Evaluation of Creative Designer Roles in the Terms of Entrepreneurial Competences

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ABSTRACT

In terms of defining and implementing new and innovative ideas, creativity and entrepreneurship are inextricably linked. In this context, creativity and entrepreneurship inevitably form sub-functions of each other in terms of performance. Because both concepts are carried out in uncertain and dynamic situations, their qualities mutually complement each other. However, it is not always possible for every creative person to be an entrepreneur or vice versa. Design is a creative process in which ideas originate from a combination of professional experience, intuition, and the knowledge required. The design process occurs in an uncertain environment, and design concepts do not emerge in a vacuum; they are frequently the product of the creative synthesis of earlier experiences with knowledge, insight, and entrepreneurship that have contributed to the development and success of many businesses. Design encompasses not only creative thinking but also innovative, productive, and compositional activities as part of entrepreneurship with a mix of rational, ideal, and pragmatic inquiry. Therefore, designers not only must be creative in the design phase but also should act as entrepreneurs/intrapreneurs as they seek to identify and address customer needs and effectively communicate and prototype their ideas to potential customers. The most creative part of the design process is identifying problems and developing solutions for analysis, evaluation, and selection to help businesses improve their operations and efficiency. To achieve these goals, designers may need to assume certain roles. The concept of entrepreneurship essentially contains positive and privileged meanings. For this reason, many people believe that they have entrepreneurial characteristics and want to be mentioned as entrepreneurs. Some professions, such as industrial design, naturally claim to be entrepreneurial because of their activities. Due to the positive meaning of entrepreneurship, designers are concerned about developing and transforming their practices within the principles of entrepreneurship. Moreover, current design discourses imply that design thinking will help entrepreneurs in the generation and selection of innovative ideas. Simply put, design entrepreneurship is the collection of correct skills and abilities required to develop the right ideas and market them as successful design products. However, to be an entrepreneur, some entrepreneurial personality traits must be present in addition to the establishment of some pre-existing conditions. Within the scope of this study, it is aimed to compare the creative and innovative roles identified in the literature and attributed to designers with the competencies needed for entrepreneurship and to identify possible intersections. The first stage of the study identified the roles attributed to designer and entrepreneurship competencies. The following stage of the review determines the major or key roles of the designers. The next stage of the research focuses on 57 entrepreneurship competence frameworks under four main headings. The study's last section contrasted 83 creative and innovative role and definition contents assigned to designers with 57 entrepreneurial competence definitions using NLP-based text similarity measurement, and the text mining results were evaluated through correspondence analysis.

Keywords: Designer roles, Entrepreneurial competences, Hierarchical clustering, Semantic similarity, Text mining

INTRODUCTION

Designer roles describe the situations in which they have certain responsibilities and rights according to the position they have acquired in a profession. Designers perform their profession by acting in accordance with their professional roles and taking appropriate actions. The complex nature of the design activity necessitates designers to take on different roles. Harmony between these roles is essential, otherwise conflict is inevitable due to incompatibility. The first dimension of the conflict is that the professionally expected role is not fulfilled by the designers. The expected role may emerge from both professionally and due to changing work conditions and practice. Another form of conflict is that the designers do not use their roles according to their place and time, that is, role mismatch.

When the literature is examined, the organic relationship between design and entrepreneurship is often emphasized. Moreover, entrepreneurship is among the roles directly defined for the designer in many studies (Tan, 2012; Press & Cooper, 2003). However, it is also seen that the sum of the right skills and abilities required to develop the right ideas and market them as successful design products is defined as the concept of design entrepreneurship (Güneş, 2012). The organic relationship between design and entrepreneurship questions how design can add value to entrepreneurial activity, since it seeks to create opportunities in both concepts (Telalbasic, 2021). Because both the methodological structure of design-oriented thinking and the existence of design awareness (Nielsen et al., 2021; Kwon et al., 2021), the nature of design to form new ventures and new product development (Valencia, 2021), and the designer's organizational collaborations (Liu, 2021) are the ways that design supports entrepreneurship within existing frameworks to provide insight and evidence of how it contributes to their activity.

The existence of this mutually beneficial relationship between design and entrepreneurship makes it necessary to question the priorities, interests and belief structures of both fields. In this context, these two key elements of the creative ecosystem need to demonstrate their talents in a sustainable and collaborative way. The differences and overlaps between the two concepts should be revealed, the roles that will benefit each other and the advantage of using these roles as a strategic tool should be questioned. Although there are inevitable partnerships between design and entrepreneurship in terms of creating new ideas, products and services, both concepts have their own specific conditions, competencies and practices. Within the scope of this study, firstly the roles attributed to designers will be discussed, then a comparison has been made over the competencies defined for entrepreneurship over the definition of each role. For comparison, NLP-based text analysis was carried out for each role and competency content, and the results were discussed through correspondence analysis.

DESIGNER ROLES AND ENTREPRENEURSHIP COMPETENCIES

The concept of entrepreneurship essentially contains positive and privileged meanings. For this reason, many people believe that they have entrepreneurial characteristics and want to be mentioned as an entrepreneur. Some

professions naturally claim to be entrepreneurs because of their activities. Due to the positive meaning of entrepreneurship, others are concerned about developing and transforming their practices within the principles of entrepreneurship. However, entrepreneurship has gained more importance recently, and it has begun to be considered the main factor of economic development, employment creation, and social development. The personality characteristics of entrepreneurs, who are the actors of such an important field, have also been among the entrepreneurship determinants.

In the classical sense, an entrepreneur can be defined as a person who starts a business, who is in the production process by bringing together various production factors and taking risks, and as a result, aims to gain profit. be an entrepreneur, there must be some entrepreneurial personality traits besides establishing some existing conditions. These entrepreneurial characteristics are also an essential factor in the entrepreneurial tendency of the individual.

Product designers must play certain roles in terms of their job descriptions. Designers play different roles in generating ideas, how to collaborate with others, and making decisions, as long as the corporate strategy allows. When the changing ways of doing business, the differences according to the sector, and the requirements of different environments of the industries are evaluated, it is seen that designers can take on very different roles in companies. Hales (1985), who noticed this diversity of roles long ago, tried to explain the designer with the metaphor of a chameleon. Entrepreneurship is a role that is mentioned among the designer roles and is recommended to be played by designers. Moreover, in many studies, entrepreneurship is considered the main role played by the designer through the definitions of design entrepreneurship and entrepreneurial design. Design entrepreneurship is not about creating a new job, but about gaining a new vision and talent through design-oriented thinking in existing businesses. Entrepreneurial design, on the other hand, involves combining design and business concepts and designing and actually implementing the entire life cycle of how a product or service gets from an idea to its market. In any case, design and entrepreneurship are an inseparable whole that supports each other and both concepts have something to learn from each other.

Since the design work is related to the product, it assigns certain roles to the designer in the entire life cycle of the product. In the literature study by Güneş (2021) using the Snowballing protocol, 83 roles were found in the literature. In the work content, these roles are clustered as Creator/Conceptor as functional and Conductor/Coordinator as administrative and Connector as linking as roles. In the study conducted by Sumter et al. (2017), it is seen that the major roles of designers are determined as strategic, coordinator, and functional roles. Although the authors declare that they have identified these major roles based on the literature, it is seen that this distinction is not justified in the study. When the Design Management literature is evaluated, it is stated that the designers, by the process, operate in terms of institutional and project level (Topalian, 1980), policy and project level (Oakley, 1990), and strategic, tactical, and operational level (Chung, 1992). Generally, it is seen that designers play roles in both the operational way and the managerial roles. However, no study has identified entrepreneurship as a key

role for the designer. Because entrepreneurship has a very broad scope, it includes many roles that are already attributed directly and indirectly such as managing/coordinating / organizing and obtaining information/cooperation / communication. Within the scope of the designer roles of the study, Güneş's work was taken as the basis.

On entrepreneurial competencies, it is possible to reach different classifications in the literature. The first satisfaction research identified on this subject is the work of Michelmore and Rowley (2010). In this study, the literature was examined until 2008, and it was seen that 41 competence frameworks were created under four main headings. Another study was by Tittel and Terzidis (2020). In this comprehensive study, the authors performed an extensive literature study on entrepreneurship competencies and made 57 qualification definitions under three basic categories (Personal, Domain, Relationship Competence), each of which includes knowledge, skills, and attitudes. This study has been accepted as the main reference of the current study due to its extensive effort in determining each competency and the most up-to-date study in its field.
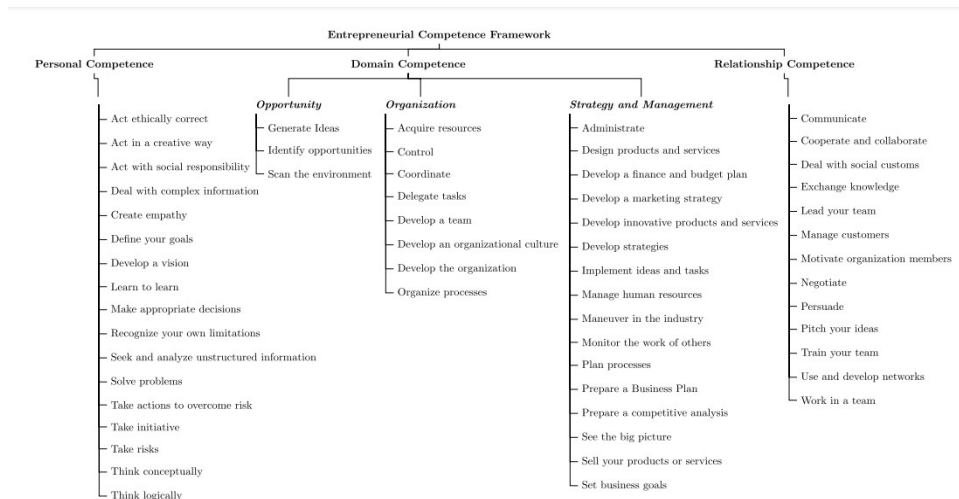
METHODOLOGY

Within the scope of the study, 83 designer role definitions presented in Table 1 were subjected to mutual content analysis with 57 entrepreneurial competencies in Figure 1.

To do this, first, for each designer role, a minimum of 10 content from the literature and internet environment must be added to the system. txt format is defined. For example, the ten most cited academic papers in business for the *storyteller* role (e.g., Taylor et. al, 2002) and 20 up-to-date content (e.g., *https://en. wikipedia.org/wiki/Organizational_storytelling*) that containing organizational definitions on the internet were included in the content repository for this role. In this manner, a content repository was created for each role. However, under 3 basic competencies, each entrepreneurial competency is defined in the comparison repository. The basic method of the study is based on scoring by comparing each role repository and the entrepreneurship content repository one by one.

Similarity assessment can be made between both texts at the lexical and semantic level. Lexical similarity is a rather superficial analysis. Here, the overlap of both word sets is compared to extract the similarity score. The higher the number of repeated words in the compared text pieces, the higher the similarity score. However, the meanings of these text fragments can differ. This method is more commonly used for keyword matching. Semantic similarity refers to the similarity between two pieces of text when their contextual meanings are considered. Semantic similarity is often used to perform NLP tasks such as description identification. The types of semantic similarity approaches are different in measuring the distance between pieces of text (Euclidean distance/cosine similarity or any other method). The compared texts are first converted to numeric vectors (e.g., with techniques such as Word2vec and Glove), and they may be semantically similar (value 1) or not (value 0). In this study, cosine similarity was used as a method. For

Table 1. 83 designer roles from the literature (Güneş, 2021).

Designer Roles						
Adviser	Agent of Change	Artist	Brand Maintainer	Capability Builder	Catalyst	Celebrity
Co-communicator	Co-creator	Co-designer	Collaborator	Communicator	Connector	Consultant
Coordinator	Co-producer	Co-promoter	Core Competence Prospector	Craft spersons Builder	Creator	Creators of Experiences and Brands
Creators of Consumer Experiences	Decision Facilitators	Design Developer	Design Generator	Design Manager	Design Process Provider	Divergent Thinker
Driving Force	Empowered Empowerer	End-User Expert	Enhancer of User Experience	Entrepreneur	Facilitator	Facilitator of End Users Creativity.
Flag Bearer	Functional Specialist	Future Oriented	Generalist	Guardians of Experiences	Guide	Hero
Hub	Identifier	Influencer	Innovation Driver	Innovator	Inspirer	Integrator
Intermediary	Interpreter	Interpreter of Complex Systems	Knowledge Broker	Maker	Market Exploiter	Masters/ Authorities
Mediator	Navigator	Negotiator	NPD Process Leader	Pioneer	Problem Solver	Producer
Professional	Promoter	Quality Producer	Questioner	Rationalist	Requirement and Criteria Provider	Researcher
Seducer	Social Visionaries	Star	Stimulator	Storyteller	Strategist	Strategy Visualizer
Synthesizer	Team Member	Teamwork Leader	Trans disciplinary Integrator	Visionaries	Visualizer	

Entrepreneurial Competence Framework

Personal Competence
- Act ethically correct
- Act in a creative way
- Act with social responsibility
- Deal with complex information
- Create empathy
- Define your goals
- Develop a vision
- Learn to learn
- Make appropriate decisions
- Recognize your own limitations
- Seek and analyze unstructured information
- Solve problems
- Take actions to overcome risk
- Take initiative
- Take risks
- Think conceptually
- Think logically

Domain Competence

Opportunity
- Generate Ideas
- Identify opportunities
- Scan the environment

Organization
- Acquire resources
- Control
- Coordinate
- Delegate tasks
- Develop a team
- Develop an organizational culture
- Develop the organization
- Organize processes

Strategy and Management
- Administrate
- Design products and services
- Develop a finance and budget plan
- Develop a marketing strategy
- Develop innovative products and services
- Develop strategies
- Implement ideas and tasks
- Manage human resources
- Maneuver in the industry
- Monitor the work of others
- Plan processes
- Prepare a Business Plan
- Prepare a competitive analysis
- See the big picture
- Sell your products or services
- Set business goals

Relationship Competence
- Communicate
- Cooperate and collaborate
- Deal with social customs
- Exchange knowledge
- Lead your team
- Manage customers
- Motivate organization members
- Negotiate
- Persuade
- Pitch your ideas
- Train your team
- Use and develop networks
- Work in a team

Figure 1: Categorized framework of entrepreneurial competence. (Tittel and Terzidis 2020).

semantic similarity, high vector Universal Sentence Encoder in Python - Transformer encoder is preferred. In summary, if there is a semantic similarity between each role definition and each enterprise competency, each similarity is added to the table as 1 point. Because of the semantic similarity analysis, the

similarity scores of each designer role over different entrepreneurship competencies were recorded in the Excel table (83x57). Then, for simplification, each entrepreneurial competency was transformed into the basic categories of Personal, Domain, Relationship Competence in accordance with the study of Tittel and Terzidis (2020), and a new Excel table was created with the sum of the score values (83x3). This table was then subjected to Hierarchical Clustering Analysis (Ward's Method) with the SPSS program.

SURVEY RESULTS

According to the grouped Excel table, Relational Competencies (2087) got the highest score and Personal Competencies (1490) got the lowest score in terms of designer roles. The roles that produce the highest score for each competency are Entrepreneur (147), Creator (107) and Design Manager (101), respectively. This is not surprising when entrepreneurial competencies are at the forefront. It can be said that the creator role has one of the highest values because this role prioritizes introducing something new (product, service, etc.). The expression manager, which directly refers to a managerial process, is also a common expression in all entrepreneurship competencies. The least valued role statements are Copromoter (36), Masters/Authorities (32) and Interpreter of Complex Systems (21) respectively. Although these roles are related to entrepreneurship, it is thought that the low frequency of use of the terms causes low score values.

In Figure 2, the Ward's dendrogram obtained because of the analysis is presented. A dendrogram is a diagram that shows the hierarchical relationship between objects. The low height of the link connecting the objects in the dendrogram indicates a high-value relationship. However, the number of common links indicates a possible clustering. In other words, it is the common connections that matter, not the horizontal object proximity. The location of the tags doesn't make any sense. The higher the position, the later the object connects with others. At this point, clades become important before the leaves at the terminal end. Some clades may have a single leaf (simplicifolious). One must interpret the simplicifolious entity to show that it differs significantly from the distribution in the remaining fragments. The parts whose connections are closest to the horizontal axis are most closely related.
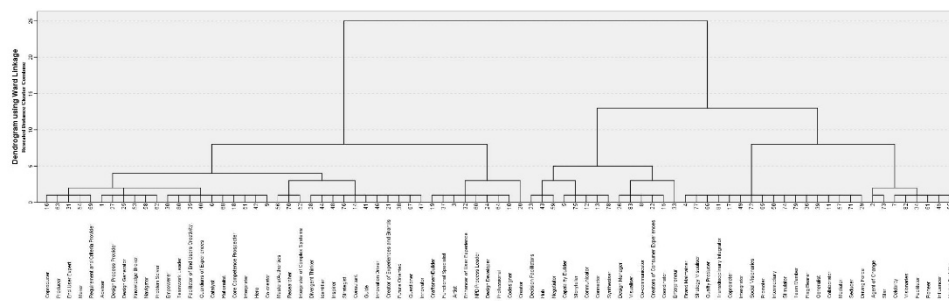
Figure 2: The Ward's dendrogram of three clusters.

When the Ward's dendrogram is examined, it is seen that there are basically 3 clusters. The first set consists of 14 elements (Capability Builder, Co-communicator, Communicator, Connector, Coordinator, Creators of Consumer Experiences, Decision Facilitators, Design Manager, Entrepreneur, Hub, Negotiator, Storyteller, Synthesiser, Visualizer) and exhibits more homogeneous features compared to the others. The most important features of these roles are that they all score higher than the others in terms of Relational Entrepreneurship Competencies. The Negotiator role obtained the highest semantic similarity score (59) in terms of Relational Entrepreneurship Competencies. The second set consists of 24 roles (Agent of Change, Brand Maintainer, Celebrity, Collaborator, Copromoter, Driving Force, Facilitator, Flag Bearer, Generalist, Influencer, Integrator, Intermediary, Market Exploiter, Mediator, Pioneer, Promoter, Quality Producer, Seducer, Social Visionaries, Star, Stimulator, Strategy Visualizer, Team Member, Transdisciplinary Integrator, Visionaries). This cluster is not as homogeneous as the first cluster. The most important feature of this cluster is that some of the cluster members have high Personal Entrepreneurship Competence scores. This cluster generally had low domain entrepreneurship competencies, but the set had the highest Relational Entrepreneurship Competence scores after the first cluster. The third cluster shows high homogeneity. The biggest feature of this cluster is that the Domain Entrepreneurship Competencies scores are the highest. However, relational entrepreneurship competency scores were low.

CONCLUSION

There are different personality traits, values and behaviors that distinguish entrepreneurs from non-entrepreneurs, and these differences must be investigated and defined. Entrepreneurship competencies are important to produce, develop and implement new applications in the design process and management. Within the scope of this study, 83 designer roles and 57 entrepreneurial competencies were subjected to semantic content analysis. Because the analysis was within the scope of the study, it was possible to represent the designer roles in the three clusters in terms of entrepreneurial competencies. The first cluster is a relatively small cluster and rather Relational Entrepreneurship Competencies are related and show Connector quality. In terms of these designer roles, being a good communicator is one of the most important skills required to display entrepreneurial qualities. Interestingly, these roles received relatively low values from technical field applications. The second cluster is a heterogeneous cluster. The element that makes this set interesting is the role in which the designer sometimes expresses himself as a detached individual by revealing his personal characteristics. It has been seen that these roles are directly related to Personal Entrepreneurship Competencies as they point to an individual who is self-confident and has values for entrepreneurship. Another feature of this cluster is the high Relational Entrepreneurship Competency scores. It refers to a group of roles that are self-confident and reveal their own discourse in a relationship. The last set is the largest set. What makes this

cluster special is that it is domain - based. In a way, these roles, which are related to the technical part of the design process and the kitchen of the business, are directly related to the technical capacity of the entrepreneurial designer and the design process. Competencies such as analysis ability, technology and model discovery, technical knowledge, solution-oriented thinking point to the field. It was seen that each design role is directly related to the three competence areas. So every design role has some affinity for entrepreneurship. However, different roles show a more intense relationship with different entrepreneurial competencies. As the designer is not expected to play all these roles, only one entrepreneurial competence creates suitable conditions for him to be seen as an entrepreneur.

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