

THE RELATIONSHIP BETWEEN EMPLOYEE CAPABILITY, INFORMATION SUPPLY, ORGANIZATION SUPPORT, DEVELOPER SUSTAINABLE PERFORMANCE, MOTIVATION AND SOFTWARE DEVELOPMENT

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ABSTRACT

The objective of this study is to examine the role of employee capability, information supply and organization support in software development. The mediating role of developer sustainable performance and motivation was examined for the further clarity. The population of this study was the software houses of Indonesia in which the employees were selected as the respondents. Results of the study show that employee capability is positive role to enhance software development. Information sharing also has positive effect on software development. Moreover, organizational support also has positive role to enhance software development. Employee capability also has positive effect on developer sustainable performance and developer sustainable performance has positive effect on motivation. Employee capabilities also has positive role to enhance employee motivation in software houses.

Keywords: Employee Capability, Information Supply, Organization Support, Developer Sustainable Performance, Motivation, Software Development

INTRODUCTION

Software houses have significant in the business as well as society. As the need of software is increasing day by day among the organizations. Most of businesses are majorly focusing to develop latest software's to enhance the performance of business. Better utilization of implementation of software's among the organizations has vital influence. Now in the competitive market, the requirement of software houses has important role. Now a day, the role of software's is increasing among the companies as each system of the business or various companies are based on software's. Software's used to handle the system in business with an easy way as compared to handle the business manually. Therefore, various previous studies also show the importance of software's (Samsinar & Wiyono, 2019; Scandaroli, Leite, Kiosia & Coelho, 2019).

In the recent decade, with the increase in information technology services, the use of software is increasing day by day. To run various applications related to the information technology, software is required. Along with the change in various information technology instruments, the need of new software's is increasing. Numbers of businesses are using various latest software's to run the operations in a smooth way. In the era of latest technology, the software's are most important to handle the business activities easily as compare to the manual system. Therefore, software's has the key contribution to the business activities which has

crucial link with the information technology (Sundararajan, Bhasi & Pramod, 2017; To, Lai & Leung, 2019).

However, in various countries the need of software's is very high which is quite tough to meet. With the increase in technology, it is really important to fulfill the increasing demand of software's. Increase in the application in the business organizations, the software's are increasing. To fulfill the increasing demand of various companies, the software houses are required (Danish et al., 2019). Information technology is one of the most powerful sources among the countries (Basheer, Siam, Awn & Hussan, 2019) which required software houses to enhance the performance. However, in Indonesia, the demand of software houses is increasing which required significant number of software houses to enhance the operations of the business as well as various other organizations. Indonesia has large number of businesses are working with different organizations. Increase in these business organizations causes to increase the demand of software companies. There are number of businesses in Indonesia including public as well as private businesses. All these businesses required number of business software's to enhance the business activities. With the help of increase in the latest business activities, it is important to install latest software's. Therefore, in the Indonesia, to support the organizations, proper business software's are required which are vital to support business to increase the business performance? Therefore, software's and businesses have major relationship which is quite important in business activities (Bhavsar, Shah & Gopalan, 2019; Scandaroli et al., 2019; To et al., 2019; Wiwchar, Walker & Marsh, 2020). Therefore, in the Indonesia the software developed should be enhanced to increase the overall performance. As the increase in software development has the ability to fulfill the need for businesses.

The performance of the software development can be increased with the help of employee capabilities. As the employee capabilities has the vital role in employee performance for the software development. In the software houses, capability of the employee to enhance the performance of employee has vital importance for software development. As the capability of the employee in organizations has positive role in performance of employees (Baik, Kim & Patel, 2019) which has the potential to increase the number of software development. It is really important to increase software development capabilities of the employee working in software houses. Furthermore, supply of information is also required to develop the software. Increase the evaluable information extraction for the employee of software houses increase the quality of product. Both the external and internal information is required for the people to enhance the software development. Furthermore, employee always required organizational support to enhance the performance. Organizations must be supportive for their employee which can increase the employee performance. As it is given that employee performance is influenced by the organization support (Li, Naz, Khan, Kusi & Murad, 2019). All these elements; capability, information supply and organization support have the potential to enhance developer sustainable performance which causes to motivate the employee and finally increases the software development.

Therefore, objective of this study is to examine the role of employee capability, information supply and organization support in software development. Hence, this study examined the relationship between employee capability, information supply, organization support, developer sustainable performance, motivation and software development. Various previous studies have examined the software houses and software development (Yaseen & Ali, 2019; Zaman, Jabbar, Nawaz & Abbas, 2019), however, previous studies have not examined the effect of employee capability, information supply and organization support on software development in Indonesia. Hence, this study has vital contribution to the literature.

LITERATURE REVIEW

Increase in the information technology requires latest software's to apply new technology for the sake to increase the performance (Hussain, Mkpojiogu & Abdullah, 2016; Jermstittiparsert, 2020; Tirastittam, Jermstittiparsert, Waiyawuththanapoom & Aunyawong, 2020). It led to the innovation which may cause to decrease the overall cost, lower time and high quality. In the business environment, number of business always has required new software's which overburden the software houses. As increase in the demand of software's increase the burden on employees. Number of previous studies carried out research on software houses in relation to the software development. However, previous studies have not examined the solution to enhance the software development. According to the current study, capability of the employee can increase the software development. Along with this, information supply to the employee of the software houses can increase the software development. Furthermore, organization support also has influential role in software development. In addition to this, developer sustainable performance and motivation also playing a vital role in software development. The relationship between employee capability, information supply, organization support, developer sustainable performance, motivation and software development is shown in Figure 1.

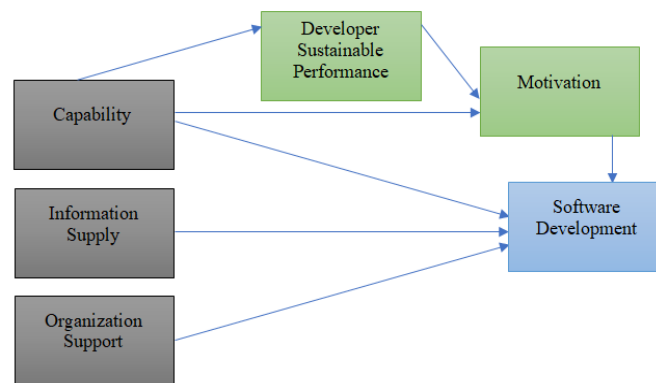


FIGURE 1
THEORITICAL FRAMEOWRK OF THE STUDY SHOWING THE RELATIONSHIP BETWEEN EMPLOYEE CAPABILITY, INFORMATION SUPPLY, ORGANIZATION SUPPORT, DEVELOPER SUSTAINABLE PERFORMANCE, MOTIVATION AND SOFTWARE DEVELOPMENT

Employee capabilities are the most crucial part of employee performance. In organizations, the capabilities of the employee are the basis of their performance which lead to the higher organizational performance. Similarly, the employee capabilities also have important role among the software houses. In software houses the employee capabilities, particularly the capabilities of the software developers have major influence on software development. The increasing demand of software's can be fulfilled by the employee capabilities. Employee capability are important because employee capability has positive effect on performance of the employees (Camps, Oltra, Aldás, Buenaventura & Torres, 2016; Papa, Dezi, Gregori, Mueller & Miglietta, 2018).

Furthermore, information sharing also has major role in software development. Employee of the software houses always require valuable information to develop a software. This information can be received with the help of various internal as well as external sources. New software development is one of the most productive elements for the companies. The

information to develop new software can be received from the external sources such as suppliers. Suppliers are the key part of any organization which can provide better and quality information. As the supplier has significant link with the customers which provide valuable information. Suppliers also have the information related to the market. Especially, the competitor's information is also key to the software development which can be provided by the suppliers. Therefore, software development has major influence in organizations (Dingsøyr, Moe, Fægri & Seim, 2018; Khan, Keung, Niazi, Hussain & Ahmad, 2017), which require significant information.

Nevertheless, organizational support also playing a vital role in software development. The organizational support is the degree to which employees of an organization believe that their organization values their contributions as well as cares related to their well-being and fulfills socioemotional requirements. Employee of the organization always requires better support from their company. Because support from the company has the ability to encourage the employee to do better job. Encouraged employees always try to develop software's because they believe that organization will support them. However, if the employee feel that organization will not support them, they remain discouraged and do not work in a better way to achieve the organizational objectives. As previous studies shows that organizational support to the employee causes to increase the performance (Kim, Hur, Moon & Jun, 2017; Zhong, Wayne & Liden, 2016).

Hypothesis 1. Capabilities has positive influence on software development.

Hypothesis 2. Information supply has positive influence on software development.

Hypothesis 3. Organizational support has positive influence on software development.

The above section shows that capabilities has positive role in software development, moreover, capabilities has positive role in software developer sustainable performance. Increase in the capabilities increases the developer sustainable performance. As the capabilities increases the confidence for software development which encourages the employee to work for development of latest software. Because, capabilities and performance of employees has major relationship (Suharto & Nusantoro, 2018; Zehir, Yıldız, Köle & Başar, 2016). Moreover, employee capabilities also have the ability to increase the level of motivation to do the specific task. According to this study, employee capability has the potential to enhance motivational level. Along with this, developer sustainable performance also increases the motivation. Higher performance achievement by the employee causes to increase the motivation among employees. It also has significant positive effect on overall team performance. As mentioned by (Beltrán & Bou, 2018) that employee performance has positive relationship with motivation. Finally, employee motivation leads to the software development.

Hypothesis 4. Capabilities have positive influence on motivation.

Hypothesis 5. Capabilities have positive influence on developer sustainable performance.

Hypothesis 6. Developer sustainable performance has positive influence on motivation.

Hypothesis 7. Motivation has positive influence on software development.

RESEARCH METHODOLOGY

The nature of this study is quantitative because this study collected the primary data to get the objective of this study. In this direction, the questionnaires were designed to examine the relationship between employee capability, information supply, organization support, developer sustainable performance, motivation and software development. In this relationship, the current study measured six variables, namely; employee capability, information supply, organization support, developer sustainable performance, motivation and software development. All these

variables were measured with the support of previous studies while developing a research questionnaire. As survey questionnaire is one of the important parts of primary data study (Bowling, Bond, Jenkinson & Lamping, 1999).

After the development of questionnaire, it was distributed among the software houses. Indonesian software houses were selected for data collection. Thus, the population of this study was the software houses of Indonesia. Finally, employee of Indonesian software houses was selected for data collection. Cluster sampling was applied to collect the data from the employee of software houses which is appropriate technique in the current nature of the study (Ul-Hameed, Mohammad, Shahar, Aljumah & Azizan, 2019). While using the cluster sampling, data were collected by making various clusters. After making various clusters, data were collected from each selected cluster after using simple random sampling (Siuly, Li & Wen, 2011). Actually, the sampling frame was not available therefore; cluster sampling was used in which the last step of cluster sampling is based on to collect the data through random sampling. Finally, 450 questionnaires were distributed among the employee of software houses and 231 were returned from the total questionnaires and used in data analysis through Partial Least Square (PLS).

RESEARCH FINDINGS

The current study followed Partial Least Square (PLS) for data analysis. The PLS is selected because of the popularity of this software for data analysis as it is most recommended as well as most suitable tool in data analysis (Hair, Sarstedt, Hopkins & Kuppelwieser, 2014; Hair, Ringle & Sarstedt, 2013; Hair, Sarstedt, Pieper & Ringle, 2012; Henseler et al., 2014). However, before to apply PLS for data analysis, it is recommended by number of studies to examine the missing value (Aydin & Şenoğlu, 2018) in the collected data because it is really important to handle because it has effect on the performance of results. Hence, the process of data screening is carried out in the current study investigated and fixes the missing values in the data as shown in Table 1.

	No.	Missing	Mean	Median	Min	Max	SD	Kurtosis	Skewness
CAP1	1	0	3.502	4	1	5	1.217	-0.631	-0.556
CAP2	2	0	3.456	4	1	5	1.21	-0.718	-0.457
CAP3	3	0	3.54	4	1	5	1.123	-0.244	-0.658
CAP4	4	0	3.498	4	1	5	1.161	-0.267	-0.663
CAP5	5	0	3.439	4	1	5	1.181	-0.615	-0.534
INS1	6	0	3.582	4	1	5	1.183	-0.336	-0.667
INS2	7	0	3.616	4	1	5	1.121	-0.163	-0.645
INS3	8	0	3.629	4	1	5	1.058	-0.343	-0.546
INS4	9	0	3.785	4	1	5	1.273	-0.302	-0.862
INS5	10	0	3.717	4	1	5	1.147	-0.247	-0.728
OS1	11	0	3.667	4	1	6	1.261	-0.654	-0.571
OS2	12	0	3.574	4	1	5	1.098	-0.413	-0.516
OS3	13	0	3.544	4	1	5	1.251	-0.766	-0.544
OS4	14	0	3.527	4	1	6	1.298	-0.737	-0.48
DSP1	15	0	3.624	4	1	5	1.15	-0.557	-0.5

DSP2	16	0	3.646	4	1	5	1.151	-0.53	-0.527
DSP3	17	0	3.591	4	1	5	1.116	-0.157	-0.697
DSP4	18	0	3.561	4	1	5	1.184	-0.39	-0.63
MOT1	19	0	3.489	4	1	5	1.207	-0.697	-0.504
MOT2	20	0	3.717	4	1	5	1.169	-0.171	-0.756
MOT3	21	0	3.684	4	1	5	1.089	-0.434	-0.566
MOT4	22	0	3.793	4	1	5	1.271	-0.239	-0.909
MOT5	23	0	3.7	4	1	5	1.18	-0.412	-0.674
SD1	24	0	3.599	4	1	6	1.22	-0.538	-0.569
SD2	25	0	3.713	4	1	5	1.141	-0.421	-0.62
SD3	26	0	3.945	4	1	5	0.901	-0.128	-0.554
SD4	27	0	3.962	4	1	5	0.956	-0.068	-0.74
SD5	28	0	3.616	4	1	5	1.099	-0.634	-0.538
SD6	29	0	3.143	3	1	5	1.168	-1.412	0.198
SD7	30	0	3.203	4	1	5	1.223	-1.153	-0.463

Note: CAP=Capability; INS=Information Supply; OS=Organization Support; DSP=Developer Sustainable Performance; MOT=Motivation; SD Software Development

After the assessment of data to fix the errors in the data, further this study carried out to analyze the data to examine the factor loadings. According to the (Hair, Hollingsworth, Randolph & Chong, 2017), factor loadings must be above 0.7. However, various studies also allow the factor loadings to maintain above 0.4. Table 2 shows the factors loadings for the current study and Figure 2 shows that data analysis first step of PLS. In this study, employee capability is measured by using five scale items; information supply is measured through five scale items. Organization support is measured with the help of four scale items. Developer sustainable performance is measured through four scale items. Motivation is measured through four scale items and finally, software development is measured through eight scale items. According to the results. Scale items for employee capability, information supply, organization support, developer sustainable performance, motivation and software development are above threshold level.

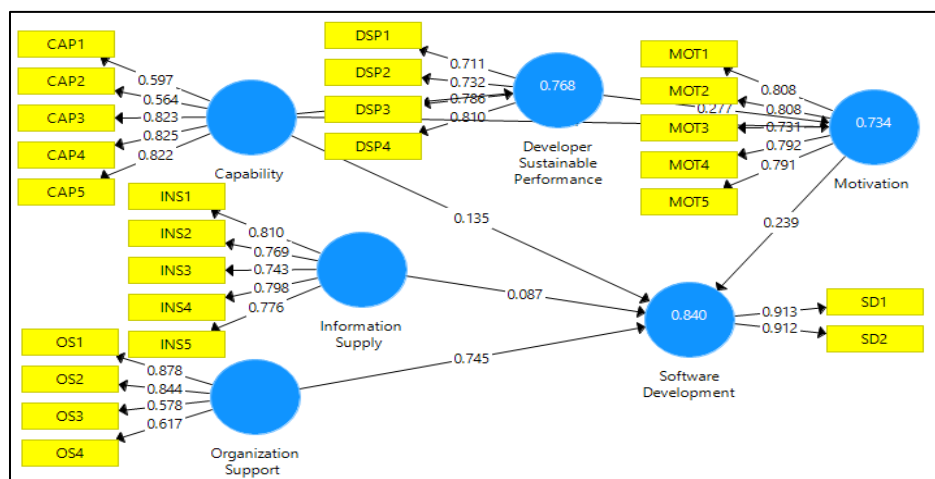


FIGURE 2
MEASUREMENT MODEL

Table 2
FACTOR LOADINGS

	Capability	Developer Sustainable Performance	Information Supply	Motivation	Organization Support	Software Development
CAP1	0.597					
CAP2	0.564					
CAP3	0.823					
CAP4	0.825					
CAP5	0.822					
DSP1		0.711				
DSP2		0.732				
DSP3		0.786				
DSP4		0.81				
INS1			0.81			
INS2			0.769			
INS3			0.743			
INS4			0.798			
INS5			0.776			
MOT1				0.808		
MOT2				0.808		
MOT3				0.731		
MOT4				0.792		
MOT5				0.791		
OS1					0.878	
OS2					0.844	
OS3					0.578	
OS4					0.617	
SD1						0.913
SD2						0.912
Note: CAP=Capability; INS=Information Supply; OS=Organization Support; DSP=Developer Sustainable Performance; MOT=Motivation; SD Software Development						

Along with this, the current study also examined Composite Reliability (CR) above 0.7. The Average Variance Extracted (AVE) also needed to have value above 0.5 which is acceptable. Results in the Table 3 shows that; CR value for employee capability, information supply, organization support, developer sustainable performance, motivation and software development is above 0.7. The AVE value for employee capability, information supply, organization support, developer sustainable performance, motivation and software development is also above 0.5. Finally, this study followed (Fornell & Larcker 1981) to examine the discriminant validity which is given in Table 4.

	Alpha	rho_A	CR	AVE
Capability	0.79	0.829	0.852	0.542
Developer Sustainable Performance	0.771	0.789	0.846	0.579
Information Supply	0.838	0.84	0.885	0.608
Motivation	0.846	0.848	0.89	0.619
Organization Support	0.749	0.835	0.825	0.549
Software Development	0.799	0.8	0.909	0.833

Note: CAP=Capability; INS=Information Supply; OS=Organization Support; DSP=Developer SustainablePerformance; MOT=Motivation; SD Software Development

	Capability	Developer Sustainable Performance	Information Supply	Motivation	Organization Support	Software Development
CAP1	0.697	0.543	0.358	0.358	0.49	0.33
CAP2	0.664	0.524	0.343	0.338	0.464	0.256
CAP3	0.823	0.697	0.729	0.706	0.653	0.673
CAP4	0.825	0.782	0.752	0.74	0.658	0.663
CAP5	0.822	0.654	0.777	0.805	0.617	0.611
DSP1	0.514	0.711	0.409	0.412	0.545	0.361
DSP2	0.527	0.732	0.414	0.443	0.511	0.315
DSP3	0.764	0.786	0.72	0.749	0.66	0.682
DSP4	0.776	0.81	0.723	0.73	0.634	0.636
INS1	0.763	0.654	0.81	0.742	0.644	0.632
INS2	0.695	0.661	0.769	0.734	0.628	0.606
INS3	0.594	0.558	0.743	0.695	0.624	0.599
INS4	0.629	0.619	0.798	0.779	0.679	0.686
INS5	0.633	0.561	0.796	0.784	0.653	0.664
MOT1	0.762	0.69	0.75	0.808	0.626	0.617
MOT2	0.705	0.683	0.767	0.808	0.661	0.654
MOT3	0.567	0.579	0.714	0.731	0.614	0.636
MOT4	0.66	0.629	0.502	0.792	0.681	0.686
MOT5	0.62	0.577	0.739	0.791	0.591	0.59
OS1	0.647	0.64	0.758	0.74	0.878	0.87
OS2	0.662	0.604	0.741	0.713	0.844	0.836
OS3	0.545	0.605	0.389	0.39	0.778	0.348
OS4	0.521	0.57	0.434	0.428	0.617	0.38
SD1	0.636	0.639	0.746	0.732	0.824	0.913
SD2	0.695	0.631	0.75	0.747	0.826	0.912

Note: CAP=Capability; INS=Information Supply; OS=Organization Support; DSP=Developer SustainablePerformance; MOT=Motivation; SD Software Development

Finally, after the assessment of reliability as well as validity, the current study carried out PLS structural model for hypotheses testing. Hypotheses testing examine to investigate the relationship between employee capability, information supply, organization support, developer sustainable performance, motivation and software development. The effect of employee capability was examined on the software development. The effect of information supply was examined on the software development. Moreover, the effect of organizational support was examined on the software development. The direct effect of employee capability was examined on motivation and effect of motivation was examined on the software development. In addition to this, the current study also examined the effect of employee capability on employee motivation. Result of the study highlighted the positive effect of employee capability on motivation and software development. The positive effect of information supply was found on software development. Moreover, it is found that organizational support has positive effect on software development. Employee capability also has positive effect on sustainable developer performance. Motivation also has significant positive effect on software development. All these results are found by using PLS structural model (Hameed, Basheer, Iqbal, Anwar & Ahmad, 2018; Henseler & Chin, 2010; Henseler et al., 2014; Henseler & Fassott, 2010; Henseler, Ringle & Sarstedt, 2015; Henseler, Ringle & Sinkovics, 2009), which is given in Figure 3. These results are given Table 4.

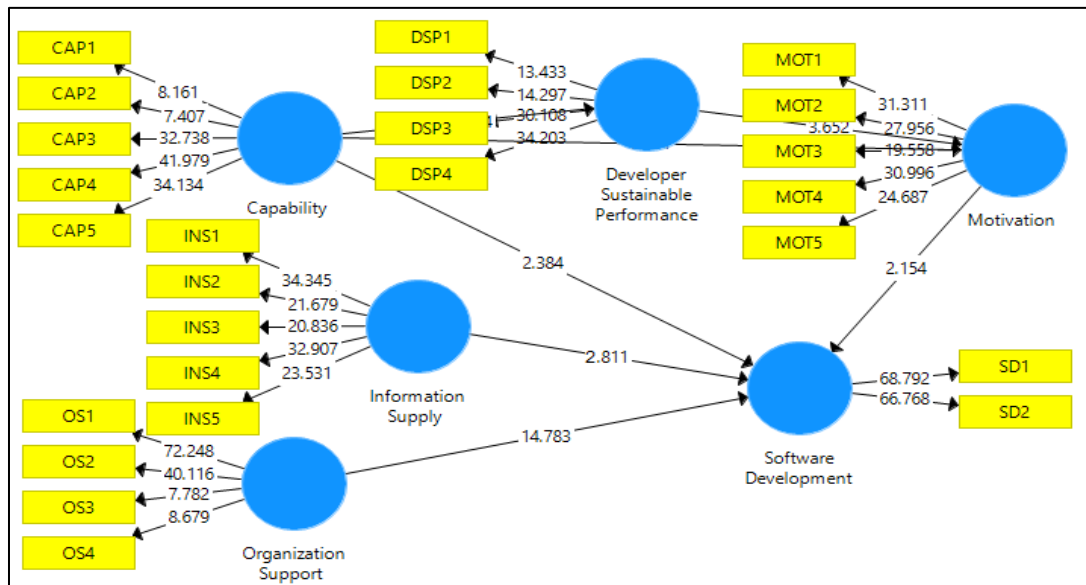


FIGURE 3
STRUCTURAL MODEL

Table 5 DIRECT EFFECT RESULTS					
	(O)	(M)	SD	t Statistics	P Values
Capability -> Developer Sustainable Performance	0.876	0.877	0.017	51.324	0
Capability -> Motivation	0.604	0.609	0.071	8.501	0
Capability -> Software Development	0.135	0.135	0.057	2.384	0.017
Developer Sustainable Performance -> Motivation	0.277	0.272	0.076	3.652	0
Information Supply -> Software Development	0.087	0.074	0.023	3.811	0
Motivation -> Software Development	0.239	0.25	0.111	2.154	0.032

Organization Support -> Software Development	0.745	0.749	0.05	14.783	0
Note: CAP=Capability; INS=Information Supply; OS=Organization Support; DSP=Developer Sustainable Performance; MOT=Motivation; SD Software Development					

After the direct effect assessment, the indirect effect is also examined. In this study the indirect effect was also examined with the help of PLS structural model by using the approach of (Preacher & Hayes, 2008). The mediation effect of developer sustainable performance was examined between employee capability and motivation. Along with this, the mediation effect of motivation was examined between developer sustainable performance and software development. Results are given in Table 6. The mediation effect of developer sustainable performance between employee capability and motivation found t-value 3.741 which is significant. The mediation effect of motivation between developer sustainable performance and software development found t-value 1.96 which is significant.

Table 6					
INDIRECT EFFECT RESULTS					
	(O)	(M)	SD	t Statistics	P Values
Capability -> Developer Sustainable Performance -> Motivation	0.242	0.239	0.065	3.741	0
Capability -> Motivation -> Software Development	0.144	0.154	0.074	1.955	0.051
Developer Sustainable Performance -> Motivation -> Software Development	0.066	0.067	0.034	1.96	0.05
Capability -> Developer Sustainable Performance -> Motivation -> Software Development	0.058	0.059	0.029	1.969	0.05
Note: CAP=Capability; INS=Information Supply; OS=Organization Support; DSP=Developer Sustainable Performance; MOT =Motivation; SD Software Development					

After the assessment of direct and indirect effect, this study also examined the role of r-square value. The r-square value was examined for software development. It is found that r-square value is 0.84 which is strong (Chin, 1998) and indicating that; employee capability, information supply, organization support, developer sustainable performance and motivation are expected to bring 84% change in software development.

CONCLUSION

This study examined the relationship between employee capability, information supply, organization support, developer sustainable performance, motivation and software development. The mediating role of developer sustainable performance and motivation was examined. The objective of this study was to examine the role of employee capability, information supply and organization support in software development. After collecting the data from employees of software houses, it was analyzed by using statistical software. Results of the study shows that software development has major role among the business organizations which requires significant demand of software's to meet the information technology requirement. Results of the study revealed that employee capabilities have major role in software development. It is found that employee capability is positive role to enhance software development. Employee capabilities has positive role to enhance the sustainable software developer performance and also shows positive effect on software development in Indonesian software houses. Information sharing also has positive effect on software development. Furthermore, organizational support also has positive role to enhance software development. Better organization support to the employee of software houses causes to increase the process of software development. Employee capability

also has positive effect on developer sustainable performance and developer sustainable performance has positive effect on motivation. Employee capabilities also has positive role to enhance employee motivation in software houses. Along with this, information supply also playing a vital contribution to software development in software houses.

Implications of the Study

The current study examined the valuable relationship between employee capability, information supply, organization support, developer sustainable performance, motivation and software development. Number of studies carried out research on various aspects of software houses; however, this relationship is not examined by the previous studies. Therefore, this is the unique study which examined the effect of employee capability, information supply, organization support, developer sustainable performance and motivation on software development. Furthermore, this study also has vital role in practical implications because the relationship examined in the current study providing significant insights for software development. As this study suggested that software houses management can increase the performance with the help of employee capability, information supply, organization support, developer sustainable performance and motivation on software development.

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