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Stakeholder theory, industrial revolution, and interaction models on the internet: further research topics

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ABSTRACT

As an ethical-based theory of moral philosophy, stakeholder theory inherits problems in its function of explaining recent business activities. This is because there is an assumption that the characteristics of the environment can direct the development of organizational theory. Epistemologically, Stakeholders Theory provides opportunities for researchers across disciplines and fields of study to be involved in its development. Therefore, the authors offer a thesis about the involvement of business environment characteristics to the development of theory. This thesis is axiomatic but actually taken for granted by researchers. Content analysis was chosen as the main method by collecting articles using www.google.com and www.scholar.google.com as well as PoP software. Source in the form of video transcripts from interviews with stakeholder theorist R. Edward Freeman was also analyzed. The characteristics of the two concepts, namely the industrial revolution 4.0 and stakeholder theory are explained and concluded which in the end the synthesis between the two concepts is visualized. This article then discusses the results of the visualization in the form of an interaction model, to support this research thesis and to provide a contribution in the future research topics.

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INTRODUCTION

The industrial revolution 4.0 -hereinafter referred to as IR 4.0- scientifically received attention from researchers with the emergence of articles related to the topic IR 4.0 which tried to explore and describe its ideas, essence and peculiarities in the industrial field (Sukhodolov, 2019); the impact on industrial processes (Jimenez, 2017); what skills are needed by the industry (Hartmann & Bovenschulte, 2013); the initial conditions needed to achieve it (Popkova, 2019); how is the formation and development indicators (Alekseev, Buraeva, Kletskova, & Rykhtikova, 2019); how is the causality of its formation globally (Sozinova, 2019), the institutional model in its formation and development (Galushkin, Nazarov, Sabyna, & Skryl, 2019); how to evaluate it from the position of the knowledge economy (Litvinova, Morozova, & Pozdnyakova, 2019); as well as the important role of the knowledge economy for the formation of IR 4.0 (Kolesnichenko, Radyukova, & Pakhomov,

2019). The attention of these researchers became the cornerstone of this article in determining the reference position where the analysis was carried out.

In this regard, even though it is an artifact of human culture, the achievements of current technological advances actually "control" human behavior. Furthermore, another human creation namely theory also suffers the same fate. If, politically the government has to prepare special policies to accommodate technological innovation; economically, employees must immediately improve their technical skills to match the needs of the latest technological work environment (Wibowo & Indarti, 2020); socially a person must join social media or online messaging applications to get netizen recognition or group membership; and culturally the community must accept the culture of "sungkem" or apologies, made only by video or voice calls; then the theory also suffers from similar disturbances although in different form.

Stakeholder Theory -hereinafter referred to as ST-, is a human tool for explaining and predicting phenomena to gain correct understanding, which in its evolution to a "perfect" form, experiences at least disruption by environmental dynamics which are currently dominated by the advancement of technology. In the business case, not only are theories that are still developing, but even established theories should be affected by "doubt" as a consequence of the enactment of the new way of human interaction. Concerning the order of space and time, a theory can even undergo a fundamental change in its main form. This change occurs because the theory has characteristics such as philosophical foundations, units of analysis, perspectives, assumptions, and broad coverage that is in contact with environmental dynamics. While theoretical functioning is expected over time, most researchers ignore the potential influence of environmental characteristics on the development of a theory. Rarely do people pay attention to this and instead force phenomena into theories that will castrate the originality of phenomena, or apply theories that are born from phenomena that are no longer in line with current actual phenomena.

In particular, the use of ST to explain various phenomena and topics, in various disciplines, often distracts researchers from looking for ST in the IR 4.0 "version" that forms the basis of the thesis we propose here. By changing the position of reference for the discussion, the thesis we propose is "characteristics of the business environment have an impact on the development of a theory". This article: 1) describes and explains the literature related to the concepts of IR 4.0 and ST, which ends by drawing a common thread between the concepts; 2) visualizes the relationship between the business and its stakeholders as a result of the first stage conclusion synthesis, the result of this work is an interaction model that shows the company's position towards its stakeholders; 3) discuss the ST interaction model in the second stage to support the research thesis and make a valuable contribution in the form of research topics based on IR 4.0; 4) provide examples of the use of the model as a reference for conducting research based on human behavior on the internet. The discussion will use a behavioral approach in IR 4.0. It is hoped that the authors' findings can be taken into consideration by researchers who are interested in ST and wish to be involved in the development of an organizational theory, within the framework of IR 4.0.

RESEARCH METHOD

The analytical method used is a content analysis of articles that have been collected using search engines at www.google.com and www.scholar.google.com as well as PoP software using the keywords "Stakeholder Theory, Industrial revolution 4.0" Documentation of secondary sources in the form of transcripts of results a video interview with R. Edward Freeman was also analyzed.

Considering that the purpose of this study is to propose the thesis "characteristics of the business environment have an impact on the development of a theory", the authors reverse the point of reference in the discussion where the complexity of the phenomena in IR 4.0 is used as a determinant of whether ST is healthy, sick, or disabled. To achieve this goal, the following steps are taken: 1) presenting the results of the collection of literature related to the IR 4.0 and ST data concepts and explaining them, 2) visualizing the relationship between business and stakeholders - as a result

of the synthesis of conclusions in the second step, 3) discussing the model theoretical in the third step to support the research thesis, 4) and become the basis for providing valuable contributions in the form of ST-based research topics in the setting of IR 4.0. The discussion will use the behavioral approach in IR 4.0.

RESULTS AND DISCUSSIONS

IR 4.0 stages of development

Popkova, Ragulina, & Bogoviz (2019) stated that IR 4.0 has more characteristics than the previous industrial revolution. Characteristics during the first industrial revolution (18th to early 19th centuries) for example, contain the forms of production activities, the distribution of steam transportation, and the start of iron casting production. The second industrial revolution (late 19th to early 20th century) the specialties were the formation/procurement of production of sending equipment, the distribution of rail use, and the commencement of steel production. In the third industrial revolution (late 20th century) the formation of digital technology-based global production, the construction of power plants, transportation equipment, and the start of computer production. The fourth industrial revolution (21st century) is characterized by the establishment of fully automated production, the elimination of the role of humans, the revolutionary changes in business processes, the emergence of possibilities for simultaneous use globally, the change in the core of industrial patents, and the possibility of a rapid change of specialization industrial production. Figure 1 shows the stages of the industrial revolution transition from the first to the fourth.

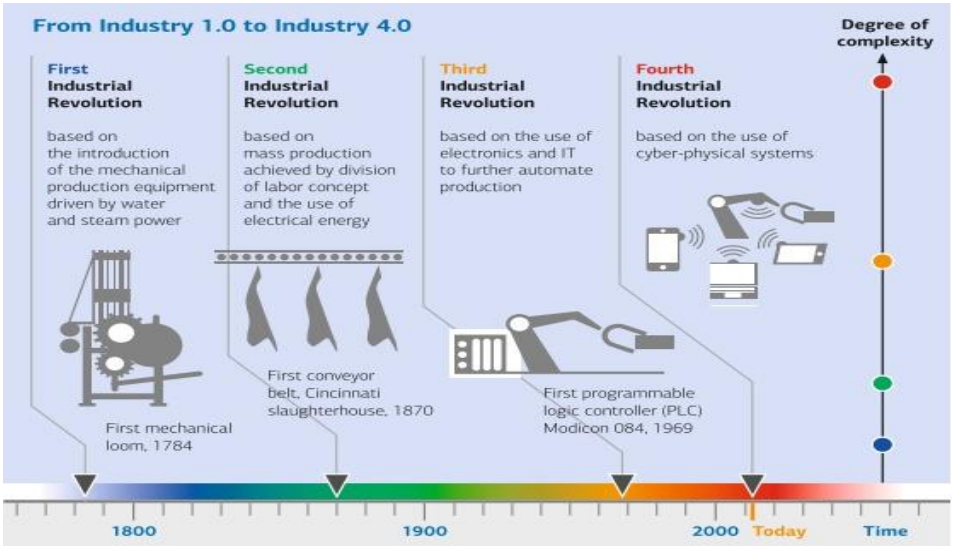

Figure 1. Stages of IR 4.0 occurrence
Source: Hartmann & Bovenschulte (2013)

Even though there are differences in the characteristics of the industrial revolution proposed by researchers, in general, their proposals regarding the peculiarities of IR 4.0 are the same, namely a production system that combines cyber systems with physical systems. Therefore, the aspects of human-machine interaction and human-machine cooperation need to be considered more deeply (Hartmann & Bovenschulte, 2013). It seems Hartmann & Novenschulte (2013) narrowed the way they see the human position in the industrial production process as the beneficiary. In contrast, Sukhodolov (2019) acknowledges that there are positive and negative manifestations of the development of IR 4.0 in the socio-economic sector. Of course, the author's interest regarding the thesis offered in this article is the elaboration of IR 4.0 which can be related to ethical aspects which are the main spirit of ST.

Preconditions for the IR 4.0

The IR 4.0 requires initial conditions that support its implementation. The knowledge economy is a precondition needed to achieve IR 4.0. Key elements of the knowledge economy (Kolesnichenko et al., 2019) are: 1) Institutional structures that function as institutions that support the dissemination of knowledge into the economic life of society. 2) An innovation system that encourages innovation and entrepreneurship, and provides commercial structures, scientific and research centers, universities, and other institutions that work to develop global knowledge while being able to adapt to localities. 3) Education and training designed to form well-qualified, creative, and dynamic communities with the prospect of obtaining proper education and lifelong learning. 4) Building information as a result of a creative process that is dynamic, competitive, and innovative, which provides a variety of services and effective tools for social activities.

Regarding the constituent elements of IR 4.0, the human aspect is the most important to prepare. Kolesnichenko et al. (2019) found that there are three types of human capital, namely "traditional", "convertible" and "creative". According to them, only creative human capital plays a role in accelerating the process of spreading and becoming IR 4.0. The characteristics of creative people are mastering knowledge and skills in advanced fields, always updating knowledge and continuing their education, being able to design tasks independently, being able to change activities, high professional autonomy.

Not only are the elements and environmental conditions that support the achievement of IR 4.0, but institutions that function effectively must also be guaranteed. An example is the finding of Galushkin et al., (2019) in developing countries where only 1 out of 7 institutions needed for the development of IR 4.0 is available, and those that are in the process of forming, it is entrepreneurial institutions of IR 4.0. In developed countries, the institutions needed are widely available, but many are still not formal and require legislative adoption.

The essence of the IR 4.0

The IR 4.0 is a new vector of industrial development, which exists only in certain developed countries and has only a small share of their real sector -but in the future, it may lead to the gradual modernization of other industrial fields (Sukhodolov, 2019). In studying the issue of IR 4.0, there are several approaches offered: first, a socio-oriented approach, namely the development of IR 4.0 has an impact on modern society and has both positive and negative manifestations. Second, the competence-based approach, namely the development of IR 4.0 requires new competencies from modern industrial specialists. Third, the production approach, namely the development of IR 4.0 means industrial modernization with large-scale automation of production processes. Fourth, the behavioristic approach, namely the development of IR 4.0 considers changes to interactions between objects i.e. elimination of the subject (human) from an interconnected system containing inanimate objects (technical tools). To understand these four approaches, pictures are provided which visualize all four.

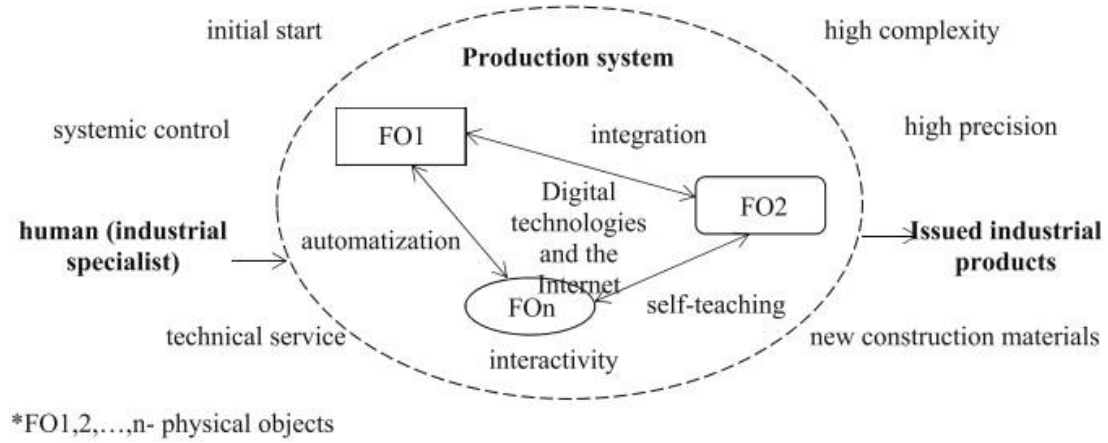

Figure 2. Visualization of IR 4.0
Source: Sukhodolov (2019)

Figure 2 above shows that the human position in the production process is outside the main process. Following the behavioristic approach, humans have a small role in quantity in business processes in IR 4.0. The interaction that occurs is the interaction between objects i.e. technical tools that replace the function of human resources in the production process. Under the competence-based approach, supporting the development of IR 4.0 requires human resources (industrial specialists) who have new competencies to control the running of processes in the production system in IR 4.0. In the production approach, the development of IR 4.0, while looking at figure 2, allows companies to achieve higher economies of scale due to standardized massive production supported by digital technology, integrated with support for actual data from the Internet of Things. Regarding this article, it seems that only the first approach, namely the socio-economic approach, allows ST to carry out its function as an explanatory and predictor for humans.

Differences in production practices in each industrial revolution that have occurred, are occurring and will occur, give rise to different characteristics of the business environment and require a scientific explanation of the essence, processes, approaches, and their implications. The concept of IR 4.0 must be thoroughly understood to know its potential in providing opportunities and challenges for the academic world which functions as a speaker and predictor of business phenomena. The concept of IR 4.0 which has been explained above, does not seem friendly to the development of ST, which is indeed the thesis of this article. The title of this article also makes sense to digest and accept.

ST emergence and development

"Stakeholder theory is a theory about organizational management and organizational ethics. One way to use it in its original form is to challenge the notion of companies being managed for the benefit of shareholders" (Freeman, 2010). What Freeman said implicitly shows that the emergence of ST is the antithesis of the Stockholder theory initiated by Milton Friedman. Although in an interview (McIntosh, 2011) at Griffith Business School, Freeman obscured it by saying that for 25 years people had misunderstood the meaning of ST Freeman, but he also stated that there were fundamental differences between the theory of Stockholders and ST.

[00:01:22] Freeman: *On several fronts. One assumes that there are some foundational questions that can be answered and that it's the philosophers and ethicists who can answer those questions that are somehow independent of history and culture in our being in the world. And I don't think that's true.*

[00:01:45] Freeman: *And if we do so doesn't that dichotomy something that doesn't need? As it suggests yet that shareholders are in opposition to stakeholders which of course everybody who's ever run the business knows is not who is completely false and so so there's the opposition between shareholders and state stakeholders.*

However, in the context of corporate social responsibility, Friedman insists that the two are different from the capitalism he promotes. "...This is the main reason why the doctrine of "social responsibility" involves accepting the socialist point of view that political mechanisms, not market mechanisms, are the appropriate way of determining the allocation of limited resources to alternative uses..." (Friedman, 2007)

The development of a "firm theory" is an interesting and rewarding project, and focusing solely on "firm theory" obscures the more important contributions of stakeholder theory. This short essay will set forth what I consider to be the central insight of stakeholder theory: the common interests of stakeholders (Freeman, 2010). The main premises of ST can be structured as follows (JONES & WICKS, 1999): 1) the company has relationships with many constituent groups (stakeholders) that affect and are affected by company decisions; 2) This theory pays attention to the naturalness of these relationships, both processes, and outcomes for the company and its stakeholders; 3) The interests of all (legitimate) stakeholders have intrinsic value, and it is assumed that there is no set of interests that dominate other interests. (Donaldson & Preston, 1995); and 4) This theory focuses on managerial decision-making (Donaldson & Preston, 1995)

In its development, which is based on ethics, ST has been expanded into convergence stakeholder theory (JONES & WICKS, 1999) in which theory development is carried out by combining two approaches, namely social science and normative ethics. End with a theory that is highly normative but instrumental in helping managers achieve corporate goals. The new paradigm results in combining agency theory with ST which results in a manager-stakeholder relationship paradigm that considers both efficiency and power. (Hill & Jones, 1992). In forming a value creation model, ST is successfully used as a lens and produces three models, narrow, transitional, and broad (Vidal, Berman, & Van Buren, 2015).

Exchange value

In terms of value creation, ST explicitly states that business talks about how customers, suppliers, employees, fund providers (shareholders, creditors, banks, etc.), society and managers interact and create value. To understand business, the mechanism of this relationship must be known. (Freeman, 2010). In his interview, Freeman also said "there are many ways to run a business that create value for stakeholders and run it in a sustainable manner. This expression can be seen in Figure 4 below

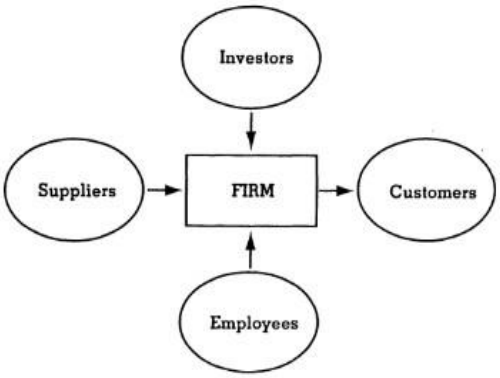

Figure 3. Conventional value creation

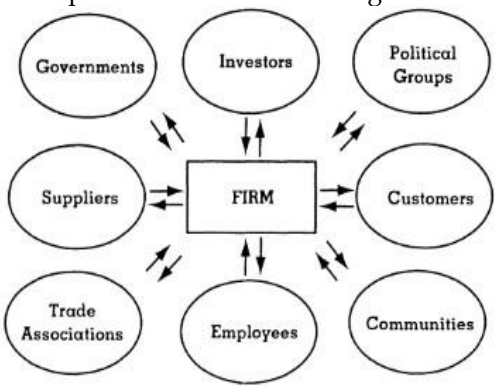

Figure 4. Stakeholder value creation theory

Source: Donaldson & Preston (1995)

Figures 3 and 4 above, both show how the flow of value travels from the source to the receiver. In Figure 3, the company is tasked with integrating the roles of investors, suppliers, and employees and then turning them into values that are conveyed to customers. Customers are central to a company's business operations objectives because sales made to customers are the company's only cash inflow. Whereas in Figure 4, the flow of sending and receiving values occurs reciprocally. Both in Figures 3 and 4 the company is the center of the flow of value delivery.

Criticism related to ST

By considering the research focus, the authors do not pay much attention to the critical aspects of ST. However, some of the work of other researchers is still presented in this article. Criticism of ST dwells on the weak application of theory (Wolfe & Putler, 2002), who are the actual stakeholders in ST, the unclear strength of the social contract relationship between stakeholders(Wolfe & Putler, 2002), discrepancies between visual graphics and explanations of the impact of ST (Fassin, 2008), a very broad scope of theoretical studies, blurring the term enterprise (social entity) vs. corporation (economic entity). Considered not qualified as a theory (Key, 1999). It appears that ST does have many gaps for criticism, even though its acceptability is still superior before the discovery of a new, more useful theory.

The importance of an accepted theory

The pragmatic power of theory will defeat critics that in a certain time and space have not yet received answers to questions arising from phenomena. As revealed by HUNT (1991)) regarding Newton's laws of motion which are excluded from scientific qualifications but are widely used and considered explanatory models, pragmatically they are still considered explanations. Therefore, the author -although not the aim of the research- believes that ST will continue to evolve because of the broad scope of its discussion which allows many parties from various perspectives and disciplines to take part in it. Furthermore, ST will be one of the superior company theories compared to other theories, even though, in this article, the author drops ST through an inverted point of view, the phenomenon of "explaining and predicting" the theory which in this case is IR 4.0 "explains and predicts". ST. The author's idea of ST superiority is in line with other ideas and was published earlier (Agle et al., 2008).

Discussion

The IR 4.0 is an era where its emergence is supported by advances in digital technology and the internet, which allows the production process to be completely automated. In the behavioristic approach (Sukhodolov, 2019) an effort to develop RI 4.0-based industries manufacturing and will follow service companies in the IR 4.0 order, replacing the role of humans with automatic machines that can work massively and precisely, these machines interact with each other. The manifestations of these changes are spreading to all areas of the economic and social system. Humans in the IR 4.0 era need to adapt to survive in their changing environment. Entrepreneurs can take advantage of IR 4.0 features to optimize their business processes, employees must improve their competence to control digital machines or become entrepreneurs in an era that offers business convenience.

Like humans, theory must also adapt to the conditions of IR 4.0. Regarding the support of the two types of technology in IR 4.0, on the one hand, the digital technology used in the production process is related to "artificial humans" who have no conscience (machines), so ST is unable to explain the phenomena that occur to them. ST is an ethical-based theory where the necessity of a company is considered as a social entity that has obligations and rights to all its stakeholders, becomes unsocial when carrying out its main activities, namely production with machines, serving consumer complaints with machines, serving consumer payments with machines, even provide customer service also with the machine. Capital-intensive industry is another phrase implicitly offered by RI 4.0. In the example of digital technology support, some features of IR 4.0 actually cripple ST's ability to explain phenomena.

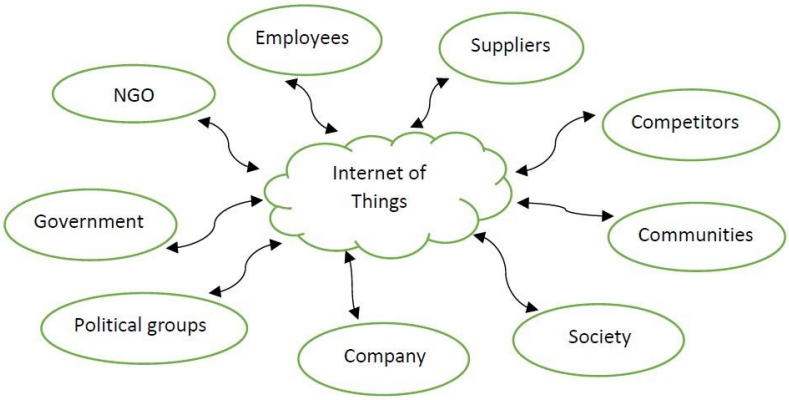

Figure 5. Theoretical relationship of ST-based Model in the IR 4.0 landscape

On the other hand, internet technology with its Internet of Things contributes great potential deviation to the development of ST. This potential arises from the existence of a new interaction pattern in which in Figure 4 the company is the central activity that becomes the ST ontology, so in the IR 4.0 era, namely Figure 5, the company has the same status as its stakeholders, users of internet communication media. The following -without limiting it to only- six research potentials for ST in the RI 4.0 setting based on the visual model above.

1. A line with two arrowheads, a possible research topic is the strength of the bonds that weave the relationship between stakeholders.
2. Circles/ovals form, possible research topics who are the stakeholders, their characteristics, their roles, etc.
3. Patterns of interaction, and research topics that may arise e.g. related to the discipline of sociology, which in the physical setting of role conflict is very interesting to study because it often creates counterproductive, for IR 4.0 the examination of stakeholders who play multiple roles (consumers and suppliers).
4. Technology, research topics that may arise e.g. allows the emergence of small company's disruptive innovation which in Figure 5 can occur in the oval of competing companies.
5. The breadth of the network, and research topics that may arise e.g. enable the other party to complete the work. For example, the Kitabisa.com netizen community takes over or at least participates in solving social problems that are the object of the Corporate Social Responsibility program. The Indonesian government in this field has taken a solution initiative by launching the kedaireka program.
6. Network security, is a research topic that may arise, namely the interaction of stakeholders with companies that is not private or at least vulnerable to being discovered by third parties.

With the elaboration of the research topics above, the author's thesis "characteristics of the business environment have an impact on the development of a theory" can be said to be supported. Even though there has been a lot of research on the physical order, the new cyber world order has its own uniqueness which of course needs to be explored in more depth.

In addition, an example of using the above model is given by taking the Bjorka phenomenon. This phenomenon can be explained by the results of the visualization in Figure 5 above in the following way: 1) Bjorka, even though he/she is an individual, in the oval section can be categorized as an element of society as well as a member of the hacker community; 2) Bjorka conceptually has more ability to connect with governments and social entities around the world through IoT. Furthermore, research topics that can emerge from methods 1 or 2 above are: who is Bjorka?; what is the description of the background?; what hacking activities has Bjorka done that was recorded

online?; how strong the country's security system is; whether is it necessary to provide funding with cyber security nomenclature in every ministry of the Indonesian government; and others.

CONCLUSION

The IR 4.0 has taken place in some developed countries, this revolution is very closely related, because it has received support from, two technologies, namely digital technology and internet technology. The combination of the two has produced an environmental condition that is unique compared to previous eras. The characteristics that emerge from RI 4.0 then, in the view of the author, have the potential to deviate from what is normally going on. If it is related to the scientific level, the development of a theory will be greatly affected by the uniqueness of this characteristic. The development of a theory is often carried out from the point of view of the ability of the theory to carry out its function as an explanation and predictor of phenomena. In this article, the authors offer a potentially new approach that changes references regarding the application of stakeholder theory. This approach shows that the pattern of business and political interaction in RI 4.0 can have an impact on the development of a theory. This thesis offered is supported because the research potential emerging from the field of cyber is very promising to be researched.

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