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Research Article

The Influence of a New Model of IT Leadership on Organizational Change Management and IT-Business Value Delivery in the First Phase of Digital Transformation Amid COVID-19

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Abstract.

This study examines and analyzes the influence of a new model of IT leadership on organizational change management and IT-business value in large manufacturing companies. This study used a quantitative research method; data were collected using a questionnaire using SmartPLS 4. This study involved 47 large manufacturing companies as unit analysis with multistage sampling in sample selection, first by purposive sampling and second by the Slovin formula. The results of this study stated that IT leadership affects organizational change management significantly but has no effect on IT-business value. Organizational change management affects IT-business value significantly. The lack of experience and knowledge in IT leadership has an impact on failure in delivering IT-business value. The results of this study provide valuable insight for IT executives in developing their IT leadership, business executives for their engagement in IT-business value delivery, and manufacturing companies to cope with their struggles in managing change in the ERP implementation, especially in the first phase of their digital transformation to achieve IT-business value successfully.

Keywords: IT leadership, organizational change management, IT-business value

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1. Introduction

A digital transformation is intended to create business value [1, 2] and to expand the area and reach of utilizing IT-Business Value for business. In the manufacturing area, digital transformation begins by integrating all business processes through implementing ERP (Enterprise Research Planning). After the ERP implementation is completed and the company benefits from operational efficiency and effectiveness are achieved in increased business performance, the next stage is the development of digital solutions. According to [3], one of the digital solutions is implementing IIoT (Industrial Internet of Things), especially in the MES (Manufacturing Execution Systems) module, which is related to the use of various kinds of sensors to automate production processes

in manufacturing. Digital solutions often associated with technology 4.0 can connect manufacturing machines, production facilities, ERP systems and consumers by providing operational information [4].

The success of digital transformation in manufacturing companies, especially in the early stages of ERP implementation, is determined by the IT Leadership of IT executives, especially lead by a CIO (Chief Information Officer). IT Leadership is how the IT executives direct and engage all the stakeholders to transform the business through IT. As the main person in charge of digital transformation, the IT Leadership of IT executive must be able to deliver IT-Business Value appropriately according to the challenges facing the company at that time [5, 6, 7, 8]. IT Leadership of an IT executive has a critical role in digital transformation that must be able to change his leadership style [9].

However, not all IT executives or IT leaders in manufacturing companies can develop a suitable and appropriate approach to managing ERP implementation for its digital transformation. Unprofessional IT Leadership is also a failure factor in the digital transformation processes [10]. The dynamics problems in ERP implementation to deliver IT-Business Value to the entire organization need an appropriate IT leadership. Many companies fail to obtain IT-Business Value because their IT Leadership is unable to provide inspiration and motivation in implementing ERP Value [10]. The failure of IT Leadership in guiding the ERP design and implementation is the cause of digital transformation failure in the early stages [11]. Another reason is that IT Leadership fails to manage the relationships with ERP vendors [12]. The failure of digital transformation is also caused by the inability to manage the changes, that occur during the digital transformation process [13]. The ability of IT leaders who are unable to provide a clear vision to convince other C-Levels regarding the IT-Business Value from ERP implementation has become another problem. Failure to realize real IT-Business Value in business operations can be another failure factor.

Several previous studies provide alternative solutions related to the role of IT Leadership on IT-Business Value. IT Leadership plays a role in directing and convincing business executives regarding IT-Business Value for business organizations [14]. Research by [7] stated that IT Leadership can drive IT-Business Value. The results of another study conducted by [6], states that IS-Leadership with an IT culture (IT subculture) can carry out its role in providing IT-Value to business. The research results of [8] also provide similar results that the technical leadership of IT executives has the highest rating, in providing IT-Value to project success. The IT Leadership has responsibility for organizational change management, bearing in mind that IT implementation is the

cause of organizational change, this can be seen in ERP implementation to integrate business processes [15].

However, it still has drawbacks because these studies can not comprehensively answer the problem in the introductory section, especially in solving the problem of what kind of IT Leadership that suitable for managing organizational change to create IT-Business Value, and what kind of organizational change management to support IT-Business Value delivery successfully. The absence of experienced influence of IT Leadership in managing organizational change is one of the drawbacks that provide deficiencies. Another drawback is it does not have better or lacks updated knowledge and experience in managing all aspects of ERP, including people in virtual teams and stakeholders, making IT Leadership difficult in supporting the creation of IT-Business Value. The development of IT leadership capabilities should be able to overcome and solve problems in the delivery of IT-Business Value to support the growth and sustainability of manufacturing companies. The importance of the role of IT Leadership is a driver of this research, especially during the COVID-19 pandemic. The results of this study are useful for manufacturing companies and professionals in the success of the first phase of digital transformation. In addition, research results related to how companies can be successful in the initial phase of their digital transformation will provide a competitive advantage and provide opportunities for economic benefits for company growth.

2. Material and Methods

2.1. IT-leadership

IT Leadership is leadership inherent in an IT executive or CIO to convince his colleagues, namely business executives, and ensure that all IT initiatives run on the right track to support business performance [16]. According to [17] IT Leadership is based on transformational leadership theory [18, 19, 20] and emergent leadership theory [21, 22]. The Transformational leadership seeks to develop the capabilities and capacities of its team. On the other hand, emergent leadership is an IT leadership characteristic derived from experience working in IT executive positions. These experiences provide confidence and a basis for a broad, diverse, and appropriate approach for IT Leadership in conducting IT resource management activities. The foundation of this approach ensures that all efforts and organizational teams, including virtual teams, remain in the direction of alignment goals, even in the absence of the IT Leader [23, 24]. The

Transformational leadership theory and emergent leadership theory is used as the basis for IT Leadership in this study.

The IT Leadership should be able to convey IT-Business vision and mission related to the role of IT in the company. The IT Leadership also should be able to ensure the vision and mission of IT are understood by all stakeholders in the company. Thus IT Leadership must provide enlightenment and a framework for thinking to the business management at the strategic level and all stakeholders at the level of implementing the strategy to understand how to realize the role of IT. [25] state that the enlightenment conveyed by IT executives regarding IT investment affects business performance. Meanwhile, research by [26] states that transformative IT Leadership shows business performance by creating transformation. [6], state that the personal characteristics of IT executives show their influence on increasing organizational innovation in IT implementation. [7] explained that IT Leadership plays a role in communicating the benefits of IT-Business in supporting business goals and strategies. The IT Leadership of IT executives in communicating IT-Business Value [7] must be able to convince top business management of the capability and value of IT in supporting business objectives [27], as well as the consequences in creating business opportunities and maintain more competitive business performance.

2.2. Organizational change management

Organizational change management is a way of managing changes caused by the application of IT [15, 28]. In developing the IT-Business Value, change management should get the main attention [29]. IT-Business Value delivery is not an ad-hoc activity but a continuous process of change and adaptation, to form dynamic capabilities, so it really requires organizational change management. The position of importance of change management in business organizations is also stated by [30], who emphasized that IT-Business Value is obtained through managing changes related to innovations that occur in business.

The Leading Change Theory or 8-Step Process for Leading Change from John Kotter [31, 32] or Kotter's Leading Change developed by [31] is used as the basis theory for Organizational Change Management in this research. The change management model based on Leading Change Theory is widely used in research related to organizational change management related to IT implementation, for example in the IT-Business Value delivery process such as in the implementation of Enterprise Resources Planning [33]. Researchers use Leading Change Theory because in the researcher's view, Leading Change Theory not only addresses the mindset of people who are the focal point of organizational change management, but also in terms of developing strategic plans for

change, especially in aspects of the structure and process of organizational change management, including work culture in the organization, down to how a strategic plan is carried out (execution), in order to create a quick win from change and manage the continuity and direction of change.

Management of organizational change on the impact of IT implementation is a comprehensive, structured, and cyclical approach to transition individuals, groups, and organizations from their current state to their intended or future state, intending to gain business benefits. Two important things in the management of organizational change related to people are related to the mindset and increasing the capacity and capability of the person concerned. Organizational change management requires leadership and commitment from top management, both from the IT side and the business side [15, 28]. As an organizational innovation, IT implementation requires a change management unit (i.e. in the form of a project management office), which focuses on planning, coordinating all change management, evaluating and making improvements on the results of the implementation of change management in all aspects of the organization (i.e. structure, process, people).

In the application of IT, organizational change management functions as a facilitator and changer of culture and organizational process in obtaining implementation results in the form of IT [15, 28, 34]. In the application of IT, technology-based activity is very much needed to create innovations that can support business performance, but on the other hand, it has an impact on changes that occur in the organization [35]. These changes are not only in the aspect of work culture to support the effectiveness of the implementation of IT, even to all personnel who are directly involved and other stakeholders who are affected by the implementation [35]. Therefore, to handle these kinds of changes, organizational change management is needed with leadership and strong commitment from top management [36], both from business and IT executives. Changes that are managed with good organizational change management can transform an organization into a company that is very different in its operations from before [37].

2.3. IT-business value

IT-Business Value is the benefit obtained by the business which is a direct result of implementing IT to support business goals. In general, IT-Business Value is not only obtained from the technical functions provided by IT, but also increases the ability of IT users by finding new ways or processes (i.e. innovation in new ways of working), and organizational structure (i.e. restructuring) that provide IT-based computing capabilities [38]. Resource-Based View of The firm (RBV) Theory is used as the basis for IT-Business

Value construct in this study. RBV realizes the harmonization at the implementation level. This is done by managing the integration and collaboration of organizational resources (IT resources and business resources), at the level of daily business operations to provide IT-Business Value for the entire organization [39]. In other words, RBV theory is used as the basis for business efforts to deliver IT-Business Value to the entire of business organizations. RBV is a theory that is used specifically in the area of creating IT-Business Value [40]. According to [40], IT-Business Value is a driver of business performance, which is the impact of IT implementation both at the intermediate process level and organization-wide level, which leads to the impact of efficiency and competitiveness.

Based on the statement of [40] above, IT-Business Value is the result of implementing IT in two areas. The first is an area that is directly related to each business process, and the second is an inter-business processes area. The focus of the application of IT in business process and inter-business processes are more emphasis on supporting the effectiveness and efficiency of day-to-day business operations. This can be obtained by the ability of IT to shorten the flow of data processing and increase the accuracy of information [41], both in each business process and inter-business processes. In the context of manufacturing operations, this can be exemplified, by IT's ability to provide fast and accurate data and information, deviations from production quality can be detected quickly, so that control and decision-making processes can be carried out quickly as well. At the next level, this can reduce production failure rates, improve product quality, reduce production costs, and increase overall productivity. The creation of IT-Business Value in each business process and inter-business processes are carried out by eliminating redundant operational activities and accelerating data processing processes with the help of ERP system and database integration, which is combined with other resource improvements [40, 42, 43, 44]. IT-Business Value at the business level can be in the form of benefits received by customers [45], such as speed and accuracy of data and information received by customers, reduction of the cycle time of product delivery to customers, and improvement of product quality that received by customers.

2.4. Population and sampling

The population of this research is based on the report from the Indonesian Central Bureau of Statistics, especially the East Java region [46], namely 1693 large manufacturing companies. In this research, the multi-stage sampling is used for sample selection; firstly purposive sampling with the criteria for selecting manufacturing companies are the manufacturing companies should have using Enterprise Resources Planning as

implementing information systems that provide IT-Business Value, and having an IT Department under the CEO company led by an IT executive main (i.e. CIO/GM/IT Head). The first stage resulted in 155 selected companies. In the second stage, based on probability random sampling we used the Slovin formula, which resulted in 105 companies. Furthermore, respondents from each sample company are determined with a minimum quota of two respondents and a maximum of six respondents, representing IT executives and Business executives. Based on the research analysis unit that has been determined in the form of an organization or company, data collected from questionnaires were sent to respondents via email and then converted by making an average for all respondent data in each company's unit analysis, by first grouping it according to the company represented by the respondent. The converted data is then analyzed descriptively, and processed statistically with SmartPLS 4.0.9.5. This research was conducted during the Covid-19 period, so it can obtain the conditions for implementing IT when change to the business environment due to the pandemic occurs.

2.5. Variable operational definitions

The operational definition for each research variable is as follows:

2.6. Research model

The research model is as follows:

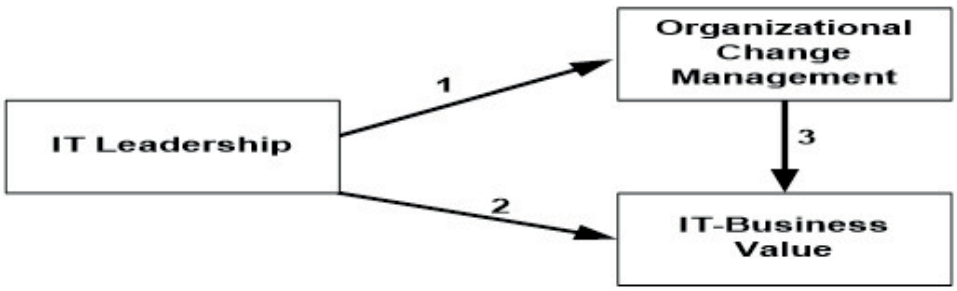

Figure 1: Research Model. Source: Author's own work.

2.7. Research Novelty

There are two novelties of this research. First is the indicator to measure the IT Leadership construct based on the theory of Transformational leadership and, Emergent leadership theory. In some previous research, IT Leadership has mainly based on the

Table 1: Independent Variable (X_1) IT Leadership.

No.	Indicator	Declaration Item	Symbol	Source
1.	Individualized Consideration ($X_{1.1}$)	IT executives can create harmonious relationships with all stakeholders involved in implementing IT.	$X_{1.1.1}$	[5, 6, 7, 8, 18, 19, 21, 22, 25, 26]
		IT executives can build shared commitments with all stakeholders involved in implementing IT.	$X_{1.1.2}$	
		IT executives respect the opinion of every stakeholder involved in implementing IT.	$X_{1.1.3}$	
2.	Intellectual Stimulation ($X_{1.2}$)	IT executives can drive creative thinking in the application of IT.	$X_{1.2.1}$	
		IT executives can drive innovation in IT applications.	$X_{1.2.2}$	
		IT executives can drive new, more adaptive work patterns.	$X_{1.2.3}$	
3.	Inspirational Motivation ($X_{1.3}$)	IT executives can communicate IT vision clearly to stakeholders.	$X_{1.3.1}$	
		IT executives can motivate the stakeholder.	$X_{1.3.2}$	
		IT executives can mobilize stakeholders to devote thoughts to achieving the vision of implementing IT.	$X_{1.3.3}$	
4.	Idealized Influence ($X_{1.4}$)	IT executives can convince stakeholders regarding the framework of IT implementation.	$X_{1.4.1}$	
		IT executives can direct stakeholders to agree on a framework for IT implementation.	$X_{1.4.2}$	
		IT executives can direct stakeholders to follow the implementation of IT based on its framework.	$X_{1.4.3}$	
5.	Experienced Influence ($X_{1.5}$)	IT executives can manage teams (including virtual teams) in implementing IT.	$X_{1.5.1}$	
		IT executives can convince stakeholders regarding the changes caused by the implementation of IT.	$X_{1.5.2}$	
		IT executives experienced in IT execution, like ERP or other software deployments.	$X_{1.5.3}$	
		IT executives have a successful employment reputation in assigned positions in previous IT areas.	$X_{1.5.4}$	
		IT executives are experienced in managing the change in the ERP or other software deployments.	$X_{1.5.5}$	
		IT executives have formal education and knowledge of IT.	$X_{1.5.6}$	

transformational leadership theory. The Emergent Leadership theory uses for the indicators of IT Leadership to measure the capability and the capacity of the IT Leader to cope with IT-Business environment challenges, and the IT-Business complexity relationship

Table 2: Dependent Variable Organizational Change Management (Y_1).

No.	Indicator	Declaration Item	Symbol	Source
1	Leadership and Top Management Commitment ($Y_{1.1}$)	The company leader plays a role in directing organizational change management	$Y_{1.1.1}$	[15, 28, 31, 32, 47, 48, 49]
		The company leader supports the organizational change management programs and agendas	$Y_{1.1.2}$	
		The company leadership is committed to providing needed funding and resources.	$Y_{1.1.3}$	
2	Organizational Change Management Unit ($Y_{1.2}$)	The change management unit manages by personnel appointed by the company leader.	$Y_{1.2.1}$	
		The change management unit coordinates the organizational change management strategy and work plan.	$Y_{1.2.2}$	
		The change management strategy and work plan integrate with the company strategy	$Y_{1.2.3}$	
3	Socialization Process ($Y_{1.3}$)	The socialization process used buy-in and engagement characteristics in each organizational change management program.	$Y_{1.3.1}$	
		The socialization process includes the stakeholders involved.	$Y_{1.3.2}$	
		The socialization process is carried out in stages, regularly and scheduled.	$Y_{1.3.3}$	
4	Capability and Capacity Development ($Y_{1.4}$)	There is a program and agenda for developing the capability and capacity of the stakeholders involved.	$Y_{1.4.1}$	
		The capability and capacity program contains material to build awareness and understanding of the stakeholders involved in change.	$Y_{1.4.2}$	
		The Capability and capacity development aims to get stakeholders involved in organizational change management	$Y_{1.4.3}$	
5	Monitoring and Evaluation ($Y_{1.5}$)	There is a monitoring and evaluation plan as a guide in implementing the monitoring and evaluation process.	$Y_{1.5.1}$	
		Monitoring and evaluation plan does in the regular schedule.	$Y_{1.5.2}$	
		Monitoring and evaluation to improve the quality of organizational change management.	$Y_{1.5.3}$	

in providing IT-Business Value. This novelty in IT Leadership provides an opportunity to measure the level of IT leadership, not only in terms of being a leader who plays a role in transforming business from a technological aspect, but also challenges that

Table 3: Dependent Variable IT-Business Value (Y_2).

No.	Indicator	Declaration Item	Symbol	Source
1.	Departmental Operationalization Improvement ($Y_{2.1}$)	Data processing speed increases in each department or part of the company.	$Y_{2.1.1}$	[28, 37, 39, 40, 41, 45, 50, 51, 52, 53, 54]
		The speed of data and information delivery support increases in each department or part of the company.	$Y_{2.1.2}$	
		The speed of the decision-making process increases in each department or part of the company.	$Y_{2.1.3}$	
2.	Business Process Integration and Performance ($Y_{2.2}$)	Business Process integration increases between departments within the company.	$Y_{2.2.1}$	
		The speed of data and information support increases between departments within the company.	$Y_{2.2.2}$	
		The speed of the decision-making process increases between departments within the company.	$Y_{2.2.3}$	
3.	Enabling Innovation ($Y_{2.3}$)	The training increase on the use of IT in each department or part of the company.	$Y_{2.3.1}$	
		The creativity and teamwork of the employees to utilize IT increase in each department significantly.	$Y_{2.3.2}$	
		The collaboration and innovation to utilize IT increase work interactions between departments within the company.	$Y_{2.3.3}$	

IT leadership must also be supported by the level of execution experience which is strongly influenced by experience and knowledge related to highly dynamic IT, with a very fast and disruptive rate of change.

The second novelty is the relationship between IT Leadership and Organizational change management, which is rarely been studied before. As a leader who transforms business, IT executive must also have a strong understanding of organizational change management that always accompanies the transformation phase. Testing IT Leadership on Organizational Change Management is expected to reveal the level of IT Leadership ability of IT executives in managing the changes that occur.

2.8. Research Hypothesis

The implementation of IT in large manufacturing companies is always accompanied by changes, in organizational structure, business processes, business management, and a work culture that puts people at risk. Based on Transformational Leadership and Emergent Leadership, IT Leadership with its idealized influence capabilities must be able to manage all these changes appropriately and appropriately by demonstrating its role as a role model for change [18, 19, 20]. IT Leadership IT executives must also be able to demonstrate their Inspirational motivation with clear explanations regarding why changes must be made, so that they can inspire and motivate all stakeholders involved [20]. Managing change requires a solid team to support changes caused by IT implementation. Therefore, IT leadership must be able to show individualized consideration in managing teams, by increasing team capacity and capability, including managing virtual teams, where team members are spread across several locations and even different countries [23, 24], including teams from different companies or organizations, as is often found in multi-national companies and international companies. The changes that always accompany every IT implementation initiative require IT Leadership to have organizational change management capabilities.

In the context of the relationship between IT leadership and organizational change management, there are very few studies that specifically show the influence of IT-Leadership on the Organizational change management, especially with the characteristics of IT-Leadership that are meant in this dissertation research (with indicators based on transformational leadership and emergent leadership). The IT leadership has responsibility to manage the organizational change, bearing in mind that the implementation of IT is the cause of organizational change. However, there are several studies related to leadership on change management, such as research conducted by [15]. The impact of organizational changes due to the implementation of IT can be seen in the ERP implementation to integrate business processes [15]. Based on the description above, the research hypothesis as follows:

H1: IT Leadership has a significant positive effect on Organizational Change Management

The RBV theory [39] states that a strategy is needed that combines physical resources, human resources, and organizational resources to achieve competitive advantage. In line with the RBV, competitiveness created through IT-Business Value. Concerning IT Leadership, IT executives must be able to integrate all organizational resources (i.e. IT and non IT resources) to create IT-Business Value. The integration of these resources

occurs in the operational level of the organization. [14] state that the role of IT executive as IT leader is to influence the creation of IT-Business Value.

The research of [7], state that IT leadership should focus on creating IT-Business Value, show another way of IT Leadership in driving IT-Business Value. The focus areas and methods are Internal IT Focus, Project Focus, Business Operations Focus, Business Process Focus, and Innovation Focus. The results of this study state that IT Leadership is very influential on the creation and delivery of IT-Business Value, by doing several things such as; a) good communication in convincing each business process owner regarding the benefits of implementing IT, b) working together with each business process to increase the effectiveness and efficiency of the process, c) aligning IT performance measures to business performance and d) emphasizing strategic objectives in the communication of IT values, with other directors. The focus area and method of IT Leadership carried out by the CIO above reflect a similar method to the indicators owned by IT Leadership, including idealized influence.

The results of another study conducted by [6], state that IS-Leadership with an IT culture (IT subculture) can carry out its role in providing IT-Value to business by adjust the business culture. The research by [8] provides similar results that Technical Leadership from IT executives has the highest rating in providing IT-Value to project success. Based on the description above, the research hypothesis is:

H2: IT Leadership has a significant positive effect on IT-Business Value.

The role of organizational change management in the creation of IT-Business Value has a strong foundation based on the Leading Change theory from [31], especially in the sixth, seventh, and eighth steps of the 8-Step Process for Leading Change [31, 32]. In the sixth step (generating short-term wins), organizational change management must be able to create quick wins. Quick-wins or short-term wins in IT implementation can be associated with IT-Business Value in the short term. Creating and delivering IT-Business Value in the short term in the IT implementation process is very important. This short-term IT-Business Value is not only a form of IT-Business benefit that can be felt directly by all stakeholders, but also as proof that the change process carried out has been able to create benefits for the business. Furthermore, based on the short-term IT-Business Value that has been achieved, other quick wins need to be created. For this reason, in the seventh step of Leading Change, namely the Consolidating Gains and Producing More Change step, the short-term IT-Business Value that has been achieved is used as momentum in achieving other quick wins. This is done by consolidating, emphasizing the successes achieved, and maintaining the enthusiasm of all stakeholders for the next achievements. Quick wins must also be embedded in the

company's daily operations so that changes that provide short-term IT-Business Value become sustainable changes. For this reason, the eighth step of Leading Change is needed (Anchoring a New Approach in the Culture). In this eighth stage, formalization is carried out by embedding a new work culture that supports the stability of IT-Business Value or quick-wins that have been achieved, by creating an SOP (Standard Operating Procedure) that emphasizes what must be done by all stakeholders involved, so that they do not return to using old way.

Research by [45] related to how IT-Business Value is created with a process approach, stating that IT-Business Value influences company performance, with IT impacts as an intermediary. The IT impact in this study are indicated by: the creation of new products or services, business process redesign, better decision-making processes, and increased flexibility in terms of coordination. [45] state that new services that focus on meeting the need of customer provide company performance in the form of customer satisfaction. Likewise, redesigning business processes, process effectiveness and efficiency and encouraging employee satisfaction and increased productivity.

Research of [41] state that the ability of IT to integrate supply chain business processes affects company performance. Several other studies conducted by [6, 36, 40, 55] also generally provide results stating that IT-Business Value or the benefits obtained from the implementation of IT based on the joint strategy of IT and Business, can provide Business Performance. The importance of change management in business organizations was also stated by [30], who emphasized that IT-Business Value is obtained through managing changes related to innovation that occurs in business. Based on the description above, the research hypothesis as follows:

H3: Organizational Change Management has a significant positive effect on IT-Business Value

2.9. Measurement with a likert scale

Measuring the answer to the questionnaire is based on the measurement scale as follows:

2.10. Research instrument test

The instrument test carried out 30 samples of company data before being used in the research. The results of the instrument testing show the validity of each variable, met the criteria with all coefficient of correlation value above 0.7, and the reliability by Cronbach's

Table 4: Measurement Scale.

No.	Response Categories	Weighted Score
1	Strongly Agree	5
2	Agree	4
3	Neutral	3
4	Disagree	2
5	Strongly Disagree	1

Source: [56].

Alpha value above 0.7 has met more of the prerequisites for further research process [56].

3. Results and Discussion

In this study, questionnaires were sent to 105 companies according to the research sample target, with target respondents ranging from two to six respondents for each company. The questionnaires sent back by the companies were 135 respondents, representing 53 companies. Only 120 respondents' answers had complete answers and were considered valid after manual checking. Before further processing, 120 respondent data, which is individual data, need to be converted into data with an organizational analysis unit by the analysis unit in this research. For this reason, the 120 respondents' data was grouped based on the companies they represented. To convert individual answers into company answers, the score of the respondent's answer items in each group of companies is then added up and divided by the number of respondents in that company to obtain an average score for each company as the unit of analysis. This average score calculation is carried out for each item in the questionnaire to obtain an average scores for the item for each company concerned.

The result of this conversion process, 47 companies' data were obtained with each item's average score. The 47 companies' data was then used for descriptive statistics on each indicator and research variable. All data on the average item score from these 47 companies is also the data used for inferential statistical calculations using PLS software [57]. According to [58], the response rate for email surveys is 11%. Referred to [59] is 12%. Based on returned questionnaires indicate that response rate for this study is 45%. Therefore email survey for this study is accepted.

3.1. Results

3.1.1. Description of respondents and samples

Based on the questionnaire data collected, the majority of the respondents are managers (Table 4.1), with the highest percentage being managers of production (37%), followed by managers of IT (36%) and managers of sales and marketing (13%). CEOs, CFOs, CMOs, COOs, CHROs, and VPs account for a smaller percentage (2%). The education level of respondents shows that 38% have a bachelor of IT (Table 4.2), 50% of respondents have a bachelor of business, 11% have bachelor's and master's degrees in business, 1% have bachelor's and master's degree in IT with certification of IT, and none respondents who have IT and Business cross-disciplinary education. As shown in Table 4.3, the largest of samples comes from the food and beverage industry (26 out of 47), followed by pharmaceuticals (5) and metal products (7). The indicator with the highest mean score of IT Leadership is Inspirational Motivation (X1.3), and Experienced Influence (X1.5) is the lowest (Table 4.4). For Organizational Change Management (Table 4.5), the highest indicator score is Leadership and Top Management Commitment (Y11), with a score of 4.60, and the lowest indicator score is Socialization Process (Y1.3), with a score of 4.20. Related to IT-Business Value (Table 4.6), Enabling Innovation (Y2.3) is the highest with a score of 4.74, and Departmental Operationalization Improvement (Y2.1) is the lowest with a score of 4.18.

Table 5: Respondent by Position.

No.	Position	Number of Respondent	Percentage (%)
1	CEO/CFO/CMO/COO/CHRO/VP	2	2%
2	CIO/VP IT/GM IT/IT-Head	4	3%
3	Manager of Production	45	37%
4	Manager of Sales and Marketing	16	13%
5	Manager of IT	43	36%
6	Manager of Human Resources	3	3%
7	Manager of Accounting and Finance	7	6%
Total		**120**	**100%**

Source: Author's own work

3.1.2. Outer model statistical test results

According to [61], the results of the validity and reliability test can determine the model fit of a research model. Based on the outer test result, the validity and reliability of the

Table 6: Respondent by Education.

No.	Education	ERP Certification	Number of Respondent	Percentage (%)
1.	Bachelor (IT)		46	38%
2.	Bachelor (IT), Master Degree (IT)	1	1	1%
3.	Bachelor (Business)		60	50%
4.	Bachelor (Business), Master Degree (Business)		13	11%
5.	Bachelor (IT), Master Degree (Business)		0	0%
6.	Bachelor (Business), Master Degree (IT)		0	0%
Total			**120**	**100%**

Source: Author's own work

Table 7: Sample by Industry.

No.	Type of Industry	Number of Samples	Number of Respondent
1	Food and Beverage	26	60
2	Tobacco	1	5
3	Pharmaceutical	5	19
4	Textile	1	2
5	Leather Processing	1	3
6	Paper	1	4
7	Metal Product	7	15
8	Footwear	1	2
9	Chemical	2	4
10	Base Metal	2	6
Total		**47**	**120**

Source: Author's own work

research model met the criteria [56], and according to [61] this research model can be declared fit. According to [62], the other criterion for measurement of model fit is on testing the Collinearity VIF (*Variance Inflation Factor*) from the inner model (Table 4.12).

Table 8: Mean Score of Indicator and Item-IT Leadership (X_1).

No.	Indicator / Item	Mean Score
1.	Individualized Consideration ($X_{1.1}$)	4.52
	$X_{1.1.1}$	4.49
	$X_{1.1.2}$	4.49
	$X_{1.1.3}$	4.57
2.	Intellectual Stimulation ($X_{1.2}$)	4.40
	$X_{1.2.1}$	4.30
	$X_{1.2.2}$	4.53
	$X_{1.2.3}$	4.36
3.	Inspirational Motivation ($X_{1.3}$)	4.60
	$X_{1.3.1}$	4.62
	$X_{1.3.2}$	4.68
	$X_{1.3.3}$	4.51
4.	Idealized Influence ($X_{1.4}$)	4.15
	$X_{1.4.1}$	4.23
	$X_{1.4.2}$	4.51
	$X_{1.4.3}$	3.70
5.	Experienced Influence ($X_{1.5}$)	3.96
	$X_{1.5.1}$	4.47
	$X_{1.5.2}$	3.85
	$X_{1.5.3}$	3.64
	$X_{1.5.4}$	4.36
	$X_{1.5.5}$	3.72
	$X_{1.5.6}$	3.74
	Variable Score	**4.33**

Source: Author's own work

Table 9: Mean Score of Indicator and Item-Organizational Change Management (Y1).

No.	Indicator / Item	Mean Score
1	Leadership and Top Management Commitment ($Y_{1.1}$)	4.60
	$Y_{1.1.1}$	4.62
	$Y_{1.1.2}$	4.68
	$Y_{1.1.3}$	4.51
2	Organizational Change Mangement Unit ($Y_{1.2}$)	4.40
	$Y_{1.2.1}$	4.28
	$Y_{1.2.2}$	4.55
	$Y_{1.2.3}$	4.38
3	Socialization Process ($Y_{1.3}$)	4.20
	$Y_{1.3.1}$	4.26
	$Y_{1.3.2}$	4.57
	$Y_{1.3.3}$	3.77
4	Capability and Capacity Development ($Y_{1.4}$)	4.49
	$Y_{1.4.1}$	4.51
	$Y_{1.4.2}$	4.40
	$Y_{1.4.3}$	4.55
5	Monitoring and Evaluation ($Y_{1.5}$)	4.37
	$Y_{1.5.1}$	4.26
	$Y_{1.5.2}$	4.49
	$Y_{1.5.3}$	4.36
	Variable Score	4.41

Source: Author's own work

Table 10: Mean Score of Indicator and Item-IT-Business Value (Y_2).

No.	Indicator	Mean Score
1	Departmental Operationalization Improvement ($Y_{2.1}$)	4.18
	$Y_{2.1.1}$	4.28
	$Y_{2.1.2}$	4.53
	$Y_{2.1.3}$	3.74
2	Business Process Integration and Performance ($Y_{2.2}$)	4.64
	$Y_{2.2.1}$	4.51
	$Y_{2.2.2}$	4.70
	$Y_{2.2.3}$	4.70
3	Enabling Innovation ($Y_{2.3}$)	4.74
	$Y_{2.3.1}$	4.70
	$Y_{2.3.2}$	4.83
	$Y_{2.3.3}$	4.70
	Variable Score	4.52

Source: Author's own work

3.1.2.1. Validity test results

Convergent validity

Table 11: Results of Cross-Loading IT Leadership (X_1).

No.	Indicator/Item	X_{11}	X_{12}	X_{13}	X_{14}	X_{15}
1.	Individualized Consideration ($X_{1.1}$) $X_{1.1.1}$	**0.838**	0.111	0.213	0.397	0.024
	$X_{1.1.2}$	**0.727**	0.056	0.289	0.394	-0.220
	$X_{1.1.3}$	**0.836**	-0.044	0.373	0.454	0.212
2.	Intellectual Stimulation ($X_{1.2}$) $X_{1.2.1}$	-0.006	**0.762**	0.328	0.445	-0.051
	$X_{1.2.2}$	-0.020	**0.875**	0.371	0.406	0.185
	$X_{1.2.3}$	0.102	**0.798**	0.516	0.364	0.247
3.	Inspirational Motivation ($X_{1.3}$) $X_{1.3.1}$	0.391	0.381	**0.862**	0.578	0.325
	$X_{1.3.2}$	0.276	0.503	**0.910**	0.533	0.285
	$X_{1.3.3}$	0.329	0.490	**0.921**	0.638	0.239
4.	Idealized Influence ($X_{1.4}$) $X_{1.4.1}$	0.473	0.475	0.889	**0.889**	0.411
	$X_{1.4.2}$	0.453	0.483	0.840	**0.840**	0.279
	$X_{1.4.3}$	0.341	0.211	0.736	**0.736**	0.256
5.	Experienced Influence ($X_{1.5}$) $X_{1.5.1}$	0.203	0.114	0.283	0.429	**0.723**
	$X_{1.5.2}$	-0.057	0.618	0.109	0.697	**0.881**
	$X_{1.5.3}$	-0.095	0.204	0.503	0.294	**0.860**
	$X_{1.5.4}$	0.206	0.149	0.593	0.422	**0.771**
	$X_{1.5.5}$	-0.014	0.055	0.193	0.252	**0.869**
	$X_{1.5.6}$	-0.046	0.165	0.252	0.239	**0.834**

Source: Author's own work

Discriminant Validity

TABLE 12: Results of Cross-Loading Organizational Change Management Variable (Y1).

No.	Indicator/Item	Y_{11}	Y_{12}	Y_{13}	Y_{14}	Y_{15}
1	Leadership and Top Management Commitment ($Y_{1.1}$) $Y_{1.1.1}$	**0.919**	0.593	0.309	0.713	0.611
	$Y_{1.1.2}$	**0.880**	0.583	0.238	0.743	0.569
	$Y_{1.1.3}$	**0.815**	0.568	0.514	0.624	0.682
2	Organizational Change Mangement Unit ($Y_{1.2}$) $Y_{1.2.1}$	0.525	**0.909**	0.360	0.366	0.350
	$Y_{1.2.2}$	0.471	**0.853**	0.106	0.451	0.395
	$Y_{1.2.3}$	0.759	**0.933**	0.272	0.599	0.545
3	Socialization Process ($Y_{1.3.}$) $Y_{1.3.1}$	0.391	0.292	**0.975**	0.305	0.635
	$Y_{1.3.2}$	0.411	0.252	**0.944**	0.343	0.636
	$Y_{1.3.3}$	0.358	0.250	**0.922**	0.307	0.600
4	Capability and Capacity Development ($Y_{1.4}$) $Y_{1.4.1}$	0.781	0.521	0.388	**0.964**	0.691
	$Y_{1.4.2}$	0.653	0.500	0.175	**0.833**	0.521
	$Y_{1.4.3}$	0.788	0.486	0.359	**0.960**	0.696
5	Monitoring and Evaluation ($Y_{1.5}$) $Y_{1.5.1}$	0.617	0.241	0.651	0.572	**0.911**
	$Y_{1.5.2}$	0.521	0.351	0.623	0.496	**0.896**
	$Y_{1.5.3}$	0.737	0.666	0.492	0.729	**0.855**

Source: Author's own work

TABLE 13: Result of Cross-Loading IT-Business Value Variable (Y_2).

No.	Indicator/Item	Y_{21}	Y_{22}	Y_{23}
1	Departmental Operationalization Improvement ($Y_{2.1}$) $Y_{2.1.1}$	**0.856**	0.717	0.691
	$Y_{2.1.2}$	**0.844**	0.730	0.582
	$Y_{2.1.3}$	**0.837**	0.668	0.681
2	Business Process Integration and Performance ($Y_{2.2)}$ $Y_{2.2.1}$	0.677	**0.894**	0.568
	$Y_{2.2.2}$	0.723	**0.874**	0.565
	$Y_{2.2.3}$	0.805	**0.882**	0.612
3	Enabling Innovation ($Y_{2.3}$) $Y_{2.3.1}$	0.678	0.572	**0.904**
	$Y_{2.3.2}$	0.724	0.679	**0.829**
	$Y_{2.3.3}$	0.656	0.503	**0.939**

Source: Author's own work

3.1.2.2. Reliability testing results

The result of the reliability testing in this study (Table 4.11) shows that all variables have met the reliability value criteria above 0.6 [56]. Thus the instrument used in this study can measure consistently.

TABLE 14: Discriminant Validity (Fornell-Larcker).

No.	Variable	X_1	Y_1	Y_2
1	IT Leadership (X_1)	**0.777**	-	-
2	Organizational Change Management (Y_1)	0.345	**0.729**	-
3	IT-Business Value (Y_2)	0.179	0.740	**0.798**

Source: Author's own work

TABLE 15: Reliability Testing Results.

Variable	Composite Relia. Coefs.	Cronbach's Alpha	Description
IT Leadership (X_1)	0.899	0.872	Reliable
Organizational Change Management (Y_1)	0.941	0.935	Reliable
IT-Business Value (Y_2)	0.929	0.928	Reliable

Source: Author's own work

3.1.3. Inner model statistical test results

The result of the inner model statistical test from this study is as follows:

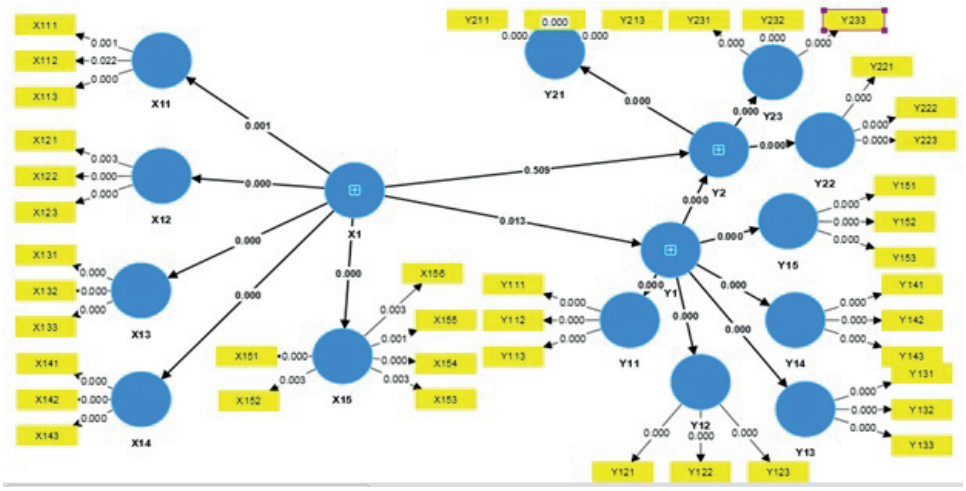

Figure 2: Inner Model Results with SmartPLS 4. Source: Author's own work.

Description:

X1: IT Leadership

Y1: Organizational Change Management

Y2: IT-Business Value

3.1.3.1. VIF collinearity

There are two opinions on determining the quality of the structural model based on the VIF value. First, according to [63], the structural model is acceptable if the VIF value is <5. Second, according to [62], the Goodness of the fit model is accepted if the VIF value is <=5. The results of the collinearity test from SmartPLS 4 are shown in Table 4.12 below.

TABLE 16: Collinearity VIF Value.

No.	Variable	X_1	Y_1	Y_2
1.	IT Leadership (X_1)	-	1.000	1.000
2.	Organizational Change Management (Y_1)	-	-	1.000
3.	IT-Business Value (Y_2)	-	-	-

Source: Author's own work

3.1.3.2. Coefficient of Determination (R^2)

TABLE 17: Coefficient of Determination.

No.	Variable	R Square
1	Organizational Change Management	0.779
2	IT-Business Value	0.551

Source: Author's own work

3.1.3.3. Predictive Relevance (Q^2)

The value of the relevance of this prediction indicates by the Q-square or Q^2 value [63]. Predictive relevance is a test conducted to show how well the observed values generates by the model [64]. According to [64], the Q-square value > 0 indicates the research model has predictive relevance, but the Q-square value ≤ 0 indicates the research model has no or less predictive relevance. The value of Q2 can be determined using the value of the coefficient of R2 between variables with the following formula [63]:

Q^2 Value = 1 – (1– R12) (1 – R22) (1 – Rn2).

Thus the Q-Square value of this research model can be calculated as follows:

Q^2 Value = 1 – (1 – R2 Y1) (1 – R2 Y2)

Q^2 Value = 1 – (1 – 0.779) x (1 – 0.551)

= 1 – (0.221) x (0.445)

= 0.9061

Based on the Q^2 value of 0.9061, the structural model of research can explain 90.6% of the diversity in the data used in this study. The remaining diversities of 9.4% in the data used in this study can explain by the other factors outside the model studied.

3.1.4. Hypothesis testing results

Testing the hypothesis in this study using the results of the inner-model process carried out by SmartPLS 4, with the results as shown in Table 4.14. Hypothesis testing was calculated by comparing the t-statistic value (T Statistic-O/STDEV column) or t-count with the t-table value for a total sample of 47, namely 2.014 (two-tailed) with a significance level (α) of 5%. The test criteria are as follows:

1. If t-count > t-table, then the hypothesis is accepted.
2. If t-count < t-table, then the hypothesis is rejected.

TABLE 18: Research Hypothesis Testing Results.

No.	Influence Between Variables	Original Sample (O)	Std. Deviation (STDEV)	T-Statistics (O/ STDEV)	P-Value	Description
1	‘	0.345	0.139	2.487	0.013	Significant
2	H2: X1Y2	-0.090	0.137	0.660	0.509	Insignificant
3	H3: Y1Y2	0.771	0.081	3.472	0.000	Significant

Source: Author’s own work

Based on the results of hypothesis testing, it can explain that:

a. H1: IT Leadership influences Organizational Change Management significantly with a p-value of 0.013 (<0.05), with a positive correlation coefficient of 0.345

b. H2: IT Leadership does not affect on IT-Business Value

c. H3: Organizational Change Management influences IT-Business Value significantly with a p-Value of 0.000 (<0.05), with a positive correlation coefficient of 0.771.

3.2. Discussion

IT leadership shows a significant and positive effect on organizational change management with a correlation coefficient of 0.345 and a p-value of 0.013. Thus the results of this study support the Transformational Leadership Theory from [18] and Emergent Leadership Theory from [22]. The significant influence of IT Leadership on Organizational Change Management, when seen from the results of the descriptive analysis, is due to the Inspirational Motivation indicator ($X_{1.3}$) with a score of 4.60. In more details,

it can be explained based on the descriptive data for each item on the Inspirational Motivation indicator as follows:

IT executives are able to communicate IT vision clearly to stakeholders, as shown by the high score of item $X_{1.3.1}$ (score 4.62) on the Inspirational Motivation indicator. With this clear IT vision and harmonious relationship, IT executive will support by the top management to commit to the organizational change management agenda. The ability of IT executives to clearly communicate IT visions will convince colleagues from the business side (C-Level) that IT initiatives are running on the right track [16]. With these capabilities, IT executives are able to obtain strong support from top management, to support the entire change agenda in IT implementation.

IT executives are able to motivate the stakeholders properly, precisely and appropriately as shown by the high score of item $X_{1.3.2}$ (score 4.68) on the Inspirational Motivation indicator. With the ability to motivate, especially to the leaders of Organizational Change Management Unit, managers and members of the Organizational Change Management Unit in improving the effectiveness of the management of the Organizational Change Management Unit.

IT executive has ability to engage so that they are able to move stakeholders to devote all their thoughts to achieving the vision of IT implementation, as shown by the high score of item $X_{1.3.3}$ (score 4.51) in supporting the Inspirational Motivation indicator. With the ability to engage and mobilize the leaders of Organizational Change Management Unit, thereby increasing the success of managing the Organizational Change Management Unit and the change agenda, as referred to by [15].

The insignificant effect of IT Leadership on IT-Business Value (H2) is shown by the T-Statistic 0.660 (<2.014). Based on the data collected in this study (Table 4.2), this insignificance can be caused by only one of IT executive has ERP implementation certification from 120 respondents, or only 1%. It shows the low level of knowledge possessed by IT executives from all samples studied. The low level of knowledge related to ERP implementation causes most IT executives not understand IT-Business Value delivery in detail, so it becomes one of the reasons that IT Leadership has no effect on IT-Business Value. Meanwhile, this insignificance, when viewed based on descriptive statistical data, is determined by the lowest indicator score on the IT Leadership variable, namely the Experienced Influence indicator (X_{15}) with a score of 3.96 and Idealized Influence indicator ($X_{1.4}$) with a score of 4.15. Based on the results of the descriptive analysis of the low item scores belonging to the Experienced Influence indicator and Idealized Influence indicator, this insignificant can explain as follows:

The inability of IT executives to convince stakeholders involved in IT-Business Value delivery regarding the importance of managing changes that occur in the IT implementation (i.e. ERP implementation). This is shown by the low score of item $X_{1.5.2}$ (score 3.85) on the Experienced Influence indicator. Lack of experience in implementing IT, makes key IT executives unable to deliver IT-Business Value.

The lack of IT executive experience in implementing IT, as shown by the low score of item $X_{1.5.3}$ (score 3.64) on the Experienced Influence indicator. The lack of experience in implementing IT, makes key IT executives unable to deliver IT-Business Value.

The lack of IT executive experience in managing change management in IT implementation, as shown by the low score of item $X_{1.5.5}$ (score 3.72), thus making IT executives unable to deliver IT-Business Value.

The lack of education and knowledge of IT executives that are relevant to the IT-Business Value delivery process, especially in IT implementation, as shown by the low score of item $X_{1.5.6}$ (score 3.74), so that they are unable to anticipate and plan and execute IT- Business Value delivery precisely.

The inability of IT executives to direct stakeholders to follow the implementation of IT based on its framework (i.e. ERP implementation). It is shown by the low score of item $X_{1.4.3}$ (score 3.70) on the Idealized Influence indicator. The lack of competency in buy-in (i.e engagement) stakeholders in implementing IT makes IT executives unable to deliver vision in delivering IT-Business Value.

The failure of IT executive to convince stakeholders regarding the framework of IT implementation, as shown by the low score of item $X_{14.13}$ (score 4.23) on the Idealized Influence indicator. The failure in creating the framework of IT implementation, including the road-map of how the IT-Business Value will be delivered, makes IT executives unable to convince all the stakeholders.

The results of this study do not support the Transformational Leadership Theory from [18] and Emergent Leadership Theory from [22]. The two theories with the characteristics of IT leadership, namely Idealized influence (charisma), Inspirational motivation, Intellectual stimulation, and Individualized consideration, Experienced and knowledge do not play a role in providing IT-Business Value in the application of IT in large industrial manufacturing companies in East Java. The results of this study do not support the results of [14], which states that IT Leadership provides IT-Business Value, does not support the research results of [7] that state IT Leadership drives IT-Business Value, and also does not support the research results of [8] and [6], which states that IT Leadership needed in realizing the IT-Business Value.

To overcome the condition that IT Leadership has no effect on IT-Business Value, IT executives must focus on the lowest indicator on IT Leadership experienced influence and Idealized Influence indicators. The rapid and dynamic development of IT is very influential in changing the IT Leadership approach in conducting IT-Business Value delivery. Therefore, the IT Leadership of IT executive must update its capabilities with increased knowledge and experience in ERP implementation and buy-in or stakeholders engagement to deliver IT-Business Value successfully, and to make the company remain competitive.

Organizational Change Management has significant positive effect on IT-Business Value (H3), with a correlation of 0.771 and a p-value of 0.000. The significance effect of the Organizational Change Management on IT-Business Value, when viewed from the results of the descriptive analysis, is due to the Leadership and Top Management Commitment indicator score ($Y_{1.1}$) with a score of 4.60, which is the highest score on the Organizational Change Management variable, thus causing the significant effect on the IT-Business Value variable. The influence of Organizational Change Management variables on IT-Business Value can be explained from the convergence value of each item on the indicator as follows:

The participation and direct involvement of company leaders and top management in directing organizational change management has supported the success of the IT-Business Value delivery process. This participation indicated by the high score of item $Y_{1.1.1}$ (The company leader plays a role in directing organizational change management), namely a score of 4.62. The success of IT implementing as a form of IT-Business Value delivery determined by the involvement of the company's top leaders.

Strong support from company leaders in each change program and agenda strengthens the success of organizational change management in supporting IT-Business value delivery. It shown by the high score of item $Y_{1.3.2}$ (The company leader supports the Organizational change management programs and agendas) with a score of 4.68. With strong support and commitment from all top management and company management, the delivering process IT IT-Business Value becomes smoother and more successful.

Strong commitment from company leaders in providing all organizational funds and resources has streamlined the process and strengthened the success of The Organizational change management in supporting IT-Business value delivery. It shown by the high score of item $Y_{1.3.3}$ (The company leadership is committed to providing needed funding and resources) with a score of 4.51.

The results of research on the relationship between Organizational Change Management variables and IT-Business Value support Kotter's Leading Change Theory and

support the research of [40] that show a more structured approach and an efficient process in ERP implementation, where ERP is a form of delivering IT-Business Value. The results of this study also support the results of [15], that state that organizational change management needed in ERP implementation, researchs of [28, 42] that state that change management has a positive effect in supporting IT-Business Value delivery, particularly in managing business process design, as a response to IT implementation.

3.3. Suggestions

3.3.1. Suggestions for further research

The lack of effect of IT Leadership on IT-Business Value needs to be considered in further research. According to [10] and [60], implementing IT-Business Alignment can provide maximum benefits in form of IT-Business Value. Therefore, further research can include IT-Business Alignment along with IT Leadership, Organizational Change Management and IT-Business Value in order to explore and explain the relationship between IT Leadership and IT-Business Value. Entering the new IT-Business Alignment variable in further research may give different results from this study.

Conduct more in-depth qualitative research, such as interviews, to explore the challenges and issues in the relationship between IT Leadership and IT-Business Value.

3.3.2. Suggestions for business executives and it executives

IT executives must reflect on their knowledge and experience, especially regarding ERP implementation within the digital transformation framework. Then, based on the results of this reflection can be used for continuous improvement, either through discussion forums with experienced IT executive colleagues, training, certification, or cross-disciplinary education in the business area to strengthen the approach in carrying out IT-Business Value delivery.

The CEO must select a CIO with IT Leadership skills that cover all aspects indicated by all indicators on the IT Leadership variable in this research, especially on the experience and knowledge of the CIO in implementing ERP within the digital transformation framework.

The Organizational Change Management needs to be well understood by IT Executives and Business Executives to increase the success of IT-Business Value delivery in manufacturing companies, especially in digital transformation in the first phase.

3.3.3. Suggestions for manufacturing company

By paying attention to the influence of the dominant Organizational Change Management variable on the relationship between variables, manufacturing companies must build and prepare all organizational change management plans, processes, and approaches, especially in the phases or early stages of the digital transformation.

4. Conclusions

The results of this study offer an empirical justification for a conceptual framework that tests the effect of IT Leadership and organizational change management on IT-Business Value. IT Leadership is measured by individualized consideration, intellectual stimulation, inspirational motivation, idealized influence, and experienced influence, whereas organizational change management is measured from five indicators, namely leadership and top management commitment, organizational change management unit, socialization process, capability and capacity development and monitoring and evaluation; IT-Business Value is measured from the indicators of the departmental operationalization improvement, business process integration and performance, and enabling innovation.

The analysis of the demographics of the manufacturing company respondents shows that the companies have adequate organizational change management, but lack experienced influence on IT Leadership, with only 1% of IT executives having ERP implementation certification. The results of statistical testing with SmartPLS 4 show that, there is a direct and positive relationship between IT Leadership and Organizational Change Management, but there is no effect between IT Leadership and IT-Business Value. Generally, the outcomes show that higher IT Leadership with high inspirational motivation can increase leadership and top management commitment, so that it can have a strong influence on organizational change management.

Thus, these results answer the problem of this research, namely what type of IT Leadership is suitable for managing organizational change to create IT-Business Value. Thus, IT Leadership with high inspirational motivation is more suitable to be successful in managing organizational change, especially in ERP implementation of the first phase of digital transformation.

On the other hand, the lack of up-to-date knowledge and experience in the IT Leadership causes it to be unable to support the creation of IT-Business Value. The experienced influence of IT Leadership is a critical competency, thus in conditions

where IT is always moving forward and dynamically, increasing experience and the latest knowledge regarding how to increase the benefits of IT for business or IT-Business Value is very necessary for IT Leadership.

In this model, the effects of Organizational Change Management on IT-Business Value are due to the high leadership commitment from top management in Organizational Change Management, so that it can optimally support the creation of IT-Business Value. These results answer the problem of this research, related to what kind of organizational change management that supports IT-Business Value. Thus, the Organizational change management with high leadership and commitment from top management is one of the critical elements of the Organizational change management to be successful in delivering IT-Business Value, especially in ERP implementation of the first phase of digital transformation.

5. Limitations

The limitations of this study are, firstly; most of the manufacturing companies on their Website, and other secondary literature do not include data regarding the organizational structure of the IT department and very rarely have information on the type of ERP used by the company and organizational change management approach in their ERP implementation. So the research had to be extended to 5 months from 4 months as planned to ensure the availability of both data. Secondly, this study collected the data only in East Java. Therefore, it is difficult to generalize the comprehensive influence of IT Leadership on Organizational Change Management and IT-Business Value at the country level.

References

[1] Matthyssens P. Reconceptualizing value innovation for Industry 4.0 and the Industrial Internet of Things. J Bus Ind Mark. 2019;34(6):1203–9.

[2] Bjorkdahl J. Strategies for digitalization in manufacturing firms. Calif Manage Rev. 2020;62(4):17–36.

[3] Di P. The research and implementation in digital transformation of manufacturing enterprises. MEMAT 2021 [IOP Publishing.]. J Phys Conf Ser. 2021;1820(1):012098.

[4] Ardito L, Petruzzelli AM, Panniello U, Garavelli AC. Towards Industry 4.0: Mapping digital technologies for supply chain managementmarketing integration. Bus Process Manag J. 2018;25(2):323–46.

[5] Preston DS: Karahanna E. Antecedents of IS Strategic Alignment: A Nomological Network. Information Systems Research. 2009;20(2):159–179. https://doi.org/10.1287/isre.1070.0159.

[6] Karahanna E, Watson RT. 2006. Information systems leadership. IEEE Transactions on Engineering Management, 53, NO. 2, MAY 2006(2), 171– 176. https://doi.org/DOI: https://doi.org/10.1109/TEM.2006.872247.

[7] Mitra S, Sambamurthy V, Westerman G. Measuring IT performance and communicating value. MIS Q Exec. 2011;10(1):47–59.

[8] Thite M. Leadership styles in information technology projects. Int J Proj Manag. 2000;18(4):235–41.

[9] Tekic Z: Koroteev D. 2019. From disruptively digital to proudly analog: A holistic typology of digital transformation strategies. Business Horizons. 2019;62(6):683–693. https://doi.org/10.1016/j.bushor.2019.07.002.

[10] Fruhlinger J, Wailgum T, Sayer P. 2020. 16 famous ERP disasters, dustups and disappointments [Online]. Cio.Com. https://www.cio.com/article/278677/enterpriseresource-planning-10-famous-erp-disasters-dustups-and-disappointments.html

[11] Hawari A, Heeks R. 2010. Explaining ERP failure in a developing country: A Jordanian case study. Journal of Enterprise Information Management, 23 Iss 2 Pp. 135 - 160, 23(2), 135–160. https://doi.org/Permanent link to this docu https://doi.org/10.1108/17410391011019741.

[12] Elragal A: Haddara M. 2013. The impact of ERP partnership formation regulations on the failure of ERP implementations. Rocedia Technology 9 (2013) 527 – 535, 9, 527–535.

[13] Kitani K. 2019. The $900 billion reason GE, Ford and P&G failed at digital transformation. cnbc.com.

[14] Preston DS, Leidner DE, Chen DQ. CIO leadership profiles: Implications of Matching CIO Authority and Leadership Capability on IT Impact. MIS Q Exec. 2008;7(2).

[15] Aladwani AM. Change management strategies for successful ERP implementation. Bus Process Manag J. 2001;7(3):266–75.

[16] De Haes S: Van Grembergen W. 2009. An exploratory study into IT Governance implementations and its impact on business/IT alignment. 26(2), 123–137.

[17] Hickman L, Akdere M. Effective leadership development in information technology: Building transformational and emergent leaders. Ind Commer Train. 2018;50(1):1–9.

[18] Bass BM, Avolio BJ. Transformational leadership and organizational culture. Public Administration Quarterly. 1993;17:112-21.

[19] Bass BM. 1999. Two decades of research and development in transformational leadership. European Journal of Work and Organizational Psychology, 8 (1), 9–32, 8(1), 9–32. https://doi.org/10.1080/135943299398410.

[20] Bass BM, Riggio RE. Transformational leadership. 2nd ed. Mahwah (New Jersey): Lawrence Erlbaum Associates Publishers, US; 2006. https://doi.org/10.4324/9781410617095.

[21] Northouse PG. Leadership: Theory and practice. 8th ed. Sage Publications; 2019.

[22] Schneier CE. The contingency model of leadership: An extension to emergent leadership and leader's sex. Organ Behav Hum Perform. 1978;21(2):220–39.

[23] Carte TA, Chidambaram L, Becker A. Emergent leadership in self-managed virtual teams: A longitudinal study of concentrated and shared leadership behaviors. Group Decis Negot. 2006;15(4):323–43.

[24] Yoo Y, Alavi M. Emergent leadership in virtual teams: what do emergent leaders do? Inf Organ. 2004;14(1):27–58.

[25] Lim JH.: Han K: Mithas S. 2012. How CIO position influences information technology investments and irm performance. Thirty Third International Conference on Information Systems.

[26] McLean ER: Smits SJ. 2014. Management, leadership, and the roles of the CIO. International Leadership Journal, 6 No. 1, Pp. 3-22., 6(1), 3–22.

[27] Weill P: Ross J. 2005. A matrixed approach to designing IT governance. Sloan Management Review, 46(2), 26-34., 46(2), 26–34.

[28] Sikdar A, Payyazhi J. A process model of managing organizational change during business process redesign. Bus Process Manag J. 2014;20(6):971–98.

[29] ITGI. Board Briefing on IT Governance. 2nd ed. IT Governance Institute; 2003.

[30] Grover V, Kohli R. CoCreating IT Value: New capabilities and metrics for multifirm environments. Manage Inf Syst Q. 2012;36(1):225–32.

[31] Kotter JP. Leading Change Kotter. Harvard Business School Press; 1996.

[32] Kotter JP, Cohen DS. The heart of change: Real-life stories of how people change their organizations. Harvard Business School Press; 2002.

[33] Kapupu R: Mignerat M. 2015. Change management strategies in ERP implementations: A case study. CONF-IRM 2015 Proceedings. 41.

[34] Sherer SA, Kohli R, Baron A. Complementary investment in change management and IT investment payoff. Inf Syst Front. 2003;5(3):321–33.

[35] Hickman L, Akdere M. Exploring information technology-business alignment through stakeholder theory: A review of literature. Ind Commer Train. 2019;51(4):228–43.

[36] Quaadgras A, Weill P, Ross JW. Management commitments that maximize business impact from IT. J Inf Technol. 2014;29(2):114–27.

[37] Chan YE, Reich BH. IT Alignment: What have we learned? J Inf Technol. 2007b;22(4):297–315.

[38] Brynjolfsson E, Hitt LM. Beyond computation: Information technology, organizational transformation and business performance. J Econ Perspect. 2000;14(4):23–48.

[39] Barney J. Firm resources and sustained competitive advantage. J Manage. 1991;17(1):91–120.

[40] Gurbaxani MK. Review: Information technology and organizational performance: An Integrative Model of IT Business Value. Manage Inf Syst Q. 2004;28(2):283.

[41] Seth RP. Firm performance impacts of digitally enabled supply chain integration capabilities. Manage Inf Syst Q. 2006;30(2):225.

[42] Kohli R, Grover V. Business value of IT: An essay on expanding research directions to keep up with the times. J Assoc Inf Syst. 2008;9(1):23–39.

[43] Hulland W. Review: The resource-based view and information systems research: Review, extension, and suggestions for future research. Manage Inf Syst Q. 2004;28(1):107.

[44] Miyamoto M. IT-business alignment and resource-based view of competitive advantage: Intangible Assets of Korean SMEs. Universal Journal of Management. 2017;5(3):101–9.

[45] Soh C, Markus ML. 1995. How IT creates business value: A process theory synthesis. Proceedings of the 6th International Conference on Ion Sources (ICIS 1995), 29–41.

[46] BPS J. 2022. Direktori Perusahaan Industri Besar dan Sedang Provinsi Jawa Timur 2022. ©Badan Pusat Statistik Provinsi Jawa Timur. ©Badan Pusat Statistik Provinsi Jawa Timur.

[47] Onyango WP. 2014. Effects of organization culture on change management: A case of the vocational training centre for the blind and deaf Sikri. European Journal of Business and Management, 6, 2014(No.34), 204–214.

[48] Sadeghi D. Alignment of organizational change strategies and its relationship with increasing organizations' performance. Procedia Soc Behav Sci. 2011;20:1099–107.

[49] Al-Ali AA, Singh SK, Al-Nahyan M, Sohal AS. Change management through leadership: the mediating role of organizational culture. Int J Organ Anal. 2017;25(4):723–39.

[50] Wernerfelt B. A resource-based view of the firm. Strateg Manage J. 1984;5(2):171–80.

[51] Chan YE, Reich BH. IT alignment: An annotated bibliography. J Inf Technol. 2007a;22(4):316–96.

[52] Tallon PP, Kraemer KL, Gurbaxani V. Executives' perceptions of the business value of information technology: A process-oriented approach. J Manage Inf Syst. 2001;16(4):145–73.

[53] Kayworth L. Review: A review of culture in information systems research: Toward a theory of information technology culture conflict. Manage Inf Syst Q. 2006;30(2):357.

[54] Tallon PP. Does IT pay to focus? An analysis of IT business value under single and multi-focused business strategies. J Strateg Inf Syst. 2007;16(3):278–300.

[55] Chan YE, Sabherwal R, Thatcher JB. Antecedents and Outcomes of Strategic IS Alignment:An Empirical Investigation. IEEE Trans Eng Manage. 2006;53(1):27–47.

[56] Solimun Fernandes AA. Metodologi Penelitian Kuantitatif Perspektif Sistem (Cetakan kedua). UB Press; 2019.

[57] Chin WW. 2000. Partial least squares for researchers: An overview and presentation of recent advances using the PLS approach (http://disc nt.cba.uh.edu/chin/icis96.pdf)

[58] Xitao Fan ST. Comparing response rates from web and mail surveys: A meta-analysis. field methods. 2008;20(3):249–71.

[59] Daikeler J, Bošnjak M, Lozar Manfreda K. Web versus other survey modes: An updated and extended meta-analysis comparing response rates. J Surv Stat Methodol. 2020;8(3):513–39.

[60] Nfuka EN, Rusu L. The effect of critical success factors on IT governance performance. Ind Manage Data Syst. 2011;111(9):1418–48.

[61] Garson D. Garson_2016_Partial Least Squares. Regression and Structural Equation Models.pdf. Statistical Publishing Associates; 2016.

[62] Kock N. WarpPLS User Manual: Version 6.0. ScriptWarp Systems; 2019.

[63] Hair JF, Ringle CM, Sarstedt M. PLS-SEM: Indeed a Silver Bullet. J Mark Theory Pract. 2011;19(2):139–52.

[64] Chin WW. The partial least squares approach to SEM. Lawrence Erlbaum Associates; 1998.