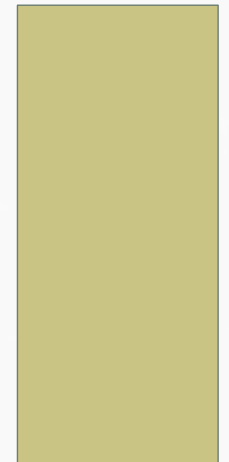


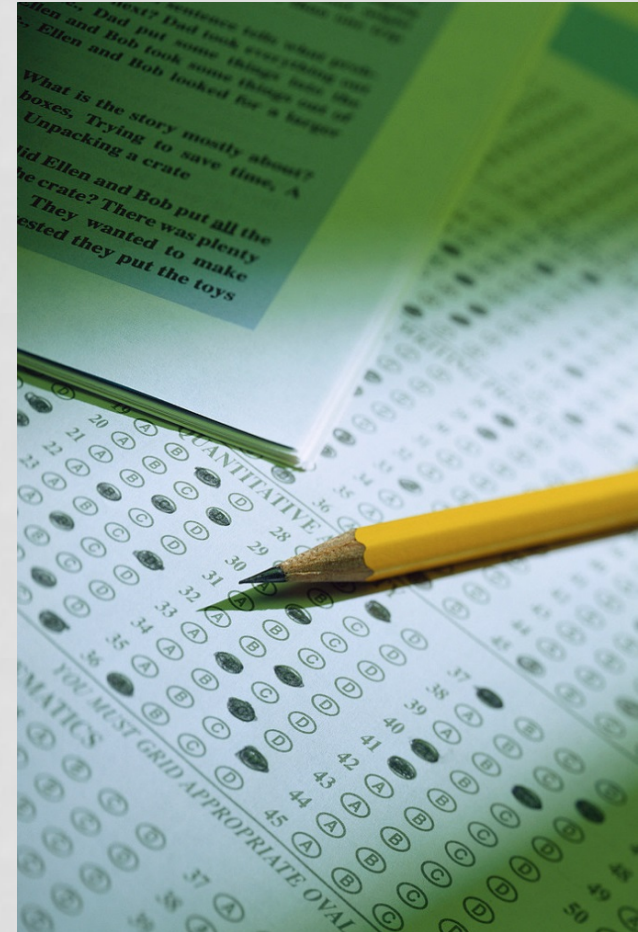
# A CONSTRUCT VALIDITY ANALYSIS OF THE WORK PERCEPTIONS PROFILE DATA

DECEMBER 4, 2014



# RESEARCH PROBLEM

- The *Work Perceptions Profile* is an existing instrument that is currently being used as an indicator of career burnout and as a candidate selection tool.
- Data from the use of the instrument has not been previously studied to its determine reliability and validity.
- Human Resource Development best practices require that survey instruments be reliable and valid tools.



# LITERATURE REVIEW

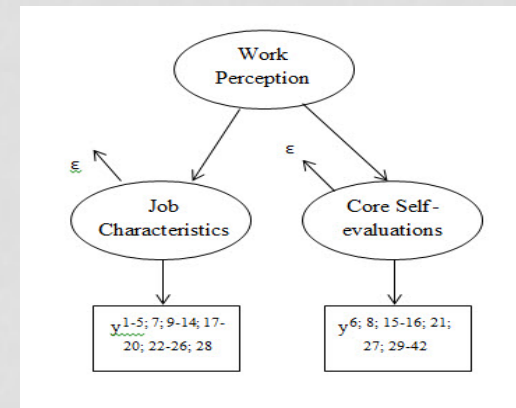
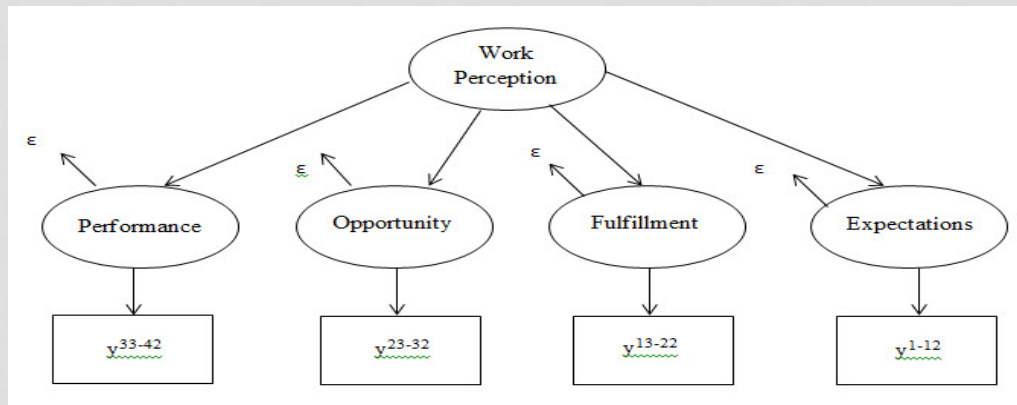
- **Thomas & Velthouse (1990):** Defined a cognitive model of intrinsic motivation that includes the following constructs: *Impact*; *Competence*; *Meaningfulness*; and *Choice*. Support for the task assessment component of the intrinsic motivation model was found in two dissertation studies (Lee, 1987; Tymon, 1988). However, the model has not been tested further nor has data from the task assessment been studied to determine its validity.
- **Spreitzer (1995):** Expanded upon the work of Thomas & Velthouse (1990) using four constructs of *meaning*, *competence*, *self-determination* and *impact*. Posits that these are influenced by (antecedents): locus of control, self-esteem, access to information (mission and performance), and rewards. Outputs include managerial effectiveness and innovation. Results supported the four factor model proposed in the theory. Two samples provided mixed support for the theorized second-order factor structure. First study provided good fit (AGFI = .92; RMSR = .05, NCFI = .93) while the second study was less conclusive (AGFI = .87, RMSR = .06, NCFI = .92).
- **Pace (2002):** Builds upon the models of Thomas & Velthouse and Spreitzer to develop a Work Dynamism Model that includes four constructs as contributors to the way employees view their work which in turn contributes to employee performance or work outcomes. The four constructs used to define work perceptions are: *performance*, *opportunity*, *expectations*, and *fulfillment*. While a construct validity analysis of the WPP has not been conducted, Pace's unpublished research on the instrument provides some information on mean responses in the four constructs: *Performance* = 3.97; *Opportunity* = 3.03; *Fulfillment* = 3.88; and *Expectations* = 3.60.

# THEORETICAL CONTRIBUTORS

- Stajkovic and Luthans' (2003) Social Cognitive Theory
- Schaufeli and Bakker's (2004) engagement theory and the Utrecht Work Engagement Scale (2008)
- Bakker and Demerouti's (2011) Engagement model
- Hackman and Oldman's (1976) Job Characteristics Model of Work Motivation
- Zigarmi, Nimon, Houson, Witt and Diehl's (2011) Employee Work Passion Model
- Judge's (2012) concept of core self-evaluation

# PURPOSE OF THE STUDY

- The fundamental research questions in this study were to determine to what extent the data from the WPP was reliable and valid and to determine what factor model is supported by the data.
- There are four hypotheses that were tested in this study:
  - 1. H1a: Performance, opportunity, fulfillment and expectations will be four independent first order factors measuring a second-order factor of work perceptions.
  - 2. H1b: Performance, opportunity, fulfillment and expectations will be four independent first order factors.
  - 3. H2: Job characteristics and core self-evaluations will be two independent first order factors measuring a second-order factor of work perceptions.
  - 4. H3: Data for all subscales of the WPP (performance, opportunity, fulfillment, and expectations) will demonstrate divergent validity with data from the short version of the Marlowe-Crowne Social Desirability Scale (MC-2) indicating low social-desirability bias in item responses.



# METHODOLOGY OVERVIEW

- This study primarily utilized the methodological model demonstrated by McLean, Yang, Kuo, Tolbert, and Larkin (2005) in their validation study of data from a managerial coaching skill instrument.
  - **Study One:** Purpose was to determine item reliability and to test model fit through an exploratory factor analysis.
    - Data screened for normality, missing data, and outliers
    - Means compared with Pace's unpublished research
    - Exploratory Factor Analysis
  - **Study Two:** Purpose was to verify the findings in Study One through a confirmatory factor analysis and to determine construct and divergent validity.
    - Data screened for normality, missing data, and outliers
    - Common method bias considered
    - Confirmatory Factor Analysis fit indices used to verify model fit
    - Construct validity analyzed using CR and AVE

# POPULATION DESCRIPTION

- The targeted population of the study was nonprofit professionals in Texas with an emphasis on North Texas
  - National demographics
    - 10% of the US workforce (Salamon & Sokolowski, 2006)
    - Women make up 67% of nonprofit personnel (Leete, 2006)
    - Whites make up 83% of nonprofit personnel (Leete, 2006)
  - Texas demographics
    - 403,196 nonprofit employees in the state of Texas (CNM, 2012)
    - Represents 4.6% of total private sector employment in the state (CNM, 2012)
  - North Texas demographics
    - 28,105 registered 501(c)3 nonprofits in North Texas (CNM, 2012)
    - \$27.2 billion in total revenue (CNM, 2012)
    - 74.85% of all registered charities have budget sizes under \$100,000 indicating few if no staff in the majority of nonprofits in North Texas (CNM, 2012)
    - 102,154 nonprofit employees in North Texas with a total payroll of approximately \$4 billion representing 3.15% of all private employment (CNM, 2012)
- The nonprofit sector is typically an under-represented population in human resource and behavioral psychology research

# SURVEY DESIGN

- Survey included the 42 items of the WPP along with 10 items from Strahan and Gerbasi's (1972) revised social desirability scale (M-C2)
- Changes to survey layout based on feedback from subject matter experts was done to address the potential for respondent fatigue and diminished response rates
  - Inclusion of a progress bar
  - Randomized items
  - Page breaks
  - Highlighted questions
  - Response requirements
  - Consistent formatting
- Two different survey links were created to track which solicitation prompted the response (newsletter or email)



# DATA COLLECTION

- An invitation to participate in the study was sent via an organizational newsletter to individuals in the Center for Nonprofit Management's database (approximately 8,000 unique individuals). In addition, email invitations to participate in the study were sent directly to 8,678 nonprofit professionals in the state of Texas using a GuideStar database.
- The survey utilized Qualtrics' survey software.
- Survey recipients were encouraged to send the survey to their nonprofit peers.
- Individuals were incentivized to respond to the survey through the random selection of three individual respondents receiving \$50 MasterCard gift certificates.
- Reminder emails were sent to non-responders from the first request sent to GuideStar contacts approximately two weeks after the initial request.

# SAMPLE OVERVIEW

- A total of 903 responses were collected (11 through newsletter, 892 through email solicitation and peer-based solicitations)
- Demographics
  - 78% Female
  - 81% White
  - 98% Some college or more
  - 29% health and human services; 23% education and research
  - 92% less than 500 employees
- Respondents not from Texas and those not representing nonprofit organizations were removed from the study
- Remaining sample ( $n=850$ ) was divided into two groups (EFA /  $n=250$ ; CFA /  $n=600$ )

# PHASE ONE: SAMPLE DEMOGRAPHICS

- Data normality – All items of the WPP had negative skew values but both skew and kurtosis values were below Kline's (2005) suggested thresholds of skew  $> 3.0$  and kurtosis  $> 20.0$
- Variables were treated as continuous
- Sample size was sufficiently large enough for an EFA analysis with a 1:5.9 item to respondent ratio (Bentler & Chou, 1987)
- Higher means than found in Pace's non-published records
  - Performance = 6.16; Opportunity = 5.41; Fulfillment = 5.62; Expectations = 5.73
- Full sample reliability of the MC-2 ( $\alpha = .63$ ) consistent with previous studies (Strahan & Gerbasi, 1972; Loo & Loewen, 2004)

# PHASE ONE: EFA

- Appropriateness of an EFA analysis
  - Kaiser-Meyer-Olkin = .924
  - Bartlett's test of sphericity =  $p < .00$
- Principle axis factoring with oblique rotation (Direct Oblimin, delta = 0) (Thompson, 1992)
- Number of factors and reliabilities
  - Eigenvalues, scree plot, MAP, parallel analysis, variance explained

Table 4

*Recommended Factors and Reliabilities*

	Data Driven Model	Four Factor Model	Two Factor Model
<b>Recommended Factors</b>			
Eigenvalues	8	4	4
Scree	5	4	2
MAP	5 – 7	4	3
Parallel Analysis	5	3	2
Variance Explained	60.273%	59.89%	55.387%
<b>Reliabilities (Cronbach's Alpha)</b>			
Factor 1	.843	.918	.933
Factor 2	.918	.763	.910
Factor 3	.763	.858	
Factor 4	.811	.909	
Factor 5	.812		

# PHASE ONE: EFA / MODEL COMPARISONS

- Models Considered
  - Four Factor
    - 23 Items
    - Opportunity only had two items loading
    - Fulfillment had four
    - Strongest theoretical factor was Expectations with all 12 items exhibiting item loads above .55
  - Two Factor
    - 25 Items
    - All items from Performance loaded well on one factor (all > .5)
    - Items from Expectations, Fulfillment and Opportunity loaded onto a single factor (all > .56)
  - Data Driven
    - Failed to converge
- Two factor model considered the strongest due to number of items per factor, reliabilities, and theoretical support

Table 5

*Pattern and Structure Matrices for Two and Four Factor Models*

	Pattern		Structure		Pattern				Structure			
	Job	Core	Job	Core	Exp	Perf	Fulf	Opp	Exp	Perf	Fulf	Opp
E1	.615	.157	.690	.451	.635	.201	-.086	-.079	.667	.420	.097	.160
E3	.562	.047	.584	.315	.568	.019	-.009	.110	.609	.268	.152	.295
E4	.654	.089	.696	.401	.676	-.024	-.135	.329	.737	.298	.072	.523
E5	.619	.088	.661	.383	.660	.091	-.090	-.012	.669	.335	.091	.209
E7	.605	.149	.676	.438	.653	.151	.093	-.135	.693	.391	.266	.119
E8	—	—	—	—	.816	.008	-.034	-.004	.809	.324	.175	.254
E9	.822	-.085	.781	.307	.717	-.124	.351	.048	.773	.224	.521	.290
E10	.833	-.140	.766	.257	.760	-.198	.160	.168	.776	.165	.363	.383
E11	.725	.087	.766	.432	.700	.113	.021	-.047	.735	.382	.211	.205
E12	.787	.100	.835	.476	.814	.081	-.011	.042	.856	.411	.213	.319
F13	—	—	—	—	.253	-.139	.579	.065	.367	.065	.630	.183
F14	—	—	—	—	.279	.200	.542	-.055	.478	.380	.637	.145
F15	—	—	—	—	-.075	.101	.752	.017	.162	.191	.751	.106
F16	—	—	—	—	-.161	.047	.739	.002	.047	.097	.705	.050
F17	.851	-.114	.796	.292	—	—	—	—	—	—	—	—
F18	.641	-.085	.600	.220	—	—	—	—	—	—	—	—
F19	.678	.051	.703	.374	—	—	—	—	—	—	—	—
F20	.569	.056	.595	.327	—	—	—	—	—	—	—	—
F22	.746	.014	.753	.370	—	—	—	—	—	—	—	—
O23	—	—	—	—	-.033	.162	.061	.794	.299	.342	.172	.828
O24	—	—	—	—	.053	.061	-.025	.876	.350	.281	.102	.904
O25	.617	-.027	.605	.267	—	—	—	—	—	—	—	—
P33	.130	.550	.393	.612	—	—	—	—	—	—	—	—
P34	.142	.527	.394	.595	—	—	—	—	—	—	—	—
P35	-.134	.815	.255	.751	-.084	.804	.013	.044	.251	.783	.120	.205
P36	-.136	.853	.270	.788	-.096	.850	.006	.096	.273	.836	.124	.264
P37	.024	.591	.306	.603	.058	.518	.092	.026	.294	.561	.189	.176
P38	-.061	.817	.329	.788	.011	.845	-.045	-.006	.331	.841	.087	.188
P39	.161	.731	.509	.807	.227	.666	.019	.043	.509	.769	.184	.273
P40	.137	.535	.392	.601	—	—	—	—	—	—	—	—
P41	.065	.778	.436	.809	.141	.740	.017	-.004	.436	.797	.166	.215
P42	.025	.845	.428	.857	.101	.768	.042	.043	.429	.824	.191	.258

# PHASE TWO: CFA / TWO FACTOR MODEL

- Appropriateness of an CFA analysis
  - Kaiser-Meyer-Olkin = .953
  - Bartlett's test of sphericity =  $p < .00$
- Item means ranged from 4.47 to 6.03
- Variance explained = 59.237%
- Two Factor Model Reliabilities: Cronbach alphas of .94 (Job Characteristics) and .93 (Core Self-evaluation)

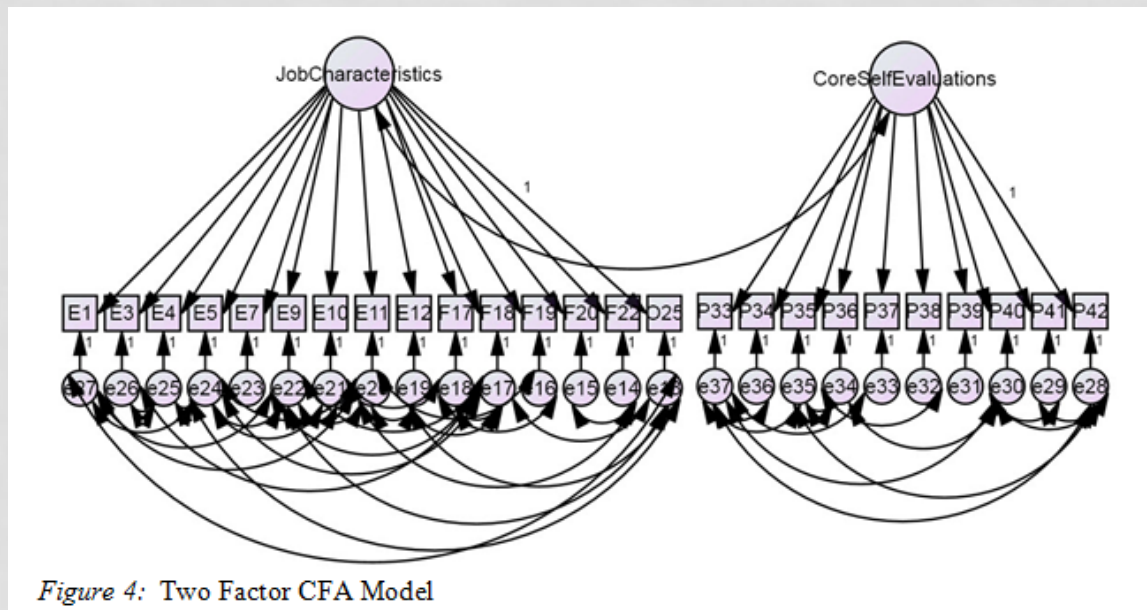


Figure 4: Two Factor CFA Model

# PHASE TWO: ALTERNATIVE CONSIDERATIONS

- Because the four factor model in the EFA was still a viable option, a CFA using the items from that model was also conducted.

Table 6

*Summary of Fit Indices in CFA Analysis*

Goodness-of-fit Measures	Target Value	Two Factor Model	First Order 4 Factor Model	References
$\chi^2/df$	< 3.00	2.607	2.883	Kline, 2005
CFI	> 0.95	.965	.959	Hu & Bentler, 1999
TLI	> 0.95	.954	.948	Hu & Bentler, 1999
RFI	> 0.95	.928	.922	Hu & Bentler, 1999
NFI	> 0.90	.944	.939	Byrne, 2010
RMSEA	< 0.06	.052	.056	Hu & Bentler, 1999
SRMSR	< 0.08	.0536	.0463	Hooper, Coughlan, & Mullen, 2008

# PHASE TWO: COMMON METHOD BIAS

- Self reports an appropriate form of data collection given the fact that the focus of the study was on employee perceptions (Conway & Lance, 2010)
- Two main approaches to determining the presence of common method bias: unmeasured latent variable and a marker variable (Johnson & Djurdjevic, 2011; Podsakoff, MacKenzie, & Podsakoff, 2012)
- Conflicting findings
  - A. Model fit improved with the presence of the unmeasured latent variable and there were large differences in the standardized regression weights between the models
  - Model fit decreased with the presence of the measured marker variable (social desirability) and there were small differences between standardized regression weights



# PHASE TWO: COMMON METHOD BIAS

*Summary of Standardized Regression Weights in Various Models Used to Determine Presence of Common Method Bias*

Items	2 Factor Model	Common Method Variance Model	Difference in Standard Regression Weights	Social Desirability Model	Difference in Standard Regression Weights
E1	.703	.48	.223*	.675	.028
E3	.664	.372	.292*	.644	.02
E4	.754	.467	.257*	.729	.025
E5	.771	.568	.203*	.714	.057
E7	.745	.461	.284*	.704	.044
E9	.771	.537	.234*	.756	.015
E10	.734	.525	.209*	.73	.004
E11	.723	.564	.159	.702	.021
E12	.826	.569	.257*	.811	.015
F17	.741	.533	.208*	.733	.008
F18	.668	.575	.093	.63	.038
F19	.66	.457	.203*	.615	.045
F20	.605	.408	.197	.564	.041
F22	.76	.526	.234*	.735	.025
O25	.69	.581	.109	.655	.035
P33	.634	-.248	.586*	.586	.048
P34	.666	-.025	.64*	.644	.022
P35	.774	.229	.664*	.764	.01
P36	.815	.245	.741*	.813	.002
P37	.741	.036	.576*	.707	.034
P38	.761	.185	.705*	.732	.029
P39	.836	.095	.57*	.811	.025
P40	.61	-.054	.545*	.562	.048
P41	.789	.149	.691*	.78	.009
P42	.794	.208	.223*	.777	.017

*Summary of Fit Indices in Common Method Bias Analyses*

Goodness-of-fit Measures	Target Value	Two Factor Model	With Unmeasured Latent Variable	With Latent Social Desirability
$\chi^2/df$	< 3.00	2.607	2.457	1.93
CFI	> 0.95	.965	.968	.957
TLI	> 0.95	.954	.959	.948
RFI	> 0.95	.928	.932	.9
NFI	> 0.90	.944	.947	.918
RMSEA	< 0.06	.052	.049	.04
SRMSR	< 0.08	.0536	.0463	

# PHASE TWO: CONSTRUCT AND DIVERGENT VALIDITY

- Construct Validity
  - CR values were higher than .7 (Hair, Anderson, Tatham, & Black, 2010) indicating good reliability
  - AVE values over .5 indicating adequate convergence (Hair et al., 2010)
  - Standardized loading estimates all over .6 (Hair et al., 2010)
- Divergent Validity
  - Squared inter-construct correlation estimates (SIC) smaller than the AVE estimates and MSV and ASV are smaller than AVE (Hair et al., 2010)
  - Chi-square difference test (Segars, 1997) indicated that the constructs in the model were unique

Table 7

*Summary of Construct and Divergent Validity Measures*

	CR	AVE	MSV	ASV	IC CSE	IC <u>JobChar</u>	IC Social Desirability
Core Self-evaluation	.928	.566	.386	.226	.752*		
Job Characteristics	.943	.524	.386	.225	.621	.724*	
Social Desirability	.578	.146	.067	.065	-.258	-.252	.382*

\* Represents the square root of the AVE

# DISCUSSION

- While this study did show that the data supported a two factor model structure, there are problems with the ways in which the items are designed making a definitive interpretation of the variables difficult.
  - “Today in this organization” – restricts the interpretation of the workplace to a single point in time
  - “My leader feels that” – unclear if the responses indicate an individual’s self-perception or the nature of the relationship between the leader and the subordinate
    - Also restricts the use of this instrument to individuals who have a formal leader
- The theoretical basis for the first scale was most closely aligned with meaningful work. However, the remaining items in this scale seem to measure constructs besides meaningful work.
  - Example: Item 1 – “Today in this organization I am treated fairly” might be measuring perceptions of equity rather than meaningful work

# FUTURE RESEARCH AND LIMITATIONS

- Establishment of a nomological network
  - Work Cognition Inventory (Nimon, Zigarmi, Houson, Witt, & Diehl, 2011)
    - 1<sup>st</sup> Factor: Autonomy, collaboration, connectedness to colleagues, distributive fairness, growth, and meaningful work
    - 2<sup>nd</sup> Factor: Feedback and connectedness to leader
- Alternative populations
  - More diversity with respect to gender, ethnicity, and education
- Elimination of problematic phrases in items
- Creation of additional items measuring theorized constructs of fulfillment and opportunity to more closely consider Pace's hypothesized four factor model
- Use of a different social desirability scale

# POTENTIAL PUBLICATION SOURCES

- *Human Resource Development Quarterly* (Academy of Human Resource Development)
- *Performance Improvement Quarterly* (International Society for Performance Improvement)