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Governance, Risk and Compliance (GRC) in Digital Transformation: Investor Views

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Governance, Risk and Compliance (GRC) in Digital Transformation: Investor Views

Abstract

Companies are embracing digital transformation to enhance their competitiveness. Existing studies show that it is important for companies to manage the governance, risk, and compliance (GRC) aspects of their digital transformation initiatives. While companies are increasingly understanding the importance of the role of GRC in digital transformation, it is unclear from the investors' views. Thus, this study examines whether investors are placing importance on the role of GRC in digital transformation for their investment decisions. The results show that investors care about the GRC aspects of digital transformation initiatives undertaken by companies. The findings of this study are consistent with the view that companies need to manage the GRC aspects of their digital transformation initiatives so that they can attract investors to invest in their companies. This study contributes to the extant literature as investors are important stakeholders of companies.

Keywords: governance, risk, compliance, digital transformation, investor judgments

Governance, Risk and Compliance (GRC) in Digital Transformation: Investor Views

1. Introduction

In today's dynamic business environment, companies are seeking to enhance their agility, speed, and data-driven decision making by embracing digital technologies to transform their organizational structures, processes, and service/product offerings (Berman, 2012). The Covid-19 pandemic has accelerated this drive to embrace digital technologies. What these companies are undergoing is the phenomenon of digital transformation (Seow et al., 2021). Digital transformation describes a company-wide change that leads to the development of new business models, which may improve its competitive advantage and business value (Pagani and Pardo, 2017). Such digital transformation initiatives often involve rearranging processes, routines, and capabilities, and changing the business logic of a firm (Li et al., 2018).

The extant literature highlights that companies may benefit significantly from digital transformation (Andal-Ancion et al., 2003; Westerman and Bonnet, 2015). Companies are embracing digital transformation to enhance their competitiveness. For example, Issa et al. (2016) suggest that routine business activities and processes are primed for automation owing to their laborious tasks and wide range of decision structures. Loh and Ashton (2019) also highlight that business functions can drive productivity through automation of processes, which may bring about increased efficiency, improved decision-making, and an enhanced control environment.

Digital transformation may also improve the agility of companies in responding to the volatile business environment. Sklyar et al. (2019) suggest that digital transformation has implications on organizations that favour a flexible structure composed of separate business units, agile organizational forms, and digital functional areas. It is also increasingly common for organizations to develop disruptive business models in autonomous business units that are

separated from the headquarters, hence allowing for experimentation and quick learning and flexible organization forms that allow for fast responses to constant digital change (Broekhuizen et al., 2018). Besides a nimble and flexible organizational structure, extant literature has also highlighted the importance of developing agility during digital transformation (Chan et al., 2019; Li et al., 2021). Digital agility describes the ability to sense and seize market opportunities provided by digital technologies (Lee et al., 2015). To achieve digital transformation, digital agility is needed to recombine digital assets with other organizational resources to change the way of doing business (Eggers and Park, 2018, Verhoef et al., 2021).

The extant literature also highlights that it is important for companies to strike a good balance between the potential rewards of digital transformation and the potential losses due to lapses in governance, risk, and compliance (GRC) if their digital transformation initiative is not effectively managed. Goh et al. (2021) demonstrates the importance of GRC in driving digital transformation and argues that companies need to adopt a risk-intelligent approach to digital transformation. Due to digital transformation, GRC professionals, processes and tools are increasingly under the spotlight as companies become need more aware of the benefits of investing in GRC systems to manage new risks and regulations (IBM, 2022). Capgemini Consulting and The MIT Center for Digital Business (2017) argue that governance is a vital component of successful digital transformation. They suggest that digital transformation results in new digital challenges for companies such as faster business cycles, new risks and need for more firm-level integration and therefore, companies need to work on their governance around their digital initiatives.

Companies are increasingly understanding the importance of the role of GRC in digital transformation. However, there is scant literature which examine investors' views about GRC in digital transformation. While investors are important stakeholders of companies, the extent

to which they appreciate the role of GRC in digital transformation is unclear. On the one hand, it is possible that investors perceive that GRC in digital transformation negatively impacts the investment attractiveness of a firm because it directs resources away from activities that directly drive revenue and profitability. On the other hand, we hypothesize that investors perceive that GRC in digital transformation positively impacts the investment attractiveness of a firm because of the role that it plays in driving digital transformation within a firm. Thus, this study aims to examine whether investors are placing importance on the role of GRC in digital transformation for their investment decisions.

This study involves a survey with 100 participants, representing non-professional investors. The results show that investors view digital transformation as important to companies and care about the GRC of digital transformation initiatives undertaken by companies. Specifically, majority of the respondents agreed that it is important for companies to have a formal committee for the governance of digital transformation initiatives. They agreed that digital transformation initiatives would increase technology risks, cyber risks, strategic risks, third-party risks, compliance risks, data security risks, and operational risks to companies. They also agreed that regulatory compliance has become more complex because of digital transformation initiatives. The findings of this study are consistent with the view that companies need to manage the GRC aspects of their digital transformation initiatives so that they can attract investors to invest in their companies.

The rest of the paper proceeds as follows. Section 2 discusses relevant background to the study and develops the hypothesis. Section 3 introduces the research method and section 4 presents the results. Finally, section 5 concludes the paper.

2. Background and Hypothesis Development

2.1 The Impact of Digital Transformation on the Investment Attractiveness of Firms

Digital transformation offers many sources of value creation for both back-end and front-end business activities (Pan and Lee, 2020). While digital transformation involves creating new business models or significant changes to existing ones, it does not necessarily mean that companies have to abandon their existing business models. In contrast, digital transformation projects consisting of new digital or digitally improved business models usually complement existing traditional ones (Dorfleitner et al. 2022). With digital transformation, companies may want to pursue “business model ambidexterity” (Cenamor et al., 2019). That is, through digital transformation, organizations may excel at deploying existing business models to add new value propositions for existing markets opportunities and, at the same time, explore new business models to provide new value propositions for emerging markets (Soto-Acosta, 2020). It is therefore increasingly common to see that firms are offering new or renewed value proposals to customers based on digital technologies. For example, technological businesses are moving out of the pure technology business while, in contrast, traditional businesses are becoming increasingly technological in nature (Bharadwaj et al., 2013).

Kiseleva (2020) argues the need to include digital factors in assessing the investment attractiveness of an entity. The digital factors may include information and communication technology infrastructure and e-business. Her research reveals that the digital capacity of the entity is improved by boosting the “e-business” component which reflects the use of ERP and CRM systems, as well as by the e-commerce. She concludes that the use of digital channels to interact with external stakeholders, the digitization of businesses, as well as the implementation of electronic workflow processes will improve the digital potential of an entity.

2.2 The Role Played by (i) Governance, (ii) Risk Management, (iii) Compliance in Driving Digital Transformation, and in so doing, Enhances the Investment Attractiveness of Firms

According to Goh et al. (2021), governance, risk management and compliance (GRC) play a significant role in driving digital transformation. For instance, due to rapid business growth, large business data are generated. These data are often stored in a set of disparate systems within the organization, where each business unit may adopt varying set of GRC practices (Bhimani and Willcocks, 2014). To uphold stringent GRC protocols which is essential during digital transformation, there should be centralization of data, coupled with a system of robust GRC monitoring and control testing. In addition, with significant amount of business activities shifting to online and an increased reliance on supply chain networks, companies are exposed to greater number of risks in business continuity, cybersecurity, and enterprise processes. As a result, digital security solution such as access management system, is often deployed to manage and monitor user access permissions and access rights to files, systems, and services to help protect organizations from data loss and security breaches. The deployment of GRC protocols in digital transformation may allow careful calibration and skilful execution, to ensure business objectives are achieved successfully during the transformation process.

Another example is the adoption of blockchain in financial reporting and auditing. While blockchain-enhanced tools have the potential to generate value, and hence improve investment attractiveness of a firm by promoting operational efficiency and effectiveness, improving reliability and responsiveness of financial reporting, but at the same time, blockchain creates new risks and the need for new controls (Lombardi et al., 2021). Tysiac (2020) highlights the importance of having organizations to evaluate the use of blockchain through a COSO lens. This may allow the board of directors and senior executives to better understand the context and likely make more informed assessments of blockchain's potential and applicability with respect to internal control. This enables the organization to perform a

detailed risk analysis and, in turn, develop appropriate control activities to address such risks, facilitating the effective adoption and use of blockchain.

Shekhar and Bandhu (2022) conduct a study to examine the decision of traditional firms to pursue a digital transformation strategy. According to them, investment into digital transformation is profitable as it may enhance business value through external platform value creation. Nevertheless, such investment may bring about some degree of risk. For instance, when the implementation of digital transformation is considered risky and the value of cross-network interactions is not very high, firms should avoid transforming to a platform and remain as a traditional firm. In addition, firms may transform into a platform by inviting rivals onto their platform, which proves to be profitable in most cases. In some extreme cases, the platform owner may even pay rivals to join its platform.

In their study on business models that rely on the quality of offered software-based services and products, Nguyen Duc and Chirumamilla (2019) highlight that strategic decision-makers are aware of the technical risks associated with the digital technologies they adopt and there are security risks in digital transformation to consider. However, the cybersecurity risk if managed well, may enhance both value creation and investment attractiveness of a firm.

In another study on mining companies, Frolova et al. (2021) suggest that digital transformation has led to the creation of new systems for organizing and managing production, which has significantly increased the efficiency of production, reduced the likelihood of risk situations, and information about the activities of companies and reporting has become more transparent and open. They believe that openness of information, risk reduction, compliance with ESG requirements may contribute to the growth of companies' attractiveness not only for investors, but also for other counterparties.

The above studies suggest that GRC plays a significant role in driving digital transformation which enhances the investment attractiveness of the company. This led to the

hypothesis of this study: *Investors are placing importance on the role of governance, risk, and compliance (GRC) in digital transformation.*

3. Research Method

To examine our hypothesis, we conducted a survey with 100 participants recruited from the Amazon Mechanical Turk (AMT) platform who were each paid US\$0.75 for participating in the study.¹ This pool of participants represents suitable proxies for non-professional investors. In particular, AMT has been used in prior research that employ both the experimental (e.g., Rennekamp, 2012; Koonce, et al. 2015) and survey (e.g., Krische 2019) methods to study the characteristics, perceptions, and judgments of non-professional investors. The results from studies employing AMT participants as proxies for non-professional investors have been demonstrated to replicate results obtained in existing accounting studies (Krische 2015).

(Insert Table 1 here)

The survey was administered via Qualtrics. Participants were first provided with brief background information about the survey, including that the survey questions focus on the governance, risk, and compliance aspects of digital transformation in companies, and the role that it plays in investment decision making. Following that, participants were provided with statements about digital transformation, the governance, risk, and compliance aspects of digital transformation, and the role that governance, risk, and compliance in digital transformation plays in their investment decisions. Participants rated their agreement with these statements using fifteen-point scales, with +7 (-7) corresponding to “strongly agree” (“strongly disagree”). Finally, participants provided demographic information.²

¹ We obtained approval to conduct the survey from our institution’s Institutional Review Board.

² We pre-tested our survey instrument with two faculty members from our institution who have extensive experience teaching and working on projects related to digital transformation in the accounting context. They did not highlight any major concerns

Table 1 presents summary statistics of the demographic characteristics of our participants. Overall, 29 participants (29 per cent) were between the ages of twenty-one and twenty-nine, 54 participants (54 per cent) were between the ages of thirty and thirty-nine, 11 participants (11 per cent) were between the ages of forty and forty-nine, and 6 participants (6 per cent) were above fifty years of age. A total of 75 participants (75 per cent) were male and the remaining 25 participants (25 per cent) were female. In addition, 1 participant (1.0 per cent) reported having less than secondary education, 10 participants (10 per cent) reported having secondary education, 74 participants (74 per cent) reported having a Bachelor's degree, and 15 participants (15 per cent) reported having a Master's degree or higher. Only 7 participants (7 per cent) had taken zero accounting and finance courses, while 86 participants (86 per cent) had taken between one and five accounting and finance courses, and 7 participants (7 per cent) had taken more than five accounting and finance courses. Further, 17 participants (17 per cent) reported having less than five years of work experience, 65 participants (65 per cent) reported having between five and ten years of work experience, 12 participants (12 per cent) reported having between eleven and fifteen years of work experience, and 6 participants (6 per cent) reported having more than fifteen years of work experience. A total of 88 participants (88 per cent) reported having made investments before while 93 participants (93 per cent) reported that they intended to make investment within the next twelve months. Finally, 60 participants (60 per cent) reported that they were currently residing in North America, 22 participants (22 per cent) reported that they were currently residing in the Asia Pacific region, 6 participants (6 per cent) reported that they were currently residing in Europe, and 12 participants (12 per cent) indicated 'Other' as their response.

about the survey instrument and agreed that our survey questions relating to GRC in digital transformation were stated clearly and appropriately. This suggests that the external validity of our survey instrument is high.

4. Results

There were altogether 26 questions being asked in the survey, which we classify into 5 distinct themes: (i) general questions related to importance of digital transformation strategy undertaken by companies, (ii) questions related to governance of digital transformation initiatives; (iii) questions related to the different type of risk associated with digital transformation initiatives; (iv) questions related to compliance of digital transformation initiatives; and (v) questions related to factors that influence the respondent's investment decisions in the digital era.

(Insert Table 2 here)

4.1 Theme 1: General Questions on Importance of Digital Transformation Initiatives

Panel A of Table 2 presents the summary statistics of the survey results related to Theme 1 on general questions related to the importance of digital transformation initiatives undertaken by companies. It is clear that survey respondents view digital transformation initiatives to be important to companies. Therefore, companies need to have a well-articulated strategy (mean = 4.95, std dev = 1.52), periodic reporting to key stakeholders on the progress of its digital journey (mean = 4.46, std dev = 2.11), possess the necessary technology (mean = 4.75, std dev = 2.04), people and skills (mean = 4.54, std dev = 2.38), as well as necessary processes (mean = 4.47, std dev = 2.32) in place to execute its digital transformation strategy. We also computed the overall mean for all the six questions and the value is 4.65 (std dev = 2.05)

In addition to the summary statistics, we also presented the percentage of respondents who disagreed with the question (response values are less than 0), who agreed with the question (response values are more than 0) and those who were neutral (response values equal 0) in Diagram 1. With regards to Theme 1, more than 95% of the respondents agree to all the questions. In particular, all respondents agreed that it is important for companies to have a well-

articulated digital transformation strategy. The percentage of respondents who disagreed with the question was low and the value ranged from 2% to 4%. Overall, an overwhelming 98% of the survey respondents agreed that the COVID-19 pandemic has accelerated the need for digital transformation in companies (mean = 4.94, std dev = 1.84).

To examine our hypothesis of whether investors place importance on the digital transformation initiatives undertaken by companies, we performed one-sample *t*-test on the mean values obtained for all the survey questionnaires for Theme 1. The hypothesized mean is 0; and we present the *t*-statistics as well as *p*-values (two-tailed test) of the results in the last 2 columns of Panel A. The findings reveal that all the mean values are significantly different from zero, which is supportive of our hypothesis.

4.2 Theme 2: Questions on Governance of Digital Transformation Initiatives

Panel B of Table 2 presents the summary statistics of the survey results related to Theme 2 on governance of digital transformation initiatives. As highlighted in Diagram 2, 96% of the survey respondents agreed that that it is important for companies to have a formal committee for the governance of digital transformation initiatives (mean = 4.43, std dev = 2.07). More relevantly, it is also crucial for such formal committee to have adequate leadership support (mean = 4.51, std dev = 1.72), report to top management (mean = 4.70, std dev = 2.06), and to align the company's digital transformation strategy with its strategic plan (mean = 4.76, std dev = 1.98). Governance of digital transformation initiatives undoubtedly involve risk. Such risk is viewed by 94% of the respondents as more of a strategic risk (mean = 4.25, std dev = 2.46), while 87% of the respondents viewed the risk as an operational risk (mean = 3.91, std dev = 2.81). The overall mean value for all the responses under Theme 2 was 4.43 (std dev = 2.17).

In general, the findings from the questions in the second theme overwhelmingly support the creation of a formal committee to govern digital transformation initiatives and this

committee will take on a strategic role that reports to the top management and oversees alignment of the digital transformation initiatives with the company's strategic plan.

Similarly, we performed a one-sample t -test on the difference of the mean values for the responses for all the survey questions under Theme 2 and 0. We reported the findings in the last two columns of Panel B of Table 2 and all the t -statistics are all highly significant (which includes the overall mean too). The results suggest that our survey findings are also supportive of the hypothesis that investors care about the governance of digital transformation initiatives undertaken by companies.

4.3 Theme 3: Questions on Risks Implications of Digital Transformation Initiatives

To further expound on various risks associated with digital transformation initiatives, Panel C of Table 2 presents the summary statistics of the survey results related to Theme 3. In general, Diagram 3 shows that at least 94% of the survey respondents agreed that digital transformation initiatives would have implications on data security risks (mean = 4.42, std dev = 2.33) and third-party risks (mean = 4.33, std dev = 2.47), and cyber risks (mean = 4.27, std dev = 2.56) to companies. The findings are consistent with anecdotal evidence of frauds and cyber-security crimes being committed in recent years, which had massive financial implications on companies and consumers globally. Meanwhile, at least 90 percent of the respondents also agreed that digital transformation initiatives has introduced operational risks (mean = 4.27, std dev = 2.54), compliance/legal risks (mean of 4.17, std dev = 2.50), and strategic risks (mean of 4.16, std dev = 2.6). Interestingly, less than 90 percent of the respondents viewed digital transformation initiatives to be linked to technology risks to companies (mean = 4.03, std dev = 2.77). The overall mean for all the responses under Theme 4 was 4.24 (std dev = 2.50).

We performed a one-sample t -test on the difference of the mean values for the responses for all the survey questions under Theme 3 and 0. The findings are reported in the last two

columns of Panel C of Table 2. The t -statistics are all positively significant, which are supportive of the hypothesis that the risk management aspect of firms' digital transformation initiatives also matter for investors.

Overall, we can observe from the findings that survey respondents were cognizant of the impacts of digital transformation initiatives on various risks that the companies will be exposed to. This further calls for strengthening of internal control systems to mitigate the negative impacts of such risks in the future.

4.4 Theme 4: Questions on Compliance of Digital Transformation Initiatives

Apart from governance and risks of digital transformation initiatives, we would also like to explore the implications on compliance of digital transformation initiatives. Panel D of Table 2 presents the summary statistics of the survey results related to Theme 4. In general, Diagram 4 shows that 93% of the survey respondents agreed that regulatory compliance has become more complex as a result of digital transformation initiatives (mean = 4.12, std dev = 2.74). A flipside of this finding is that regulatory non-compliance will become a key source of risk for companies, in relation to their digital transformation initiatives (mean = 4.01, std dev = 2.56). To manage the compliance factor, 94% of the respondents agreed that it becomes crucial for companies to adopt regulatory technology tools to cope with compliance in relation to digital transformation initiatives (mean = 4.52, std dev = 2.54). The overall mean for all the responses under Theme 4 was 4.22 (std dev = 2.53).

We performed a one-sample t -test on the difference of the mean values for the responses for all the survey questions under Theme 4 and 0. The findings are reported in the last two columns of Panel D of Table 2. Once again, the t -statistics are all positive and statistically significant, which are supportive of the hypothesis that the compliance aspect of firms' digital transformation initiatives also matter for investors.

Therefore, findings from this theme suggest that companies need to manage the benefits from implementing digital transformation initiatives with the expected costs of having to adapt to more complex regulatory environment, which requires additional investments in regulatory technology tools. Only when the benefits exceed the costs, will the investment in digital transformation initiatives become value-adding to companies.

4.5 Theme 5: Questions on Investment Decision Making in the Digital Era

The final theme that we explored in the survey questionnaire was factors influencing the survey respondents' investment decision making in the era of digital transformation. Panel E of Table 2 presents the summary statistics of the survey results related to Theme 5. As shown in Diagram 5, an overwhelming 98% of the survey respondents agreed that digital transformation plays a significant role in their investment decisions (mean = 4.37, std dev = 2.08). Out of the three facets of digital transformation initiatives (governance, risk management, and compliance), survey respondents viewed the risk management (mean = 4.71, std dev = 2.35), followed by the compliance (mean = 4.70, std dev = 2.24) of digital transformation initiatives to be of utmost importance. This is not surprising as investors are generally risk-averse and would be hesitant to invest in companies if they don't manage the risk management and compliance of their digital transformation initiatives well. There are also evidences of publicly listed companies which experienced a significant decline in share price due to failure in managing the risk and compliance aspects of their digital transformation initiatives. The overall mean for all the responses under Theme 5 was 4.52 (std dev = 2.23).

A one-sample *t*-test was conducted on the difference of the mean values for the responses for all the survey questions under Theme 5 and 0. The findings reported in the last two columns of Panel E of Table 2 highlighted that the *t*-statistics are all positive and statistically significant. Therefore, these imply that the governance, risk, and compliance aspects of digital undertaken by companies do matter for investors in the digital age.

Overall, the survey findings are consistent with the view that while digital transformation initiatives are necessary and often hastened by the COVID-19 pandemic, companies need to manage the three aspects of their digital transformation initiatives so that they can attract tech-savvy investors to invest in their companies to fund future investment growth.

5. Conclusion

Companies are embracing digital transformation to enhance their competitiveness. The Covid-19 pandemic has accelerated this drive to embrace digital technologies. The extant literature suggests that GRC plays a significant role in companies' digital transformation initiatives. Companies need to consider GRC before and during their digital transformation, and not treat GRC as an after-thought. Otherwise, companies may suffer potential losses if the GRC aspects of their digital transformation initiatives are not effectively managed.

This study examines whether investors are placing importance on the role of GRC in digital transformation for their investment decisions. This study contributes to the existing literature by examining the investors' views as most studies focus on the companies' perspectives. While companies are increasingly understanding the importance of the role of GRC in digital transformation, it is important to understand investors' views as investors are important stakeholders for companies.

The results show that investors view digital transformation as important to companies and care about the GRC of digital transformation initiatives undertaken by companies. Specifically, majority of the respondents agreed that it is important for companies to have a formal committee for the governance of digital transformation initiatives. They agreed that digital transformation initiatives would increase technology risks, cyber risks, strategic risks, third-party risks, compliance risks, data security risks, and operational risks to companies. They

also agreed that regulatory compliance has become more complex because of digital transformation initiatives. The findings of this study are consistent with the view that companies need to manage the GRC aspects of their digital transformation initiatives so that they can attract investors to invest in their companies.

A limitation of this study relates to the survey research method. It measures the perceptions of the survey respondents and may not be representative of their actual investment decisions. Future study may employ the experimental research method to examine investors' investment outcomes relating to GRC aspects of digital transformation. Another limitation relates to the small sample size of 100 respondents. The findings may not be generalized to other settings. This study recruited 100 participants from the Amazon Mechanical Turk (AMT) platform as proxies for non-professional investors. Future study may expand to examine the investment analysts.

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TABLE 1
Summary of Participants' Demographic Information

Panel A: What is your age? Frequency (percentage)

| Age | |
|---------------------|-----------|
| 21 to 29 | 29 (29.0) |
| 30 to 39 | 54 (54.0) |
| 40 to 49 | 11 (11.0) |
| 50 and above | 6 (6.0) |

Panel B: What is your gender? Frequency (percentage)

| Gender | |
|---------------|-----------|
| Male | 75 (74.0) |
| Female | 25 (25.0) |
| Other | 0 (0.0) |

Panel C: What is your highest education level? Frequency (percentage)

| Education Level | |
|----------------------------------|-----------|
| Less than secondary | 1 (1.0) |
| Secondary | 10 (10.0) |
| Bachelor's degree | 74 (74.0) |
| Master's degree or higher | 15 (15.0) |

Panel D: What is your number of years of work experience? Frequency (percentage)

| Years of Work Experience | |
|---------------------------------|-----------|
| Less than 5 | 17 (17.0) |
| 5 to 10 | 65 (65.0) |
| 11 to 15 | 12 (12.0) |
| More than 15 | 6 (6.0) |

Panel E: How many courses in accounting and finance have you taken? Frequency (percentage)

| Number of Courses | |
|--------------------------|-----------|
| 0 | 7 (7.0) |
| 1 to 5 | 86 (86.0) |
| More than 5 | 7 (7.0) |

Panel F: Have you made investments before? Frequency (percentage)

| Made Investments Before | |
|--------------------------------|-----------|
| Yes | 88 (88.0) |
| No | 12 (12.0) |

Panel G: Do you intend to make investments in the next twelve months? Frequency (percentage)

| Investment Intention | |
|-----------------------------|-----------|
| Yes | 93 (93.0) |
| No | 7 (7.0) |

Panel H: In which region do you currently reside? Frequency (percentage)

| Region | |
|----------------------|-----------|
| North America | 60 (60.0) |
| Asia Pacific | 22 (22.0) |
| Europe | 6 (6.0) |
| Other | 12 (12.0) |

TABLE 2
Summary Statistics of Surveys on Governance, Risk and Compliance of Digital Transformation Initiatives

Panel A: Theme 1 (General questions related to importance of digital transformation strategy undertaken by companies)

| Questions | Mean | Median | Std | Min | Max | <i>t</i> -statistic | <i>p</i> -value |
|---|------|--------|------|-------|------|---------------------|-----------------|
| It is important for companies to have: | | | | | | | |
| (1) A well-articulated digital transformation strategy | 4.95 | 5.00 | 1.52 | 2.00 | 7.00 | 32.56 | (0.00) |
| (2) Periodic reporting to key stakeholders on the progress of its digital journey to make sure it is still relevant | 4.46 | 5.00 | 2.11 | -6.00 | 7.00 | 21.18 | (0.00) |
| (3) Have the necessary technology in place to execute its digital transformation strategy | 4.75 | 5.00 | 2.04 | -6.00 | 7.00 | 23.32 | (0.00) |
| (4) Have the necessary people and skills in place to execute its digital transformation strategy | 4.54 | 5.00 | 2.38 | -6.00 | 7.00 | 19.07 | (0.00) |
| (5) Have the necessary processes in place to execute its digital transformation strategy | 4.47 | 5.00 | 2.32 | -6.00 | 7.00 | 19.30 | (0.00) |
| (6) The COVID-19 pandemic has accelerated the need for digital transformation of companies | 4.94 | 5.00 | 1.84 | -3.00 | 7.00 | 26.91 | (0.00) |
| Overall | 4.69 | 5.00 | 2.05 | -6.00 | 7.00 | 55.84 | (0.00) |

A 15-point Likert scale was adopted, ranging from “-7” (strongly disagree) to “7” (strongly agree).

Panel B: Theme 2 (Questions related to governance of digital transformation initiatives)

| Questions | Mean | Median | Std | Min | Max | t-statistic | p-value |
|---|-------------|---------------|------------|------------|------------|--------------------|----------------|
| (7) It is important for companies to have formal committee for the governance of digital transformation initiatives | 4.43 | 5.00 | 2.07 | -2.00 | 7.00 | 21.46 | (0.00) |
| It is important for a committee for the governance of digital transformation initiatives: | | | | | | | |
| (8) To have adequate leadership support | 4.51 | 4.50 | 1.72 | -2.00 | 7.00 | 26.22 | (0.00) |
| (9) To report to top management | 4.70 | 5.00 | 2.06 | -6.00 | 7.00 | 22.85 | (0.00) |
| (10) To align company's digital transformation strategy with its strategic plan | 4.76 | 5.00 | 1.98 | -6.00 | 7.00 | 24.04 | (0.00) |
| The risk associated with digital transformation initiatives is: | | | | | | | |
| (11) An operational risk | 3.91 | 5.00 | 2.81 | -6.00 | 7.00 | 13.89 | (0.00) |
| (12) A strategic risk | 4.25 | 5.00 | 2.46 | -7.00 | 7.00 | 17.31 | (0.00) |
| Overall | 4.43 | 5.00 | 2.17 | -7.00 | 7.00 | 50.09 | (0.00) |

A 15-point Likert scale was adopted, ranging from “-7” (strongly disagree) to “7” (strongly agree).

Panel C: Theme 3 (Questions related to risks of digital transformation initiatives)

| Questions | Mean | Median | Std | Min | Max | t-statistic | p-value |
|---|-------------|---------------|------------|------------|------------|--------------------|----------------|
| Digital transformation has introduced: | | | | | | | |
| (13) Technology risks to companies | 4.03 | 5.00 | 2.77 | -6.00 | 7.00 | 14.54 | (0.00) |
| (14) Cyber risks to companies | 4.27 | 5.00 | 2.56 | -7.00 | 7.00 | 16.69 | (0.00) |
| (15) Strategic risks to companies | 4.16 | 4.00 | 2.60 | -6.00 | 7.00 | 16.00 | (0.00) |
| (16) Third-party risks to companies | 4.33 | 5.00 | 2.47 | -6.00 | 7.00 | 17.56 | (0.00) |
| (17) Compliance/regulatory/legal risks to companies | 4.17 | 5.00 | 2.50 | -6.00 | 7.00 | 16.66 | (0.00) |
| (18) Data security risks to companies | 4.42 | 5.00 | 2.33 | -6.00 | 7.00 | 18.95 | (0.00) |
| (19) Operational risks to companies | 4.27 | 5.00 | 2.54 | -6.00 | 7.00 | 16.80 | (0.00) |
| Overall | 4.24 | 5.00 | 2.50 | -7.00 | 7.00 | 41.51 | (0.00) |

A 15-point Likert scale was adopted, ranging from “-7” (strongly disagree) to “7” (strongly agree).

Panel D: Theme 4 (Questions related to compliance of digital transformation initiatives)

| Questions | Mean | Median | Std | Min | Max | t-statistic | p-value |
|---|-------------|---------------|------------|------------|------------|--------------------|----------------|
| (20) Regulatory compliance has become more complex as a result of digital transformation initiatives | 4.12 | 5.00 | 2.74 | -7.00 | 7.00 | 15.04 | (0.00) |
| (21) Regulatory non-compliance in relation to digital transformation initiatives is a key source of risk for companies | 4.01 | 5.00 | 2.56 | -6.00 | 7.00 | 15.64 | (0.00) |
| (22) It is important for companies to adopt regulatory technology tools to cope with compliance in relation to digital transformation initiatives | 4.52 | 5.00 | 2.27 | -6.00 | 7.00 | 19.90 | (0.00) |
| Overall | 4.22 | 5.00 | 2.53 | -7.00 | 7.00 | 28.83 | (0.00) |

A 15-point Likert scale was adopted, ranging from “-7” (strongly disagree) to “7” (strongly agree).

Panel E: Theme 5 (Questions related to implications on survey respondents' investment decisions)

| Questions | Mean | Median | Std | Min | Max | <i>t</i>-statistic | <i>p</i>-value |
|--|-------------|---------------|-------------|--------------|-------------|---------------------------|-----------------------|
| (23) A company's progress in digital transformation plays an important role in my investment decisions | 4.37 | 5.00 | 2.08 | -3.00 | 7.00 | 21.05 | (0.00) |
| How a company manages: | | | | | | | |
| (24) The governance aspect of its digital transformation plays an important role in my investment decisions | 4.31 | 5.00 | 2.24 | -6.00 | 7.00 | 19.23 | (0.00) |
| (25) The risk management aspect of its digital transformation plays an important role in my investment decisions | 4.71 | 5.00 | 2.35 | -7.00 | 7.00 | 20.08 | (0.00) |
| (26) The compliance aspect of its digital transformation plays an important role in my investment decisions | 4.70 | 5.00 | 2.24 | -6.00 | 7.00 | 20.98 | (0.00) |
| Overall | 4.52 | 5.00 | 2.23 | -7.00 | 7.00 | 40.56 | (0.00) |

A 15-point Likert scale was adopted, ranging from “-7” (strongly disagree) to “7” (strongly agree).

Diagram 1
How investors view the importance of digital transformation initiatives undertaken by companies

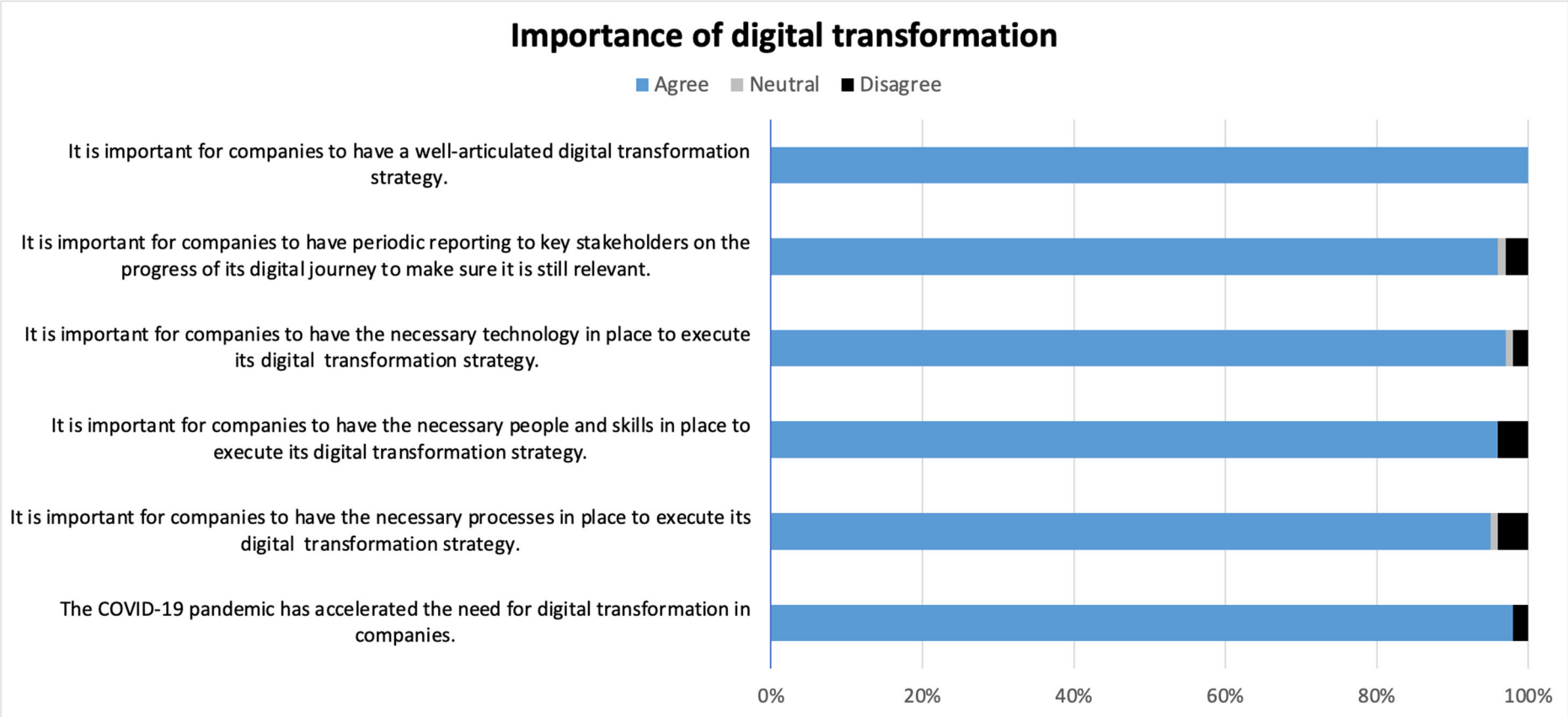


Diagram 2
How investors perceive the importance of governance of digital transformation initiatives

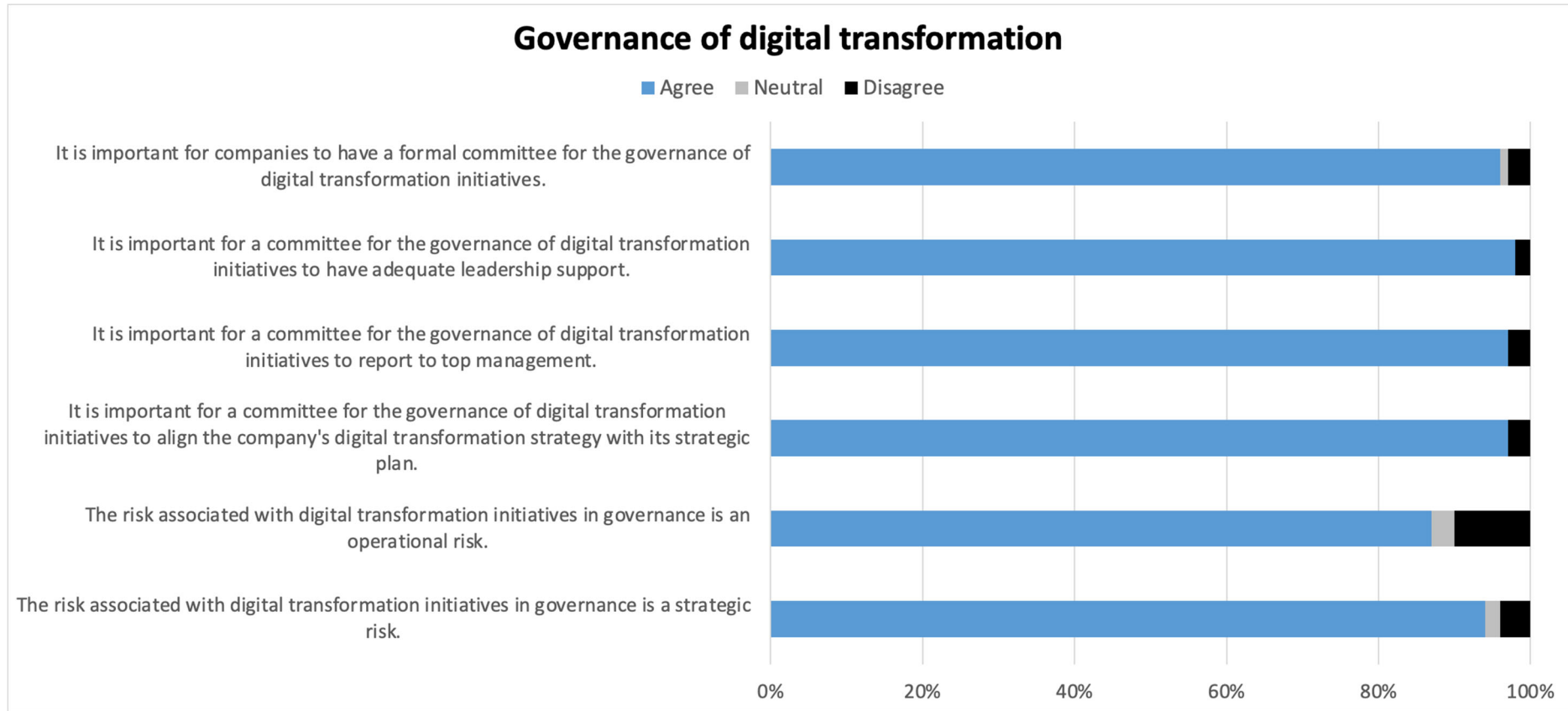


Diagram 3
How investors perceive the risk implications of digital transformation initiatives

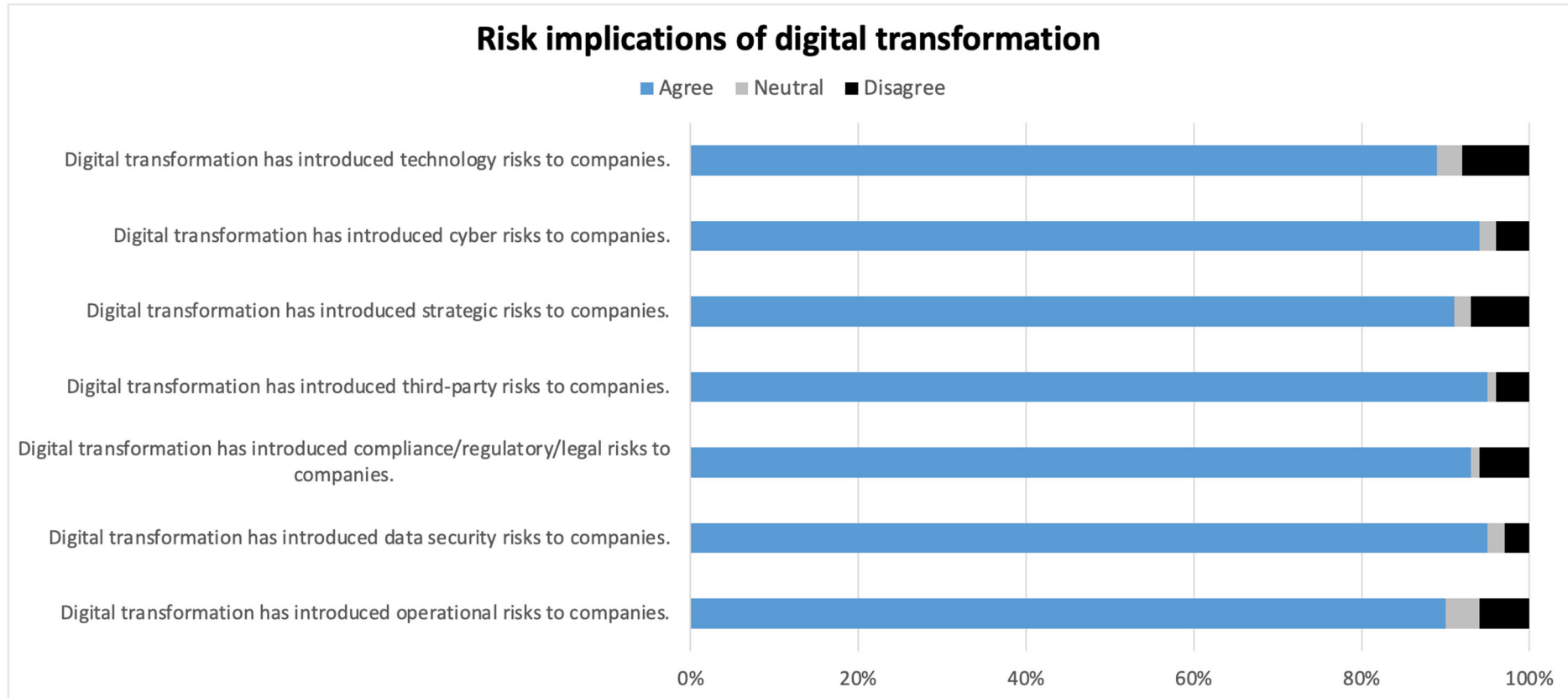


Diagram 4
How investors perceive the importance of regulation in digital transformation initiatives

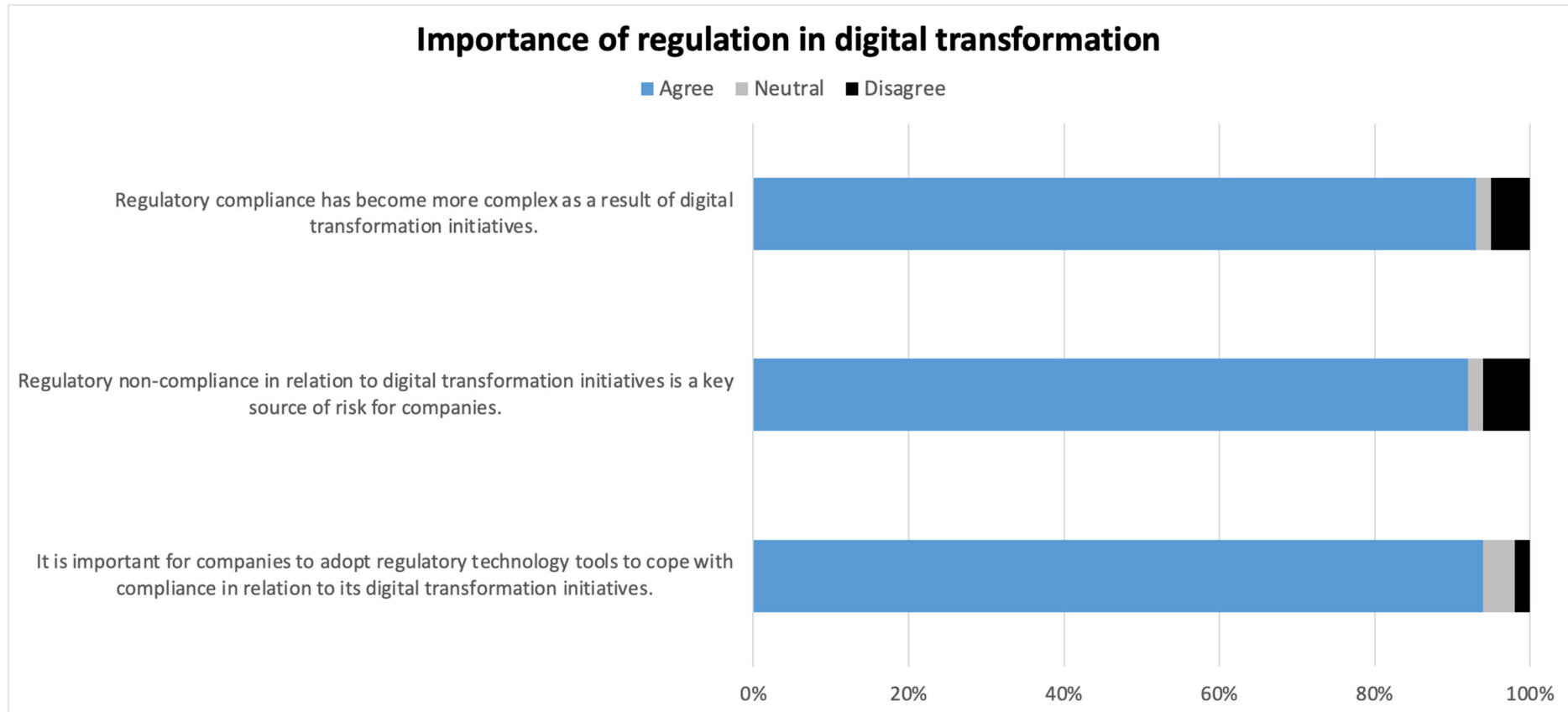


Diagram 5
Investors' decision making in the digital age

