Lecture Notes on Data Engineering and Communications Technologies 118

Leonard Barolli
Elis Kulla
Makoto Ikeda *Editors*

Advances in Internet, Data & Web Technologies

The 10th International Conference on Emerging Internet, Data and Web Technologies (EIDWT-2022)

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Editors

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Welcome Message of EIDWT-2022 International Conference Organizers

Welcome to the 10th International Conference on Emerging Internet, Data and Web Technologies (EIDWT-2022), which will be held from March 2 to March 4, 2022, at Okayama University of Science, Okayama, Japan.

The EIDWT is dedicated to the dissemination of original contributions that are related to the theories, practices and concepts of emerging Internet and data technologies yet most importantly of their applicability in business and academia toward a collective intelligence approach.

In EIDWT-2022 will be discussed topics related to Information Networking, Data Centers, Data Grids, Clouds, Crowds, Mashups, Social Networks, Security Issues and other Web 2.0 implementations toward a collaborative and collective intelligence approach leading to advancements of virtual organizations and their user communities. This is because, current and future Web and Web 2.0 implementations will store and continuously produce a vast amount of data, which if combined and analyzed through a collective intelligence manner will make a difference in the organizational settings and their user communities. Thus, the scope of EIDWT-2022 includes methods and practices which bring various emerging Internet and data technologies together to capture, integrate, analyze, mine, annotate and visualize data in a meaningful and collaborative manner. Finally, EIDWT-2022 aims to provide a forum for original discussion and prompt future directions in the area.

An international conference requires the support and help of many people. A lot of people have helped and worked hard for a successful EIDWT-2022 technical program and conference proceedings. First, we would like to thank all authors for submitting their papers. We are indebted to program area chairs, program committee members and reviewers who carried out the most difficult work of carefully evaluating the submitted papers. We would like to give our special thanks to Honorary Chair of EIDWT-2022 Prof. Makoto Takizawa, Hosei University,

Japan, for his guidance and support. We would like to express our appreciation to our keynote speakers for accepting our invitation and delivering very interesting keynotes at the conference.

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EIDWT-2022 Keynote Talks

Mining of Cohesive Groups in Massive Social and Web Graphs

Alex Thomo

University of Victoria, British Columbia, Canada

Abstract. Mining dense subgraphs and discovering hierarchical relations between them is a fundamental problem in graph analysis tasks. For instance, it can be used in visualizing complex networks, finding correlated genes and motifs in biological networks, detecting communities in social and Web graphs, summarizing text and revealing new research subjects in citation networks. Core, truss and nucleus decompositions are popular tools for finding dense subgraphs. A k-core is a maximal subgraph in which each vertex has at least k-neighbors, and a k-truss is a maximal subgraph whose edges are contained in at least k-triangles. Core and truss decompositions have been extensively studied in both deterministic as well as probabilistic graphs. A more recent notion of dense subgraphs is nucleus decomposition which is a generalization of core and truss decompositions that uses higher-order structures to detect dense regions in the graph. In this talk, I will first motivate and illustrate core, truss, and nucleus decompositions for mining dense hierarchical regions in large graphs. Next, I will describe algorithms for computing these decompositions and outline avenues for further research.

Human Centered Approaches in Transformative Computing Applications

Lidia Dominika Ogiela

AGH University of Science and Technology, Krakow, Poland

Abstract. Human centered systems are now recognized as one of the most important solutions in artificial intelligence. They have advantage over other systems from the fact that they still adapt their operation to the changing and unpredictable tasks and functions. The variability of the human analysis process, which is the basis for the operation of such systems, means that the developed IT solutions are constantly evolving, and their development is a determinant of various external factors independent of humans and those that depend on them. Human centered systems allow for the implementation of deep tasks, meaningful analysis and interpretation of various data sets. Their special advantage is the possibility of incorporating characteristic of the human perception processes of automatic data prediction. In human centered systems, transformative computing processes are also carried out, giving the possibility of implementing analysis steps at various levels of inference. The differentiation of the levels at which the interpretation and inference processes are carried out is a characteristic of complex data management structure.

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Human-Value Orientation as Center for Business Transformation Model in Digital Era

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Abstract. Human-Technology Interaction (HTI) is an intensive interaction between humans and technology to achieve organizational goals. In the digital era, the interaction between humans and technology is becoming more massive due to its efficient and effective ways to meet the work requirements. Therefore, redesigning the business model through the Human-Value orientation is needed. Human value orientation applies to the principle that welfare, health and humanities are priorities in running a business. The human ecosystem in the organization consisting of customers, workforce, and partners becomes the new focus of business strategy. Human comfort and welfare are a top priority, even though it must coexist with the obstacles and take advantage of advances in information technology. The ability to unite to improve the collective capabilities of human resources and the use of technology will provide significant changes for business sustainability. This paper presents several methods and techniques for implementing the transformation model with the human value orientation approach.

Keywords: Business transformation · Human-technology interaction · Religious values

1 Introduction

Currently, the global industrial world is entering a new era known as the Industrial Revolution 4.0 or also known as the digital era. In general, Indonesia has actively implemented a new era marked by the movement of various sectors of life towards fully automated digital. We can see this phenomenon with evidence that there are more and more digital-based business people around us. Call it Google, Facebook, Youtube to messaging application services or messenger. The main feature of the digital era is how data becomes important. Of all the uploaded data, there is artificial intelligence which then translates it into an algorithm. This algorithm then becomes data that can be maximized to help businesses, including reading trends. Although computer technology has been around for decades, the concept of digital transformation is relatively new. This concept was present in the 1990s with the introduction of the internet. Since then, the ability to transform traditional forms of media (such as documents and photos) has waned amid the importance that digital technology brings to society. Today, digitization touches every

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part of our lives, influencing the way we work, shop, travel, educate, manage and live. Transformation practices are usually used in a business context. The introduction of digital technology has sparked the creation of new business models and revenue streams. Emerging technologies such as artificial intelligence are accelerating transformation, while basic technologies such as data management and analytics are required to analyze the huge amount of data that results from digital transformation. Digital transformation is not just about technology. It takes place at the intersection of people, business and technology, guided by broader business strategy. Success exists when organizations can effectively use data created by or through technology in ways that enable business change to occur dynamically. In the digital era, the interaction between humans and technology is increasingly massive because it is an efficient and effective way to fulfill work needs. Therefore, it is necessary to redesign the business model through a Human-Value orientation.

Technological advances are one of the biggest challenges in the difficulty of building models that integrate humans with technology. To create new habits and management practices related to how humans adapt, behave and work with existing technology, in addition to meeting human needs such as the search for meaning, connection and well-being in the workplace as well as maximizing employee potential through capacity building and protecting ethical values. This is because of the focus on technology and how humans can interact with technology.

Religiosity (the importance of religion to an individual) is associated with honesty (Arrunada 2010), high ethical standards (Weaver and Agle 2002), and greater risk aversion (Diaz 2000). Personal religious beliefs influence behavioureven among individuals who have not internalized societal beliefs and values (Spicer and Bailey 2007). Consistent with this, it shows that risk-taking and behaviourbased on religious values can make a person have more superior values with work orientation not only looking at material aspects, but also aspects of social relationships, interactions, and a balanced unity between technology and humans.

Business transformation is very necessary in responding to various challenges in today's world, not only looking at the aspects of changes that occur in the digital era but also seeing how interactions between humans and technology can become a single unit that can build human values that instill a religious character.

2 Human – Technology Interaction

As defined in the 2018 resource trends report, the "new social contract" proposes an increase in relationships that are more human-centered than those between individuals and organizations and organizations and society (Dimple et al. 2018). Since 2018, we have seen the speed and scale of change continue to increase. With the advancement of technology brings bigger and bolder changes in less time. But as new technologies and digital transformation dominate the conversation in the boardroom, human concerns are seen as separate, indirectly at odds with technological advances.

Technological progress that is getting faster and faster has certainly made many changes to a country, including Indonesia. Taking advantage of the progress made during the crisis and planning future goals as changes in behaviourto keep running activities trigger companies to rely more on technology.

Currently, the use of applications for long-distance communication is still high to stay connected with colleagues and clients. Focusing solely on returning to work is not the right choice, as organizations take advantage of everything they have experienced and learned over the past few months. Companies are required to adapt to technological advances that can support work. Organizations must embrace the perspective of New York Times columnist Thomas Friedman that humans wishing to adapt in an age of acceleration must develop dynamic stability. Rather than trying to stop the storm of inevitable change, it is better to encourage leaders to build an eye that moves with the storm, drawing energy from it, but creating a dynamic platform of stability within (Zach 2017).

Thus, the concept of the relationship between humans and technology provides a conclusion that technological developments can contribute significantly to making people's daily lives healthier, safer, more independent, fun and comfortable. New technologies can also provide new means of communication and entertainment and contribute to solving challenges, such as saving energy or improving health and well-being. For technology to be successful, people need to trust, accept and use it naturally. Technology produces rapid progress and leads to major changes in society. Access to new technologies can also improve consumers' quality of life exponentially (Scott 2019).

3 Business Transformation

Today's business transformation into a digital business refers to the process and strategy of using digital technology to drastically change the way businesses operate and serve customers. This expression has become common in the era of digitalization. That's because every organization regardless of size or industry is increasingly reliant on data and technology to operate more efficiently and deliver value to customers. Companies throughout Indonesia continue to survive with the changes in the digitalization era. Of course the company is trying to survive and find the right moment to bounce back. So that companies can survive in facing the challenges that exist in this digitalization era, like it or not, business transformation must be carried out. Business transformation is a comprehensive change process that requires companies to position themselves with the aim that companies can become better at responding to new business challenges that face or face a rapidly changing business environment. Changes made by companies in undergoing the digitalization era can be carried out comprehensively and continuously, consisting of changes to the company's perspective, mindset, and pattern of action. Changes are made because human health and safety is currently a priority. Changes made by companies in undergoing the digitalization era can be carried out comprehensively and continuously, consisting of changes to the company's perspective, mindset, and pattern of action. Changes are made because human health and safety is currently a priority. Changes made by companies in undergoing the digitalization era can be carried out comprehensively and continuously, consisting of changes to the company's perspective, mindset, and pattern of action. Changes are made because human health and safety is currently a priority.

Changes can also be made through business strategy, organizational capabilities and corporate culture. Business transformation cannot be separated from the current popular

trends. This transformation can be carried out in various forms of business, including business model transformation, strategy transformation, structural transformation, operational transformation and corporate culture transformation. Transformation of business models and strategies, namely choosing the main source of business income that is adapted to society in the new normal era, such as technical sales and delivery of goods, in structural transformation repositioning the organization according to the needs of the company's model and strategy. Operational transformation is carried out by preparing infrastructure which includes sales promotion facilities and health protocols in the office.

Business transformation requires changes in organizational and management aspects that are aligned with changes in all systems and management aspects such as planning management, operations management, human resources, marketing management, financial management, and others. The implementation and business transformation steps that can be carried out by the company go through several stages, including the identification stage, the implementation stage and the implementation evaluation stage. Identification in this case is to identify the needs of the community. Continued at the identification stage of the availability of raw materials, production equipment and human resource capabilities. Then the identification stage of the standard operation procedure (SOP) is also carried out. Identification of the selection of a good promotional tool is also carried out so that the promotion that is carried out is able to hit the target. And the last is to identify the pattern and distribution strategy to consumers. After the identification stage, operational activities are carried out and do not forget to evaluate the results of the implementation of activities.

Transformation can be interpreted as an effort to accelerate business by involving technological tools. The process is not changing all manual business models to digital, but trying to see opportunities that can help business processes with digital (Hidayat et al. 2020). The company's business transformation has enormous benefits for the company, among others, the company can focus more on businesses that are more promising and financially profitable, as well as being able to improve organizational capabilities so that they have strong support power. After carrying out a business transformation, it is expected that the company in acting has new rules, operations, ways of working and strategies. There is a lot to consider to make a transformation for a better business in the future. Strong leaders who place the digital and customer experience at the core of the business model drive successful transformation efforts. These leaders must ensure their digital transformation strategy addresses the cultural gap and that everyone understands where the organization is going in the future.

4 Religious Values

Religious belief is one of the most influential determinants of individual behavior. Tiliouine and Belgoumidi (2009) assert that religious practice has become a source of strength for entrepreneurs because it has a tendency to influence them. As a result, the application of religious practices in a company provides a force that can influence personality traits and positive attitudes towards the success of Muslim entrepreneurs' companies. The influence of religious factors on moral values is considered crucial on the grounds that it can increase the religious values of business visionaries. In addition, they

can improve their business performance better (Kotey and Meredith 1997). Based on the positive characteristics contained in religious values, including savings and productivity, precision and time saving, have a sense of pride in the work done, commitment and loyalty to the organization, the need for high achievement, honesty, have a high internal. self-control, seeing ambition and success as signs of God's help. According to Adnan and Mohamad Dahlan (2002), doing business is considered as worship because it is an economic activity that allows people to earn a living and the most common component of any society is religion, thus stating that historically it has shown that religion has become a force in business. Ethical issues that occur in the business world can actually be overcome if universal religious values can be adopted as a source of ethics, especially in Indonesia, where people tend to be religious. In doing business without a religious foundation, it will only be an idea to do good but humans do not have a strong urge to do so. He also explained that the application of religion in a company with religious diversity to its employees and stakeholders is not something difficult. There are universal values found in all religions. For example, the values of honesty, fairness, responsibility, and so on. All religions should give birth to positive ethics that can be applied in a company. For example the values of honesty, fairness, responsibility, and so on. All religions should give birth to positive ethics that can be applied in a company. For example the values of honesty, fairness, responsibility, and so on. All religions should give birth to positive ethics that can be applied in a company.

Table 1. Visualization human-value orientation concepts

No	Concepts	Definition
1	Human – technology interaction	A new social resource trend that proposes an increase in relationships that are more human-centered than the relationships between individuals and organizations and organizations and society associated with digital interactions (Dimple et al. 2018)
2	Business transformation	Efforts to accelerate business by involving technological tools. The process is not changing all manual business models to digital, but trying to see opportunities that can help business processes with digital (Hidayat et al. 2020)
3	Religious values	Religious beliefs reflect individual behaviouras a source of power that tends to influence Tiliouine and Belgoumidi (2009)

Based on the table the concept of visualization of human value will be created In the digital era supported by the interaction between humans and technology will make a job more efficient and effective. Therefore, it is necessary to redesign the business model through a Human-Value orientation. The orientation of human values with the principle that welfare, health and humanity are priorities in running a business, which is balanced

with strong religious values. So that human value will be superior and have a positive effect on a business.

5 Conclusion

The globalization trend of the digital era facilitated by worldwide communication and Internet technology has influenced the formation of identity and human values. A person's religiosity can describe his moral values to make a choice between good and bad. religious factors and business performance found that honesty and kindness, trust, truth and justice and equality showed a positive relationship with business performance and one of the factors that influenced the application of the Islamic work ethic was religious practice. Work ethics regulated by Islam can form individuals or employees with a high sense of self-discipline. They will try to comply with every rule set in an organization such as doing work according to procedures, punctuality, mutual respect and integrity. High discipline is a civilized way of life in which employees become more positive for the organization in terms of commitment, dedication, job satisfaction, cooperation, creativity and work improvement. So that doing business transformation is no longer an aspiration that focuses on the future, but a reality in the present.

The company's business transformation in the digital era has enormous benefits for the company, including the company being able to focus more on more promising businesses and increasing the organization's ability to have strong support. Rather than trying to stop the storm of inevitable change, it is better to encourage leaders to build decisions that move with the storm, draw energy from the storm and create a platform of dynamic stability within it based on religious values.

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