



Digital Knowledge Supply Chain for Creative Industry: A Conceptual Framework

Ardian Adhiatma^{1(✉)}, Olivia Fachrunnisa¹, and Mustafa²

¹ Department of Management, Faculty of Economics,
Sultan Agung Islamic University, Semarang, Indonesia

{ardian, olivia.fachrunnisa}@unissula.ac.id

² Department of Informatics Technology, Faculty of Industrial Technology,
Sultan Agung Islamic University, Semarang, Indonesia

mustafa@unissula.ac.id

Abstract. This paper aims to develop a framework for digital knowledge supply chain in creative industry. Creative industry is an industry that intensifies information and creativity by relying on ideas and stock of knowledge from its human resources (HR) as the main production factor in its economic activities. Industry stakeholders have committed to improve the quality of human resources involved in the creative industry. Commitments such as creating professional standardization, quality of education, competencies that must be possessed by each HR that are part of creating a competitive advantage of the nation through the creation of goods and services in the creative industry. The next problem that arises is that each institution or government body has an HR competency development program for creative industries, but until now it has not been integrated into the national standardization concept. Hence, we proposed a framework for digital knowledge supply chain to help this problem. Initial data is collected through in-depth interview with 13 informants. Results shows that creative industry has good understanding about knowledge management through talent development. Further research is discussed to validate the proposed framework.

Keywords: Digital knowledge supply chain · Creative industry · Competitive advantage

1 Introduction

Efforts to improve product quality and the competitiveness of products produced by the creative industry have been done in many ways. However, it is very limited or there has not even been an attempt to think that a good product comes from the quality of knowledge possessed by competent and standardized human resources and the collaboration model among them. Therefore, developing HR competency standardization in this industrial field is a very significant need. After efforts to develop HR standards were completed, the next step is to develop an information technology-based collaboration model among industry players both in terms of supply and demand.

The Indonesian government in this case through policies in several ministries such as the Ministry of Industry, Ministry of Cooperatives and MSMEs, the Ministry of Communication and Information, Ministry of research and higher education and BNSP

(Professional Standardization National Agency) have sought to make general commitments regarding the quality of human resources involved in the creative industry. However, problem that arises is that each institution has competency development program for creative industries, but until now it has not been integrated into the national standardization concept. For example, the Ministry of Industry has a training program for the development of HR in creative industries, but some of the training has not been oriented to the standardization and professional certification of creative industries. Indeed, the competency standard has a single criterion that will be referred to by any institution. This has become a significant need because the achievement of competency standards involves a long process starting from the early age HR.

Therefore, this study aims to design a digital information technology-based collaboration network to meet the needs of industry and education as a competent source of human resources. This digital collaboration network is designed to create a business ecosystem for the Indonesian internet-based creative industry and web services. So, the focus of this research is to build a model and prototype of digital collaboration network software, an open platform as a virtual business ecosystem to facilitate collaboration between economic actors in an industry.

2 Literature Review

In the new economics and management literature, a knowledge-based theory of the firm is contributed to develop. It states that the main reason for firms' existence as being the creation, integration, and utilization of knowledge [1]. The knowledge-based view (KBV) has its roots in the resource-based view of the firm, which focuses on strategic assets as the main source of competitive advantages [2]. In contrast, under the KBV, knowledge is the main strategic resource, which, when properly managed, allows the firm to create value from its exploitation of production [4]. Therefore, through the combinative–dynamic capabilities, it results a knowledge bearing entity that manages its knowledge resources result the firm [3].

Consequently, by developing and implementing a series of activities or initiatives, it will deploy organizational capability and extract value; so that can be called as KM practices [4]. The main purpose of the use of KM organization is to get knowledge cognition, individually and collectively, and to shape itself in such a way as to make the use of firm knowledge to achieve effective and efficient performance. Alavi and Leidner [5] explained that the use of KM practices aims to give positive organizational outcomes such as enhanced communication and participation levels among staff members, efficiencies in finding solution and time-to-market, more energetic financial performance, better marketing practices, and improved project team performance, therefore, the widespread acknowledgement of KM contributed to succeed all organization. Nonetheless, in creative-intensive industries where the capability of firms to continually develop new products or processes, innovation seems to be the most important challenge for KM which is heavily depended by competitive advantage [6].

2.1 Digital Supply Chain

Digital Supply Chain (DSC) is defined as a customer-centric platform model that captures and maximizes the utilization of real-time data coming from a variety of sources. It enables demand stimulation, matching, sensing and management to optimize performance and minimize risk. Other definition of digital supply chain, argued that the digital supply chain is a process of networking between individuals and organizations involved in a business deal that is initiated in a paperless environment, using web-enabled capabilities. Whereas a supply chain is the simple networking between all individuals, organization, and activities involved in a business process from the manufacturer to the end user. It can be concluded that supply chain is a set of two or more individuals or organizations directly involved in selling or buying services, products, information from a source to a buyer. The whole process done with the aid of digital technology is termed as digital supply chain.

There are several key considerations in transforming a supply chain to a Digital Supply Chain. First and foremost understands your customer and the end consumer in a more sophisticated way by utilizing data analytics and advanced technologies. Production will be driven by customer demand and not by manufacturing efficiencies. This will lead to improved inventory management while better meeting customer needs. Instead of being a function that focuses on the less visible aspects of business (everything from procurement through delivery), the supply chain will evolve into an integrated role alongside sales, marketing and product development. Data analytics and advanced technologies enable companies to have greater visibility into supply chain risks and prevent or mitigate negative impacts.

Digital supply chain integration is becoming increasingly dynamic. Access to customer demand needs to be shared effectively, and product and service deliveries must be tracked to provide visibility in the supply chain (SC). Business process integration is based on standards and reference architectures, which should offer end-to-end integration of product data. Companies operating in supply chains establish process and data integration through the specialized intermediate companies, whose role is to establish interoperability by mapping and integrating company specific data for various organizations and systems. Capabilities of core inter organizational processes, such as customer relationship management, supply chain management, and contract manufacturing, are suggested as critical to firm performance [7]. Their digitization across the extended enterprise is being enabled by Web technologies, workflow tools and portals for customers, suppliers, and employees, and information technology innovations targeted at supply chains and customer relationships. Firms are investing in these technologies and related partnerships to develop their extended enterprise capabilities.

Rubenstein [3] argued that many organizations are now engaging in Knowledge management (KM) in order to leverage both within their organization and externally to their customers and suppliers. KM is an important role in selecting the right information at the right time from several pertinent resources while converting it to useful insight. Effective knowledge management can help the enterprise to accumulate core knowledge, build corporate intelligence and obtain a competitive competence.

Kant [8] took a case study approach to develop a framework to guide KM implementation in supply chains. They introduced the construct of “value proposition”

as the strategic knowledge sources identified across the SC. Li [9] aimed to outline the significance of SC knowledge sharing using the Prisoner’s Dilemma Model of game theory. Mc Laughlin [10] mentioned that organizations can identified their core business processes as being responsive and flexible, or otherwise, less- responsive. The four KM process, knowledge creation, knowledge storage, knowledge transfer and knowledge application are associated with customer service management, decision-making, forecasting/demand planning and global SC.

In addition, Patil [11] determined the barriers and critical success factor for KM adoption within SC context. The knowledge-based view has been used as a theoretical fundamental to discuss the link between KM and SC performance. The main assumption of the knowledge-based view theory is the understanding of knowledge as a primary productive resource with a strategic connotation in the value adding process. Thus, from a knowledge-based view perspective, “knowledge can be viewed as a source of competitive advantages in supply chain and improved supply chain outcomes” [12]. The resource-based theory also has been noticed by the researchers to approach the KM discipline. From this theoretical perspective, as Halley [13] argue that the efficient use of resources as the notion of organizational learning and the efficient accumulation of resources will be useful to face future needs as the task corresponding to KM.

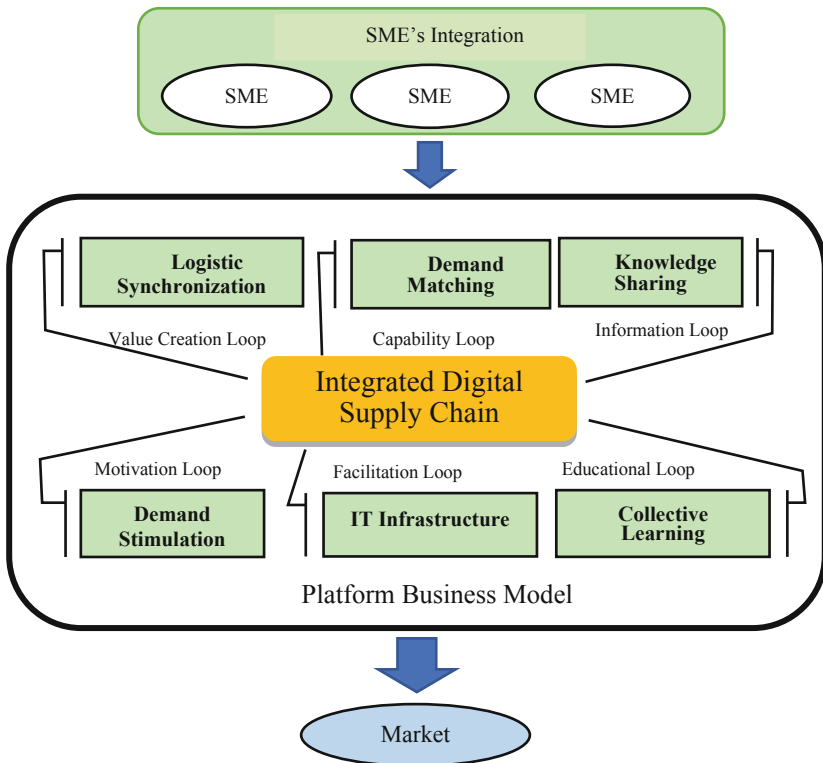


Fig. 1. Conceptual framework of digital knowledge supply chain

2.2 Conceptual Framework

The digital knowledge supply chain framework will have a design for mapping professional competencies needed by industry, designing an information technology-based digital collaboration network to facilitate the supply chain knowledge system by meeting the needs of the industrial and educational world as a competent source of human resources to produce high quality products. The framework can be pictorially described in Fig. 1.

3 Method

For initial validation of the proposed framework, we conduct explorative qualitative study to get clearer and accurate data. Interview and observation are done by creative industry actor who has been operating for at least two years. Based on the Presidential Regulation of Indonesia Number 72 Year 2015, which is an amendment of Presidential Regulation No. 6 of 2015 on Creative Economy Agency states that the creative industry sub-sector in Indonesia is divided into 16 categories which are: application sub-sectors and game developers; architecture; interior design; visual communication design; product design; fashion; movies, animations, and videos; photography; crafts; culinary; music; publishing; advertising; performing Arts; art; as well as television and radio [14]. Certain considerations of reference to sampling are based on the results of a special creative economy survey of 2017 conducted by the Creative Economy Agency (Bekraf) in cooperation with the Central Bureau of Statistics (CBS) and the leader or business owner or HR manager from each sub-sector creative economy as they directly involved with the talent management practices and policies. The two main questions are about their understanding on talent management and talent management practices. Those questions are important to get understanding about SMEs knowledge on talent management practice. Information gathered from this study will then use as input to design regard to Digital HR Supply Chain.

4 Result

We obtained 13 informants with characteristics provided in the Table 1.

Table 1. Informants’ description

No	Informant code*	Gender	Position	Creative industry sub sector
1	Inf1	Female	Owner	Culinary
2	Inf2	Female	Owner/designer	Fashion
3	Inf3	Female	Owner	Craft
4	Inf4	Male	Owner	Art
5	Inf5	Male	CEO	IT

(continued)

Table 1. (continued)

No	Informant code*	Gender	Position	Creative industry sub sector
6	Inf6	Female	President Director	Music
7	Inf7	Male	HRD Manager	Publication
8	Inf8	Male	HRD Manager	Communication
9	Inf9	Male	Founder/manager	Arts
10	Inf10	Male	CEO Assistant	Advertisement
11	Inf11	Male	Solidarity Maker	Arts
12	Inf12	Male	Interior Designer	IT
13	Inf13	Male	Founder/owner	IT

Research Question 1 (RQ1): Understanding of Talent and Talent Management Definition

The results of research have found significant variations of meaning from the understanding of talent management phenomenon, which can be called as challenge of talent identification. Some of informants' statements are following (Table 2):

Table 2. Informants' statement on RQ1

Informants	Statements
Inf1, Inf2, Inf4, Inf6, Inf8	Talent is something that has existed since we were born or grace given by God since we were born. Talent cannot change over time. Talent needs to be developed. If it is not developed it will be useless. The point is in development and maintenance. Many persons still have not seen his talent, but if they try to practice more they can. Essentially a person has a talent, because he/she usually does. And of course it takes time, cannot be instant
Inf3	"Associated with talent management, it is necessary to be able to produce maximum creation. But it depends on every individual, if it's been enjoyed to keep working hard to make the craft, it needs perseverance"
Inf5, Inf9	"Talent management tends to manage talent's person, either personally or organization in order to be successful and beneficial, both for himself and others. Talent is really necessary in management. If there is no management, it will get messed up. Talent management is the goal to manage and direct employee to develop talent and get more successful. If we have successful employees automatically we also succeed"
Inf10, Inf12	"The talent management manages the talents of employees well for each individual or sub-division, and the most important thing is we can develop the talent they have. Talent needs to be managed by company management. If it is not managed then the talent development will be slow. By doing good management, it will be more focused on the better talent development"

(continued)

Table 2. (continued)

Informants	Statements
Inf12, Inf13	“The talent is already possessed since everybody was born. Talent is defined as art, so it needs to be developed, because otherwise it will fade. But if the person does not have talent, he/she will be directed to do anything difficult. So, it will be not maximal. Therefore, it needs to be developed and studied to be honed. Although talent can not be lost, but it could fade if he pursues a field that is not in accordance with the talent possessed”
Inf11	“Talent management is exploring the potential or prospective employees to be able to develop the unit that he did. The talent must be managed so that it really becomes something that produces, is completely unearthed. The talent management is more about how we can organize, and manage talent that exists within the organization, not only for us but also can be useful for others”

Based on the presentation of the talent’s understanding by the 13 informants above, it can be concluded that talent is a gifted skill, attitude, character, knowledge, experience, and ability given by God to someone since he was born to continue to learn and grow; as well as a favorite that is done repeatedly. Talent depends on the developers, it does not depend on what talent it has. Someone who has a talent but he does not know and cannot be compared to people who does not have talent but he is diligent to learn, then eventually the work they create will give different results. While talent management is an effort to organize or manage the talent and potential possessed by a person or employees to be developed and dug deeper in order to produce work that is beneficial for himself, others, and his organization.

Research Question 2: Talent Management Practice

4.1 Primer Position

According to Collings and Mellahi [15] talent management begins with the identification of important positions that contribute differently to the competitive advantage of an organization. This is then followed by development of high performing potential performers to fill this role, and development of differentiated employees to manage the old players as well as to ensure their commitment to the organization.

Inf4: “the difficult one is that to find freelance crews, because they are becoming the core of the cinematographic venture. For example, if they have already been taken or contracted by another production, we should look for another.”

While the seventh informant (Inf7) argues that talent management practices are the same as employee management practices which only more focus on talented people. The practice of talent management is very important when recruiting people to occupy important positions within the organization. In addition, eighth informant (Inf8)

argues that to apply talent management, first thing to do is to determine the important positions that require special talent, followed by employee’s talent planning.

4.2 Hiring Talent

After identifying the key positions in the organization that is to be filled by talented employees, the next step is to plan for the provision of talented employees to fit the needs or how to hire talented employees. 12 out of 13 informants said that proper talent management practices within the organization should initially plan talent procurement or how to employ talented employees. This talent procurement is the first step in terms of getting talented employees for organization’s sustainability (Table 3).

Table 3. Informants’ statements on hiring practices

Informants	Statements
Inf1, Inf2, Inf3, Inf9	“The practice of talent management is more focused on finding early employees talents or by recruitment and selection. The point is to find employees that must be really - talented, intent, and honest. In essence we both need, employees need me, I also need them”
Inf5, Inf7	“Talent recruitment, for example when we want to find the talent, the company distributes questionnaires to find out the employment of candidates of employees, or tested psychologically. Recruitment of talent not only tends to important positions in the company, but more to all positions in the company”
Inf11	“In the recruitment of members, there are various ways, some of which we offer, we know, some are indeed holding recruitment, due internships, there is a fit together, a project like that we offered”
Inf12, Inf13	“Broadly, talent management practice is almost the same as employee management because it is only more likely to talent that each individual has especially in recruitment”

Informants 4, 6 and 10 specifically state that they need skilled employees for the talents they need in the workplace through casting and designs at recruitment time and selection.

4.3 Identifying Talent

Successful talent management practices must first be initiated by the identification of talents possessed by individuals or the organization. Five informants argue that one of the implementation practices of talent management is by identifying the talents of employees, by knowing the talents possessed then individuals or organizations will more easily do the development of the talent owned.

Inf3: “The main factor is the identification of talent. The craftsmen should be given such stimulus so they are interested in their creative work. If they are interested, then we facilitate them to start creating *batik* (such Indonesian creative work). Well, from there he can be caught

his talent in what field. In addition, to know that talent, we need others to know, especially from their parents, or exactly mothers.”

Inf2, Inf7: “Employees must start from the talent identification first so as not to misstep. If the first step is wrong, then the next step will be useless. So, I think the main factor is on the identification of talent, whether it is by the HR self individually or by the organization where he works.”

Inf11, Inf12: “The most important factor is on talent detection. It can through psychological tests, such as steving, MBTI, temubakat.com, and so forth. So, individuals must know in advance what talents they have. But most of us know that the talents are not by ourselves but more likely by others. You tend to be ignorant and unaware.”

4.4 Developing Talent

After an organization gets the talented employees they are looking for, the next step is to develop employees’ talents. Four informants stated that, talent development can be adopted on how to develop employee in employees’ management such as training, seminars, workshops, and so on.

Inf2: “... After we get the appropriate human resources with their talents, then we develop them with training, seminars, workshops, etc. It’s just that the talent management that we apply is not up to the retirement.”

Inf5: “... Also there is potential development. Honed and developed their talents, whether soft skills or hard skills. It is very necessary to be developed because to achieve the expected corporate or organizational goals.”

Inf8: “There is no special activity, we know, digging, or assessing the talent of human resources at the time of monitoring or training during the first 3 months earlier. But it is not guaranteed, because of the monitoring process it will only be known 10–20% of talent owned by human resources. Not yet overall. For the next potential excavation, we put him in his new 10–20% initial talent just as he has.”

4.5 Retain Talent

The last talent management practice is to retain talent. Once the organization identifies key positions that require talented human resources, then the organization has found the potential talent they are looking for, after the talent that has been acquired must be developed in order to align with the goals of the organization to be achieved, the last step is to retain talent. As we know, that the difficulty of maintaining potential employees is a problem experienced by many organizations in Indonesia. Therefore, it is important for us to know how to practice in maintaining potential employees in order to contribute to the organization and not to be taken by other organizations. Based on the results of the study, three informants said it was important for them to retain talent in their organizations.

Inf4: “Practice is more on how to retain talent. It will be more difficult than recruiting our way to maintain the talent of employees.”

Inf9: “The practice is more about retaining members’ talents.”

Inf11: “It does not matter if they want to work elsewhere, we are collective art, so if they think they cannot collectively money they have to work elsewhere, but still have to sacrifice a lot. providing money, time, and energy to create projects. It is precisely in our way that gives them freedom that makes them comfortable and endures here.”

Based on the results of research efforts to maintain the talent of employees in the organization in order to make them not run to other organizations, make them with not too pressed. Pressed necessary but not too forced, should also be approached in a personal and intensive, especially if it is very talented in the field of employees. In addition, we should give full confidence to the employees. Let them hone their own skills, but still be directed.

5 Conclusion and Future Research

The digital knowledge supply chain framework is expected to increase the connection of stakeholders in the creative industry, especially to standardize the quality of human resources. This is expected to make it easier for businesses to get information starting to get high-skill and certified human resources, places or skill grading institutions so they can create competitive advantages for the creative industry. The results of this study are expected to provide recommendations to related parties, especially in an effort to improve the quality of HR in creative industries that have an impact on improving product quality.

Result of initial observation in this study produce such information that talent management policies which will affect organizational performance in the creative economy are caused by five practices, namely the identification of important positions in the organization (pivotal position), procuring or employing talented employees (hiring of talent), identifying talent identification, and develop talents of employees (talent development), and retain talented employees to remain a member of the organization (talent retention).

Further research will be carried out to validate the framework design using mixed methods and triangulation approaches (quantitative and qualitative) and computer simulation. Data collection will be using a questionnaire survey approach and more in-depth interviews with creative industry stakeholders. Another in depth interviews are used to validate the findings of the findings obtained from the gap analysis survey. While the prototype will be designed, developed, validated and evaluated with a computer simulation approach using the Multi Agent System (MAS) method.

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