

Lecture Notes in Networks and Systems 527

Leonard Barolli
Hiroyoshi Miwa *Editors*

Advances in Intelligent Networking and Collaborative Systems

The 14th International Conference
on Intelligent Networking and
Collaborative Systems (INCoS-2022)

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Leonard Barolli · Hiroyoshi Miwa
Editors

Advances in Intelligent Networking and Collaborative Systems

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on Intelligent Networking and Collaborative
Systems (INCoS-2022)

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Welcome Message from the INCoS-2022 Organizing Committee

Welcome to the 14th International Conference on Intelligent Networking and Collaborative Systems (INCoS-2022), which is held from September 7 to September 9, 2022.

INCoS is a multidisciplinary conference that covers the latest advances in intelligent social networks and collaborative systems, intelligent networking systems, mobile collaborative systems, secure intelligent cloud systems, etc. Additionally, the conference addresses security, authentication, privacy, data trust and user trustworthiness behavior, which have become crosscutting features of intelligent collaborative systems. With the fast development of the Internet, we are experiencing a shift from the traditional sharing of information and applications as the main purpose of the networking systems to an emergent paradigm, which locates people at the very center of networks and exploits the value of people's connections, relations and collaborations. Social networks are playing a major role as one of the drivers in the dynamics and structure of intelligent networking and collaborative systems.

Virtual campuses, virtual communities and organizations strongly leverage intelligent networking and collaborative systems by a great variety of formal and informal electronic relations, such as business-to-business, peer-to-peer and many types of online collaborative learning interactions, including the virtual campuses and eLearning systems. Altogether, this has resulted in entangled systems that need to be managed efficiently and in an autonomous way. In addition, the conjunction of the latest and powerful technologies based on Cloud, mobile and wireless infrastructures is currently bringing new dimensions of collaborative and networking applications a great deal by facing new issues and challenges.

The aim of this conference is to stimulate research that will lead to the creation of responsive environments for networking and the development of adaptive, secure, mobile and intuitive intelligent systems for collaborative work and learning.

The successful organization of the conference is achieved thanks to the great collaboration and hard work of many people and conference supporters. First, we would like to thank all the authors for their continued support to the conference by submitting their research work to the conference, for their presentations and

discussions during the conference days. We would like to thank PC Co-Chairs, Track Co-chairs, TPC Members and External Reviewers for their work by carefully evaluating the submissions and providing constructive feedback to authors.

We would like to acknowledge the excellent work and support by the International Advisory Committee and our gratitude and acknowledgment for the conference keynotes for their interesting and inspiring keynote speeches.

We greatly appreciate the support by Web Administrator Co-Chairs. We are very grateful to Springer as well as several academic institutions for their endorsement and assistance.

Finally, we hope that you will find these proceedings to be a valuable resource in your professional, research and educational activities.

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INCoS-2022 Keynote Talks

Fundamental Model of Online User Dynamics Based on a Causal Framework

Masaki Aida

Tokyo Metropolitan University, Tokyo, Japan

User dynamics in online social networks have come to have a great impact not only on online society but also on real life. Therefore, understanding online user dynamics is an important issue. Of course, it is difficult to understand all of the complex online user dynamics, but it may be possible to describe their characteristics in a particular way. This talk introduces an attempt to give a mathematical model of online user dynamics based on a causal framework in which the mutual influences working between users are propagated at finite speeds via an online social network. This model can theoretically explain various phenomena including the intensity of user dynamics diverges, such as online flaming phenomena, and the phenomenon that information propagation is restricted only within a specific community, such as polarization.

Big Data Analytics on COVID-19 Epidemiological Data

Carson K. Leung

University of Manitoba, Manitoba, Canada

In the current era of big data, high volume of big data can be generated and collected from a wide variety of rich data sources at a rapid rate. Embedded in these big data are useful information and valuable knowledge. Examples include healthcare and epidemiological data such as data related to patients who suffered from viral diseases like the coronavirus disease 2019 (COVID-19). Knowledge discovered from these epidemiological data via data science helps researchers, epidemiologists, and policymakers to get a better understanding of the disease, which may inspire them to come up with ways to detect, control and combat the disease. This talk presents big data analytics solutions for analyzing COVID-19 epidemiological data. The solutions help users to get a better understanding of information about COVID-19 cases. Evaluation on real-life COVID-19 data across Canadian provinces shows the benefits of big data analytics in discovering useful knowledge from COVID-19 epidemiological data.

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The Role of Religious Values to Drive Value Co-creation in Religio-Centric Market

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Abstract. This study aims to develop a model in increasing Religious Value Co-Creation through Religious Brand Community Support, Customer Ethical Perceptions and Trust to manage the Religio-centric market. This study is a development of previous studies which failed to find a relationship between Trust and willingness to do Value co-Creation with the millennial generation object that adheres to individualism. Through the internalization of religious values, particularly Islam which emphasizes helping behaviour and brotherhood, it is hoped that the relationship between Trust, which is triggered by virtual community support and ethical perceptions, will be able to provide new insights about the importance of managing religio-centric market segments. A number of propositions are proposed from the results of an in-depth literature review, which can later be validated for each measurement and tested for relationships between constructs. This study is expected to strengthen the concept of virtual market segmentation and social identity theory through a religious values approach.

Keywords: Religious brand community support · Customer ethical perceptions · Trust · Religious value co-Creation · Market Religio-centric

1 Introduction

One of the goals of marketing activities is to create customer value which is believed to be a key variable for business success. There are various values that can be offered to customers, namely: functional, social, emotional, economic, epistemic, and conditional [1]. Initially, all delivering value was only considered a one-way activity from producers to consumers, but in recent developments, this concept has become value co-creation, namely value creation that involves customers as active actors in the value creation [2]. Value co-creation can be done between the Business to Customer (B to C) [3], Business to Business [4], and customer to customer (C to C) through the online platform [5].

Increasing consumer interest to be involved in value co-creation is an important strategy in business. This is related to the increasingly limited company resources on the one hand and market dynamics that are changing very rapidly on the other. Therefore, relying on internal resources alone is considered insufficient. Through customer engagement, companies can optimize resources and know better what they want. In addition, customers will also be more satisfied because their desires are more fulfilled.

Considering the importance of the value co-creation strategy, there have been many empirical studies that discuss this, including [6–10]. However, studies related to value co-creation are still very rare that focus on the religio-centric market segment. Religio-centric means religious sentiment based on the exclusivity of the belief that a person in fulfilling his interests must be based on the teachings of his religion [11].

In a religio-centric market, consumers strongly adhere to religious values and base all their activities on religious values, including how they consider the value they get when consuming a product. In this market segment, the six values offered by [1] felt that they had not been able to cover all types of values expected by customers, they still needed religious values. It considers that the incompatibility of the product and the process of obtaining it with religious values will not be accepted in this market segment, because strong religious followers will tend to obey the rules and ethical codes set by their religious doctrines.

Talking about religious value co-creation between C to B in a religio-centric market becomes even more challenging when transactions are carried out online where the uncertainty factor is very dominant and asymmetric information often only benefits sellers to increase consumer awareness [12, 13]. This concern can hinder the consumer-producer relationship [14]. Therefore, virtual communities exist to maintain quality long-term relationships [15].

Community is one of the efforts worth considering in online transactions since the conditions of online transactions with many product choices make the consumers get substitute goods through the ease of comparing product values. Through community, consumers form a bond based on shared values. For the religio-centric market, the similarity of religious values becomes a strong glue and influences their purchasing decisions. Support from religious communities which can be in the form of religious support, emotional support, and informational support are antecedent variables that are considered to form customer ethical perception and trust which ultimately lead to their willingness to be involved in religious value co-creation.

Increased consumer interest in engaging with other consumers to create value for each other through this virtual community will benefit all actors. For companies, C to C interactions can strengthen the brand and the religious values attached to the brand more efficiently and effectively. For customers, they will get a strengthening of product value and religious value through their interaction with people who have the same religious values in a religion-based community. The created values must be obtained and result in the strengthening of knowledge and belief in religious values. Consumers who are religio-centric think that products that can support a better religious life will be more attractive [16]. If this causal relationship can be consistently implemented, the virtual halal ecosystem will be even stronger.

2 Literature Review

2.1 Religious Brand Community Support (RBCS)

Religious Brand Community Support (RBCS) is a concept derived from Social Support Theory by considering religious values. This theory has its roots in the psychological literature of the 1980s [17]. Social support theory refers to the perception individuals

have about the available social resources or the resources provided to them by other members of the group network in formal or informal support [18]. Some researchers assert that social support is related to how individuals experience feelings of caring, responsiveness, and willingness to provide facilitation to their social network or group [19]. If this is related to Social Identity Theory, the willingness to provide facilities will be stronger when they are in the same group, including religious groups.

Social support is a multidimensional construct that can be measured from: emotional support, informational support, belonging support, tangible support, and appraisal support [20]. [5] takes a more concise dimension, namely emotional and informational support. Emotional support is related to communication that involves emotions such as empathy, care, and attention. With emotional support, consumers felt cared for and understood. Information support is the provision of messages that involve information such as advice, the knowledge that can help solve problems, and recommendations.

However, the dimensions of social support according to [20] and [5] are incomplete when used to manage religio-centric markets. Support for a community that contains people with similar strong religious beliefs will certainly provide religious support because religion is a cultural element that influences a person's attitudes, values, and behaviour [21]. [22] also emphasized that consumer behaviour is highly dependent on their religious commitment. Religio-centric customers care deeply about the morality and well-being of their religious group. Religio-centric customers care deeply about the morality and well-being of their religious group [16].

2.2 Customer Ethical Perceptions (CEP)

Customer ethical perception (CEP) refers to the consumer's perception of the responsibility and integrity of the company on the online platform. [23] asserts that companies must create a sense of security, fairness, honesty, and protect consumer privacy. Several authors have suggested systematically investigating the ethical issues associated with corporate success in technology-based platforms.

In the context of online transactions, ethics is a factor worth considering because consumers will get information support from many sources because the platform provides space for users to provide reviews, recommendations, and testimonials. As a result, information traffic becomes very dense with the quality of various sources. This can lead to ethical, positive, or negative perceptions of a brand or owner.

Regarding ethical issues, there is no consensus on the number of dimensions that shape the construction of consumer ethical perceptions in the context of e-commerce. Several previous studies consider the dimensions of reliability/fulfilment, non-fraud, non-deception, seller behaviour, communication, share value, service recovery, privacy, and security [5, 9, 24, 25]. This study only takes three indicators: security, reliability, and service recovery. Reliability includes how consumers can place orders as accurately as possible [26]. This relates to an accurate display and description of the services offered, confirmation of orders, and the provision of good tracking services. Service should be as it has been served. Security is related to handling data breaches in the form of losses related to financial, personal, and transactional information. Security is a consumer perception related to the uncertainty of monetary expenditure when transacting

with online platforms. Service recovery concerns consumer perceptions related to owner justice in their efforts to overcome consumer problems [5].

2.3 Trust

One variable that gets a lot of attention in online business is trust [24]. This is related to the characteristics of online shopping where consumers and producers cannot meet directly. Consumers are only able to evaluate product performance with a limited evaluation. Trust itself is one of the important elements forming the quality of the relationship. Relationship quality refers to the closeness and intensity of a relationship that will have an impact on behaviour [27].

[28] states that consumers will trust the seller when the seller is perceived as fair, honest, kind, and responsible. [29] asserts that consumers will believe when they believe that the seller can meet their needs. Consumer behaviour theory postulates that marketing activities function as a stimulus (shaping consumer ethical perceptions) to generate responses, one of which is trust. Trust in this study adapted the opinion of [30], which states that trust is an individual's expectation and belief that the other party behaves honestly, cooperatively, and obeys the mutually agreed norms.

Trust contains several dimensions, namely: Benevolence (sincerity), Ability, Integrity (honesty), and Willingness to depend. Benevolence shows how much someone trusts the seller to behave well with consumers. Ability shows the consumer's assessment of the seller's ability to convince buyers and provide satisfaction and security guarantees when transacting. Integrity (honesty) shows how much consumer confidence in the seller's honesty to maintain and fulfil previously agreed upon agreements. Willingness to depend shows the willingness of consumers to depend on the seller in the form of acceptance of the risk or negative consequences that may occur.

2.4 Religious Value Co-creation (RVCC)

The concept of RVCC is a derivative of the Theory of value (TOV). This theory is the foundation of Service-Dominant Logic (SDL) which then derives the concept of Value Co-Creation (VCC) as a value construction. SDL postulates that when customers engage in exchanging shared values, they actively create meaning from the process, thereby increasing the value [31]. Value is a consequence of interaction and collaboration between consumers and companies to achieve mutual benefits [32].

Value is a consequence of interaction and collaboration between consumers and companies to achieve mutual benefits [33]. Religious commitment shows how far a person believes in his religious values and practices them in everyday life. It is including the desire to do *da'wah* through the buying process. *Da'wah* has the potential to form harmony between humans to create a group cohesiveness [34].

Religious Value Co-Creation (RVCC) is defined as the intensity of mutually reinforcing beliefs and knowledge of consuming halal brands between customers and other customers by "giving and accepting religious values" through online platforms. The definition of RVCC refers to the value-forming elements that must exist in value co-creation activities according to [10], namely: meaningfulness, collaboration, contribution, recognition, and affective response. RVCC takes the contribution element, which is represented

by the sincere giving dimension, and the collaboration element, which is represented by the sincere accepting dimension. The command to give alms is contained in the Holy Qur'an *Surah An-Nisa* verse 114. And among the most important alms is the charity of knowledge. According to the words of the Prophet Muhammad narrated by Ibn Majah: "The most important charity is when a Muslim learns the knowledge, then teaches it to other Muslim brothers". Knowledge occupies a very important position in Islam. This can be seen from the many verses of the Qur'an that view knowledgeable people in a high position.

3 Proposition Development

3.1 Religious Brand Community Support (RBCS) Dan Customer Ethical Perceptions (CEP)

Social support plays a very important role in the consumer decision process in online transactions. Social support is the principle of sharing ideas, thoughts, connections, and experiences in an online environment. To convince consumers to be willing to build sustainable relationships, strong social support is needed so that consumers are sure of their choice [20]. Although consumers' motivation to share information varies, such as increasing self-reputation and mind formation, it also affects the quality and speed of decision making [35].

Social support refers to psychology that looks at individuals' experiences when they are present in social networks where they can be accepted, loved, valued, and helped (Hajli, 2018). This then develops in online relationships. When individuals face a problem, they are likely to have positive feelings toward the platform and make better decisions in dealing with the problem [25]. This can be interpreted that when consumers are involved in an online brand community and get support from community members, both support for religious values, emotional support, and information support, thus their perception of the online shop is getting stronger. The strength of positive and negative perceptions is highly dependent on the quality and quantity of support from community members.

Information support from community members is believed to be more valid than promotional content because, in most cases, consumers provide information based on their personal experiences. Consumers will get information support in online transactions because the platform provides space for users to provide reviews, recommendations, and testimonials. Consumers who are facing problems will feel satisfied emotionally and get complete information. Based on this explanation, it is very rational to put forward the following proposition:

P1: the stronger the support provided by the religious-based brand community, the better the consumer's perception of the ethical behaviour of the online shop

3.2 Customer Ethical Perceptions (CEP) Dan Religious Value Co-creation (RVCC)

Value co-creation contains an element of cooperation because in this activity, the customer is asked to perform specific roles to obtain the desired service. Collaboration refers

to a situation where the parties involved work together to achieve a common goal [36]. Customers are willing to cooperate with other companies or customers influenced by the perceived value of the core service. The urge to engage in value co-creation occurs when the customer perceives the core service as performing well and elicits a reaction. The more experience they have, the more customers will feel able and willing to help other customers get the service information they need.

The perception that the online shop is reliable, maintains security, and handles service recovery well, will be stronger because the perception comes from own experience and the experience of community members [9]. All perceptions of good performance will encourage consumer interest to share their good experiences with community members. The bond of brotherhood because of their religious similarity strengthens their interest in not letting community members lack information when choosing products online. Based on this explanation, the proposed proposition is:

P2: the better the consumer's perception of the ethical behaviour of the online shop, the consumers are increasingly willing to carry out religious value co-creation

3.3 Customer Ethical Perceptions (CEP) Dan Trust (TR)

Ethics involves judging behaviour as right or wrong [37]. It is especially important regarding online relationships because the internet is the easiest way to damage any relationship. Therefore, it is very important to get clarity on how consumers perceive the ethical performance of e-retailers [38]. Consumer behaviour theory postulates that marketing activities function as a stimulus (shaping consumer ethical perceptions) to improve response. One of the responses is trust [39]. [23] states that consumers will trust online sellers when perceived as fair, honest, kind, and responsible. Ethical perceptions strongly influence attitudes and beliefs towards websites [40]. Previous research concluded that customer ethical perception affects trust [39].

Psychologically, virtual communities help reduce consumer risk and increase trust in brands. [29] asserts that consumers will believe that sellers can meet their needs. This relationship is strongly suspected to also occur in religio-centric markets because religiosity has been used to predict, explain and moderate various processes of consumer behaviour [41]. Religio-centric consumer behaviour is largely determined by a common understanding of what is allowed and prohibited in sharia law [42].

When consumers perceive that the company can fulfil its promises, can handle complaints well, and provide a sense of security in transactions, they will be more confident that the company is responsible, honest, and can fulfil its promises. These values are important for religious consumers because the buying and selling process is considered a halal transaction when the actors involved are trustworthy and do not deceive each other. Islam as a religion has been found to impact the beliefs and ethical behaviour of Muslim consumers from various countries, as well as the choice of consumer services and some products based on Islamic sharia law [43]. Based on this explanation, the proposed proposition is:

P3: the better the consumer's perception of the ethical behaviour of the online shop, then the consumer confidence will be higher.

3.4 Trust (TR) Dan Religious Value Co-creation (RVCC)

Trust is one of the critical elements forming the quality of the relationship. Relationship quality refers to the closeness and intensity of a relationship that will impact behaviour [27]. [44] states that social networks allow for coordination and communication to foster mutual trust among community members. Trust has positive implications for consumer behaviour. It is proven that the relationship of people who have mutual trust in a social network strengthens the norms regarding the necessity to help each other. Helping others is one of the underlying motivations for consumers to create shared values [10].

Value co-creation contains an element of cooperation, where the parties involved work together to achieve a common goal [3]. When religio-centric consumers feel that the online shop is honest, has capabilities related to the products it offers, and has religious values according to the values of its products. They do not hesitate to share their knowledge and experience with other consumers regarding the products and services provided by the online shop. Based on this explanation, the proposed proposition is (Fig. 1):

P4: the higher the consumer's trust in the online shop, the consumers are increasingly willing to carry out value-based value co-creation of religious value.

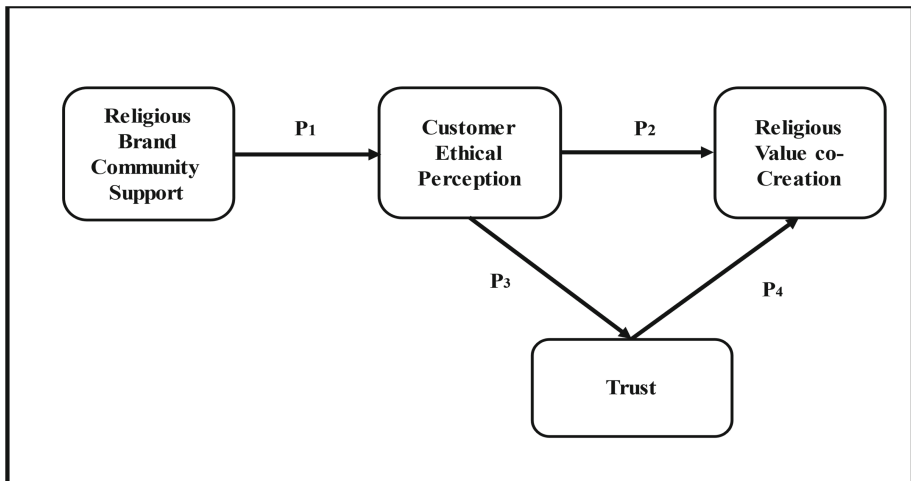


Fig. 1. Framework of thinking

4 Conclusion and Future Research

The Islamic clothing market is a very potential market and promises a large level of profit for companies that enter it. The relationship between consumers is very close. Therefore,

managing religiously-based brand groups in a religio-centric market is a challenge for business people. Companies must strive to strengthen the support of virtual groups who have the same religious values to ensure that online shops are trusted and have good ethics. These two variables are very likely to increase consumers' willingness to be involved in religious value co-creation. Religious aspects are also considered in the creation of shared values because religious commitment affects consumer orientation regarding consumption patterns and their social behaviour. Religious commitment plays an important role in people's lives through the formation of people's beliefs, knowledge, and attitudes towards consumption.

Future research can be done by validating the measurement scale of the related variables and testing empirical models. The object of research can be focused on religio-centric consumers who are actively involved in an online-based syar'i fashion brand community.

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