Confirmatory Factor Analysis of Time Management Behavior Scale: Evidence from Pakistan

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Abstract

This paper presents a confirmatory factor analysis of the time management behavior scale of Macan, Shahani, Dipboyle and Phillips (1990). Three underlying factors of time management (planning, organizing and mechanics) are confirmed in the setting of an emerging economy.

Keywords: Time Management Behavior Scale, Confirmatory Factor Analysis, Emerging economy

Introduction

60 seconds in one minute, 60 minutes in an hour, 24 hours in a day….

Does it happen to you, also, that at the end of the day you look back to realize that there wasn't enough time to complete all your tasks? The answer may tell something about your time management behavior.

Over the past couple of decades, the importance of time management behaviors in organizational context has received more acknowledgment. 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) pointed to the rapidity of life through a study that 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, some authors have scrutinized the aspect of time in organizational framework (Palmer and Schoorman, 1999) and have tried to understand the role of pressure in time management context among employees (Major et al, 2002; Trueman and Hartley, 1996) .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; George and Jones 2000). While other writers focused on how employees manage their time, and how can these efforts can be improved (Macan, 1994).

However, the recognition of the issues involved in time management is not an innovation. The problems associated with time management have already been topic of research attention in the decades of 1950s and 1960s. Authors outlined methods on how to address issues of time at work (Drucker,1967; McCay, 1959; and Lakein,1973). They suggested straightforward solutions like making to-do-lists and writing work plans in order to facilitate job performance. Researching on this phenomenon, Drucker (1967) documented that planning the tasks and activities will not necessarily lead to the completion of work, especially under pressure. Adding to the literature, McCay (1959) proposed the concept of a training program for enhancing time management skills. The essential elements were: an overview of tiresome activities, changing the pattern how time was spent, and increasing the efficiency by training people about scheduling, prioritizing and dealing with unexpected tasks. Numerous books and articles have been published that convey these basic concepts to managers.

The phrase "time management" in itself is misleading. Time cannot be managed because it exists as an inaccessible factor. Nonetheless, how a person uses that time can be due to the person's predisposition. Keeping this in consideration Eilam and Aharon (2003) theorized that time management can be measured as a means of monitoring and controlling activities. According to this view, it makes more sense to speak of self-management. However, the literature describes self-management as supervision and regulation of oneself, but without any specific reference to the use of technical monitoring of time.

Despite all the attention to time management, relatively insignificant empirical research has been done about the processes involved in using time efficiently and completion of tasks on time. Richards (1987) conducted a study which examined the rising fame of time management. He referred to the principles mentioned by McCay (1959) to conclude that establishing life goals were important techniques to manage time effectively. Although this article was useful to understand the ideas behind the concept of time management, yet it was not a review of empirical studies about the time management related issue. After two decades, Classens et al (2005) conducted a review of the time management literature. The first goal of their study was to examine the past empirical studies about time management and to determine the instruments used in this domain of research. They reviewed how researchers have included time management behavior concepts and methods in their research. They also critically discussed research designs used by the researchers. Their second objective was to identify gaps in the then available research.

Research Objective

This paper provides evidence for the applicability of Time Management Behavior Scale (TMBS) by Macan et al., (1990), a western milieu model of time, in Pakistan. The Time Management Behavioral Scale is an instrument distinctively intended to measure time management behavior. It has not been extensively used by researchers in Pakistan (Azar 2013). Its applicability has been demonstrated in other parts of the world (Adams and Jex (1997); Britton and Tesser (1991); Mpofu, Damico and Cleghorn (1996)). This leads to the following research question:

Is Macan at al., (1990) time management behavioral scale applicable to non-western cultures (specifically Pakistan)?

Literature Review

The research question directed attention to the fact that the generalization of Western models of time management behavior to non western cultures has not been studied in detail (Azar 2013). Adams and Jex (1997) conducted the confirmatory factor analysis to test the factor

structure of the TMBS and found evidence for a three components based on a sample of students in United States. Shahani, Weiner, and Streit (1993) tested the convergent validity of the TMBS on students in the west.

Non western cultures offer unique opportunities for investigating time management behavior of organizational members. Mpofu, Damico and Cleghorn (1996) have tested the cross cultural transportability of the Britton and Tesser (1991) model using their Time Management Questionnaire in Africa, using students as their respondents. However, the application of Macan's questionnaire in Pakistani culture lacks empirical evidence.

Various authors have used TMBS (Macan et al., 1990) in their research studies (Refer to Table 1). It was noticed that the studies employing TMBS as their research instrument had used a varied sample size, from 37 (Van Eerde, 2003) to 525 (Jex and Elacqua, 1999), while most of the research in the 20th century has revolved around 100 to 150 respondents. TMBS had the backing of many authors and was one of the most validated instruments to measure time management behavior. Shahani, Weiner, and Streit (1993) investigated the validity of the TMBS. Adams and Jex (1997) tested the fundamental factor structure of the TMBS using confirmatory factor analysis and found additional evidence for a three-factor solution (Planning, Mechanics, and Organizing).

Table 1: Time management studies employing TMBS as research instrument

Author	Year	Sample Size	Respondent Type
Chang et al	2011	111	students
Peeters and Rutte	2005	123	teachers
Griffith	2003	120	employees
Van Eerde	2003	37	workshop participants
Kelly	2002	130	students
Davis	2000	140	women
Adams and Jex	1999	522	employees

Jex and Elacqua	1999	525	employees and students
Mudrack	1997	207	adults
Macan	1996	38	employees
Macan	1994	341	students
Lay and Schouwenburg	1993	65	students
Shahani et al	1993	106	students
Macan et al	1990	353	employees

Methodology

The data was coded in SPSS and Confirmatory Factor Analysis was conducted in Amos.

Sample size

For this research a sample of 200 questionnaires were distributed among employees of both public and private sector organizations operating in Lahore metropolitan area including the surrounding industrial areas. Final sample included 117 filled and returned responses that were used for analysis, resulting in response rate of 58.5%. To check for non response bias, a t-test was conducted on all items between the first 50% of questioners returned and the later 50% of questionnaires returned. No significant difference was found in the two groups.

Data collection

The data was collected using the Time Management Behavior Scale. The questionnaires were distributed in Lahore and surrounding areas across organizations, both in public and private sector. The questionnaire either sent through email or self-administered. To minimize response bias, the respondents were requested to complete questionnaire in privacy, eliminating influence of others. To avoid prejudice and sensitization to components of time management, the labels from the questionnaire were removed.

Instrument

Questionnaires filled by the respondents have dominated the research methods for time management behavior. The role of diary studies and experiments has not been significant. Various authors have developed questionnaires to study the impact and time management behavior. Most popular questionnaires are: Time Structure Questionnaire (TSQ, Bond and Feather, 1988); the Time Management Questionnaire (TMQ, Britton and Tesser, 1991); Time Management Behavior Scale (TMBS, Macan, Shahani, Dipboye, and Philips, 1990 and 1994).

For the purpose of this study TMBS (Macan, Shahani, Dipboye, and Philips, 1990 and 1994) was used as the data collection instrument. It measures the subscales of 1) setting goals and priorities, 2) mechanics of time management (e.g., making to-do lists), 3) preference for organization (e.g., having a preference for an orderly way of working). The permission to use the said instrument was granted by the author, Macan, via email in which the questionnaire was attached.

Results

This research investigated the transportability of the Macan et al., (1990) Time Management Behavior questionnaire onto Pakistan by conducting Confirmatory Factor Analysis.

The 29 items of the TMBS (Macan et al 1990) were set as the input of the confirmatory factor analysis. Figure 1 shows the resulting factor loadings. However, initially the validity and reliability did not hold for the mechanics and organizing component of time management behavior. Therefore, 10 items with factor loadings less than 0.5 were deleted. The final analysis comprised of 19 items as shown in Figure2.

After deleting 10 items of Macan's instrument (1990) remaining items loaded onto 3 factors namely planning, organizing, and mechanics (Table 2) with a factor loading greater than 0.5 and the composite reliability (CR) was greater than 0.7. The three factors of time management behavior also showed convergent validity as the Average Variance Extracted (AVE) for each factor was greater than 0.4. The discriminant validity for each factor is also greater than 0.6. This indicates that the scale (Macan et al., 1990) is appropriate to measure time management behavior in Pakistan.

Table 2: Confirmatory Factor Analysis

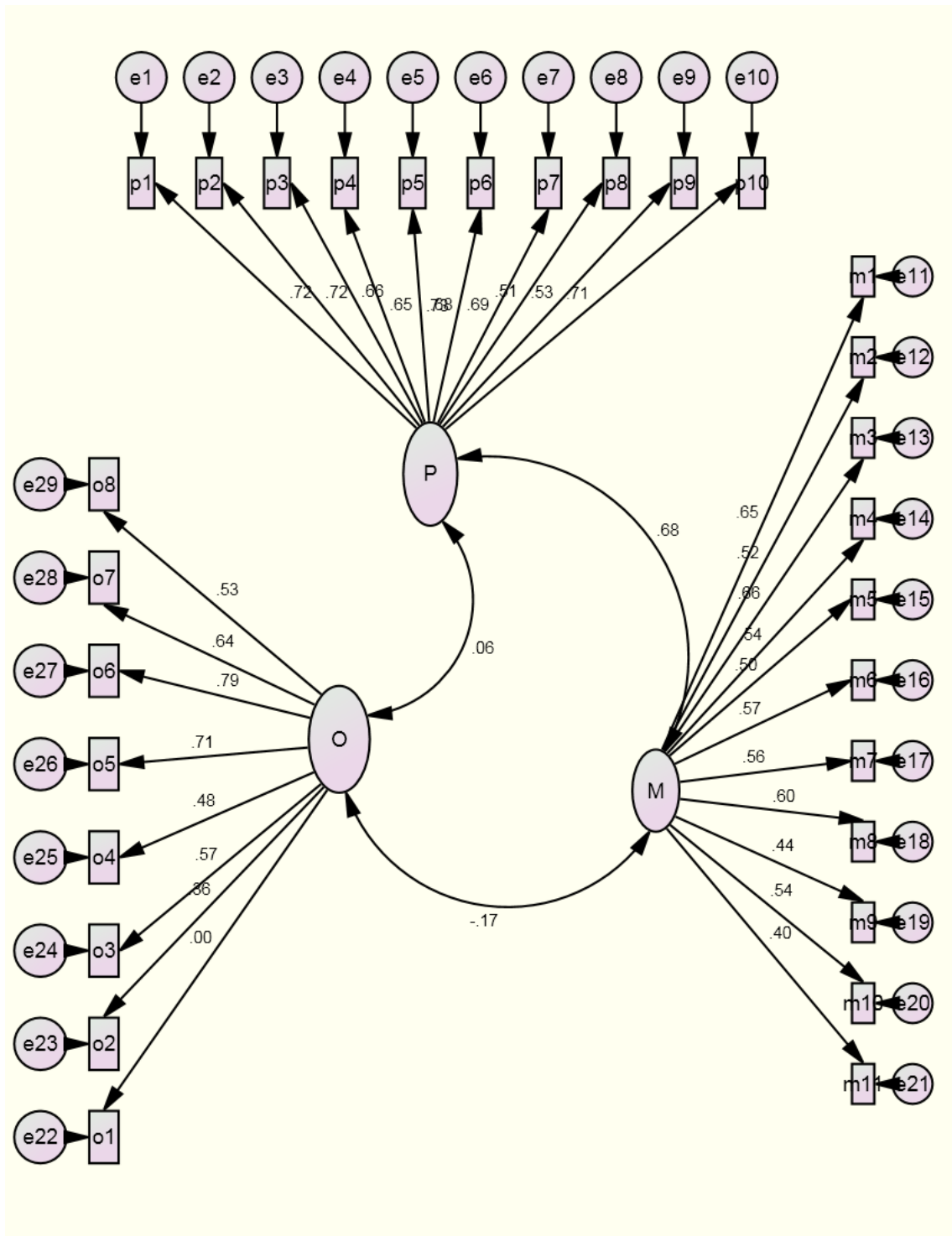|	Factor loading	Composite Reliability	AVE	Discriminant validity
Mechanics	.62 - .69	0.757	0.438	0.662
Planning	.51 - .73	0.886	0.441	0.664
Organizing	.52 - .84	0.788	0.434	0.659

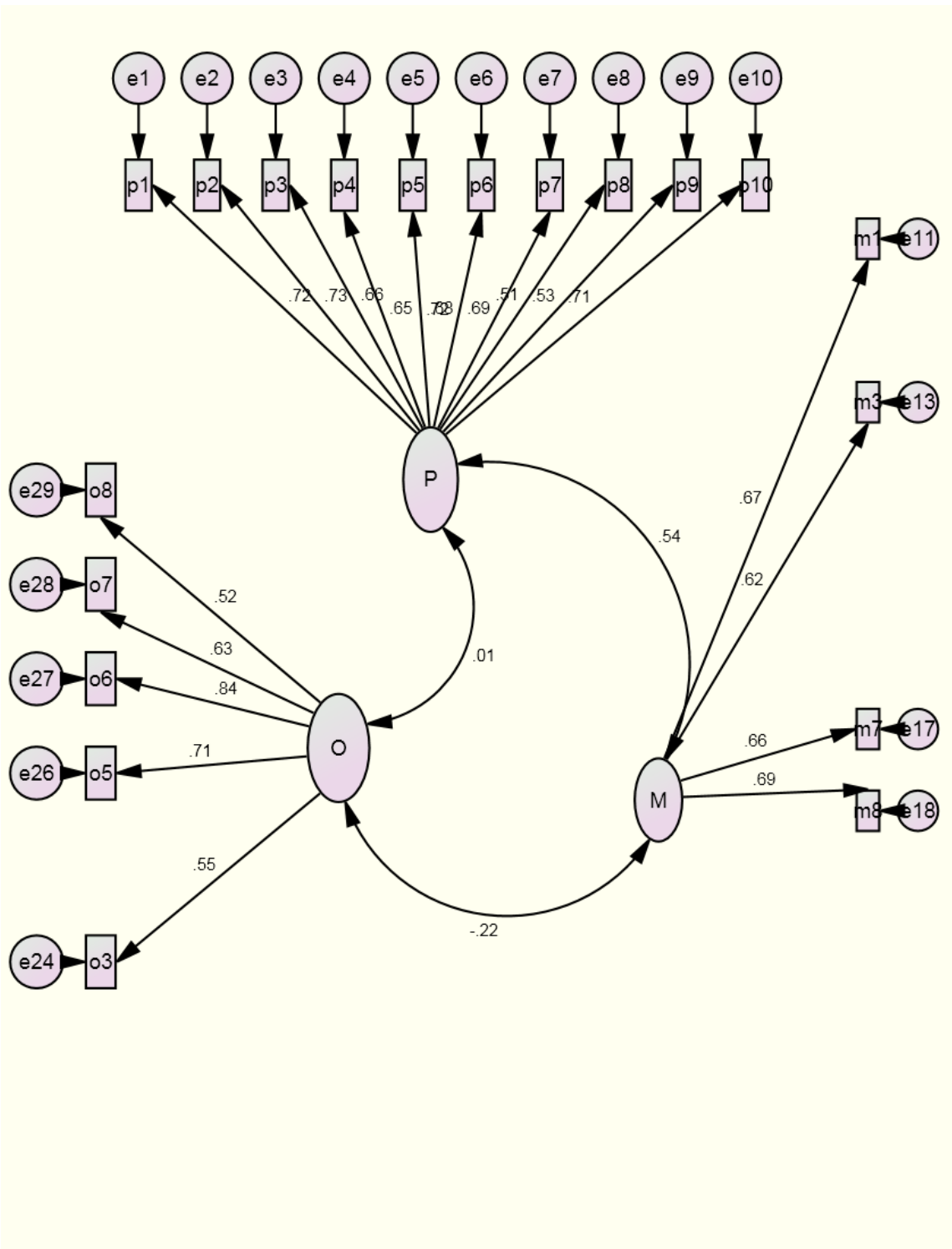### Figure 1: Factor Loadings of all 29 items

Figure 2: Factor Loadings of resulting 19 items

Contextual Contribution

The results of this study indicated that time management behavior scale (Macan et al., 1990) was an appropriate scale to measure time management behavior of Pakistani corporate sector employees. This indicates that the respondents could relate the questions asked in regard to the three factors (planning, mechanics and organization) as developed by Macan et al., 1990 for the west.

Conclusion and Discussion

"Time is money" (Franklin, 1748). This proverb reflects on time being a resource that can be measured in value to individuals and organizations. While the amount of money that can be made in a lifetime is not necessarily bounded, time is naturally limited. "Buying" time has become indicative of the busy lives today. It has become economic trade-off. For example, we pay gardeners to mow lawns, or wedding planners to organize a wedding. In turn it means that time can be spend on things that are more worthwhile and suit competence of the individual. However, "saving time" can also be accomplished through other means, for example, better time management.

A myriad of methods and technologies have been developed over the past decades to aid people in managing their time better. Most of these methods are available at the workplace, including but not limited to day planners, electronic and paper calendars, time tracking software, and project planning tools. For academic purpose the TMBS is an appropriate scale to measure the time management behavior; planning, organizing and mechanics behavior.

Future Implications

The result of this paper may be used to employee TMBS (Macan et al., 1990) as a research instrument in emerging economics and non western cultures with regard to time management behaviors. This will encourage researchers to add to the dirt of literature in time management and in turn improve time management behavior of managers and students.

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Appendix: Resulting TMBS

TIME MANAGEMENT BEHAVIOR SCALE (TMBS)

Planning

- When I decide on what I will try to accomplish in the short term, I keep in mind my long-term objectives.
- I review my goals to determine if they need revising.
- I break complex, difficult projects down into smaller manageable tasks.
- I set short-term goals for what I want to accomplish in a few days or weeks.
- I set deadlines for myself when I set out to accomplish a task.
- I look for ways to increase the efficiency with which I perform my work activities.
- I finish top priority tasks before going on to less important ones.
- I review my daily activities to see where I am wasting time.
- During a workday I evaluate how well I am following the schedule I have set down for myself.
- I set priorities to determine the order in which I will perform tasks each day.

Mechanics

- I carry a notebook to jot down notes and ideas.
- When I find that I am frequently contacting someone, I record that person's name, address, and phone number in a special file.
- I keep a daily log of my activities.

Preference for Organization

- I can find the things I need for my work more easily when my workspace is messy and disorganized than when it is neat and organized. (R)
- My workdays are too unpredictable for me to plan and manage my time to any great extent. (R)
- I have some of my most creative ideas when I am disorganized. (R)
- When I am somewhat disorganized I am better able to adjust to unexpected events. (R)
- I find that I can do a better job if I put off tasks that I don't feel like doing than if I try to get them done in the order of their importance. (R)