Extending the Role of Diffusion of Innovation Theory (DOI) in Achieving the Strategic Goal of the Firm With the Moderating Effect of Cost Leadership

Bader Abdulrahman Alyoubi, University of Jeddah, Saudi Arabia

Mohammad Ali Yamin, University of Jeddah, Saudi Arabia

<https://orcid.org/0000-0002-6944-6866>

ABSTRACT

The information system literature has long emphasized the importance of employee acceptance of information technology for achieving the strategic goal of the firm and organizational performance. Consequently, this study investigates the determinants of acceptance of information technology with the extension of diffusion of innovation theory (DOI) in organizational context. Results showed that compatibility, innovativeness, trust in technology, perceived gap in IT capabilities, employee self-efficacy, and perceived cost advantage explained R^2 79.4% variance in achieving strategic goal of the firm. The effect size analysis showed that perceived gap in IT capabilities had substantial effect size. Similarly, substantial predictive relevance was found Q^2 58.1%, 15.7% when predicting firm strategic goals and organizational performance, respectively.

KEYWORDS

Compatibility, Cost Leadership, Employee Self-Efficacy, Innovativeness, Moderating Analysis, Structural Equation Modeling

1. INTRODUCTION

In this vibrant economy, the use of information technology is considered essential for organizational operations. Despite impressive advances in technology, the problem of underutilization of technology in human resource organizations is still existed. In developing countries the use of information technology is complex and crucial (Omamo, Rodrigues, & Muliaro, 2020). Therefore, understanding the IT determinants influence on employee performance and organizational performance is important. The present study fills the gap in information system and human resource literature by developing and amalgamated model which combines employee psychological and technological factors in achieving strategic goal and performance of the firm. In technology context, the diffusion of innovation theory (DOI) is extended with trust in technology, perceived gap in IT capabilities, employee self-efficacy, perceived service quality and perceived cost advantage in order to see the impact of these factors on achieving strategic goal of the firm. To the date, this study is the first that investigates the role of diffusion of innovation theory in achieving strategic goal of the firm and organizational performance.

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Diffusion of innovation theory was introduced by Rogers (2003) which includes two factors namely; compatibility and innovativeness. Earlier studies had confirmed the importance of compatibility and innovativeness in acceptance and usage of information technology (Rogers, 1962, 2003; Ryan & Gross, 1943). Concerning with other constructs such as trust in technology, perceived gap in IT capabilities, employee self-efficacy, perceived service quality and perceived cost advantage are studied by several researcher in technology adoption context (Bose & Luo, 2011; Daud Norzaidi, Choy Chong, Murali, & Intan Salwani, 2007; Ghani, Rahi, Yasin, & Alnaser, 2017; Han, 2003; Ho Cheong & Park, 2005; Lee & Kim, 2007; Liang, Saraf, Hu, & Xue, 2007; R. Samar & Mazuri, 2019b; Teo, 2010; Wixom & Todd, 2005; Wu, Mahajan, & Balasubramanian, 2003). Therefore, this study contributes to the body of knowledge by examining these constructs in achieving strategic goal of the firm which in turn enhance organizational performance. Trust in technology is referred to employee perception about technology that how technology protect monetary and confidential information at organizational level (S Rahi, Ghani, & Muhamad, 2017). Author like Xin and Levina (2008) stated that organizations achieve strategic goals by gaining IT knowledge through the deployment of technology. According to D. Wang, Xu, and Chan (2008) postulated that self-efficacy effect positively on employee behavioral intention, effort and determination to carry out a task or achieving strategic goal of a firm and organizational performance. Similarly, Ghani et al. (2017) asserted that service quality bring ease in employee daily work and enhance organizational performance. Aside of direct relationship among exogenous and endogenous constructs, this study includes the moderating role of cost leadership and contributes to human resource literature. The research model of this study is depicted in Fig 1. In following sections the importance of these construct is augmented.

2. LITERATURE REVIEW

2.1 Diffusion of Innovation Theory (DOI)

Diffusion of innovation theory was initially introduced by Rogers in 1962 and includes four components of technology diffusion namely communication, social system, time and innovation (Rogers, 1962). By looking at dynamic global changes Rogers revised his theory in 2003 and revealed five stages of technology diffusion which includes persuasion, implementation, decision, confirmation and knowledge (Rogers, 2003). This study focuses on compatibility and innovativeness dimensions to examine organizational goals and firm performance. Innovation is seen as the extent wherein *“individual engages in activities that lead to selection either to adopt or reject an innovation”* (Rogers, 1962, 2003; Ryan & Gross, 1943). Therefore, compatibility is defined as the extent wherein *“innovation is perceived as being consistent with existing values, current working practices/needs, and past experiences of potential adopters”* (Nikabadi & Hakaki, 2018; Rogers, 1962, 2003; Ryan & Gross, 1943). Previous literature had confirmed significant impact of innovativeness and compatibility in achieving strategic goal of the firm and boosting organizational performance (Karahanna, Agarwal, & Angst, 2006; Oliveira, Thomas, Baptista, & Campos, 2016; Samar Rahi & Abd. Ghani, 2018; Rogers, 1962, 2003; Zhao & de Pablos, 2011). Thus, compatibility and innovativeness is hypothesized as:

H1: Compatibility has positive influence on achieving strategic goal of the firm.

H2: Innovativeness has positive influence on achieving strategic goal of the firm.

2.2 Trust in the Technology (TECH)

Trust concern has been seen major barrier in adoption and acceptance of human resource management system (Elharakany, Moscardini, Khalifa, & Abd Elghany, 2018; Miltgen, Popovič, & Oliveira, 2013). Trust is referred to employee perception about technology that how technology protect monetary and confidential information at organizational level (Al-Ammary, Al-Doseri, Al-Blushi, Al-Blushi, & Aman, 2019; Mayayise & Osunmakinde, 2019; S Rahi et al., 2017). According to Miltgen et al. (2013)

asserted that sense of risk is associated with safety and employee trust on technology plays vital role in acceptance and usage of human resource management system. Similarly, earlier studies had confirmed that trust is an effective tool in reducing uncertainty (Al-Alawi & Al-Bassam, 2019; Fuller, Serva, & Baroudi, 2009; Ha & Lo, 2018; Pavlou, 2003). With increase of trust factor, employee feels safe in daily operations which in turn help them to achieve strategic goal of the firm timely and efficiently (Fuller et al., 2009; Komiak & Benbasat, 2006; Mohammad Ali, 2018; Pavlou, 2003; Salisbury, Pearson, Pearson, & Miller, 2001). Therefore, and back-up by earlier studies Fuller et al. (2009); Komiak and Benbasat (2006); Miltgen et al. (2013); Pavlou (2003); S Rahi et al. (2017); Salisbury et al. (2001), researcher anticipate that employee having trust in technology feels more secure and safe and accomplish their job responsibilities efficiently. Thus, trust in technology is hypothesized as:

H3: Trust in the technology has positive influence on achieving strategic goal of the firm.

2.3 Perceived Gap in IT Capabilities (PGIT)

Perceived gap in IT capabilities directs to the differences between organization's own ability and solution (technology) provider capability in terms of knowledge, resources and agility in deployment and usage of management information system (Jayatilaka, Schwarz, & Hirschheim, 2003; Loebbecke & Huyskens, 2006). Organizations can fill the gap in IT capabilities by reviewing strategic IT knowledge, resources and agility in human resource operations (Smith & Kumar, 2004). Author like Xin and Levina (2008) stated that organizations achieve strategic goals by gaining IT knowledge through the deployment of technology. However, if companies are incapable to respond the technological advancement, they may take help from solution provider for agile technology operations. Concerning with resources dimension in IT capabilities, resource based theory can be used. Following resource-based theory (*RBT*) organization can evaluate their IT capabilities in order to confirm whether organization needs to outsource IT operation to external solution provider or need to use internal organizational resources to fill the technology usage gap. Similarly, Smith and Kumar (2004) postulated that with perceived gap in IT technology, organization can enhance their competitive advantage. Earlier studies have confirmed that perceived gap in IT capabilities had significant influence on achieving strategic goal of the firm Jayatilaka et al. (2003); Loebbecke and Huyskens (2006); Smith and Kumar (2004). Therefore and following above argument perceived gap in IT capabilities is hypothesized as:

H4: Perceived gap in IT capabilities has positive influence on achieving strategic goal of the firm.

2.4 Employee Self-Efficacy (EMSE)

In general self-efficacy is defined as “*a situation where individual become motivated when they believe that their effort will improve task performance*” (Bandura, Freeman, & Lightsey, 1999; Choi, 2004). According to Bandura et al. (1999) asserted that self-efficacy is actually the ability of an individual to perform a given task in order to meet situational demands within an organization. Authors like D. Wang et al. (2008) postulated that self-efficacy effect positively on employee behavioral intention, effort and determination to carry out a task or achieving strategic goal of a firm and organizational performance. Concerning with technology acceptance in organizations and employee-self-efficacy, earlier studies had confirmed a significant impact of employee self-efficacy on achieving strategic goal of the firm and firm performance (Bandura et al., 1999; Choi, 2004; D. Wang et al., 2008). Following above arguments and supported by Aldholay, Isaac, Abdullah, Abdulsalam, and Al-Shibami (2018); Bandura et al. (1999); Choi (2004); Makokha and Ochieng (2014); D. Wang et al. (2008); Y.-S. Wang and Liao (2008), employee self-efficacy is hypothesized as:

H5: Employee Self-efficacy has positive influence on achieving strategic goal of the firm.

2.5 Perceived Service Quality (PRSQ)

Perceived service quality is seen as “the extent where employees believe that using a human resource management system will be free from effort and meet with their expectations to perform a task” (Delone & McLean, 2003; Samar Rahi & Abd. Ghani, 2018). In management information system (MIS) literature three types of service quality dimensions such as information quality, service quality and system quality are widely discussed in technology acceptance context (R. Samar & Mazuri, 2019b). Therefore, the present study focus is on achieving strategic goal of the firm and service quality is the most important dimension to be taken into consideration. Earlier studies had confirmed positive relationship between service quality and employee willingness to achieve strategic goal of the firm (Bose & Luo, 2011; Daud Norzaidi et al., 2007; Ghani et al., 2017; Han, 2003; Ho Cheong & Park, 2005; Lee & Kim, 2007; Liang et al., 2007; R. Samar & Mazuri, 2019b; Teo, 2010; Wixom & Todd, 2005; Wu et al., 2003). Thus, following above arguments perceived service quality is hypothesized as:

H6: Perceived service quality has positive influence on achieving strategic goal of the firm.

2.6 Perceived Cost Advantage (PRCA)

Perceived cost advantage is defined as, “*the extent where organizations reduce operational and strategic cost using information technology*” (Martens & Teuteberg, 2012). This study evaluates two types of cost advantages foremost; the cost advantage is examined in economical perspective which is achieved using information technology. Secondly, cost advantage is studied in strategic perspective and fills the gap in IT capabilities for organization competitive advantage (Dubey & Wagle, 2007). In economical perspective, the cost advantage is compared with internal production of the information technology (Auxilia, Raja, & Kannan, 2020; Benlian & Hess, 2011; Galli, 2020). Therefore, organizations may take help from external parties using outsourcing method for the deployment of information system. According to Smith and Kumar (2004) asserted that companies using high level of transactions are usually outsource their IT operation in order to achieve perceived cost advantage. Following above arguments and back-up by earlier literature Dubey and Wagle (2007); Fan, Kumar, and Whinston (2009); Limam and Boutaba (2010); Smith and Kumar (2004) perceived cost advantage is hypothesised as:

H7: Perceived cost advantage has positive influence on achieving strategic goal of the firm.

2.7 Achieving Strategic Goal of the Firm and Organizational Performance

In order to achieve organizational performance employee strategic goals must be aligned. According to Dobre (2013) employee motivation towards achieving strategic goal significantly contributes to organizational performance. It is that management information system in HR department is cost effectively and bring ease in employee strategic operations (Kiumarsi, Isa, Jayaraman, Amran, & Hashemi, 2020; Venkatachalam, Fieft, Rosemann, & Mathews, 2012). According to Dehning, Richardson, and Zmud (2007), use of technology in organizations improve employee performance and help employee to achieve goals timely and cost efficiently. Earlier studies had confirmed that employee determination to achieve firm strategic firm goals significantly impact on organizational performance (Chakraborty & Biswas, 2019; Dobre, 2013; Kiveu, Namusonge, & Muathe, 2019; Trybou, Gemmel, Desmidt, & Annemans, 2017). Therefore, and supported by previous literature Chakraborty and Biswas (2019); Dobre (2013); Haselmann and Vossen (2011); Kaufmann and Schneider (2004); Mahdi and Almsafir (2014); Roper, Du, and Love (2006); Seethamraju (2015); Trybou et al. (2017); Venkatachalam et al. (2012), achieving strategic goal of the firm is hypothesized as:

H8: Achieving strategic goal of the firm has positive influence on organizational performance.

2.8 Moderating Role of Cost Leadership (CLED)

The concept of cost leadership is identified as “*the extent wherein company cut their operational and procurement cost thorough strategic orientation*” (Porter, 1985). The importance of strategic orientation is indispensable in an organization and it helps organizations to analyze, differentiate product and services for competitive advantages (Miles, Snow, Meyer, & Coleman Jr, 1978); Porter (1985). Authors like Aubert, Beaurivage, Croteau, and Rivard (2009) found inconsistent relationship between cost leadership and IT outsourcing for achieving strategic goal of the firm. Therefore, the current study examines generic cost leadership in the context of organizational performance and achieving strategic goal of the firm which is in line with Porter (1985). It is argued that organizations with strong cost leadership enhance positive relationship in achieving strategic goal of the firm and organizational performance (Grover, Cheon, & Teng, 1994). Extending to this Heart, Pliskin, and Tractinsky (2004) postulated that strategic orientation towards cost leadership improve business performance. Following above arguments and supported by Heart et al. (2004); Miles et al. (1978); Porter (1985), cost leadership is hypothesized as:

H9: The positive relationship between achieving strategic goal of the firm and organizational performance will be stronger when cost Leadership is higher.

3. METHODOLOGY

3.1 Scale Development

The present study is quantitative in nature and followed positivist paradigm. Following the theme of this research a survey questionnaire is developed to collect the respondent observations. Survey questionnaire of this study is in twofold. In first section it contains demographic information of the respondents such as age, gender, education and marital status. In following section scales items are demonstrated. The context of this study is to investigate organizational strategic goal and organizational performance of the firm with technology factors such as trust in technology, compatibility and innovativeness. Thus, scale items were adopted from previous literature and then adapted into current research context. Scale items for the constructs achieving strategic goal of the firm and organizational performance were adopted from Chakraborty and Biswas (2019). Therefore, instrument items for the construct compatibility and innovativeness were adopted from Samar Rahi and Abd. Ghani (2018) and then adapted into current research context. Scale items for the construct of perceived cost advantage adopted from Smith and Kumar (2004). Similarly, perceived gap in IT capabilities adapted from Jayatilaka et al. (2003). Cost leadership items were adapted from Miles et al. (1978) and Porter (1985). Finally, perceived service quality, employee self-efficacy and trust items were adapted from Samar Rahi and Abd. Ghani (2019a); R. Samar and Mazuri (2019b) and S Rahi et al. (2017). All constructs items are measured using a seven-point Likert scale ranging from “1” strongly disagree to “7” strongly agree which is in line with earlier studies (Samar Rahi, 2016b; S Rahi & Ghani, 2016). The process of data collection and sample size of this study is demonstrated in following section.

3.2 Data Collection Methods and Sampling

In order to examine firm strategic goal and organizational performance, a research survey is conducted towards Public sector organizations in Saudi Arabia. Employees of the public sector organizations were the main respondents in this study. This is due to the fact that public sector organizations in Saudi Arabia are still in initial phase of technology adoption especially in human resource sector (Mohammad Ali Yamin & Swaieess, 2019). Thus, it is expected that employees of the public sector organizations can better explain diffusion of technology in Saudi organizations. For sampling, G-Power software was used to calculate the sample size (Samar Rahi, Alnaser, & Ghani, 2019). Findings of

Figure 1. Research framework of the study

the G-power software revealed that for factor analysis a sample of 200 respondents is substantial. Therefore, addition in sample size mitigate sampling error (Samar Rahi & Ghani, 2018b). Thus, the current study distributes 400 questionnaires to public sector organizations using convenience sampling approach (Samar Rahi, 2018). Convenience sampling approach is the most appropriate approach in data collection in management sciences studies (Samar Rahi & Ghani, 2018a). The employees of public sector organizations were requested to fill the questionnaires and returned to researcher in said time. Amongst 400, 360 valid questionnaires were returned to the researcher that further used for structural equation modeling.

3.3 Harman's Single Factor Test

This study collects empirical data using single source method for endogenous and exogenous variables. Therefore, it may affect due to common method variance bias. Testing common method variance bias is necessary before structural equation modeling (FMI Alnaser, Ghani, & Rahi, 2017). Thus, Harman's single factor test is incorporated to see common method variance bias (F Alnaser, Ghani, & Rahi, 2018; Mohammad Ali, 2018). Harman's single factor test suggested that the maximum co-variance explained by single factor should be less than 50%. Therefore, the findings of Harman's single factor test showed that the maximum co-variance explained by first factor was less than 50%. These findings confirmed that common method variance is not likely issue in this study and data is appropriate for inferential analysis using structural equation modeling.

4. DATA ANALYSIS AND RESULTS

This study extends the diffusion of innovation theory (DOI) with some other technology factors namely; trust in technology, perceived gap in IT technology and perceived services quality to investigate firm strategic goals and firm performance. Therefore, structural equation modeling (*SEM*) technique is the most appropriate approach for data analysis. Structural equation modeling is defined as “*a statistical technique for testing and estimating causal relations using a combination of statistical data and qualitative causal assumptions*” (Samar Rahi, Ghani, & Ngah, 2020). The structural equation modeling approach incorporated measurement model and structural model. For structural model estimation Smart PLS 3.2.7 software is used (S. Rahi, 2017; Ringle, Wende, & Becker, 2015).

4.1 Measurement Model

The measurement model estimates convergent validity and discriminant validity of the constructs. The convergent validity of the model is achieved with construct reliability, indicator validity and average variance extracted. In order to achieve construct reliability the criterion is that the values of Cronbach's alpha and composite reliability should be higher than 0.70 indicating adequate reliability of the constructs. Therefore, for indicator reliability, the values of factor loadings should be higher than 0.60 as suggested by Samar Rahi, Abd.Ghani, and Hafaz Ngah (2019). Finally, convergent validity of the model was achieved with average variance extracted (AVE), following criterion that average variance extracted values should be higher than 0.50, which is in line with (Samar Rahi, 2019). Findings revealed that all values including Cronbach's alpha, composite reliability and average variance extracted are adequate and reliable for further data analysis. Table 1 depicts the values of construct reliability, indicator reliability and convergent validity of the constructs.

The second step of the measurement model is to estimate discriminant validity of the constructs. Discriminant validity is defined as the extent wherein constructs measure distinct concept (S. Rahi, 2018a). Therefore, it is necessary to confirm the discriminant validity of the constructs (Samar Rahi & Abd. Ghani, 2019a). The current study estimates discriminant validity using Fornell and Larcker criterion, cross loadings and Heterotrait-Monotrait Ratio as suggested by S. Rahi (2018b) and Ghani et al. (2017). Fornell and Larcker criterion suggested that the square root values of average variance extracted (AVE) should be greater than corresponding constructs indicates construct is discriminant (Fornell & Larcker, 1981). Finding of the analysis revealed that all square root values were greater than corresponding constructs values and confirmed that construct is discriminant. The values of average variance extracted (AVE) depicted in Table 2.

The discriminant validity of the constructs was tested with cross-loading method. According to Fornell and Larcker (1981) cross-loading method provide more authentic results that may dilutes in average variance extract. In order to achieve cross discriminant validity of the constructs, the criterion is that loadings should exceed than all of its loading on the other constructs (R. Samar & Mazuri, 2019a). Findings of the cross loading method showed that all constructs loadings are higher than corresponding constructs which confirmed that construct is discriminant. The result of the cross loadings method is shown in Table 3.

In recent years authors like Gold and Arvind Malhotra (2001); Kline (2011) have criticized old dated methods such as cross loadings and Fornell and Larcker's method. According to Kline (2011) Heterotrait-monotrait ratio analysis (HTMT) is the most appropriate method to measure discriminant validity of the constructs. The study of Kline (2011) revealed that cross loading and Fornell and Larcker's methods are not sufficient to measure discriminant validity of the constructs. Thus, the current study confirms discriminant validity of the constructs using Heterotrait-monotrait ratio analysis (HTMT). In order to achieve discriminant validity of the construct the values of HTMT ration analysis should be less than 0.85 or 0.90 indicate adequate discriminant validity of the constructs (R. Samar & Mazuri, 2019b). Table 4 depicts the values of HTMT indicated that all values of Heterotrait-monotrait ratio analysis are less than 0.85 or 0.90, confirming adequate discriminant validity of the constructs.

Table 1. Measurement Model

Constructs/Items	Loadings	(α)	CR	AVE
ASGF1: Achieving strategic goal of the firm improves employee competency and boost organization performance.	0.853	0.856	0.912	0.776
ASGF2: Attaining and achieving organizational goal ensures employee engagement, empowerment and commitment that drive toward organizational performance.	0.893			
ASGF3: Integration and achievement of individual and organizational goals helps organizations to manage further challenges and risks for dynamic performance.	0.896			
CLED1: our organization focuses more on vendor sourcing and supplier management that cut procurement costs.	0.816	0.798	0.882	0.713
CLED2: Our organization focuses more on resource efficiency and process improvements that cut operational costs.	0.834			
CLED3: Our organization focuses more on cost competition that provide competitive advantage.	0.882			
COMP1: Using information system fits into my job style.	0.912	0.890	0.923	0.750
COMP2: Using information system is compatible with all aspects of my job style.	0.838			
COMP3: Using information system is completely compatible with my current job situation.	0.941			
COMP4: I think that using information system fits well with the way I like to accomplish my tasks.	0.762			
EMSE1: I feel confident in using information system sending and receiving e-mail messages creatively in my organization.	0.867	0.881	0.927	0.808
EMSE2: In my organization I have trust in human resource management system while sending and receiving e-mail messages.	0.929			
EMSE3: In my organization employees have confidence in their ability to solve problems using online system.	0.899			
INNO1: In my organization and peers, I am usually the first to try out new information technologies.	0.806	0.920	0.944	0.809
INNO2: If I heard about a new information technology, I would look for ways to experiment with it.	0.955			
INNO3: I like to experiment with new information technologies at my job place.	0.935			
INNO4: If I heard about a new information technology in my organization I prefer to complete my task using that technology.	0.895			
ORGP1: Superior performance of the organization helps employees to build skill and make the organization sustainable.	0.941	0.894	0.934	0.826
ORGP2: Effective performance of the firm leads to quality and excellence that provide competitive advantage to organization.	0.874			
ORGP3: Effective performance of the firm help employee to achieve firm goals and enhance firm image in industry.	0.910			
PGIT1: Our organization have capacity to identify shortage of qualified IT professionals	0.976	0.968	0.979	0.941
PGIT2: Our organizations have capacity to identify lack of resources in hardware and software.	0.958			
PGIT3: Our organizations have capacity to identify shortage of quick adaptation to IT technology change.	0.975			
PRCA1: organization reduces cost of hiring IT staff compared with In-house Installation.	0.835	0.853	0.911	0.774
PRCA2: Predictable cost in using information system within the contract period of the online human resource services.	0.895			
PRCA3: Reduction in the cost of enhancing IT applications with solution providers instead of traditional In-house Installation of information system.	0.907			

continued on next page

Table 1. Continued

Constructs/Items	Loadings	(α)	CR	AVE
PRSQ1: Use of information system in organizations can provide high security for data exchange, data storage, data back-up, data restoration, and disaster recovery plan.	0.848	0.775	0.853	0.594
PRSQ2: Use of information system in organizations can provide proper and ease of use of application features to support our business operations.	0.777			
PRSQ3: Use of information system in organizations can provide responsive and flexible services to meet our company's needs.	0.765			
PRSQ4: Use of information system in organizations can provide reliable, readily available, and scalable services.	0.684			
TECH1: I would trust on information system provided by my organization to achieve tasks.	0.913	0.899	0.930	0.768
TECH2: I would prefer to use information system provided by my organization instead of manual operation to achieve organizational tasks.	0.856			
TECH3: I am concerned that my personal data is not being shared with third parties without my agreement.	0.866			
TECH4: I trust on technology provided by my organization and secure that data will not be shared with third parties without my consent.	0.870			

Table 2. Discriminant validity using Fornell and Larcker's Criterion

#	ASGF	CLED	COMP	EMSE	INNO	ORGP	PGIT	PRCA	PRSQ	TECH
ASGF	0.881									
CLED	0.019	0.844								
COMP	0.467	0.053	0.866							
EMSE	0.459	0.016	0.273	0.899						
INNO	0.437	0.104	0.258	0.182	0.900					
ORGP	0.406	0.133	0.317	0.214	0.213	0.909				
PGIT	0.771	0.019	0.296	0.323	0.280	0.281	0.970			
PRCA	0.708	0.013	0.325	0.408	0.351	0.404	0.521	0.880		
PRSQ	0.150	0.001	0.107	0.002	0.108	0.039	0.030	0.087	0.771	
TECH	0.658	0.056	0.453	0.295	0.376	0.358	0.516	0.582	0.096	0.877

Note: Bold values indicate the square root of AVE of each construct

4.2 Structural Model

The measurement model confirms that constructs are reliable and measure distinct concepts. Therefore, structural model estimates causal relationship between two constructs. In order to confirm lateral collinearity of the constructs the criterion is that the inner variance inflation factor should be less than 3.3 as suggested by Samar Rahi and Abd. Ghani (2019b). Findings of the analysis showed that all VIF values are lower than 3.3 indicated that this study is free from multicollinearity issues and adequate for further analysis. The values of variance inflation factor can be seen in Table 5.

Table 3. Cross Loadings

#	ASGF	CLED	COMP	EMSE	INNO	ORGP	PGIT	PRCA	PRSQ	TECH
ASGF1	0.853	-0.035	0.318	0.332	0.335	0.269	0.913	0.579	0.101	0.580
ASGF2	0.893	0.014	0.471	0.413	0.440	0.435	0.545	0.632	0.146	0.560
ASGF3	0.896	-0.029	0.451	0.473	0.381	0.374	0.562	0.663	0.152	0.597
CLED1	-0.030	0.816	0.031	0.017	-0.092	0.116	-0.022	-0.013	0.010	0.051
CLED2	0.020	0.834	0.058	0.009	-0.094	0.105	0.023	0.042	0.037	0.066
CLED3	-0.035	0.882	0.046	0.015	-0.077	0.115	-0.045	0.006	-0.046	0.028
COMP1	0.396	0.063	0.912	0.201	0.225	0.280	0.245	0.254	0.104	0.382
COMP2	0.494	0.045	0.838	0.327	0.225	0.278	0.354	0.379	0.090	0.473
COMP3	0.412	0.049	0.941	0.231	0.270	0.294	0.229	0.275	0.114	0.389
COMP4	0.248	0.019	0.762	0.130	0.149	0.239	0.136	0.152	0.047	0.272
EMSE1	0.415	0.035	0.284	0.867	0.134	0.208	0.329	0.353	0.000	0.271
EMSE2	0.423	0.010	0.238	0.929	0.187	0.181	0.279	0.398	-0.016	0.273
EMSE3	0.399	-0.001	0.211	0.899	0.169	0.189	0.261	0.348	0.023	0.250
INNO1	0.375	-0.093	0.140	0.161	0.806	0.128	0.374	0.311	0.095	0.352
INNO2	0.436	-0.091	0.287	0.156	0.955	0.228	0.228	0.326	0.112	0.347
INNO3	0.415	-0.091	0.262	0.184	0.935	0.227	0.240	0.337	0.087	0.343
INNO4	0.332	-0.099	0.227	0.152	0.895	0.173	0.162	0.282	0.095	0.308
ORGP1	0.351	0.112	0.244	0.188	0.154	0.941	0.254	0.367	0.023	0.322
ORGP2	0.419	0.108	0.376	0.213	0.285	0.874	0.258	0.411	0.056	0.368
ORGP3	0.330	0.145	0.232	0.179	0.129	0.910	0.252	0.315	0.024	0.277
PGIT1	0.752	-0.018	0.299	0.306	0.285	0.283	0.976	0.503	0.041	0.535
PGIT2	0.749	-0.028	0.294	0.315	0.266	0.270	0.958	0.529	0.000	0.478
PGIT3	0.741	-0.009	0.268	0.319	0.263	0.265	0.975	0.485	0.046	0.489
PRCA1	0.592	0.006	0.198	0.296	0.270	0.256	0.651	0.835	0.048	0.523
PRCA2	0.628	0.036	0.336	0.367	0.353	0.431	0.350	0.895	0.095	0.483
PRCA3	0.648	-0.007	0.317	0.408	0.301	0.373	0.389	0.907	0.086	0.531
PRSQ1	0.145	0.057	0.101	-0.001	0.072	0.024	0.053	0.073	0.848	0.059
PRSQ2	0.105	0.029	0.062	0.032	0.145	0.067	-0.032	0.132	0.777	0.063
PRSQ3	0.120	-0.079	0.087	-0.015	0.086	0.019	0.035	0.018	0.765	0.088
PRSQ4	0.076	-0.030	0.075	-0.011	0.023	0.012	0.026	0.049	0.684	0.103
TECH1	0.584	0.029	0.332	0.224	0.309	0.275	0.607	0.511	0.054	0.913
TECH2	0.593	0.069	0.495	0.287	0.390	0.383	0.320	0.531	0.147	0.856
TECH3	0.593	0.053	0.475	0.347	0.312	0.364	0.351	0.532	0.087	0.866
TECH4	0.530	0.046	0.272	0.164	0.304	0.222	0.545	0.461	0.045	0.870

Table 4. Heterotrait-Monotrait Ratio (HTMT)

	ASGF	CLED	COMP	EMSE	INNO	ORGP	PGIT	PRCA	PRSQ	TECH
ASGF	0.000									
CLED	0.045									
COMP	0.514	0.061								
EMSE	0.530	0.029	0.289							
INNO	0.490	0.122	0.274	0.202						
ORGP	0.463	0.158	0.347	0.240	0.227					
PGIT	0.840	0.041	0.300	0.349	0.296	0.302				
PRCA	0.829	0.037	0.349	0.468	0.394	0.457	0.580			
PRSQ	0.178	0.080	0.121	0.030	0.125	0.050	0.054	0.108		
TECH	0.748	0.067	0.484	0.327	0.412	0.392	0.557	0.664	0.120	0.000

Note: Heterotrait-Monotrait Ratio (HTMT) discriminate at (HTMT <0.9/ HTMT <0.85)

Table 5. Variance Inflation Factor Analysis

Constructs	Achieving strategic goal of the firm	Organizational Performance
Achieving strategic goal of the firm		1.000
Cost Leadership		1.000
Compatibility	1.313	
Employee Self-efficacy	1.253	
Innovativeness	1.221	
Perceived gap in IT capabilities	1.549	
Perceived cost advantage	1.839	
Perceived service quality	1.025	
Trust in the technology	1.905	

Table 6. Hypothesis testing

Hypothesis	Relationship	Direct effect (β)	Standard Deviation	T Statistics	P Values	Results
H1	COMP -> ASGF	0.120	0.036	3.316**	0.001	Supported
H2	INNO -> ASGF	0.106	0.031	3.431**	0.001	Supported
H3	TECH -> ASGF	0.132	0.047	2.840**	0.005	Supported
H4	PGIT -> ASGF	0.462	0.055	8.336***	0.000	Supported
H5	EMSE -> ASGF	0.112	0.034	3.266**	0.001	Supported
H6	PRSQ -> ASGF	0.076	0.024	3.185**	0.002	Supported
H7	PRCA -> ASGF	0.262	0.057	4.566***	0.000	Supported
H8	ASGF -> ORGP	0.409	0.059	6.957***	0.000	Supported

Note: *p<0.05; **p< 0.01; ***p< 0.001 (one-tailed)

4.2.1 Hypothesis Testing

The structural model of this study is assessed with beta value, t-statistics and significance level of the study. In addition to that, bootstrapping method is opted with re-sample of 1000 from original sample (Samar Rahi & Abd. Ghani, 2018; Yamin & Alyoubi, 2020). Table 6 exhibits hypothesised relationship with beta value, t-statistics and significance level of the constructs.

As depicted in Table 6 the relationship between compatibility and achieving strategic goal of the firm was found significant and supported by H1: ($\beta=0.120$, t-value 3.316, significance $p < 0.001$). Innovativeness had significant influence on achieving strategic goal of the firm and supported by H2: ($\beta=0.106$, t-value 3.431, significance $p < 0.001$). The relationship between trust in the technology was also found significant and supported by H3: ($\beta=0.132$, t-value 2.840, significance $p < 0.005$). Similarly, perceived gap in IT capabilities had showed significant influence on achieving strategic goal of the firm and supported by H4: ($\beta=0.462$, t-value 8.336, significance $p < 0.001$). Employee self-efficacy had showed positive impact on achieving strategic goal of the firm and supported by H5: ($\beta=0.112$, t-value 3.266, significance $p < 0.001$). Perceived service quality had showed significant influence on achieving strategic goal of the firm and supported by H6: ($\beta=0.076$, t-value 3.185, significance $p < 0.002$). The relationship between perceived cost advantage and achieving strategic goal of the firm was statistically confirmed and supported by H7: ($\beta=0.262$, t-value 4.566, significance $p < 0.000$). Finally, H8 is confirmed wherein achieving strategic goal of the firm had positive and significant influence on organizational performance and supported by ($\beta=0.409$, t-value 6.957, significance $p < 0.000$). Results of the structural model using bootstrap method can be seen in the Appendix. These findings confirmed that the extension of diffusion of innovation model (DOI) in human resource context is appropriate and significantly contributes to achieving strategic goal of the firm and boost organizational performance.

4.2.2 Effect Size (f^2), Predictive Relevance Q^2 and Coefficient of Determination R^2

The current study introduces an extended diffusion of innovation model to investigate strategic goal of the firm and overall organization performance. The first endogenous construct namely achieving strategic goal of the firm was jointly predicted by compatibility, innovativeness, trust in technology, perceived gap in IT capabilities, employee self-efficacy, perceived service quality and perceived cost advantage and explained R^2 79.4%% variance in achieving strategic goal of the firm. On the flip side organizational performance is predicted by achieving strategic goal of the firm and cost leadership and explained R^2 20.7% variance in organizational performance. These findings confirmed that model have substantial power to predict firm strategic goals and organizational performance. Although coefficient of determination had showed substantial variance, the individual variance of each exogenous variable is yet to be confirmed with effect size analysis (M. Yamin, 2020). Effect size analysis showed that perceived gap in IT capabilities had substantial effect size in predicting strategic goal of the firm. Perceived cost advantage had the medium size effect. Therefore, all other constructs had showed small effect size in predicting firm strategic goals. Concerning with organizational performance, achieving strategic goal had medium whereas cost leadership had showed small effect size on organizational performance. Finally, the predictive relevance of the model was tested with blind folding procedure Q^2 which is in line with S. Samar, Ghani, and Alnaser (2017) and S Rahi, Ghani, Alnaser, and Ngah (2018). The predictive relevance test suggested that the values of Q^2 should be greater than 0, reflecting adequate predictive relevance of the model (Samar Rahi, Ghani, & Alnaser, 2017; R. Samar, Norjaya, & Feras, 2017; M. A. Y. Yamin, 2020). Finding of the predictive analysis revealed that the newly developed model have substantial predictive relevance Q^2 58.1% when predicting firm strategic goals. Similarly, extended model had showed adequate predictive relevance Q^2 15.7% when measuring organizational performance. The results of the predictive relevance, effect size analysis and coefficient of determination are exhibited in Table 7.

Table 7. Effect size analysis (f^2) and predictive relevance Q^2

Achieving strategic goal of the firm (ASGF)				
Constructs	R^2	Q^2	(f^2)	Size
Achieving strategic goal of the firm (ASGF)	79.4%	58.1%		
Compatibility (COMP)			0.053	Small
Employee Self-efficacy (EMSE)			0.049	Small
Innovativeness (INNO)			0.045	Small
Perceived gap in IT capabilities (PGIT)			0.669	Substantial
Perceived cost advantage (PRCA)			0.181	Medium
Perceived service quality (PRSQ)			0.027	Small
Trust in the technology (TECH)			0.044	Small
Organizational Performance (ORGP)				
Constructs	R^2	Q^2	(f^2)	Size
Organizational Performance (ORGP)	20.7%	15.7%		
Achieving strategic goal of the firm (ASGF)			0.211	Medium
Cost Leadership (CLED)			0.025	Small

Note: f^2 0.02, Small; 0.15, Medium; 0.35, Substantial

4.3 Moderating Analysis

Apart of diffusion of innovation theory extension, the current study examined the role of cost leadership as moderating variable between achieving strategic goal of the firm and organizational performance. Therefore, the current study proposed that *“The positive relationship between achieving strategic goal of the firm and organizational performance will be stronger when cost leadership is higher”*. The proposed hypothesis is tested with structural model. Within structural model, product-indicator approach is used as suggested by Samar Rahi (2015, 2016a). Results of the moderating analysis showed that the interaction effect between cost leadership and achieving strategic goal of the firm is significant and supported by H9: ($\beta = 0.153$, $t = 2.202$, $p < 0.001$). These findings confirmed that strategic goal of the firm and cost leadership altogether influence on organizational performance. Findings of the moderating analysis with interaction effect of strategic goal of the firm and cost leadership are shown in Figure 2.

5. DISCUSSION

The research model of this study extends the diffusion of innovation theory (DOI) in organizational context and revealed that compatibility, innovativeness, trust in technology, perceived gap in IT capabilities, employee self-efficacy, perceived service quality and perceived cost advantage explained R^2 79.4%% variance in achieving strategic goal of the firm. In addition to that organizational performance is predicted by achieving strategic goal of the firm and cost leadership and explained

Figure 2. Moderating Effect of cost leadership

R^2 20.7% variance in organizational performance. These findings confirmed that newly developed research model as depicted in Fig.1 is appropriate and significantly contributes to achieving strategic goal of the firm which in turn boost organizational performance. Table 6 showed causal relationships between exogenous and endogenous variables. The relationship between compatibility and achieving strategic goal of the firm is found significant and in line with Karahanna et al. (2006); Oliveira et al. (2016); Samar Rahi and Abd. Ghani (2018); Rogers (1962, 2003); Zhao and de Pablos (2011). Innovativeness had significant influence on achieving strategic goal of the firm and consistent with Zhao and de Pablos (2011). Trust in the technology had significant influence on achieving strategic goal of the firm and followed earlier studies Fuller et al. (2009); Komiak and Benbasat (2006); Pavlou (2003); Salisbury et al. (2001). Extending to this perceived gap in IT capabilities had showed significant influence on achieving strategic goal of the firm and in line with Jayatilaka et al. (2003); Loebbecke and Huyskens (2006); Smith and Kumar (2004).

Similarly, employee self-efficacy had showed positive impact on achieving strategic goal of the firm and in line with Bandura et al. (1999); Choi (2004); D. Wang et al. (2008). Perceived service quality had showed significant influence on achieving strategic goal of the firm and in line with Ghani et al. (2017); R. Samar and Mazuri (2019b). The relationship between perceived cost advantage and achieving strategic goal of the firm was statistically confirmed and in line with Benlian and Hess (2011); Martens and Teuteberg (2012); Smith and Kumar (2004). Concerning with achieving strategic goal of the firm and organizational performance, findings of the structural model showed that achieving strategic goal significantly influence on organizational performance and in line with Chakraborty and Biswas (2019); Dobre (2013); Trybou et al. (2017). Finally, the moderating role of cost leadership was confirmed between achieving strategic goal of the firm and organizational performance. Interaction effect confirmed that *“the positive relationship between achieving strategic goal of the firm and organizational performance will be stronger when cost Leadership is higher”*. Therefore, managers and policy makers should focus underpinning factors which includes compatibility, innovativeness, trust in technology, perceived gap in IT capabilities, employee self-efficacy, perceived service

quality, perceived cost advantage and cost leadership in order to achieve strategic goal of the firm and organizational performance in Public sector organizations.

6. CONCLUSION

In this dynamic world, organizations are taking help from artificial intelligence using information technology. The old brick-and-mortar documentation system is obsolete and now organizations are shifting into electronic documentation using information technology. Therefore, understanding the importance of information system in human resource departments is vital for organizational success. In this essence, the current study develops an extended diffusion of innovation model to examine strategic goal of the firm and overall organization performance. Strategic goal of the firm is jointly predicted by compatibility, innovativeness, trust in technology, perceived gap in IT capabilities, employee self-efficacy, perceived service quality and perceived cost advantage and explained R^2 79.4% variance in achieving strategic goal of the firm. In extended model, the organizational performance is predicted by achieving strategic goal of the firm and cost leadership and explained R^2 20.7% variance in organizational performance. Moving further, the effect size analysis showed that perceived gap in IT capabilities had substantial effect size in predicting strategic goal of the firm therefore perceived cost advantage had the medium size effect. The predictive relevance of the model is tested with blind folding procedure Q^2 , test indicated that the newly developed model have substantial predictive relevance Q^2 58.1%, 15.7% when predicting firm strategic goals and organizational performance respectively. The importance performance matrix analysis (IPMA) is applied in this study by selecting organizational performance as outcome variable. Results of the IPMA analysis showed that strategic goal of the firm had the highest importance value therefore perceived gap in IT capabilities, cost leadership and perceived cost advantage had intermediate level of importance to predict organizational performance. Findings showed that strategic goal of the firm, perceived gap in IT capabilities, cost leadership and perceived cost advantage are the most influential constructs that managers need to take into consideration. This research extends the body of knowledge by adding moderating role of cost leadership between achieving strategic goal of the firm and organizational performance. Finding of the moderating analysis is confirmed that the positive relationship between achieving strategic goal of the firm and organizational performance will be stronger when cost leadership is higher. Thus, managers and policy makers should focus on factors such as trust in technology, strategic goal of the firm, perceived gap in IT capabilities, cost leadership and perceived cost advantage in order to boost the organizational performance.

6.1 Limitations and Future Research Directions

Although, the current study augments to human resource and information system literature and provides several implications to theory and practice, it is important to highlight limitations for future research. There are two major limitations of this study foremost this study is cross-sectional and examines employee behaviour at one point of time which may vary in longitudinal study. Therefore, future research may conduct in longitudinal context while using qualitative research methods. Secondly, the present study is incorporated employee observations from only public sector organizations. Therefore, adding employees observations from private sector could reveal interesting findings. Finally, this study is in Middle East context, replication of this research model in Asian countries is important for the generalizability of the model.

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APPENDIX

Figure 3.

Bader A. Alyoubi College of Business, Department of Management Information Systems, University of Jeddah, Saudi Arabia. Google Scholar: https://scholar.google.com/citations?user=9J0ZU2gAAAAJ&hl=ar_

Mohammed Ali Yousef Yamin is currently associate professor of department of human resources management in business collage at the University of Jeddah in the Kingdome of Saudi Arabia. Assistance professor of the business collage at al-Quds University in Palestine in the past. He also worked many administrative positions at human resources department and public relationship before he holds the doctoral degree in human resources and organizational behavior. He is the author of many articles on topic of his specialty. Google Scholar: https://scholar.google.com/citations?hl=en&user=mh2nJ9EAAAAJ_