1. Multiple regression analysis and multiple discriminant analysis are very similar techniques. Both involve plotting the independent variable against the dependent or group variable. They allow us to examine the effects of the independent variables on the dependent variable. More importantly, we are able to see the power or extent to which each independent variable has an effect on the dependent variable. However, there is one main difference between the two. For regression analysis, the dependent variable is metric, but for discriminant analysis the dependent variable is nonmetric -- it is categorical. Examples of this could include gender, age group, cities, job, color, etc… anything categorical. There is no specific limit for the number of categories, there just needs to be at least two. Thus, while regression analysis allows us to understand our data and predict specific values for the dependent variables, the discriminant equation allows us to understand the differences between groups and predict which group a certain sample will belong to.
2.
    a. X4 Region (nonmetric)
       X6 Product Quality (metric)
       X7 E-Commerce Activities/Website (metric)
       X8 Technical Support (metric)
       X9 Complaint Resolution (metric)
       X10 Advertising (metric)
       X11 Product Line (metric)
       X12 Salesforce Image (metric)
       X13 Competitive Pricing (metric)
       X14 Warranty & Claims (metric)
       X15 New Products (metric)
       X16 Ordering & Billing (metric)
       X17 Price Flexibility (metric)
       X18 Delivery Speed (metric)
    b. 2 groups in X4
    c. Linear discriminant function:

Linear Discriminant Function for x4			
Variable	**Label**	**0**	**1**
Constant		-191.92135	-194.33409
x6	x6	8.32797	7.65248
x7	x7	4.20485	1.20101
x8	x8	-2.06370	-2.09852
x9	x9	-3.62428	-3.60295
x10	x10	-1.62571	-2.03642
x11	x11	58.68681	58.34999
x12	x12	1.69711	4.70052
x13	x13	3.64274	4.22872
x14	x14	13.54926	13.38761
x15	x15	0.00591	0.28730
x16	x16	-2.84573	-2.25264

Linear Discriminant Function for x4			
Variable	**Label**	**0**	**1**
x17	x17	62.42839	64.51335
x18	x18	-101.40047	-103.57123

Training data - 5 misclassified results: Obs 3, 22, 38, 60, 94
Probability of misclassification = .05

Testing data - 13 misclassified results: Obs 3, 5, 11, 21, 22, 24, 32, 38, 60, 74, 86, 90, 94
Probability of misclassification = .13

All other data attached below.

Total Sample Size	100	**DF Total**	99
Variables	13	**DF Within Classes**	98
Classes	2	**DF Between Classes**	1

Number of Observations Read	100
Number of Observations Used	100

Class Level Information

x4	Variable Name	Frequency	Weight	Proportion	Prior Probability
0	0	39	39.0000	0.390000	0.390000
1	1	61	61.0000	0.610000	0.610000

Pooled Covariance Matrix Information

Covariance Matrix Rank	Natural Log of the Determinant of the Covariance Matrix
13	-8.01842

Squared Distance to x4		
From x4	**0**	**1**
0	0	7.45466
1	7.45466	0

F Statistics, NDF=13, DDF=86 for Squared Distance to x4		
From x4	**0**	**1**
0	0	11.97157
1	11.97157	0

Prob > Mahalanobis Distance for Squared Distance to x4		
From x4	**0**	**1**
0	1.0000	<.0001
1	<.0001	1.0000

Generalized Squared Distance to x4		
From x4	**0**	**1**
0	1.88322	8.44325
1	9.33787	0.98859

Linear Discriminant Function for x4			
Variable	**Label**	**0**	**1**
Constant		-191.92135	-194.33409
x6	x6	8.32797	7.65248
x7	x7	4.20485	1.20101
x8	x8	-2.06370	-2.09852
x9	x9	-3.62428	-3.60295
x10	x10	-1.62571	-2.03642
x11	x11	58.68681	58.34999
x12	x12	1.69711	4.70052
x13	x13	3.64274	4.22872
x14	x14	13.54926	13.38761
x15	x15	0.00591	0.28730
x16	x16	-2.84573	-2.25264

Linear Discriminant Function for x4			
Variable	**Label**	**0**	**1**
x17	x17	62.42839	64.51335
x18	x18	-101.40047	-103.57123

Classification Results for Calibration Data: WORK.IMPORT
Resubstitution Results using Linear Discriminant Function

Posterior Probability of Membership in x4					
Obs	From x4	Classified into x4		0	1
1	1	1		0.0103	0.9897
2	0	0		0.9989	0.0011
3	1	0	*	0.8181	0.1819
4	1	1		0.0566	0.9434
5	0	0		0.8269	0.1731
6	1	1		0.0123	0.9877
7	1	1		0.0008	0.9992
8	1	1		0.0004	0.9996
9	1	1		0.0004	0.9996
10	1	1		0.0298	0.9702
11	0	0		0.7504	0.2496
12	1	1		0.0050	0.9950
13	0	0		0.9220	0.0780
14	0	0		0.9990	0.0010
15	1	1		0.0274	0.9726
16	0	0		0.9980	0.0020
17	1	1		0.0309	0.9691
18	1	1		0.0072	0.9928
19	1	1		0.0001	0.9999
20	1	1		0.0009	0.9991
21	1	1		0.0103	0.9897
22	1	0	*	0.9920	0.0080
23	0	0		0.9929	0.0071
24	1	1		0.1817	0.8183
25	1	1		0.0237	0.9763
26	1	1		0.0003	0.9997
27	0	0		0.9952	0.0048
28	1	1		0.0171	0.9829
29	0	0		0.9868	0.0132
30	1	1		0.0130	0.9870
31	0	0		0.9818	0.0182
32	1	1		0.4376	0.5624
33	1	1		0.0843	0.9157
34	1	1		0.0059	0.9941

Classification Results for Calibration Data: WORK.IMPORT
Resubstitution Results using Linear Discriminant Function

Posterior Probability of Membership in x4					
Obs	From x4	Classified into x4		0	1
35	**1**	**1**		0.0011	0.9989
36	**0**	**0**		0.9980	0.0020
37	**0**	**0**		0.9397	0.0603
38	**1**	**0**	*	0.8503	0.1497
39	**1**	**1**		0.0023	0.9977
40	**1**	**1**		0.0017	0.9983
41	**1**	**1**		0.0023	0.9977
42	**0**	**0**		0.6015	0.3985
43	**0**	**0**		0.8872	0.1128
44	**1**	**1**		0.0002	0.9998
45	**0**	**0**		0.9975	0.0025
46	**1**	**1**		0.0365	0.9635
47	**0**	**0**		0.9970	0.0030
48	**1**	**1**		0.0001	0.9999
49	**1**	**1**		0.1019	0.8981
50	**0**	**0**		0.8055	0.1945
51	**1**	**1**		0.1036	0.8964
52	**0**	**0**		0.9971	0.0029
53	**1**	**1**		0.1996	0.8004
54	**0**	**0**		0.9598	0.0402
55	**1**	**1**		0.0015	0.9985
56	**0**	**0**		0.6783	0.3217
57	**1**	**1**		0.0046	0.9954
58	**0**	**0**		0.7772	0.2228
59	**0**	**0**		0.9990	0.0010
60	**1**	**0**	*	0.7572	0.2428
61	**0**	**0**		0.9972	0.0028
62	**1**	**1**		0.0409	0.9591
63	**0**	**0**		0.5946	0.4054
64	**1**	**1**		0.4852	0.5148
65	**1**	**1**		0.3120	0.6880
66	**1**	**1**		0.0003	0.9997
67	**1**	**1**		0.0136	0.9864
68	**1**	**1**		0.0560	0.9440

Classification Results for Calibration Data: WORK.IMPORT
Resubstitution Results using Linear Discriminant Function

Posterior Probability of Membership in x4					
Obs	From x4	Classified into x4		0	1
69	**1**	**1**		0.0143	0.9857
70	**1**	**1**		0.0002	0.9998
71	**1**	**1**		0.0014	0.9986
72	**0**	**0**		0.9811	0.0189
73	**1**	**1**		0.0165	0.9835
74	**1**	**1**		0.4355	0.5645
75	**1**	**1**		0.0249	0.9751
76	**0**	**0**		0.8383	0.1617
77	**1**	**1**		0.0149	0.9851
78	**0**	**0**		0.8987	0.1013
79	**0**	**0**		0.8987	0.1013
80	**1**	**1**		0.0265	0.9735
81	**0**	**0**		0.7325	0.2675
82	**0**	**0**		0.8172	0.1828
83	**0**	**0**		0.9498	0.0502
84	**1**	**1**		0.0005	0.9995
85	**0**	**0**		0.6598	0.3402
86	**1**	**1**		0.0474	0.9526
87	**1**	**1**		0.0020	0.9980
88	**0**	**0**		0.5442	0.4558
89	**0**	**0**		0.7779	0.2221
90	**1**	**1**		0.0003	0.9997
91	**0**	**0**		0.8146	0.1854
92	**1**	**1**		0.1368	0.8632
93	**0**	**0**		0.9986	0.0014
94	**1**	**0**	*	0.8139	0.1861
95	**0**	**0**		0.8117	0.1883
96	**0**	**0**		0.8776	0.1224
97	**1**	**1**		0.0062	0.9938
98	**0**	**0**		0.9984	0.0016
99	**1**	**1**		0.0112	0.9888
100	**1**	**1**		0.0029	0.9971

*** Misclassified observation**

Classification Summary for Calibration Data: WORK.IMPORT
Resubstitution Summary using Linear Discriminant Function

Number of Observations and Percent Classified into x4			
From x4	**0**	**1**	**Total**
0	39 100.00	0 0.00	39 100.00
1	5 8.20	56 91.80	61 100.00
Total	44 44.00	56 56.00	100 100.00
Priors	0.39	0.61	

Error Count Estimates for x4			
	0	**1**	**Total**
Rate	0.0000	0.0820	0.0500
Priors	0.3900	0.6100	

Classification Results for Calibration Data: WORK.IMPORT
Cross-validation Results using Linear Discriminant Function

Posterior Probability of Membership in x4					
Obs	From x4	Classified into x4		0	1
3	**1**	**0**	*	0.9388	0.0612
22	**1**	**0**	*	0.9999	0.0001
24	**1**	**0**	*	0.6602	0.3398
32	**1**	**0**	*	0.5773	0.4227
38	**1**	**0**	*	0.9394	0.0606
42	**0**	**1**	*	0.4490	0.5510
60	**1**	**0**	*	0.9396	0.0604
63	**0**	**1**	*	0.3361	0.6639
64	**1**	**0**	*	0.6576	0.3424
74	**1**	**0**	*	0.7029	0.2971
81	**0**	**1**	*	0.4834	0.5166
88	**0**	**1**	*	0.3170	0.6830
94	**1**	**0**	*	0.9345	0.0655

*** Misclassified observation**

Classification Summary for Calibration Data: WORK.IMPORT
Cross-validation Summary using Linear Discriminant Function

Number of Observations and Percent Classified into x4			
From x4	**0**	**1**	**Total**
0	35 89.74	4 10.26	39 100.00
1	9 14.75	52 85.25	61 100.00
Total	44 44.00	56 56.00	100 100.00
Priors	0.39	0.61	

Error Count Estimates for x4			
	0	**1**	**Total**
Rate	0.1026	0.1475	0.1300
Priors	0.3900	0.6100	

Total Sample Size	100	**DF Total**	99
Variables	13	**DF Within Classes**	98
Classes	2	**DF Between Classes**	1

Number of Observations Read	100
Number of Observations Used	100

Class Level Information

x4	Variable Name	Frequency	Weight	Proportion	Prior Probability
0	0	39	39.0000	0.390000	0.390000
1	1	61	61.0000	0.610000	0.610000

Pooled Covariance Matrix Information

Covariance Matrix Rank	Natural Log of the Determinant of the Covariance Matrix
13	-8.01842

Squared Distance to x4		
From x4	**0**	**1**
0	0	7.45466
1	7.45466	0

F Statistics, NDF=13, DDF=86 for Squared Distance to x4		
From x4	**0**	**1**
0	0	11.97157
1	11.97157	0

Prob > Mahalanobis Distance for Squared Distance to x4		
From x4	**0**	**1**
0	1.0000	<.0001
1	<.0001	1.0000

Generalized Squared Distance to x4		
From x4	**0**	**1**
0	1.88322	8.44325
1	9.33787	0.98859

Linear Discriminant Function for x4			
Variable	**Label**	**0**	**1**
Constant		-191.92135	-194.33409
x6	x6	8.32797	7.65248
x7	x7	4.20485	1.20101
x8	x8	-2.06370	-2.09852
x9	x9	-3.62428	-3.60295
x10	x10	-1.62571	-2.03642
x11	x11	58.68681	58.34999
x12	x12	1.69711	4.70052
x13	x13	3.64274	4.22872
x14	x14	13.54926	13.38761
x15	x15	0.00591	0.28730
x16	x16	-2.84573	-2.25264

Linear Discriminant Function for x4			
Variable	**Label**	**0**	**1**
x17	x17	62.42839	64.51335
x18	x18	-101.40047	-103.57123

Classification Results for Calibration Data: WORK.IMPORT
Resubstitution Results using Linear Discriminant Function

Posterior Probability of Membership in x4					
Obs	From x4	Classified into x4		0	1
1	1	1		0.0103	0.9897
2	0	0		0.9989	0.0011
3	1	0	*	0.8181	0.1819
4	1	1		0.0566	0.9434
5	0	0		0.8269	0.1731
6	1	1		0.0123	0.9877
7	1	1		0.0008	0.9992
8	1	1		0.0004	0.9996
9	1	1		0.0004	0.9996
10	1	1		0.0298	0.9702
11	0	0		0.7504	0.2496
12	1	1		0.0050	0.9950
13	0	0		0.9220	0.0780
14	0	0		0.9990	0.0010
15	1	1		0.0274	0.9726
16	0	0		0.9980	0.0020
17	1	1		0.0309	0.9691
18	1	1		0.0072	0.9928
19	1	1		0.0001	0.9999
20	1	1		0.0009	0.9991
21	1	1		0.0103	0.9897
22	1	0	*	0.9920	0.0080
23	0	0		0.9929	0.0071
24	1	1		0.1817	0.8183
25	1	1		0.0237	0.9763
26	1	1		0.0003	0.9997
27	0	0		0.9952	0.0048
28	1	1		0.0171	0.9829
29	0	0		0.9868	0.0132
30	1	1		0.0130	0.9870
31	0	0		0.9818	0.0182
32	1	1		0.4376	0.5624
33	1	1		0.0843	0.9157
34	1	1		0.0059	0.9941

Classification Results for Calibration Data: WORK.IMPORT
Resubstitution Results using Linear Discriminant Function

Posterior Probability of Membership in x4					
Obs	From x4	Classified into x4		0	1
35	1	1		0.0011	0.9989
36	0	0		0.9980	0.0020
37	0	0		0.9397	0.0603
38	1	0	*	0.8503	0.1497
39	1	1		0.0023	0.9977
40	1	1		0.0017	0.9983
41	1	1		0.0023	0.9977
42	0	0		0.6015	0.3985
43	0	0		0.8872	0.1128
44	1	1		0.0002	0.9998
45	0	0		0.9975	0.0025
46	1	1		0.0365	0.9635
47	0	0		0.9970	0.0030
48	1	1		0.0001	0.9999
49	1	1		0.1019	0.8981
50	0	0		0.8055	0.1945
51	1	1		0.1036	0.8964
52	0	0		0.9971	0.0029
53	1	1		0.1996	0.8004
54	0	0		0.9598	0.0402
55	1	1		0.0015	0.9985
56	0	0		0.6783	0.3217
57	1	1		0.0046	0.9954
58	0	0		0.7772	0.2228
59	0	0		0.9990	0.0010
60	1	0	*	0.7572	0.2428
61	0	0		0.9972	0.0028
62	1	1		0.0409	0.9591
63	0	0		0.5946	0.4054
64	1	1		0.4852	0.5148
65	1	1		0.3120	0.6880
66	1	1		0.0003	0.9997
67	1	1		0.0136	0.9864
68	1	1		0.0560	0.9440

Classification Results for Calibration Data: WORK.IMPORT
Resubstitution Results using Linear Discriminant Function

Posterior Probability of Membership in x4					
Obs	From x4	Classified into x4		0	1
69	**1**	**1**		0.0143	0.9857
70	**1**	**1**		0.0002	0.9998
71	**1**	**1**		0.0014	0.9986
72	**0**	**0**		0.9811	0.0189
73	**1**	**1**		0.0165	0.9835
74	**1**	**1**		0.4355	0.5645
75	**1**	**1**		0.0249	0.9751
76	**0**	**0**		0.8383	0.1617
77	**1**	**1**		0.0149	0.9851
78	**0**	**0**		0.8987	0.1013
79	**0**	**0**		0.8987	0.1013
80	**1**	**1**		0.0265	0.9735
81	**0**	**0**		0.7325	0.2675
82	**0**	**0**		0.8172	0.1828
83	**0**	**0**		0.9498	0.0502
84	**1**	**1**		0.0005	0.9995
85	**0**	**0**		0.6598	0.3402
86	**1**	**1**		0.0474	0.9526
87	**1**	**1**		0.0020	0.9980
88	**0**	**0**		0.5442	0.4558
89	**0**	**0**		0.7779	0.2221
90	**1**	**1**		0.0003	0.9997
91	**0**	**0**		0.8146	0.1854
92	**1**	**1**		0.1368	0.8632
93	**0**	**0**		0.9986	0.0014
94	**1**	**0**	*	0.8139	0.1861
95	**0**	**0**		0.8117	0.1883
96	**0**	**0**		0.8776	0.1224
97	**1**	**1**		0.0062	0.9938
98	**0**	**0**		0.9984	0.0016
99	**1**	**1**		0.0112	0.9888
100	**1**	**1**		0.0029	0.9971

*** Misclassified observation**

Classification Summary for Calibration Data: WORK.IMPORT
Resubstitution Summary using Linear Discriminant Function

Number of Observations and Percent Classified into x4			
From x4	**0**	**1**	**Total**
0	39 100.00	0 0.00	39 100.00
1	5 8.20	56 91.80	61 100.00
Total	44 44.00	56 56.00	100 100.00
Priors	0.39	0.61	

Error Count Estimates for x4			
	0	**1**	**Total**
Rate	0.0000	0.0820	0.0500
Priors	0.3900	0.6100	

Classification Results for Calibration Data: WORK.IMPORT
Cross-validation Results using Linear Discriminant Function

Posterior Probability of Membership in x4					
Obs	From x4	Classified into x4		0	1
3	**1**	**0**	*	0.9388	0.0612
22	**1**	**0**	*	0.9999	0.0001
24	**1**	**0**	*	0.6602	0.3398
32	**1**	**0**	*	0.5773	0.4227
38	**1**	**0**	*	0.9394	0.0606
42	**0**	**1**	*	0.4490	0.5510
60	**1**	**0**	*	0.9396	0.0604
63	**0**	**1**	*	0.3361	0.6639
64	**1**	**0**	*	0.6576	0.3424
74	**1**	**0**	*	0.7029	0.2971
81	**0**	**1**	*	0.4834	0.5166
88	**0**	**1**	*	0.3170	0.6830
94	**1**	**0**	*	0.9345	0.0655

*** Misclassified observation**

Classification Summary for Calibration Data: WORK.IMPORT
Cross-validation Summary using Linear Discriminant Function

Number of Observations and Percent Classified into x4			
From x4	**0**	**1**	**Total**
0	35 89.74	4 10.26	39 100.00
1	9 14.75	52 85.25	61 100.00
Total	44 44.00	56 56.00	100 100.00
Priors	0.39	0.61	

Error Count Estimates for x4			
	0	**1**	**Total**
Rate	0.1026	0.1475	0.1300
Priors	0.3900	0.6100	

Classification Results for Test Data: WORK.IMPORT1
Classification Results using Linear Discriminant Function

Posterior Probability of Membership in x4					
Obs	From x4	Classified into x4		0	1
1	1	1		0.0102	0.9898
2	0	0		0.9990	0.0010
3	1	0	*	0.8181	0.1819
4	1	1		0.0566	0.9434
5	0	1	*	0.4568	0.5432
6	1	1		0.0116	0.9884
7	1	1		0.0006	0.9994
8	1	1		0.0005	0.9995
9	1	1		0.0006	0.9994
10	1	1		0.0313	0.9687
11	0	1	*	0.3942	0.6058
12	1	1		0.0050	0.9950
13	0	0		0.9268	0.0732
14	0	0		0.9991	0.0009
15	1	1		0.0274	0.9726
16	0	0		0.9996	0.0004
17	1	1		0.2404	0.7596
18	1	1		0.0271	0.9729
19	1	1		0.0014	0.9986
20	1	1		0.0118	0.9882
21	1	0	*	0.6756	0.3244
22	1	0	*	0.9986	0.0014
23	0	0		0.9995	0.0005
24	1	0	*	0.5897	0.4103
25	1	1		0.4453	0.5547
26	1	1		0.0049	0.9951
27	0	0		0.9991	0.0009
28	1	1		0.3116	0.6884
29	0	0		0.9976	0.0024
30	1	1		0.3453	0.6547
31	0	0		0.9995	0.0005
32	1	0	*	0.9750	0.0250
33	1	1		0.0588	0.9412
34	1	1		0.0078	0.9922

Classification Results for Test Data: WORK.IMPORT1
Classification Results using Linear Discriminant Function

Posterior Probability of Membership in x4					
Obs	From x4	Classified into x4		0	1
35	1	1		0.0004	0.9996
36	0	0		0.9961	0.0039
37	0	0		0.9229	0.0771
38	1	0	*	0.9082	0.0918
39	1	1		0.0035	0.9965
40	1	1		0.0023	0.9977
41	1	1		0.0023	0.9977
42	0	0		0.6015	0.3985
43	0	0		0.8872	0.1128
44	1	1		0.0002	0.9998
45	0	0		0.9975	0.0025
46	1	1		0.0365	0.9635
47	0	0		0.9970	0.0030
48	1	1		0.0001	0.9999
49	1	1		0.1019	0.8981
50	0	0		0.8055	0.1945
51	1	1		0.1036	0.8964
52	0	0		0.9971	0.0029
53	1	1		0.1996	0.8004
54	0	0		0.9598	0.0402
55	1	1		0.0015	0.9985
56	0	0		0.6783	0.3217
57	1	1		0.0046	0.9954
58	0	0		0.7772	0.2228
59	0	0		0.9990	0.0010
60	1	0	*	0.7572	0.2428
61	0	0		0.9972	0.0028
62	1	1		0.0409	0.9591
63	0	0		0.5946	0.4054
64	1	1		0.4852	0.5148
65	1	1		0.3120	0.6880
66	1	1		0.0003	0.9997
67	1	1		0.0136	0.9864
68	1	1		0.0560	0.9440

Classification Results for Test Data: WORK.IMPORT1
Classification Results using Linear Discriminant Function

Posterior Probability of Membership in x4					
Obs	From x4	Classified into x4		0	1
69	1	1		0.0926	0.9074
70	1	1		0.0005	0.9995
71	1	1		0.2064	0.7936
72	0	0		0.9845	0.0155
73	1	1		0.0670	0.9330
74	1	0	*	0.9919	0.0081
75	1	1		0.3673	0.6327
76	0	0		0.8883	0.1117
77	1	1		0.0251	0.9749
78	0	0		0.5896	0.4104
79	0	0		0.8533	0.1467
80	1	1		0.0196	0.9804
81	0	0		0.9848	0.0152
82	0	0		0.9482	0.0518
83	0	0		0.9282	0.0718
84	1	1		0.0029	0.9971
85	0	0		0.9156	0.0844
86	1	0	*	0.8741	0.1259
87	1	1		0.2922	0.7078
88	0	0		0.8636	0.1364
89	0	0		0.9432	0.0568
90	1	0	*	0.7074	0.2926
91	0	0		0.6306	0.3694
92	1	1		0.1920	0.8080
93	0	0		0.9986	0.0014
94	1	0	*	0.8139	0.1861
95	0	0		0.8620	0.1380
96	0	0		0.9224	0.0776
97	1	1		0.0175	0.9825
98	0	0		0.9990	0.0010
99	1	1		0.0233	0.9767
100	1	1		0.0029	0.9971

*** Misclassified observation**

Classification Summary for Test Data: WORK.IMPORT1
Classification Summary using Linear Discriminant Function

Observation Profile for Test Data	
Number of Observations Read	100
Number of Observations Used	100

Number of Observations and Percent Classified into x4			
From x4	0	1	Total
0	37 94.87	2 5.13	39 100.00
1	11 18.03	50 81.97	61 100.00
Total	48 48.00	52 52.00	100 100.00
Priors	0.39	0.61	

Error Count Estimates for x4			
	0	1	Total
Rate	0.0513	0.1803	0.1300
Priors	0.3900	0.6100	