

## Time Management Behaviour: Scale Development And Validation

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**Abstract:** According To Popular Belief, Individuals Who Manages Their Time Well Are Subjected To Less Stress, More Efficiency Resulting In High Level Ofperformance And Satisfaction. This Paper Presents A Confirmatory Factor Analysis Of The Time Management Behaviour Scale Originally Developed Of Macan Et Al. (1990). With The Fast-Growing Rate Of Academicians In India, There Is A Growing Demands And Challenges Need To Understand The Concept Of Time Management Behaviour In Context Of Faculty Members. Three Underlying Dimensions Of Time Management (Setting Goals And Priorities, Preference For Organization And Mechanics Of Time Management) Are Confirmed In The Setting Of Faculty Members Of Higher Education Institutions In India. The Scale Was Empirically Tested In Indian Context To Establish Unidimensional, Reliable And Valid Scale Using Confirmatory Factor Analysis (CFA) And Structural Equation Modelling (SEM) With AMOS Version 20.0.

**Index Terms:** Time Management Behaviour Scale, Faculty Members, Higher Education, Confirmatory Factor Analysis,

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### I. Introduction

In Recent Years, The Importance Of Time Management Behaviours Inorganizational Context Has Been Significantly Increased.Orlikowsky And Yates (2002) Attribute This Significance Of Temporal Dimension Because Of The World Becoming A Global Village,Immense Competition Is Leading To Increased Demand For Immediate Timely Availability Of Goods And Services. Garhammer (2002) Found That The Rapidity Of Life Demonstrated Acceleration, Habits Of Spending Time (E.G. Eat Faster, Sleep Less), And Actions Of Compression (E.G. Making A Phone Calls Over Lunch). Similarly, Many Researchers Have Scrutinized The Aspect Of Time In Organizational Framework (Palmer &Schoorman, 1999) And Have Tried To Understand The Role Of Pressure In Time Management Context Among Employees (Major *Et Al.*, 2002).The Growing Importance Of Time Is Mirrored In Both, Theoretical And Practical Publications. Some Authors Argued Regarding The Need For Integration In Theoretical Models With The Research Models (Ancona *Et Al.*, 2001). While Other Have Focused On How Employees Manage Their Time, And How Can These Efforts Can Be Improved (Macan, 1994).

Teaching Is Often Considered As A Stressful And Complex Occupation, With Increased Demands, Long Working Hours And High Workload (Court, 1996; Daniels & Guppy, 1994; Early, 1994; Jackson & Hayday, 1997;Tytherleigh *Et Al.*, 2005). Apart From Their Core Task I.E. Teaching, Teachers Have To Fulfil A Great Number Of Additional Tasks *Viz.* Administrative Tasks, Preparing For Classes And Notes, Managing Classroom, Meeting Syllabus Deadlines And Engaging In Extracurricular Activities, Projects (Bauer *Et Al.*, 2007).

Teachers' Job Profile Is More Complex In Higher Education Institutes In India. As, Indian Higher Education System Is The Third Largest In The World (World Bank Report, 2011) And Teachers Are Under Constant Pressure To Perform And Manage For Themselves And Their Institutions Collectively. They Also Have To Engage In Researchand Guidance, Training And Placement, And Have To Fulfil Various Criteria For Their Own Career Development (E.G. Promotion). It Is Felt That There Is Not Enough Time To Complete All The Work Effectively. Therefore, It Is Essential For Teachers To Have A Good Time Management Behaviour Which Can Enhance Productivity And Minimise Stress (Lay & Schouwenburg, 1993), Also Contributes To The Work Effectiveness And Success (Misra & Mckean, 2000).

It Has Been Observed That Time Management Practices Lower The Stress Level (Schuler, 1979). Effective Time Management A Play An Important Factor For Experiencing Job Satisfaction, Lower Stress And Maximize Health And Thus Can Contribute To An Individual And Organization's Results. On The Other Hand,

Poor Time Management Has Been Associated With Unperformed Jobs, Low Quality Of Work, Emotional Exhaustion, High Stress And Strain (Britton & Tesser, 1991).

There Are Very Few Studies Available That Focuses On Time Management In Indian Context. The Majority Of Research Work In This Area Have Been Carried Out In Western Context (E.G. Coetzer, 2016; Garcia-Ros *Et Al.*, 2004; Hellsten & Rogers, 2009; Kearns & Gardiner, 2007; Morsy 2010; Tavakoli *Et Al.*, 2013; Van Der Meer *Et Al.*, 2010; Wolters *Et Al.*, 2017; Yang *Et Al.*, 2015; Zampetakiset *Al.*, 2010). Thus, There Is A Need To Study The Dimensions Of Time Management In Indian Context.

## **II. Literature Review**

The Interest In Time Management Is Not New. The Term Time Management Became Popular In The 1950s And 1960s As A Tool To Help Managers With Better Use Of Available Time (Drucker, 1967; Mccay, 1959). This Tool Was Based On Practical Experience, In The Form Of Various Methods And Techniques. The Term Appears To Be Indicating That Time Is Managed But It Is Actually The Activities That Are Managed Over A Period Of Time. The Advice On Managing Time Seems quite Consistent Across The Various Authors. It Is Understood That Time Cannot Be Managed; It Is The Activities Or Tasks That Has To Be Performed By An Individual That Should Be Managed Over Time. Time Management Can Be Seen As A Way Of Monitoring And Controlling Time (Eilam And Aharon, 2003). In Spite Of All Popular Attention To Managing Time, Relatively Little Research Has Been Conducted On The Processes Involved In Using One's Time Effectively And Completing Work Within Deadlines. Richards (1987) Discussed The Principles Mentioned By Authors Like Mccay (1959) And Concluded That, For Instance, Setting Life Goals And Keeping Time Logs Were Important Techniques For Effectively Managing One's Time Definitions Of Time Management.

The Time Management Has Been Defined As The Process Of Skilfully Applying Time To Finish And Perfect A Specific Activity Within Time Limit (Harris, 2008). However, There Is No Single Definition Of Time That Fully Captures All Aspects Of The Concept. Time Management Has Been Described Using Many Different Terms Including Spontaneity, Balance, Flexibility, And Having Control Over Time (Lakein, 1973). Time Management Has Also Been Characterized As A Habit Developed Only Through Determination And Practice (Simpson, 1978) And Prioritizing And Respecting Those Priorities (Soucie, 1986), And As Setting Priorities And Scheduling Tasks (Jordan *Et Al.*, 1989). Time Management Can Also Be Considered As The Course By Which An Individual More Effectively Accomplishes Tasks And Goals (Schuler, 1979). It Also Viewed As A Process By Which An Individual Obtains Control Over The Timing And The Content Of What They Do (Oncken & Wass, 1985) And As What Can Be Accomplished With Time (Mackenzie 1990).

Recent Studies Show That Time Pressure Is Getting More Critical For Overworked University Staff (Gillespie *Et Al.*, 2001). Academicians Feel That There Are Constant Demands By Students, Time To Prepare For Teaching Is Not Enough, Administration Load Is Not Possible To Meet, And There Is Very Less Time For Research Work (Gillespie *Et Al.*, 2001). Teaching Has Been Listed Among The High Stress Professions, With Majority Of Teachers Reporting That Teaching Is A Very Stressful Job and Teachers With Greater Teaching Stress Experienced Negative Emotions Resulting From Their Work (Kyriacou, 2001). They Have Lower Self-Efficacy (Schwarzer & Hallum, 2008), Lower Levels Of Effectiveness And Poorer Teacher-Student Relationship (Kokkinos, 2007). There Is Lack Of Studies Related To Time Management In The Context Of Academics (Macan *Et Al.*, 1990).

## **III. Time Management Behaviour Constructs**

Time Management Behaviour Scale Developed By Macan *Et Al.* (1990) Was Adopted For The Present Study. There Are Several Studies Carried Out To Measure Time Management Behaviour Using This Scale (Adams & Jex, 1999; Chang *Et Al.*, 2011; Davis, 2000; Macan *Et Al.*, 1990; Macan, 1994, 1996, 2010; Peeters & Rutte, 2005). Time Management Behaviour Scale (TMB) Scale by Macan *Et Al.* (1990) Was Designed To Assess The Behaviours Critical To The Construct Of Time Management As Defined By The Popular Literature (Hall And Hirsch 1982; King *Et Al.*, 1986; Lakein, 1973).

The Subscales Identified And Established Were: Setting Goals And Priorities, Mechanics Of Time Management (E.G. Making To-Do Lists), Preference For Organization (E.G. Having A Preference For An Orderly Way Of Working), And Perceived Control Of Time. Reliability Levels Were Moderate And Differed Greatly Among Different Studies (Davis, 2000). Macan (1994), Argued That Perceived Control Of Time Was Actually An Outcome Variable Of Time Management Behaviours, And Should Not Be Considered Part Of The TMBS. Therefore, Only Three Subscales Of TMBS *Viz.* Setting Goals And Priorities (SG), Mechanics Of Time Management (TM) And Preference For Organization (PO) Were Considered In The Present Study.

**Setting Goals And Priorities:** This Factor Taps The Setting Of Goals The Person Wants Or Needs To Accomplish And Prioritizing Of The Various Tasks To Achieve These Goals (Macan, 1994).

**Mechanics Of Time Management:** Macan (1994), Refers To The Behaviours Typically Associated With Managing Time, Such As Making Lists And Planning.

**Preference For Organization:** This Construct Was Originally Addressed As Preference For Disorganization, Whose Scores Need To Be Reverse Coded To Indicate The Factor For Preference For Organization (Macan, 1994). Here, Preference For Organization, Refers To A General Preference For Organization In One's Workplace And Approach To The Assigned Tasks.

#### **IV. Development Of Research Instrument**

In Order To Collect Primary Data, A Research Instrument- TMB Was Designed Which Included Items Relating To The Three Dimensions/ Constructs Of TMB.

**Setting Goals And Priorities (SG) Scale:** Six Items

**Mechanics Of Time Management (TM) Scale:** Five Items

**Preference For Organization (PO) Scale:** Five Items

The TMB Scale Utilized A 5-Point Likert Scale Labelled As *Not True (1) To Always True (5)*. Five-Point Likert Scale Has Been Commonly Used By Other Researchers In The Area (Britton & Tesser, 1991; Nonis *Et Al.*, 2011; Tavakoli *Et Al.*, 2013). Efforts Were Made To Keep Each Item As Simple And Unambiguous As Possible To Avoid Any Sort Of Bias As Suggested By Huselid And Becker (2000). During Instrument Development, Face And Content Validity Were Ensured As Suggested By Anderson And Gerbing (1988).

#### **Pilot Testing And Data Collection**

The Questionnaire Was Administered On A Smaller Sample Of The Actual Target Population I.E. Teachers In Higher Education Institution In India. They Were Asked To Provide Their Responses But Also Give Their Comments On The Instrument And Its Items. The Respondents Were Asked Critique The Questionnaire And Its Items. After Pilot Testing, Few Items Were Re-Worded, Refined And Changed, So The Questionnaire Could Be More Representative Of The Intended Constructs And Thus, Enhancing Its Content Validity.

Final Data Was Collected From The Selected Central Universities Through E-Mail And Personal Visits. This Methodology Has Been Used By Other Researchers In The Area Too (Randhawa, 2007). In Order To Collect Data, A Three-Wave Methodology Was Adopted. To Proceed With SEM With AMOS, The Suggested Sample Size Is A Minimum Of 50 And Preferably 100-200 (Lindquist *Et Al.*, 2001). Since The Present Study Had A Sample Of 542 Teachers, SEM Procedure Could Be Conveniently Adopted.

#### **V. Method Of Analysis**

As The Approach Suggested By Anderson And Gerbing (1988), The Measurement Model For The Three Scales Was Estimated. Measurement Model Estimates The Unidimensionality, Reliability And Validity Of Each Construct (Green *Et Al.*, 2006). Measurement Model Depicts How Well The Observed Indicators Measure The Latent Variables. For Determining The Measurement Model, We Used Confirmatory Factor Analysis (CFA) For Purification Of Scale Using AMOS (20.0). As Suggested By Jöreskog And Sörbom (2002) Separate Measurement Models Were Estimated For Each Construct Within The TMB Scale.

Once The Unidimensionality Of The Scales Is Established, An Assessment Of The Statistical Reliability Is Necessary Before Proceeding With The Validity Of The Scales Is Performed (Anderson & Gerbing, 1991; Mentzer *Et Al.*, 1999). Scale Reliability Is Considered As An Internal Consistency Or The Degree Of Inter-Correlations Among The Scale Items (Nunnally & Bernstein, 1994). It Reflects The Scale's Ability To Consistently Yield The Same Responses. Cronbach's Alpha As Well As Construct-Reliability And Variance-Extracted Measures Were Used As Assessing Scale Reliability. Various Forms Of Construct Validity I.E. Convergent And Discriminant Validity Were Also Estimated. Structural Equation Modelling (SEM) Capabilities AMOS Version (20.0) Were Deployed In Order To Test The Scales.

#### **VI. Assessing Scale Unidimensionality**

Unidimensionality Refers To The Extent To Which Items On A Scale Estimate One Construct. Unidimensionality Is A Necessary Condition For Reliability And Validation (Anderson & Gerbing, 1991). To Assess Unidimensionality Of The Three Scales Of TMB, Confirmatory Factor Analysis (CFA), Was Carried Out.

#### **Confirmatory Factor Analysis (CFA)**

The Researcher Proceeded With Scale Refinement To Obtain Unidimensional Scales. This Warrant Purifying The Scale By Removing Those Items That Reduce Unidimensionality Of The Scale. The Primary Approach For Scale Purification, When Theory Guides Survey Development, Is To Rely On CFA (Mentzer *Et Al.*, 1999). CFA Procedure Using AMOS (20.0) Was Performed On The Scales With The Objective Of

Determining The Fit Of The One-Factor Model. A Measurement Model Consisting Of The Scales, Each Defined According To A Weighted Linear Combination Of The Items, Is Specified.

When Using AMOS, Fit Indices Should Ideally Correspond To The Recommended Values (For The Recommended Values Of Fit Indices And Their Description See Table 1). These Recommended Values Have Been Mentioned By Number Of Researchers (Garver & Mentzer, 1999; Hu & Bentler, 1999; Jöreskog & Sörbom, 2002; Schumacker & Lomax, 2004). When Examining The Measurement Model, It Is Important To Note That All Indices Are Not Important. At The Same Time, It Is Not Possible To Achieve Perfect Values For All Indices (Garver & Mentzer, 1999). Thus, As Suggested By Garver And Mentzer, (1999), Jöreskog And Sörbom (2002) And Lindquist *Et Al.* (2001) The Areas Of Greater Focus Were Goodness Of Fit Index (GFI) And Adjusted Goodness Of Fit Index (AGFI), Normed Fit Index (NFI) And Non-Normed Fit Index (NNFI).

GFI And AGFI Are Indications Of How Well The Model Fits The Data With Values Of 0.90 Or Higher For The Model Suggesting That Evidence For Unidimensionality Exists (Jöreskog & Sörbom, 2002). NFI And NNFI Are Used To Examine The Proportion Of Total Variance Accounted For By A Model. The Values Should Ideally Be Greater Than 0.9. When The Measurement Model Was Estimated For The Original Scales, The Fit Indices Were Not Satisfactory. The Measurement Model Was Estimated Based On Standardized Solutions.

Since, None Of The Scales *Viz.* SG, TM And PO Were Found To Be Unidimensional. It Was Decided To Obtain Purified Scales With The Help Of Item Reduction. This Is A Well-Documented Practice In Business Research (Bawa, 2004). As Recommended By Anderson And Gerbing (1988), Mentzer *et Al.* (1999) The Method Of Standardized Residuals Was Used To Delete Items From The Scales And Achieve Unidimensionality. During Each Iteration In CFA, The Procedure Of Scale Purification Continued Till Fit Indices Improved And The Standardized Loadings Was Items Were More Than 0.3 As Recommended By Hill And Petty (1995) And Tinsley And Tinsley (1987). As Each Item Deleted Affects All Others, A Very Cautious Approach Was Taken, Deleting Only One Item Per Run. The Iterative Process Helped Obtain Stronger Fitting Single-Factor Model. The Fit Indices Improved After Scale Refinement, Indicating A Better Fitting Model. The Fit Indices For The Original And Purified Scales Are Given In Tables 1 And 2 Respectively.

**Table 1 CFA Model Fit Indices For The Original Scales**

Fit Indices	Ideal Value	Original SG Scale (6 Items)	Original TM Scale (5 Items)	Original PO Scale (5 Items)
<b>GFI</b>	<b>&gt;0.90</b>	0.859	0.977	0.987
<b>AGFI</b>	<b>&gt;0.90</b>	0.672	0.931	0.945
<b>NFI</b>	<b>&gt;0.90</b>	0.246	0.902	0.938
<b>NNFI</b>	<b>&gt;0.90</b>	-0.268	0.829	0.889
<b>CFI</b>	<b>&gt;0.90</b>	0.239	0.915	0.953

*Note:* GFI= Goodness Of Fit Index; AGFI= Adjusted Goodness Of Fit Index; NFI= Normed Fit Index; NNFI=

*Non-Normed Fit Index; CFI= Comparative Fit Index*

**Table 2 CFA Model Fit For The Refined Scales**

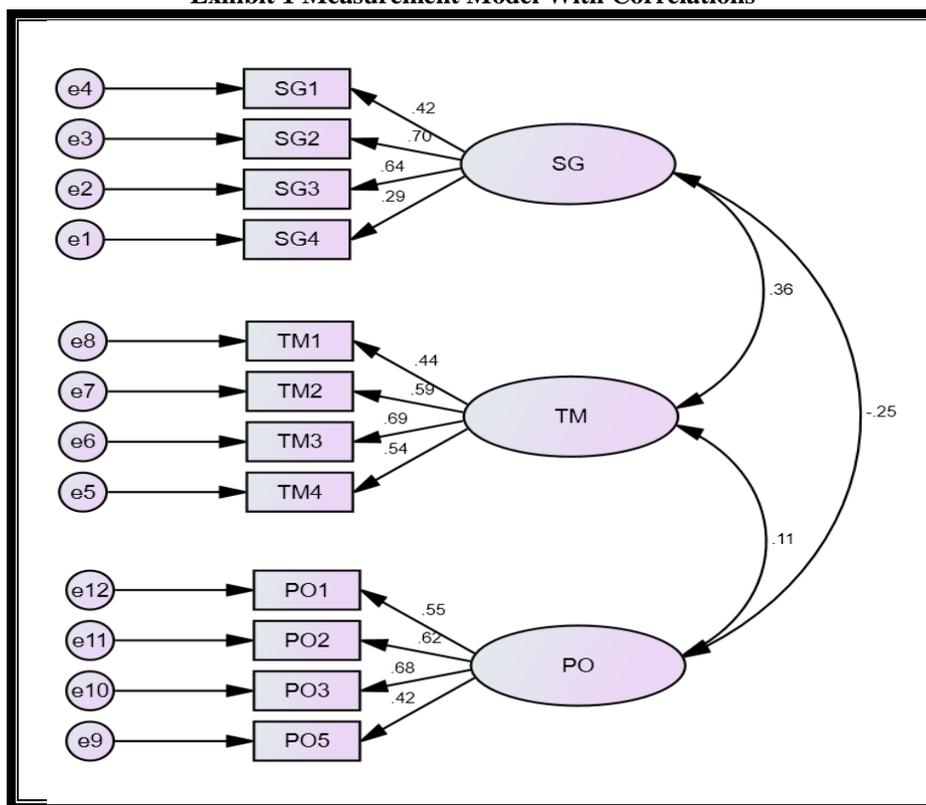
Fit Indices	Ideal Value	Original SG Scale (6 Items)	Original TM Scale (5 Items)	Original PO Scale (5 Items)
<b>GFI</b>	<b>&gt;0.90</b>	0.979	0.993	0.989
<b>AGFI</b>	<b>&gt;0.90</b>	0.895	0.963	0.961
<b>NFI</b>	<b>&gt;0.90</b>	0.908	0.971	0.957
<b>NNFI</b>	<b>&gt;0.90</b>	0.742	0.934	0.889
<b>CFI</b>	<b>&gt;0.90</b>	0.914	0.978	0.953

*Note:* GFI= Goodness Of Fit Index; AGFI= Adjusted Goodness Of Fit Index; NFI= Normed Fit Index; NNFI=

*Non-Normed Fit Index; CFI= Comparative Fit Index*

The Improved Fit Indices In The Refined Scales Support The Case For Unidimensionality Of The Scales. The Cumulative Measurement Model Based On The Standardized Solution For The Refined Scales *Viz.* SG, TM And PO Are Shown In Exhibit 1

Exhibit 1 Measurement Model With Correlations



**VII. Assessment Of Reliability**

Scale Reliability Estimates Were Calculated In This Study. It Is The Most Popular Method To Assess The Reliability Of A Construct Is By Computing The Cronbach’s Alpha Value Of 0.6 Or More Is Considered Significant For The Scale To Be Reliable (Hair *Et Al.*, 2008). Reliability Assessment Of The Three Scales Returned High Cronbach Alpha Values Suggesting High Reliability. However, Coefficient Alpha Tends To Underestimate And Sometimes Overestimate Scale Reliability (Garver & Mentzer, 1999). Thus, Apart From Cronbach’s Alpha, Garver And Mentzer (1999) Recommend Computing The SEM Construct-Reliability And Variance- Extracted Measures For Scale Reliability. SEM Construct Reliability Values Do Not Assume That The Individual Items Have Equal Reliabilities.

Fornell And Bookstein (1982), Garver And Mentzer (1999) Have Described Construct-Reliability And Variance-Extracted Measures As: Construct Reliability (CR) Is Estimated For Internal Consistency Similar To Cronbach’s Alpha. Varianceextracted (VE) Is An Equivalent Measure For Finding Construct Reliability And Is Referred To As Variance Extracted Measure. It Estimates The Assess The Amount Of Variance Captured By A Construct’s Measure In Relation To Variance Due To Random Measurement Error. Fornell And Bookstein (1982) Stated Thatcr Value Higher Than 0.6 Implies That There Ishigh Internal Consistency. Variance Extracted At 0.5 Or Higher Is Consideredacceptable (Fornell& Bookstein,1982. The Scale Reliability Estimates For All Scales Are Given In Table 3.

**Table 3 Scale Reliability Of The Three Scales**

Scales	Scale Reliability		
	Cronbach Alpha	Construct Reliability	Variance Extracted
SG	0.55	0.90	0.72
TM	0.65	0.92	0.76
PO	0.65	0.92	0.72

**VIII. Assessment Of Validity**

A Scale Has Validity If It Is Measuring Theconcept That It Was Intended To Measure (Bagozzi, 1981). Sinceunidimensionality And Reliability Have Been Established, The Next Step Involved Assessing Validity As Suggested Bygerbing And Anderson (1988). Various Forms Of Validity (I.E., Convergent And Discriminantvalidity) Were Assessed.

**Convergent Validity:** Convergent validity is the extent to which items in a scale correlate positively with each other. A construct is said to possess convergent validity if measures/items of a construct converge or highly correlate (Kaplan & Sacuzzo, 1993). The items of various scales should load or converge on their respective constructs with item loading values greater than 0.50 (Kaplan & Sacuzzo, 1993; Hair *Et Al.*, 2008). Factor loadings of all scales were more than 0.50, thus indicating presence of convergent validity. Also, convergent validity can also be measured using Bentler-Bonett Coefficient (Bentler & Bonett, 1980). Ahire *et Al.* (1996) and Green *Et Al.* (2006) suggested Bentler-Bonett Coefficient values of 0.9 or higher as indicative of high convergent validity. In the present study, the refined scales have a Bentler-Bonett Coefficient i.e. NFI and TLI values closer to 0.9.

**Table 4 Values Indicating Convergent Validity**

Scale	Loading Value Range	NFI	TLI
<b>SG</b>	0.32- 0.72	0.908	0.742
<b>TM</b>	0.44- 0.68	0.971	0.829
<b>PO</b>	0.42- 0.69	0.957	0.889

**Discriminant Validity:** Discriminant validity refers to the extent to which two theoretically alike concepts are unrelated. It refers to the extent to which a certain construct discriminates from other constructs (Chen *Et Al.*, 2005). A scale represents discriminant validity if its constituent items assess only one construct (Bagozzi, *Et Al.*, 1991). This plays an important role, when constructs are highly correlated, which means items from scale should not load on a different scale (Garver & Mentzer, 1999). Despite correlation, each scale should represent a distinct concept.

**Table 5 Correlation Values For Discriminant Validity**

Scale	SG	TM	PO
<b>SG</b>	1.000		
<b>TM</b>	0.403	1.000	
<b>PO</b>	0.034	0.028	1.000

As can be seen from the table 5, correlation values are low to moderate. Thus, indicating that discriminant validity of the scales.

### **IX. Conclusion And Direction For Future Research**

The measurement model for the three scales *viz.* Setting Goals And Priorities (SG), Mechanics Of Time Management (TM) And Preference For Organization (PO) showed that scales were not unidimensional in nature. Hence, the process of scale purification was carried out to obtain better fit indices with the help of CFA. The purified scale had improved fit indices and were established as unidimensional. Reliability and validity of refined scales were then assessed. Scale reliability was measured in three ways i.e. Cronbach's Alpha, Construct Reliability And Variance Extracted. The scales exhibited satisfactory results. Further, evidence of various forms of validity was assessed i.e. convergent and discriminant was found.

The study has implications for both academicians and practitioners. The study intends to build on recent theoretical work aimed at extending the boundaries of time management as defined and researched. The contributions of the study included development of a reliable and valid instrument *viz.* TMB scale. Since the existing scales in the area have been produced in developed countries, the present research contributes by drawing its sample from India. The present study contributes methodologically by deploying SEM, which is a rather less touched upon technique in the area. Since SEM is said to be superior to traditional statistical techniques (Anderson & Gerbing, 1988; Garver & Mentzer, 1999), the results can be relied upon.

Without a theoretical foundation for the propositions being tested and establishing construct validity for the measures, practitioners would have less confidence in the conclusions from any study. By adopting a rigorous methodology and ensuring reliability and validity, the study has sound basis for both theoretical and managerial implications. The present study was intended at developing a reliable and valid instrument for measuring TMB dimensions. However, the instrument has been tested in the Indian context only. Such scale modifications, which are empirically generated, must be cross-validated on other samples. Thus, it calls for more studies in different settings, cultures and countries to further test its unidimensionality, reliability and validity. The scales are tested based on the responses of a limited sample. Hence, the study might have suffered from sample size related problems. Future investigations may focus on larger sample sizes to give more representative results. Researchers can utilize the TMB scale and relate them to objective and subjective measures of organizational

Performance. Further, As Suggested By Kohli *Et Al.* (1993) Deleted Scale Items May Be Relevant To For Specific Stakeholders. That Should Be Consider In Future Researches.

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