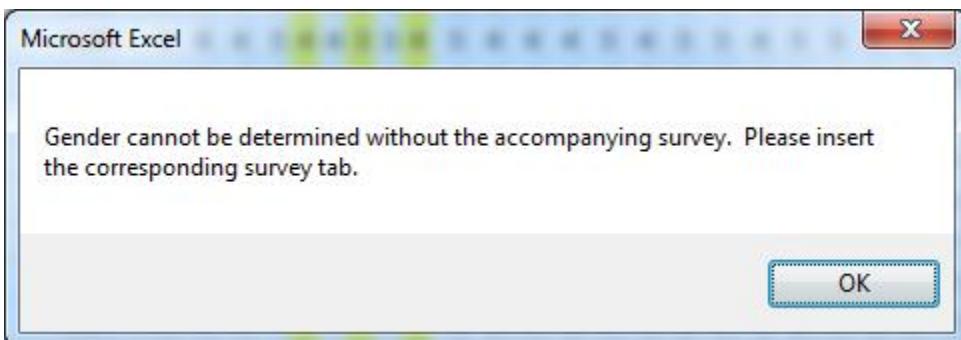
The third task performed by the program is to generate an engagement profile based on manager gender to determine if there is a difference in the engagement levels of employees of male and female managers. This process can be initiated by pressing the “Gender Analysis Reports” button on the Analysis tab. The process is as follows:

- (1) Insert a new sheet – To remove extraneous data, a new sheet is inserted with names and engagement scores for both employees and managers copied into it from the “Data” sheet.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	Manager	Engagement Score	Rated	Engagement Score																	
2	Adgate, Andrei	5.00	Duffy, Jessica	4.43																	
3	Adgate, Andrei	5.00	Johnson, Ebony	4.86																	
4	Adgate, Andrei	5.00	Maneehee, Jeon	5.00																	
5	Allison, Daniel	4.00	Anderson, Teff	2.71																	
6	Allison, Daniel	4.00	Keller, Devin	4.46																	
7	Allison, Daniel	4.00	Kester, Leia	4.43																	
8	Allison, Daniel	4.00	Perry, Robert	5.00																	
9	Allison, Daniel	4.00	Piele, James	5.00																	
10	Allison, Daniel	4.00	Thompson, Jen	5.00																	
11	Allison, Daniel	4.00	Wedges, Sophie	4.00																	
12	Anderson, Teff	5.00	Creasy, Sybil	4.86																	
13	Anderson, Teff	5.00	Doezile, Tyce	4.29																	
14	Anderson, Teff	5.00	Mariner, Laverne	4.43																	
15	Anderson, Teff	5.00	Molder, Shandi	4.00																	
16	Anderson, Teff	5.00	Reed, Kaitlyn	4.71																	
17	Anderson, Teff	5.00	Tauzinga, Amy	5.00																	
18	Austin, Shanno	5.00	Lugunde, Barba	4.43																	
19	Austin, Shanno	5.00	Pritchett, Melliss	5.00																	
20	Austin, Shanno	5.00	Russell, Anne	4.57																	
21	Austin, Shanno	5.00	Webb, Debbie L	4.00																	
22	Austin, Shanno	5.00	Webb, Debbie N	3.14																	
23	Backus, Cindy	5.00	Hannan, Kelly	4.43																	
24	Backus, Cindy	5.00	Levine, Sharie	4.86																	
25	Backus, Cindy	5.00	Lopez, Cathie L	4.57																	
26	Backus, Cindy	5.00	Rizzo, Brionna	1.00																	
27	Balding, Benjamin	3.00	Shelley, Courtney	4.43																	
28	Balding, Benjamin	5.00	Takashita, Daisi	5.00																	
29	Ball, Elizabeth	5.00	Coombis, Mary	5.00																	
30	Ball, Elizabeth	5.00	Freestrome, Juli	5.00																	
31	Ball, Elizabeth	5.00	Jennings, Debra	5.00																	
32	Ball, Elizabeth	5.00	Kuhn, Aliesha T	4.43																	
33	Ball, Elizabeth	5.00	Kuhn, Aliesha T	4.43																	
34	Ball, Elizabeth	5.00	Martinez, Brittni	4.86																	
35	Ball, Elizabeth	5.00	Thomas, Angie	5.00																	
36	Ball, Nancy F.	5.00	Anonrus, Metric	4.86																	

- (2) Determine the gender for each employee – The following process scours the survey data to find the gender response for each employee:

- The gender question is different on each survey, so the code first scans the “Survey” tab and finds the question number of the gender survey question.
- If the “Survey” tab is not available, a message box prompts the user to insert the appropriate survey into the workbook.



- Using the gender question number determined in the previous step, the code scans the data and finds the column with the gender responses. This column is then copied into the new sheet with the engagement scores and names.

A	B	C	D	E	F
1 Manager	Engagement Score Rater	Engagement Score	Gender		
2 Adgate, Andrea	5.00 Duffy, Jessica	4.43	2		
3 Adgate, Andrea	5.00 Johnson, Ebony	4.86	2		
4 Adgate, Andrea	5.00 Menefee, Jenn	5.00	2		
5 Allison, Daniel	4.00 Britton, Jason	2.71	1		
6 Allison, Daniel	4.00 Keller, Devin	4.86	1		
7 Allison, Daniel	4.00 Kesler, Leila	4.43	2		
8 Allison, Daniel	4.00 Perry, Robert	5.00	1		
9 Allison, Daniel	4.00 Piele, James	5.00	1		
10 Allison, Daniel	4.00 Thompson, Jen	5.00	2		
11 Allison, Daniel	4.00 Venegas, Susar	4.00	2		
12 Anderson, Ted	5.00 Creasy, Sybil	4.86	2		
13 Anderson, Ted	5.00 Doezele, Tyce	4.29	1		
14 Anderson, Ted	5.00 Mariner, Lawre	4.43	1		
15 Anderson, Ted	5.00 Molder, Shandy	4.00	2		
16 Anderson, Ted	5.00 Roia, Mark	4.71	1		
17 Anderson, Ted	5.00 Tausinga, Amy	5.00	2		
18 Austin, Shanno	5.00 Ligonde, Barba	4.43	2		
19 Austin, Shanno	5.00 Pitstick, Meliss	5.00	2		
20 Austin, Shanno	5.00 Russell, Anne	4.57	2		
21 Austin, Shanno	5.00 Webb, Deena L	4.00	2		
22 Backus, Cindy	5.00 Chirighin, Nata	2.14	2		
23 Backus, Cindy	5.00 Hannon, Kelly	4.43	2		
24 Backus, Cindy	5.00 Levine, Sharon	4.86	2		
25 Backus, Cindy	5.00 Lopez, Cathie L	4.57	2		
26 Backus, Cindy	5.00 Rizzo, Brianna	1.00	2		
27 Bagley, Benjamin	5.00 Boggs, Mallory	4.43	2		
28 Bagley, Benjamin	5.00 Takahashi, Daw	5.00	2		
29 Ball, Elizabeth	5.00 Coombs, Mary I	5.00	2		
30 Ball, Elizabeth	5.00 Freestone, Juli	5.00	2		
31 Ball, Elizabeth	5.00 Jennings, Debo	5.00	2		
32 Ball, Elizabeth	5.00 Judson, Arlene	5.00	2		
33 Ball, Elizabeth	5.00 Kuhn, Aliesha N	4.43	2		
34 Ball, Elizabeth	5.00 Martinez, Britt	4.86	2		
35 Ball, Elizabeth	5.00 Thomas, Angie	5.00	2		
36 Ball, Nancy F.	5.00 Anzures, Melis	4.86	2		

- Because gender is listed as a number in the survey responses, the code converts the numbers to the appropriate gender.

A	B	C	D	E	Gender
1 Manager	Engagement Score Rater	Engagement Score			
2 Adgate, Andrea	5.00 Duffy, Jessica	4.43	F		
3 Adgate, Andrea	5.00 Johnson, Ebony	4.86	F		
4 Adgate, Andrea	5.00 Menefee, Jenn	5.00	F		
5 Allison, Daniel	4.00 Britton, Jason	2.71	M		
6 Allison, Daniel	4.00 Keller, Devin	4.86	M		
7 Allison, Daniel	4.00 Kesler, Leila	4.43	F		
8 Allison, Daniel	4.00 Perry, Robert	5.00	M		
9 Allison, Daniel	4.00 Piele, James	5.00	M		
10 Allison, Daniel	4.00 Thompson, Jen	5.00	F		
11 Allison, Daniel	4.00 Venegas, Susar	4.00	F		
12 Anderson, Ted	5.00 Creasy, Sybil	4.86	F		
13 Anderson, Ted	5.00 Doezele, Tyce	4.29	M		
14 Anderson, Ted	5.00 Mariner, Lawre	4.43	M		
15 Anderson, Ted	5.00 Molder, Shandy	4.00	F		
16 Anderson, Ted	5.00 Roia, Mark	4.71	M		
17 Anderson, Ted	5.00 Tausinga, Amy	5.00	F		
18 Austin, Shanno	5.00 Ligonde, Barba	4.43	F		
19 Austin, Shanno	5.00 Pitstick, Meliss	5.00	F		
20 Austin, Shanno	5.00 Russell, Anne	4.57	F		
21 Austin, Shanno	5.00 Webb, Deena L	4.00	F		
22 Backus, Cindy	5.00 Chirighin, Nata	2.14	F		
23 Backus, Cindy	5.00 Hannon, Kelly	4.43	F		
24 Backus, Cindy	5.00 Levine, Sharon	4.86	F		
25 Backus, Cindy	5.00 Lopez, Cathie L	4.57	F		
26 Backus, Cindy	5.00 Rizzo, Brianna	1.00	F		
27 Bagley, Benjamin	5.00 Boggs, Mallory	4.43	F		
28 Bagley, Benjamin	5.00 Takahashi, Daw	5.00	F		
29 Ball, Elizabeth	5.00 Coombs, Mary I	5.00	F		
30 Ball, Elizabeth	5.00 Freestone, Juli	5.00	F		
31 Ball, Elizabeth	5.00 Jennings, Debo	5.00	F		
32 Ball, Elizabeth	5.00 Judson, Arlene	5.00	F		
33 Ball, Elizabeth	5.00 Kuhn, Aliesha N	4.43	F		
34 Ball, Elizabeth	5.00 Martinez, Britt	4.86	F		
35 Ball, Elizabeth	5.00 Thomas, Angie	5.00	F		
36 Ball, Nancy F.	5.00 Anzures, Melis	4.86	F		

- Manager's gender is found using the VLOOKUP worksheet function again. A new column is created with the manager's gender listed.

	A	B	C	D	E	F	G
1	Manager	Engagement Score	Gender	Rater	Engagement Score	Gender	
2	Adgate, Andrea	5.00	F	Dufty, Jessica	4.43	F	
3	Adgate, Andrea	5.00	F	Johnson, Ebony	4.86	F	
4	Adgate, Andrea	5.00	F	Menehee, Jenn	5.00	F	
5	Allison, Daniel	4.00	M	Britton, Jason	2.71	M	
6	Allison, Daniel	4.00	M	Keller, Devin	4.86	M	
7	Allison, Daniel	4.00	M	Kesler, Leah	4.43	F	
8	Allison, Daniel	4.00	M	Perry, Robert	5.00	M	
9	Allison, Daniel	4.00	M	Piele, James	5.00	M	
10	Allison, Daniel	4.00	M	Thompson, Jen	5.00	F	
11	Allison, Daniel	4.00	M	Venezas, Susar	4.00	F	
12	Anderson, Ted	5.00	M	Creasy, Sybil	4.86	F	
13	Anderson, Ted	5.00	M	Doezie, Tyce	4.29	M	
14	Anderson, Ted	5.00	M	Mariner, Lawrence	4.43	M	
15	Anderson, Ted	5.00	M	Molder, Shandi	4.00	F	
16	Anderson, Ted	5.00	M	Rola, Mark	4.71	M	
17	Anderson, Ted	5.00	M	Tausinga, Amy	5.00	F	
18	Austin, Shanno	5.00	F	Ligonde, Barbra	4.43	F	
19	Austin, Shanno	5.00	F	Pitstick, Melissa	5.00	F	
20	Austin, Shanno	5.00	F	Russell, Anne	4.57	F	
21	Austin, Shanno	5.00	F	Webb, Deena L	4.00	F	
22	Backus, Cindy	5.00	F	Chirighin, Nata	2.14	F	
23	Backus, Cindy	5.00	F	Hannon, Kelly	4.43	F	
24	Backus, Cindy	5.00	F	Levine, Sharon	4.86	F	
25	Backus, Cindy	5.00	F	Lopez, Cathie L	4.57	F	
26	Backus, Cindy	5.00	F	Rizzo, Brianna	1.00	F	
27	Ball, Elizabeth	5.00	F	Coombs, Mary	5.00	F	
28	Ball, Elizabeth	5.00	F	Freestone, Juli	5.00	F	
29	Ball, Elizabeth	5.00	F	Jennings, Debra	5.00	F	
30	Ball, Elizabeth	5.00	F	Judson, Arlene	5.00	F	
31	Ball, Elizabeth	5.00	F	Kuhn, Allesha	4.43	F	
32	Ball, Elizabeth	5.00	F	Martinez, Britt	4.86	F	
33	Ball, Elizabeth	5.00	F	Thomas, Angie	5.00	F	
34	Ball, Nancy E.	5.00	F	Anzures, Melissa	4.86	F	
35	Ball, Nancy E.	5.00	F	Billings, Corinn	5.00	F	
36	Ball, Nancy E.	5.00	F	Creason, Mary	3.86	F	

- (3) Clean the data – The code here calls the same clean-up subprocedure used previously to remove all "N/A" responses and any managers with fewer than three subordinates.
- (4) Separate male and female managers – In order to create separate analyses, male and female managers are separated as follows:
- A new sheet is created and all data is copied into it.
 - The code deletes all rows of male managers from the new sheet and all rows of female managers from the sheet created in step 1. The sheets are renamed accordingly.

26	Barlow, Jennifer	5.00	F	Hunter, Gavin	4.14	M
27	Barlow, Jennifer	5.00	F	Kammeyer, Paul	4.43	M
28	Barlow, Jennifer	5.00	F	McNeil, Ian	5.00	M
29	Barlow, Jennifer	5.00	F	Ortega, Kris	4.14	M
30	Barlow, Jennifer	5.00	F	Sutherland, Hall	4.57	F
31	Beer, Allison	5.00	F	Bennett, Matth	5.00	M
32	Beer, Allison	5.00	F	Fessler, Kymber	5.00	F
33	Beer, Allison	5.00	F	Huff, Patrick L.	5.00	M
34	Beer, Allison	5.00	F	Payne, Lisa A.	5.00	F
35	Benson, Selena	5.00	F	Ackerman, Mar	3.86	F
36	Benson, Selena	5.00	F	Cameron, Ian	5.00	M

- (5) Count the number of managers – Using the same process as in the general engagement profile (see step 3 of the *General Engagement Profile Generation* procedure), the number of male managers within each engagement category is determined. This calculation is also done for female managers, and the data is placed on a new “Gender Reports” tab.
- (6) Count the number of employees – Using the same process outlined in step 4 of the *General Engagement Profile Generation* procedure, the number of employees within each engagement category is counted, first for male managers, then for female managers. An array is used to store the counts. These values are then placed on the “Gender Reports” tab in the appropriate boxes.

Male Managers

Manager Category	Employee Category	Count	Percentage
Fully Engaged (n=85)	Key Contributor	59	
	Opportunity Group	21	
	Fully Disengaged	4	
Key Contributor (n=11)	Fully Engaged	5	
	Key Contributor	4	
	Opportunity Group	2	
	Fully Disengaged	0	
Opportunity Group (n=3)	Fully Engaged	2	
	Key Contributor	0	
	Opportunity Group	0	
	Fully Disengaged	1	
Fully Disengaged (n=1)	Fully Engaged	0	
	Key Contributor	1	
	Opportunity Group	0	
	Fully Disengaged	0	

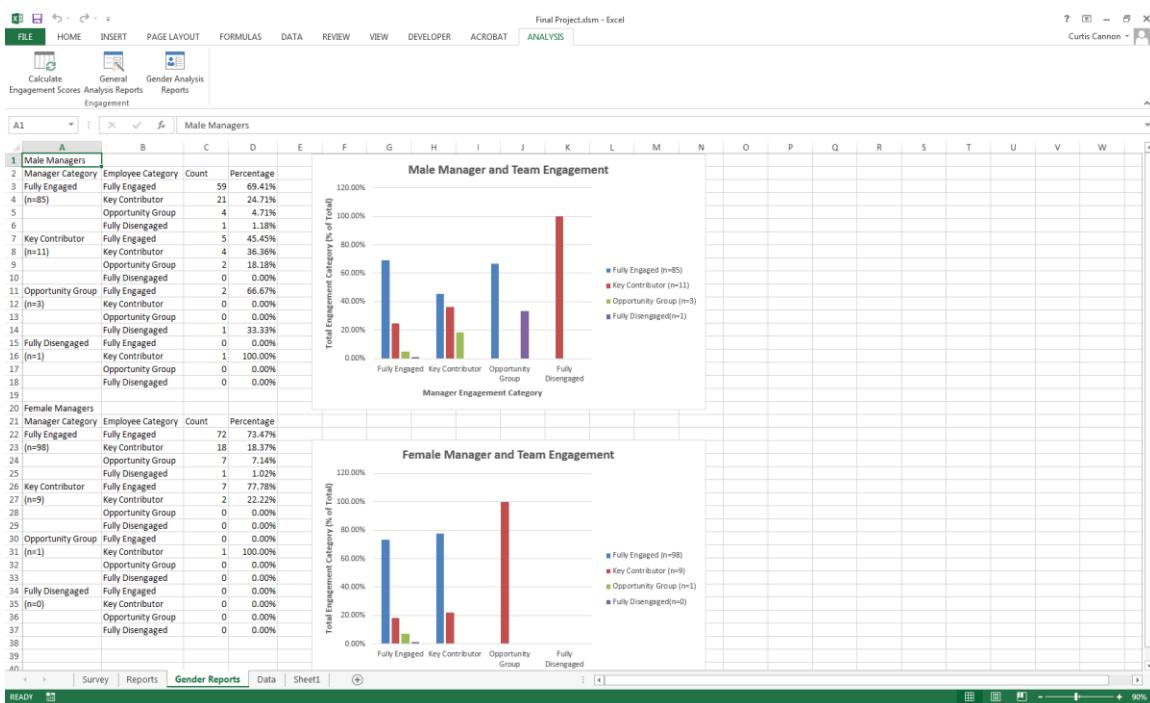
Female Managers

Manager Category	Employee Category	Count	Percentage
Fully Engaged (n=98)	Fully Engaged	72	
	Key Contributor	18	
	Opportunity Group	7	
	Fully Disengaged	1	
Key Contributor (n=9)	Fully Engaged	7	
	Key Contributor	2	
	Opportunity Group	0	
	Fully Disengaged	0	
Opportunity Group (n=1)	Fully Engaged	0	
	Key Contributor	1	
	Opportunity Group	0	
	Fully Disengaged	0	
Fully Disengaged (n=0)	Fully Engaged	0	
	Key Contributor	0	
	Opportunity Group	0	
	Fully Disengaged	0	

- (7) Calculate percentages – The percentages of employees within each engagement category are calculated using simple algebraic expressions in the code and the count variables from the appropriate arrays created in step 6.

Male Managers					
	Manager Category	Employee Category	Count	Percentage	
1	Manager	Managers	59	69.41%	
2	Fully Engaged	Fully Engaged	59	69.41%	
3	(n=85)	Key Contributor	21	24.71%	
4		Opportunity Group	4	4.71%	
5		Fully Disengaged	1	1.18%	
6					
7	Key Contributor	Fully Engaged	5	45.45%	
8	(n=11)	Key Contributor	4	36.36%	
9		Opportunity Group	2	18.18%	
10		Fully Disengaged	0	0.00%	
11	Opportunity Group	Fully Engaged	2	66.67%	
12	(n=3)	Key Contributor	0	0.00%	
13		Opportunity Group	0	0.00%	
14		Fully Disengaged	1	33.33%	
15	Fully Disengaged	Fully Engaged	0	0.00%	
16	(n=1)	Key Contributor	1	100.00%	
17		Opportunity Group	0	0.00%	
18		Fully Disengaged	0	0.00%	
19					
20	Female Managers				
21	Manager Category	Employee Category	Count	Percentage	
22	Fully Engaged	Fully Engaged	72	73.47%	
23	(n=98)	Key Contributor	18	18.37%	
24		Opportunity Group	7	7.14%	
25		Fully Disengaged	1	1.02%	
26	Key Contributor	Fully Engaged	7	77.78%	
27	(n=9)	Key Contributor	2	22.22%	
28		Opportunity Group	0	0.00%	
29		Fully Disengaged	0	0.00%	
30	Opportunity Group	Fully Engaged	0	0.00%	
31	(n=1)	Key Contributor	1	100.00%	
32		Opportunity Group	0	0.00%	
33		Fully Disengaged	0	0.00%	
34	Fully Disengaged	Fully Engaged	0	0.00%	
35	(n=0)	Key Contributor	0	0.00%	
36		Opportunity Group	0	0.00%	
37		Fully Disengaged	0	0.00%	
38					

(8) Generate the graphs – A graph of the same format as the general engagement profile graph is generated for both male managers and female managers, following the steps outlined in step 6 of the *General Engagement Profile Generation* procedure.



(9) Delete sheets – The sheets created of male and female managers are deleted, leaving only the “Gender Reports” sheet in the workbook.

Learning and Conceptual Difficulties

This project was a fantastic learning experience. I did an internship with DecisionWise and had to complete this survey analysis manually, so I really enjoyed automating the process. The first major lesson I learned in completing this project was that nearly every process can be automated in Excel, but sometimes a little creativity is required in determining how to do this automation. For example, when I was coding the VLOOKUP function for the manager gender, I ran into a challenge trying to use the same clean-up subprocedure that I had used for the previous analysis since I had an extra row of data. However, after some thought, I solved the problem by simply putting the data in a different column, then cutting and pasting the column into the right place after running the clean-up. This taught me that any problem can be solved with a little creativity.

I also learned the importance of isolating the problem and trial and error. With several pieces of my code, I was able to get most of what I wanted, but it was not exactly what I hoped for. I did not want to keep running the entire code over and over again, so I took the specific portion I was working on and put it in its own subprocedure. This allowed me to test just that portion of the code to make sure it worked. Because of this, I was able to isolate exactly the problem I was facing and use the process of trial and error to produce the exact results I wanted.

A third learning point from this project was the importance of continuous review. When I first began writing my code, I had several blocks of very lengthy code to accomplish a simple task. As I continued writing, I figured out other ways to accomplish the same thing that were much simpler than the way I originally coded it. I was able to go back and revise my code to accomplish the same thing in fewer lines. This process helped me to write much better code as I went along because I was able to improve along the way. The more experience I have with coding, the better I will become at it. It will be important for me to revisit previous code I have written to see if there are ways I can improve it with new things that I have learned.

I did not encounter any major conceptual difficulties in this project. Having done this process manually several times, I knew exactly what needed to be accomplished. I had to think hard to figure out several of the parts, but using the processes of continuous review, isolating the problem, and trial and error, I was able to figure out how to do everything I wanted to. This project turned out very successful.

Assistance

Other than the textbook and a few web searches, I did not receive any assistance on this project.