

# From HR 4.0 to Better Supply Chain Flexibility: Role of Talent on Boarding and a Development in Thailand

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**Abstract**— Talent management is one of the most discussed areas of human resource management in 21st century. This is due to its vast range of implications in almost all processes of organization. However, introduction of HR 4.0 has diverted all the attention towards this new concept as talent management evolved in a more predicting role afterwards. This study has aimed to analyze the impact of talent management practices such as on-boarding, off-boarding and development on supply chain flexibility in mediating role of strategic HR 4.0 adoption. Responses were collected from the managerial employees of manufacturing sector of Thailand and those firms were selected for survey who were either adopted or in process of adoption of strategic HR 4.0. The gathered data was then tested statistically on SPSS and AMOS especially through confirmatory factor analysis and structural equation modeling. Results have revealed that talent management practices have significant impact on supply chain flexibility in manufacturing firms. Moreover, findings have also flagged strategic HR 4.0 adoption as a positive significant mediator in relationship between talent management practices and supply chain flexibility. Implications of this study has also extended towards telecommunication and service sectors too because most of such sectors are undergoing from strategic HR 4.0 adoption.

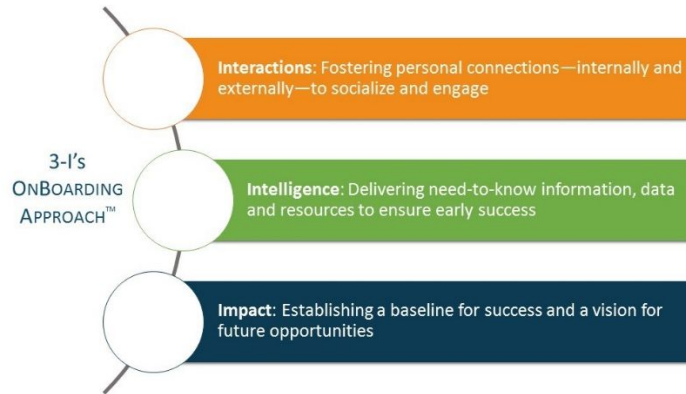
*Key Words:* Strategic HR 4.0, Talent Management, Talent On-Boarding, Talent Off-Boarding, Talent Development and Supply Chain Flexibility

## 1. Introduction

In the past few years, Human resource 4.0 is required by the companies of the encourage industrial transmission 4.0 [29]. HR 4.0 is necessary to meet

the industrial challenges. Different technologies like, internet of thing, big data analytics, and artificial intelligence enhanced the HR activities which resulted in leading HR teams and performances [1]. HR4.0 helped different organizations to implement a more strategic role in the growth of the overall organization. Flexibility in demand and supply and the response of the distribution system towards that change is known as supply chain flexibility [30]. That flexibility is meaningful when it is upward and positive. Hr4.0 helped many organizations in boarding the talent on the organizations and that always resulted in the improved performance of the company. If the people worked hard and on time the finished the task that means the talent onboard is successful. If that thing goes opposite and workers do not fulfill the work on time it means that it's the time to off-board, the talent. HR4.0 also helped in the development of the talent for the organizations, in the past many organizations used the advanced HR 4.0 strategic technique in order to better the performance for HR processes [1].

Figure no. 1 is showing the approach by which talent on boarding can be done. This study will know about the impact of talent onboarding on supply chain flexibility, the impact and relationship between talent development and supply chain flexibility. The aim will be to know about the association between talent off-boarding and supply chain flexibility.



**Figure 1:** The approach to talent onboarding (Source: TurningPoint)

There is a mediator in this study named as HR4.0 which will cause the impact between talent onboarding and supply chain flexibility. It will also cause the impact between talent off-boarding and supply chain flexibility. The study will also see the affiliation between talent development and supply chain flexibility with the mediating role of HR 4.0[2]. This study will also investigate the problem and suggestion will be provided for each variable, for the acceptance and rejection of different variables. The topic of HR 4.0 which may be helpful for the better supply chain flexibility, with the role of talent off-boarding and talent onboarding and talent development is a challenging topic for every organization. This is a worldwide problem. Different researches gave the findings for the problem but those were not enough to make the success possible. This study will use HR 4.0 as a mediator and will propose some suggestions which can be proved beneficial for the concerned department and companies [3]. This study will be conducted with the aim of the relationship between the variables stated above. The main objective will be to have knowledge about the mediating role of HR 4.0 and the rest of the variables given above and the impacts of these variables on each other. This study will tell how to develop the talent and what will be the results of talent onboarding and off boarding as well. This study will be conducted in Thailand. The pool of data will be established. The data will be collected from the leading organizations of Thailand[4]. This study will meaningfully subsidize to literate material, literature material will be enlarged through this study. The data will publish on the internet for better use. The students and different researchers can have deep

knowledge about the role of HR4.0 between talent onboarding and supply chain flexibility and talent off boarding a supply chain flexibility, talent development. This study will also pay numerous affections in practical life[5]. The organizations which want to hire skilled and expert workforce will consider this study. The researchers did not give suitable and enough suggestions for the topic of talent development and talent on and off boarding, and talent development. They did not describe the conclusion and impacts very clearly. They did not see the role of mediating and moderating variables between these factors. This study will enhance the knowledge level of the people who want to the talent on board and develop the talent. This study will use the mediating role of HR 4.0 for the latest industrial transmission. The study will be proved knowledgeable and dependable[6].

## 2. Literature review

### 2.1. Analytic Theory of HRM

The concept of the industry 4.0 can be described as an increase in the amount of digitization throughout the entire value chain, and a proper structuring of data transfer between people, objects and systems in real time [31-32]. Industries involve human resource management systems [7] to support the efficiency of industry 4.0, to produce better products through the use of supply chains. Industry 4.0 according to recent status has become the market of billion Euros which will further enhance the business performance [8] by installing different devices, objects and internet of things. HR produced the platform of industry 4.0 that was considered just one theory whose function was to take action, however now this platform is used

primarily for supporting new era of technology along with various supply chain management capabilities. Theorist [9] explains the concept and evidences regarding the framework of HR industry 4.0 that relates itself with the theoretical and conceptual framework of analytics theory of HRM. HRM functions into micro-minute forces that emphasize the utility and inter relationships of those elements are so valid and reliable in achieving the main objectives and goals of HRM. HRM policies are usually designed by the top lined managers who have high responsibility in maintaining the sustainability of HR industry 4.0, to further introduce [10] it into the markets. HR industry 4.0 tackles with the resources of strategic resources.

## **2.2. Talent On-Boarding impact on Supply Chain Flexibility**

[11], explains the importance of talent on-boarding to the HR department, who hires new employees and workers to maintain the flexibility of supply chain within an organization. New hiring means new responsibilities for which management team of HR or other related department has to be flexible enough that they should provide enough space to the new hired employees, and this can only happen through supply chain management. Studies by [12], suggest that talent on-boarding is a huge risk as well as it is an opportunity where companies and industries can hire new amazing talent. Analytic theory of HR management [13] corresponds with the dimensions on whose basis talents are on-boarded by the HR department that will further promote the relationship of (SCF). Literature that depends upon talent on boarding [14, 26] relies upon communication freedom because it defines the flexibility of the management teams and the organization performance. Studies [15], demonstrates that industries are the backbone of developing economy of a Country that needs to be dealt with supply chain performance and flexibility to make appropriate decisions and policies for future role of HR industry 4.0. Thus, the following hypothesis is proposed:

**H1:** Talent On-boarding has a significant impact on Supply chain flexibility.

## **2.3. Talent Development impact on Supply chain flexibility**

According to various studies [16], talent development shows its impact on supply chain flexibility (SCF). Talent development depends upon the talent management because it deals with multiple challenges faced by the firms and organization. However, when organization need to optimize their workforce's talent development is essentially required in that phase of management. Talent usually emerges when management is of strategic importance. Talent development raises intense cost pressures from both traditional and emerging competitors, new markets, and more demanding customers are considered as additional elements that gives a new sense of urgency to the concept of talent management. As per theoretical evidences [17] related to human resource theory, generates its potential to identify strength and growing recognition regarding the new talent because quality talent is a sustainable competitive advantage that shows the realistic aspects of complexity and flexibility of supply chain. Talent hunt can cause talent development which renews the human resource HR management system which identifies and attracts developing and emerging talents as per their skills, abilities, capabilities and their experiences. SCF attracts and retains professional beings while most impacting their organizational strategies. Nevertheless, developing manager's capabilities retains high performances [18] in the pool of potential and successions related to leadership qualities according to talent development which further enhances the performance of SCF. Thus, the following hypothesis is proposed:

**H2:** Talent development has a significant impact on supply chain flexibility.

## **2.4. Talent Off-Boarding impact on Supply Chain Flexibility**

Research articles, relies upon the supply chain accessibility, flexibility and performance that controls the criteria of talent hunt, selection of emerging talents and also off-boarding these talents due to environmental changes, due to economic decline faced by organizations, firms performance and product growth. Poor performance of individuals can also cause off-boarding of talents whenever organizations faces a downfall at financial level.

Studies, states the concepts of implications by HR theory [8] in the field of talent development as well as talent management. Talent off boarding is considered one of the most important aspects of HR management that helps to maintain the supply chain flexibility of the organization. Articles [20], highlights certain factors that involves separating an employee from a firm while, looking forward to the financial position of the firm or by focusing on the quality of work an employee produces within a firm. However, quality of work depends upon the SCF, which includes the process of sharing knowledge with other employees. Therefore, changes in labor market are the source of SCF which involves hiring and removal of talents. Thus, the following hypothesis is proposed:

**H3:** Talent off-boarding has a significant impact on supply chain flexibility.

### **2.5. Mediating Role of Strategic HR 4.0 Adoption between Talent On-Boarding and Supply chain flexibility**

Ref [7], organizes the role of the mediator between two effective variables that includes talent on-boarding and supply chain flexibility. Strategy HR 4.0 is a new emerging business that develops the performance of organization and its workplace, which enhances the procedure used for hiring the talents with the help of flexible environmental conditions. Ford [21] Strategy HR 4.0 adoption is based upon flat hierarchy related to agile organization structure that will perhaps create a conducive environment for the implementation of strategy 4.0 in the HR department or domain. Strategy HR 4.0 is responsible for enhancing leadership qualities and leadership dimensions for speeding up the decision making process and also to provide learning and innovation cultures that will benefit new on-boarding talents with the existence of SCF in an organization. According to recent studies [22], strategy HR 4.0 adoption develops a supporting structure for those employees who are newly hired and also for the existing employees that adapt itself with the flexibility generation in the organization. Thus, the following hypothesis is proposed:

**H4:** Strategy HR 4.0 Adoption has a significant mediating role between the relationship of Talent on-boarding and supply chain flexibility.

### **2.6. Mediating Role of Strategic HR 4.0 Adoption between Talent Development and Supply Chain Flexibility**

Authors [23] explain the concepts of HR theory while focusing on the mediating role of Strategy HR 4.0 adoption to possess HR expectations that causes talent development that enables the shortening of HR team size and provide HR department more time to play a strategic role in the organization. According to HR related case studies [24] that explain the view point of analytics working under the process of strategy HR 4.0 adoption to develop investment in banking increasing amount of workplace, private banking and asset management system. Furthermore, this asset management services increases the workplace potential to further enhance talent development that however influences SCF. As per theorists [25], origins of human capital influences the role of strategy HR 4.0 adoption that further develops the two significant variables for the process of attaining better workplace results and competitive advantages while involving different competitors in this progress. Thus, the following hypothesis is proposed:

**H5:** Strategic HR 4.0 Adoption has a significant mediating role between the relationship of talent development and supply chain flexibility.

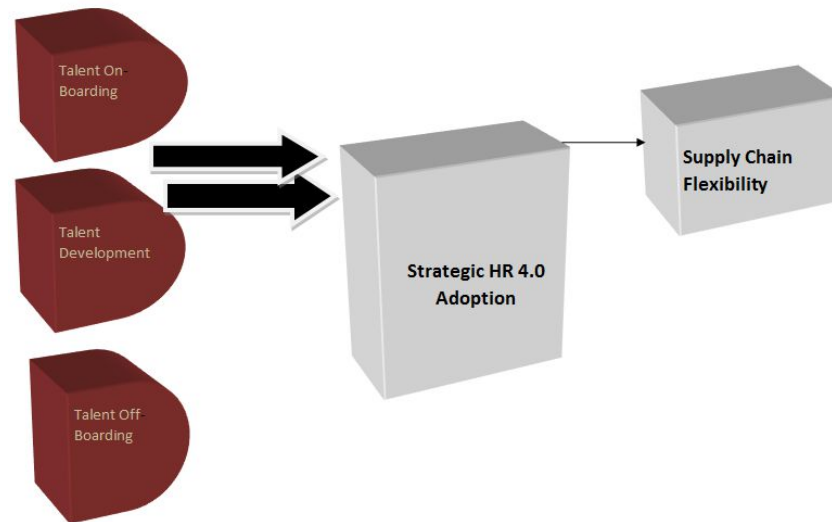
### **2.7. Mediating Role of Strategic HR 4.0 Adoption between Talent Off-Boarding and Supply Chain Flexibility**

Recent studies by [1], demonstrates the conceptual analysis of the mediator between talent off-boarding and supply chain flexibility. Strategy HR 4.0 makes statistical approaches that work for the benefit of HR department while off-boarding the talent that largely depends upon the performance and management of supply chain. SCF adheres itself with the environmental and transformational as well as technical challenges, that has to cope up with the emerging industry and strategies 4.0 to further influence the role of HR while off-boarding the talents [26] that are least required by the organization because of their inefficiency, lack of experience and unprofessional skills and capabilities. However, change in environment causes flexibility within environment that is significantly promoted by strategy HR 4.0 adoption. Thus, the following hypothesis is proposed:

**H6:** Strategic HR 4.0 adoption has a significant mediating role between the relationship of talent off-boarding and supply chain flexibility.

boarding and supply chain flexibility.

**Model:**



### 3. Methodology

#### 3.1. Population and Sample Selection

This research study has been accompanied to observe how the integration of HR 4.0 in talent on-boarding, talent off-boarding and talent development helps to achieved better supply chain flexibility. For examining the impact of this study, manufacturing sector of Thailand has been selected as a population, because in manufacturing sector, supply chain management effects whole operations of organization. Researcher selected electronic, textile and automotive industries as a sample because these industries as they have fully developed supply chain. By using purposive sampling technique, HR managerial employees have been selected as respondents because they clearly illustrate how the strategic HR 4.0 adoption in talent on-boarding, off-boarding and development leads to the supply chain flexibility. In sampling, researcher has to be careful while selecting the sample size because it is main issuing point of the sampling. Sample size has to be large enough if the covariance-based SEM approach has been used for analysis. Researcher selected sample size according to the idea of which states that number of questions\*10 generates accurate sample size. In this research study, 300 questionnaires have been distributed among the respondents, out of which 268 responses have collected. After discarding the

invalid responses, researcher considered 268 responses valid.

#### 3.2. Data Collection Methods

Structured questionnaire has been used by researcher as data collection method. The questionnaire development procedure has been started by composing closed ended questions, in which researcher asked about the impact of study in selected population. In order to examine whether all the items were understandable by respondents or not, pilot study has been conducted in which feedback have been collected from 35 respondents. Afterwards, content validity of scale has been checked by observing the point of views of other authors and industrial professionals about the scale. As this scale has already been used by many other researchers. The finalized questionnaire, has been administered by both self-administered and online questionnaire methods.

#### 3.3. Analysis of Validity, Reliability and Common Bias

In the measurement model, validity and reliability has been assessed by AMOS and SPSS respectively. Criterion used to examine the reliability assessment states that Cronbach's  $\alpha$  has to be greater than 0.70 because it has been elaborated by that desirable level

of items reliability has been attained only when  $\alpha$  values greater than 0.70. Three criteria have been examined for the assessment of convergent validity which includes one is items loading  $\lambda$ , its threshold range is greater than 0.70, second is average variance extracted which has to be exceeded than specific limit such as 0.50 and third is composite constructs reliability, its values were stronger when it is greater than 0.80. Coming towards discriminant validity, it has been assessed by the criterion which narrates that square root of AVE has to be exceeded when compared with the inter-correlated coefficients of remaining constructs.

Analysis of common bias has been accompanied in order to observe whether most of constructs accounted for by single measure or different measure used for the evaluation of most of the constructs. Common bias has been generated when 50% of variance accounted for by single factor. To observed this fact, Harman's single factor test has been conducted and all the variables of this research study has been included in test model such as talent on-boarding, talent off-boarding, talent development, HR 4.0, supply chain flexibility. Test has been implemented on all the variances and researcher came to know that single factor used for accounting of 23% of variance and factors solution used for accounting of 82% of variance. Therefore, inexistence of common bias in the research study has been confirmed as not single factor used for accounting of 50% of variance.

### 3.4. Hypothesis Testing

Hypothesis testing has been accompanied in order to observed that whether hypotheses of the study are positively related or negatively related. It has been performed with structure equation modeling, which has been run on AMOS. Structure equation model diagnostics has been run when covariance-based approach used by AMOS. In this research study, hypotheses have been tested are role of talent on-boarding, talent off-boarding and talent development in supply chain flexibility, in mediating role of strategic HR 4.0 adoption. By examining the direct, indirect and total effect and its relative significance, researcher assessed the acceptance or rejection status of hypotheses.

### 3.5. Measures

TOB was measured with the scale developed by [17], with the help of five items that were taken on a five-point Likert scale. Then TD was assessed by the scale developed by the researcher [12] and here four items were taken on a five-point Likert scale and were assessed. TOFB was measured by a scale developed by [11] four items were taken and measured on a five-point Likert scale. Finally, SCF was measured by the scale developed by [10] and five items were taken which were measured on a five-point Likert scale.

## 4. Empirical Results

### 4.1. Demographical Results

The study was conducted in Thailand and data was from 350 participants and the number of respondents was 274. The associations with the help of a self-organizational questionnaire were analyzed by using SPSS and Amos. It is very important to conduct the prerequisite analysis in order to check the reliability, normality, and validity of the data. The researcher applied the frequency distribution test in order to check the respondent profile. The findings showed that 131 males and 190 females participated in this study. 23 of the participants had graduation degree, 161 respondents had done post-graduation. Whereas, 127 respondents had master's degree and 10 had another degree. The participants included 268 people in age range 21 to 30 years, 42 people in age range 31 to 40 years, 9 people in age range of 41 to 50 years and only 2 participants were of age more than 50.

### 4.2. Descriptive Statistics

Table no. 1 is showing that there is no outlier in the given data as the maximum values lie in the threshold range of 5-point Likert scale, as the skewness value is somewhere between -1 and +1 which is the threshold range of normality assumption and so the data is normal and is valid to go for further testing.

**Table 1. Descriptive Statistics**

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
SCF	321	1.00	4.90	3.5439	1.10047	-.830	.136
TNB	321	1.00	5.00	3.4773	1.16448	-.666	.136
TD	321	1.00	5.00	3.5514	1.09835	-.769	.136
TFB	321	1.00	5.00	3.5426	1.08873	-.805	.136
HRA	321	1.00	5.00	3.4478	1.12405	-.556	.136
Valid N (listwise)	321						

**Table 2. Rotated Component Matrix**

	Component				
	1	2	3	4	5
SCF1	.705				
SCF2	.772				
SCF3	.833				
SCF4	.840				
SCF5	.832				
SCF6	.822				
SCF7	.823				
SCF8	.802				
SCF9	.834				
SCF10	.806				
TNB1			.761		
TNB2			.803		
TNB3			.815		
TNB4			.837		
TNB5			.824		
TD1				.808	
TD2				.823	
TD3				.874	
TD4				.813	
TD5				.781	
TFB1		.772			
TFB2		.782			
TFB3		.796			
TFB4		.854			
TFB5		.820			
TFB6		.873			
HRA1					.834
HRA2					.856
HRA3					.867
HRA4					.870

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

### 4.3. Rotated Component Matrix

The above table is showing the RCM values, almost all of the indicators are showing the factor loading more than 0.7, it means that all of the indicators are eligible to be added in the further hypothesis testing because all factor loadings are in suitable threshold level and in a suitable and valid range. Moreover,

there is no cross-loading data shown in RCM so, data is good to go for further testing.

**Table 3.** Convergent and discriminant validity

	CR	AVE	MSV	MaxR(H)	HRA	TNB	TD	TFB	SCF
<b>HRA</b>	0.937	0.789	0.246	0.943	<b>0.888</b>				
<b>TNB</b>	0.952	0.799	0.366	0.973	0.349	<b>0.894</b>			
<b>TD</b>	0.940	0.759	0.366	0.981	0.432	0.605	<b>0.871</b>		
<b>TFB</b>	0.946	0.747	0.300	0.989	0.417	0.545	0.405	<b>0.864</b>	
<b>SCF</b>	0.967	0.746	0.320	0.992	0.496	0.566	0.511	0.548	<b>0.864</b>

#### 4.4. Convergent and discriminant validity

The results of convergent and discriminant validity show that the overall model is a good fit because the composite reliability of each variable is more than 70% and average variance extracted is more than 50% while the discriminant validity shows that loading of each variable discriminates from others. Every variable has maximum loading with itself as compared to with others so these validities prove the authenticity of collected data.

#### 4.5. Confirmatory Factor Analysis

Here, CMIN is less than 3, GFI is greater than .924, CFI is greater than .90, IFI is greater than .981 and RMSEA is less than .80. So, the table 4 is showing that the indicators lie in the valid range so the data is good to go. Screenshot of CFA is given below:

**Table 4.** CFA

Indicators	Threshold range	Current values
CMIN/DF	Less or equal 3	2.506
GFI	Equal or greater .80	.823
CFI	Equal or greater .90	.943
IFI	Equal or greater .90	.943
RMSEA	Less or equal .08	.069

**Table 5.** SEM

Total effect	TFB	TD	TNB	HRA
<b>HRA</b>	.309***	.271***	.001	.000
<b>SCF</b>	.311***	.204***	.260***	.226***
Direct effect	TFB	TD	TNB	HRA
<b>HRA</b>	.309***	.271**	.001	.000
<b>SCF</b>	.241***	.143*	.260***	.226***
Indirect effect	TFB	TD	TNB	HRA
<b>HRA</b>	.000	.000	.000	.000
<b>SCF</b>	.070**	.061**	.000	.000

#### 4.6. Structural Equation Modeling

The total effect of TFB on HRA and SCF is 30.9% and 31.1% respectively. Impact of TD on HRA and SCF is 27.1% and 20.4%. Impact of TNB on HRA and SCF is 0.1% insignificant and 26% positive and significant. the impact of HRA on SCF is 22.6% positive and significant so with every 1 unit increase in HRA, SCF will increase by 22.6%. Directly, TFB

has 30.9% and 24.1% impacts on HRA and SCF. TD has 27.1% and 14.3% impact on HRA and SCF respectively. TNB has 0.1% insignificant and 26% significant impact on HRA and SCF. HRA has 26.6% impact on SCF. TFB has 7% impact on SCF and TD has 6.1% impact on SCF, the impacts are positive and significant.



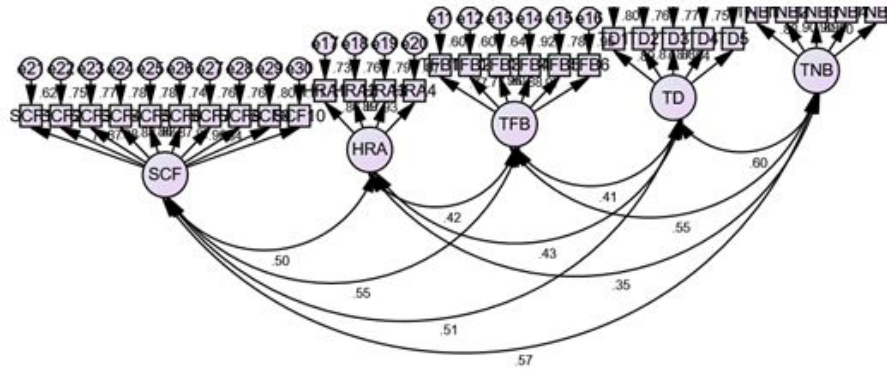


Figure 2: CFA

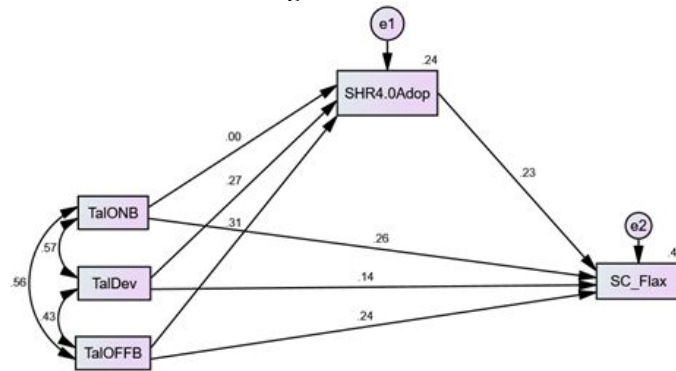


Figure 3: SEM

5. Discussion and Conclusion

5.1. Discussion

The main purpose of this study was to know about the relationship between Talent ON Boarding (TOB) and Supply Chain Flexibility[27]. The purpose was also to know about the relationship between Talent Development (TD) and SCF. Another purpose was also to know about the impacts of Talent Offboarding (TOFB) on SCF. The aim was to know about the mediating role of Strategic HR 4.0 adoption (SHR-4.0) between TOB and SCF. The aim was also to know about the mediating role of SHR-4.0 between TD and SCF. This study has the aim to know about the mediating role of SHR-4.0 between TOFB and SCF. This study also suggested some hypothesis the first hypothesis suggested that TOB has a significant and positive impact on SCF. This hypothesis was accepted. “Markio Jurceve D.SC.” Stated in that research the positive impact of TOB ON SCF is just because of the new talent which companies hired and implement their innovative ideas and then they can get increase performance[7]. The second hypothesis stated that the impact of TD on SCF is significant.

This hypothesis was also accepted. According to the researcher “Morana Ivakovic” there is a positive impact of TD on SCF. The hypothesis number third suggested that the impact of TOFB on SCF is significant. This hypothesis was accepted as well. “Darko Babic” suggested that the development of new talent caused enhanced and improved distribution and production system. The fourth hypothesis recommended that SHR-4.0 significantly and positively mediates between TOB and SCF. This hypothesis was accepted as well. “Marinko” stated in a paper that the SHR-4.0 improve the performance of the organization from material to delivering the finished goods. The hypothesis number fifth suggested that SHR-4.0 significantly mediates between TD and SCF. The hypothesis is accepted. “Ingrid Mork” in the research stated that SRH-4.0 helped companies in gaining the competitive advanced through efficient operational activities. Sixth and last hypothesis stated that the mediating role of SHR-4.0 is positive between TOFB and SCF.this hypothesis was also accepted. As per the study of “Jyotsna Bhatnagar,” the SRH-4.0

concluded in the form of developing and retaining the talent development and off-boarding the talent helped the organizations in better SCF[28].

## 5.2. Conclusion

This study is completed having the aim to know about the association between TOB and SCF, TD and SCF, TOFB and SCF. The aim was also to know about the significance of the mediating role of SHR-4.0 between TOB and SCF. To know about the significance of the mediating role of SHR-4.0 between TD and SCF, and also between TOFB and SCF. This study is conducted in Thailand. Data was collected from leading organizations of Thailand. The sample size was 300 people, 268 responses were valid, from leading organizations of Thailand. This study resulted in a significant impact between TOB and SCF, between TD and SCF, between TOFB and SCF. This research concluded that SHR-4.0 significantly mediates between TOB and SCF, between TD and SCF, and between TOFB and SCF.

## 5.3. Implications of this Study

This study enhanced the literature material, the students now can search the positive impacts of TOB on SCF, the positive impacts of TD on SCF, and impacts of TOFB on SCF they can also have the knowledge about the significance of the mediating role of SHR-4.0 between these variables. This study also contributed to practical life. The organization practically learn from this research and they can also implement the suggestion discussed in order to better the performance of their organizations. The authorities at the government level can also get benefits from this research.

## 5.4. Limitations and Future Research Indications

This study is completed by selecting the sample of only 300 people from the leading organization of Thailand. The future researchers can expand the sample size they can get data from more than 300 people from different organizations. The data may be more accurate from the large sample. This study is conducted only in Thailand the future researchers can conduct this study beyond the borders of Thailand or in any other country. This study used only questionnaires for data collection. Upcoming researchers can use more than one data collection tool.

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