INTERORGANIZATIONAL FILM FINANCING NETWORKS IN GERMANY

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Abstract

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This article examines film financing in markets where joint investments are common. Previous research has focused on output-related issues of the motion picture industry and have paid little attention to input-related issues. Based on the current network of interorganizational financing relationships, social, technological, and economic changes of the market context as well as repercussions on film financing are analyzed. The qualitative research design uses the Delphi technique to reach consensus among representative industry stakeholders and derive robust forward-looking results. The invited scholars and industry experts, all holding executive positions, evaluate financing of German motion pictures, where financing is a major task for film producers. The results show that video-on-demand platforms and public subsidization are most important for network evolution. Although context changes are large, researchers predict only minor structural and performance alterations in the industry.

The authors advance network theory concerning business networks of collaborative investment structures. So far, this area of research is largely conceptual. The authors contribute to forecasting and marketing literature regarding the constitution of networks in the financing stage of motion pictures and environmental conditions for network evolution in the motion picture industry. The empirical findings are helpful for practitioners in film financing as well as for cultural politicians that try to foster economic competitiveness and social development. Besides this, the research provides an application of the Delphi technique, which is indeed frequently used but rarely in the socially, economically and technologically important media industry. Moreover, we achieve methodological improvements through introducing an additional reliability test.

Keywords: Motion picture industry, business networks, interorganizational relationships, stakeholders of local film financing, Delphi technique, network dynamics
1. Introduction

Joint investment is very relevant if investment risk is high or the investment need overtaxes involved companies (Goettler and Leslie, 2005). In the motion picture industry joint investment is applicable to independent movies that are realized without full budget coverage from a major studio, i.e., if investments of more than one actor are necessary to raise the budget of a movie. This includes local productions in smaller markets such as Germany (FFA, 2016). The combination of different financing sources in this market setting is a major challenge (e.g., Eliashberg et al., 2006) and entails transaction costs. Financing networks are an instrument to organize repeated co-financing and reduce these costs. This leads to stable financing structures.

However, dynamics have been strong in the motion picture industry during recent years. The reasons are due to technological, social, and economic changes of the market context. There are four main reasons: Firstly, the technical possibility of streaming to watch movies on demand has become popular among consumers. In the U.S.A., revenues of video-on-demand services amounted to 7.53 billion US dollars in 2014 and surpassed physical home video sales (Digital Entertainment Group). Germany’s video on demand revenues have grown at a rate of 30 percent in 2014 (BVV, 2015). Secondly, this development has resulted in a change of the balance of economic strength between exhibition windows. Thirdly, there is an ongoing debate on the level of public funding. In 2015, for example, the federal government in Germany reduced the amount of film funding (e.g., Roxborough, 2014). Finally, one must state a demand shift towards a small number of mainstream movies (“blockbusters”). The audience of arthouse movies is older than they were ten years earlier, with a high number of heavy users. The theatrical revenues of the TOP 20 movies increased from 45 percent in 2005 to 54 percent in 2015 (FFA). These empirical changes suggest modifications within the film-financing network.

Nevertheless, previous research on the motion picture industry mostly assumes a given production budget. Few exceptions examine behavior of third-party investors (Hofmann, 2013) or crowdfunding (Seog and Hyan, 2009). Academic insights into the formation of financing networks only exist in areas such as R&D investment (e.g., Doz et al., 2000) or entrepreneurship (e.g., Hoang and Yi, 2015). There is a lack of findings about the structures and evolution of networks regarding film financing.
The objective of this article is to advance theory of forecasting regarding network development. We use the reasoning of the property rights approach and analyze the network structures of film financing. The research provides insights into current network structures and a forecast for network evolution within the specific context of Germany. The study answers the following research questions (RQ):

RQ1: What are the essential elements of the film-financing network in Germany (network structure)?

RQ2: How are economic, social and technological conditions changing until 2020 (network context)?

RQ3: How will the changed network context affect film financing in Germany (network evolution)?

We apply the Delphi technique, which is a widely accepted method to systematically address future developments in anticipatory examinations (Ecken et al., 2011). The essential characteristics, anonymity between experts, an iterative process, and controlled feedback (Von der Gracht, 2012) guarantee structured and consensual future scenarios. The method is superior in terms of stability and dependability, due to the underlying aggregated group opinion of participating experts, who hold executive positions in the industry. Our results show that experts confirm the four factors that influence network evolution. The development of the film-financing network in Germany substantially depends on video-on-demand platforms and public funding that would need to compensate for deterioration within the network. Nevertheless, experts only assume a limited impact of these context factors on the evolution of film financing.

This research contributes to literature and practice in two dimensions. Firstly, insights will expand existing knowledge to systematically address future developments regarding resource allocation. We derive a methodological approach that is applicable for modeling joint investment decision making. Besides this, previous research has lacked a yield of empirical studies. Only few insights into interorganizational networks are available (e.g., Provan et al., 2007). We add empirical findings concerning film financing in the German motion picture industry. Secondly, projections of network evolution until 2020 may support industry executives and cultural politicians. Relevant players involved in film financing may better adapt to the changing economic, social and technological network context.
Furthermore, cultural politicians will be able to anticipate market changes affecting film financing and improve public film support schemes accordingly.

The article is structured as follows. The following section 2 provides a literature review on network theory, which is the theoretical foundation of this study. Section 3 uses this theoretical background and applies it to the interorganizational relationships of film financing. Section 4 contains our modeling approach with the theoretical principles of this study regarding film-financing networks. The Delphi technique and research design are described and evaluated in section 5. We then present and discuss the research results in section 6. Based on the empirical results, section 7 derives implications for theory and practice as well as limitations and future research opportunities.

1. Network Theory: A literature survey

If three or more independent companies connect each other and cooperate repeatedly, the interorganizational relationship is defined as a network (Ebers, 1997). There are different forms of interorganizational cooperation – from joint ventures to interlocking directorates (Barringer and Harrison, 2000). The theoretical network approach contributes an adequate, relational basis for the analysis of firm behavior and outcome in such empirical market conditions (Zaheer et al., 2010). However, there is no holistic theory of business networks (Oliver and Ebers, 1998; Provan et al., 2007). A coherence deficit exists (Zaheer et al., 2010). Nevertheless, the film industry is an often-cited example of a network industry (Jones et al., 1997) due to prevailing flexible industry structures, project orientation, constant supply, demand uncertainty and time constraints (Barringer and Harrison, 2000; Picard, 2005).

The roots of network theory trace back to early economic research (Wilkinson, 2001), including the work of Commons and Parsons (1950) who defined bargaining transactions, i.e., transferring property rights, as one of three processes that occur between firms. In recent years research amount has increased and diversified significantly, as literature reviews indicate (e.g., Barringer and Harrison, 2000; Borgatti and Foster, 2003; Bergenholtz and Waldstøm, 2011). There are three levels of network analysis: the actor, dyadic and network level (Borgatti and Foster, 2003). Ozman (2009) structured research using the dynamic process of network formation and development. He introduced a classification into three groups: studies on the origin of networks, on network structures and on network performance. Provan et al. (2007) provided a literature review that focuses on the network level. Hoang and Antoncic (2003) and Hoang and Yi (2015) contributed reviews of relevant literature in an

**Network Formation**

Initiation and termination of business networks are widely studied (Kim et al., 2006). Firms build interorganizational networks to maximize revenues, access complementary and coordinate resources or minimize costs and internalize risks (Ebers, 1997). In addition to these motives, further basic conditions are discussed that explain the formation of interorganizational networks. These are the degree of familiarity with interorganizational relationships, the trust level between firms, norms and monitoring such as hierarchy or social control among participating firms, the degree of similarity in status, power and the market context (Brass et al., 2004). Building interorganizational relationships is linked to opportunities and inducements (Ahuja, 2000). Doz et al. (2000) for example, analyzed R&D consortia and reveal that two initiation processes are prevailing. Business networks are created during environmental change, either if equal opinions exist or if one firm plays a leading role and initiates the process.

**Network Structure**

The ability of firms to construe fruitful interorganizational relationships is a key competence (Ritter et al., 2002). The optimal structure of a network depends on a firm’s objectives (Ahuja, 2000a). The position of a firm in a business network defines its opportunities and constraints. The relationships in business networks are complex because actors may be potential suppliers, customers, partners and competitors at the same time (Anderson and Narus, 1999). Contractor et al. (2006) offered a framework to specify and test the relations within business networks on a multi-theoretical basis. The IMP group has yielded a research stream that analyzes the constitution of business networks (Axelsson, 2010). The introduced ARA-model is an often-cited simplistic approach to model interaction in business relationships (Hakansson et al., 2009; Hakansson and Johanson, 1992; Snehota and Hakansson, 1995). It consists of three main interdependent variables at the network level: web of actors, activity patterns and resource constellations. Web of actors describes the dependencies between involved firms. Hagedoorn (2006) examined embeddedness and derives a theoretical approach of interorganizational relationships. Activity patterns are the interdepending results of coordinated behavior between actors. Dhanaraj and Parkhe (2006) proposed that hub firms ensue, although lacking authority, the required economic results
during innovation processes. Raskovich (2003) described a setting of large and smaller buyers and the inherent power distribution. Resource constellations reflect combined resources of involved actors. Whereas in the traditional resource-based view firms own resources entirely, in a network economy resources are partly shared (see Lavie, 2006, for a theoretical model).

**Network Performance**

Network performance could be measured through quantitative or qualitative indicators such as the contribution of the network to industry’s development, innovation, new product development or knowledge building (see Provan et al., 2007). A few studies reveal success requirements for network performance. Dyer and Nobeoka (2000) discovered that building a strong network identity, in which knowledge is efficiently shared, supports performance. Legitimacy is another essential factor for network performance (Human and Provan, 2000). Baum et al. (2000) showed that composition and diversity of the network of start-ups is relevant for their performance. Ozmel et al. (2013) discussed the effects of venture capital firms in business networks. Aidis et al. (2008) used the example of Russia to propose that a detrimental institutional environment negatively effects entrepreneurship.

There are only a few studies concerning the creative industries. Two rare examples are the study of Sydow and Stabler (2002) on German television production and of Soda et al. (2004) on television content production in Italy. The study concerning Germany used Giddens’ structuration perspective regarding project networks and revealed that institutional support explains the performance and development of regional production clusters. The latter used social network theory and detected that current structural holes and past closure supports audience performance.

Rangan et al. (2006) have addressed the role of public actors and discussed cases in which public-private partnerships are efficient and effective. If uncertainty and governance costs are high for firms and positive externalities are prevailing, public actors should support.

**Network Context and Evolution**

Past development determines the future constitution of a business network. However, the relationships within a network or the composition of the participating group may change over time (for a brief description see Provan et al., 2007). Firms may encounter external changes in the market context through adjustments of interorganizational relationships (Lang and Lockhard, 1990). Knoben et al. (2006) presented a summary of literature on the network
effects of radical market changes. Possible changes may be technological (e.g., Madhaven et al., 1998), political/legal (e.g., Welch and Wilkinson, 2004), cultural or economical (e.g., Picard, 2005).

Madhaven et al. (1998), for example, found that technological change affects business networks. Whereas new technology adoption by powerful firms of a network leads to structural reinforcement, early adoption by a less central actor will lead to structural changes. The performance of a firm will decrease if the capabilities of other network members are getting worthless due to technological change (Afuah, 2000). Powerful players are able to define industry standards and they are more likely to survive if they adopt technologies in business networks at an early stage (Soh and Roberts, 2003).

Because of network evolution, the degree of uncertainty and munificence may change (Koka et al., 2006), which will lead to either network expansion, strengthening, churning or shrinking (Koka et al., 2006). This affects organizational structure and power distribution, which are addressed in this article.

3. Modeling Approach and Operationalization

Motion pictures are per se created in innovation processes. They are individually produced, have a unique character and face high market risks (Picard, 2005). The current interorganizational relationships to finance movies are examined with RQ1 (network structure). Possible changes of the business environment until 2020 will be addressed in RQ2 (network context). Based on this, RQ3 examines the effect of a changing network context on film financing (network evolution).

Network Structure

To examine the underlying interorganizational relationships, we refer to the fundamentals of the ARA model (Hakansson et al., 2009; Hakansson and Johanson, 1992; Snehota and Hakansson, 1995). The key resource under examination is an actor’s financial contribution to the budget of a motion picture. Other resources, such as creative staff and technical equipment, are usually provided by the market in project-related contractual relationships (DeFillippi and Arthur, 1998). The main activity task in the financing phase of a movie is to coordinate budget contributions and rights allocation.
The actors that may be involved in film financing are derived from literature. *Production companies*, as the manufacturing institutions, and distributors, which organize exhibition, are frequently discussed actors of the motion picture industry (e.g., Corts, 2001; Scott, 2005). Differences between non-integrated distributors (*independent studios*), which involve external partners for distribution in foreign markets (*world distributors*), and vertically integrated, international distribution companies (*major studios*), must be considered. Hofmann (2013) contributed a research piece on the role of *third party investors* that are external to the industry. Seog and Hyan (2009) examined the financing option of *crowdfunding*. Furthermore, presale license-fees of *television stations* and *video-on-demand services* are potential financing sources (see Pepall and Richards, 2006, on exhibition rights auctions). Public *funding bodies* are major protagonists of film financing in many European markets. Zuckerman and Kim (2003) indicate a differentiation between mass market and art house movies that should be considered.

**Network Context**

In literature, the competitive power of the motion picture industry is reflected by the relative volume of domestic production. To analyze the influence of market context, as suggested by Kumb et al. (2016), we examine the impact of contextual factors on the number of locally produced motion pictures. We consider and operationalize the *window-related economic potential*, *inter-window substitutability*, *window-related product preference*, *public subsidization level* and other factors.

Economic changes are of major importance for local movie production (e.g., Oh, 2001; Lee and Bae, 2004; Lee and Waterman, 2007). The *window-related economic potential* affects the amount of financial resources and determines the maximum investment of a financier in the absence of profits. Due to high fixed costs in movie production, economies of scale exist (Hansen and Xiang, 2011). Therefore, the expected revenue level is the deciding factor for profitability. We examine the expected development of window-related revenues to measure the economic context of film financing.

Several substitution effects are disclosed by different studies on the film industry. Cleeren *et al.* (2006) examined substitution effects between cinemas and video rental stores. Others analyzed consumer decisions between rental and sell-through products (e.g., Knox and Eliashberg, 2009; Mukherjee and Kadiyali, 2011). Dewenter and Westermann (2005) demonstrated substitution effects between cinema and television exhibition in a long-term
analysis of the German film industry. Therefore, we propose that *inter-window substitutability* exists and is an influencing context factor of film financing.

Many studies differentiate between mainstream and arthouse movies (*e.g.*, Gemser *et al.*, 2007; Hennig-Thurau *et al.*, 2012). Zentner *et al.* (2013) found that sales concentration is lower in video-on-demand services compared to other release windows. The study implies that demand for arthouse movies, compared to mainstream movies, may depend on the exhibition window and may change over time. Therefore, we operationalize the *window-related product preference* with arthouse (special interest) and mainstream (mass-market) movies.

The effects of public subsidization in the motion picture industry is a controversially discussed issue (*e.g.*, Marvasti and Canterbury, 2005). Public subsidization is a major market intervention. Many studies denied a positive effect of film funding on market competitiveness (*e.g.*, Jansen, 2005). Nevertheless, funding bodies continue to exist and increase the investment amount above the economically efficient investment level. Furthermore, they exert influence on the selection process of movies. Changes of the political objective concerning the *public subsidization level* may therefore influence the film financing business network. We operationalize this factor by the expected development of funding amounts of all involved funding bodies (European, federal, and regional).

*Other factors* may include all additional economic context factors, such as the country of origin of a movie (*e.g.*, Oh, 2001; Clement *et al.*, 2014), the effects of further technological development (*e.g.*, Picard, 2000; Kim, 2004) or other societal changes (*e.g.*, Cuadrado and Frasquet, 1999; Moretti, 2011).

**Network Evolution**

The third section compares current and expected network structures based on underlying changes, which are implied by the context factors. Network evolution includes additional actors who may become part of the *new web of actors* and others that will leave. Furthermore, possible changes in the *resource constellation* regarding budget contributions must be examined. We also analyze emerging changes within the *activity patterns* of film-financing coordination, as Figure 1 illustrates.
4. Theoretical principles of Film Financing Networks

Prior to the empirical analysis, we model the theoretical network structure, context, and evolution. According to general economic theory, the budget $B$ of movie $i$, which represents the financial performance of the film-financing network, equals – at most – the expected total net revenues $R$ that all financiers, participating in the network, generate in weeks $w$ of exhibition\(^1\). The preceding gross earnings $G_n$ are the cumulated earnings of all exhibition windows ($G_n = G_{CI} + G_{HV} + G_{VOD} + G_{TV}$), which are discounted with $f(w)$, the window’s individual rate of flow (Hennig-Thurau et al., 2007). The factor $r$ is the weekly industry-specific discount rate; $r_m$ is the respective monthly rate. Due to revenue-sharing contracts between distribution and exhibition (e.g. with cinema operators), $\beta$ is the revenue share of the financing partner of the network that contributes to the budget of movie $i$. In networks that involve existing public subsidization, the funding amount $P$ increases the budget. If public service broadcasting is involved, the revenues of the broadcasting window describe the (theoretical) added public value.

$$B_i = R_i - \beta_{CI} \times \frac{\sum_{w} f_{CI}(w) \ast G_{CI}}{(1 + r_m)^w} + \beta_{HV} \times \frac{\sum_{w} f_{HV}(w) \ast G_{HV}}{(1 + r)^w} + \beta_{VOD} \times \frac{\sum_{w} f_{VOD}(w) \ast G_{VOD}}{(1 + r)^w} + \frac{\sum_{w} f_{TV}(w) \ast G_{TV}}{(1 + r)^w} + P$$

\(^{1}\) Note: The figure represents the network structure and evolution over time. The network evolves from $t=0$ to $t=1$ with changes in the web of actors, resource constellation, and activity pattern.
Property rights are an accumulation of action and disposal rights and conduce to the internalization of revenues and costs. They describe the relationship within a financing network. The price and product differentiation of movies suggest that imperfect substitutability (Picard, 2011) exist between different exhibition windows of movies and internalize external effects. Consequently, financiers contributing parts of the movie budget receive different property rights regarding exhibition time and markets. The value of these exhibition rights should respond to the financier’s budget contribution and the corresponding revenue expectations.

Therefore, film financing in networks is modeled as a maximizing problem of property rights allocation. Let $V$ be the cumulated value of all property rights $j$ of movie $i$ that depend on the window-related economic potential $p$, inter-window substitutability $s$ and other factors $o$ (see Hennig-Thurau et al., 2007, for a comparable application of customers’ window choice). Furthermore, the customers’ window-related product preference regarding film type $f$ is included.

The secondary constraint reflects the importance of film funding. The public subsidization level $S_i$ reduces the budget amount that must be financed through the exploitation of property rights, which is reflected by the value $V_j$.

$$\text{Max } V_j = \sum_{n=1}^{j} G_n (p_n, s_n, f_n, o_n) \quad \text{s.t. } B_i - S_i = V_j$$

The network structure of financing partners contributing to the budget (Notation 1) and parameters describing the network context (Notation 2), are constituents of the following analysis regarding structure, context and evolution of film-financing networks.

5. Methodology and Research Design

Provan et al. (2007) recommend qualitative research methods to explore business networks, inherent dynamics and the impact of changing industry contexts. To include the evaluation of major industry stakeholders and achieve weighted, applicable results instead of diverse subjective statements, a certain degree of consensus among participants is needed. For this purpose, an explanatory research design, involving the Delphi technique, is a suitable approach.
Delphi Technique

The RAND Corporation developed the Delphi technique as an operations research method in the 1950s to investigate experts’ opinions and reach reliable future projections (Dalkey and Helmer, 1963; Helmer and Qaude, 1963). Scholars such as De Loë et al. (2016), Okoli and Pawlowski (2004), and Von der Gracht (2012) have provided brief overviews on Delphi. The multiphase Delphi technique is a heuristic method that focuses on fostering an acceptable level of consensus among participants. Results must be quantifiable. Key components are structural surveys that experts answer during at least two rounds. The participants receive controlled feedback on the aggregated group opinion in every following round. All experts answer the surveys anonymously and have the opportunity to modify their opinion during the iterative process (Linstone and Turoff, 1975; 2002). This reveals stable assents and dissents, based on consensus theory. The research process is described in Figure 2.

Figure 2: Four-stage Research Process
Overall, many academic works utilize the method (e.g., Blind et al., 1999; Gupta and Clarke, 1996; Landeta, 2006). Delphi has become an academically accepted and useful forecasting technique because of inherent advantages in areas where uncertainty is prevailing (Landeta, 2006). The method uses the higher dependability of joint group-decisions over individual opinions. Furthermore, research on Delphi effectiveness indicates that it outperforms other methods of group decision making (Rowe and Wright, 1999). Undesired psychological effects that may harm findings of other methods, such as dominant participants in focus groups, are eliminated. Anonymity guarantees opinion-forming procedures that are free from external influences, such as organizational policy of a participant’s institution. Nevertheless, the method faces some weaknesses, discussed in the literature. The inherent flexibility of the method allows for adjustments to the subject of investigation. At the same time, the lack of consistency reduces the explanatory power of the method (De Loë et al., 2016). Selection effects of experts and their small number, the unused benefits associated with oral discussions, and investigator-caused bias are major downsides. Generally accepted quality criteria are not available. Osborne (2003) and Landeta (2006) provided comprehensive evaluations of the methodology. We address these weaknesses of the technique and how to improve the quality level and develop an appropriate and reviewable modeling approach for this study.

Market Selection

Film financing is a difficult task if no actor is capable to provide the entire budget (Eliashberg et al., 2006). Germany’s market structure is characterized by small and medium-sized companies with limited financial power. Network structures with a number of budget contributors are necessary to finance a movie. Besides this, analyzing film financing is complex if public subsidization is prevailing. The public film funding system in Germany consists of 18 independent federal and regional film funding schemes with a combined budget of more than 300 million Euros per year (FFA, 2014). In addition to this, public service broadcasting is mandated to engage in film support. Therefore, the complex financing network of Germany is an interesting and relevant object of investigation.
Expert Panel

Expert selection is the most critical aspect when applying the Delphi technique (Okoli and Pawlowski, 2004). This comprises expert recruitment, panel constitution, and size of the expert panel.

Desirability bias and overconfidence of involved experts are major challenges. Desirability bias is the risk of higher likelihood levels of future events that are personally favored by members of the expert panel (Ecken et al., 2011; Rowe and Wright, 1996). Overconfidence of participating experts may also harm results (Moore and Healy, 2008). Hussler et al. (2011) suggested a heterogeneous expert panel to include all perspectives regarding the research question to receive more reliable insights (Powell, 2003). Therefore, we assemble a heterogeneous expert panel to naturalize the effects of desirability and reduce overconfidence through conveyed results of heterogeneous expertise.

To identify appropriate experts and compile the heterogeneous panel, we follow the suggested iterative process of Delbecq et al. (1975) as well as of Okoli and Pawlowski (2004). This includes (1) the identification of relevant skills and organizations, (2) the identification of relevant experts, (3) the nomination of potential experts, (4) the classification of experts into sub-samples, and (5) the invitation of nominated experts.

The selection is based on the experts’ individual reputations and the reputations of their respective institutions. All experts and their institutions should be working for or within the industry with yearly credits during the last ten years. Experts should represent major stakeholders or industry associations of film financing. We identify eight relevant groups (according to Kumb et al., 2016). They encompass industry stakeholders of seven groups: (1) cultural politics, (2) funding bodies, (3) creative professionals, and (4) production companies, as well as distributors and exhibitors of (5) cinema, (6) home video / video on demand and (7) television exploitation. The film-financing scientific community represents the eighth group.

All industry experts should be in executive or key positions regarding film financing in the German motion picture industry. Creative professionals include authors and directors who should be key participants in creative development processes. Politicians should be specialists of represented parties in the federal parliament. Scientists are members of film academies or equivalent university institutes. All experts require a business background and to be closely involved in film financing in their daily work. This is ensured by considering
their CVs and current positions. Participants (except for scholars) should have sufficient influence to shape the future development of the industry (Duffield, 1993). Regional diversity, ownership, and company size are taken into account. Gender structure should reflect an appropriate representation of women, meaning of at least 25 percent.

All experts are invited via email to guarantee quasi-anonymity between participants (McKenna, 1994). Table 1 shows participants according to their individual characteristics per group.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>exf/m</th>
<th>Job Position</th>
<th>Other Factorsa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural policy makers</td>
<td>10</td>
<td>/5</td>
<td>Member of Parliament</td>
<td>Party distribution: 4 / 3 / 2 / 1</td>
</tr>
<tr>
<td>Funding bodies</td>
<td>10</td>
<td>/6</td>
<td>General Manager</td>
<td>SME/Majors: 5 / 5 Regional Diversity: 3 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1</td>
</tr>
<tr>
<td>Creative professionals</td>
<td>10</td>
<td>/7</td>
<td>Author, Director</td>
<td>Authors / Directors: 5 / 5 Regional Diversity: 7 / 2 / 1</td>
</tr>
<tr>
<td>Production companies</td>
<td>10</td>
<td>/6</td>
<td>General Manager</td>
<td>SME/Majors: 8 / 2 Regional Diversity: 5 / 3 / 1 / 1</td>
</tr>
<tr>
<td>Movie theater distribution/exhibition</td>
<td>0</td>
<td>/9</td>
<td>Executive Manager</td>
<td>SME/Majors: 4 / 6 Regional Diversity: 4 / 2 / 2 / 1 / 1</td>
</tr>
<tr>
<td>Home video distribution/exhibition</td>
<td>0</td>
<td>/9</td>
<td>Executive Manager</td>
<td>SME/Majors: 4 / 6 Regional Diversity: 4 / 2 / 2 / 1 / 1</td>
</tr>
<tr>
<td>Television distribution/exhibition</td>
<td>0</td>
<td>/7</td>
<td>Executive Manager</td>
<td>SME / Majors: 2 / 8 Public/Private Ownership: 4 / 6 Regional Diversity: 3 / 3 / 2 / 1 / 1</td>
</tr>
<tr>
<td>Film Financing Scientists</td>
<td>0</td>
<td>/10</td>
<td>Scholar</td>
<td>Regional Diversity: 3 / 2 / 2 / 1 / 1 / 1</td>
</tr>
</tbody>
</table>

a Numbers illustrate expert distribution and ensure their anonymity

Table 1: Expert Selection

Panel size depends on research scope and objective (Hansson et al., 2000; Mullen, 2003). Hence, recommendations in literature on panel size diverge (e.g., Clayton, 1997; Skulmoski et al., 2007). Gordon (1994) summarized that most Delphi studies employ between
15 and 35 experts. There is no need for a large sample (Duffield, 1993). The response rate depends on the topic, difficulty, and length of surveys. Against this theoretical background, we nominate 80 experts and define a mandatory participation of at least two experts per group, resulting in a minimum level of 16 experts.

Quality Criteria

The importance of quality criteria has been frequently discussed in literature (Flick, 2009; Steinke, 2004). Some studies have either developed their own criteria for qualitative research designs (e.g., Shenton, 2004), or have rejected the utility of quality criteria (e.g., Denzin and Lincoln, 2000). To prevent the danger of arbitrariness and a lack of generalizability, we apply traditional quality criteria – objectivity, reliability, and validity – which are applicable in our study due to the quantitative elements of the research design.

Literature interprets objectivity as consistency, which requires resilience of external influences (Madill et al., 2000). We provide the transparency needed to achieve confirmability (Shenton, 2004) for third parties. Experts perform the Delphi surveys themselves in an online environment, which guarantees freedom from personal bias of the interviewer, compared to methodological approaches such as focus groups. Furthermore, standardized questions dominate. All open questions are analyzed with the subsumption technique developed by Mayring (2010) as part of the qualitative content analysis (for a brief discussion on the method, see Schreiner, 2014). Five scholars independently code the open questions to reach inter-coder reliability.

Reliability is a frequently discussed criterion in qualitative research (e.g., Flick, 2008). Following the theoretical construct, replications of a study should lead to identical results (e.g., Flick, 2009). Nevertheless, the required expertise is highly specific, experts are rare, and multiple Delphi studies with changed participants and a different degree of expertise will not necessarily show the same findings. Therefore, some reliability tests such as a test-retest design turn out to be unfeasible due to the exaggerated occupational status of participating experts. Parallel test methods could not be operationalized due to the iterative survey process, which requires a consistent basis. Otherwise, objectivity is at risk because of necessary interpretations of the researcher. To ensure dependability of our research design, we apply a variation of the well-known split-half method. We randomly separate each group into two sub-groups of five experts before implementation. Both sub-groups had to answer identical questionnaires in Round 1. The results show that correlations of both sub-groups are high.
Differences between the aggregated answers occur only in 7.2 percent of results. In these cases, one sub-group falls below the threshold level, which the entire group reaches. Nevertheless, there are no opposing results to cumulated insights. Consequently, results are a strong indication for a high reliability level.

Validity comprises internal and external validity. To evaluate true validity, an ex-post comparison would be necessary, which is impossible at the time of forecasting. Nevertheless, the accuracy of the research design may determine the (theoretical) validity level. Internal validity (Shenton, 2004) and the explanatory power of our Delphi design, in which possible confounding variables are irrelevant, ensure credibility. We have added an open-ended control question (Q16) to match the answers with the selected influencing factors. Furthermore, the iterative process, including the possibility of questioning previous results, assures communicative validity (Okoli and Pawlowski, 2004). External validity guarantees transferability of results (Shenton, 2004), which is ensured by comprehensive literature research. Additionally, empirical coherence checks are added to the experts’ answers regarding the evaluation of the present constitution of the film-financing network.

Threshold Levels

There are no generally accepted guidelines in literature for interpreting Delphi results in literature. Dajani et al. (1979) developed a theoretical stopping criteria matrix that forms the basis for many studies. Recommendations for adequate threshold levels vary between 0.51 and 0.8 (Hansson et al., 2000). Using existing literature as a foundation, we differentiate between four possible outcomes: consensus, majority, bipolarity, and plurality.

We define consensus by three termination criteria that are frequently used in literature (e.g., Geist, 2010; Musa, 2015). This includes a restrictive threshold of 0.7 as the optimal consensus level. Furthermore, we introduce thresholds for the interquartile range (IQR) of answers \( \leq 1.0 \) and the standard deviation (SD) of answers \( \leq 1.0 \) to quantify scatter. If these three threshold levels are reached, questions are terminated and are not re-presented in the following round. If answer options of a Likert scale receive more than 50 percent of expert answers, we accept them as majority results (according to Dajani et al., 1979). Bipolarity and plurality are dissent outcomes that need further examination in the following round.
6. Results and Discussion

The Delphi panel consisted of 34 experts who participated in the study. One expert participated only in the first round and 33 in both rounds. The response rate between both rounds of the study is 97.1 percent. This fully meets the requirements stated in literature (e.g., Martino, 1983). Between three and seven experts of every group take part in the research and thereby meet the minimum requirements of this study.

The inquiry can be divided into three parts. The first section asks for an evaluation of the current consistency of the film-financing network. The second section deals with prospective external influencing factors on local movie production. The third section asks for forward-looking statements concerning the film-financing network in 2020.

In the first section, the Delphi panel has designated federal film funding bodies and regional film funding bodies and public service broadcasting as regular financiers in the German film-financing network. Furthermore, major studios (in the mainstream segment) and independent studios (in the arthouse segment) are regular budget contributors. Besides this, free-to-air TV stations frequently co-finance the budget of mainstream movies. Production companies’ own resources contribute to the budget of arthouse movies, according to the expert panel. Nevertheless, experts consider major studios to be the most important financiers of mainstream movies. In the case of arthouse movies, funding of regional film funds are most important. However, experts ascribe the central coordination function in both segments to production companies. Table 2 summarizes the expert opinions on the current film-financing network.

There are no inconsistencies between the experts’ opinions and empirically observed market structures. The results confirm industry surveys on the German motion picture industry (e.g., Castendyk and Goldhammer, 2011). This consensus indicates a high validity of Delphi results. The findings reveal the important role of public funding sources in local film financing, including subsidies of funding bodies and contributions of public service broadcasting. Thus, especially arthouse movies rely on public funding. Nevertheless, even mainstream movies of major studios receive public support. Therefore, public funding bodies have a major responsibility in the selection process of movies. According to their role within the web of actors, public funding bodies should possess equal or higher market knowledge than most private investors.
Besides this, results disclose a disparity between financial contributions and network influence. Although production companies have a minor role in financing that is limited to the arthouse segment, they are essential in network coordination and therefore take responsibility for network performance (Dhanaraj and Parkhe, 2006). This evaluation is consistent with current film funding guidelines, according to which exclusively production companies are entitled to apply for production subsidies (FFA, 2014). These results imply a defective composition of the network structure with the risk of misallocation of property rights. The budget as the central network resource significantly depends on studios and public funding, while the adjustment of the network structure, resulting from a changing network context, depends on production companies.

<table>
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<tr>
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<th>Uninvolved (≥70.0%)</th>
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<tbody>
<tr>
<td>Q1. Web of actors</td>
<td>1</td>
<td>film funds (federal), film funds (regional), major studios, TV (free), TV (public)</td>
<td>film fund (E.U.), independent studios, production companies, VoD platforms</td>
</tr>
<tr>
<td></td>
<td></td>
<td>film funds (federal), film funds (regional), independent studios, production companies, TV (public)</td>
<td>major studios, TV (free), TV (pay), VoD platforms</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Q2. Activity patterns</td>
<td>1</td>
<td>production company</td>
<td>film fund (E.U.), film funds (federal), film funds (regional), independent studios, major studios, TV (free), TV (pay), TV (public), VoD platforms, world distributors</td>
</tr>
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<td></td>
<td></td>
<td>production company</td>
<td>film fund (E.U.), film funds (federal), film funds (regional), independent studios, major studios, TV (free), TV (pay), TV (public), VoD platforms, world distributors</td>
</tr>
<tr>
<td>Q3. Resource constellation</td>
<td>1</td>
<td>major studios</td>
<td>crowdfunding, film fund (E.U.), independent studios, investors, production companies, TV (pay), VoD platforms, world distributors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-</td>
<td>film fund (E.U.), independent studios, investors, major studios, production companies, TV (free), TV (pay), VoD platforms, world distributors</td>
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<td></td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>film fund (regional)</td>
<td>-</td>
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</tbody>
</table>

M = mainstream, A = arthouse
Table 2: Current film financing network

In the second section, the Delphi panel has assumed an increase in video-on-demand consumption until 2020, due to substitutional effects at the expense of DVD/Blu-ray and TV. Consequently, revenue potentials, which reflect the budget contributions of actors, of exhibition windows other than video on demand, will remain unchanged (cinema admissions) or decrease (home video, free-to-air TV). Experts have disagreed on the development of licensing revenues from pay TV and public service TV. Nevertheless, the experts have not expected a consequence on the number of locally financed movies (Q5, Q11). A relative majority assumes stable movie quantities whereas, in relative terms, more experts predict a decreasing rather than increasing number. These results imply that video-on-demand services will compensate for declines of other exhibition windows within the film-financing network, according to their increased revenue expectations. Besides this, the experts have predicted a shift of consumers’ preferences in favor of mainstream movies at the expense of arthouse movies. Consequently, they have expected a negative impact on the number of locally produced movies in 2020. These results show that the Delphi panel assumes an ongoing trend within the network to budget concentration on fewer movies that face ever-increasing investment requirements. Literature describes this as the “blockbuster effect” (e.g., Collins et al., 2002).

The cumulated subsidy amount of European, federal, and regional funding bodies will remain stable until 2020, according to aggregated expert opinion. Nevertheless, a relative majority negates a substantial effect on the total number of locally financed movies, while 44.1 percent expect the number of financed and produced movies decline. This implies that experts proceed on the assumption of balancing effects within the financing network that compensate for regular inflation, e.g. lower average movie budgets.

Some experts introduced other context factors with regard to the legal framework, domestic economic conditions, and international economic development that do not meet the threshold levels. Table 3 contains all results of the second set of questions. In summary, experts confirm that the tested context factors influence network evolution. They predict a moderate development that continues existing trends, such as an increasing importance of video-on-demand exhibition and a decline of arthouse demand. Nevertheless, only the predicted increase in demand for mainstream movies will have negative effects on the viability of the industry, indicated by the lower number of produced movies. The predicted
continuity of public film funding will stabilize the German motion picture industry until 2020 if inflation effects are compensated. As a result, public funding and video-on-demand are the key change triggers for the development of the film-financing network in Germany.

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<tr>
<th>Question</th>
<th>Rd</th>
<th>Strong Increase / Increase (&gt;50.0%)</th>
<th>Unchanged (&gt;50.0%)</th>
<th>Strong Decrease / Decrease (&gt;50.0%)</th>
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<tr>
<td>Q4. Expected window-related economic potential</td>
<td>1</td>
<td>S-VoD, T-VoD</td>
<td>-</td>
<td>DVD/BR (rental), DVD/BR (sell-through)</td>
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<tr>
<td></td>
<td>2</td>
<td>-</td>
<td>cinema</td>
<td>TV (free)</td>
</tr>
<tr>
<td>Q5. Effects of Q4 on movie quantities</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td></td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Q6. Expected window-related product preference (mainstream / arthouse)</td>
<td>1</td>
<td>mainstream movies</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>arthouse movies</td>
</tr>
<tr>
<td>Q7. Effects of Q6 on movie quantities</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>number of movies</td>
</tr>
<tr>
<td>Q8. Expected public subsidization level</td>
<td>1</td>
<td>-</td>
<td>film fund (E.U.), film fund (federal), film fund (regional)</td>
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<td></td>
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<td>Q9. Effects of Q8 on movie quantities</td>
<td>1</td>
<td>-</td>
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<td></td>
<td>2</td>
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<td>Q10. Expected inter-window substitutability</td>
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<td>VoD</td>
<td>cinema</td>
<td>DVD/Blu-ray, TV</td>
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<td></td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Q11. Effects of Q10 on movie quantities</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td></td>
<td>2</td>
<td>-</td>
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</table>

M = mainstream, A = arthouse, BR = Blu-ray
Table 3: Influence of context factors

In the third section, the experts have predicted that video-on-demand platforms will become regular financiers in the future financing network of movies. This implies that video-on-demand platforms will follow current financiers into the framework and increase their budget contributions according to their expected growing importance in exhibition. Other potential budget contributors, such as the advertising industry with product placement or technologically driven companies from the ICT industries, will not participate in the film-financing network in Germany.

The Delphi panel has expected pay TV stations to increase their financing activities of mainstream movies, while independent studios will reduce their financial contributions. However, experts have disagreed on the future role of major studios regarding mainstream movies. There are no clear results. In the arthouse segment, current private financiers – such as major studios, pay TV, and free-to-air TV stations – will lose importance. However, production companies will continue to be the central coordinators of the future network.

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<td></td>
<td>production company</td>
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<td>film fund (E.U.), film fund (federal), film fund (regional), production companies, world distributors</td>
<td>major studios</td>
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<td></td>
<td>2</td>
<td>-</td>
<td>crowdfunding, film fund (E.U.), investors, TV (public), world distributors</td>
<td>independent studios</td>
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</table>
Table 4: Film financing network in 2020

Table 4 summarizes the results regarding the future film-financing network in 2020. Comparisons with the experts’ specification of the current network reveal only minor modifications regarding the constitution of the network, while budget contributions face major changes. The results imply that it is decisive whether video-on-demand platforms and pay TV stations may compensate for declining contributions of traditional investors in the mainstream segment. Otherwise, dependence on stable public subsidization will increase. Cultural politicians and public funding bodies need to develop mechanisms to encourage private investment and the recovery of the film-financing network, e.g. revised funding schemes or local production quotas. In the arthouse segment, the decreasing demand will lead to a higher dependence on public subsidization. Consequently, the economic viability of the financing network will be further reduced. Decoupling from economic competition may be a solution for certain movies in this segment. According to other cultural subsidies, this could lead to general, free use releases, which will increase the audience for movies that rarely attract private investors but are socially desirable.

7. Conclusions

In this article, we have developed a new exploratory research design, applying the Delphi technique, to examine the film-financing network for locally financed motion pictures in Germany. Essential actors of the current film-financing network in Germany (RQ1) are public funding bodies, public service broadcasters and studios. Nevertheless, production companies are the central coordination actors. Changing economic, social and technological conditions will negatively influence film financing until 2020 (RQ2). Inter-window-substitutability, changed economic potential of windows, decreased arthouse demand and stable subsidization levels are major reasons. Nevertheless, members of the Delphi panel expect only minor changes of the film-financing network in 2020 (RQ3).

The results advance network theory in the form of a suitable modeling approach to investigate interorganizational networks in markets in which joint investments are common. Besides this, the applied measures to ensure validity and reliability improve the Delphi technique, which is a relevant research method with various possible applications in marketing and forecasting theory.
The results show that established financiers detect changes of the network context but systematically underestimate the dangers of these changes to the network structure. The reasons for this behavior remain unclear and should be addressed by future research. This may provide additional knowledge of circumstances that lead to network evolution and enhance network theory.

The study provides evidence for cultural policy to adapt existing funding schemes to projected market conditions in 2020. In order to avoid a further increase in dependence on public subsidization, cultural politicians should introduce mechanisms to encourage private investment. This study can be a starting point for further research in this area.

Previous research has mostly omitted to examine whether the predicted events really occurred. Therefore, scholars should review the predicted changes of the film-financing network in Germany to validate results of this study and to underline and verify the methodological performance of the Delphi technique.

Further research should build on the additional measures that are applied in this study to increase reliability and validity. Nevertheless, the exploratory research design faces some weaknesses in this area. For example, other factors may influence evolution of film-financing networks that are not part of this study. Besides this, a different group of experts, which does not comprise well-established industry executives, may derive additional or slightly different results. Therefore, our research needs further validation by using different research methods.

Finally, this empirical study is limited to the German market with its particular market conditions. For example, the German motion picture industry is highly subsidized, which includes a complex public funding system. Furthermore, only a small number of local major studios is involved in film financing. Therefore, findings may be not transferable to other markets. However, the study derives helpful implications for the analysis of financing networks that may represent the basis for research in adjacent markets or different industries.
References


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Rechts- und Wirtschaftswissenschaftliche Fakultät  
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