Exploratory Factor Analysis
Key to a Successful Factors in Mentoring Relationship

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Introduction

Nowadays employees' development such as enhancing two ways communication, coaching and mentoring has become an important element in organization's strategies and effort in improving employees' work and skills qualities, to face the era of globalization (Ismail et al., 2009), as well as social change and to incorporate the advances in sophisticated technology and demanded work design (Mclean & Joo, 2012).

Ismail et al., (2009) also revealed that mentoring was becoming important in an education field and inspired the scholars in organizational development interpret the practice and concept that is in line with organizations development.

Top managers including leaders in an organization viewed as mentors in helping their employees to enhance performance, cultivate sort of learning, improve the employees attitudes and produce positive outcomes in work environment, (William,1999) and with the combination of systematic design and good coordinating in such mentoring programs it may have significant impact in the employees individual's advancement which are psychosocial support and career development (Allen et al.,2005;Wanberg et al.,2006).

There have been many evidences about mentoring program either in formal or informal being implemented in professional range and fields like universities, hospitals, school and public and private agencies (Ehrich & Hansford, 2008). In additions, Watty et al.(2006) found three areas of mentoring program in higher education. One of them is the area of mentoring focuses on developing the staffs through scholarly approaches in improving teaching and learning in higher education.

Significance of the study

As the increment of the complexities in the workplace, there is a growing recognition that mentoring programs are needed to help individuals to be successful throughout their career development.

From mentoring program, the organization was able to produce peers support group and creates best learning community in transferring knowledge aspect, especially in education background.

Objective of the study

To accessing the successful factors that contributed in mentoring relationship by using optimal number of items in questionnaire using Exploratory Factor Analysis.

Literature Review

Psychosocial support is defined as the aspect of relationship that emphasized on enhancement of individual competencies in professional roles, namely, role modeling, counseling, acceptance and confirmation as well as friendship (Birrell & Waters, 1999). The study shows that positive psychosocial support in mentoring program will result to higher level of affective organizational commitment thus leading to reduce numbers of turnover intention rate among employees in the organization (Craig et al, 2012).

Weinberg & Lankau (2010) found in their study of 9-month mentoring program in insurance company explained that the mentoring effectiveness was significantly related to psychosocial support as well as marginally to mentoring function of role modeling. The results indicated that elements of communicating, listening and providing opportunities for development were the most influential factors in mentoring program.

Moreover, de Janasz & Godshalk (2013) noted that e-mentoring in psychosocial support was effective as conventional face-to-face mentors, and the mentees were expected to increase their performance rate in duties. Individual who practiced good interactions and maintain the development of relationship in mentoring paradigm might have effects on his or her individual advancement, namely, in psychosocial support and career development (Ismail et al, 2009).

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Career development in mentoring function is defined as the aspect in relationships that enhance in career advancement and career related support. Previous research showed that these two mentoring function are applicable in various samples, such as, administrators, IT staff, academicians, medical staff and teachers (Wanberg, Welsh & Hezlett, 2003).

This study which is focused on the UiTM Negeri Sembilan (public universities), the effort to enhance academicians' skill in teaching and learning competencies would be the crucial part towards the achievement of sustainability of high quality academic staff development environment (Othman et al, 2011). Specifically, UiTM Negeri Sembilan expected to have academicians who will carry out the tasks, duties, and responsibilities in professionalism terms to promote academic excellence and institutional policy. The outcomes of mentoring program in UiTM were expected to benefit all parties in terms of career development, spiritual fulfillment, personal growth, lifestyle enhancement, goal achievement and many more (Rugayah et al., 2003). Furthermore, Luna & Cullen (1995) noted that "Empowering the Faculty" synthesizes the literature on mentoring in conceptual framework, mentoring roles and arenas as well as the functions of mentors and mentees. The mentoring program was developed and implemented in UiTM Negeri Sembilan to empower organization in terms of strategies, guidelines as well as programs.

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Mentoring relationship focused on interpersonal support, mutual exchange, guidance, role modeling, coaching as well as sharing of wisdom among experienced employees to another person (Zachary, 2005). Mentoring relationship can be said as a planned formal activity in accordance to formal procedures of an organization, or informally, as pro-social behaviour or naturally or informal mentoring (Erdem & O¨zen, 2003). One of the strongest examples of positive mentoring relationship was the intellectual and emotional relationship between a senior lecturer and a junior lecturer. It was known as an expert apprenticeship, where by the relationship between the mother or father–son or daughter (Erdem and Sarvan, 2000).   The mentoring relationship in a university was a longer mentoring relationship as compared to other types of organization and the said relationship was important to an academic organization (Erdem & O¨zen, 2003).

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According to Ragin & Cotton (1999) there were an increased numbers of organizations that recognized the importance of mentoring program and the **formal mentoring** program was one type of mentoring in aspect of to build the mentoring relationship. Ragin again described formal mentorships normally needs the interference or assistance from respective organization to formulate the concept of mentoring which difference with informal mentoring. The formal relationship was usually much shorter duration than information relationships and the mentoring framework was depend on the organization (Ragin & Cotton, 1991). Formal mentoring programs are programs that are planned, structures as well as coordinated from the human resource department in the organization (Ehrich, 2004). In addition, the administrator who initiated the formal mentoring program should ensure that the goals of programs are clear and known to mentors and mentees, well matched between mentors and mentees and gain support and commitment from organization. In other word, since the educational bodies had invested the considerable resources into mentoring programs, it is crucial for the administrators to minimize potential problems that could arise (Hansford et al., 2004).

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In the nature of an organization, people will come and leave due to some purposes such as retirement. Therefore, the senior employees should need to transfer their expertise and knowledge on their job specification as well as to give advice, counseling and guidance to new employees. Mentorship program can be done by both formal and informal. New employees can learn from senior employees through a mentoring relationship. They can work together as one team with senior employees (Bramley et al., 2014).

The success of the informal mentoring program was correlated to choose the right mentors for mentees and it involved the process that strengthens the relationship (Allen et al., 2005). In many aspects, an informal mentoring relationship is the situation in which mentor and mentee freely and independently choose each other where it is similar to a friendship just because they choose the persons (mentor or mentee) because of the existence of good relationship (Germain, 2011). According to Khian Jui et al (2009) informal mentoring widely implemented in many organizations to complement and to strengthen formal mentoring program and normally it will last for many years compared to formal mentoring which have specific time. As a result if informal mentoring works effectively in the organization, it may lead employees to achieve organizational objectives, strategies and goals (Ismail et al, 2009).
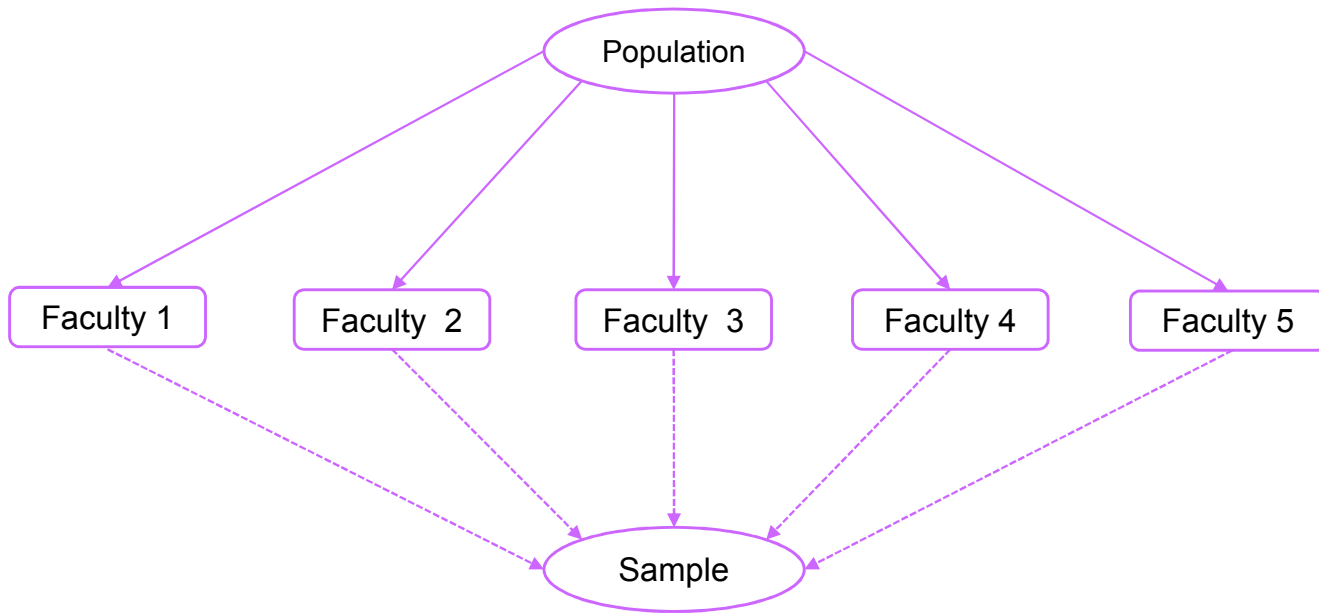
Methodology

This study will focuses on young lecturers who are working in Universiti Teknologi MARA located in Kuala Pilah, Negeri Sembilan. Respondents from five faculties which are Faculty of Applied Sciences, Faculty of Computer Science & Mathematic, Faculty of Business Management, Academy of Contemporary Islamic Studies and Akademi Pengajian Bahasa will be the sample and UiTM Negeri Sembilan Cawangan Kuala Pilah will be representing the organization in this study.

SAMPLE SIZE

As for the sample size, this study was determined through the use of an approach of Krejcie & Morgan (1970). Therefore, a sample size of 76 from a population of 93 elements was used for this study

PROBABILITY SAMPLING TECHNIQUE

Stratified sampling and then choosing representatives from each stratum using simple random sampling.

NUMBER OF PARTICIPANTS IN THE STUDY

Faculty	(N)	(n)
Applied Science	58	47
Computer Science & Mathematic	19	16
Business Management	8	8
Academy of Contemporary Islamic Studies	3	3
Academy of Language Studies	5	5
Total	93	76

Seventy six (76) questionnaires were distributed but only 63 questionnaires were returned, which a total of **83% response rate.**

Figure 1. Theoretical Framework of Key to a Successful Factors in Mentoring Relationship


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┌──────────────────────────────────────┐
│       PRELIMINARY  ANALYSIS          │
│         Reliability analysis         │
│            Communalities             │
│        KMO and Bartlett's test       │
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┌──────────────────────────────────────┐
│      EXTRACTION  OF THE FACTORS      │
│             Eigenvalues              │
│  Cumulative percentage of the total variance │
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                   │
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│          ROTATION  METHOD            │
│           Varimax rotation           │
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│   FACTOR IDENTIFICATION  AND LABELING │
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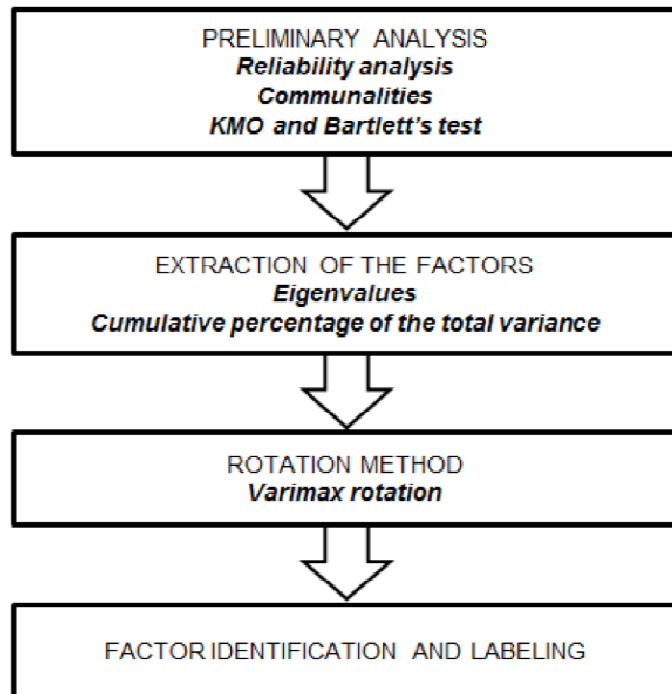
Reliability analysis used Cronbach alpha in determining the retention or removal of items on the scale. In addition, any item with small value of extraction communalities were marked as a component to be deleted. As for the result, the Cronbach's alpha coefficient of the scale increased when such items were deleted.

KMO and Barlett's test were acquired to indicate whether factor analysis is feasible or not. Thus, the higher the value of KMO and small values of the significance level of Bartlett's test of sphericity indicate factor analysis is feasible.

Eigenvalues was more than 1 considered as acceptable and cumulative amount of score variance for different factors were performed for the factor extraction. It was used to determine the optimal number of components useful to describe the data. The higher the cumulative amount of score variance, the less information will be missed out (lost).

Principal Component Analysis with Varimax rotation was performed for the purposes of obtaining simple and interpretable factors.

Finally is factor identification and labeling based on the higher loading factor for each component.

Exploratory Factor Analysis

The advantages of factor analysis are reduction of number of variables, by combining two or more variables into a single factor or more factors. Factors generated consist of variables that are highly correlated among them.

Analysis & Results

Table 2. The summary of 3 runs of component of Key to a Successful Factors in Mentoring Relationship

Items	Number of Item Removed	Cronbach's Alpha	KMO	CPTV[a]
35	7	.931	.691*	76.106%
28	6	.925	.750*	76.709%
22	-	.913	.790*	77.561%

*P-value<=0.000

[a.]CPTV: Cumulative percentage of the total variance

The results of 3 runs of reliability analysis showed that 13 items were removed by considering the Cronbach's alpha, KMO and Bartlett's test value.

Cronbach's alpha of 0.913, suggesting that the items have relatively internal consistency. The value of KMO=0.790 and small values of the significance level of Bartlett's test of sphericity (p-value=0.000) indicate factor analysis is feasible.

Table 3. Communalities (22 items)

Item	Extraction	Item	Extraction
1	.764	12	.739
2	.799	13	.744
3	.761	14	.632
4	.787	15	.709
5	.857	16	.886
6	.773	17	.753
7	.852	18	.729
8	.788	19	.758
9	.839	20	.829
10	.737	21	.888
11	.614	22	.826

Extraction communalities are estimates of the variance in each variable for the final 22 items. High values indicate that variables fit well with the factor solution, and should be retained in the analysis

Table 4.Eigenvalues

Component	Total	Percentage of variance	Cumulative percentage
1	8.589	39.040	39.040
2	3.550	16.137	55.177
3	2.035	9.250	64.427
4	1.639	7.448	71.875
5	1.251	5.686	77.561

Five (5) factors were extracted since the eigenvalue greater than 1.

The first eigenvalue was equal to 8.589, and corresponds to 39.04% of the variance in the original data. The second eigenvalue of 3.550, corresponding to the second factor that associated with 16.137% of the variance in the original data. The next eigenvalues are 2.035, 1.639 and 1.251 respectively, corresponding to the total of 77.561% of the variance in the original data.

Therefore, the cumulative percentage of the total variance explained by the factors extracted was 77.561% with considerably reduced the complexity of the data set by using these components with 22.439% lost of information.
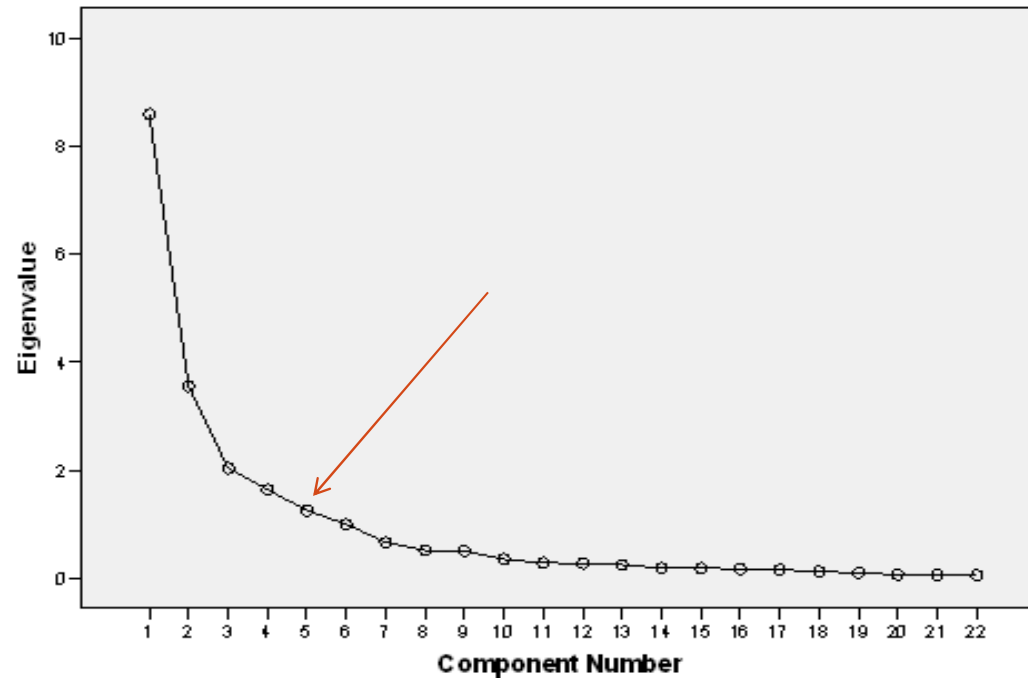
It is supported by the scree plot where it shows bend at the fifth components.

Table 5: Rotated component matrix

Items	Component				
	1	2	3	4	5
1	0.768	-0.058	-0.081	0.292	0.154
2	0.895	-0.099	0.171	0.143	0.159
3	0.706	0.128	0.327	0.320	-0.169
4	0.811	-0.018	0.139	0.179	-0.139
5	0.756	-0.129	0.390	0.135	-0.009
6	0.864	0.061	0.193	0.165	0.122
7	0.919	0.066	0.067	0.183	-0.029
8	0.783	0.163	0.323	0.274	-0.076
9	-0.027	0.700	0.070	-0.321	0.433
10	-0.101	0.886	0.152	0.197	0.029
11	0.013	0.875	0.074	-0.016	0.029
12	0.123	0.888	0.102	0.183	0.067
13	0.294	0.163	0.777	0.180	0.123
14	0.380	0.082	0.796	0.032	-0.112
15	0.135	0.199	0.770	0.077	0.322
16	0.292	0.151	-0.264	0.642	0.152
17	0.443	0.028	0.140	0.715	0.109
18	0.449	0.168	0.389	0.600	-0.055
19	0.281	0.010	0.226	0.709	0.005
20	-0.010	0.114	-0.100	0.045	0.873
21	-0.028	0.134	0.221	0.052	0.877
22	0.138	-0.021	0.239	0.541	0.607

- Eight items that were loaded onto Factor 1 were labeled as "Career development".
- Four items that were loaded onto Factor 2 were labeled as "Formal mentoring".
- Three items that were loaded onto Factor 3 were labeled as "Mentoring relationship".
- Four items that were loaded onto Factor 4 were labeled as "Psychosocial support".
- Three items that were loaded onto Factor 5 were labeled as "Informal mentoring"

Conclusion

As conclusion, this study found that the suggested determinants in mentoring program could play a role as an effective determinant for the individuals' advancement in UiTM Cawangan Negeri Sembilan. An understanding of mentoring and the development of professions cannot be separated from the organizational culture. Thus, the objectives and the goals of organization must be clearly explained to all lecturers for better understanding in making mentoring program a success. In addition, these elements can lead to the sustained and supported organizational strategic vision and mission.

The exploratory factor analysis of this research suggests that there are five determinants of individuals' advancement among the lecturers participating in mentoring program which account for 77.561% of the total variance which considerably reduce the complexity of the data set by using these components with 22.439% loss of information.

Kaiser-Meyer-Olkin value is 0.773 and small values of the significance level of Bartlett's test of sphericity (p-value<0.000) indicate factor analysis is feasible for this data set. Principal Component Analysis with Varimax rotation that produced the final 22-components suggested five (5) determinants of individuals' advancement among the lecturers participating in mentoring program revealed as career development, formal mentoring, mentoring relationship, informal mentoring and psychosocial support. Main findings indicates that the resulting of 22-items scale is much more reliable instrument than the initial 35-items scale with Cronbach's alpha correlation coefficients of 0.913.

Further research is recommended to determine the major determinant that contributes to the individual's advancement among lecturers in UiTM Negeri Sembilan by using Multiple Linear Regression.

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