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The Networked Boardroom: Director Network Centrality and Firm Performance in Malaysia

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ABSTRACT

Achieving consistent firm performance is a crucial issue in strategic management and corporate governance research. This study uses Social Network Theory to present a network-based perspective and Resource Dependence Theory to suggests that directors' networks can serve as strategic governance resources. These networks help firms obtain essential external resources and reduce their dependence on the environment, thereby improving firm performance, as indicated by changes in return on assets. Additionally, the study claims that directors with extensive and influential interlocking networks give firms easier access to valuable information, legitimacy, and resource pathways. This support enhances strategic decision-making, resulting in better performance. Using secondary data from 579 publicly listed Malaysian firms in the consumer products and services sectors between 2017 and 2019, and applying content analysis of social networks and panel regression methods, the findings firmly back the proposed framework. The results indicate that a director's network positively and significantly impacts firm performance across all centrality dimensions. This finding means that firms with more centrally located and well-connected directors achieve better performance improvements. Overall, this study emphasizes a director's network as a unique source of performance advantage, distinct from traditional governance methods. By combining network-based corporate governance with the dynamic capability perspective, the study broadens our understanding of how firms in emerging, relationship-driven institutional settings use director networks to boost adaptive efficiency and maintain performance improvements.

Keywords: director networks, firm performance, corporate governance, social network theory, resource dependency theory

Methodological area: quantitative

INTRODUCTION

Globally, corporate governance effectiveness is paramount for sustaining firm performance and competitive advantage. This study investigates the role of directors' networks (DIRNET) as a critical governance instrument that determines financial outcomes, within the unique institutional context of an emerging market. While prior research claims that board networks facilitate access to important resources, information, and legitimacy (He & Huang, 2023; Shipilov & Li, 2023), the role of specific structural dimensions of network, i.e., network centrality, remain underexplored in settings defined by relational capitalism. This gap is noteworthy, as firms in economies such as Malaysia often rely heavily on informal networks to secure capital, and manage stakeholder relationships in complex regulatory environments. Therefore, the primary objective of this study is to examine how distinct structural dimensions of DIRNET, specifically Degree (DEG), Closeness (CLO), Eigenvector (EIG), Betweenness (BET), and Information (INFO) centralities (dimensions from the Social Network Theory),[1]

[1] DEG is a measure of the number and percentage of direct interlock relations between the directorates of a firm and other firms, and represents the range of a firm's direct exposure to others. CLO on the other hand, calculates an index of how quickly and easily a firm can access all other firms within the interlock structure, which reflects the efficiency of information and resource flows. EIG also known as eigenvector index, scores a firm's exposure to well-connected others, as a function of their individual centrality scores, which reflects a firm's quality of exposure. BET also known as betweenness index, scores a firm's presence on shortest paths between all

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differentially influence firm performance, measured by change in Return on Assets (CROA). By integrating insights from Resource Dependence, Social Network, and Signalling Theories, this research seeks to shed some light on which structural dimension of directors' networks constitutes a strategic governance asset. The findings aim to offer actionable insights for policymakers and corporate leaders on leveraging boardroom connectivity to enhance organizational resilience and performance in dynamic emerging markets.

The significance of directors' network (DIRNET) quality and structural composition is particularly pronounced in institutional environments characterized by weaker formal governance, such as Malaysia. In these contexts, relationship-based practices remain deeply ingrained within the corporate landscape, making informal ties a critical substitute for, or complement to, formal institutional support (Claessens & Fan, 2002; Khanna & Palepu, 1997). Well-connected boards can leverage their social capital to bridge institutional voids, facilitating superior access to vital information, scarce resources, and essential coordination mechanisms. Conversely, firms endowed with weak or poorly positioned director networks face significant disadvantages in navigating such relational ecosystems, thereby limiting their ability to harness external connections for performance gains. This dynamic can become self-reinforcing: firms experiencing performance declines may suffer from diminished credibility, which discourages qualified, well-connected directors from joining their boards, further constraining network development and access to critical external assets (Khanna & Palepu, 2000; Chen et al., 2014). This potential cycle of underperformance and network impoverishment underscores the need to examine DIRNET not merely as a static asset but as a dynamic, performance-shaping capability.

Consequently, this study investigates the impact of DIRNET's structural dimensions on firm performance, measured by changes in return on assets (CROA). We posit that a director's network position functions as a strategic governance asset, directly shaping a firm's operational efficiency and financial outcomes by determining its access to information, resources, and relational advantages. Our focus is specifically on Malaysia's unique business environment, where relational governance and embedded network ties critically influence corporate decision-making and strategic positioning. This approach aligns with prior research confirming the centrality of relationship-based governance in Malaysia, where director networks serve as a pivotal informal mechanism that shapes resource access and governance quality, which, in turn, influences observable performance outcomes such as CROA.

The primary objective of this research is to address a gap in the extant literature by empirically examining how specific facets of director network centrality affect firm performance within an emerging market's relationship-based institutional context. While existing scholarship acknowledges DIRNET as a strategic governance mechanism, there remains a scarcity of detailed evidence on the differential effects of distinct network characteristics in such settings. This study advances the theoretical discourse by framing DIRNET as a significant antecedent to CROA. We propose that well-connected directors enhance firms' access to strategic resources, privileged information, and relational benefits, thereby driving improvements in operational and financial performance. The embedded social capital at the board level is especially crucial for enhancing governance quality, fostering valuable inter-organizational linkages, and enabling more effective strategic decision-making in environments like Malaysia.

Our theoretical framework is anchored in an integration of resource dependence theory (RDT) and social network theory (SNT). RDT posits that organizations must manage their dependence on external resources controlled by other entities (Pfeffer & Salancik, 1978). From this perspective, DIRNET serves as a critical mechanism for securing essential resources, reducing environmental uncertainty, and gaining legitimacy. Simultaneously, SNT provides the structural lens to analyze how the configuration of these ties, their centrality, density, and reach, creates relational advantages that facilitate better information flow and coordination with key stakeholders (Adler & Kwon, 2002). Together, these theories explain how DIRNET functions as an organizational capability, enabling firms to identify, assimilate, and reconfigure external opportunities in line with dynamic capability arguments (Teece, Pisano, & Shuen, 1997).

To test our propositions, we employ content and network analysis on a sample of 579 publicly listed firms in Malaysia's consumer products and services sectors from 2017 to 2019. Using regression analysis, we hypothesize

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other unique pairs of firms, and hence represents a firm's control over flows of information. INFO also known as information index, scores an index of a firm's exposure to information over a range of direct and indirect paths.

that the scale and strategic quality of DIRNET will demonstrate a positive and significant association with CROA. Our models incorporate relevant control variables, including firm size (FMSIZE), leverage (LEV), age (FMAGE), growth opportunities (GROWTH), free cash flow (FCF), and export intensity (EI), to ensure robustness. We anticipate that the findings will confirm that firms with more extensive, strategically positioned director networks achieve superior performance within Malaysia's distinctive market context.

This study aims to contribute to both the governance and strategic management literature in several keyways. First, it empirically establishes DIRNET as a critical, yet often overlooked, determinant of firm performance in an emerging market, moving beyond a symbolic view of board interlocks to highlight their role as conduits of resources and information. Second, it contextualizes this relationship within Malaysia's specific relationship-based governance environment, demonstrating how network ties enhance visibility, credibility, and market positioning. Third, it elucidates the informational mechanisms underpinning this relationship, suggesting that the performance benefits of DIRNET are contingent on a firm's capacity to absorb and utilize network-derived knowledge, a capability paramount in information-asymmetric emerging markets.

The remainder of this paper is structured as follows. The next section provides a review of the relevant literature on directors' networks and firm performance, leading to the development of our hypotheses. We then detail our research methodology, sample, and variable measurements. Subsequently, we present and discuss the empirical results. The paper concludes by outlining the theoretical contributions, practical implications for managers and policymakers, and potential avenues for future research.

Directors Network and Performance: A Brief Review

The performance of firms, which is often indicated through changes in return on assets (CROA), has been a significant and contentious issue from both the academic and managerial perspectives. The CROA method is quite similar to traditional ROA, but it focuses on year-over-year fluctuations in companies' performance. Consequently, it is more capable of seizing the dynamic efficiency in asset utilization during the economic changes. This technique confronts the static ROA critiques that it can be sometimes overlooking the volatility in the firm's operations especially in service sectors like Malaysia's. The most recent studies have confirmed the importance of CROA in longitudinal studies regarding the impacts of governance. The evaluation of a previous corporate governance study that relied on year-on-year change in ROA as a measure of performance claims that this method captures the short-term profitability dynamics more reliably than static ROA does. Research has shown consistently that DIRNET's role is a principal determinant of CROA. Taking RDT into account, researchers put forward that the well-connected directors guarantee the timely provision of external information to the firms, and that they also provide facilitation to the firms in unlocking the strategic resources, in obtaining the financing, and in gaining more legitimacy in their institutional environment (Hillman & Dalziel, 2003; Tian et al., 2021). Directors who are located in varied or broad networks, especially those who are bridging structural holes, are often the ones who come by the non-redundant knowledge and the high-status people. This factor enhances the board's decision-making and promotes the firm's quick, efficient response to market competition.

Additionally, SNT inputs reveal that the effectiveness of DIRNET is determined by the major structural factors such as DEG, CLO, EIG, BET, and INFO while ST emphasize the relational-perceptual value of DIRNET. Trust establishing, knowledge transferring, and collaboration being the basic social capital benefits, enhance the process and the quality of information through the organizational boundaries (Nahapiet & Ghoshal, 1998). On the other hand, signalling theory implies that firms linked with very networked or reputable directors transmit positive messages of credibility, stability, and competence to investors, regulators, and other outside stakeholders, thus minimizing informational disparity and boosting trust in such markets. This is particularly the case in opaque ones. The recent research is more and more converging these theories, arguing that the performance of a company is a mixture of both the structural benefits that come with being connected to an external network and the signalling power that directors' relational positions carry over, more so in the case of emerging markets where the institutional restraints are to a larger extent relying on networks (Connelly et al., 2011; Peng et al., 2009; Shipilov & Li, 2012; Liu et al., 2015). In summary, the literature indicates that the outcomes of firms are not only influenced by their internal operations but also by how directors are situated in wider inter-organizational networks that both support the flow of resources and provide the market with signals that convey meaning.

Apart from accessibility to resources, the building of mutual trust, and the signalling effects, the recent literature points out that the effect of DIRNET on CROA is highly dependent on the firms' institutional embeddedness the regulatory, cultural, and socio-political environment in which they operate. Researches have demonstrated that the advantages of a network vary largely according to the institutional context, as the country specific governance systems, the regulatory credibility, and the informal business norms determine how the network ties are made, how they are understood, and how they are used (Carpenter et al., 2023; Aguilera et al., 2019). In Malaysia, which is the home to family-controlled ownership, government linked corporations (GLCs), ethnic-based business networks, and evolving regulatory reforms, the directors' links often assume twofold roles: opening up the way to the resources and helping the firms to deal with the institutions and their un-official relational practices (Munir & Baird, 2020; Ghazali et al., 2022). Viewed from this angle, CROA improves not only because the directors are well connected but also because these connections are made within a particular institutional background, in which the ties are activated, appreciated and limited. Things like investor protection, regulatory enforcement and the presence of state-linked actors, together with norms of reciprocity, further determine how much network relationships can be converted into performance gains (Fan et al., 2020; Claessens & Yafeh, 2021). All in all, this line of reasoning indicates that in emerging economies, the impact of DIRNET on firm performance can be fully understood only if the institutional context in which these networks are rooted is considered. These different perspectives combine to give a comprehensive view of the nature of DIRNET and CROA, especially in developing markets such as Malaysia, where a lack of institutions, large ownership, and relationship-based business make external ties far more valuable. According to the resource dependence view, the positions of directors' networks grant companies access to strategic resources, timely information, and legitimacy advantages that are particularly important in locations with fewer market-supporting institutions. Contrarily, the theories of social capital and signalling emphasise that resource access is not the only privilege of DIRNET: the relationships created by networks build trust, promote better communication, and send positive signals about credibility and stability to external stakeholders. All these views imply that, in developing economies, firm performance will be better if they not only occupy good positions in the network but also avail themselves of the benefits of trust and good market signals inherent in their respective connections. This integrated view suggests that Malaysian firms benefit the most when directors' outer networks not only enhance resource access but also foster relationship building and send trustworthy signals to the market.

Table 1. Prior and Current Research Streams on Board Networks and Firm Performance

Research Strand	Representative Studies	Source of Performance Advantage	Role of Board Networks / Relationships	View on Networks & Relationships
Resource Dependence Theory (RDT)	Pfeffer & Salancik (1978); Hillman & Dalziel (2003); Tian et al. (2021)	Access to strategic resources, external information, legitimacy, financing	DIRNET provide channels for critical resources, non-redundant knowledge, and high-status connections	Positive Networks as resource providing structures
Social Network Theory (SNT)	Burt (1992); Granovetter (1985); Carpenter et al. (2023)	Structural advantages from network position	Directors in bridging positions gain informational advantages and strengthen decision-making	Positive Networks as structural advantages
Signaling Theory (ST)	Spence (1973); Connelly et al. (2011); Ghazali et al. (2022)	Market confidence, reduced information asymmetry	Networked directors signal stability, competence, and credibility	Positive Networks as credible signals
Institutional Embeddedness Perspective	Aguilera et al. (2019); Munir & Baird (2020); Claessens & Yafeh (2021); Carpenter et al. (2023)	Ability to navigate institutional constraints	Networks help firms respond to informal norms, state influence, and regulatory gaps	Context dependent Value varies by institutional conditions

Hypothesis Development

In this section, we formulate our research hypotheses through the combination of Signalling Theory (ST), Resource Dependence Theory (RDT), and Social Network Theory (SNT) on how directors' networks (DIRNET) affect firm performance (CROA). In emerging, relationship-based markets like Malaysia, firm performance is influenced by its ability to leverage external ties and its governance reputation. It is postulated in ST that the significance of well-connected directors on the board serves as a plausible signal about governing reputation, legitimacy, and stability, thus mutually benefiting external parties' confidence and firm performance (Connelly et al., 2011; Rao & Greve, 2018; Park & Kim, 2023). Recent research suggests that directors with vastly connected external networks signal superior monitoring capability and strategic availability, thus favourably impacting financial performance (He & Huang, 2023).

In line with the predictions derived from RDT, DIRNET are essential conduits for firms to acquire outside-institutional and strategic knowledge, which cannot be internalized (Pfeffer & Salancik, 1978; Hillman & Dalziel, 2003). Supporting this framework are recent results that have tested and confirmed that firms with strongly connected boards can reduce resource dependence and uncertainty, ultimately improve firm performance (Shipilov & Li, 2023). Within emerging countries with less predictable market structures, firms utilizing interlocking directorates are able to be much more flexible and have improved competitive advantage (Khatib et al., 2022). In support of SNT, DIRNET is a structural and relational form of social capital that improves information flows and knowledge diffusion (Nahapiet and Ghoshal, 1998; Adler and Kwon, 2002). Recent studies highlight that high-quality network links enhance the speed of interpreting institutional changes, absorbing market knowledge, and formulating strategic responses thereby improving firm performance (Liu, Shi, & Chen, 2023). Based on the aforesaid theoretical foundations, it may be inferred that DIRNET have more importance than mere symbolic network links. Boards with stronger network links improve a firm's performance by serving as credible signals to the market, reducing environmental dependence, and enabling greater access to social capital. Based on the theoretical framework outlined above, the following hypotheses have been formulated. Degree Centrality (DEG) is the number of direct ties a director has within a company's social network. As argued by Nezami et al. (2024), DEG measures the degree to which a node is actually connected to other nodes, revealing a director's ability to access and distribute information, pointing to a significant role they play as a mediator of knowledge flow within a company. In essence, directors serving on various company boards are expected to be more central, enabling them to gain better access to diverse information, resources, and power (Freeman, 1979). The greater a director's DEG, the more they are expected to imbue their main concern with market knowledge, strategic vision, and industry experience gleaned from other companies, thus improving their decision-making abilities. In RDT theory, non-audit boards are perceived to play a dual role as mere company watchdogs and as channels for gaining access to vital external resources (Pfeffer & Salancik, 1978; Hillman & Dalziel, 2003). Scholars have found a prominent relationship between DEG and better company performance (Fang et al., 2015; Nezami et al., 2024). A director with strong ties to others can harness valuable information and resources, which helps to generate superior performance (Larcker, So, & Wang, 2013; Ferris, Jagannathan, & Pritchard, 2003). In a nutshell, a superior DEG helps to build greater trust, teamwork, and coordination among companies, enabling a faster shift to environmental changes and superior performance.

H1a: There is a positive relationship between DEG and CROA

Closeness centrality (CLO) measure the proximity of a director to other directors in the corporate network, indicating the director's ability to reach others via the shortest path (Freeman, 1979). Strategically located directors with high CLO values enjoy the benefits of easy access to different sources of information and collaboration without the need for a direct structural tie. This structural advantage helps the company respond quickly to changes in the environment such as shifts in government regulation, technology, or market forces. According to RDT, directors with high CLO strengthen the firm's external linkages and resource access by connecting to a wider range of stakeholders and strategic partners (Pfeffer & Salancik, 1978). Researchers have supported the notion that a high CLO score enhances a company's performance and innovation capabilities through efficient information exchange and faster decision-making (Harjoto & Wang, 2020; Bai et al., 2021; Gulati & Westphal, 1999; Shipilov et al., 2014). The findings emphasize the importance of network proximity, where structurally close directors in the DIRNET data play a critical role in facilitating the flow of knowledge or trust and helping the company build flexibility to achieve better results.

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H1b: There is a positive relationship between CLO and CROA

Eigenvector centrality (EIG) refers not only to the number of a director's ties in a given corporate network, but also, in this measure, the importance and influence of these ties. A high EIG for a director does not necessarily entail that he or she does not actually have many direct ties, as this particular individual can somehow be well-connected with many high influencers in the network, thus reflecting this particular individual's influence, importance, or authority in the given network structure (Bonacich, 1987). This advantageous network position offers firms various advantages, including priority access to exclusive information, increased legitimacy, and trust from many stock investors. Ties with influential directors can also open pathways to securing gains in connections with potential funding sources, business partnerships and corporate influence. Under the RDT model, directors who are entrenched in influential corporate networks can act as conduits to secure particular firms' crucial external resources, including direct gains from emerging technologies, access to potential funding sources, and mainstream institutional support (Pfeffer & Salancik, 1978). Empirical evidence directly supports the view that EIG performance can positively relate to good corporate performance and corporate governance (Nezami, Chisam, & Palmatier, 2024; Zhang, 2023; Larcker, So, & Wang, 2013). Directors with strong EIG can, in some ways, improve a firm's strategic posture, as this can provide them with faster access to crucial information and corporate legitimacy in the corporate landscape (Stahl et al., 2021; Omer et al., Renneboog & Zhao, 2011).

H1c: There is a positive relationship between EIG and CROA

Betweenness centrality (BET) measures how much a director acts as a bridge between different, otherwise disconnected subgroups in a corporate network. Directors with high BET hold structurally influential positions that allow them to mediate and control information exchange between separate clusters (Burt, 1992). These brokerage positions confer strategic advantages due to access to diverse, nonredundant information. Indeed, empirical evidence indicates that BET has positive effects on firm performance and cash management efficiency (Rumokoy et al., 2024; Nezami et al., 2024). The directors bridging structural holes enable the exchange of unique knowledge while enhancing inter-organizational cooperation, thus strengthening firms' adaptive and strategic ability (Zaheer & Bell, 2005; Lin et al., 2022; Shipilov & Li, 2008). Their network positions enhance a firm's access to external stakeholders such as customers, suppliers, and regulators, fitting well within RDT and SNT emphases on the importance of external connections (Pfeffer & Salancik, 1978). Moreover, these directors are found to be highly instrumental in reputation building, driving innovation, and increasing responsiveness in environments characterized by rapid change (Liu et al., 2023; Shi et al., 2021). Firms enable competitiveness, lower transaction costs, and thereby enhance overall performance by cross-group information flows.

H1d: There is a positive relationship between BET and CROA

Information centrality (INFO) measures the extent to which directors facilitate effective information transfer within the corporate network. Unlike other techniques for assessing the strength and power of directors' corporate networks, which focus on the quantity or quality of network ties, INFO emphasises directors' important roles in information transfer and propagation along the best communication paths within the network (Stephenson & Zelen, 1989). The roles played by directors with high INFO are important and help minimize intervals with obstacles in information transfer through access to important knowledge at the right time. The ease of information transfer through timely decision-making is important in corporate governance environments when corporations operate in a competitive changing environment. Such directors with high INFO help corporations respond quickly to changes in the market, technological, and regulatory environment changes. As such, decision quality and financial performance are enhanced (Reagans & Zuckerman, 2001; Fang et al., 2014). Empirical tests have shown a positive correlation between INFO and corporate financial performance. As such, directors with high INFO improve the accuracy of communication and cooperation among key stakeholders (Harjoto & Wang, 2024). From the standpoint of Social Capital Theory, directors with high INFO not only enhance corporate information transfer but also enhance trust and cooperation through effective communication (Cross & Parker, 2004). H1e: There is a positive relationship between INFO and CROA.

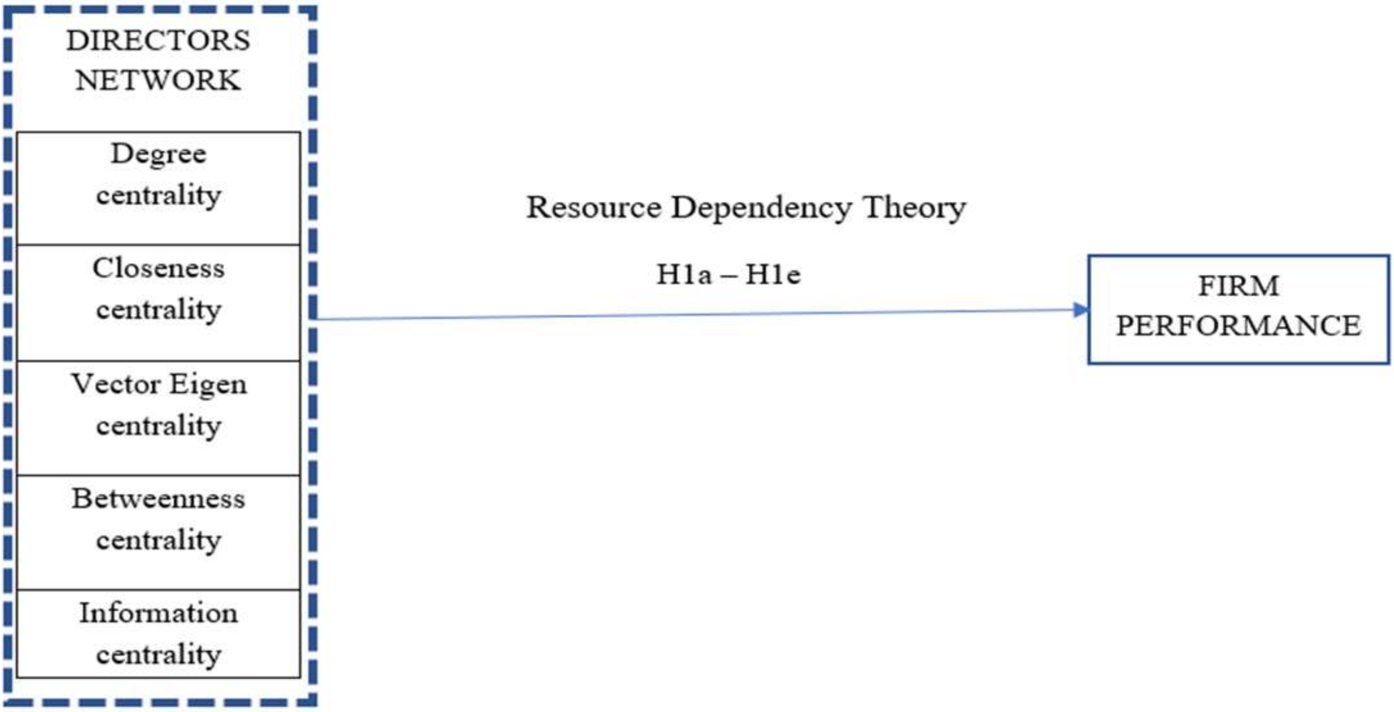

Figure 1. The research framework

METHOD

Sample

The study sample consists of publicly listed firms on Bursa Malaysia within the consumer products and services industries on the Main Market and ACE Market. This choice of sectors is made because the firms in the consumer products and services sectors operate in a highly competitive and dynamic environment where their success relies heavily on strategic thinking and the use of external information. Empirical evidence has indicated that firms in fast moving, customer-driven industries derive greater advantages from directors who are well-networked externally, which in turn enables them to obtain greater knowledge flows, information, and access to complementary resources than their less well-networked directors do, thus enabling the firm to perform better or obtain greater returns despite the costs involved (Hillman & Dalziel, 2003; Johnson, Bowman, & Bonds, 2013; Zona, Zollo, & Di Maria, 2018).

This sector, therefore, is an appropriate context in which to test the research hypothesis, which proposes that DIRNET affects the firm performance variable (CROA). This sector is crucial to Malaysia's economy, employing more than 60% of the country's population and accounting for more than 50% of the country’s Gross Domestic Product (Plecher, 2020; Treasury of Malaysia, 2017). This sector comprises significant sectors such as retail, finance, and hotels, represented by some of the largest entities, including Tenaga Nasional, Telekom Malaysia, PLUS, Petronas Dagangan, and Malaysia Airlines. The data used to test the hypothesis for this research are drawn from the annual reports of the firms for the period 2017-2019, available on Bursa’s website. This is because 2019 was the last year the country's economy was not affected by the COVID-19 pandemic, which had a significant impact on the country's economy and stock market (Ozili & Arun, 2020). This research used a sampling frame of 579 firms from the sector identified.

Table 2. Sample

Year	**2017 #**	**2018 #**	**2019 #**
Main Market	180	177	178
ACE Market	14	14	16
Total	194	191	194

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Variables and measures

The study includes three main types of variables dependent and independent, supported by several control variables. The dependent variable by firm performance is measured by changes in the return on assets (CROA). It shows how responsive the management is and how it has improved its operations and management efficiency. It shows how efficiently or inefficiently the company generates revenue from its resources. The independent variable, DIRNET, captures the board composition and connections across multiple firms. The variable DIRNET is measured using social network analysis and covers five forms of centrality, as mentioned in the study DEG, CLO, EIG, BET, and INFO.

DEG represents the range of the company's network by quantifying the number or proportion of other companies with which the company has ties through interlock directorships. CLO shows the company's accessibility to other actors by calculating the average geodesic distance from the company's directors and other company actors. EIG considers the number and quality of the company's ties giving greater weight to ties with highly connected companies. BET captures the company's brokerage potential by calculating how often the company appears along other companies' shortest paths. INFO quantifies the strength of information gathering by measuring the proportion of ties between the company's representative and other company representatives. These variables provide a full understanding of the range, accessibility, importance, brokerage, and information flow of the intercompany directors.

Control variables

Moreover, several control variables explain firm-specific factors that may also influence performance. The control variables are FMSIZE, which is the natural log of the total assets, LEV, which is the total liabilities to total assets ratio, FMAGE, which is the natural log of the number of years that have lapsed since the firm's formation, GROWTH, which is the difference between the market and the book value of assets divided by the market value, FCF, which assumes the values of the net operating cash flow and the expenditures on capital, and EI, which is the sum of the export sales to the total sales. Additionally, there is the dummy variable MAIN which distinguishes firms quoted in the Main Market (assumed 1) from those in the ACE Market (assumed 0). Therefore, the regression model of this study is as follows:

$$\hat{FP} = i_1 + a\hat{DIRNET} + b_1\hat{FMSIZE} + c_1\hat{LEV} + d_1\hat{FMAGE} + e_1\hat{GROWTH} + f_1\hat{FCF} + g_1\hat{EI}$$

Firm performance (FP) is the dependent variable in this study. There are five (5) independent variable elements tested in this study, namely the director network (DIRNET). The control variables consist of FMSIZE is the size of the firm, LEV is leverage, FMAGE is the age of the firm, GROWTH is growth opportunity, FCF is free cash flow and EI is export intensity, i is the intercept, and a, b, c, d, e, f and g are parameters.

FP	=	Firm performance
i	=	Intercept
a, b, c, d….	=	Parameters
DIRNET	=	Director's network
FMSIZE	=	Firm size
LEV	=	Leverage
FMAGE	=	Firm age
GROWTH	=	Growth opportunity

FCF = Free cash flow

IE = Export intensity

RESULTS

The regression results indicate that DIRNET has a clear, positive impact on CROA across all models. In particular, DEG ($\beta = 3.814$, $p < 0.01$), CLO ($\beta = 2.176$, $p < 0.01$), and EIG ($\beta = 2.458$, $p < 0.01$) show strong and significant links with CROA. This suggests that directors who hold more central roles within the DIRNET help boost CROA by providing better access to resources, valuable information, and external opportunities.

Likewise, BET ($\beta = 0.061$, $p < 0.01$) and INFO ($\beta = 1.102$, $p < 0.01$) also have a positive relationship with CROA, indicating that directors who serve as connectors between firms play an important role in promoting strategic communication and cooperation beyond organizational boundaries. Looking at the control variables, FMSIZE ($\beta = 0.732$, $p < 0.01$), LEV ($\beta = 0.621$, $p < 0.01$), GROWTH ($\beta = 0.009$, $p < 0.05$), FCF ($\beta = 0.037$, $p < 0.05$), and EI ($\beta = 0.411$, $p < 0.50$) all have positive and meaningful effects on CROA. This suggests that firms that are larger, financially stable, growing, and export-oriented firms tend to perform better. On the other hand, FMAGE shows a negative and significant effect ($\beta = –0.012$, $p < 0.10$), suggesting that older companies may struggle to remain flexible in rapidly changing environments. Overall, these findings provide empirical support for the RDT. he positive effect of DIRNET on CROA reinforces the notion that director interlocks provide firms with access to external information channels and resource pools thereby enhancing performance.

Table 3. Baseline Regression of DIRNET dimensions on CROA

CROA	**Coefficient**	**Standard Error**	**t-statistic**	**P>t**
Independent Variable				
Constant	-14.51	2.930	-4.953	0.000
DEG	**3.814*****	0.734	5.190	0.000
CLO	**2.176*****	0.507	4.290	0.000
EIG	**2.458*****	0.426	5.772	0.000
BET	**0.106*****	0.035	3.030	0.003
INFO	**1.102*****	0.157	7.010	0.000
Control Variable				
FMSIZE	**0.732*****	0.212	3.450	0.001
LEV	**0.621*****	0.113	5.490	0.000
FMAGE	**-0.012****	0.011	-1.090	0.045
GROWTH	**0.009****	0.004	2.250	0.053
FCF	**0.037****	0.009	4.110	0.051
EI	**0.411****	0.367	1.120	0.035

*** and ** indicate a significant level at $p < 0.01$ dan $p < 0.05$ respectively

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Panel data

The results of the panel data regression analysis indicate that the Fixed Effect Model (FEM) is the most appropriate model for this study, as confirmed by the Hausman test ($\chi^2 = 57.48$, $p = 0.000$), which indicates significant differences between the fixed- and random-effects estimates. The analysis shows that all five dimensions of the DIRNET have a positive and significant influence on CROA. Specifically, DEG ($\beta = 5.282$, $p < 0.01$), CLO ($\beta = 3.133$, $p < 0.01$), EIG ($\beta = 3.200$, $p < 0.01$), BET ($\beta = 0.122$, $p < 0.05$), and INFO ($\beta = 1.672$, $p < 0.01$) all demonstrate statistically significant relationships with CROA. These finding means that firms with directors who hold central and influential roles in DIRNET tend to perform better because these positions provide easier access to valuable information, resources, and strategic opportunities.

Among the control variables, FMSIZE ($\beta = 1.285$, $p < 0.01$), LEV ($\beta = 1.009$, $p < 0.01$), and FCF ($\beta = 0.060$, $p < 0.01$) have positive and significant effects on CROA, whereas FMAGE ($\beta = –0.025$, $p > 0.10$), GROWTH ($\beta = –0.017$, $p > 0.10$) and EI ($\beta = 0.836$, $p > 0.10$) are not significant. The robustness test using Driscoll–Kraay standard errors confirms that the main relationships remain significant after controlling for heteroskedasticity and autocorrelation, ensuring the reliability of the panel estimates. Overall, these findings demonstrate that DIRNET play a significant role in directly enhancing CROA. The results align with RDT, which posits that interlocking directorates provide access to valuable external resources to sustain CROA.

Table 4. Panel Data Regression of DIRNET dimensions on CROA

CROA	Coefficient	Standard Error	t-statistic	P>t
Independent Variable				
Constant	-14.51	2.930	-4.950	0.000
DEG	**5.282*****	1.016	5.200	0.000
CLO	**3.133*****	0.731	4.290	0.000
EIG	**3.200*****	0.555	5.770	0.000
BET	**0.122*****	0.041	3.010	0.003
INFO	**1.672*****	0.238	7.020	0.000
Control Variable				
FMSIZE	**1.285*****	0.371	3.460	0.001
LEV	**1.009*****	0.184	5.490	0.000
FMAGE	-0.025	0.023	-1.050	0.296
GROWTH	-0.017	0.008	2.130	0.034
FCF	**0.060*****	0.015	3.950	0.000
EI	0.836	0.747	1.120	0.264

*** and ** indicate a significant level at $p < 0.01$ dan $p < 0.05$ respectively

Principle Component Analysis (PCA)

The Principal Component Analysis (PCA) results demonstrate that the director network construct (DIRNET) assessed through five indicators (DEG, CLO, EIG, BET, and INFO) is unidimensional, with the first component accounting for 76.5% of the total variance (eigenvalue = 3.823). The Kaiser-Meyer-Olkin (KMO) value of 0.889

and Bartlett's Test of Sphericity ($\chi^2 = 2169.102$, $p < 0.001$) further verified the adequacy of the sample and the presence of significant intercorrelations among the variables. Panel regression findings indicate that DIRNET exerts a significant positive influence on firm performance (CROA) ($\beta = 1.972$, $p < 0.01$). Firm size, leverage, and free cash flow also emerged as significant control variables, with the overall model explaining 72.2% of the variance in CROA. The Hausman test ($\chi^2 = 45.23$, $p < 0.001$) supported the use of the fixed effects model. Collectively, the results affirm that DIRNET contribute directly to improved CROA.

CROA	**Coefficient**	**Standard Error**	**t-statistic**	**P>t**
Independent Variables				
Pemalar	**-9.745*****	2.950	-3.300	0.001
DIRNET	**1.972*****	0.115	17.18	0.000
Control Variables				
FMSIZE	1**.303*****	0.373	3.500	0.001
LEV	**1.037*****	0.184	5.640	0.000
FMAGE	-0.024	0.024	-1.040	0.301
GROWTH	**-0.016****	0.008	2.000	0.046
FCF	**0.058*****	0.015	3.770	0.000
EI	-0.419	0.739	0.057	0.571

Component 1 eigenvalue = 3.823; explains 76.5% of total variance

KMO = 0.889 Bartlett's Test $\chi^2 = 2169.102$, $p < 0.001$

*** and ** indicate a significant level at $p < 0.01$ and $p < 0.05$ respectively

Robustness test

As an additional robustness check, this study employs one year ahead stock return (RET1Y) as an alternative dependent variable to validate whether the DIRNET's influence on RET1Y remains consistent when firm value is measured using a forward-looking market-based metric rather than an accounting-based indicator such as CROA. Prior studies (Jegadeesh & Titman, 1993; Daniel & Titman, 1997) also emphasize forward returns as an important measure for evaluating how firms' fundamental characteristics translate into future market performance. Result show that DIRNET dimensions are positive and statistically significant predictors of RET1Y. DEG ($\beta = 25.262$, $p < 0.01$), CLO ($\beta = 8.147$, $p < 0.01$), EIG ($\beta = 4.030$, $p < 0.05$), BET ($\beta = 0.198$, $p < 0.10$) and INFO ($\beta = 0.265$, $p < 0.10$) demonstrate strong explanatory power, confirming that directors positioned centrally within interlocking networks continue to provide firms with superior information channels, credibility, and access to strategic opportunities that enhance future stock returns. These consistent results indicate that DIRNET not only enhances contemporary firm performance (CROA) but also shapes forward-looking market expectations.

For control variables, LEV ($\beta = 1.893$, $p < 0.01$), FMAGE ($\beta = 0.238$, $p < 0.01$), GROWTH ($\beta = 0.055$, $p < 0.01$), FCF ($\beta = 0.193$, $p < 0.01$) and EI ($\beta = 7.338$, $p < 0.01$) exhibit positive influences on RET1Y, whereas FMSIZE is insignificant. These findings suggest that firms with stronger financial discipline and higher growth prospects are rewarded with higher future returns. Overall, the robustness test using RET1Y provides firm confirmation that the impact of DIRNET extends beyond accounting outcomes to future market based performance. These results strengthen the argument grounded in RDT that directors' interlocking ties allow firms to secure external resources and informational advantages that investors recognize and price into future returns. Thus, DIRNET significantly enhances both short-term operating performance and long-term shareholder value, confirming the reliability of the study's core findings.

Table 6. Robustness Test Using One Year Ahead Stock Return (RET1Y)

RET1Y	Coefficient	Standard Error	t-statistic	P>t
Independent Variables				
Constant	-26.299	6.297	-4.180	0.000
DEG	**25.262*****	2.848	8.870	0.000
CLO	**8.147*****	2.137	3.810	0.000
EIG	**4.030*****	1.567	2.570	0.010
BET	**0.198***	0.119	1.660	0.096
INFO	**-0.265***	0.100	-2.650	0.009
Control Variables				
FMSIZE	0.656	0.797	0.082	0.410
LEV	**1.893*****	0.362	5.220	0.000
FMAGE	**0.238*****	0.037	6.420	0.000
GROWTH	**0.055*****	0.012	4.720	0.000
FCF	**0.193*****	0.037	5.210	0.000
EI	**7.338*****	1.604	4.570	0.000

*** and * shows a significant level at $p < 0.01$ and $p < 0.10$ respectively

DISCUSSION

The main objective of this study was to examine the relationship between DIRNE T and CROA in Malaysia. The result revealed a positive relationship between DIRNET and CROA. The fact that the variables DEG, CLO, EIG, BET, and INFO remained significant throughout indicated that those in a central position in DIRNET offer better access for the firms concerning strategic networks, resources, and power structures. The persistence of CLO as the most influential factor reinforced the importance of efficient, rapid access to other players in the network, rather than mere centrality or the number of connections. These findings are supported by several studies that provide evidence that highly connected boards can create value for firms attracting resources and supporting coordinated activities for strategy implementation (Fich & Shivdasani, 2012; Kirchmaier & Stathopoulos, 2008; Shipilov & Li, 2012).

The robustness test results using RET1Y further strengthen this overall conclusion. The positively significant effects of all Dimensions of DIRNET on RET1Y show not only the current influence of DIRNET on accounting performance but also its influence on future market expectations. It is clear that shareholders value the effectiveness of these highly connected boards, as they provide additional future returns to these companies, in line with research indicating that an effective network of boards signals board quality to market participants (Connelly et al., 2011; Park & Kim, 2021). In totality, this result supports RDT, as DIRNET plays an essential role as the conduit through which an entity can seek resources and legitimacy to perform more effectively.

CONCLUSION

This study concludes that DIRNET play an important role in improving the performance of Malaysian companies, as indicated by the changes in return on assets (CROA). In emerging markets such as Malaysia, various institutional constraints often limit companies' access to key resources and information, resulting in poor performance. In this context, the study examines how DIRNET help firms overcome these limitations and improve performance outcomes. This research analysed of 579 Malaysian public-listed companies and found concrete evidence that DIRNET positively influence CROA, after controlling for FMSIZE, LEV, FMAGE, GROWTH, FCF, and EI. Through the panel data of Malaysian public-listed firms, this research utilized several regressions tests as well as a number of robustness tests in order to determine the influence of DIRNET on accounting as well as stock market performance, as indicated by CROA and RET1Y, respectively. This research clearly tested the hypothesis that DIRNET as well as the performance of Malaysian companies (CROA & RET1Y) is positively related and it describes how DIRNET contribute to better performance.

This finding supports the RDT by demonstrating how effectively DIRNET provides critical resources. Overall, our findings confirm that DIRNET's influence is essentially facilitated and cemented by the firm's strategic ability to enhance performance as proxied by CROA and RET1Y. The strategic value of DIRNET will always depend on how well the firms engage in information search activities. Firms that scan their environment, explore new technologies, and maintain the pulse of industry developments are well-set to gain from the informational advantages consequential in DIRNET. Conversely, a firm lacking strong information-search routines would leverage the social embeddedness of its directors in limited ways, particularly in environments characterized by high information asymmetry and overlapping social ties. The highlighting information search processes as a vital moderating factor readily explains why firms with similar governance structures may still exhibit different performance outcomes. This suggests that firms in emerging economies should complement their internal capabilities with external social resources to enhance the effectiveness of their governance structures and sustain higher performance. The findings also align with ST, as well-connected directors serve as credible signals to external stakeholders such as investors, partners, and regulators about the firm's governance quality, strategic competence, and reliability. In emerging markets, where institutional frameworks are relatively weak, these signals become particularly important, as stakeholders rely on observable network positions to assess firm quality and future prospects. Hence, DIRNET not only provides tangible resources but also communicates the firm's legitimacy and strategic capability to its environment.

To some extent, emerging market companies may find it a challenge to access crucial resources and information. Therefore, this study set out to examine the extent to which DIRNET affects company performance, as measured by changes in return on assets (CROA), among Malaysian firms. Using panel regression analysis, the study found that DIRNET positively affects current accounting performance and one-year stock return. The fact that DEG, CLO, EIG, BET, and INFO remain significant across all models shows that directors who find themselves in a structurally centred position create superior access to strategic information, external resources, and powerful connections. Notably, CLO is the strongest of the five, indicating that while being connected is important, having faster access to other actors in the network is more crucial. These findings suggest that the previous literature on well-structured board networks positively influencing company performance by enabling access to resources, strategic information, and powerful connections (Fich & Shivdasani, 2012; Kirchmaier & Stathopoulos, 2008; Shipilov & Li, 2012) is correct. They also support resource dependence theory (Pfeffer & Salancik, 1978). The results of the robustness check using RET1Y also support the idea that director networks affect investor expectations, suggesting that well-structured board networks transmit governance quality before external actors (Connelly et al., 2011; Park & Kim, 2021).

Overall, this research contributes to the literature on corporate governance, strategic management, and board network effects by emphasizing the role of DIRNET as a strategic resource factor, which positively impacts on a company's ability to access crucial external information, coordinate, and create value. By observing that DIRNET influences CROA and RET1Y, this research supports previous literature on board networks by offering insights into the mechanisms underlying board network structure and position that contribute to performance gains in emerging markets. Specifically, this study on Malaysia directly addresses the literature shortfalls mentioned in its introduction, namely the understanding of why/how DIRNET attributes influence a company's performance, as well as why some firms could benefit more from their access to board networks. This literature, through its support of RDT, highlights underlying principles related to the provision of crucial external

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information, which ultimately affects performance gains. Based on the observations, it is noted that performance influenced by DIRNET is not equal cross all firms, suggesting that access to board networks varies with the use of crucial external information.

The practical implications for managers suggest that it is crucial to have a well-structured DIRNET, which is created through careful consideration of the degree of external connections and the efficiency of access. High quality DIRNET improves access to external resources, resulting in positive performance improvements. However, it is also crucial for managers to be aware of potential risks when a company has a high degree of DIRNET, which may lead to conflicts of interest and collusion, requiring them to establish appropriate governance. For regulators, frameworks need to be established to enhance the company's ability to capitalize on the opportunities offered by DIRNET. This is even more crucial, specifically in emerging markets such as Malaysia, where relational governance is a key element.

This study is subject to several limitations. First, it specifically evaluates publicly listed Malaysian firms, which can make it difficult to generalize the results in a broader institutional and cultural setting. Second, despite employing panel regression analysis and various robustness tests, observational evidence remains a limitation for asserting causal claims without the benefit of experimental and quasi-experimental research designs. Finally, DIRNET study employed centrality analysis. This implies that the study did not investigate structural holes, among other aspects of board interactions and network structures. Future research could further explore the relationship between DIRNET and firm performance across different emerging and developed markets to assess the influence of institutional and cultural variations. Further, utilizing a broader range of network attributes, including diversity, multiplex, and structural, can provide a more comprehensive view of the reach of directors in a firm’s affairs. Further, investigating the dynamic process by which DIRNET structures develop over a given timeframe can also provide insights into the impact of changes in positions on the subsequent firm performance and strategic decisions. Finally, investigating the impact of DIRNET on a broader range of firm performances, including but not limited to, innovation, risk management, and strategic alliances, can also be a topic worthy of exploration.

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