

The Impact of Organizational Readiness on IR 4.0 and Sustainability-A Conceptual Framework for SMEs in Malaysia

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Abstract: Nowadays, companies are facing complicated challenges, because markets are moving fast, competition is growing to take the market share and the products and production is also complex. So, transformation in organization is very essential for the marketers to keep them compete and sustain in the business field. Hence, it is very important to develop the changes occur in organization, as it may decrease the difficulties that come from the employees and also might forecast the future possible circumstances. Due to lack of an appropriate model of IR 4.0 and enterprise sustainability the actual benefits are not recognized by Malaysian SMEs. Therefore, to broaden recent state of knowledge this study evaluates the existing literature and develops a new framework for IR 4.0 and sustainability from the view point of organizational readiness to change. It is expected that this work will expand the existing knowledge and will initiate ideas among intellectuals that may pave ways for upcoming experimental research. The study is planned to employ a cross-sectional survey and Structural Equation Modeling (SEM) for data analysis.

Keywords: Industrial Revolution (IR) 4.0, organizational readiness, Organizational Sustainability

INTRODUCTION

Organizational readiness is a very important issue to discuss about; particularly, for small and medium (SMEs) companies those are planning to implement with latest advanced tools and technology. An organization may ready to change when the employee, atmosphere and structure are agreeable to facing the forthcoming changes (Holt et al., 2007). There are some comprehensive and significant gaps between actual expectation and the real situation and these gaps should be eliminated by evaluating the readiness aspects (Holt et al., 2007). According to Murad and Thomson, 2010; Koc and Bozdog, 2009, SMEs requires a profound investigation before making any choice of adoption. Previous study demonstrates that, most of the SMEs want to implement advanced manufacturing technology but they stopped in the middle of embracing due to lack of monetary, resources and experienced employees. Organizational readiness is an all-around aspect, not only a multi-stage assembles. Particularly, it is employees' change assurance and transforms effectiveness to employ organizational renovation (Weiner BJ, Amick H, Lee SY., 2008; Weiner BJ, Lewis MA, Linnan LA, 2009). Collective capabilities can be achieved through managing action across various persons and groups and by encouraging organizational learning. Study shows that, efficacy decisions are related to action competencies; efficacy decisions are not the ending expectations (Bandura A, 1986; Bandura A, 2000; Maddux JE, 1995) or evaluation of the knowledge, proficiencies, expertise or resources (Bandura A, 1986). When the employees in an organization share a sense of assurance then they can achieve higher change efficacy, even a critical organizational change can be accomplished.

For successful implementation of IR 4.0, organizational readiness to change i.e. accept the advanced manufacturing technologies is very essential. In Malaysia, SMEs facing difficulties in rising their business, but research shows that, SMEs are the backbones of Malaysian financial expansion (Kee et al., 2013; Khalid, 2012; Cheungsuvadee, 2006; Saleh and Ndubisi, 2006; Rosnah et al., 2004). Thus, SMEs are creating new job opportunities and cheering fresh starter business to take their entry in business ground. In Malaysia,

most of the SMEs are engaged in manufacturing, service and other production oriented services (SME, 2016). The Government Eleventh Plan provides the ground to make fundamental strategies shifts and create latest approaches to identify new and existing disputes. One of the policies is practicing green expansion and environment as well as sustainability that will protect the country's ecology. In this aspect, IR 4.0 will help to transform Malaysian SMEs by pushing down production cost, enhancing the market reach and producing new competitors. So, it is high time to identify the success factors that can assist the SMEs to open the entire possibilities of the incorporation of industry 4.0 and natural-sustainable production (A. B. L. de S. Jabbour, Jabbour, Foropon, & Filho, 2018). This current research will attempt to explore organizational readiness, as it is one of the critical success factors of IR 4.0.

RESEARCH QUESTIONS

This study deals with the subsequent questions:

- ✓ What is the impact of organizational readiness for change on IR 4.0 effectiveness?
- ✓ How IR 4.0 mediates organizational readiness for change and organizational sustainability?
- ✓ How does IR 4.0 effectiveness affect organizational sustainability?

OBJECTIVES OF THE RESEARCH

This study proposes to examine the impact of organizational readiness on IR 4.0 effectiveness and organizational sustainability. The precise objectives of this study could be mentioned as follows:

- ✓ Scrutinize the impact of organizational readiness for change on IR 4.0 effectiveness.
- ✓ Evaluate the mediating relationship of IR 4.0 between organizational readiness for change and organizational sustainability.
- ✓ Investigate the relationship between IR 4.0 and Organizational Sustainability.

LITERATURE REVIEW

Current scenario of SMEs in Malaysia

IR 4.0 can develop the competitiveness of Malaysian products; hence the Gross Domestic Product (GDP) will rise and better GDP will improve employment possibilities. In IR 4.0, large SMEs can reduce the operation and production cost, product price and services might be lower and as a result the potentiality of Malaysian products will be more competitive. This is possible when Malaysia will accept the changes fast to enter into IR 4.0, the country will be benefitted from early mover advantage. The incorporation of latest manufacturing technology and its adoption in organization is the best policy for enduring benefits and environmental sustainability. The integration between latest technologies for IR 4.0 in organization is still low (Rosnah et al., 2004). As IR 4.0 employs the environment based latest technology, hence it is the best time for Malaysia to take the entry into the era of IR 4.0 as it evolves with competitive manufacturing and environmental sustainability.

IR 4.0 and Organizational Readiness

IR 4.0 may denote as 'fourth industrial revolution' and is a concept of speedy transformations in the blueprint, manufacturing, execution, procedure, and service of production structures, products, and elements. Industry 4.0 was initiated by Germany and it generates the computerization of manufacturing industry to expand digital factories where the production is more flexible, elegant and more efficient. (Bauernhansl, Ten Hompel, & Vogel-Heuser, 2014; Bienenzeisler, Schletz, & Gahle, 2014; Henke, 2014).

Organizational readiness can be defined as organization procedure, communication and making the decisions. The mission and vision and the direction of the company should be similar with the implementation of latest technology (Abu et al., 2015; Thomas et al., 2008). The readiness is incorporated with the acceptance of latest technology within organization to maintain the sustainability and perform as competitive advantages in current atmosphere (Abu et al., 2014). Although changes occur in organization for enhancing the capability and effectiveness, employees can create some difficulties, but it is usual because they worry about future potential threat (Susanto, 2008). For this reason, the members of an organization may be mentioned as a crucial factor that might influence the implementation of IR 4.0. These members control the decision making process, work implementation, roles and responsibilities and thus the organizational readiness to change is significantly influenced (Teixeira et al., 2012). Organizational readiness to change is connected with all the organization roles. An organization can accept the changes or

it is suitable for readiness when the employees recognize that the organization is already reached at the level of transformation (Bakkabulindi et al. 2009).

According to Susanto, 2008, organizational readiness to change is influenced by seven elements such as observation towards changes efforts, vision, shared faith, plans offered, and management support. The entrance into the era of IR 4.0 is a mutual integration of acceptance to adopt the latest technology in manufacturing companies. The execution of advanced technology requires the incorporation of production and marketing, design and administration and so on. Hence, lack of it can affect the execution of latest technologies for IR 4.0 in manufacturing companies. Other research (Senarathna and Wickramasuriya, 2011) indicated that e-commerce acceptance is significantly influenced by organizational culture where organizational culture refers to adhocracy, chain of command and manager's decision. So, organization readiness for change is a very crucial issue and the factors of readiness should be assessed as it can provide the guidance for implementation of latest technology in IR 4.0. By reading the prominent literature regarding organizational readiness for change, this study adopts the aspects and maturity items of Industry 4.0 Maturity Model (Schumacher et al. 2016). According to this model the dimensions of organizational readiness are divided into 2 categories i.e. basic dimension and organizational dimension. Basic dimensions are products, customers, operations and technology; whereas organizational dimensions are strategy, leadership, governance, culture and people. This study intends to investigate the organizational dimensions as the previous studies didn't present specific information about the dimensions. Hence, it may help enterprises to understand the dimensions properly for the implementation of IR 4.0.

IR 4.0 and Organizational Sustainability

Organizations will be more sustainable and they will enter into a sustainable civilization with top level sustainable production (Dubey, Gunasekaran, Childe, Wamba, & Papadopoulos, 2016). This is achievable because, technological improvement is connected to the sustainability of a country (Gouvea, Kapelianis, & Kassicieh, 2017) and environment-base technological development can enhance the quality of environment (Song & Wang, 2016). In this regard, it can be mentioned that, big data is a major technology of IR 4.0 that can provide a significant contribution to the advancement of a circular economy (C. J. C. Jabbour, Jabbour, Sarkis, & Filho, 2017; Charbel Jose Chiappetta Jabbour, Mauricio, & Jabbour, 2017). In recent research, the concept of organizational sustainability has grown the importance, with a particular spotlight on the environmental feature of sustainability. In spite of this, the study of combination of financial and ecological matters into sustainable production management is remained inadequate (Gunasekaran & Irani, 2014). According to Alayon, Safsten, and Johansson, 2017, organizations may achieve their sustainability when they fully use the resources that can be repetitive and the emissions are controlled by the natural system. These researchers suggest reducing, reusing, recycling (3Rs) the products to expand the life cycle and the use of new technologies will decrease environmental pollution. There is a strong affiliation and interdependency among financial, environmental and societal features, the components of sustainability should be taken into account. This study suggests developing the body of further knowledge on Industry 4.0 and naturally-sustainable production process and presents recommendation to do a quantitative study with organizational readiness as it is one of the most important dimensions of Industry 4.0.

Hence, the hypotheses of this study are as follows,

H1: There is an important relationship between business strategy and IR 4.0.

H2: There is an important relationship between leadership and IR 4.0.

H3: There is an important relationship between governance and IR 4.0.

H4: There is an important relationship between culture and IR 4.0.

H5: There is an important relationship between people and IR 4.0.

H6: IR 4.0 effectiveness mediates the relationship between independent variables (1-5) and organizational sustainability.

H7: There is an important relationship between independent variables (1-5) and organizational sustainability

CONCEPTUAL FRAMEWORK

The planned theoretical framework of this study is shown in Figure-1.

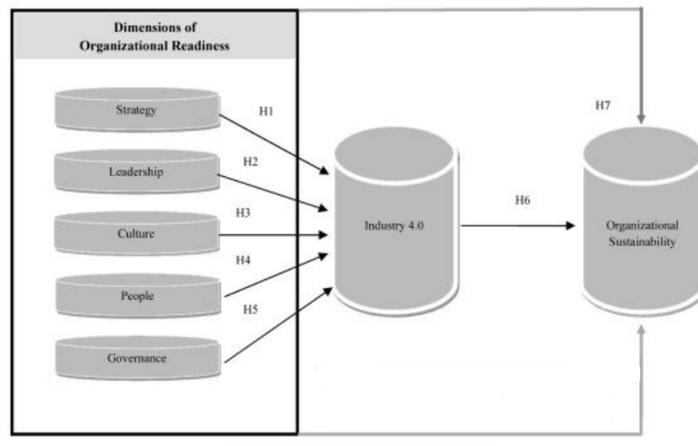


figure 1: Conceptual framework of Organizational Readiness

According to the framework (Figure-1), the five dimensions of organizational readiness (independent variables) are significantly related to IR 4.0 and IR 4.0 mediates the relationship between the independent variables and organizational sustainability. Furthermore, there is a significant relationship between independent variables and organizational sustainability.

Strategy

The implementation of IR 4.0 significantly relates with business strategy. This dimension includes IR 4.0 roadmap (Schumacher et al. 2016) and the roadmap should be sketched out in harmonization with the technical advisory panel; the necessary improvement and research activities as well as their support will be approved and synchronized from an industry viewpoint (Bitkom, VDMA, ZVEI, 2016). Strategies should be taken for available resources and adaption of business models (Schumacher et al. 2016).

Leadership

Leadership has a strong relationship with the accomplishment of Industry 4.0. IR 4.0 world is all about leadership. IR 4.0 leaders involve at optimizing the performance of the employee, but they also give attention on optimizing the performance of the entire group (David E. Perry and Ron Wiens, 2018). The leaders should know management competences and methods while there must be an existence of central coordination for IR 4.0 implementation (Schumacher et al. 2016).

Governance

IR 4.0 would not be successful without the help of the Government. It includes, labor regulations, technological standards, protection of intellectual property and so on. According to Brynjolfsson and McAfee, 2014; Rifkin, 2014, the existing technological transformation proposes new hopes and prospects which can direct to remarkable changes not only in the way of creating new products and making profit but also in the entire financial structure. So, labor regulations are very important for Industry 4.0. On the other hand, government should consider the suitability of technological standards and should be aware for the protection of intellectual property (Schumacher et al. 2016). The government of Malaysia has set national policy for the successful implementation of IR 4.0; guidelines are already been taken to attract the stakeholders to Industry 4.0 technologies & procedures, plans are set to build the perfect ecology for Industry 4.0 technologies to be accepted and to foster novelty (Industry4ward, 2018).

Culture

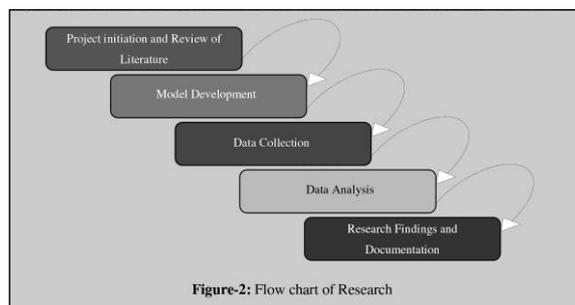
Organizational culture is closely related to the execution of IR 4.0. In IR 4.0, it's very necessary to share the knowledge with suitable partners to develop the existing information. Additionally, open-innovation and cross company collaboration practice should be encouraged for Industry 4.0. Furthermore, value of ICT in the organization should be realized (Schumacher et al. 2016).

People

According to the report of Industrial Global Union (2017), today's workers are not necessarily skilled but the new workplace requires skills that they don't have although it is agreed that the smart manufacturing would not only abolish jobs but also to create new opportunities (Bonekamp & Sure, 2015). This new opportunities however most probably will demand for workers who are high skilled, innovative and dynamic (Shamim, Cang, Yu, & Li, 2016), with preference of the employees with high IT competency in good understanding of practical, engineering and programming skills (Bonekamp & Sure, 2015; Industriall Global Union, 2017).

METHODOLOGY

The flow chart of the research activities are shown in Figure-2.



Proposed Model of the Study

A novel model of organizational readiness to change for IR 4.0 (Figure-1, theoretical framework) and its impact on organizational sustainability is proposed for the SMEs of Malaysia based on the 11th MP and the literature gaps. This is focused as a very important area in 2018 budget and this study intends to come up with a model to make the Industry 4.0 more flourishing for Malaysian SMEs as previous study does not present any specific model like this.

Design of the Study

A cross-sectional survey will be conducted from Malaysian SMEs.

Sampling Process

Malaysian SMEs are the target population for the study and the samples will be selected from SME Corporation. The survey will be carried out in Selangor, Johor Bahru, Melaka and Kuala Lumpur. The study will use Structural Equation Modeling (SEM).

Data Collection and Analysis

The study will obtain the necessary information through a questionnaire-based survey. All of the independent variables will be mentioned in the questions. The affiliation between the independent variables and organizational sustainability will be calculated. Mediating role of Industry 4.0 will also be tested.

CONCLUSION

In conclusion, this study endeavors to scrutinize the organizational readiness factors that affecting SMEs manufacturing to employ with advanced technology of Industry 4.0 (Rahardjo and Yahya, 2010). Using the prior study the authors come out with five dimensions that associated with organizational readiness. If the organization is entirely committed, advanced technology for IR 4.0 can be success and can enhance the organization performance and sustainability (Small and Yasin, 1997). The study will build up the understanding by developing an effective and efficient model of organizational readiness to change for Industry 4.0 and organizational sustainability, which may help Malaysian manufacturing industries to take the entry into the era of IR 4.0 as the government is very concern about the issue. Apart from the above, the study prioritizes the dimensions of organizational readiness for Industry 4.0 which will help Malaysian SMEs to contribute more positively to gain the national goal. Theoretical study mostly confines this research and all other factors except organizational readiness are not considered. Hence, other study on Industry 4.0 may not have been included, but intensifying this study would be a fascinating prospect for future research.

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