

# Invited Paper

## Role of Trust in Realizing a Digital Society



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Trust plays an important role in maintaining the norms of nations and communities. When trust is present, norms in communities are maintained and civic society functions smoothly. Trust can also reduce the complexity of social mechanisms, which allows for things to run smoothly in societies or companies or even among friends. Furthermore, trust also contributes to future prospects as well as to the present. Trust, on the other hand, does not necessarily deepen infinitely over time, and may be formed or lost. This paper first reviews the meaning of trust and then introduces some prior studies, including Niklas Luhmann to discuss the role of relationships and trust in achieving a digital society. It then goes on to describe changes in trust at Fujitsu.

### 1. Introduction

Trust plays an important role in maintaining the norms of nations and communities and in human relationships. When trust is present, norms in communities are maintained and civic society functions smoothly. Trust can also reduce the complexity of social mechanisms, which allows for things to run smoothly in societies or companies or even among friends.

Furthermore, because trust contributes to future prospects as well as to the present, it also incorporates the concept of time. Moreover, while it is difficult to build trust in a short period, trust does not necessarily deepen infinitely over time, but rather is just as capable of being dissipated as it is of being built up. Trust can be lost in an instant or it can fade gradually. And once lost, it can not always be regained.

Cases of betrayal, deception, predatory or exploitative behavior, infidelity, selfishness, political corruption, or lack of cooperation are among those in which it is difficult to eliminate distrust from people and the mechanisms of society. In such cases, it may lead to mental suffering as people become fearful, society becomes prone to disorder, costs are inevitably incurred as both nations and people become wary of one another.

For companies, demonstrating to all concerned

the paradigm by which they address the issue of trust is vital. This is because long-term relationships of trust are fundamental to trade and companies grow when their customers trust them.

This paper first reviews the meaning of trust and then introduces some prior studies, including Niklas Luhmann to discuss the role of relationships and trust in achieving a digital society. It then goes on to describe changes in trust at Fujitsu.

### 2. How different countries are engaging with digitalization

Digitalization is taking place in a variety of different situations around the world in pursuit of greater efficiency and economic growth. A common theme in the literature on the subject from Japan, on the other hand, both in recent publications and those from a decade ago, is one of slow progress. With reference to developments elsewhere, such as e-Estonia and e-Residency in Estonia, the move to cashless commerce in China, and Denmark's Digital Growth Strategy, the tone of these articles is one of enumerating the challenges for Japan, asking why we face such difficulties.

To keep matters simple, this paper seeks to address the digital society in terms of relationships and trust. One example is the relationship between the

nation and its citizens. It is safe to say that Denmark, which has an image of being a happy place, provides a good example of digitalization being brought about in a way that is "citizen-led," with a strong understanding of the issues and oversight by the public. A key feature in Denmark is a strong sense of self-determination going forward, with all members of the public expressing their views to the government. Debate about what digitalization is for has taken place from a citizen's perspective, involving dialogue and trial-and-error at various different layers of society. Not only has this process imbued the public with a sense of ownership and faith, it has also left them confident that the government will continue to enact and maintain this approach.

Digital society in Estonia provides another example of the public having a strong understanding of the issues. Estonia was formerly a republic within the Soviet Union. This is another case of being "citizen-led," including how, the will of the public post-independence to clearly distance itself from the Soviet Union served as a primary driver. Ethnic Russians living in the country were not immediately granted citizenship by the Estonian government following the breakup of the Soviet Union in 1991. There are various reasons for this. If the government had implemented paper-based management of nationality during the chaotic period, the changeover to new systems would have been a complicating task. It was digitalization that was able to absorb this complexity and deliver convenience in the provision of services in an efficient and transparent manner while still allowing for diversity among the public.

China, on the other hand, provides an example of a country where digitalization is "government-led" under the auspices of the national leadership. The government determines the direction, setting the conditions on which trust is built, while at the private level, companies are free to grow. In recent years, China has reached a point where it can no longer sustain the rates of growth it has experienced in the past. However, the shift to cashless commerce is proceeding rapidly. In addition, Chinese information ICT companies are a growing presence internationally, with the likes of Tencent and Alibaba having risen to the upper rank of global corporate market capitalizations.

While there are national differences in how digitalization is approached, trust remains a common theme. Although, to be precise, trust and confidence or credit

should be dealt with separately, this paper will focus on the former only.

### 3. "Trust"

The word "trust" has been in use in Britain since the 13th century to indicate whether or not the veracity of a property, capability, strength, person, or object can be relied upon. The word is thought to derive from "traust" in archaic Scandinavian languages and "trēowe" from Old English. The word "trēowe" included "belief" among its meanings, and also "faithful" in the sense of able to be relied upon, being honest, being faithful to, not being devious, and being pious. The word "true" is also derived from "trēowe," and even "tree" has its origins in this particular word.<sup>1)</sup>

While this makes a convincing case for an affinity between the words "trust" and "true," one is left wondering how "tree" fits into the picture. Part of the background to how this came about lies in the ancient practice of tree worship. Trees had been treated as spiritual entities in ancient Europe from before the widespread adoption of Christianity, such that, for people, religious belief in trees was considered a truth. This practice of tree worship can also be found in India, and of course in Japan.

Confucianism talks about the five virtues of benevolence, honesty, propriety, wisdom, and faith. While "faith" in this case is synonymous with "trust," according to Kaji it equates to "truth". Truth has four meanings.

- 1) To be true and honest in one's own heart
- 2) The external showing of truth and honesty in the mind
- 3) The expression of openheartedness, and
- 4) To expresses this sincerity verbally or in writing, which is to say in language.<sup>2)</sup>

This virtue represented a standard of human behavior on the presumption that people exist within a variety of relationships, underpinned by the community in which they live.

Elsewhere, while it can be noted that the expression "Without trust, the society can never be organized," meaning that government is impossible without the trust of the people, is an oft-quoted phrase from the Analects of Confucius, one should also take note of what came before that. This was a scene in which Zi Gong (520-446 BC), a group known as the "most

excellent ten pupils" of Confucius (551-479 BC), asked Confucius about politics.

Confucius explained that three factors are crucial: food supply, military preparedness, and trust among people. Zi Gong then asked which of these should be given up if it became necessary. Through question and answer, Confucius replied that military force should be sacrificed first, followed by food, leaving only trust.

*Zi Gong asked about what important about politics.*

*The Master answered, "Enough food supplies, military advantage, and the trust of the people."*

*Zi Gong asked, "Suppose you had no alternative but to give up one of these three, which one would be let go of first?"*

*The Master answered, "Military force."*

*Further, Zi Gong asked, "What if you had to give up one of the remaining two which one would it be?"*

*The Master answered, "Food. Without the trust of the people, the foundation of politics cannot stand."<sup>3)</sup>*

While going without food may result in death, death is something that no living creature can avoid.

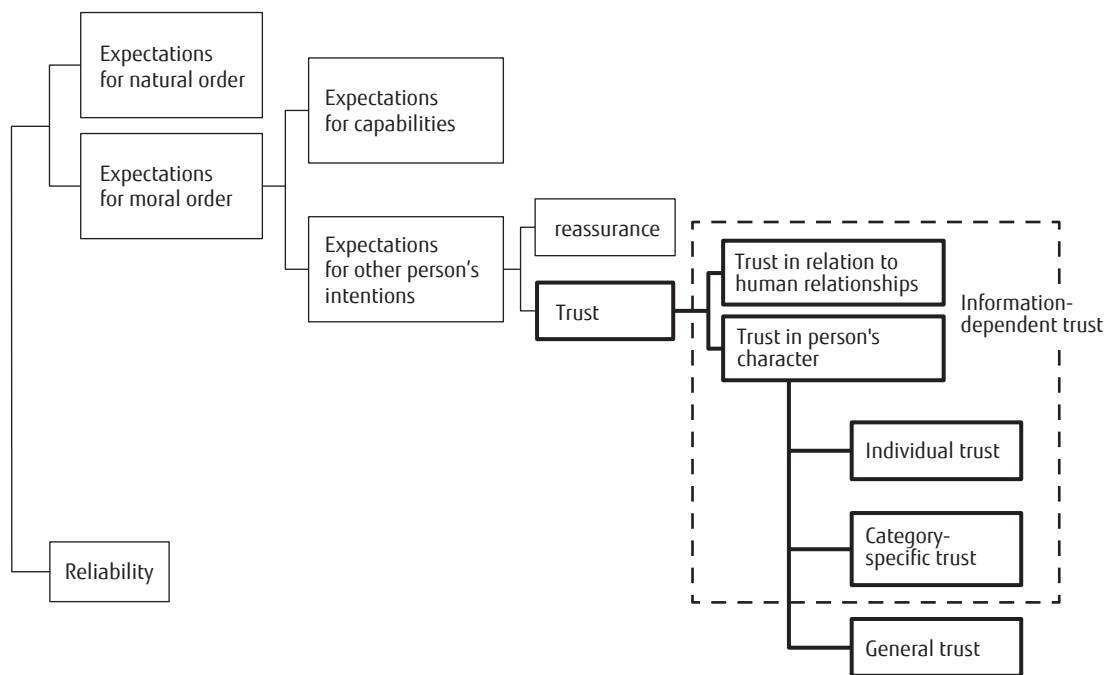
The lesson is that trust alone is something that cannot be won overnight and it is this that makes people's way of life possible.

#### 4. Past research on trust

In this way, relationships and trust act to maintain the norms of behavior in nations and communities. However, it is only since the 1970s that people have started to think more deeply about things like what trust actually is, in what forms it manifests, and the trustworthiness of trust itself.

The work by Yamagishi provides a summary of past research into trust<sup>3)</sup>. Trust, for Yamagishi, is an ambiguous concept. As a broad definition, he offers that of American sociologist Bernard Barber (1918-2006), who defined it as an expectation for the existence of natural and moral social orders. On the other hand, as a narrow definition of trust, he offers that of having faith in a person's character. As such, our assessment of a person's character is often acquired through ongoing interaction with them.

Yamagishi considered expectation and trust separately, taking a fine-grained approach to the latter. **Figure 1** shows how he broke trust down into its



Note: 3), p.31, partially revised.

**Figure 1**  
Conceptual block diagram of trust.

different concepts. He interpreted trust as being those blocks indicated in the figure by bold lines under the "trust" block. Furthermore, the "information-dependent trust" grouping indicated by the dashed line refers to judgements of trustworthiness based on information about a specific person. The information that provides the basis for this judgement includes general information about the person as a human being and their feelings and attitudes toward the person making the judgement.

#### 4.1 Trust as a part of composite capital

Trust has been studied, both in its own right, and also as a part of collective capital. The French philosopher and sociologist Pierre Bourdieu (1930-2002), American sociologist James Samuel Coleman (1926-1995), and American political scientist Robert D. Putnam (1940-) regarded trust as a composite concept that makes up part of the social capital that focuses on trust and other relationships between people in their respective books.

Putnam, for example, treats social capital as a collective good, something that is made up of the social conventions (norms) of social networks (links between people), trust, and reciprocity. The formation of abundant social capital makes possible a prosperous civic society. The fact of its being a composite concept has, however, led to a variety of debates about what factors make up social capital and what indicators can be used to define it. These topics are not considered in this paper.

#### 4.2 Trust as a mechanism for reducing complexity

Another aspect of trust that warrants mention is its role as a mechanism for reducing complexity, as noted by the German sociologist Niklas Luhmann (1927-1998). Luhmann considered trust in terms of structure, process, and systems. While society is full of complexities that are beyond our grasp, given trust we can assess risks in advance, compare different circumstances, and identify rational cases from among different options.

Important considerations when seeking to reduce complexity through cooperation with other people are whether or not other systems are in play with which you are not aligned, and whether or not you play a role in these.

A point of considerable interest is the concept of

time. As Luhmann wrote about how people who show that they are trusting can see what is coming,<sup>4)</sup> trust acts to reduce the complexity of the future.

### 5. Trust in the age of digitalization

This section draws on the work of Luhmann to consider trust in the age of digitalization. Trust in what Luhmann called the "age of electronic data processing"<sup>5)</sup> is based on a hierarchical structure. On the basis of such an ordered structure with clearly defined layers and a top, people just need to trust the top of the structure. In a heterarchical structure, in contrast, meaning one that lacks a hierarchy and in which authority is unclear, complex interrelationships continually need to be distinguished. The spread of digitalization and the Internet are of this latter type. Luhmann gives the technology of printing as an example of hierarchy and heterarchy. In China, printed material was distributed under the direction of a governing structure, this corresponds to a hierarchy. On the other hand, in Europe, printed matter was distributed in the market first, and therefore a need arose for a new technique called censorship by the government. This is a heterarchy. Accordingly, how to incorporate trust mechanisms is one of the challenges to creating a digital society.

In communication via means such as mass media, there are also cases based on "trust that exceeds what can be mass-produced," which is to say trust inflation. One example of this would be a politician who, rather than expressing his or her actual views, only communicates a positive spin.

Another idea that can be taken from Luhmann is the relationship between analog and digital, as in analog (continuous) relationships being transformed into digital (discrete) relationships, in accordance with some form of formula. Drawing on Luhmann's views, this paper seeks to radically rethink trust in the context of digitalization and technology. In doing so, it is best not to make a distinction between what is digitalized and what is not, these being equally interchangeable, and to consider them mutually interacting and interpenetrating. What is needed, then, is a design for how trust in a digital society can be equated with trust in an analog society.

## 6. How has trust come to be dealt with within Fujitsu?

This section describes how the concept of trust at Fujitsu has evolved over time.

### 6.1 Birth of slogan and High Reliability Campaign

The slogan "Fujitsu, Reliability and Creativity," which describes Fujitsu as being about trust and creativity, was chosen in November 1976 from staff suggestions. Inviting staff to suggest a slogan was itself a new initiative for the company and generated considerable interest. The winner was selected from 1,018 entries by then president Taiyu Kobayashi. Kobayashi appeared to think of "Reliability and Creativity" as focusing not only on outputs in the form of products, but also as processes.

In a message written shortly after the selection of the new slogan, Kobayashi made the point that, given that competition would continue to intensify throughout the industries in which Fujitsu operated, it was inevitable that staff would need to put an effort into cost reduction, labor saving, and other such things. And that, for this very reason, rather than just overcoming economic conditions, trust would become increasingly important. Here, "trust" expressed the idea that, as Kobayashi put it, having all Fujitsu staff continually striving and putting their utmost efforts into initiatives would foster greater trust, including people who develop new technologies, sales staff, people who develop software, people who develop systems, and maintenance staff, as well as in the production process. By this, the idea that it can respond to the trust from customers in all areas of activity was shown to all Fujitsu staff. In other words, this is the process whereby trust is engendered by the sincere attitudes of people who strive to build trusted products.

However, it was about a decade or so earlier than this that the word "trust" first started to be talked about at Fujitsu. This took place around the year 1965, as Fujitsu was approaching the 30th anniversary of its founding.<sup>6)</sup> At this time, telephone exchange equipment, a product that had previously delivered good results, had started down a slope of diminishing profitability. It began to be recognized that Fujitsu was facing difficult times the likes of which it had not recently experienced. With the initial concern being

how to increase the trustworthiness of parts and the production process, and the subsequent topic for consideration being what exactly it was that customers wanted. By this, a sequence of events came about whereby it became necessary to acquire a large number of customers and win their trust in order for Fujitsu to achieve "Infinite Growth," and as a natural consequence of this, the term "trust" came to be frequently used within the company.

In this way, the trustworthiness of all of Fujitsu's products, systems, devices, parts, and so on came into question gradually. It was against this background that Fujitsu's High Reliability Campaign was introduced in December 1966 based on an initiative by Kanjiro Okada, who was Fujitsu's fifth president from 1959 to 1970 and is credited with rejuvenating the company. The High Reliability Campaign involved small-group activities and went beyond the pursuit of reliable manufacturing by production divisions to also encompass work on quality improvement in R&D and engineering. It was also extended to include software departments in the 1980s.

The point to note here is that, whereas Fujitsu started out using the word "trustworthiness" to refer to the reliability of products and systems, the slogan finally adopted was not one of enhancing trust.

The Zero Defects Movement that emerged in the USA in the latter half of the 1960s sought to eliminate defects. In contrast, rather than simply targeting the eradication of defects, work at Fujitsu pursued better quality and involved building trust through the processes it pursued.<sup>7)</sup>

The president of the time, Takuma Yamamoto, who trained under Okada, gave an interview in June 1985 in which he said that Fujitsu needed to be an honest partner that is recognized as trustworthy by customers. He added that this is about more than reliable products and involves the company as a whole as well as staff themselves being trusted, saying that this was something he was determined to stick by.<sup>8)</sup>

### 6.2 Kanjiro Okada, trust, and human-centric ideology

It was Kanjiro Okada who established the basis for action on pursuing this ideal of trust.

Behind Kanjiro Okada's devising of his High Reliability Campaign was a philosophy of combining

the spirit of the East with the methods of the West and human dignity. More so than technology, he had strong views about the importance of pursuing human nature within the company, being concerned about and giving consideration to the human factor. He was prompted to think deeply about technology and about feelings and art after reading the thoughts on mathematics together with feelings and art expressed in a book by the internationally renowned mathematician Kiyoshi Oka (1901-1978), who wrote that feelings are at the core of what it is to be human and that mathematics is a form of scientific art that is done by expressing one's inner feelings outwardly.

Serving as chairman of the National Federation of UNESCO Associations in Japan also influenced the development of this thinking. "The Humanist Frame" (1961) was edited and written by the British evolutionary biologist Sir Julian Huxley (1887-1975). It includes "The Crisis of Humanism: New Concepts of Humanism" by Morris Ginsberg. In 1964, at the age of 73, Okada took on the job of translating "The Humanist Frame" into Japanese. Following publication of the translation, Okada would refer to Huxley's ideas at every opportunity both inside and outside Fujitsu.

Okada's perspective was of a mission to make full use of scientific knowledge with humans playing a central role. It is likely that this represents the first instance of human-centric ideas being considered within Fujitsu.

He expressed the idea that people can progress and demonstrate creativity, with the people involved in the project living up to their potential as the embodiment of rigorous high reliability, citing Apollo 8, which launched on December 21, 1968 and became the first spacecraft to leave Earth orbit, enter into orbit around the Moon, and then safely return to Earth.<sup>9)</sup>

Fujitsu has within it the cultural foundations of pursuing trust and humanity from more than 50 years ago.

## 7. Conclusion

After first considering the meaning of trust and reviewing some past studies on the topic, this paper has drawn on the theory of Niklas Luhmann to discuss the role of relationships and trust in achieving a digital society. It then went on to describe how trust at Fujitsu has changed over time.

Nevertheless, questions remain regarding the cause-and-effect relationships between trust and outcomes and about the layers of trust, as well as the issue of how this can be achieved by means of ICT. These will be addressed in a separate paper.

Future expectations for Fujitsu Laboratories and Fujitsu are likely to include the following. First of all, within the company, we will be called on to express the paradigm by which we ourselves address the issue of trust. Externally, we are expected to build processes that are trusted by customers in each business process, and to build a model that will sustain growth through these processes.

Kanjiro Okada, Taiyu Kobayashi, and Takuma Yamamoto all came to recognize the importance of attitudes and processes that are serious about achieving trust, and have taken customers as the starting point when considering corporate growth in the sense of asking what it is that customers want. Presumably this is what is important when considering trust in a society created by digital and other highly developed technologies. It seems that what our forebears were ultimately seeking was a cycle (an ecosystem) in which creativity could be expressed, one in which, rather than improving convenience in isolation, people, companies, and communities could grow under conditions of trust.

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All company and product names mentioned herein are trademarks or registered trademarks of their respective owners.

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