

## Factors Influencing Business IT Alignment

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### Abstract

*Business IT alignment has consistently been ranked at the top of the most important topics from the perspective of business executives. Over the years, many models and IT management frameworks have been proposed to address this issue. The purpose of this study was to develop a comprehensive understanding of business IT alignment phenomena based on the life experiences of IT leaders working in FMCG companies based in the UK. To achieve the goal of the study, a descriptive phenomenological method was employed. Live experiences of eleven participants from FMCG companies were used as the primary source of data. Phenomenological analysis of the data obtained from interviews revealed twenty-two sub-themes grouped into four main themes. Four main themes identified during the study are leading topics, IT trends, IT management frameworks influencing business IT alignment, and future improvement. The leading topics theme gathers current most important areas being discussed between senior IT and business leaders. The IT trend's theme points to all technological trends that draw the attention of companies. In particular, three categories were discovered: technologies to automate and optimize, digital technologies, and disruptive technologies. The IT management framework theme tackles all frameworks contributing to business IT alignment. The logical chain of sequence could be observed due to the speed of changes and customers moving to online channels (leading topics), and because digital technologies are spreading (IT trends) supported by organizational changes (IT management frameworks). The last theme aggregates recommendations for improvement in business IT alignment based on participants' suggestions.*

**Keywords:** Business IT alignment, IT trends, IT management frameworks, IT leading topics

### 1. Introduction

Over the years, the role of Information Technology (IT) departments has evolved significantly from being reactive and focused on technical aspects only, through the office and process automation [1] to proactive business value and innovation creation [2]. In a majority of businesses, dependency on IT to provide ongoing support, enable efficiency, and contribute to business value is as important as matters of finance or general corporate governance [3]. With these changes positioning IT within the business, the need for IT governance and business IT alignment is growing. The IT Governance Institute [4] outlines that "IT Governance spans the culture, organization, policy, and practices that provide for IT Management and control across five areas". Those five areas are business IT alignment, value delivery, risk management, resource management, and performance measurement. Value delivery is focused on driving

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maximum business value from IT to the business with the inclusion of an ROI assessment. Risk management entails ensuring that processes are in place allowing adequate measurement of risks, with the inclusion of risks assessment of IT investments. Resource management provides a high-level approach regarding sourcing and use of IT resources and ensures that IT capability and infrastructure effectively support current and future business requirements. Performance measurement verifies strategic compliance and delivery of strategic IT objectives and evaluates contributions of IT to the business. Finally, business IT alignment focuses on the strategic direction and alignment of IT and the business for services and projects. The IT Governance Institute emphasizes the benefits of "good IT Governance", which are built around five areas: 1) transparency and accountability, 2) return on investment/stakeholder value, 3) opportunities and partnerships, 4) performance improvement, and 5) external compliance. Benefits of transparency and accountability arise from improved transparency of IT costs, IT processes, and IT portfolios (for projects and services) as well as from precise decision-making accountabilities and definition of user and provider relationships. Return on investment/stakeholder value relates to improved understanding of overall IT costs and ROI cases, improved contribution to stakeholder returns, and enhancement and protection of the company's reputation and image. Opportunities and partnerships enable IT participation in business strategy, improve responsiveness to market challenges, and facilitate more businesslike relationships with key IT partners. Performance improvement benefits are realized by increased transparency, the continuous rising of the bar for performance, execution of best practices, and elimination of unnecessary expenditures.

This last area of external compliance allows a business to meet external legal and regulatory requirements. Many researchers have confirmed those benefits; Coltman, Reynolds, Sharma, Tallon, and Queiroz [5] confirmed the positive impact of Multi-Business Organizations (MBO) business IT alignment on Single Business Unit (SBU) performance. Becker, Gaustad Macada, Lunardi, and Van Grembergen [6] examined antecedents of IT governance effectiveness in Brazilian firms and found that: 1) the level of IT strategic alignment had the strongest effect on the effectiveness of IT governance, suggesting that the more aligned the IT and corporate strategies, the more effective the use of IT by the organization; 2) the strategic alignment of IT is a central element in obtaining higher levels of IT effectiveness that could support organizations in achieving better business performance, and 3) regarding the adoption of IT governance mechanisms and their associations with IT strategic alignment, the results indicate that structure, process, and relational mechanisms have significant and positive effects on perceived IT alignment.

## **2. Theoretical foundations and literature review**

Theoretical foundations of the business IT alignment area considered in this research are related to corporate governance, governance of IT, and IT governance. Corporate governance theories connected are: agency theory [7], stewardship theory [8], resource dependency theory [9], resource-based view theory [10], stakeholder theory by Freeman [11], and transaction cost theory [12][13] Governance of IT as stated by Juiz and Toomey [14] reflects the business usage of IT by non-IT executives. In this context, ISO/IEC 38500 defines governance of IT as a system by which current and future use of IT is directed and controlled [15][16]. IT governance reflects the usage of IT-by-IT executives. The main IT governance framework presented below is COBIT 2019 [17] together with other frameworks like the King III report [18], Val IT [19], and Calder-Moir meta-model [20].

The analysis of the literature was conducted within the context of business IT alignment and IT strategy. Different approaches to IT strategy (archetypes (Isaca, 2018)) were reviewed. Business IT alignment modeling approaches were reviewed, based on Enterprise Architecture (EA) and SAM concept [21]. EA model-based approach allows assessment of the quality of relationships based on documented models (e.g., EA frameworks) and focuses on business architecture, data architecture, application architecture, and technology architecture. SAM-based models are built on domains of business strategy, IT strategy, business infrastructure, and IT infrastructure. The concept of aligning IT and business was formally shaped and initiated by the SAM model [22], which later evolved and was extended many times [23][24]. One of the latest extensions of the SAM model [25] adjusts the model to current, more dynamic circumstances. The same dynamism was addressed in the concept of bimodal IT [26] where alignment is shared between dynamic and less dynamic parts of IT. The measurement methods of business IT alignment take two approaches: model-based (where measurement is based on documented models linking business and IT domains) and perception-based. In the perception-based approach, evaluation is made from the perception of the authors, and measurements are usually taken via surveys and interviews. Other concepts extended business IT alignment to a direction [27] and alignment pace [28]. Finally, a set of ISO/IEC standards related to IT management is presented, as well as the most commonly used IT management frameworks like ITIL v4 [29] and project management frameworks - PMBOK® [30] and PRINCE2® [31].

### 3. Methodology

The purpose of this study was to understand the current IT governance and business IT alignment influencing factors in global Fast-Moving Consumer Goods (FMCG) companies based in the UK. More specifically to understand which influencing factors and practices are employed considering current business dynamics and IT trends. IT trend changes are noticeable in many areas like IT devices, IT methodologies/frameworks, IT Software, third-party IT services, business strategies, and business/users' expectations. On top of this, customer and consumer demands have also changed, and companies willing to address those demands need to adopt new ways of working. This study relies on personal interviews with IT managers. This research will explore how IT leaders realize in practice business IT alignment and which IT governance practices are used, as well as which IT trends and leading topics influence business IT alignment. Eleven participants with a minimum of 10 years of experience in FMCG/CPG global companies were selected to participate in the study.

For this research, the author planned to conduct eleven interviews. As the number of samples is small, this approach will require more intense questioning [32]. Creswell [33] recommends three strategies for sampling: 1) purposeful, where participants are purposefully informed about the given phenomenon, 2) criterion-based, where participants experience the phenomenon due to fulfilling certain criteria, 3) snowballing, where participants can refer to participants meeting certain criteria. Snowball sampling is also recommended by Rahi [34]. In this study, the author will apply those strategies. The researcher identified key characteristics required from participants in this study. Those characteristics are: 1) the participant working in the company that has a presence in the UK market, 2) the participant is employed by a global FMCG company (global in this context means that the company operates at least in three regions), 3) the participant occupies at least one manager position, and 4) the participant is involved in the business IT alignment process. Access to the participants was initiated via LinkedIn portal (social network for professionals), email, or phone.

Table 1. Selected characteristics of participants

	Participant's code	Position level in the company	Management Experience [years]	Global company turnover [mld USD]	Nr of employees globally
1	Male 1	Director	20	19	138000
2	Male 2	Director	23	4	6000
3	Male 3	Director	20	30	100000
4	Male 4	Director	30	44	110000
5	Male 5	CIO/VP/Senior Director	14	25	45000
6	Male 6	CIO/VP/Senior Director	23	37	13000
7	Male 7	CIO/VP/Senior Director	25	11	55000
8	Male 8	CIO/VP/Senior Director	24	4	6000
9	Male 9	Manager	15	35	82000
10	Male 10	CIO/VP/Senior Director	25	40	40000
11	Female 1	CIO/VP/Senior Director	12	4	6000

#### 4. Results and discussion

Results of the qualitative research, coming from the analysis of the interviews are summarized in [Table 2].

Table 2. Identified themes and sub-themes

Theme/research question	Sub-theme
Leading topics	Business environment changes
IT Trends Management frameworks Future Improvements	Remote work, flexible work, and remote collaboration
	Speed
	Automation and optimization
	Digital transformation
	Cybersecurity
	Data & Analytics
	Blockchain
	Cloud, Platforms, and E-commerce
	Cybersecurity
	Agile & Waterfall
	ITIL
	Other frameworks
	Coaching and education
	Early involvement
	Remote collaboration experiences
	Link fragmented budgets
Re-think shadow IT and Platforms governance approach	
Worthwhile conversations	
Dedicated technology boards	
Time to think	
Benchmarking	
Disruptive innovation	

#### **4.1. Leading topics**

The first theme evidenced all the participants' experiences related to leading topics in business IT alignment. Leading topics as identified by the participants came from interactions with business leaders. As a result of the analysis, there were four identified emerging sub-themes: 1) business environment changes, 2) remote work, flexible work, and remote collaboration, 2) digital transformation, 3) speed, and 4) automation and optimization. Business environment changes were reported by participants in the context of the impact of COVID-19, as well as shifts in customer behaviors. The shift in customer behaviors was different and specific to each company, e.g., some changes were related with higher urbanization of cities, carpooling (impacting product logistic), other pointed that consumption moved from bars and restaurants to homes (cocktails at home). Remote work, flexible work, and remote collaboration have become number one on the agenda of all companies in the study. Remote work is linked with the ability to work remotely, mostly from home. Flexible work refers to the ability to work within the flexible time frame (so not as it used to be eight hours in a row but taking into account some breaks for home-related duties). Remote collaboration was pointed to as the ability to collaborate remotely and therefore use more sophisticated IT tools allowing this. Digital transformation was noted as one of the leading topics on the business leader's agenda. In the research, it was linked with the new ways of working and generating revenue streams. Speed was pointed by participants as the leading topic around acceleration and rapidness in many areas like expectations of rapid delivery of IT services and products. Automation and optimization, another leading topic which business leaders pointed to as the one where discussion between business and IT alignment should continue. In particular, participants reflected the need to invest more into RPA (Robotic Process Automation) and thus defend against the increasing cost of doing business. In the same context data and analytics were marked as a source of knowledge and direction.

#### **4.2. IT trends**

The second IT trend's theme includes the following IT trends: 1) Cybersecurity, 2) Data & Analytics, 3) RPA, 4) blockchain, 5) IoT, 6) Cloud, 7) E-commerce, 8) AI (Artificial Intelligence), and 9) ML (Machine Learning). Some participants stated that as a part of Data & Analytics they see artificial intelligence and machine-learning technology, but others indicated application of AI and ML in other areas. This part could be seen as a connection between cybersecurity and technologies delivering automation. Due to the specificity of FMCG companies, there is a relentless focus on automation and optimization technologies.

#### **4.3. IT management frameworks**

The third theme, management frameworks contributing to business IT alignment. The identified frameworks were around: 1) cybersecurity, 2) Agile & Waterfall, 3) ITIL, and 4) other frameworks. Participants pointed to cybersecurity frameworks as those helping to build trust with the business. Frameworks related to agile & waterfall were viewed as delivery and business alignment methodologies. ITIL framework was seen as the one which contributes to providing reliable and repeatable high-quality IT services. In other frameworks, participants pointed to DevOps and COBIT although it was not the unanimous pattern. From a recent study [35], we know that DevOps requires intra-IT alignment within three grounds to fully serve its purpose. DevOps and especially its continuous improvement process can be successfully applied to the IT service management field [36]. Previous studies in the banking sector indicate

that successful COBIT practices integrated within IT governance and require high CEO-CIO motivation as well as regular IT audits allowing evaluation of progress [37]. Another study of about 40 private organizations from the Middle East region [38] statistically proved that all sub-dimensions of COBIT as a coherent IT governance framework play important roles in business IT alignment, with “IT risk management” being a leading indicator of business interest.

#### **4.4. Improvement suggestions**

The fourth Theme was around improvement suggestions in the context of even better business IT alignment. Ten improvements were identified: 1) coaching and education, 2) early involvement, 3) remote collaboration experiences, 4) link fragmented budgets, 5) re-think shadow IT and platforms governance approach, 6) worthwhile conversations, 7) dedicated technology boards, 8) time to think, 9) benchmarking, and 10) disruptive innovation. Coaching and education - participants stated that permanent coaching and education of business leaders to build the trust of IT being a strategic partner. Examples provided by participants were around social media, RPA (Robotic Process Automation), blockchain, data analysis, and other latest technologies. Some participants referred to educational sessions organized with selected technology partners, which could last even three days. Coaching and education are increasing the understanding of IT by the business. This observation is consistent with results from the research on Ethiopia's bank [39] where one of the identified barriers in business IT alignment was a lack of business/IT understanding. On top of this cross-training and shared understanding of business/IT objectives is a part of business IT alignment relational mechanisms [40]. Early involvement was another proposal for the improvement of business IT alignment. In this context, early involvement of IT in executive boards and forums related to business initiatives was pointed. This recommendation of improvement of business IT alignment was already examined and proven by Bart, Liu, and Turel [41], who confirmed that board-level IT governance is positively associated with strategic alignment and organization performance. Similar results came from Liang, Straub, and Wu [42], whose study concluded that board-level IT governance can play a critical role in strategic alignment. Participants indicated that remote work, flexible work, and remote collaboration experiences are becoming more important in the context of business IT alignment. Participants pointed out that from one perspective this could lead to difficulties in conveying and reading emotion [43], while from others it could move business IT alignment experiences to another virtual level that was never experienced before to such an extent. Those experiences are linked to video streaming solutions that provide communication synchronicity and relatively rich content [44]. Participants of the study also expressed the need to link fragmented budgets when it comes to the commercial initiatives deployed with Agile methodologies. Those initiatives are not supported by traditional budgeting per department but have a dedicated pot of money which includes other initiatives like sales and marketing. Consequently, IT project cost is seen as just a small portion of a bigger initiative. This problem is consistent with the study related to Agile budgeting [45] with a proposed model to apply multi-level budgeting where the budget could be moved between different levels. The problem of budget allocation in the context of Agile projects was also stressed in previous studies [46] where conventional management approaches and their control were not compatible with Agile ways of working. Participants suggested that with the growth of the cloud, software online renting and different platforms, so-called "shadow IT" is becoming an area where IT-related spending is not controlled by IT departments nor fully managed by the business. The ease of buying or renting software from the cloud could cause

financial inefficiencies that could affect the company's funds. This problem was already the subject of a recent study [47]. Kopper, Strahr, and Westner defined a framework with the definitions of Shadow IT, Business Managed IT, and IT Managed Systems. This framework was later enriched [48] with possible transition instances of Shadow IT. Participants expressed the need as well for worthwhile conversations with business leaders which if established properly would lead to benefits for both parties. With the increased business dynamic and remote collaboration experiences worthwhile, well thought, and prepared conversations seem to be helping with even faster business IT alignment. Another recommended improvement is a mechanism of dedicated technology boards that consist of senior leaders focused on maximizing the use of given technology in the company. Higgs, Pinsker, Smith, and Young [49] recommended establishing a board-level security committee to be supported by an appropriate security framework. The concept of dedicated technology boards (or overlapping committees) is a part of transformational governance mechanisms working effectively, especially within bi-modal IT organizations [50]. The dedicated technology boards are enabling even better business IT alignment. Participants stated that in the Agile and dynamic world, employees should have time to think. Time to think should be part of the company's culture. A company's culture could be a factor in differentiating alignment maturity as stated by Li and Palvia [51]. Ge, Jia, and Want [52] reviewed dimensions of business IT alignment and found that within four dimensions (strategic, social, structural, and cultural), cultural dimensions play an important role too. From recent psychological studies we know that when people with knowledge have enough time to think (company's culture), their knowledge can be turned into economic value [53]. Participants stated that in the Agile and dynamic world, employees should have time to think. Time to think should be part of the company's culture. A company's culture could be a factor in differentiating alignment maturity as stated by Li and Palvia [51]. Ge, Jia, and Want [52] reviewed dimensions of business IT alignment and found that within four dimensions (strategic, social, structural, and cultural), cultural dimensions play an important role too. From recent psychological studies we know that when people with knowledge have enough time to think (company's culture), their knowledge can be turned into economic value [53]. Participants suggested that benchmarking could help them in two dimensions. In the first dimension, it would help to assess IT performance in a given area and identify opportunities for improvement. This could help to shape strategy and form ambitious IT-related goals. Benchmarking is an effective tool for the improvement of organizational performance [54]. The second dimension is linked to the mechanism of building trust, especially with CEOs, board members, and other senior leaders. Participants stated that within FMCG companies every 4 years, third-party consulting companies are approaching CEOs and boards and encouraging business transformation as well as further automation and optimization. Having regular benchmarking of IT services helps to build trust and thus overtake the external consultants. External benchmarking as a value analytics dimension is a part of the SAM model [55]. Participants pointed out that disruptive innovation based on selected technology is something that also could improve business IT alignment. Technology selection is directly linked to the specificity of the business and cannot be copied and pasted to other businesses. Digitally enabled innovation helps to create new offerings much faster with a bigger scale and scope [56]. Digital innovation is not the same as disruptive innovation. Disruptive innovation is defined by Baiyere and Hukal [57], and Airbnb or Netflix are examples of such disruptive innovation, which fundamentally reconfigures industry structures and is digital and innovative. Companies shifting towards disruptive innovation requires new skills [58]. The ability to respond to disruptions requires an understanding of overall business strategy with a special focus on digital transformation [59][60][61].

## 5. Conclusions

The observations from this study allow practical recommendations. Each recommendation was shaped as a result of the analysis of this research's primary data, analysis of the past theories, and previous studies. Additionally, the knowledge and experience of the researcher influenced the final formulation of the conclusions and practical recommendations. Practical recommendations are presented below for both IT and business leaders and also for organizations that create IT management frameworks. This part also includes the researcher's reflection on limitations. This section provides practical recommendations for IT leaders: 1) codify and regularly improve the remote work, flexible work, and remote collaboration, 2) regular IT trends reviews, 3) regular coaching and education of senior leaders, 4) technology boards – cybersecurity and more. Some of the practical recommendations reflect and are linked with leading topics identified in this research (e.g., codification of remote work) while others are not yet fully implemented in practice (e.g., technology boards). The value and contribution to the business of the above recommendations were also confirmed by at least one participant in this study.

### (1) Codify and regularly improve the remote work, flexible work, and remote collaboration

The first consideration is that IT managers and respective business partners, should (re)define the remote work, flexible work, and remote collaboration best practices. Those best practices should be codified and regularly reviewed and improved. It should allow employees to reach the optimal remote collaboration experiences. The optimal experiences level needs to be set by the company (it should include topics like software, recommended devices like cameras and headsets, surroundings, etc.) and should include training. From the perspective of business IT alignment, both IT managers and respective business partners should codify new ways of working (remote work versus office work) and collaborating. As a result, the optimal platform for communication (remote versus office) should be aligned and regularly improved.

### (2) Regular IT Trend Reviews

Another consideration is related to regular reviews of IT trends from the perspective of two dimensions: 1) future IT trends allowing companies to automate and optimize, and 2) potential disruptive technologies. Future IT trends to automate and optimize should be built based on input from IT employees (bottom-up – this should also increase IT employee engagement) [62][63]. Based on this, IT leaders should prepare recommendations for improvement and make them a part of the discussion with business partners. Potential disruptive trends should be regularly tracked and assessed from the maturity and business usability perspective. Those trends should also be a part of the discussion with senior business partners not only to increase awareness but also to allow them to align on future opportunities.

### (3) Regular Coaching and Education of Senior Leaders

IT leaders should ignite regular coaching and education sessions for senior business leaders related to cybersecurity, identified IT trends, and potentially disruptive technologies. This would bring benefits to the senior leaders in the form of high, practical awareness related to cybersecurity threats and methods to defend against them. IT trends in the context of automation and optimization should allow business leaders to review their ways of working and make the company more profitable. Potential disruptive technologies reviews together with business leaders should allow to raise awareness and keep track of future potential opportunities.



#### (4) Technology Boards – Cybersecurity and More

It is recommended that IT leaders should create a new formal IT governance mechanism: technology boards. Technology boards should focus on regular reviews of currently used technologies with an eye toward current issues and opportunities. This study showed that technology boards are practiced in some of the companies from the current research. Consideration is to extend it and embrace more technologies with a particular focus on cybersecurity. Cybersecurity, as confirmed by the study, is at the center of attention and formalized methods of regular reviews should help to keep the focus of IT and business partners. Other technologies to be considered as candidates for potential regular reviews are digital technologies (as it is already happening in one of the researched companies) and Bitcoin (which is also the case based on the current study) [64][65]. Other technologies with transforming or disruptive natures should also be part of a technology board's review. As a result of this research in FMCG companies in the UK, cybersecurity stays on top in terms of importance and visibility for business leaders.

#### (5) Recommendations for further research

Findings from the study encourage further research. They identified three categories of technologies influencing business IT alignment in FMCG companies: 1) technologies that help to automate and optimize businesses, 2) digital technologies that help transform the business, 3) and disruptive technologies (which help to create new digital sources of revenue and significantly change the way business operates) would be interesting subjects to extend and validate across different industries. Traditional IT governance frameworks are strong in terms of technologies helping to automate and optimize business processes. This research discovery may lead to the creation of new IT governance frameworks, which will embrace digital transformation technologies and disruptive technologies. Another recommendation is to explore if there are any significant differences between genders. Unfortunately, due to the female-to-male ratio, this was not possible during this study. A third research recommendation would be to research after a period, which will allow companies to fully digest and absorb the uniqueness of the post-lockdown situation (caused by COVID-19) related to remote work, flexible work, and remote collaboration.

## References

- [1] K. C. Moffitt, A. M. Rozario, and M. A. Vasarhelyi, “Robotic process automation for auditing,” *Journal of Emerging Technologies in Accounting*, vol.15, no.1, pp.1-10, (2018)
- [2] J. W. Ross, P. Weill, and S. L. Woerner, “Top-performing CIOs in the digital era,” *CISR Research Briefing*, vol.15, no.5, pp.14, (2016)
- [3] S. De Haes, W. Van Grembergen, A. Joshi, and T. Huygh, “Enterprise governance of information technology: Achieving alignment and value in digital organizations,” *Management for Professionals s.l.: Springer*; 3rd ed. 2020 edition, Sept., (2019)
- [4] IT Governance. IT governance - Developing a successful governance strategy - A best practice guide for decision-makers in IT. *isaca.org*. [Online], <http://www.isaca.org/Certification/CGEIT-Certified-in-the-Governance-of-Enterprise-IT/Prepare-for-the-Exam/Study-Materials/Documents/Forms/AllItems.aspx>, (2005)
- [5] T. Coltman, et al., “The complementarity of corporate IT alignment and business unit IT alignment: An analysis of their joint effects on business unit performance,” *Hawaii: HICSS*, 2018. *Proceedings of the 51st Hawaii International Conference on System Sciences*, pp.4901-4910, (2018)
- [6] J. Becker, et al., “Antecedents of IT governance effectiveness: An empirical examination in Brazilian firms,” *Journal of Information Systems*, vol.31, no.1, pp.41-57, (2017)

- [7] M. Jensen, and W. Meckling, "Theory of the firm: Managerial behavior, agency costs and capital structure," *Journal of Financial Economics*, pp.305-360
- [8] J. H. Davis, L. Donaldson, and F. D. Schoorman, "Toward a stewardship theory of management," *Academy of Management Review*, vol.22, pp.20-47
- [9] J. Pfeffer and G. Salancik, "The external control of organizations: A resource dependence perspective," s.l.: Stanford business book, (2003)
- [10] J. Barney, "Firm resources and sustained competitive advantage," *Journal of Management*, vol.17, no.1, pp.99-120
- [11] R. E. Freeman, "Strategic management: A stakeholder approach," Boston: Pitman Publishing Inc
- [12] Y. Benkler, "Coase's penguin, or, linux and the nature of the firm", *Yale Law Journal*, vol.112, no.3, (2001)
- [13] Y. Benkler, "Peer production, the commons and the future of the firm," *Strategic Organization*, vol.15, no.2, pp.264-274, (2017)
- [14] C. Juiz and M. Toomey, "To govern IT, or not to govern IT?" *Communications of the ACM*, vol.58, no.2, ISO. ISO/IEC 38500 2015 standard. s.l.: ISO, (2015)
- [15] A. Calder, "A pocket guide, second edition," ISO/IEC 38500: s.l.: ITGP; Two edition, Sept. (2019)
- [16] Isaca, "COBIT 2019 framework: Governance and management objectives," s.l.: Isaca, Nov. (2018)
- [17] Institute of Directors in Southern Africa. King report on corporate governance for South Africa 2009. s.l.: Institute of Directors in Southern Africa, (2009)
- [18] Isaca, "Enterprise value: Governance of IT investments," The Val IT framework 2.0 extract. <http://www.isaca.org/Knowledge-Center/Val-IT-IT-Value-Delivery>. [Online] 09 16, 2019. <http://www.isaca.org/Knowledge-Center/Val-IT-IT-Value-Delivery-/Documents/Val-IT-Framework-2.0-Extract-Jul-2008.pdf>, (2019)
- [19] A. Calder and S. Moir, "IT governance - Implementing frameworks and standards for the corporate governance of ITm," s.l.: IT Governance Publishing, (2009)
- [20] O. Avila and L. Muñoz, "Business and information technology alignment measurement - A recent literature review," In W. Abramowicz and A. Paschke (eds.), *Business Information Systems Workshops. BIS 2018, Lecture Notes in Business Information Processing*, 339. Springer, Cham, (2019)
- [21] J. Henderson and N. Venkatraman, "Strategic alignment: Leveraging information technology for transforming organizations," *IBM Systems Journal*, vol.32, no.1, (1993)
- [22] A. Souad, et al., "An elaboration of a strategic alignment model of university information systems based on the SAM model," *Engineering, Technology, and Applied Science Research* vol.8, no.1, pp.2471-2476, (2018)
- [23] M. Kalika, A. Renaud, and I. Walsh, "Is Sam still alive? A bibliometric and interpretive mapping of the strategic alignment research field," *Journal of Strategic Information Systems*, vol.25, pp.75-103, (2016)
- [24] S. Baina, K. Karim, and K. Imgharene, "Extended the SAM model - proposed a synchronized model" 12th IADIS International Conference Information Systems, (2019)
- [25] A. Benlian, I. Haffke, and B. Kalgovas, "Options for transforming the IT function using Bimodal IT," *MIS Quarterly Executive*, vol.16, no.2, pp.101-120, (2017)
- [26] S. Alfadhel, S. Liu, and F. Oderanti, "Business and information system alignment theories built on eGovernment service practice: A holistic literature review," *Application of Decision Science in Business and Management*, (2019)
- [27] P. Drews, B. Horlach, and I. Schirmer, "Bimodal IT: Business-IT alignment in the age of digital transformation," MKWI, (2016)
- [28] AXELOS.ITIL® Foundation, ITIL 4 edition. s.l.: TSO (The Stationery Office), (2019)
- [29] Project Management Institute. A guide to the Project Management Body of Knowledge: PMBOK(R) Guide (Sixth edition). Pennsylvania: Project Management Institute, Inc. 756, (2017)
- [30] AXELOS. Managing Successful Projects with PRINCE2®. London: TSO, (2017)
- [31] S. J. Gentles, et al., "Sampling in qualitative research: Insights from an overview of the methods literature," *The Qualitative Report*, vol.20, no.11, pp.1772-1789, (2015)

- [32] J. W. Creswell, "Qualitative inquiry and research design: Choosing among the five approaches," Thousand Oaks, CA: SAGE Publications, Inc., pp.77-83, (2013)
- [33] S. Rahi, "Research design and methods: A systematic review of research paradigms, sampling issues, and instruments development," *International Journal of Economics and Management Sciences*, (2017)
- [34] H. Gewald, et al., "Understanding how DevOps aligns development and operations: A tripartite model of intra-IT alignment," *European Journal of Information Systems*, (2020)
- [35] S. Abdelkebir, M. Belaissaoui, and M. Yassine, "An agile framework for ITS management in organizations. A case study based on DevOps," Larache, Morocco: S.N., Conference: the 2nd International Conference on Computing and Wireless Communication Systems, (2017)
- [36] M. P. Bach, M. Spremic, and D. S. Vugec, "IT governance adoption in banking and insurance sector: Longitudinal case study of COBIT use," *International Journal for Quality Research*, vol.11, no.3, pp.691-716, (2017)
- [37] F. Alkhalidi, S. Hammami, and M. A. Uddin, "Understating value characteristics toward a robust IT governance application in private organizations using COBIT framework," *International Journal of Engineering Business Management*, vol.9, no.1, (2017)
- [38] G. M. Jonathan, K. S. Hailemariam, and W. L. Debay, "Business-IT alignment in the banking sector: A case from a developing country," *MCIS 2019 Proceedings*, vol.25, no.6, (2019)
- [39] I. S. Bianchi, R. F. de Sousa Pereira, and R. D. Sousa, "IT governance mechanisms at universities: An exploratory study," Boston, USA: s.n., Twenty-third Americas Conference on Information Systems, (2017)
- [40] C. Bart, P. Liu, and O. Turel, "Board-level information technology governance effects on organizational performance: The roles of strategic alignment and authoritarian governance style," *Information Management Systems*, vol.23, no.2, pp.117-136, (2017)
- [41] T. P. Liang, S. Detmar, Wu, and P. J. Shelly, "How information technology governance mechanisms and strategic alignment influence organizational performance: Insights from a matched survey of business and its managers," *MIS Quarterly archive*, vol.39, no.2, pp.497-518, (2015)
- [42] J. P. Bagrow, S. Johnson, and J. Meluso, "Making virtual teams work: Redesigning virtual collaboration for the future," bagrow.com, <https://bagrow.com/#research>, [Online] (2020)
- [43] J. M. Schaubroeck and A. Yu, "When does virtuality help or hinder teams? Core team characteristics as contingency factors," *Human Resource Management Review*, vol.27, no.4, pp.635-647, (2017)
- [44] K. Gövert, et al., "Budgeting for agile product development," *Proceedings of the Design Society International Conference on Engineering Design*, (2019)
- [45] H. Borgman, H. Heier, and I. Smeekes, "A wheelbarrow full of frogs: Understanding portfolio management for agile project," Hawaii: s.n., Hawaii International Conference on System Sciences, (2018)
- [46] A. Kopper, S. Strahr, and M. Westner, "From shadow IT to business-managed IT: A qualitative comparative analysis to determine configurations for successful management of IT by business entities," *Information Systems and e-Business Management*, vol.18, pp.209-257, (2020)
- [47] S. Klotz, S. Strahringer, and M. Westner, "From shadow IT to business-managed IT and back again: How responsibility for IT instances evolves over time," Dubai: s.n., Pacific Asia Conference on Information Systems (PACIS), (2020)
- [48] J. L. Higgs, et al., "The relationship between board-level technology committees and reported security breaches," *Journal of Information Systems*, vol.30, no.3, (2016)
- [49] J. Jöhnk, et al., "Juggling the paradoxes - governance mechanisms in Bimodal IT organizations" Stockholm and Uppsala: S.N., Conference: 27th European Conference on Information Systems (ECIS), (2019)
- [50] X. Li and P. C. Palvia, "Business-IT alignment maturity in the US and China: Perspectives of IT and non-IT employees," *AMCIS*, (2017)
- [51] S. Ge, Y. Jia, and N. Wang, "Business-IT alignment literature review: A bibliometric analysis," *Information Resources Management Journal*, vol.31, no.3, pp.1-16, (2018)

- [52] X. Hu, K. Peng, and F. Yu, "Knowledge is money: Do people think cultural capital can be transformed into economic value?" *PsyCh Journal*, (2020)
- [53] M. S. Alosani, H. S. Al-Dhaafri, and R. Zien, "Mechanism of benchmarking and its impact on organizational performance," *International Journal of Business Performance Management* vol.11, no.10, pp.172-183, (2016)
- [54] J. Luftman, "Assessing business IT alignment maturity," *Communications of AIS*, 4, (2000)
- [55] K. Lyytinen, et al., "Digital innovation management: Reinventing innovation management research in a digital world," *MIS Quarterly*, vol.41, no.1, pp.223-238, (2017)
- [56] A. Baiyere and P. Hukal, "Digital disruption: A conceptual clarification" *Hawaii: s.n., Hawaii International Conference on System Sciences*, (2020)
- [57] N. Y. Konina and G. H. Stonehouse, "Management challenges in the age of digital disruption," *George H., Advances in Economics, Business and Management Research*, vol.119, (2019)
- [58] Z. Kostić and S. Radukić, "The impact of digital disruption and disruptive innovation on the business environment," *KNOWLEDGE - International Journal*, vol.35, no.1, (2019)
- [59] T. Hovelja, A. Levstek, A. and Pucihar, "IT governance mechanisms and contingency factors: Towards an adaptive IT governance model," *Organizacija*, vol.51, no.4, pp.286-310, (2018)
- [60] R. W. Gregory, et al., "IT consumerization and the transformation of IT governance," *MIS Quarterly*, vol.42, no.4, pp.1225-1253, (2018)
- [61] F. Ahlemann, D. Hoffmann, and T. Mueller, "Balancing alignment, adaptivity, and effectiveness: Design principles for sustainable IT project portfolio management," s.l.: ECIS, *Proceedings of the 25th European Conference on Information Systems (ECIS)*, pp.1503-1520, (2017)
- [62] P. Drews, B. Horlach, and I. Schirmer, "Agile portfolio management: Design goals and principles," *Stockholm, Sweden: ECIS 2019, 2019. ECIS*, (2019)
- [63] P. Bhattacharya, "Aligning enterprise systems capabilities with business strategy: An extension of the strategic alignment model (SAM) using enterprise architecture," *Procedia Computer Science*, vol.138, pp.655-662, (2018)
- [64] C. Gellweiler, "Connecting enterprise architecture and project portfolio management: A review and a model for IT project alignment," *International Journal of Information Technology and Management*, vol.11, no.1, pp.1-16, (2020)
- [65] T. Ben-Zvi, J. N. Luftman, and K. Lyytinen, "Enhancing the measurement of information technology (IT) business alignment and its influence on company performance," *Journal of Information Technology*, vol.32, no.1, (2015)