

Exploring effects of Technology and Knowledge Integration mechanism in the context of Social Innovation

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Abstract: The Main Objective of the study is the aim to analyse the Social innovation as the cause of Technology and Knowledge integration Mechanism. Technology Integration Mechanism (TIM) denotes institutions and infrastructure that enable to routinely transfer and acquire consistent and high-velocity electronic data across its own boundaries. Knowledge Integration Mechanism (KIM) has been defined as the formal processes and structures that ensure the capture, analysis, interpretation, and integration of market and other types of knowledge among different functional units within a firm. Both KIM and TIM results in Absorptive Capacity (AC) which can utilize both internal and external knowledge to make their competences more dynamic. AC can be used to recognize the value of new information, assimilate, internalize and apply it to commercial ends were resulted in Social Innovation. TIM and KIM are the basic elements of the organisations to result in social Innovative product and services. We choose 400 individuals in the organisation those who are engaged in organisation integration activity for social purpose by setting corporate social responsibility (CSR) hub. The data were submitted to Regression for analysis along with hypothesis testing, finally it was interpreted that all the factors has significant relationship

Index Terms: Technology Integration Mechanism, Knowledge Integration Mechanism, Absorptive Capacity, Social Innovation

I. INTRODUCTION

Social innovations that seek to improve the well-being of people, communities and society (Mulgan, 2006). Unlike innovations that are driven by the profit motive or competitive business pressures, social innovations are generally triggered by a concern with people and communities rather than commercial gain. Although there is a clear overlap with social entrepreneurship (Bornstein, 2003) and social business (Yunus, 2007), especially in referring to innovative activity with a social objective [Austin et al., (2006), p.2], there are also a number of differentiating elements in for example, the collective sharedness of people driving and owning social change. For us, social innovation can be broadly described as the development of new concepts, strategies and tools that support groups in achieving the objective of improved well-being. In this article on social innovation, it is examined that there is a growing interest in this phenomenon to delineate our boundaries of interest in developing an understanding of what is meant by this new and emerging term. In drawing on some of the ideas and concepts from sociological studies of technology and innovation, a provisional model is developed for making sense of social innovation that integrates the two key knowledge domains of business innovation and social awareness. The study commences with a discussion on innovations in science and technology from which it concludes that social innovations are about resolving social challenges and meeting social goals to enhance societal well-being. In examining early sociological concerns with social process and the development of a healthy society, it is highlighted that the historical and ongoing importance of social processes is successful innovation and change. Attention is then given to the development of a provisional framework for making sense of social innovation. It concludes by calling for further critical reflection and constructive debate on the concept of social innovation and the application of social innovation to improve conditions of people in society.

II. Review of literature

Technology Integration Mechanism

Automation, coordination, integration, and synchronization can synchronize the flow of physical goods, information, and finances (Rai et al., 2012). Fayard et al. (2012) indicated that inter-organizational performance can be enhanced via internal electronic integration and management improving. Business partner information changes constantly (Du et al., 2012), and inter-organizational system (IOS) building is seen as a traditional way to monitor and acquire information from partners. However, earlier management information systems usually provided a fragmented and incomplete view of the resource pool owing to limited technology (Grant, 1996). A technology integration mechanisms (TIM) has a wider interpretation which embraces structural institutions and infrastructure rather than simple IT/ IS, thus this study referred to and used TIM as a substitute for the concept of IOS. In this study, TIM can be viewed as the structural institutions and infrastructure that enable a focal firm to routinely transfer and acquire consistent and high-velocity electronic data from it

Partner firms with in and across its own boundaries via data consistency and cross-functional application integration, or that help the firm to combine its existing organizational IT/ IS with newly acquired and assimilated information and technology from partner firms in an effective and efficient manner (Rai et al., 2006; Tsou& Chen, 2012).

According to Sinkovicetal.(2011),B2Btechnologiesand the Internet offer IT integration among firms. In order to facilitate IT integration, data consistency and cross-functional application integration are two important factors that affect the outcome of collective activities. Data consistency enables the integration of information, financial, and physical flows; cross-functional

application integration is concerned with the mutual dependencies among firms which generate supply chain-wide visibility and affect innovation performance (De Luca & Atuahene-Gima, 2007; Rai et al., 2006; Mishra & Shah, 2009). Referring to Rai et al. (2006), data consistency in this study can be viewed as the degree to which common data definitions and consistency in stored data have been established across partner firms in a business collaboration, while cross-functional application integration can be defined as the degree of real-time communication that partner firms' function-specific management applications engage in with each other.

Knowledge Integration Mechanism

KIM has been defined as the formal processes and structures that ensure the capture, analysis, interpretation, and integration of market and other types of knowledge among different functional units within a firm (De Luca & Atuahene-Gima, 2007). Explicit knowledge can be explained in codified knowledge, so information or knowledge can be spread in formal and systematic language and is an easier means by which to enhance the efficiency of knowledge transmission (Nonaka, 1994). Nahapiet and Ghoshal (1998) suggested that all new resources including knowledge are generated through exchange and combination mechanisms. If the resource or material can be deployed properly, value will be created (Kimetal.,2015). Chen and Hung (2010) used knowledge contribution and collection behavior to explain knowledge sharing activities and indicated that a knowledge base has to be reformed and innovate; otherwise, its value is restricted by prior knowledge.

Through continuous knowledge reformation and innovation, the mechanisms of knowledge integration can be deduced (Nonaka, 1994). Referring to Tsou and Chen (2012) and Jayaram and Pathak (2013), this study defines KIM as the formal structures and processes that routinely facilitate or evoke combining existing organizational knowledge with newly acquired and assimilated knowledge to analyse and assimilate useful external knowledge and combine it with the knowledge the organization already possess. Such knowledge-related integration processes can be viewed as routine capabilities to mediate resources effectively and efficiently. In general, organizational competences are assumed to be complex, structured and multidimensional (Hoopes & Madsen, 2008).

Absorptive Capacity

Firms can utilize both internal and external knowledge to make their competences more dynamic. AC can be used to recognize the value of new information, assimilate, internalize and apply it to commercial ends (Cohen & Levinthal, 1990; Azadegan, 2011; Lawson & Potter, 2012), so it can be viewed as a set of routines comprised of the acquisition, dissemination, transformation, and exploitation of knowledge, which can be used to generate dynamic competences within organizations. Based on this perspective, the notion of AC in this study contains four ingredients: acquisition, dissemination, transformation and exploitation, as explained in more detail below. Acquisition is a firm's competence to assess, identify, and acquire the knowledge which is allocated within an organization (Camisón & Forés, 2010; Lane & Lubatkin, 1998; Zahra & George, 2002). When inner-organizational information processing is initiated, knowledge acquisition plays an important role which allows a firm to have the competence of obtaining knowledge from its various functions through both formal and informal activities.

During this process, the collected information and cross-functional interactions that arise may stimulate innovative activities and a rethinking of knowledge use (Parra-Requena et al., 2010). Dissemination refers to the process and extent to which the exchange of new information occurs both externally and within organizations (Van Der Bij et al., 2003). Liao et al. (2003) mentioned that the knowledge internalization process requires dissemination and assimilation for the knowledge to be used internally. Knowledge may be acquired from outside of organizations or created from the inside, but an organization cannot perform successfully if there is a lack of effective knowledge distribution channels within the organization. Transformation mainly serves to push knowledge internalization, and valuable innovations and applications will be created through an internalized process which combines both newly acquired and existing knowledge (Camisón & Forés, 2010; Hirunyawipada et al., 2010; Vanden Bosch et al., 1999; Zahra & George, 2002). Exploitation is considered to be the use of knowledge to make substantive improvements to firm performance, such as through NPD or use of a practical technique to enhance internal management (Yli & Renko, et al. 2001; Cegarra-Navarro et al., 2011). This can turn an invisible asset into an apparent assessment; in other words, the value of knowledge cannot be evaluated if the firm does not have the competence to exploit it. Therefore, knowledge exploitation is defined as a firm's competence with regard harvesting and incorporating knowledge into commercial activities, such as NPD (Lane & Lubatkin, 1998; Van den Bosch et al., 1999).

Hypothesis development

H1: Technology Integration Mechanism has significance relationship between Absorptive Capacity

H2: Knowledge Integration Mechanism has significance relationship between Absorptive Capacity

H3: Absorptive capacity has significant relationship with Social Innovation

III. Methodology

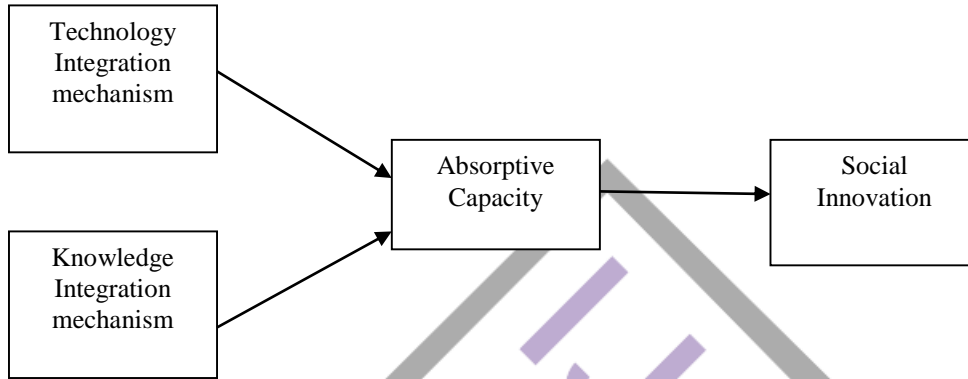
Participants

The analysis sample was collected aimed at understanding how the Technology integrated mechanism and Knowledge Integrated Mechanism with Absorptive capacity resulted in the form of social Innovation. Which is measured between individuals who are dealing with integration activity with other organisation for social purpose. In total, 400 individuals were provided the opportunity to take the survey. After screening, cleaning and conditioning the data, 375 individuals are remained. Data are collected from individuals those who are engaged in organisation integration activity for social welfare purpose. Such responses provided sufficient data upon which to evaluate data in response to the research question (Fosnacht et al. 2017; Gagne and Hancock 2006). Individual's in the sample were also diverse by way of gender, race, and major field of study.

Measures

This study has used three independent variable (Technology Integration Mechanism, Knowledge Integration Mechanism and Absorptive Capacity) and one dependent variable (Social Innovation). These variable were measured using the 5 point Likert scale(1= strongly disagree to 5= strongly agree). Details of the survey instrument measures are discussed below : social innovation on digital technology were measured by the 6 items scale sample item are “Our alliance can actively carries out its work on developing new affordable social oriented products/service/ Technology”. The Cronbach alpha for the scale reliability was 0.859. Technology Integration Mechanism was measured by the 5 item scale. The Cronbach alpha for the scale reliability was 0.797. Knowledge Integration Mechanism was measured by the 5 item scale. The Cronbach alpha for the scale reliability was 0.854. Absorptive Capacity was measured by the 5 item scale. The Cronbach alpha for the scale reliability was 0.818.

Figure 1: Proposed Framework



IV Results and Discussion

Correlation

Correlation is a statistical measure that indicates the extent to which two or more variables fluctuate together. Correlation (Pearson, Kendall, Spearman) Correlation is a bivariate analysis that measures the strength of association between two variables and the direction of the relationship. A positive correlation value means that the variables concerned increase or decrease in parallel as one increases or decreases so does the other whereas a negative correlation value indicates that as one variable increases the other decreases, or vice versa. Thus, below the table shows Karl person coefficient of correlation with the reliability coefficients and correlations among the major study variables. The correlations between the study variables were in the expected direction (positive correlation) and statistically significant.

Table 1-Karl Pearson Coefficient of Correlation

Variables of Interest	Technology Integration Mechanism	Knowledge Integration Mechanism	Absorptive Capacity	Social Innovation
Technology Integration Mechanism	1			
Knowledge Integration Mechanism	.547**	1		
Absorptive Capacity	.634**	.636**	1	
Social Innovation	.576**	.523**	.703**	1

Correlation coefficients are significant at *p < .01; and **p < .001

Test of Multicollinearity:

Multicollinearity is the occurrence of high intercorrelations among independent variables in a multiple regression model. Multicollinearity can lead to skewed or misleading results when a researcher or analyst attempts to determine how well each independent variable can be used most effectively to predict or understand the dependent variable in a statistical model. Thus, Above the Correlation table shows that Correlation between two independent variables are lower – Moderate.(0.3 – 0.7). There is no existence of Multicollinearity between the variables. Results are met the underlying Assumptions of Multiple Regression with Normally distributed data tolerance and VIF are below:

Table 2-Coefficients

Model		Collinearity Statistics	
		Tolerance	VIF
1	TIM	.776	1.289
	KIM	.759	1.318
	AC	.752	1.329

a. Dependent Variable: Social Innovation

Figure 2: Test of Homoscedasticity

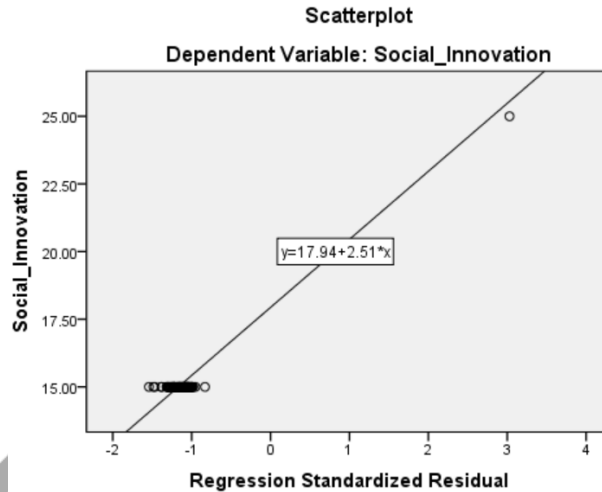


Table-3 Regression

Table 2 Digital Technology Acceptance Regressed on Social Innovation on digital technology

Independent Variable	Social Innovation			
	Beta	t-value	Sig	VIF
Technology Integration Mechanism	0.435	2.010	.02	4.32
Knowledge Integration Mechanism	0.564	2.238	.004	4.54
Absorptive Capacity	0.687	2.387	.001	4.67
R Square	.692		.000	
Adjusted R Square	.625			

Overall our model showed a good fit to the data as evidenced by the R-squared (R^2). It is a statistical measure that represents the proportion of the variance for a dependent variable that's explained by an independent variable or variables in a regression model. It may also be known as the coefficient of determination. Whereas, The adjusted R-squared compares the descriptive power of regression models two or more variables that include a diverse number of independent variables known as a predictor. Every predictor or independent variable, added to a model increases the R-squared value and never decreases it. Thus dependent variable of Intent to use has Adjusted R Square 0.625 with significant p value ($p < 0.05$)

Table 2 explained the results of Multiple regression is an extension of simple linear regression. It is used when we want to predict the value of a variable based on the value of two or more other variables. The variable we want to predict is called the dependent variable (or sometimes, the outcome, target or criterion variable) Here, predicted variables are Technology Integration Mechanism (beta =0.435, $p < 0.05$), Knowledge Integration Mechanism (beta = 0.564, $p < 0.05$), Absorptive Capacity (beta = 0.687, $p < 0.05$) Thus, social innovation found as significantly predicted in organisation

Table-4 Acceptance/ Rejection of hypothesis

Hypothesis	Supported/Not Supported
H1: Technology Integration Mechanism has significance relationship between Absorptive Capacity	Supported
H2: Knowledge Integration Mechanism has significance relationship between Absorptive Capacity	Supported
H3: Absorptive capacity has significant relationship with Social Innovation	Supported

V Conclusion

The above study analyses the Social innovation as the cause of Technology and Knowledge integration Mechanism. Technology Integration mechanism denotes institutions and infrastructure that enable to routinely transfer and acquire consistent and high-velocity electronic data across its own boundaries. Knowledge Integration Mechanism has been defined as the formal processes and structures that ensure the capture, analysis, interpretation, and integration of market and other types of knowledge among different functional units within a firm. Both KIM and TIM Results in Absorptive capacity can utilize both internal and external knowledge to make their competences more dynamic. AC can be used to recognize the value of information, assimilate, internalize and apply it to commercial ends were resulted in Social Innovation. As the Result of Regression Analysis shows that Independent and Dependent variables has healthy relationship between them without the presence of Multicollinearity and homoscedasticity thus, This study proves that TIM KIM and AC of the organisation significantly lead to the social innovation product/services

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