

Knowledge Collaboration Among Fashion Designers: An *A Priori* Conceptual Model

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Abstract: Whilst collaboration from the branding and marketing perspective for the fashion industry is well documented, little is known about the knowledge collaboration (KC) of fashion designers, and how information and communication technology (ICT) is involved within their Communities of Practice (CoPs). This paper proposes an *a priori* conceptual model to enable the examination of KC among fashion designers within their CoPs. It aims to interlink the concepts of KC, CoPs, and ICT to understand fashion designers in their social learning reality. In that regard, the *a priori* conceptual model addresses three broad research questions: 1) How do fashion designers collaborate? 2) How do they participate within their professional communities? And 3) Does ICT play a role? The concepts used in the *a priori* conceptual model will be interlinked with specific indicators extracted from past studies. Since past studies had not focused on this area of research before, future studies can benefit from the *a priori* conceptual model by applying it to examine KC within CoPs of fashion designers or other groups.

Keywords: Knowledge collaboration, Communities of practice, Fashion and design, Fashion designers, Information and communication technology, *A priori* conceptual model

1. Introduction

Collaboration is defined as a process in which different parties who see different aspects of a problem constructively explore the differences so as to seek solutions which may go beyond their own limited possibilities (Gray, 1989). It is a knowledge-based learning activity. Knowledge is part of mutual engagement through which participants refine and expand their experiences of practice (Wenger, 2009, Wenger, 2011b). Nonetheless, Faraj, Jarvenpaa and Majchrzak (2011) viewed knowledge collaboration (KC) as a process of sharing, transferring, accumulating, transforming, and co-creating knowledge, such that knowledge may be added to, recombined, modified, or integrated with the knowledge of others. In her review, Tessier (2020) identified at least 24 actions in the collaborative design process which may involve KC. They include “sharing knowledge,” “establishing shared design goals,” “working together, co-evolving, or co-elaborating,” “negotiating, arguing and making trade-offs or compromising,” “sharing expertise,” “reflecting,” “decision-making,” “producing a common design proposition,” “exploring and proposing ideas,” “searching information,” “defining constraints,” “communicating and listening to others,” “joint problem-solving,” “organizing,” “building consensus,” “clarifying task or context,” “reaching agreement,” “building a common language,” “commercialization,” “consulting others,” “responding to feedback,” and “performing with synergy.”

Fashion is a social phenomenon that can be seen as a system of interlocking institutions, organizations, groups, practices, individuals and even events (Kawamura, 2004). Over the years, fashion as an industry has accommodated well to the general idea of collaboration, to the extent that collaboration is seen as key to the design activity (Nguyen and Mougenot, 2022). Collaboration is a cooperative relationship between two or more companies, brands, or individuals; it is aimed at providing customers with significantly better outcomes, particularly when supported by the competitive advantage of differing collaborative parties on an equal basis (Chun and Niehm, 2010). Observations by Powell (1998) showed that enterprises within the innovation-driven fields are engaging in the learning race through collaborations. For instance, in design collaboration, product design involves collective and joint-efforts such that expertise, ideas, resources, and responsibilities are shared among all involved (Wang, Shen and Liu, 2017). Fashion retail executives also emphasized collaboration as an important strategy (Testa and Karpova, 2022), with the most common type of collaboration involving fashion brands and brands outside of fashion (Jang, 2006, Alexander *et al.*, 2016) and by fashion brands with retailers (Shen *et al.*, 2014). Retailers often capitalize on small fashion designers or independent designers outside their

organization for innovative products as they lack product creativity skills, but they excel at the commercialization process such as marketing, branding, production, and market access which small fashion designers are weak at (Lin, Piercy and Campbell, 2012). Brokers may also be involved in this innovation exchange (Lin, 2018). Despite fashion designers particularly independent fashion designers having a reputation for innovativeness they seem to be hindered by their position at the periphery of the fashion field and also by their focus on creativity rather than commerce (Rieple and Gornostaeva, 2014).

Collaboration is important in the fashion industry because the success of fashion design products relies heavily on two critical factors: 1) highly creative new products (design), and 2) successful commercialization (marketing, branding, production, and market access) (Calvo Dopico and Calvo Porral, 2012, Lin, Piercy and Campbell, 2012). Collaboration is also key if the goal is to maintain competitiveness for fashion enterprises (Andriani *et al.*, 2018). Calvo Dopico and Calvo Porral (2012) mentioned that fashion enterprises can compete on cost or differentiation, but products with high added values, require focus on variations such as distinctive designs produced by highly creative individuals. These highly creative individual are fashion designers whom are known to create significant innovative fashion products (Lin and Piercy, 2013).

Collaboration in the fashion industry is largely characterized by branding and marketing (Millsbaugh *et al.*, 2016) through terms such as co-branding, strategic alliance, brand alliance, co-marketing, brand mix, brand cooperation, joint brand strategy or brand expansion. While collaboration in the fashion industry has been examined from the branding and marketing perspective, little is known about the KC between fashion designers. KC as opposed to just collaboration such as branding and marketing collaboration in the fashion industry focuses on knowledge as a resource and learning as an activity between collaborative parties.

Since “community” is an important part of collaborative designs (Fritsch, 2008, Tessier and Zahedi, 2019, Tessier, 2020), fashion designers may form their own Communities of Practice (CoPs) to exchange views or ideas as a shared endeavor (Yu, 2009, Wenger, 2010). CoPs can be defined as groups of people with a shared concern, problem, or passion on a particular topic. Members deepen their knowledge and expertise in the shared area by interacting continuously with each other (Wenger, McDermott and Snyder, 2002). In this regard, CoPs are a social learning system (Wenger, 2010) which may utilise KC as a process for learning. This is embedded in a social activity that has context and culture of its own, where learning tends to occur in an unintentional way rather than through deliberate means (Lave and Wenger, 1991). While CoPs can enhance success of fashion designers, evidence highlighting this aspect of KC within CoPs is far in between (Faraj, Jarvenpaa and Majchrzak, 2011, Park and Park, 2016, Majchrzak, Jarvenpaa and Faraj, 2017, Randhawa *et al.*, 2017, Wei *et al.*, 2018, Cheng and Chang, 2020, Bahar, Bahri and Zakaria, 2022). Cheng and Chang (2020) also notes that the field of KC is only in its initial development stage. Thus, evidence showing how fashion designers undertake KC within their CoPs is still somewhat lacking.

The importance of CoPs to fashion designers should however not be underplayed. Within CoPs, fashion designers have the opportunity to know what others in their community are doing, and what their aspirations, ideas, competencies, and skills are. While the learning of tacit knowledge cannot be codified, written down, or expressed in precise words or numbers (Anklam, 2002), studies suggest that the know-how and experience occur informally within the fashion designers’ CoPs (Duguid, 2005, Jurasaitė-Harbison and Rex, 2010). CoPs increases the probability of KC, to the extent that fashion designers could even develop projects together (Bettiol and Sedita, 2011). As members of a CoP, fashion designers engage in mutual sense-making on a continuous basis, thereby deepening their shared knowledge with regards to their enterprise and ways of doing things. This encompass their diverse views, values, power relations, communication, and others (Eckert, 2006). Undeniably, these CoPs offer fashion designers a platform for KC such that fashion designers can observe and model after each other (Li *et al.*, 2009a). It also enables fashion designers to make better sense of their own personal practice of fashion designing.

The *a priori* conceptual model proposed by this paper can serve as a network or a nomological net, offering a “plane” of interlinked concepts that can highlight understanding of a phenomenon (Cronbach and Meehl, 1955, Jabareen, 2009). It is an abstraction or mental concept of the way that can be chosen to perceived a specific part, function, property or aspect of social reality and is fundamentally theoretical in nature (Jonker and Pennink, 2009). It may also build on theory or theories by offering propositions regarding previously untested relationships (Gilson and Goldberg, 2015). Since KC within CoPs of fashion designers have not been explored before, this paper offers an *a priori* conceptual model as an exploratory approach for qualitative research involving KC in the context of CoPs of fashion designers. The *a priori* conceptual model helps highlight gaps in the literature which are the interlinks between KC of fashion designers, CoPs particularly extra-organizational

CoPs of fashion designers, the value of such CoPs to fashion designers and how information and communication technology (ICT) interlinks with KC within CoPs of fashion designers. ICT may support KC within CoPs of fashion designers by way of its use and impact.

Indicators are proposed for each concept used in the *a priori* conceptual model. The concepts with proposed indicators include KC, CoPs and their value, and ICT use and impact. As distinguished by Jabareen (2009), this paper presents a model and not a framework as it provides indicators (or variable or factors) for the focal phenomenon. It is important to understand however that the conceptual interrelationships and the indicators in the proposed *a priori* conceptual model do not provide a causal, predictive, or analytical setting. It is also not deterministic. Causal structures are indeed very complex in the social sciences. Instead, it provides a starting point for an interpretive approach towards understanding, and in explaining a phenomenon in social reality (Jabareen, 2009, Jaakkola, 2020). It is a means to communicate that social reality. Albeit only a mere slice of that social reality. The *a priori* conceptual model as an outcome of this paper could be used by future researchers in further theorizing or empirically elucidating KC within CoPs along with the involvement of ICT for fashion designers, as well as in other groups.

2. Literature Review

2.1 KC Models

D'Amour *et al.* (2005) reviewed concepts related to collaboration. They mentioned that the collaboration process was a complex, voluntary and dynamic process which involved several skills, incurring changes of paradigm from the logic of collaboration rather than the logic of competition. Thomson, Perry and Miller (2007) defined collaboration as a process where autonomous or semi-autonomous actors interact, whether through formal or informal negotiations. They jointly create rules and structures to govern their relationships, and they develop ways to act or decide on the issues that brought them together. This involves shared norms and mutually beneficial interactions.

There are several collaboration models. They are based on various stages set within a continuum, with variations in elaborations. These models generally focus on the three main steps which are cooperation and coordination which result in collaboration. They are more commonly used by sectors such as public administration, healthcare, and education/online learning (Gray, 1989, Peterson, 1991, Gitlin, Lyons and Kolodner, 1994, Bergstrom *et al.*, 1995, Cigler, 1999, Bailey and Koney, 2000, Himmelman, 2002, Gajda, 2004, Murphy, 2004, Frey *et al.*, 2006, Thomson and Perry, 2006, Horwath and Morrison, 2007, Thomson, Perry and Miller, 2007, Kilbride *et al.*, 2011, McNamara, 2012, Quinn *et al.*, 2016, Roberts, Van Wyk and Dhanpat, 2017, Schaefer *et al.*, 2019). These associated models can also be used in multidisciplinary settings.

KC represents a more specific type of collaboration. It focuses on learning which is intentional in nature. It is directed towards delivering a product (knowledge, service or technology) (Du Chatenier *et al.*, 2009). There are overlaps in the steps with regards to the general continuum of collaboration among models. Frey *et al.* (2006), for example, proposed a seven step model starting with co-existing, followed with communication, cooperation, coordination, coalition, collaboration and finally coadunation (joining together or uniting to become one). Du Chatenier *et al.* (2009) proposed a four-step model of collaborative knowledge which looks at 1) externalizing and sharing, 2) interpreting and analyzing, 3) negotiating and revising, and 4) combining and creating. The said model was developed based on nine relevant KC models. Bettoni and Obeng (2020) created a knowledge-based collaboration and community-oriented collaboration model called "New Collaboration." It comprised seven steps including, 1) physical space (either real or virtual), 2) social presence and leading presence (which is the design, facilitation, and support of the cognitive and social presence), 3) artefacts-mediated interaction, 4) co-construction of knowledge (first of the two components of cognitive presence), 5) negotiation of meaning (second of the two components of cognitive presence), 6) knowledge sharing, and finally, 7) "New Collaboration" where collaborators construct and maintain the "Joint Knowledge Base" or JKB (a shared knowledge structure where each team member constructs and maintains in his or her mind from knowledge sharing during collaboration and for which each collaborator contributes to in relation to the task at hand via conversations, physical actions and other interactions involving a combination of words and actions). Given the various models of collaboration and KC available, there is perhaps a need to clarify or harmonize KC in terms of its activities into a general scheme.

2.2 Value of KC

Value from collaboration and thus KC is rooted in the resource based view of the firm which states that firms develop a competitive advantage by creating, storing, and applying knowledge (Grant and Baden-Fuller, 1995).

Collaboration is essentially part of knowledge management. Collaboration in firms enables members to exchange and share their knowledge with each other. This belief is also rooted in the social exchange theory which states that individuals will try to maximize benefits whilst minimizing the cost of participation, thereby maintaining an equitable exchange (Gitlin, Lyons and Kolodner, 1994). Collaboration allows the members to reconstruct shared meanings into greater meanings (Peltonen and Lämsä, 2004). There is a preponderance of studies focused on intra-firm and inter-firm collaborations which mentioned that collaboration could generate value for organizations (Inkpen, 1996, Powell, 1998, Hardy, Phillips and Lawrence, 2003, Cricelli and Grimaldi, 2010, Franssila *et al.*, 2012, Ashok, Narula and Martinez-Noya, 2016, Lin, 2019, Milagres and Burcharth, 2019, Jian *et al.*, 2020). Collaboration is thus generally viewed as a value generating proposition for organizations in the literature.

2.3 KC in Communities

Anklam (2002) noted that the first stage of knowledge management focuses on the use of communication and publishing technologies to connect people to the information they need. The second stage of knowledge management involves the exploration of methods of capturing tacit knowledge and enabling people to find each other. It deals with themes such as organizational best practices, knowledge networks, and expertise locators. The third stage of knowledge management is described as the stage of collaboration (co-laboring, sharing, and co-creating together) involving KC and occurs in communities (in various forms i.e., CoPs, communities of learning, communities of interest and communities of purpose). This appears to be consistent with recent studies (Ben Yahia, Bellamine and Ben Ghezala, 2012, Handzic, Bratianu and Bolisani, 2021, Bahar, Bahri and Zakaria, 2022). However, studies focusing on inter-firm and intra-firm collaborations tend to only deal with the first and second stage of knowledge management as described by Anklam (2002).

The third stage of knowledge management, involving KC in communities is a new concept to most organizations even though the idea has been around for a while. Research work stressing on KC in communities has also tended to be geared towards online communities (Johnson, 2001, Murphy, 2004, Cress and Kimmerle, 2008, Gunawardena *et al.*, 2009, Oguz, Marsh and Landis, 2010, Faraj, Jarvenpaa and Majchrzak, 2011, Le Dinh *et al.*, 2013, Park and Park, 2016, Randhawa *et al.*, 2017). There is good reason for this as modern technology has enabled communities to collaborate fully online through convenient devices. The advent of social media networking such as wikis and blogs has also encouraged community dialogs and conversations online (Gunawardena *et al.*, 2009). This activity allows past and present experiences to be utilized as a learning and collaborative effort. In that regard, more knowledge is shared, stored, and captured, leading to the creation of new ideas.

Murphy (2004)'s collaboration model was developed for the online community, but since then, the model has been modified (Schaefer *et al.*, 2019, Schaefer, Fabian and Kopp, 2020). The modified version is represented by a continuum of eight steps. First, participants seek assistance from each other (technical assistance). Then they present themselves to others (social presence). Next, they externalize their points of view (articulating individual perspectives). They also potentially restructure their ideas (accommodating or reflecting the perspectives and meanings). Meantime, they could create shared meanings (co-constructing shared perspectives and meanings) whilst also applying the knowledge (taking to the outside), and then setting goals (building shared goals). Finally, they realize shared artefacts (producing shared artefacts).

Murphy (2004)'s modified collaboration model can be described as analogous to other selected models produced by Frey *et al.* (2006), Du Chatenier *et al.* (2009), Faraj, Jarvenpaa and Majchrzak (2011) and Bettoni and Obeng (2020). For example Faraj, Jarvenpaa and Majchrzak (2011) considered KC as activities which can be viewed with similarities to Murphy (2004)'s modified collaboration model such as: 1) to Share (analogous to providing technical assistance, social presence and articulating individual perspectives), 2) to Transfer, (analogous to accommodating or reflecting the perspectives of others), 3) to Accumulate and to Transform (analogous to co-constructing shared perspectives and meanings), and 4) to Co-create (taking to the outside such as applying the knowledge, building shared goals and producing shared artefacts). However, Faraj, Jarvenpaa and Majchrzak (2011) did not indicate social presence like that in the modified Murphy (2004)'s collaboration model as an activity in KC. Social presence however can be taken to be part of the "to Share" KC activity in Faraj, Jarvenpaa and Majchrzak (2011)'s KC model. Table 1 illustrates various selected models from various authors and their similarities and overlaps with regards to KC activities. Faraj, Jarvenpaa and Majchrzak (2011)'s KC model arguably provides the most succinct and parsimonious general scheme for KC activities when similarities of KC activities are compared between the selected models.

Table 1: Similarities of KC Activities

Authors	Frey <i>et al.</i> (2006)	Du Chatenier <i>et al.</i> (2009)	Faraj, Jarvenpaa and Majchrzak (2011)	Murphy (2004), Schaefer <i>et al.</i> (2019), Schaefer, Fabian and Kopp (2020)	Bettoni and Obeng (2020)
Knowledge Collaboration (KC) Activities	<ul style="list-style-type: none"> Co-exist Communication 	<ul style="list-style-type: none"> Externalizing and sharing 	<ul style="list-style-type: none"> Share 	<ul style="list-style-type: none"> Providing technical assistance Social presence Articulating individual perspectives 	<ul style="list-style-type: none"> Physical space (<i>real or virtual</i>) Social presence Leading presence (<i>design, facilitation, and support of the cognitive and social presence</i>) Artefacts-mediated interaction
	<ul style="list-style-type: none"> Cooperation Coordination 		<ul style="list-style-type: none"> Transfer 	<ul style="list-style-type: none"> Accommodating or reflecting the perspectives of others 	
	<ul style="list-style-type: none"> Coalition 	<ul style="list-style-type: none"> Interpreting and analysing Negotiating and revising 	<ul style="list-style-type: none"> Accumulate Transform 	<ul style="list-style-type: none"> Co-constructing shared perspectives and meanings 	<ul style="list-style-type: none"> Co-construction of knowledge (<i>cognitive presence</i>)
	<ul style="list-style-type: none"> Collaboration Coadunation (<i>joining together or uniting to become one</i>) 	<ul style="list-style-type: none"> Combining and creating 	<ul style="list-style-type: none"> Co-create 	<ul style="list-style-type: none"> Taking to the outside (<i>applying the knowledge</i>) Building shared goals Producing shared artefacts 	<ul style="list-style-type: none"> "New Collaboration" by means of knowledge sharing (<i>where collaborators construct and maintain the JKB</i>)

2.4 KC in Fashion and Design

In fashion and design, literature emphasizing on knowledge management (Li, 2005, Li, 2006, Andriani *et al.*, 2019), and KC or KC within CoPs specifically, is far in between. Among these, Maciver and Malins (2016) discussed the challenges of the collaborative design process. This centered around the gathering of insights, the generating of ideas, and the facilitation of communications. Ideas are generated by KC from the insights gathered in CoPs. The communication process in the gathering of insights and the generation of ideas is in part facilitated by ICT. This is important for fashion designers who are pursuing creative designs and distinguished brands (Lee, Ahn and Kim, 2018). In their study, Andriani *et al.* (2019) examined how knowledge management was linked to organizational growth in the context of creative industries in Indonesia. Collaboration was found to be the pinnacle of organizational growth. Silva *et al.* (2018) examined the departments, processes, and knowledge management elements that influenced the purchasing department in a fashion and clothing company. Acharya *et al.* (2018) used big data on knowledge co-creation from four fashion retailing organizations to understand how knowledge co-creation could be utilized for better decision making. Ashton (2006) reviewed the fashion networks of the knitting industry of Nottingham, and found that intangibles such as values, norms, and tacit knowledge were exchanged in social relationships. This implies that relationships, instead of competition, trigger collaboration. Bandinelli, d'Avolio and Rinaldi (2014) also examined collaborative networks of Italian suppliers in the fashion industry whereas Azuma (2002) detailed the Korean-Japanese collaborations in the casual fashion sector. Interestingly, Dell'era, Acur and Verganti (2009) examined the portfolio of designers of different nationalities and how they impacted the innovative performance of Italian furniture companies. More recently, Suib, Engelen and Crul (2020) highlighted that craftspeople and designers can collaborate and share knowledge with effectiveness when focus is given to their domain knowledge. This showed a research gap because in the context of fashion and design, little is known specifically about KC in its entirety as a process with its various activities.

2.5 Conceptualizing CoPs

The concept of the CoPs was introduced and popularized by Etienne Wenger in Lave and Wenger (1991), Wenger (1998a), and Wenger, McDermott and Snyder (2002). It was derived from the social learning theory (Vygotsky, 1962, Bandura, 1977, Vygotsky, 1978, Lave and Wenger, 1991), in line with the social constructivist view of learning. It reflects the non-canonical nature of learning (Brown and Duguid, 1991). It is not a theory of social learning in itself, but rather a broad conceptualization of how learning occurs within a social environment (Li *et al.*, 2009b, Wenger, 2010, Farnsworth, Kleanthous and Wenger-Trayner, 2016). In order to learn, one has to belong to something, and “community” is what that “something” is (Hodkinson, 2004). The concept of the CoPs can be classified as an “instrumental” theory which are any analytical tools, models or processes that theorizes how work is done or how outcomes are achieved (Davison, Martinsons and Ou, 2012). It can also be viewed from a purely theoretical sense (McKellar, 2019) or as a “focal” theory (Davison, Martinsons and Ou, 2012) which is broader and provides for the intellectual basis for social learning. Wenger (2010) however observed that the concept of CoPs may not be adequate to explain other dimensions of learning, such as the biological, psychological, cognitive as well as historical and political elements of learning. Thus, Wenger (2010) recommended the plug-and-play approach by combining the concept of CoPs with other concepts or theories so as to explain other salient dimensions. In this paper the concept of CoPs was combined with KC and ICT support by its use and impact.

The concept of CoPs initially centered on the interactions between novices/apprentices and experts, and the process by which newcomers create a professional identity. Following this, the focus shifted to personal growth and the trajectory of individuals’ participation within a group (i.e., peripheral versus core participation). It was then applied as a managerial tool for improving an organization’s competitiveness (Li *et al.*, 2009a). The concept continues to evolve as it allows for diversity (Li *et al.*, 2009a). This diversity can be challenging when trying to take full advantage of the benefits that CoPs offer, particularly when considering the tension between satisfying individuals’ needs for personal growth versus the empowerment of organizations. Politics of management and organizations also play a part in CoPs (Contu and Willmott, 2003, Contu, 2014). This suggests that CoPs can also be problematic (Yanow, 2004, Hong and Fiona, 2009, Macpherson and Clark, 2009, Mørk *et al.*, 2010, Heizmann, 2011, Rennstam and Karreman, 2020) as CoPs can be understood differently based on the lens it is viewed from (Nicolini *et al.*, 2022).

As a start, CoPs are naturally self-organizing, self-evolving, and informal. However, they can be intentionally cultivated and managed as a knowledge management tool (Wenger and Snyder, 2000, Wenger, McDermott and Snyder, 2002, Loyarte and Rivera, 2010). It is not sufficient to just set-up CoPs because developing an understanding of the nature of collaborative learning, i.e. the process of “thinking together,” is also critical (Pyrko, Dörfler and Eden, 2017). Wenger, McDermott and Snyder (2002) noted that CoPs cannot be cultivated as how traditional organizations are structured. Amin and Roberts (2008) observed that cultivating CoPs is important because they support a specific form of learning and knowing or knowing in action for members. McDermott (1999a) suggests that CoPs can reduce the downsides of teams in organizations. Of course, CoPs are also differentiated based on their activities, such as craft or task based, professional, epistemic, or creative, and virtual. Each of these categories have different forms of knowledge, social interactions, impact to innovation and organizational dynamics. Therefore, when it comes to learning and practice, CoPs also have wider and looser forms, such as landscapes of practice, collectivities of practice, and networks of practice (Brown and Duguid, 1991, McDermott, 1999b, Lindkvist, 2005, Gherardi, 2006, Gherardi, 2009, Beane, 2019, Pyrko, Dörfler and Eden, 2019).

Not everything termed as a community is a Community of Practice (CoP) however. A neighborhood, for instance, is a community, but not a CoP because it lacks the three characteristics of a CoP: 1) domain or mutual engagement (identity defined by a shared domain of interest), 2) community or joint enterprise (engage in joint activities and discussions, help each other, share information and build relationships that enable them to learn from each other), and 3) practice or shared repertoire (develop a shared repertoire of resources: experiences, stories, tools, ways of addressing recurring problem – a shared practice) (Wenger, 1998a, Wenger, 1998b, Wenger, 2011a). CoPs are also not permanent because they go through five stages of evolutionary development - identification, coalescence, maturation, stewardship and dissolution, and transformation (Wenger, McDermott and Snyder, 2002). In this regard, a neighborhood does not qualify.

2.6 Value of CoPs

Although it is accepted that knowledge is a key competitive advantage in business, an understanding in how to create and leverage this in practice, is still lacking (Wenger, 1998a). CoPs enable particular organizations to know

and to learn (Wenger, 1998a) and can become part of an organization's knowledge management strategy (Venkatraman and Venkatraman, 2018). They are important to those organizations who recognize knowledge as an asset (Peltonen and Lämsä, 2004). CoPs serve as nodes for the exchange and interpretation of information, for knowledge to be retained in "living" ways, and for the stewarding of competencies so that organizations can acquire a cutting edge. CoPs are also homes for various members to showcase their different identities and where attention needs to be focused (Peltonen and Lämsä, 2004). CoPs are groups of people bound together informally by shared expertise and passion. They act as a joint enterprise for the various professions, such as engineers engaged in deep-water drilling, consultants specializing in strategic marketing, or frontline managers of large commercial banks in-charge of check processing. As a platform, CoPs can drive strategy, generate new lines of business, solve problems, promote best practices, develop professional skills, and help companies to recruit and retain talent (Wenger and Snyder, 2000, Cox, 2005).

Schwen and Hara (2003) stated that the concept of the CoPs is compelling. It can be used to understand the complicated pattern of workplace learning, and the idea of identity formation. Wenger (1998a) and Wenger, McDermott and Snyder (2002) argued that CoPs are everywhere, developed by people around things that mattered to them. Some CoPs carry a name, others do not, but most of the members are familiar with the experience of belonging to a CoP since almost everyone belongs to a number of these CoPs. Some may be core members while others are peripheral members (Wenger, McDermott and Snyder, 2002). The concept of the CoPs has been widely used in the educational, business and medical disciplines such as seen in Hodges (1998), Holmes and Meyerhoff (1999), Wenger, McDermott and Snyder (2002), Printy (2007), Gherardi (2009), Le May (2009), Li *et al.* (2009b), Shih-Hsien (2009), Jurasaitė-Harbison and Rex (2010), Mørk *et al.* (2010), Barnett *et al.* (2012), McDonald and Cater-Steel (2017a), McDonald and Cater-Steel (2017b), Struminger *et al.* (2017), Yarris *et al.* (2019), Shaw *et al.* (2022) and Guénette *et al.* (2022) but limited in fashion and design.

To ascertain if CoPs are effective and generate value, evaluation models are required. There are at least 17 evaluation models for CoPs that has been identified (McKellar *et al.*, 2014, McKellar *et al.*, 2020). Among them are by Verburg and Andriessen (2006), Wenger, Trayner and De Laat (2011), Wenger-Trayner *et al.* (2017) and McKellar *et al.* (2020). Having said that, according to McKellar (2019) the evaluation of CoPs in term of the value it creates is limited in the literature. This is especially so with regards to extra-organizational CoPs. This has resulted in limited evidence supporting the effectiveness and how value is generated in CoPs.

2.7 CoPs of Fashion Designers

Fritsch (2008) noted that the community in the creative industry of fashion and design can be considered a CoP based on the elements of ideas, process, experience, innovation, and collaboration. This community has an important role to play in collaborative design (Tessier and Zahedi, 2019, Tessier, 2020). While CoPs are important for fashion designers, it is undeniable that literature stressing on fashion designers in CoPs is less abundant. This is especially so when one considers the literature on extra-organizational CoPs and evaluating such extra-organizational CoPs (McKellar, 2019). Thus, there is a need to examine how the fashion and design industry collaborates within CoPs. An insight into this area would help to broaden the fashion and design field because it could enhance the exchange of information among the members, thereby enabling the retention of knowledge in "living" ways unlike in just databases or manuals while providing homes for their identities (Wenger, 1998a).

Studies state that CoPs create spaces for learning and collaboration, thereby adding value, developing networks, and fostering communication among members who excel in learning and innovation (Dougherty, 2001, Swan, Scarbrough and Robertson, 2002, Brown, 2004, Sánchez-Cardona, Sánchez-Lugo and Velez-González, 2012, Kirkman *et al.*, 2013, Pattinson and Preece, 2014, Pattinson, Preece and Dawson, 2016). Some notable literature on fashion and design included the examination of creative industry projects in Italy (Bettiol and Sedita, 2011) where CoPs support interactions that go beyond knowledge sharing. This had led the creative professionals who shared a common identity and language, to interact and collaborate their expertise and experiences. Creative professionals also can know what other professionals are doing. This knowledge can increase the probability of collaborations. CoPs are known to exist in the purchasing department of the fashion and clothing industry (Silva *et al.*, 2018) and can also take the form of an organization aimed at assisting upcoming designers to launch their own labels through networking knowledge resources (Azuma, 2003). Poggenpohl (2015) proposed that design research take on a broader, less insular, and more holistic form when examining CoPs.

2.8 ICT and Fashion Designers

The fashion industry is increasingly being influenced by the advent of ICT which can be classified into three broad categories: 1) communications and marketing, 2) design and production, and 3) culture and society (Noris *et al.*,

2020, Nobile *et al.*, 2021). There are four important value creation approaches in the design and production category which focuses on design collaboration, organizational process, information, and electronic coordination. Of these elements, electronic coordination is the critical bridge for connecting organizations, processes, and information (Wang, Shen and Liu, 2017). This means that ICT is important in collaboration (Hossain and Wigand, 2004) especially, design collaboration (Wang, Shen and Liu, 2017) because it facilitates communications, making it easier for the diverse groups to get together, and to share insights and ideas (Maciver and Malins, 2016). ICT puts emphasis on certain processes such as presence, visibility, rhythm, variety of interactions, efficiency of involvement, and connection to the world (Peltonen and Lämsä, 2004). Nonetheless, the process can also have many challenges (Karsten, 1999, McCormick, 2004, Li, 2006) since it could affect members' behaviors. One of the difficulties faced is in the capturing and sharing tacit knowledge unless it is first converted to explicit and communicable knowledge (Li, 2006). This could defeat the purpose of using ICT to enhance KC within CoPs.

Therefore, as a support or facilitator for KC within CoPs, ICT has certain advantages and limitations (Kling and Courtright, 2003, Correia, Paulos and Mesquita, 2010, Sims, 2018). Blogs, for example, can enhance collaboration in CoPs (Shih-Hsien, 2009) because it promotes active audience relationships by fostering participation and reciprocity (Swale, 2017). Wikis, on the other hand, offers new opportunities for learning and collaborative knowledge building (Cress and Kimmerle, 2008). Social networks are particularly beneficial for supporting collaborations and communities (Van Noorden, 2014). Thus, it is imperative that the use of ICT by fashion designers be examined together with KC within CoPs. The fact is that CoPs have become virtual networks for many industries, where knowledge is shared by using all opportunities offered by ICT (Dubé, Bourhis and Jacob, 2005, Constantin, 2015).

Unlike traditional face-to-face interactions which require a tangible platform to meet and interact, thereby taking up time and space, virtual interactions and collaborations only require modern devices. Meetings can occur almost anywhere. In this regard, members of any industry should be encouraged to utilize all opportunities offered by ICT (Dubé, Bourhis and Jacob, 2005, Casalini, Janowski and Estevez, 2006, Dubé, Bourhis and Jacob, 2006, Gunawardena *et al.*, 2009, Hara, Shachaf and Stoerger, 2009, Oguz, Marsh and Landis, 2010, Barnett *et al.*, 2012, Constantin, 2015, Struminger *et al.*, 2017, Ogbamichael and Warden, 2018, Yarris *et al.*, 2019, Haas *et al.*, 2020, Embrett *et al.*, 2021, Ghamrawi, 2022, Guénette *et al.*, 2022, Shaw *et al.*, 2022). To date, online platforms and communities are becoming important for fashion designers to generate new insights and ideas besides facilitating communications in their collaborative process (Maciver and Malins, 2016).

ICT can impact KC and CoPs by way of social presence. Social presence is important for social learning (Tu, 2000). It is also part of virtual or online collaboration and creates group cohesion whilst enriching interaction (Murphy, 2004, Schaefer *et al.*, 2019, Schaefer, Fabian and Kopp, 2020). Social presence is therefore relevant for understanding how ICT impacts KC that involves virtual or online CoPs. Social presence is the degree of salience involving two communicators using a communication media. It explains the effects a communication medium has on the way people communicate (Short, Williams and Christie, 1976). Social presence can also be seen as the degree to which participants in a collaboration interact and create awareness of each other's presence as they begin to relate as a group (Murphy, 2004). This is when they are able to project or share their characteristics onto the group by presenting themselves as "real people" to others by mainly expressing emotions via an artefacts-mediated interaction such as in a computer-based environment using ICT (Bettoni and Obeng, 2020). There is however no short of ideas on what precisely social presence is in the literature as it is still widely debated with many definitions (Lowenthal, 2009, Kreijns, Xu and Weidlich, 2021).

Three categories of social presence indicators were presented by Rourke *et al.* (2001). They include: 1) affective responses using emoticons, for example, to represent personal expressions of emotions, feelings, beliefs, and values (Gunawardena and Zittle, 1997, Swan and Shih, 2005), 2) interactive responses, for instance, agreement/disagreement, approval, referencing previous messages and so on, evidencing attendance (Swan and Shih, 2005) followed by 3) cohesive responses which involve greetings, salutations, and group or personal references that help to build sustained group commitment (Swan and Shih, 2005). Kim (2011) determined four factors for social presence which are mutual attention and support (a broad concept as an extension of being attentive to each other), affective connectedness (similar to affective responses), sense of community (similar to cohesive responses) and open communications (similar to interactive responses). Mutual attention and support could be integrated with interactive responses or open communications as it is a broad concept related to attentiveness as acknowledged by Kim (2011). Privacy is also a facet of social presence (Tu, 2002b, Tu, 2002c, Tu and Mclsaac, 2002). It is important when trying to understand how KC within CoPs works in addition to the

three categories of social presence. A reduced level in privacy or perception of privacy could lead to reduced social presence in online mediums (Tu, 2001, Tu, 2002a).

3. Methodology

This paper is premised on three broad research questions: -

RQ1. How do fashion designers collaborate?

RQ2. How do they participate within their professional communities?

RQ3. Does ICT play a role?

Conceptual framework analysis proposed by Jabareen (2009) was adapted along with utilizing an integrative literature review (Torraco, 2005, Snyder, 2019) and guidance on constructing conceptual models by Jonker and Pennink (2009). This was in order to analyze the concepts related to the three broad research questions. Conceptual framework analysis is practical when exploring a phenomenon linked to multidisciplinary bodies of knowledge (Jabareen, 2009). Integrative literature review allows for the overview of the knowledge base to be known and also the generation of initial or preliminary new conceptualization and synthesis from a review of relevant literature based on the broad research questions. Selected concepts were then combined to an *a priori* conceptual model which expands the theoretical foundation of the areas related to the broad research questions (Snyder, 2019). As Yadav (2010) noted, the creative scope for conceptual papers can remain relatively unfettered by data-related limitations since the focus is on theoretical development, and not theory testing. In this regard, this present paper directs attention to the conceptual interrelationships which have not been explored previously, that is, KC of fashion designers within their CoPs, particularly extra-organizational CoPs, and the use and impact of ICT for KC within CoPs.

Literature search to identify relevant papers was made using selected web databases - Clarivate's Web of Science, Elsevier's Scopus, and Google Scholar. This process helped to establish an understanding of the multidisciplinary standpoints. A comprehensive group of key search terms were used to ensure identification of literature meeting the aim of this study; terms included - "Fashion Designer," "Fashion AND Collaboration," "Fashion AND Innovation," "Collaboration," "Collaboration Models," "Collaborative Knowledge," OR "Knowledge Collaboration," and "Communities of Practice" OR "Community of Practice" within article titles, abstracts, and keywords until year 2022. Only articles in the English language were considered. The literature was then manually screened and selected iteratively for the contents which may demonstrate some clues towards answering any one of the three broad research questions formulated. The aim was not to cover all articles ever published on the topic but rather to combine perspectives and insights from the different areas of interest (Snyder, 2019) which are KC, CoPs and ICT based on the broad research questions. A total of 478 sources were found to be relevant for further review.

Extensive reading and categorization of concepts were then undertaken. Relevant selected concepts were deconstructed and categorized to identify their main attributes which were traced to their indicators. These were mapped with their supporting sources. Concepts and their indicators which were similar were then integrated or selected based on what best represents the concept and indicator. Concepts that were redundant were removed. The aim was for parsimony, that is to present the least number of concepts and indicators which would best describe the phenomenon being examined. A concept map was developed showing the relationships between the concepts including cross connections among concepts, and their manifestations (Eppler, 2006) and this serves as a graphical tool, visual pathway, or schematic device for organizing and representing those concepts (Novak and Gowin, 1984, Novak, 1998, Novak and Cañas, 2008). Figure 1 shows the outcome of this process and was developed using IHMC CmapTools version 6.04 (IHMC, 2019).

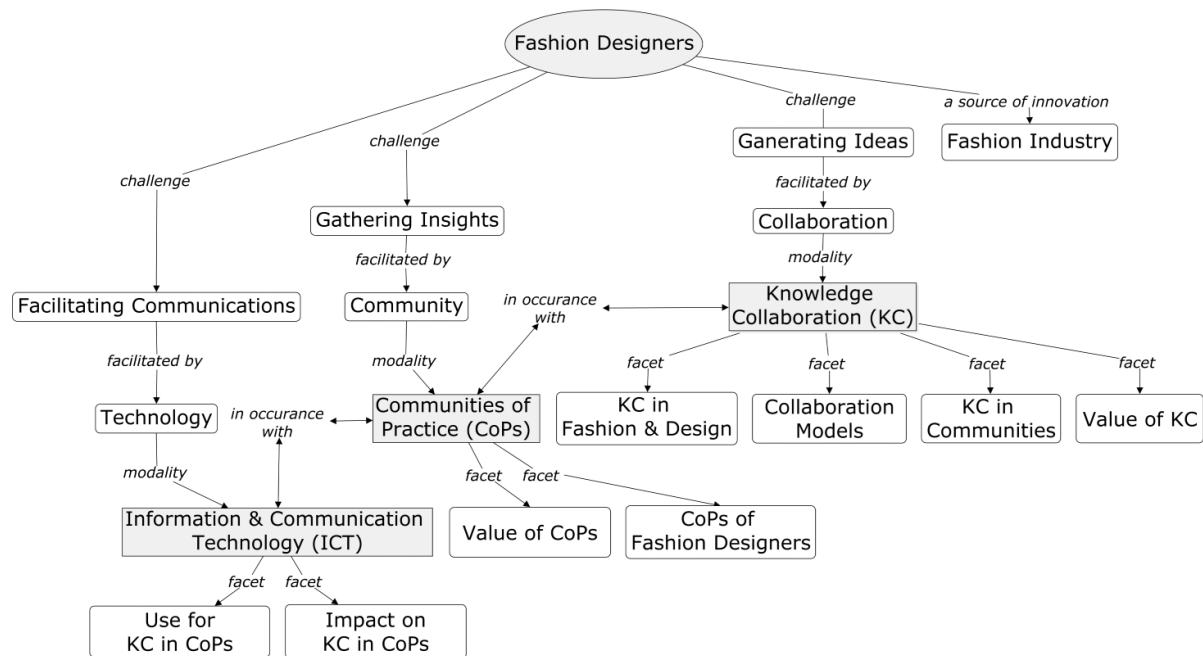


Figure 1: Concept Map

Under KC, the concepts of “Collaboration,” “Collaboration of Knowledge,” and “Knowledge Collaboration” were integrated. Their indicators were KC activities, mapped and integrated together into terms adopted from the literature which best described similar indicators. The mapping can be seen in Table 1. For CoPs, the concepts and indicators as proposed by seminal authors were used. In terms of ICT, literature showed some variations in concepts and indicators, but the iterative process consisting of synthesis, resynthesis, and adaptation led to the identification of concepts and indicators that would enable the exploration of the phenomenon of ICT use and its impact on KC within CoPs of fashion designers. The finalized concepts and their respective indicators were then interlinked into the *a priori* conceptual model. Therefore, the *a priori* conceptual model, whether with or without propositions depicting (representing or describing but not explaining) the abstract concepts, events, objects, and processes (Meredith, 1993, Eppler, 2006) was derived from the combination of past studies. A total of 29 sources were selected to support the *a priori* conceptual model. The exploratory research propositions were then described based on the *a priori* conceptual model to direct attention for future research. These propositions will enable the validation and rethinking of the *a priori* conceptual model when empirically examining the focal phenomenon.

4. A Priori Conceptual Model

The proposed *a priori* conceptual model which posits the interrelationships between KC, CoPs and ICT was developed within the theory of CoPs. CoPs acted as an “instrumental” theory (Davison, Martinsons and Ou, 2012) that guided the model. KC was proposed to occur within CoPs, and its indicators were guided by insights from Murphy (2004), Frey *et al.* (2006), Du Chatenier *et al.* (2009), Faraj, Jarvenpaa and Majchrzak (2011), Majchrzak, Jarvenpaa and Faraj (2017), Schaefer *et al.* (2019), Bettoni and Obeng (2020) and Schaefer, Fabian and Kopp (2020). Indicators noted by Faraj, Jarvenpaa and Majchrzak (2011) which are the process activities of KC, parsimoniously represented the concept of KC.

The indicators for the presence of CoPs, were adopted from Wenger (1998a), Wenger (1998b), and Wenger (2011a) with Wenger (1998b) being the primary source for understanding. The value creation framework and evaluation models focusing on extra-organizational CoPs were guided by Verbarg and Andriessen (2006), Wenger, Trayner and De Laat (2011), McKellar *et al.* (2014), Wenger-Trayner *et al.* (2017), McKellar (2019) and McKellar *et al.* (2020). The evaluation model with varying levels of value and differing types of values as proposed by McKellar *et al.* (2020) was used to represent the concept of value when participating in extra-organizational CoPs.

The understanding of ICT use which supported KC within CoPs was primarily obtained from Gunawardena *et al.* (2009), Oguz, Marsh and Landis (2010), Maciver and Malins (2016), Noris *et al.* (2020), Nobile *et al.* (2021). The discussion by Oguz, Marsh and Landis (2010) was key to begin linking ICT use for KC within CoPs. The indicators

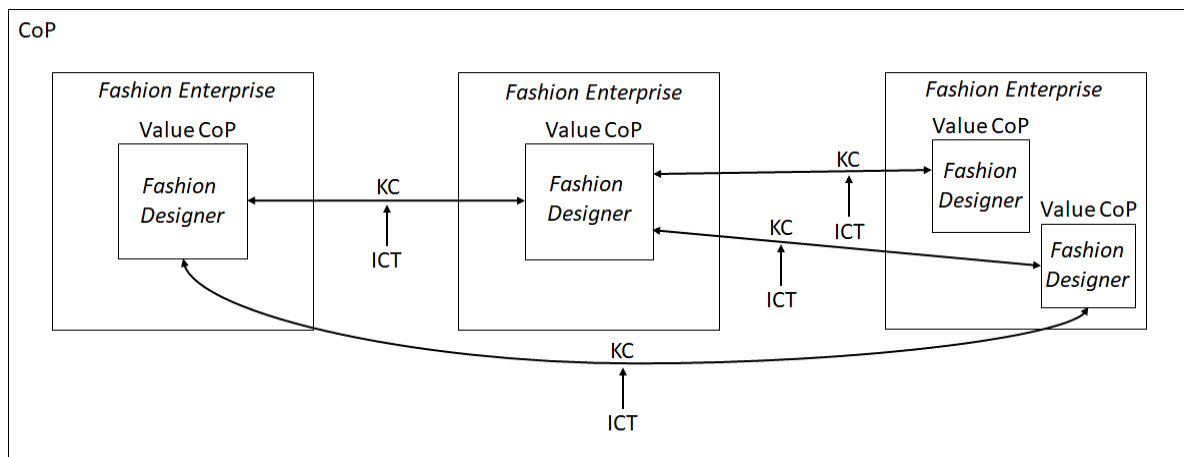
for ICT which impacted (social presence) KC within CoPs were guided by Rourke *et al.* (2001), Tu (2002a), Tu (2002b), Tu (2002c), Murphy (2004), Swan and Shih (2005), Kim (2011), Schaefer *et al.* (2019), Schaefer, Fabian and Kopp (2020), and Kreijns, Xu and Weidlich (2021). To this end work by Rourke *et al.* (2001), Tu (2002b) and Kim (2011) was particularly elucidating for the identification of the indicators of ICT impact. Table 2 summarizes the *a priori* conceptual model and its concepts and indicators. It also provides proposed operational definitions for each of the indicators followed by the selected supporting sources used for understanding the concepts and indicators (with key supporting sources underlined and highlighted in bold).

Table 2: A Priori Conceptual Model Indicators and The Selected Supporting Sources

Code	Concepts	Indicators	Proposed Operational Definitions	Selected Supporting Sources
KC	Knowledge Collaboration	Sharing	Providing technical assistance, social presence (<i>presenting themselves to others</i>) and articulating individual perspectives	Murphy (2004), Frey <i>et al.</i> (2006), Du Chatenier <i>et al.</i> (2009), <u>Faraj, Jarvenpaa and Majchrzak (2011)</u> , Majchrzak, Jarvenpaa and Faraj (2017), Schaefer <i>et al.</i> (2019), Bettoni and Obeng (2020), Schaefer, Fabian and Kopp (2020)
		Transfer	Accommodating or reflecting the perspectives of others	
		Accumulate	Co-constructing (<i>jointly producing</i>) shared perspectives and meanings	
		Transform	Negotiating and revising (<i>jointly modifying</i>) shared perspectives and meanings	
		Co-create	Applying the knowledge, building shared goals, and producing shared artefacts	
CoP	Participation in Extra-organizational CoP	Mutual Engagement (<i>Domain</i>)	Building relationships around what they do	Wenger (1998a), <u>Wenger (1998b)</u> , Wenger (2011a)
		Joint Enterprise (<i>Community</i>)	Develop understanding of what binds them together – shared concern or passion	
		Shared Repertoire (<i>Practice</i>)	Share, maintain and do certain things which expressed their membership and identity to the community	
Value CoP	Value of Extra-organizational CoP (Types of Value: "Motivation & Participation," "Relational," "Knowledge," "Learning & Identity," "Intangible," "Tangible," "Applied," "Realized" and "Reframing & Transformative")	Level: Individual Value	Value for individual members of the CoP	Verburg and Andriessen (2006), Wenger, Trayner and De Laat (2011), McKellar <i>et al.</i> (2014), Wenger-Trayner <i>et al.</i> (2017), McKellar (2019), <u>McKellar et al. (2020)</u>
		Level: Collective Value	Value of participation at the collective level as a whole CoP	
		Level: Organizational Value	Value to firms, institutes, or organizations to which members of the CoP belong	
		Level: Value to External Stakeholders	Value to individuals, organizations, and/or target populations external to the CoP	
		Level: Value to Field	Value to subject, issue, or topic in which members of CoP share an interest or passion in	
ICT	ICT: Supporting KC & CoP	Use of ICT	Use of electronic mediums for the facilitation of communications	Gunawardena <i>et al.</i> (2009), <u>Oguz, Marsh and Landis (2010)</u> , Maciver and Malins (2016), Noris <i>et al.</i> (2020), Nobile <i>et al.</i> (2021)

Code	Concepts	Indicators	Proposed Operational Definitions	Selected Supporting Sources
		Impact of ICT (<i>Social Presence</i>)	Affective Feelings of connectedness, intimacy, and warmth	Rourke et al. (2001) , Tu (2002a), Tu (2002b) , Tu (2002c), Murphy (2004), Swan and Shih (2005), Kim (2011) , Schaefer et al. (2019), Schaefer, Fabian and Kopp (2020), Kreijns, Xu and Weidlich (2021)
			Interactive Open communications and attentiveness (<i>mutual attention and support</i>)	
			Cohesive Group commitment and a sense of community	
			Privacy Perception of online privacy	

An overall view of the proposed *a priori* conceptual model is further illustrated in Figure 2, in the form of a nomological net involving a network which interlinks KC, a CoP, value from a CoP (Value CoP) and ICT. Figure 2 provides an example of one CoP. It aims to conceptually show the interrelationships between the instrumental theory of CoPs and the concept of KC with its various activities as well as the involvement of ICT (both use and impact) in supporting KC within the CoPs of fashion designers. Five exploratory research propositions were formulated from the *a priori* conceptual model to understand KC among fashion designers.



Key: -

A Community of Practice (CoP): Indicated by 1) Mutual Engagement, 2) Joint Enterprise, and 3) Shared Repertoire.

Value from A Community of Practice (Value of CoP): Indicated by 5 different levels of value which are at the 1) Individual, 2) Collective, 3) Organization, 4) External Stakeholders, and 5) Field, levels and by 9 different types of value: 1) Motivation & Participation, 2) Relational, 3) Knowledge, 4) Learning & Identity, 5) Intangible, 6) Tangible, 7) Applied, 8) Realized, and 9) Reframing & Transformative.

Knowledge Collaboration (KC): Indicated by the 1) Sharing, 2) Transferring, 3) Accumulating, 4) Transforming, and 5) Co-creation of knowledge.

Information and Communication Technology (ICT): Indicated by 1) Use, and 2) Impact (Social Presence: Affective, Cohesive, Interactive and Privacy) of ICT.

Figure 2: The A Priori Conceptual Model as a Nomological Net

As noted in Figure 2, fashion designers are represented by the small boxes, bound by Wenger's three dimensions of the CoPs (mutual engagement, joint enterprise, and shared repertoire). The fashion enterprises are represented by the larger boxes which enclose the small boxes located in one extra-organizational CoP represented by the all-encompassing large rectangle. Proposition 1 from this representation assumes that fashion designers do form extra-organizational CoPs.

They create value for themselves individually at different levels, that is their collective, their organization, other external stakeholders, and their field. They obtain distinct types of values at those different levels i.e., motivation & participation, relational, knowledge, learning & identity, intangible, tangible, applied, realized and reframing & transformative values. This is denoted by "Value CoP" in Figure 2. Proposition 2 from this representation assumes that fashion designers derive value from extra-organizational CoPs.

They create value by undertaking the activities of KC as denoted by "KC" in Figure 2 which are sharing, transferring, accumulating, transforming, and co-creation of knowledge. This represents KC in the form of

activities within a CoP, thereby leading to proposition 3 which assumes that fashion designers undertake KC within an extra-organizational CoP.

ICT supports KC in extra-organizational CoPs of fashion designers by means of its use and its impact (through social presence at the affective, cohesive, interactive, and privacy levels) as denoted by “ICT” in Figure 2, thereby representing proposition 4 that assumes ICT use supports KC within an extra-organizational CoP of fashion designers, and also finally, proposition 5 which assumes that ICT impacts KC within an extra-organizational CoP of fashion designers.

The proposed *a priori* conceptual model can allow the examination of these five exploratory research propositions so as to see if it indeed represents a part of social reality for fashion designers. This fulfills the aim of the *a priori* conceptual model which is to help understand the phenomenon in focus. Having said this, due to the iterative process of developing the *a priori* conceptual model, different researchers using the same sources and same approaches in theorizing could arrive at very different conclusions on the concepts and their indicators. This may seem like a manifest limitation of the proposed *a priori* conceptual model. However, this could be valuable since new or different insights from new or further theorizing could enhance or otherwise revise the *a priori* conceptual model.

As such the *a priori* conceptual model needs to maintain its flexible, exploratory, and non-predictive nature. If at all, it is only one representation of the social reality of fashion designers. As Sayer (2010) mentioned, theories are not monolithic and discrete. They can overlap and differentiate internally. The proposed *a priori* conceptual model as an outcome of theorizing shown in Figure 2 can be further revised for future studies to explain KC within CoPs of fashion designers when there are competing theories or rival explanations. This is especially so since the proposed *a priori* conceptual model is multidisciplinary and dynamic in nature, which allows the theoretical perspectives of the disciplines involved to be further broadened (Jabareen, 2009). Upon empirical examination an *a posteriori* conceptual model can also be proposed.

5. Contributions

To date, there is a lack of understanding about KC, particularly for fashion designers, the main innovators, and differentiators, within the fashion and design industry. The social environment or reality, particularly involving extra-organizational CoPs and the activities of KC can determine fashion designers’ insights and ideas. ICT may also play a role in supporting and impacting KC within CoPs. This paper suggests that the *a priori* conceptual model could be used to understand KC by fashion designers in the fashion industry.

The first contribution of this paper is thus the examination of KC among fashion designers within their extra-organizational CoPs by means of conceptualizing the interrelationships between concepts and their indicators based on three broad research questions. This conceptualizing led to the development of an *a priori* conceptual model which is distinctive and for which interrelationships have not been explored before in prior studies. This contribution also addresses the research gap where past studies for collaboration in fashion design had mainly focused on organizational marketing and branding, but not KC.

The second contribution of this paper is the identification of new avenues for future research. The *a priori* conceptual model identifies an opportunity for future prospective researchers to frame their research in the under explored area of KC within CoPs of fashion designers. It also allows them to frame their research looking into the role of ICT in KC within CoPs. It is hoped that this paper will provide researchers with a foundation to study the interrelationship between KC, fashion enterprises, fashion designers, CoPs, and ICT.

The third contribution of this paper lies in management practice, particularly for fashion enterprises. The significance of the *a priori* conceptual model to fashion enterprises is to help address the need for managers to improve upon their fashion designers’ knowledge and abilities in keeping up with constant change. This is especially so on an extra-organizational level. By conceptually understanding at least at the fundamental level how fashion designers exist within their extra-organizational CoPs, and how they undertake KC with the support of ICT, managers may then effectively conceive strategies to upgrade and improve the knowledge stock of fashion designers within their enterprise. Fashion designers who are knowledge workers will then be able to live up to their full potential and create fashion products and experiences that exceed customers’ expectations.

6. Conclusion

In conclusion, the *a priori* conceptual model described in this paper fills the gap on the nature of KC, CoPs, and ICT with regards to fashion designers in fashion enterprises. It conceptualizes the interrelationships between

these concepts and their indicators through five propositions. In that regard, this paper has focused on KC and how this occurs within CoPs of fashion designers, the value of CoPs to fashion designers undertaking KC, and how ICT (its use and impact) supports KC in extra-organizational CoPs. Insights obtained from utilizing the *a priori* conceptual model could extend theoretical knowledge demonstrating how KC occurs in the CoPs of fashion designers. The outcome can then be used by fashion enterprises to build their innovation approach and capability. Future researchers can also utilize the *a priori* conceptual model to investigate KC within CoPs of other groups including other professional groups. To the best of the authors' knowledge, this paper appears to be the first to offer an *a priori* conceptual model to understand KC within CoPs of fashion designers.

References

- Acharya, A., Singh, S. K., Pereira, V. & Singh, P. 2018. Big data, knowledge co-creation and decision making in fashion industry. *International Journal of Information Management*, 42, pp.90-101.
- Alexander, B., Goworek, P. P., Anthony Ke, H. & Contreras, L. O. 2016. Inter-industry creative collaborations incorporating luxury fashion brands. *Journal of Fashion Marketing and Management: An International Journal*, 20(3), pp.254-275.
- Amin, A. & Roberts, J. 2008. Knowing in action: Beyond communities of practice. *Research Policy*, 37(2), pp.353-369.
- Andriani, M., Samadhi, T. M. A. A., Siswanto, J. & Suryadi, K. 2018. Aligning business process maturity level with SMEs growth in Indonesian fashion industry. *International Journal of Organizational Analysis*, 26(4), pp.709-727.
- Andriani, M., Samadhi, T. M. A. A., Siswanto, J. & Suryadi, K. 2019. Knowledge management strategy: an organisational development approach. *Business Process Management Journal*, 25(7), pp.1474-1490.
- Anklam, P. 2002. Knowledge Management: The Collaboration Thread. *Bulletin of the American Society for Information Science and Technology*, 28(6), pp.8-11.
- Ashok, M., Narula, R. & Martinez-Noya, A. 2016. How do collaboration and investments in knowledge management affect process innovation in services? *Journal of Knowledge Management*, 20(5), pp.1004-1024.
- Ashton, P. 2006. Fashion occupational communities – a market-as-network approach. *Journal of Fashion Marketing and Management: An International Journal*, 10(2), pp.181-194.
- Azuma, N. 2002. Pronto moda Tokyo-style – emergence of collection-free street fashion in Tokyo and the Seoul-Tokyo fashion connection. *International Journal of Retail & Distribution Management*, 30(3), pp.137-144.
- Azuma, N. 2003. Fashion in the globalized world and the role of virtual networks in intrinsic fashion design. *Journal of Fashion Marketing and Management: An International Journal*, 7(4), pp.413-427.
- Bahar, N., Bahri, S. & Zakaria, Z. 2022. Knowledge Collaboration among Tax Professionals through the Lens of a Community of Practice. *Journal of Risk and Financial Management*, 15(10), pp.439.
- Bailey, D. & Koney, K. M. 2000. Strategic Alliances among Health and Human Services Organizations: From Affiliations to Consolidations. Thousand Oaks, California.
- Bandinelli, R., d'Avolio, E. & Rinaldi, R. Assessing the maturity of collaborative networks: A case study analysis in the Italian fashion SMEs. *International Conference on Engineering, Technology and Innovation (ICE)*, 23-25 June 2014. pp.1-9.
- Bandura, A. 1977. *Social Learning Theory*, New York: General Learning Press.
- Barnett, S., Jones, S. C., Bennett, S., Iverson, D. & Bonney, A. 2012. General practice training and virtual communities of practice - a review of the literature. *BMC Family Practice*, 13.
- Beane, M. 2019. Shadow Learning: Building Robotic Surgical Skill When Approved Means Fail. *Administrative Science Quarterly*, 64(1), pp.87-123.
- Ben Yahia, N., Bellamine, N. & Ben Ghezala, H. 2012. On the Convergence of Collaboration and Knowledge Management. *Computing Research Repository (CoRR)*.
- Bergstrom, A., Clark, R., Hogue, T., Perkins, D., Slinski, M. & Associates. 1995. Collaboration Framework: Addressing Community Capacity. Columbus, OH.
- Bettiol, M. & Sedita, S. R. 2011. The role of community of practice in developing creative industry projects. *International Journal of Project Management*, 29(4), pp.468-479.
- Bettoni, M. & Obeng, E. 2020. Alive by Meeting: A Solution to the Paradox of Meetings Based on the Pyramid of New Collaboration. *Electronic Journal of Knowledge Management*, 18(2), pp.161-171.
- Brown, J. S. 2004. Minding and Mining the Periphery. *Long Range Planning*, 37(2), pp.143-151.
- Brown, J. S. & Duguid, P. 1991. Organizational Learning and Communities-of-Practice: Toward a Unified View of Working, Learning, and Innovation. *Organization Science*, 2(1), pp.40-57.
- Calvo Dopico, D. & Calvo Porral, C. 2012. Sources of equity in fashion markets. *Journal of Product & Brand Management*, 21(6), pp.391-403.
- Casalini, M. C., Janowski, T. & Estevez, E. 2006. A process model for collaborative problem solving in virtual communities of practice. In: Camarinha-Matos, L., Afsarmanesh, H. & Ollus, M. (eds.) *IFIP International Federation for Information Processing Volume 224, Network-Centric Collaboration and Supporting Fireworks*. New York: Springer. pp.343-350.
- Cheng, Q. & Chang, Y. 2020. Influencing factors of knowledge collaboration effects in knowledge alliances. *Knowledge Management Research & Practice*, 18(4), pp.380-393.
- Chun, E. & Niehm, L. S. 2010. Collaboration Strategies of Fashion Companies and Customer Attitudes. *Journal of Global Academy of Marketing Science*, 20(1), pp.4-14.
- Cigler, B. A. 1999. Pre-Conditions for The Emergence of Multicommunity Collaborative Organizations. *Review of Policy Research*, 16(1), pp.86-102.

- Constantin, B. 2015. Knowledge Sharing and Communities of Practice. In: Constantin, B. (ed.) *Organizational Knowledge Dynamics: Managing Knowledge Creation, Acquisition, Sharing, and Transformation*. Hershey, PA, USA: IGI Global.
- Contu, A. 2014. On boundaries and difference: Communities of practice and power relations in creative work. *Management Learning*, 45(3), pp.289-316.
- Contu, A. & Willmott, H. 2003. Re-Embedding Situatedness: The Importance of Power Relations in Learning Theory. *Organization Science*, 14(3), pp.283-296.
- Correia, A. M. R., Paulos, A. & Mesquita, A. 2010. Virtual Communities of Practice: Investigating Motivations and Constraints in the Processes of Knowledge Creation and Transfer. *Electronic Journal of Knowledge Management*, 8(1), pp.11-20.
- Cox, A. 2005. What are communities of practice? A comparative review of four seminal works. *Journal of Information Science*, 31(6), pp.527-540.
- Cress, U. & Kimmerle, J. 2008. A systemic and cognitive view on collaborative knowledge building with wikis. *International Journal of Computer-Supported Collaborative Learning*, 3(2), pp.105-122.
- Cricelli, L. & Grimaldi, M. 2010. Knowledge-based inter-organizational collaborations. *Journal of Knowledge Management*, 14(3), pp.348-358.
- Cronbach, L. J. & Meehl, P. E. 1955. Construct validity in psychological tests. *Psychological Bulletin*, 52(4), pp.281-302.
- D'Amour, D., Ferrada-Videla, M., San Martin Rodriguez, L. & Beaulieu, M. D. 2005. The conceptual basis for interprofessional collaboration: Core concepts and theoretical frameworks. *Journal of Interprofessional Care*, 19(sup1), pp.116-131.
- Davison, R. M., Martinsons, M. G. & Ou, C. X. J. 2012. The Roles of Theory in Canonical Action Research. *MIS Quarterly*, 36(3), pp.763-786.
- Dell'era, C., Acur, N. & Verganti, R. 2009. The impact of international designers on firm innovation capability and consumer interest. *International Journal of Operations & Production Management*, 29(9), pp.870-893.
- Dougherty, D. 2001. Reimagining the Differentiation and Integration of Work for Sustained Product Innovation. *Organization Science*, 12(5), pp.612-631.
- Du Chatenier, E., Verstegen, J. A. A. M., Biemans, H. J. A., Mulder, M. & Omta, O. 2009. The Challenges of Collaborative Knowledge Creation in Open Innovation Teams. *Human Resource Development Review*, 8(3), pp.350-381.
- Dubé, L., Bourhis, A. & Jacob, R. 2005. The impact of structuring characteristics on the launching of virtual communities of practice. *Journal of Organizational Change Management*, 18(2), pp.145-166.
- Dubé, L., Bourhis, A. & Jacob, R. 2006. Towards a typology of virtual communities of practice. *Interdisciplinary Journal of Information, Knowledge, and Management*, 1, pp.69-93.
- Duguid, P. 2005. "The Art of Knowing": Social and Tacit Dimensions of Knowledge and the Limits of the Community of Practice. *The Information Society*, 21(2), pp.109-118.
- Eckert, P. 2006. Communities of Practice. *Encyclopedia of Language & Linguistics*. Elsevier Ltd. pp.683-685.
- Embrett, M., Liu, R. H., Aubrecht, K., Koval, A. & Lai, J. 2021. Thinking together, working apart: Leveraging a community of practice to facilitate productive and meaningful remote collaboration. *International Journal of Health Policy and Management*, 10(9), pp.528-533.
- Eppler, M. J. 2006. A Comparison between Concept Maps, Mind Maps, Conceptual Diagrams, and Visual Metaphors as Complementary Tools for Knowledge Construction and Sharing. *Information Visualization*, 5(3), pp.202-210.
- Faraj, S., Jarvenpaa, S. L. & Majchrzak, A. 2011. Knowledge Collaboration in Online Communities. *Organization Science*, 22(5), pp.1224-1239.
- Farnsworth, V., Kleanthous, I. & Wenger-Trayner, E. 2016. Communities of Practice as a Social Theory of Learning: a Conversation with Etienne Wenger. *British Journal of Educational Studies*, 64(2), pp.139-160.
- Franssila, H., Schiuma, G., Okkonen, J., Savolainen, R. & Talja, S. 2012. The formation of coordinative knowledge practices in distributed work: towards an explanatory model. *Journal of Knowledge Management*, 16(4), pp.650-665.
- Frey, B., Lohmeier, J., Lee, S. & Tollefson, N. 2006. Measuring collaboration among grant partners. *American Journal of Evaluation*, 27(3), pp.383-392.
- Fritsch, J. 2008. Can a 'Communities of Practice' framework be applied to the creative industries as an identified audience for the V&A? *V&A Online Journal* [Online], 1. Available at: <http://www.vam.ac.uk/content/journals/research-journal/issue-01/can-a-communities-of-practice-framework-be-applied-to-the-creative-industries-as-an-identified-audience-for-the-v-and-a/>
- Gajda, R. 2004. Utilizing Collaboration Theory to Evaluate Strategic Alliances. *The American Journal of Evaluation*, 25(1), pp.65-77.
- Ghamrawi, N. 2022. Teachers' virtual communities of practice: A strong response in times of crisis or just another Fad? *Education and Information Technologies*, 27(5), pp.5889-5915.
- Gherardi, S. 2006. *Organizational knowledge: The texture of workplace learning*, Blackwell Publishing.
- Gherardi, S. 2009. Community of practice or practices of a community? In: Armstrong, S. J. & Fukami, C. V. (eds.) *The SAGE Handbook of Management Learning, Education and Development*. pp.514-530.
- Gilson, L. L. & Goldberg, C. B. 2015. Editors' Comment: So, What is a Conceptual paper? *Group & Organization Management*, 40(2), pp.127-130.
- Gitlin, L. N., Lyons, K. J. & Kolodner, E. 1994. A model to build collaborative research or educational teams of health professionals in gerontology. *Educational Gerontology*, 20(1), pp.15-34.

- Grant, R. M. & Baden-Fuller, C. 1995. A Knowledge-based Theory of Inter-firm Collaboration. *Academy of Management Proceedings*, 1995(1), pp.17-21.
- Gray, B. 1989. Collaborating: finding common ground for multiparty problems. 1st ed. ed. San Francisco: Jossey-Bass.
- Guénette, L., Maheu, A., Vanier, M. C., Dugré, N., Rouleau, L., Roy-Petit, J. & Lalonde, L. 2022. Pharmacists practising in family medicine groups: An evaluation 2 years after experiencing a virtual community of practice. *Canadian Pharmacists Journal*, 155(1), pp.39-49.
- Gunawardena, C. N., Hermans, M. B., Sanchez, D., Richmond, C., Bohley, M. & Tuttle, R. 2009. A theoretical framework for building online communities of practice with social networking tools. *Educational Media International*, 46(1), pp.3-16.
- Gunawardena, C. N. & Zittle, F. J. 1997. Social presence as a predictor of satisfaction within a computer-mediated conferencing environment. *American Journal of Distance Education*, 11(3), pp.8-26.
- Haas, A., Abonneau, D., Borzillo, S. & Guillaume, L.-P. 2020. Afraid of engagement? Towards an understanding of engagement in virtual communities of practice. *Knowledge Management Research & Practice*, 19(2), pp.169-180.
- Handzic, M., Bratianu, C. & Bolisani, E. 2021. Scientific Associations as communities of practice for fostering collaborative knowledge building: Case study of IAKM. *Electronic Journal of Knowledge Management*, 19(2), pp.91-104.
- Hara, N., Shachaf, P. & Stoerger, S. 2009. Online communities of practice typology revisited. *Journal of Information Science*, 35(6), pp.740-757.
- Hardy, C., Phillips, N. & Lawrence, T. B. 2003. Resources, Knowledge and Influence: The Organizational Effects of Interorganizational Collaboration. *Journal of Management Studies*, 40(2), pp.321-347.
- Heizmann, H. 2011. Knowledge sharing in a dispersed network of HR practice: Zooming in on power/knowledge struggles. *Management Learning*, 42(4), pp.379-393.
- Himmelman, A. 2002. Collaboration for Change (Definitions, Decision-making models, Roles, and Collaboration Process Guide). Available at: <https://tennessee.edu/wp-content/uploads/2019/07/Himmelman-Collaboration-for-a-Change.pdf>
- Hodges, D. C. 1998. Participation as Dis-Identification With/in a Community of Practice. *Mind, Culture, and Activity*, 5(4), pp.272-290.
- Hodkinson, P. 2004. Research as a form of work: expertise, community and methodological objectivity. *British Educational Research Journal*, 30(1), pp.9-26.
- Holmes, J. & Meyerhoff, M. 1999. The Community of Practice: Theories and methodologies in language and gender research. *Language in Society*, 28(2), pp.173-183.
- Hong, J. F. L. & Fiona, K. H. 2009. Conflicting identities and power between communities of practice: The case of IT outsourcing. *Management Learning*, 40(3), pp.311-326.
- Horwath, J. & Morrison, T. 2007. Collaboration, integration and change in children's services: critical issues and key ingredients. *Child Abuse Negl*, 31(1), pp.55-69.
- Hossain, L. & Wigand, R. T. 2004. ICT Enabled Virtual Collaboration through Trust. *Journal of Computer-Mediated Communication*, 10(1).
- IHMC 2019. CmapTools. 6.04 ed.: Florida Institute for Human and Machine Cognition.
- Inkpen, A. C. 1996. Creating Knowledge through Collaboration. *California Management Review*, 39(1), pp.123-140.
- Jaakkola, E. 2020. Designing conceptual articles: four approaches. *AMS Review*, 10(1-2), pp.18-26.
- Jabareen, Y. 2009. Building a Conceptual Framework: Philosophy, Definitions, and Procedure. *International Journal of Qualitative Methods*, 8(4), pp.49-62.
- Jang, E.-Y. 2006. An Analysis on Cases of Fashion Collaboration Strategy. *Journal of Fashion Business*, 10(6), pp.110-121.
- Jian, J., Wang, M., Li, L., Su, J. & Huang, T. 2020. A partner selection model for collaborative product innovation from the viewpoint of knowledge collaboration. *Kybernetes*, 49(6), pp.1623-1644.
- Johnson, C. M. 2001. A survey of current research on online communities of practice. *The Internet and Higher Education*, 4(1), pp.45-60.
- Jonker, J. & Pennink, B. W. 2009. Conceptual Models. In: Jonker, J. & Pennink, B. (eds.) *The Essence of Research Methodology: A Concise Guide for Master and PhD Students in Management Science*. Berlin, Heidelberg: Springer Berlin Heidelberg. pp.43-63.
- Jurasaitė-Harbison, E. & Rex, L. A. 2010. School cultures as contexts for informal teacher learning. *Teaching and Teacher Education*, 26(2), pp.267-277.
- Karsten, H. 1999. Collaboration and collaborative information technologies: a review of the evidence. *SIGMIS Database*, 30(2), pp.44-65.
- Kawamura, Y. 2004. The Japanese Revolution in Paris Fashion. *Fashion Theory*, 8(2), pp.195-223.
- Kilbride, C., Perry, L., Flatley, M., Turner, E. & Meyer, J. 2011. Developing theory and practice: Creation of a Community of Practice through Action Research produced excellence in stroke care. *Journal of Interprofessional Care*, 25(2), pp.91-97.
- Kim, J. 2011. Developing an instrument to measure social presence in distance higher education. *British Journal of Educational Technology*, 42(5), pp.763-777.
- Kirkman, B. L., Cordery, J. L., Mathieu, J., Rosen, B. & Kukenberger, M. 2013. Global organizational communities of practice: The effects of nationality diversity, psychological safety, and media richness on community performance. *Human Relations*, 66(3), pp.333-362.
- Kling, R. & Courtright, C. 2003. Group Behavior and Learning in Electronic Forums: A Sociotechnical Approach. *The Information Society*, 19(3), pp.221-235.

- Kreijns, K., Xu, K. & Weidlich, J. 2021. Social Presence: Conceptualization and Measurement. *Educational Psychology Review*, 34, pp.139–170.
- Lave, J. & Wenger, E. 1991. *Situated learning: Legitimate peripheral participation*, Cambridge university press.
- Le Dinh, T., Rinfret, L., Raymond, L. & Dong Thi, B. T. 2013. Towards the reconciliation of knowledge management and e-collaboration systems. *Interactive Technology and Smart Education*, 10(2), pp.95-115.
- Le May, A. 2009. *Communities of Practice in Health and Social Care*, Wiley-Blackwell.
- Lee, J. H., Ahn, J. & Kim, J. 2018. Theoretical Competence Model of Fashion Designers in Co-Designed Fashion Systems. *Fashion Practice*, 10(3), pp.381-404.
- Li, E. P. H. 2005. Managing Knowledge in Fashion Businesses: A Contextual Review. *Research Journal of Textile and Apparel*, 9(2), pp.97-104.
- Li, E. P. H. 2006. Managing Knowledge in Fashion Businesses: A Survey of Contemporary Tools for Coordination and Collaboration. *Research Journal of Textile and Apparel*, 10(2), pp.83-92.
- Li, L. C., Grimshaw, J. M., Nielsen, C., Judd, M., Coyte, P. C. & Graham, I. D. 2009a. Evolution of Wenger's concept of community of practice. *Implementation Science*, 4, pp.11.
- Li, L. C., Grimshaw, J. M., Nielsen, C., Judd, M., Coyte, P. C. & Graham, I. D. 2009b. Use of communities of practice in business and health care sectors: a systematic review. *Implementation Science*, 4, pp.27.
- Lin, J.-Y. 2019. How does collaboration between universities and R&D firms influence performance? *Management Decision*, 57(9), pp.2436-2476.
- Lin, S. 2018. The structural characteristics of innovation ecosystem: a fashion case. *European Journal of Innovation Management*, 21(4), pp.620-635.
- Lin, S. & Piercy, N. 2013. New product development competencies and capabilities: the case of the fashion SME. *Journal of General Management*, 38(2), pp.61-77.
- Lin, S., Piercy, N. & Campbell, C. 2012. Beyond the make-or-buy dichotomy: outsourcing creativity in the fashion sector. *Production Planning & Control*, 24(4-5), pp.294-307.
- Lindkvist, L. 2005. Knowledge Communities and Knowledge Collectivities: A Typology of Knowledge Work in Groups. *Journal of Management Studies*, 42(6), pp.1189-1210.
- Lowenthal, P. 2009. Social Presence. *Encyclopedia of Distance and Online Learning*. pp.202-211.
- Loyarte, E. & Rivera, O. 2010. Conditions and key success factors for the management of communities of practice. In: Karacapilidis, N. (ed.) *Web-Based Learning Solutions for Communities of Practice: Developing Virtual Environments for Social and Pedagogical Advancement*. IGI Global. pp.306-329.
- Maciver, F. & Malins, J. 2016. Two Heads Are Better Than One: Principles for Collaborative Design Practice. In: Markopoulos, P., Martens, J., Malins, J., Coninx, K. & Liapis, A. (eds.) *Collaboration in Creative Design*. Springer, Cham. pp.13-31.
- Macpherson, A. & Clark, B. 2009. Islands of Practice: Conflict and a Lack of 'Community' in Situated Learning. *Management Learning*, 40(5), pp.551-568.
- Majchrzak, A., Jarvenpaa, S. L. & Faraj, S. 2017. Theorizing Knowledge Collaboration in Online Communities. In: Argote, L. & Levine, J. M. (eds.) *The Oxford Handbook of Group and Organizational Learning*.
- McCormick, R. 2004. Collaboration: The Challenge of ICT. *International Journal of Technology and Design Education*, 14(2), pp.159-176.
- McDermott, R. 1999a. Learning across Teams: How to Build Communities of Practice in Team-based Organizations. *Knowledge Management Review*, 8, pp.32-36.
- McDermott, R. 1999b. Nurturing three-dimensional communities of practice: How to get the most out of human networks. *Knowledge Management Review*, 11, pp.26-29.
- McDonald, J. & Cater-Steel, A. 2017a. *Communities of Practice: Facilitating Social Learning in Higher Education*, Singapore, Springer Nature.
- McDonald, J. & Cater-Steel, A. 2017b. *Implementing Communities of Practice in Higher Education: Dreamers and Schemers*, Singapore, Springer Nature.
- McKellar, K., Saint-Charles, J., Berta, W., Cockerill, R. & Cole, D. 2020. Application of an evaluation framework for extra-organizational communities of practice: assessment and refinement. *Canadian Journal of Program Evaluation*, 35(2), pp.149–169.
- McKellar, K. A. 2019. *Evaluating Extra-Organizational Communities of Practice*. Ph.D., University of Toronto.
- McKellar, K. A., Pitzul, K. B., Yi, J. Y. & Cole, D. C. 2014. Evaluating communities of practice and knowledge networks: a systematic scoping review of evaluation frameworks. *Ecohealth*, 11(3), pp.383-99.
- McNamara, M. 2012. Starting to Untangle the Web of Cooperation, Coordination, and Collaboration: A Framework for Public Managers. *International Journal of Public Administration*, 35(6), pp.389-401.
- Meredith, J. 1993. Theory Building through Conceptual Methods. *International Journal of Operations & Production Management*, 13(5), pp.3-11.
- Milagres, R. & Burcharth, A. 2019. Knowledge transfer in interorganizational partnerships: what do we know? *Business Process Management Journal*, 25(1), pp.27-68.
- Millspaugh, J., Goworek, P. P., Anthony Ke, H. & Kent, A. 2016. Co-creation and the development of SME designer fashion enterprises. *Journal of Fashion Marketing and Management: An International Journal*, 20(3), pp.322-338.
- Mørk, B. E., Hoholm, T., Ellingsen, G., Edwin, B. & Aanestad, M. 2010. Challenging expertise: On power relations within and across communities of practice in medical innovation. *Management Learning*, 41(5), pp.575-592.

- Murphy, E. 2004. Recognising and promoting collaboration in an online asynchronous discussion. *British Journal of Educational Technology*, 35(4), pp.421-431.
- Nguyen, M. & Mougnot, C. 2022. A systematic review of empirical studies on multidisciplinary design collaboration: Findings, methods, and challenges. *Design Studies*, 81, pp.101120.
- Nicolini, D., Pyrko, I., Omidvar, O. & Spanellis, A. 2022. Understanding Communities of Practice: Taking Stock and Moving Forward. *Academy of Management Annals*, 16(2), pp.680-718.
- Nobile, T. H., Noris, A., Kalbaska, N. & Cantoni, L. 2021. A review of digital fashion research: before and beyond communication and marketing. *International Journal of Fashion Design, Technology and Education*, 14(3), pp.293-301.
- Noris, A., Nobile, T. H., Kalbaska, N. & Cantoni, L. 2020. Digital Fashion: A systematic literature review. A perspective on marketing and communication. *Journal of Global Fashion Marketing*, 12(1), pp.32-46.
- Novak, J. & Cañas, A. 2008. The Theory Underlying Concept Maps and How to Construct Them. Florida Institute for Human and Machine Cognition, 2008: Technical Report IHMC CmapTools 2006-01 Rev 01-2008.
- Novak, J. D. 1998. *Learning, Creating, and Using Knowledge: Concept Maps as Facilitative Tools in Schools and Corporations*, Routledge.
- Novak, J. D. & Gowin, D. B. 1984. *Learning How to Learn*, Cambridge, Cambridge University Press.
- Ogbamichael, H. B. & Warden, S. 2018. Information and knowledge sharing within virtual communities of practice. *South African Journal of Information Management*, 20(1), pp.a956.
- Oguz, F., Marsh, C. V. & Landis, C. Collaboration through Communities of Practice in the Digital Age. In: Kurbanoglu, S., Al, U., Lepon Erdoğan, P., Tonta, Y. & Uçak, N., eds. *Technological Convergence and Social Networks in Information Management. IMCW 2010. Communications in Computer and Information Science.*, 2010. Berlin & Heidelberg: Springer. 96, pp.18-30.
- Park, H. & Park, S. J. 2016. Communication behavior and online knowledge collaboration: evidence from Wikipedia. *Journal of Knowledge Management*, 20(4), pp.769-792.
- Pattinson, S. & Preece, D. 2014. Communities of practice, knowledge acquisition and innovation: A case study of science-based SMEs. *Journal of Knowledge Management*, 18(1), pp.107-120.
- Pattinson, S., Preece, D. & Dawson, P. 2016. In search of innovative capabilities of communities of practice: A systematic review and typology for future research. *Management Learning*, 47(5), pp.506-524.
- Peltonen, T. & Lämsä, T. 2004. 'Communities of Practice' and the Social Process of Knowledge Creation: Towards a New Vocabulary for Making Sense of Organizational Learning. *Problems and Perspectives in Management*, 2(4), pp.249-262.
- Peterson, N. L. 1991. Interagency Collaboration Under Part H. *Journal of Early Intervention*, 15(1), pp.89-105.
- Poggenpohl, S. H. 2015. Communities of Practice in Design Research. *She Ji: The Journal of Design, Economics, and Innovation*, 1(1), pp.44-57.
- Powell, W. W. 1998. Learning from Collaboration: Knowledge and Networks in the Biotechnology and Pharmaceutical Industries. *California Management Review*, 40(3), pp.228-240.
- Printy, S. M. 2007. Leadership for Teacher Learning: A Community of Practice Perspective. *Educational Administration Quarterly*, 44(2), pp.187-226.
- Pyrko, I., Dörfler, V. & Eden, C. 2017. Thinking together: What makes Communities of Practice work? *Hum Relat*, 70(4), pp.389-409.
- Pyrko, I., Dörfler, V. & Eden, C. 2019. Communities of practice in landscapes of practice. *Management Learning*, 50(4), pp.482-499.
- Quinn, M. A., Southerland, J. L., Richards, K., Slawson, D. L., Behringer, B., Johns-Womack, R. & Smith, S. 2016. Quantifying collaboration using Himmelman's strategies for working together: Findings from the Tennessee coordinated school health program. *Health Education*, 116(1), pp.34-49.
- Randhawa, K., Josserand, E., Schweitzer, J. & Logue, D. 2017. Knowledge collaboration between organizations and online communities: the role of open innovation intermediaries. *Journal of Knowledge Management*, 21(6), pp.1293-1318.
- Rennstam, J. & Karreman, D. 2020. Understanding control in communities of practice: Constructive disobedience in a high-tech firm. *Human Relations*, 73(6), pp.864-890.
- Rieple, A. & Gornostaeva, G. 2014. Fashion Design in London: the Positioning of Independent Designers within the Fashion Field. *Archives of Design Research*, 27(3), pp.37-47.
- Roberts, D., Van Wyk, R. & Dhanpat, N. 2017. Validation of the Thomson, Perry and Miller (2007) Collaboration Instrument in the South African context. *SA Journal of Human Resource Management*, 15(0), pp.a793.
- Rourke, L., Anderson, T., Garrison, D. R. & Archer, W. 2001. Assessing social presence in asynchronous text-based computer conferencing. *The Journal of Distance Education/Revue de l'education Distance*, 14(2), pp.50-71.
- Sánchez-Cardona, I., Sánchez-Lugo, J. & Velez-González, J. Exploring the Potential of Communities of Practice for Learning and Collaboration in a Higher Education Context. *Procedia - Social and Behavioral Sciences*, 2012. 46(2012), pp.1820-1825.
- Sayer, R. A. 2010. *Method in Social Science: A Realist Approach*, Routledge.
- Schaefer, T., Fabian, C. M. & Kopp, T. 2020. The dynamics of online learning at the workplace: Peer-facilitated social learning and the application in practice. *British Journal of Educational Technology*, 51(4), pp.1406-1419.

- Schaefer, T., Rahn, J., Kopp, T., Fabian, C. M. & Brown, A. 2019. Fostering online learning at the workplace: A scheme to identify and analyse collaboration processes in asynchronous discussions. *British Journal of Educational Technology*, 50(3), pp.1354-1367.
- Schwen, T. M. & Hara, N. 2003. Community of Practice: A Metaphor for Online Design? *The Information Society*, 19(3), pp.257-270.
- Shaw, L., Jazayeri, D., Kiegaldie, D. & Morris, M. E. 2022. Implementation of Virtual Communities of Practice in Healthcare to Improve Capability and Capacity: A 10-Year Scoping Review. *International Journal of Environmental Research and Public Health*, 19(13), pp.7994.
- Shen, B., Jung, J., Chow, P.-S. & Wong, S. 2014. Co-branding in Fast Fashion: The Impact of Consumers' Need for Uniqueness on Purchase Perception. In: Choi, T.-M. (ed.) *Fashion Branding and Consumer Behaviors: Scientific Models*. New York, NY: Springer New York. pp.101-112.
- Shih-Hsien, Y. 2009. Using Blogs to Enhance Critical Reflection and Community of Practice. *Journal of Educational Technology & Society*, 12(2), pp.11-21.
- Short, J., Williams, E. & Christie, B. 1976. *The social psychology of telecommunications*, London; New York, Wiley.
- Silva, M. J., Menegassi, C. H. M., Sartori, R. & Tenório, N. 2018. Knowledge management within the fashion and clothing industry: an investigation into the purchase processes within a company. *International Journal of Development Research*, 8(3), pp.19739-19743.
- Sims, J. M. 2018. Communities of practice: Telemedicine and online medical communities. *Technological Forecasting and Social Change*, 126, pp.53-63.
- Snyder, H. 2019. Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, 104, pp.333-339.
- Struminger, B., Arora, S., Zalud-Cerrato, S., Lowrance, D. & Ellerbrock, T. 2017. Building virtual communities of practice for health. *The Lancet*, 390(10095), pp.632-634.
- Suib, S. S. S. B., Engelen, J. M. L. V. & Crul, M. R. M. 2020. Enhancing Knowledge Exchange and Collaboration Between Craftspeople and Designers Using the Concept of Boundary Objects. *International Journal of Design*, 14(1), pp.113-133.
- Swale, S. 2017. Fashion Blogging: Audience Participation and New Fashion Discourses. *Scope (Art & Design)*, 13, pp.102-107.
- Swan, J., Scarbrough, H. & Robertson, M. 2002. The Construction of 'Communities of Practice' in the Management of Innovation. *Management Learning*, 33(4), pp.477-496.
- Swan, K. & Shih, L. 2005. On the nature and development of social presence in online course discussions. *Journal of Asynchronous Learning Networks*, 9(3), pp.115-136.
- Tessier, V. 2020. Insights on Collaborative Design Research: A Scoping Review. *The Design Journal*, 23(5), pp.655-675.
- Tessier, V. & Zahedi, M. 2019. Assessment of collaborative design: a sociocultural approach. *International Conference on Engineering and Product Design Education*, 12-13 September 2019. Department of Design, Manufacture and Engineering Management, University of Strathclyde, United Kingdom.
- Testa, D. & Karpova, E. 2022. Executive decision-making in fashion retail: a phenomenological exploration of resources and strategies. *Journal of Fashion Marketing and Management: An International Journal*, 26(4), pp.700-716.
- Thomson, A. M. & Perry, J. L. 2006. Collaboration Processes: Inside the Black Box. *Public Administration Review*, 66, pp.20-32.
- Thomson, A. M., Perry, J. L. & Miller, T. K. 2007. Conceptualizing and Measuring Collaboration. *Journal of Public Administration Research and Theory*, 19(1), pp.23-56.
- Torraco, R. J. 2005. Writing Integrative Literature Reviews: Guidelines and Examples. *Human Resource Development Review*, 4(3), pp.356-367.
- Tu, C.-H. 2000. On-line learning migration: from social learning theory to social presence theory in a CMC environment. *Journal of Network and Computer Applications*, 23(1), pp.27-37.
- Tu, C.-H. 2001. How Chinese Perceive Social Presence: An Examination of Interaction in Online Learning Environment. *Educational Media International*, 38(1), pp.45-60.
- Tu, C.-H. 2002a. The Impacts of Text-based CMC on Online Social Presence. *The Journal of Interactive Online Learning*, 1(2), pp.1-24.
- Tu, C.-H. 2002b. The Measurement of Social Presence in an Online Learning Environment. *International Journal on E-learning*, 1(2), pp.34-45.
- Tu, C.-H. 2002c. The Relationship Between Social Presence and Online Privacy. *The Internet and Higher Education*, 5(4), pp.293-318.
- Tu, C.-H. & McIsaac, M. 2002. The Relationship of Social Presence and Interaction in Online Classes. *American Journal of Distance Education*, 16(3), pp.131-150.
- Van Noorden, R. 2014. Online collaboration: Scientists and the social network. *Nature*, 512(7513), pp.126-129.
- Venkatraman, S. & Venkatraman, R. 2018. Communities of Practice Approach for Knowledge Management Systems. *Systems*, 6(4), pp.36.
- Verburg, R. M. & Andriessen, J. H. E. 2006. The assessment of communities of practice. *Knowledge and Process Management*, 13(1), pp.13-25.
- Vygotsky, L. S. 1962. *Thought and language*, MIT Press.

- Vygotsky, L. S. 1978. *Mind in society: the development of higher psychological processes*, Cambridge, Massachusetts; London, Harvard University Press.
- Wang, L., Shen, B. & Liu, X. 2017. The Value of Design Collaboration in the Fashion Business: A Literature Review. *The Design Journal*, 20(6), pp.795-820.
- Wei, W., Wang, J., Chen, X., Yang, J. & Min, X. 2018. Psychological contract model for knowledge collaboration in virtual community of practice: An analysis based on the game theory. *Applied Mathematics and Computation*, 329, pp.175-187.
- Wenger-Trayner, B., Wenger-Trayner, E., Cameron, J., Eryigit-Madzwamuse, S. & Hart, A. 2017. Boundaries and Boundary Objects: An Evaluation Framework for Mixed Methods Research. *Journal of Mixed Methods Research*, 13(3), pp.321-338.
- Wenger, E. 1998a. Communities of Practice: Learning as a Social System. *Systems Thinker*, 9(5), pp.2-3.
- Wenger, E. 1998b. *Communities of practice: Learning, Meaning, and Identity*, New York, Cambridge University Press.
- Wenger, E. 2009. Communities of practice and social learning systems: the career of a concept. In: Blackmore, C. (ed.) *Communities of practice and social learning systems*. United Kingdom: Springer Nature.
- Wenger, E. 2010. Communities of Practice and Social Learning Systems: the Career of a Concept. In: Blackmore, C. (ed.) *Social Learning Systems and Communities of Practice*. London: Springer London. pp.179-198.
- Wenger, E. 2011a. Communities of practice a brief introduction: A brief introduction. University of Oregon.
- Wenger, E. 2011b. Social learning capability: four essays on innovation and learning in social systems. In: Boddington, A. & Boys, J. (eds.) *Re-Shaping Learning: A Critical Reader: The Future of Learning Spaces in Post-Compulsory Education*. Rotterdam: SensePublishers. pp.193-210.
- Wenger, E., McDermott, R. & Snyder, W. 2002. *Cultivating Communities of Practice: A Guide to Managing Knowledge*, Boston, Harvard Business School Press.
- Wenger, E., Trayner, B. & De Laat, M. 2011. Promoting and assessing value creation in communities and networks: A conceptual framework. *Rapport 18, Ruud de Moor Centrum, Open University of the Netherlands*.
- Wenger, E. C. & Snyder, W. M. 2000. Communities of Practice: The Organizational Frontier. *Harvard Business Review*, 78(1), pp.139-146.
- Yadav, M. S. 2010. The Decline of Conceptual Articles and Implications for Knowledge Development. *Journal of Marketing*, 74(1), pp.1-19.
- Yanow, D. 2004. Translating Local Knowledge at Organizational Peripheries. *British Journal of Management*, 15(S1), pp.9-25.
- Yarris, L. M., Chan, T. M., Gottlieb, M. & Juve, A. M. 2019. Finding Your People in the Digital Age: Virtual Communities of Practice to Promote Education Scholarship. *Journal of Graduate Medical Education*, 11(1), pp.1-5.
- Yu, A. 2009. Strengthening Communities of Practice in ADB. Asian Development Bank.