

Information Technology as a Strategic Resource in Encouraging Organizational Change Readiness through the Role of the Human Capital Effectiveness

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Abstract

The application of technology will have a direct strategic impact on the organization. Information technology in the context of infrastructure refers to applications used to create, process, store, and disseminate knowledge to organizations. The capability of information technology will encourage the effectiveness of organizations in creating a competitive advantage. The research direction is to uncover the influence of Information Technology Capability (ITC) on Readiness to Change (RTC) of organizations mediated by the existence of the role of Leadership and Human Capital Effectiveness (HCE). These two big concepts are offered to bridge the research gap. The research sample was 166 design-based fashion manufacture industry in Central Java at the organizational level, consist of 49 males and 117 females respectively. Testing through the Structural Equation Model shows that Information Technology Capability (ITC) has an indirect influence on Readiness to Change (RTC) through Human Capital Effectiveness (HCE) which is greater than through Leadership and HCE.

Teknologi Informasi sebagai Sumberdaya Strategis dalam Mendorong Kesiapan Perubahan Organisasi Melalui Peran Keefektifan Modal Manusia

Abstrak

Penerapan sebuah teknologi akan memberikan dampak langsung secara strategis pada organisasi. Teknologi informasi dalam konteks infrastruktur merujuk pada aplikasi yang digunakan untuk menciptakan, mengolah, menyimpan dan menyebarkan pengetahuan pada organisasi. Kapabilitas teknologi informasi akan mendorong keefektifan organisasi dalam menciptakan keunggulan bersaing. Arah penelitian adalah mengungkap pengaruh Information Technology Capability (ITC) terhadap Readiness to Change (RTC) dari organisasi yang dimediasi dengan eksistensi peran Leadership dan Human Capital Effectiveness (HCE). Kedua konsep besar ini ditawarkan untuk menjembatani adanya gap penelitian. Sampel penelitian adalah sejumlah 166 industri manufaktur fesyen berbasis desain di Jawa Tengah di level organisasi, yang terdiri dari 49 pria dan 117 wanita. Pengujian melalui Structural Equation Model menunjukkan bahwa Information Technology Capability (ITC) memiliki pengaruh secara tidak langsung terhadap Readiness to Change (RTC) melalui Human Capital Effectiveness (HCE) yang lebih besar dibandingkan melalui Leadership dan HCE.

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INTRODUCTION

Information technology becomes a strategic tool in increasing competitive advantage in the knowledge economy paradigm (Hermawan & Tripriyo, 2014; Hermawan et al., 2016; Hermawan et al., 2018). Many studies in the last decade shows that organizations have a dependency on the role of information technology because it is an asset that is easily copied and applied to immediately create a competitive advantage in organizations (Mithas & Krishnan, 2008). The success of the organization depends on the level of focus of managers in coordinating infrastructure assets that push the organization ready to change to face relevant business challenges today. Information technology in the context of knowledge infrastructure involves the integration of technology systems and knowledge in companies in creating, continuing, storing, and securing assets of organizational knowledge resources (Matin & Sabagh, 2015).

The term digital economy is often described as "always-on" and "real-time" economics (Tsourela & Roumeliotis, 2015). Information technology becomes a fundamental aspect in controlling the level of organizational readiness to deal with dynamics (Adil, 2016; Nugroho et al., 2017; Lokuge et al., 2018; Shirahada et al., 2019), so that technology that was originally positioned only as a supporting tool (supporting tools), developed into a strategic tool that is inherent to the vision and mission of an organization (Hermawan & Tripriyo, 2014).

Points from the development of the industrial revolution 4.0 in Indonesia were marked by the collapse of large malls because they were unable to compete with online businesses done from home without relying on physical buildings and large production sites, and could be controlled by mobile (Fauzie, 2017; Widiartanto, 2017). This phenomenon is formed from the development of the technology domain which takes a crucial role, creating new challenges in the business world with industrial platform 4.0 issues, where the digital concept is the engine of economic growth (Sayekti, 2018). Coming from the dynamics of the digital economy that organizations that survive can acqui-

re business challenges and current technology well and convert these challenges into opportunities. Business processes in organizations have changed along with the delivery of digital businesses such as PayPal, go-pay, or DANA which are all cashless manifestations. Organizations that do not adjust their business processes in line with changing times and update the current business paradigm will be left behind. In highlight, the responsibility of providing an environment that facilitates drastic technological change becomes a leader's responsibility. Transformational leaders will be able to deliver organizations to success and be ready to face changes that follow the challenges of the times in the industry paradigm 4.0. On the other hand, concerning the adoption of information technology, Apriyanto and Putro (2018) states that 18 percent of organizations have failed to adopt information technology. This statement is in line with the study (Project Smart, 2014; The Standish Group, 2015), especially in small companies. This failure to adopt is an interesting fact to explore the role of leadership and the effectiveness of human capital in the context of leveraging the influence of ICT so that it impacts an organization's readiness to change.

This study aims to confirm previous studies (Chen et al., 2016; Subramony et al., 2018) which stated that Information Technology Capability (ITC) cannot directly influence Readiness to Change (RTC). ITC here refers to the concept, ITC refers to knowledge infrastructure in organizations in the form of hardware (computers, mobile phones, internet networks) and software (office applications in general, data processing, cloud storage, use of company-specific applications) as a strategic tool in the company's business processes (Gold et al., 2001; Real et al., 2006; Mills & Smith, 2011). ITC is a tool that ensures the ease of creation, sharing, storage, and transfer of knowledge in organizations. Whereas the RTC is the organization's overall readiness to accept changes with the application of renewable information technology to increase the organization's competitive advantage. To leverage ITC on RTC, this study offers a moderating role namely Human Resource Effectiveness (HCE) (Bontis, 2002). HCE is a human resource that is utilized to achie-

ve the organization's general goals and objectives. Besides, there is an alternative mediator proposed, leadership. The ability of leadership to be a crucial aspect, especially in terms of leadership in the organization, is related to its ability to lead and prepare its members in facing challenges that arise (Chen et al., 2016). The concept of human resources views Leadership as an important asset that drives organizations (Kaushal, 2011; Noruzi et al., 2012; Guerrero & Kim, 2013; Ebrahimi et al., 2016). Thus at different perspectives, information technology that is elaborated with other elements in the organization will have an impact on one's performance (Chiu & Chen, 2016; Rajabi & Arastekhoo, 2017; Syarifah & Fauziyah, 2017; José et al., 2018). ITC must be juxtaposed with other concepts to create a significant impact. In many research articles mentioned in line with the study of Powell and Dent (1997), where some researchers find that ITC negatively influences performance (Real et al., 2006). Likewise in the organization's readiness to change so, this research offers a middle concept of the effectiveness of human capital which is rooted in the role of Leadership (Russette et al., 2008; Kaushal, 2011; Rodney et al., 2014; Itsekor, 2018). Then in this study, the effectiveness of human capital is replicated the model of Bontis (2001), Bontis (2002), Choo and Bontis (2002) serve as a solution to bridge the phenomena and gaps in the problems mentioned above.

The novelty in this study is the use of the HCE variable as an intermediary concept that elevates the role of ITC and TL against RTC. What is different from the application of this model than previous studies is the acquisition of human capital

valuation and asset management fields. However, in the implementation of this study, the concept of human capital valuation is used by modifying indicators that lead to how to build self-efficacy from human capital. So, intellectual capital will be related to leadership input and other resources. In many studies, self-efficacy will encourage the growth of the organization's readiness to change as a whole (Matin & Sabagh, 2015; Rasel, 2016; Rajabi & Arastekhoo, 2017). This research is a study in the sample object of the design-based manufacturing industry. This selection is based on the need to develop ideas, insights, and knowledge that are massive in the field, where reliable IT support, the ability of leaders who can provide a good managerial environment for the organization. Thus, the determination of the analysis unit is relevant to this study. Both of them are areas that have not been done much research at this time.

Hypothesis Development

Existing variables were adopted from previous studies (Chen et al., 2016; Subramony et al., 2018). In vice versa, the developed model in this study is a new concept that promotes the research gap of the role of the ITC on RTC. The HCE study in previous research refers to the banking area relating to financial assets. However, the developed model is applied to the creative industry that emphasizes the valuation of HCE as an intangible asset in growing efficacy. It becomes logical for the analysis unit in the creative industry. Figure 1, which is a picture of a conceptual model of research, to construct a hypothesis is explained as follows:

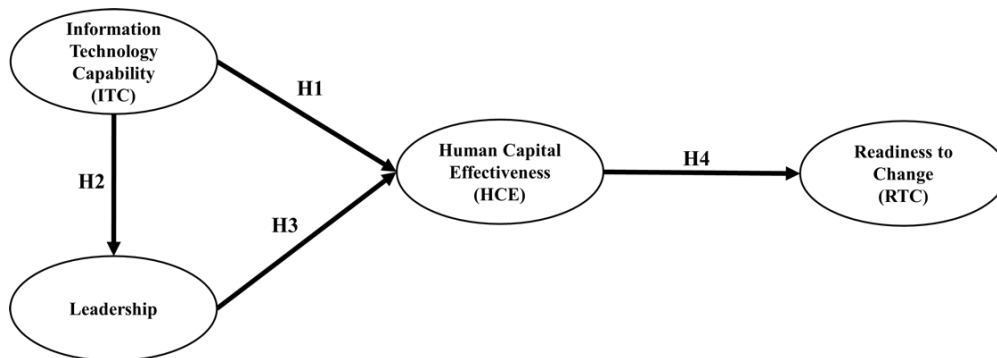


Figure 1. Conceptual Model

ITC as a Determinant of HCE

Information technology in this study refers to infrastructure, as in the context of knowledge infrastructure (Matin & Sabagh, 2015; Chiu & Chen, 2016). Capability in this context refers to the capabilities of a device, both hardware and software used to retrieve, transfer, acquire, store, and distribute knowledge to organizational entities (Real et al., 2006). Information technology cannot stand alone, so it requires other concepts (Matin & Sabagh, 2015; Rasel, 2016; Rajabi & Arastekhoo, 2017) which are worked on together to exert influence on the effectiveness of human capital. CE is an important aspect of the organization. The effectiveness of human capital was first introduced in the Human Capital Valuation study (Bontis & Fitz-enz, 2002). The effectiveness of human capital is a concept synthesized from Human Capital Depletion and Human Capital Investment to form the concept of HCE. HCE will encourage elements of the organization such as managers and employees to have optimism ready to face change. The first hypothesis of this research is:

H1: There is a significant influence between ITC and HCE

ITC as a Determinant of Leadership

Information technology has a strong relation to leadership, where the development of infrastructure that can create, store and distribute knowledge will encourage regularity in the organization and achieve the vision and mission impact on leadership effectiveness (Zhu et al., 2013). As information technology encourages trust in organizations such as performance measurement, payroll, and employee track record, it ultimately makes it easy for a leader to develop trust and fair leadership attitude (Mayer et al., 1995; Russette et al., 2008; Kaushal, 2011; Obal, 2013; Rodney et al., 2014). This can be defined that utilizing good information technology can make good leaders as well as companies can achieve their goals (Anyaku et al., 2015). Information technology not only affects techni-

cal improvement but also affects leadership. The main consistency of leadership is the ability of leaders to influence subordinates to achieve organizational goals. If a company has good information technology, the leadership trust will be built and the managerial level will be able to direct the organization well (Northouse, 2018). The second hypothesis of this study is:

H2: There is a significant influence between ITC and Leadership.

Leadership as a Determinant of HCE

Leadership is the motor of an organization. The good and bad of an organization depends on the leader who performs managerial functions (Shelly & David, 2009; Gilbert et al., 2017). A leader must have the ability to scan the surrounding environment and be able to interact with external entities (Heavey et al., 2009), then be able to absorb information and insights and identify options for choosing the best decision (Glaser et al., 2015). Leaders who are able to bring personality and build trust in organizational entities will create the effectiveness of resource assets (Rad & Yarmohammadian, 2006) such as employee intellectuals in organizations that are intangible assets (Alireza et al., 2014; Andaleeb et al., 2016; Ndungu et al., 2017), so the third hypothesis in this study is:

H3: There is a significant influence between Leadership and HCE.

HCE as a Determinant of RTC

Employees' expertise, attitudes, and intellectualism as human capital provide a good role in the creation of a work environment (Shah & Shah, 2010; Parul & Pooja, 2017; Itsekor, 2018). A good work environment is a representation of human capital that will provide strength both at the team level (Gilbert et al., 2017; Protogerou et al., 2017) and organizational level (Abd Razak et al., 2014; Gilbert et al., 2017; Itsekor, 2018) to provide stimulants to all entities involved elastically to always be ready to face changes and challenges in the world of work (Ryan &

Wessel, 2015). Therefore, the fourth hypothesis of this study is:

H4: There is a significant influence between HCE and RTC.

METHOD

Sample

This study is using primary data. Primary data is data obtained by researchers through observation activities by distributing questionnaires. The method of filling out the questionnaire is the non-self-assessment method, where the surveyor team guides the respondents in filling out the questionnaire. This research is at the organizational level, so the designated sample is personnel who can represent the organization, namely the business owner and the preferred manager. Sampling in this study involved 166 design-based fashion manufacture industry spread in Central Java and Yogyakarta. The analysis tool approach in this study uses the Structural Equation Model (SEM) processed with AMOS, with the number of indicators in all constructs being 17 item scales, so that a sample of 119 respondents is needed (17 x 5) so that the existing sample is sufficient to be used in calculations (Hair, 2011).

Based on Table 1, it can be seen that the business sectors targeted by respondents are clothing convection (83.13 %) and bags (16.87 %). Even though the majority of respondents were female as many as 117 people (70.48 %), the average derivative business was a start-up business of 154 (82.77 %).

Measurement

Structural Equation Model (SEM) analysis method was used in this study. Data is processed using AMOS 22 (Analysis Moment of Structural) application software. Measurement using a Likert scale with a range of 1 (strongly disagree) to 10 (strongly agree) with each question asked. Before the data is declared ready to be analyzed, a Confirmatory Factor Analysis (CFA) needs to be performed on each construct variable for the latent ITC variable with the information provider dimension, cooperation forum, and innovation (Real et al., 2006). Leadership with dimensions of cooperation, competition, and independence (Liu et al., 2002). HCE, with dimensions of appreciation, commitment to change, and planning (Baron, 2011). RTC with dimensions including technology, self-efficacy, enthusiasm (Neves, 2009). The number of samples analyzed was 176 respondents reduced by

Table 1. Characteristics of Respondent

	Total	Percent
Identity of Respondents		
Gender		
Male	49	29.52%
Female	117	70.48%
Business Identity		
Business fields		
Convection of Apparel	138	83.13%
Convection Bags	28	16.87%
Derivative Business		
Start-up Business	154	82.77%
Inheritance Business	12	7.23%

outlier data by 9.28 percent. Outlier data cuts are based on Mahalanobis Distance which is worth 0,000 at p1 and p2. The analysis results presented in Table 2 shows that the CFA model is fitted with the following conditions:

Referring to Table 2, shown loading factor of each item scale has a number above 0.5 and construct reliability above 0.6 (Ghozali, 2008). Even though the dimensions and indicators in this study are within the cut-off limit (0.5), this is a limitation. Since the crucial value of the indicator as an item scale, it is still maintained in this study. The example

in the HCE variable, to build efficacy in building a design-based manufacturing industry, the main component of the cycle is the training program. It encourages organizational learning, which will leverage the growth of human capital efficacy as an intangible asset of the organization. Although the training indicator has a loading factor of 0.497, it is tolerated equivalent to 0.5, because of the item scale strategic. Besides, CR which is 0.841, becomes other confirmatory aspects support of the HCE. Before building the full model, a goodness of fit test of the variables arranged is

Table 2. Measurement details for standardized factor loadings, reliability tests, and fit statistics

Item Description	Standardized factor loadings	Construct Reliability
ITC (Real et al., 2006; Matin & Sabagh, 2015)		.803
The organization has a computer that helps in informing	.787	
The organization uses technology that ensures the synergy of work teams and stakeholder relations	.721	
Important data, documents and knowledge have been recorded properly	.501	
Information technology updates are an organizational priority	.583	
Leadership (Liu et al., 2002; Ling et al., 2018)		.811
Leaders provide opportunities for subordinates to complete work in their own way	.559	
The leader provides clear work targets to subordinates	.593	
The leader is able to complete the work independently	.829	
The leader directs the job description according to conditions and situations	.679	
HCE (Bontis & Fitz-enz, 2002; Baron, 2011)		.841
Having effective resources	.787	
Be consistent in attending training	.497	
Have a strong commitment to face work-life	.791	
Have a careful planning before investing	.750	
RTC (Neves, 2009; Ling et al., 2018)		.952
Organizations ready to use digital economic innovation services	.849	
Do not have anxiety using gadgets and the internet	0.858	
Organizations are able to anticipate new product trends	0.837	
The organization is able to operate new production methods	0.779	
There is an organizational level management plan for new technology migration	0.772	

then conducted to then construct the causality of the concept as shown in Table 3.

analysis. The analytical method used in this study is a structural equation modeling ana-

Table 3. Summary of Goodness of Fit from Confirmatory Factor Analysis of Variable Constructions

Variable	Chi-Square	Prob ≥ .05	df	CMIN/DF 2.00	RMSEA ≤ .08	GFI ≥ .90	AGFI ≥ .90	TLI ≥ .90	CFI ≥ .90
ITC	8.914	.012	2	4.457	.145	.975	.874	.889	.963
Leadership	1.971	.373	2	.986	.000	.994	.971	1.001	1.000
HC	2.587	.274	2	1.294	.042	.992	.961	.992	.997
RTC	9.121	.104	5	1.824	.071	.976	.929	.985	.992

Based on the achievement of Loading Factor and Construct Reliability shows meet the cut-off value, so that the variables and constructs are eligible to be arranged in full model (Figure 2).

lysis. Based on the test results, from the five hypotheses that were formulated, it turned out that all hypotheses were accepted. So, this research has confirmed the relationship between ITC and RTC.

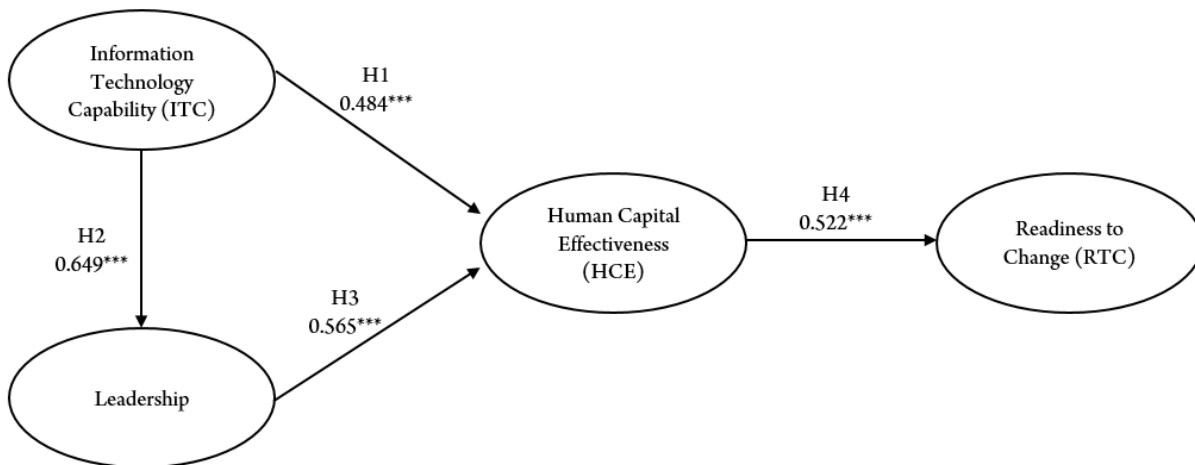


Figure 2. The Results of Full Model Analysis

RESULT AND DISCUSSION

Based on the results of the CFA Test, the loading factor value of each construct has met the limit (> 0.5). Then seen from the construct reliability of each latent variable with a cut-off (0.7-0.95), it can be concluded that the statistical model is reliable and feasible for further

Based on the analysis results, it was found that the full model in Figure 2 met the requirements Goodness of Fit (Chi-Square ≤ 125,458, CMIN/DF ≤ 2.00, RMSEA ≤ 0.08, GFI ≥ 0.90, AGFI ≥ 0.90, TLI ≥ 0.95 dan CFI ≥ 0.95).

It can be seen from Table 4 that the effect of ITC on RTC through HCE (β = 0.253) is greater than ITC on RTC through Leadership &

Table 4. The goodness of fit for Full Model

Chi-Square	Prob	df	CMIN/DF	RMSEA	GFI	AGFI	TLI	CFI
123.402	.064	101	1.222	.037	.921	.881	.979	.984

HCE ($\beta = 0.191$). The results of validity and reliability tests that have been done by researchers show that all four variables are valid and reliable. Based on the result of full model analysis shows that hypothesis 1 is accepted ($\beta = 0.484$, $p < 0.001$), hypothesis 2 is accepted ($\beta = 0.522$, $p < 0.001$), hypothesis 3 is accepted ($\beta = 0.649$, $p < 0.001$) and hypothesis 4 is accepted ($\beta = 0.565$, $p < 0.001$).

Based on the results of the study that Hypothesis 1 was accepted. ITC as measured in the dimension of capacity to transfer knowledge, store, and distribute knowledge on organizational elements will significantly influence HCE. The better the ability of ITC infrastructure, it will provide a direct stimulation on the existence of HCE, the effectiveness is raised because technology will conceptually create trust, such as decision making based on the track record of data mining achievements of consumer behavior, trend sensing of viral information in communities that are acquired as organizational capital, so that with a good capacity of the use of technology in organizations will encourage integration, encourage synergy in work teams at the organizational level in line with these studies (Alaarj et al., 2016; Bijoylaxmi et al., 2017; Smith, 2017).

The human resources division will be able to play the role of HR Outside in (Ulrich et al., 2012; Ulrich et al., 2013). The existence of ITC in design-based creative industries such as fashion and convection is essential. The ITC will be a strategic tool in assisting HR in making design patterns with good accuracy and rich in motives. Certainly, this is relevant to HCE because ITC as a resource of knowledge infrastructure will accommodate input in line with its capabilities in developing a human capital valuation and building efficacy.

Hypothesis 2 accepted by ITC significantly influences leadership. This statement is true because by improving the information technology capabilities of the company will have an impact on the achievement of the vision and mission of a leader. In line with the statement (Northouse, 2018), through the role of

the ITC. ITC as a system encourages the formation of trust (Harris, 2009; Bijoylaxmi et al., 2017; Smith, 2017) technical in conducting business, managers are helped in finding business opportunities and other important information that is used as a basis for decision making (Foos et al., 2006; Kaushal, 2011; Itsekor, 2018). The concept of ITC as a conventional knowledge infrastructure is to present trust and synergy. Especially in the creative industry where the core prerequisites for life are creating unique differences in competitor products and building rare designs to create inimitable products, the role of ICTs that encourage effective leadership growth is increasingly strategic. The development of digital business now has pushed new ways to move organizations such as virtual meetings, data mining, and social media use to work, to the point of pushing the concept of remote leadership namely virtual leadership. So, H2 is accepted that ITC has a significant influence on Leadership has been proven logically and empirically (Anyaku et al., 2015).

Hypothesis 3 is accepted; Leadership has a significant influence on HCE. Situation-based leadership approaches encourage the emergence of a wise solution to work challenges, the custom approach will build on HCE (Bono & Anderson, 2005; Carmeli, 2009; Chen et al., 2016). Thus, it can be said that a leader who is active in all development activities aimed at improving interpersonal and intrapersonal leadership skills will be more effective in building a vision of organizational work, thus putting an appreciation of HCE in the right corridor (Subramony et al., 2018). Conventionally, the role of a leader is to direct subordinates and build the efficacy of human resources at the organizational level. This role is frequently widespread in the creative industry environment were to create a competitive advantage and to generate a work environment that facilitates the presence of an innovative culture.

In its capacity as proponent technology, hypothesis 4 was accepted by HCE as having a significant effect on RTC. RTC is a dimension related to organizational readiness to face the internet and external challenges that ensure

organizations survive. These challenges such as changes in the macroeconomic paradigm, market trends, new methods, and the presence of new technologies, so that the better the HCE, it will affect the overall level of organizational readiness to change (Shah & Shah, 2010). HCE encourages self-efficacy in teams and organizations in facing organizational prerequisites for survival. One of the organization's strategic assets in the form of intangible assets is human capital. HCE contributes to the speed of the work process in the creative industry. Strengthening organizational learning in sharing knowledge is to build the effectiveness of how to work from human resource assets. On this side, the HCE will encourage the achievement of the RTC. By effective human capital, organizations will be able to grow in the face of market turbulence and critical challenges in the work-life. The second hypothesis has been empirically proven that there is a significant influence between HCE on RTC (Goksoy, 2014).

CONCLUSION AND RECOMMENDATION

To foster a company's readiness to deal with changes in market conditions, this research successfully offers a concept that becomes a mediation that can connect the ITC to the RTC, namely by mediating the leadership of the HCE. IT plays an important role during the industrial revolution 4.0 which is being faced by convective SMEs in the form of fashion products which are the need for ideas and ideas for creating creative products that must be renewable. The need for data and information flow to be converted into knowledge is used as a basic idea for designing, producing, and distributing products in the industrial era 4.0 which is closely involved with the existence of information technology. The capability of IT infrastructure in the organization becomes a strategic aspect to be built in the organization. IT is easily copied and applied to immediately get the benefits of competitive advantage. HCE is an expression of the concept of intangible assets of organizations in the form of individuals who are empirically able to bridge the application

of IT so that it can be used to build RTC (Example: the use of office applications) as well as obtain important information from the internet and / or social media that are accessed will strengthen organizational efficacy. With the existence of strong human capital, the organization will not be difficult to carry out business development to achieve a competitive advantage. Besides, the value of leadership possessed by the leaders/managers of the company is crucial to determine the direction of the organization. Good leadership skills will be able to be protective to integrate each of the existing lines. Therefore, leadership is a crucial factor to determine human capital. Referring to the total effect produced by the full model, the HCE concept will provide the best leverage for RTC. The managerial implications that can be used as alternatives are expected for business organizations to build organizational values and culture to ensure an adaptive environment that facilitates innovation and creativity to achieve RTC.

This research is focused on one industry to get unbiased results where each respondent is assumed to be in the same condition in the field. Filling out the questionnaire uses a non-self-assessment technique to ensure there are no filling errors. The concepts and variables in this study require further testing in the longitudinal study by testing it on nonprofit organizations. Leadership in this model has not provided a strong mediating role, so it is recommended to conduct an in-depth study of authentic leadership, transformational leadership, and within the scope of nonprofit organizations using the concept of servant leadership approach to strengthening the leverage of ITC influence on the RTC.

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