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**THE IMPACT OF NATIONAL CULTURE ON BUSINESS
INTELLIGENCE SYSTEM ACCEPTANCE.**

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LIST OF ABBREVIATIONS

sl. – Slovene

AUS – Adoption, Utilization, and Success

BI – Business Intelligence

BIEUM – Business Intelligence Extended Use Model

BIS – Business Intelligence System

CRM – Customer Relationship Management

DSS – Decision Support System

DW – Data Warehouse

ECT – Expectation-Confirmation Theory

ELT – Extract, Load, Transform

ERP – Enterprise Resource Management

ETL – Extract, Transform, Load

GLOBE – Global Leadership and Organizational Behavior Effectiveness

IC – Individualism- Collectivism

ICT – Information and Communication Technology

IDT – Innovation Diffusion Theory
IPO – Initial Public Offering
IT – Information Technology
KDD – Knowledge Discover in Data
KPI – Key Performance Indicators
OLAP – Online Analytical Processing
PEAU – Perceived Ease of Use
PU – Perceived Usefulness
SEB LU – School of Economics and Business, Ljubljana
SQL – Structured Query Language
TAM – Technology Acceptance Model
TIB – Theory of Interpersonal Behavior
TPB – Theory of Planned Behavior
TRA – Theory of Reasoned Action
UA – Uncertainty Avoidance
UTAUT – Unified Theory of Acceptance and Use of Technology

INTRODUCTION

As technology and innovation develop to improve performance, businesses across all sectors must adapt accordingly (Jasperson, Carter, & Zmud, 2005). Many types of innovation can lead to higher efficiency, an increase in productivity, and reduction of costs. However, for new technologies to be adopted and leveraged for business success, they must be accepted across a business or organization (Davis, 1989). Without acceptance, the new product will not deliver the intended value.

In a variety of fields, research continues to be conducted on which factors may impact this acceptance of new technology, from Customer Relationship Management (CRM) tools to Enterprise Resource Planning (ERP) systems. Technical acceptance models are firmly rooted in groundwork laid in psychology and sociology research beginning in the 1960's with Martin Fishbein and Icek Ajzen's theories of Reasoned Action and Planned Behavior, providing a foundation of understanding of human behavior (Fishbein & Ajzen, 1975).

More recently, models have been developed to look at technology acceptance as a form of human behavior. The two most referenced acceptance frameworks focused on technology use are the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (Davis, 1989; Venkatesh, Morris, Davis, & Davis, 2003). TAM, and its more recent version- TAM2, identify two main determinants of use: Perceived Usefulness, and Perceived Ease of Use. This model assumes effort is a finite variable and is thus utilized accordingly by individuals through their actions (Davis, 1989). The second framework, UTAUT, first defined by Venkatesh in 2003, built off of the TAM model to identify factors, such as performance expectancy, effort expectancy, and social influence, which impact the behavioral intention which then leads to the actual use behavior (Venkatesh et al., 2003).

The previous models, although general, have provided background for more specific frameworks. In order to understand acceptance of business intelligence systems (BIS), Grublješič and Jaklič, through interviews and surveys, developed and tested the business intelligence extended use model (BIEUM) (Grublješič & Jaklič, 2015). This model identifies factors that impact acceptance of BIS and provides a three-fold definition of use: extent of use, intensity of use, and embeddedness of use. One factor that is briefly studied but not deeply analyzed in this framework is the impact of national culture.

Companies across nearly every industry are finding new and innovative ways to use BIS across their business operations. Using data and analytics to support timeliness and accuracy of decision making is a critical way to obtain and maintain a competitive advantage (Ahmad, 2015). Through collecting and analyzing data across internal and external processes, the knowledge can be fully utilized in a way to deliver value. To have an effective BIS implementation, a company must have the right tools, along with other necessary resources- such as processes, personnel, and procedures.

Technology not only improves internal efficiency but opens doors for more international cooperation and additional global expansion- highlighting a need to understand national culture. Most business research regarding national culture uses Geert Hofstede's dimensions developed with IBM in the 1960s and 1970s and later revised in 1991 and 2001 as a framework. (Hofstede, 2001). In this research, Hofstede proposed four dimensions that could be used to differentiate and study culture between nations: individualism-collectivism, uncertainty avoidance, power distance, and masculinity-femininity.

Further research supports Hofstede's definition of national culture, specifically that uncertainty avoidance and individualism-collectivism have an impact on supply chain integration, corporate innovation, use of 3rd party management consulting services, and information and communication technology (ICT) adoption (Chen, Podolski, & Veeraraghavan, 2017; Erumban & de Jong, 2006; Perner, Sieweke, & Werr, 2018; Wong, Sancha, & Thomsen, 2017). In general, uncertainty avoidance and adoption rate have a negative correlation, but individualism is positively correlated, proving that countries with a lower uncertainty avoidance and a higher individualism lead to a higher adoption rate of technology (Erumban & de Jong, 2006). When looking at cultures with low individualism (or high collectivism), it has been found that these factors are negatively associated with autonomy, as recognition is unlikely to be given for individual contribution to task success (Wong et al., 2017). In addition to Hofstede's finding that people in high uncertainty-avoidant countries show higher resistance to change, additional research concludes that the association of high uncertainty and fear of failure may impact the emotional pressure when adapting a process or system (McClintock & McNeel, 1966).

Therefore, it is understood that social influence, defined as "the individual's internalization of the reference group's subjective culture" impacts attitudes (Thompson, Higgins, & Howell, 1991). In addition, the literature has proven that attitude is a strong driver of behavior, with the Theory of Reasoned Action defined as "attitudes lead to the intention to perform certain behavior and intentions will eventually lead to the actual behavior" (Erumban & de Jong, 2006). Consequently, it can be assumed that the national culture factors of individualism-collectivism and uncertainty avoidance drives an individual's attitude, which in turn impacts their behavior in acceptance of BIS. This chain of reasoning, triangulating the impact of national culture on attitude, and attitude's impact on behavior, supports the research question: "How does national culture impact business intelligence system acceptance?".

This work will contribute to the understanding of national culture as a business intelligence system acceptance factor. Understanding acceptance factors is increasingly important in all industries to most efficiently leverage new technology and infrastructure to deliver the most business value when benefits of use may already be considered ambiguous. National culture as a driver of acceptance is important to understand as companies with global offices may need to adapt their implementation plans to best suit the individuals in varying cultures. In developing a model, Venkatesh's initial framework with revisions from Grublješić and Jaklič

will be used and providing a dual case study to contribute to an understanding that national culture impacts effect the attitudes of social influence and then can be understood to impact the acceptance of BIS.

The first goal of this thesis is to provide the reader with a general understanding of BIS acceptance and an overview of acceptance models and frameworks. An additional goal is to provide a similar background of national culture, with a focus on the differences between Slovenia and the United States. The final goal is to analyze BIS through the perspective of two companies to provide a qualitative perception of how national culture may impact BIS acceptance.

The structure of this work starts with a literature review of the following areas of study: business intelligence, technology acceptance, and national culture. Within each Chapter, I will define key terminology and highlight the timeline of each field. This theoretical background provides a strong foundation in national culture and technology acceptance models. From there, the research model will be presented, based on the models previously developed. To support the research question, four interviews were conducted, two in Slovenia and two in the United States. In these interviews, I asked employees of companies with recent BIS implementation/digital transformations about their BIS usage, their view of national culture, and their perspective on how national culture may impact BIS acceptance. These evaluations provide insight into the research question and suggestions for other companies. The final Chapter will discuss these findings and provide solutions for research and corporate implications.

1 BUSINESS INTELLIGENCE

Gartner defines Business Intelligence (BI) as “the applications, infrastructure and tools, and best practices that enable access to and analysis of information to improve and optimize decisions and performance” (Gartner, n.d.). An effective BI framework, with processes, instruments, and technologies supports measuring, storing, and using data to inform decision makers and add value to the organization overall (Eidizadeh, Salehzadeh, & Chitsaz, 2017). It is important to highlight that BI is not just the tools and technologies, but also the people, rules, and systems and in place which enable and software usage. Decision makers at all levels typically rely on analysts and data scientists to support with domain-specific knowledge of the tools and the underlying data (Kowalczyk & Buxmann, 2015).

1.1 Business Intelligence Systems

Under the umbrella term of BI, Business Intelligence Systems are the “specialized tools for data analysis, query, and reporting that support organizational decision-making that potentially enhances the performance of a range of business processes” (Elbashir, Collier, & Davern, 2008). As with BI, these tools must be complemented by appropriate Information

Technology (IT) infrastructure, such as data warehouses, data marts, and extract-transform-load (ETL) procedures to run and operate. The overall purpose of BIS is for organizations to better understand their capabilities and resources, monitor trends, and overall “improve the timeliness and quality of inputs to the decision process” (Negash, 2004).

Within BI, it is important to note the ways in which BIS differs from information systems (IS). IS can be defined as “a system which assembles, stores, processes, and delivers information relevant to an organization in a such a way that the information is accessible and useful to those who wish to use it” (Avison & Myers, 1995). In addition to IS to analyze and understand the business, BIS requires operational data, analytical tools, but also has some key differentiations. First, BIS is typically more voluntary, where the employees may not have clear directives to use the systems for their daily task (Popovič, Hackney, Coelho, & Jaklič, 2012). This is relevant to this paper in understanding human behavior when the action is considered voluntary.

As mentioned later in Chapter 3, this level of voluntariness is frequently considered when looking at technical acceptance. An additional differentiation between BIS and IS is the level of structure, where IS are typically more structured and BIS and its use is less defined, leaving more opportunity for exploration and also potential for user error (Popovič et al., 2012). Finally, the results of BIS are often more indirect and long-term (Gibson, Arnott, & Jagielska, 2004). This is a challenge in the implementation process as organizations have to justify the financial and organizational risk of executing a new BIS without a clear expected return on investment.

The history of BIS can be understood starting in the 1960s with computerized decision support systems (DSS) before gaining popularity in the 1980s with expanded managerial use (Power, 2007). Later, in the 1990s, accounting research departments started to look at archival data to better understand IT investments and analyze previous payoffs (Elbashir et al., 2008). Since then, this accounting research has expanded more into IT, with more widespread use of Enterprise Resource Management (ERP) and Customer Resource Management (CRM) systems.

In general, the field of BI tends to “chase the buzz words and system types of the day” (T. D. Clark, Jones, & Armstrong, 2007). Since 2011, there has been a stark increase in the number of papers published in the field of BIS Adoption, Utilization, and Success (AUS), with the majority of publications coming from the United States and Taiwan, followed by Australia, China, and South Africa (Ain, Vaia, DeLone, & Waheed, 2019).

Today, BIS solutions support nearly all aspects of the business, across all sizes of organizations. However it is not clear if all organizations are necessarily taking advantage of “the full benefits of what the systems could potentially bring” (Lim & Teoh, 2020). In seeking a competitive advantage and maintaining survival, BI is often considered a critical

competitive tool in enabling the organization to operate in a higher quality or more efficient manner than previous operations or compared to the competition (Eidizadeh et al., 2017).

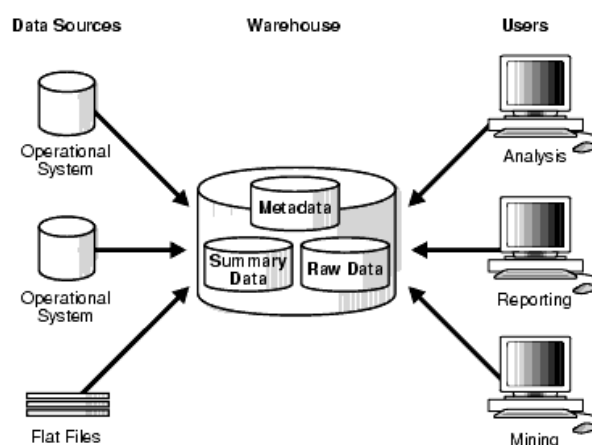
1.2 Components of Business Intelligence Systems

As previously defined, BI and BIS are general concepts which contain a variety of tools, techniques, and technologies. BI data types can fall into two categories: structured and unstructured (Negash, 2004). The following subsections will further define these categories and some key components and discuss how these components interact. Although a variety of companies produce solutions within each component and use cases may differ, the general themes remain the same. Trends within the space are also universal, such as hosting data in the cloud, which is scalable and often cost effective. Of course, usage of any storage can result in issues such as security and general data protection concerns, and cloud-based systems present their own unique challenges (Kraynak & Baum, 2020).

1.2.1 Data Warehouse

The first key component within the field of BI is the data warehouse (DW), which “gathers accurate, clean and detailed data from multiple sources for in-depth analysis” (Ain et al., 2019). This data repository supports all BI activities and is an advantageous component for analytics (Oracle, n.d.). Compared to a traditional transactional database, a data warehouse has additional capabilities: organizing around an object such as a supplier or customer and the ability to store historical data to summarize for later analysis (Ramamurthy, Sen, & Sinha, 2008). This can be observed below in Figure 1.

Figure 1: Architecture of a Data Warehouse



Source: Oracle (2005).

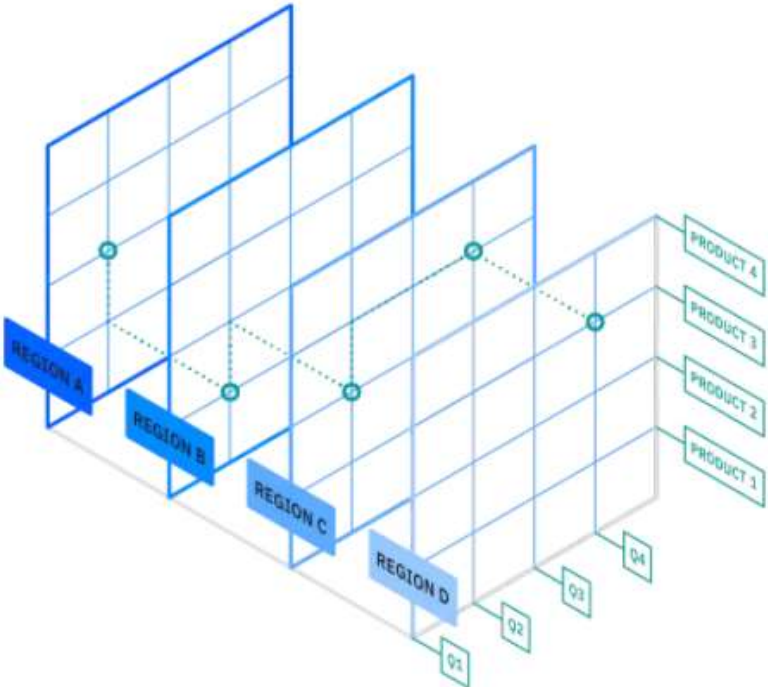
Through the ETL process, a data warehouse can maintain this history without overwriting the current-valued data (Oracle, 2005). Although initially introduced in the late 1980s, to

“help data flow from operational systems into decision-support systems (DSSs)”, recent innovations in data warehouses include using cloud technology to ingest and store data. New developments allow more opportunities for users to self-serve rather than dependencies on IT or other technical departments (Kraynak & Baum, 2020).

1.2.2 Online Analytical Processing

Online Analytical Processing (OLAP) was introduced in 1990, and “supports multidimensional analysis in real time”. This real time access to data allows users to analyze data through techniques such as aggregations and filtering across a multi-dimensional matrix (Ain et al., 2019). Accessing data from the data warehouse or another central data storage system, OLAP software is able to reorganize the data into a cube shape- and the array-based structure enables multidimensional analysis (IBM, 2020). Seen below in Figure 2, multidimensional analysis is typically done in four main ways: drill-down, roll-up, slice and dice, and pivot (IBM, 2020). Through these types of analysis, companies can gain substantial insight into company performance to aid in decision making. As with data warehouses, trends in OLAP are also moving to the cloud, which aids in better scalability and is generally more cost effective.

Figure 2: OLAP Cube Structure



Source: IBM (2020).

1.2.3 Data Mining

To turn patterns and processes into usable information, data mining, the extraction of interesting data, is necessary (Han & Kamber, 2012). As the scale of available data continues to grow, optimizing business operations and leveraging BIS across an entire organization requires data mining or Knowledge Discovery in Data (KDD). Below, I will detail three phases of data mining: descriptive, predictive, and prescriptive.

Descriptive data mining involves looking for patterns or insights from the available data to better understand how a company operates and to identify areas for improvement. This is typically executed within the process of descriptive analytics, first deciding on business metrics, then collecting and preparing the required data, analyzing the data, and presenting in visualizations or dashboards. Data mining uses data science techniques such as pattern recognition, regression analysis, and clustering to acquire information for processing (UNSW Online, 2020).

The next order of data mining is predictive. Using more advanced techniques, often based in statistics, this type of data mining is focused on predicting what could possibly happen in future behavior and performance based on previous history (UNSW Online, 2020). When prepared properly this allows a company to make important business decisions such as supply chain, pricing, and logistics to best serve the demands of their customers. A form of this is sentiment analysis, where a computer program is able to “read” or consume a piece of text and automatically predict the sentiment or emotions from the consumer (Carremans, 2019). This strategy is quickly becoming popular across many consumer products (Gupta, 2018).

The last step beyond predictive analytics is prescriptive; this requires the least amount of human input, with computer automation predicting what will happen and then making the decision automatically (UNSW Online, 2020). Prescriptive analytics without human intervention also requires substantial decision support, constantly scoring and predicting from the decisions to improve in potential future situations that may be similar. An example of prescriptive analytics is dynamic pricing, where an organization can quickly make price adjustments automatically with the aim to best meet demand and optimize profits (AltexSoft, 2019).

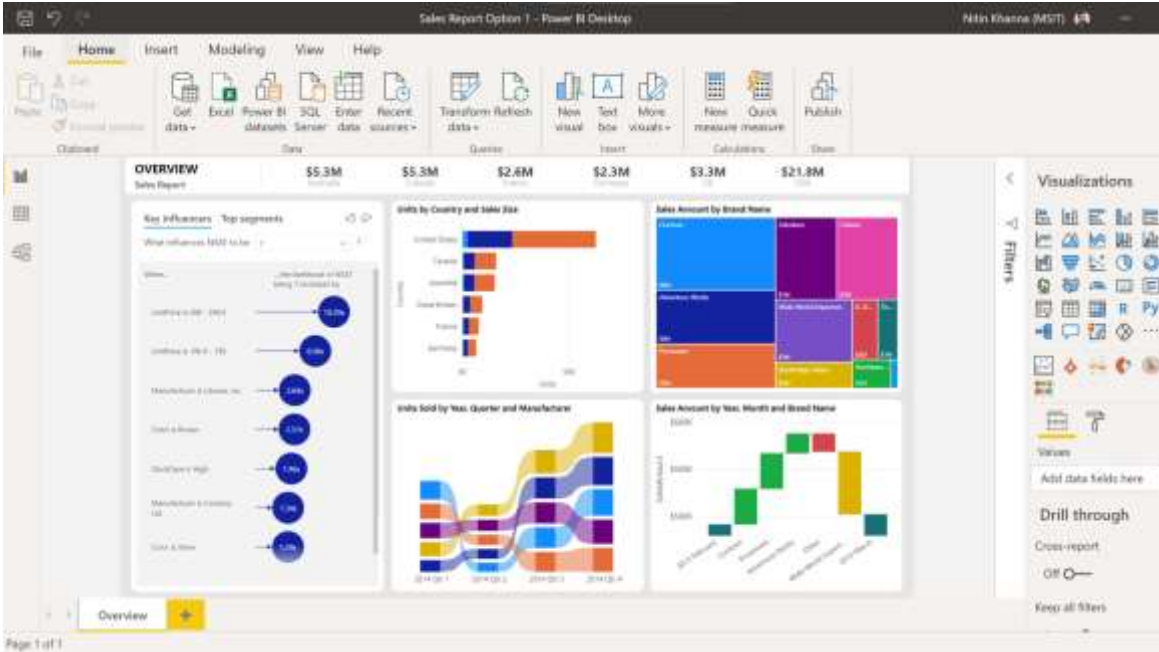
1.2.4 Data Visualizations

The final key components within BIS are visualizations and dashboards, which are the front-end applications, or business user facing tools, for data analysis. Using visualizations such as graphs, charts, widgets, and ad hoc reports, decision makers can better track and monitor their business (Ain et al., 2019). Having data stored in a data warehouse and structured in an OLAP cube is insufficient if leaders and decision-makers are unable to access and understand

their business. Beyond business leaders, all employees are empowered to better manage their own roles with more knowledge of the business.

Dashboards are often used to combine visualizations, such as charts, plots, and infographics, to clearly communicate the data in a coherent manner (IBM, 2021). Frequently used tools such as Domo, Tableau, and Microsoft’s PowerBI display large amounts of information, from key performance indicators (KPIs) to modeling of processes (Gartner, 2021). In addition to driving decisions, these types of strategic tools can also be used for alerts for operational and strategic initiatives (Popovič et al., 2012). An example of such a dashboard can be observed below in Figure 3. The dashboard shown below is an example of a sales report, showing overall KPIs at the header with deep dive visualizations of sales data comparing over time and broken out by location (Microsoft Power, n.d.). These “information delivery systems” are a necessary component in accessing data to drive real change at an organization with analytics.

Figure 3: PowerBI Dashboard Example



Source: Microsoft Power (n.d.).

1.2.5 Unstructured Components

Within BIS use, there are three levels of unstructured components that are supported by the previously mentioned structured components: strategic, analytical, and operational, with each achieving different business goals (Quinn, 2009). Although not found to be mutually exclusive, each level also impacts the other; strategic components drive analytical BI, and analytical BI focus on operational priorities. If a company puts their BI use into silos by department, with individuals only focusing on their business operations, there is little to no

collaboration and issues may remain unresolved. Effective BIS use also requires a BI strategy that supports and is supported, often in the form of a balanced scorecard or KPIs.

Getting to strong BIS use at a company often takes many years and iterations, starting with basic use, typically at an executive level with IT support, then moving to sharing throughout an organization. Once performance management is analyzed more systematically and new initiatives are based on analytics, venturing into predictive or even prescriptive analytical projects, a company achieves the higher levels of acceptance (Quinn, 2009).

1.3 Snowflake

As described in the overview of BIS, analytical tools must be supported by appropriate IT infrastructure, and a quickly growing company in this space is Snowflake. Snowflake was selected for this project as they are present globally, popular across a variety of industries, and when contacted, were open and enthusiastic about supporting this research project. Aptly named for a creation in the cloud, Snowflake is a data warehousing company headquartered in San Mateo, California. Although less than 10 years old, Snowflake went public in September 2020 as the most valuable software startup IPO (Krazit, 2020).

Figure 4: Snowflake Computing Diagram



Source: Snowflake (2021).

As seen above in figure 4, Snowflake offers a variety of cloud computing services, centered around storing data. This single platform supports data engineering, containing data lakes, data warehouses, and enables further data science, data applications, and data sharing (Snowflake, n.d.). Snowflake acts as the intermediary between data sources and the consumers of data, and when implemented properly can reduce the need for a substantial internal data engineering department. Newer product offerings even include a data marketplace, where companies are able to buy and sell mutually beneficial data, such as

COVID-19 statistics by country or even daily weather patterns (Snowflake, n.d.-a). Snowflake is competing with tech giants Amazon Web Services (AWS), Microsoft Azure (Azure), and Google Cloud Platform (GCP) and has a limited operating history but continues to perform favorably.

The company's uniqueness and success comes from separating stored data from the required computing power, challenging the generally accepted extract-transform-load process (ETL) to opt for an extract-load-transform (ELT) alternative. In addition, Snowflake automatically scales and adjusts pricing accordingly to provide support for varying amounts of data, workloads, and users (Kraynak & Baum, 2020). Competing with tech giants such as Amazon, Microsoft, and Google, Snowflake continues to expand globally and will be used as a common variable in this research project as the companies evaluated have chosen Snowflake as their solution of choice.

While looking at different companies, being able to eliminate the variable of BIS technology is immensely helpful in focusing the research and discussion on national culture and BIS acceptance, rather than how the specific technology itself impacted the acceptance. Although this thesis will not be focused on Snowflake directly, knowing that companies have selected and implemented the same solution is beneficial, for the reasons expressed above.

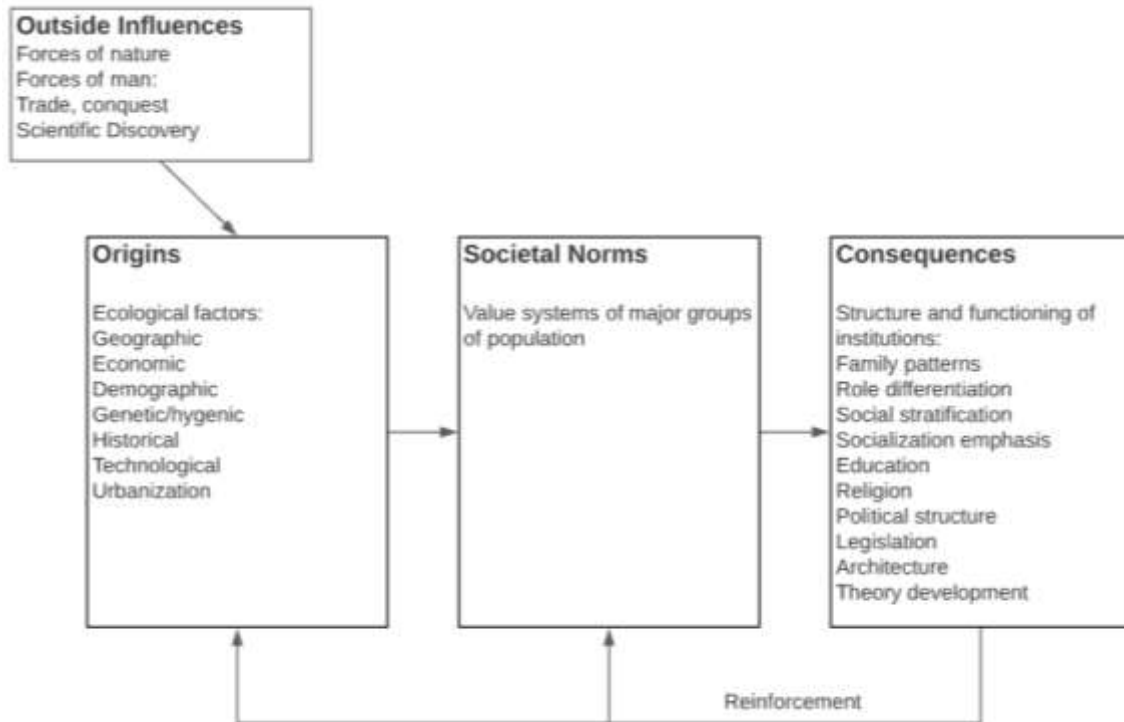
2 NATIONAL CULTURE

With culture defined as “the collective programming of the mind which distinguishes the members of one human group from another”, national culture can be described as these attributes in a group of people from the same country (Hofstede, 1980). Although there are many other cultural aspects to be considered when researching human behavior, such as gender, age, and organization, for the purpose of this study, all cultural dimensions except for national culture will be not be considered (Shane, 1995). National culture defines the collective society and is shaped by and further develops institutions such as family, education, politics, and legislation (Hofstede, 1980). Once defined, these institutions further enforce the societal norms, which can be observed below in Figure 5.

In understanding behavior in a corporate environment, Geert Hofstede is perhaps the most referenced and well-respected researcher in the field. While working at IBM International in 1968, Hofstede initially surveyed 40 distinct national groups, and later repeated his study in 1972 with 70 nations represented (Hofstede, 1980). The preliminary framework was based on sociological and anthropological theories, but was developed with the intention of examining the role of national culture in work scenarios and in the design of information systems (Hofstede, 1980). IBM, along with many other large, multinational companies, expanded internationally through “greenfield starts”- setting up a foreign subsidiary from scratch which was led by an expatriate. As these international offices combined the IBM

corporate cultural elements and national culture elements, studying the effects of national culture was critical to ensuring ongoing success (Hofstede, 2010).

Figure 5: The Stabilizing of Culture Patterns



Source: Hofstede (1980).

Since then, other cultural classification models have been developed, one of which is the Global Leadership and Organizational Behavior Effectiveness (GLOBE) model (House, Hanges, Ruiz-Quintanilla, Dorfman, & Dickson, 1999). Based on Hofstede’s culture theory along with additional motivation and organizational theories, this theory was developed to “describe, understand, and predict the impact of specific cultural variables on leadership and organizational processes and the effectiveness of these processes” (House et al., 1999). This framework has nine dimensions and aims to better understand leadership- through expectations, behavior, status, and influence.

As the scope of this project does not focus on business leaders but rather the behavior and values of countries, Hofstede’s classification was selected rather than GLOBE. A recent study found that national culture changes over time and the differences in countries remain relative, not absolute (Hofstede, 2010). This indication supports use of Hofstede’s classifications in the purpose of understanding the relationships between national culture and BIS acceptance when looking at two differing societies, in this case defined as a nation.

2.1 Hofstede's Model of National Culture

As previously mentioned, Hofstede's research will be used in this paper to define and structure the definition of national culture. Hofstede's four main dimensions of culture are based on research from sociologist Alex Inkeles and psychologist Daniel Levinson. Inkeles and Levinson identified: relation to authority, conflict management techniques, and concept of self in relation to individualism and masculinity, as universally occurring and phenomenologically real (T. A. Clark, 1990). Although all original individuals surveyed worked for IBM, he found near perfect fit within each country. This empirical study confirmed Inkele's and Levinson's predictions and the dimensions of culture strongly resemble the initial problems identified. These dimensions can be observed in Table 2 below. To provide an additional understanding each dimension, the highest and lowest ranked country are included. These countries are based on the study done in 1973 that expanded the number of countries included from 40 to 70.

Table 1: Hofstede's Dimensions of National Culture

	Definition	Country (High)	Country (Low)
Uncertainty Avoidance	"the extent to which the members of a culture feel threatened by ambiguous or unknown situations"	Greece	Singapore
Power Distance	"extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally." *Highly predictable with geographic latitude, population size, and wealth.	Malaysia	Austria
Individualism-Collectivism	"societies in which the ties between individuals are loose: everyone is expected to look after him-or herself and his or her immediate family."	United States	Guatemala
	"societies in which people from birth onward are integrated into strong, cohesive in-groups, which throughout people's lifetime continue to protect them in exchange for unquestioning loyalty."		
Masculine-Feminine	"when emotional gender roles are clearly distinct: men are supposed to be assertive, tough, and focused on material success, whereas women are supposed to be more modest, tender, and concerned with quality of life"	Slovakia	Sweden

	“when emotional gender roles overlap both men and women are supposed to be modest, tender, and concerned with quality of life”		
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Source: Hofstede (2010).

Due to the assumptions and methodology used, Hofstede’s dimensions have faced extensive criticism. The most referenced criticism comes from Brendan McSweeney’s “A triumph of faith- a failure of analytics” (McSweeney, 2002). In this criticism, McSweeney argues that Hofstede’s expansive responses (117,000) does not guarantee representativeness and that is incorrect to assume homogeneity of a nation’s population. Facing this and other criticism, Hofstede continued to publish responses up until his death in 2020. In a 2007 adaptation, incorporating additional research from the World Values Survey, a fifth and sixth dimension were added to the original model (Minkov, 2007). In addition to these metrics, Minkov also identified a strong correlation between pride and religiousness with nationality. These two additional dimensions can be observed below and were found to significantly increase the overall accuracy.

Table 2: Hofstede’s Dimensions of National Culture (continued)

	Definition	Country (High)	Country (Low)
Long - Short Term Orientation	fostering of virtues oriented toward future rewards, perseverance, and thrift	South Korea	Ghana
	the fostering of virtues related to the past and present- in particular, respect for tradition, preservation of “face,” and fulfilling social obligations		
Indulgence- Restraint	a tendency to allow relatively free gratification of basic and natural human desires related to enjoying life and having fun	Venezuela	Pakistan
	a conviction that such gratification needs to be curbed and regulated by strict social norms		

Source: Hofstede (2010).

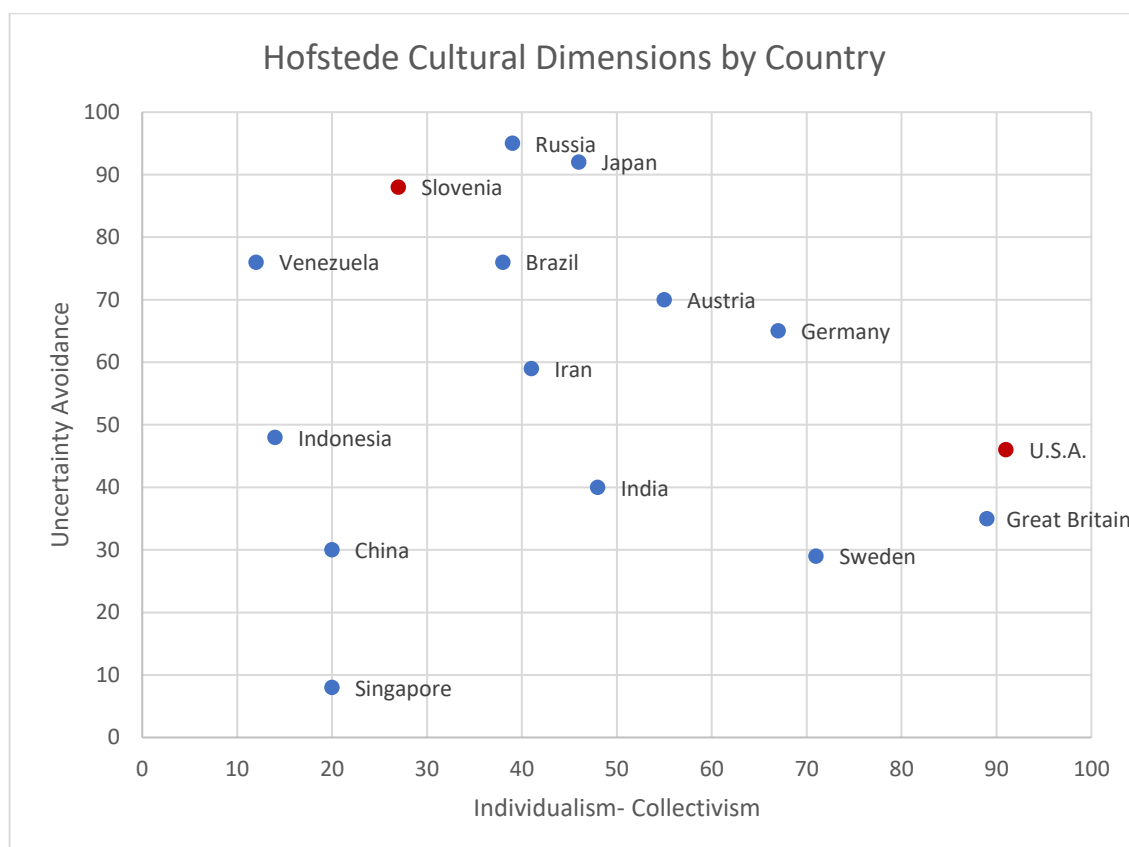
Some research has incorrectly translated the national culture attributes to an organization or even individual level (Minkov, 2018). Although methodologically unproven to use national-level guidance to support research in individuals, Hofstede’s classifications can provide structure in a case study analysis. In a 2011 publication, Hofstede states that individual personalities differ within each national culture and these “scores should not be used for stereotyping individuals” (Hofstede, 2011). However, Hofstede specifies that these “theoretical constructs” provide a framework when comparing national culture norms and

that quantitative analysis alone is insufficient. Equally important is the “qualitative interpretation of what differences on the dimensions mean for each of the studies societies” (Hofstede, 2011).

This paper will do exactly what he advises, structuring the data collected and analysis on the “emic” or insider perspective, to support the “etic” dimensional data. In response to criticism that technological modernization equalizes societal norms, Hofstede argues that there is insufficient proof of this modernization impacting diversity amongst cultural dimensions. In fact, he suggests that technology “may even increase differences, as on the basis of pre-existing value systems societies cope with technological modernization in different ways” (Hofstede, 2011). This paper will be following Hofstede’s recommendation and investigate how BIS users perceive national culture to impact acceptance.

Based on tangential additional research, this paper will focus on only two of Hofstede’s cultural dimensions: Uncertainty Avoidance and Individualism vs. Collectivism. The following sections will describe these dimensions in more detail and provide support for why they are applicable in this situation. A summation of this additional research can be observed in Table 3.

Figure 6: Cultural Dimensions of Uncertainty Avoidance vs. Individualism-Collectivism



Source: Hofstede Insights (n.d.).

Figure 6 above shows an example of fifteen countries and where they score on those two dimensions (Hofstede Insights, n.d.). The countries were selected based on their diverse standing and geographic location. Slovenia and the United States are highlighted in red for emphasis. To define score, Hofstede used weights so that the countries would be evenly distributed between 0 and 100. For example, Singapore for example has a low uncertainty avoidance and is more collectivist than individualist.

2.1.1 Individualism- Collectivism

Hofstede's individualism score is defined as how the individuals prioritize themselves vs. prioritizing conformity in a cohesive group. This can be seen in how individuals value their personal time, freedom, and work (Gorodnichenko & Roland, 2017). More individualistic cultures ("I" consciousness) have loose ties between people, and the expectation is that people will first look out for themselves and their immediate family (Hofstede, 2011). In a collectivist culture ("We" consciousness), people are more integrated into cohesive groups with extended family and community, with extreme loyalty within and strong distrust outside of one's collective (Hofstede, 2011).

These differences can be seen in the role of management. In a more collectivist society, management is more concerned about the groups rather than the individuals, and does not directly appraise subordinates in order to avoid "spoiling the harmony" (Hofstede, 2010). The opposite is true in individualist societies, where management is taught to encourage and share feelings with individuals. In regards to feelings and emotions, collectivist societies encourage showing sadness, but discourage displaying happiness, a complete reverse of the individualistic societies (Hofstede, 2010). In general, the individualism score can be predicted with relatively high accuracy based on the country's wealth and geographical latitude, where countries closer to the equator tend to have a lower score.

Even before the workplace, education is structured in different formats- where individualistic countries teach students to speak up in class and that the purpose of education is "learning how to learn" rather than the "learning how to do" methodology taught in collectivist societies. These societal norms continue in professional settings, where individual employees make decisions regarding their behavior and how they may be perceived by others.

Individualism impacts innovation because social influence and rewards are given to those who prioritize individualism. Research findings support their hypothesis that individualism should encourage more innovation, but in a collectivist society, changes in coordination of processes will be more effective long term (Gorodnichenko & Roland, 2017). This is due to the fact that in a more collectivist society, individuals prefer not to stand out from a crowd, which may discourage use of new technology if not already the general standard throughout the organization. Therefore, as BIS is generally considered innovative and may require

additional encouragement and enthusiasm to initially accept, this paper explores the relationship between individualism and BIS acceptance.

2.1.2 Uncertainty Avoidance

Another key Hofstede attribute to be analyzed in this paper is uncertainty avoidance, defined as the “extent to which the members of a culture feel threatened by uncertain or unknown situations” (Hofstede, 1991). This definition differs from GLOBE’s definition and other frameworks defined as Hofstede is specifically interested in the *stress* and threatening feelings the user experiences when in an uncertain situation. To reduce stress, countries with a high uncertainty avoidance typically find ways to combat this ambiguity, typically focusing on the immediate situation at hand (G. K. Jones & Davis, 2000).

Adopting or accepting any sort of new technology or innovation inherently involves risk and uncertainty (Erumban & de Jong, 2006). This difference in comfort with uncertainty can be observed in how countries conventionally do business. For example Germany, with a high uncertainty avoidance has a financial sector dominated by banking where the US, lower in uncertainty avoidance, has more equity-market financing (Li, Griffin, Yue, & Zhao, 2013).

It is important to note the differences between uncertainty avoidance and risk avoidance. Risk is typically associated with a probability of a specific event occurring, whereas uncertainty is the more general and open situation, with no probability and leads to a general feeling of ambiguity. In avoiding uncertainty, societies tend to focus on rules and regulations, structure, and stability. Even if rules are incorrect or not followed, their existence can provide comfort and ease to individuals from such environments (Hofstede, 2010).

Recognizing that individuals in more uncertainty accepting societies are more likely to challenge rules, norms and procedures; it has also been proven that uncertainty avoidance can be linked to adoption of new technology, corporate innovation, and potentially BIS acceptance (Shane, 1995). Hofstede’s initial research found that managers in high uncertainty avoidant cultures are less open to making decisions that could be considered risky, and even if research and development (R&D) spending is comparable to that of a low uncertainty avoidance country, their priorities will be different with the former focused on low-risk endeavors (G. K. Jones & Davis, 2000). In addition to Hofstede’s finding that people in high uncertainty avoidant countries show higher resistance to change, additional research concludes that the association of high uncertainty and fear of failure may impact the emotional pressure when adapting a process or system (McClintock & McNeel, 1966).

This trend can be observed throughout history with 16th century Florentine philosopher Niccolo Machiavelli stating that “We must bear in mind that nothing is more difficult to set up, more likely to fail, and more dangerous to conduct than a new order of things” (Machiavelli, 1981). He states this is because those who prospered under the old system will no longer succeed and that a fear of opponents can lead to a resistance to change, as “men

are hard to convince of anything, and don't really have believe in new things until they have had a long experience of them" (Machiavelli, 1981). Using BIS to assist in decision making and integrating throughout a company is a large corporate shift to becoming more data driven. In these statements, Machiavelli argues a similar message as Hofstede- that individuals more avoidant of uncertainty may be more resistant to change because they have experienced more negative consequences from deviating from the status quo rather than rewarded for seeking change.

2.2 Business Research based on Hofstede's Model

Many researchers have used Hofstede's dimensions of national culture as a foundation for understanding corporate behavior. As Hofstede's initial motivation for work was sponsored by IBM, this is fitting as companies since then have worked to best understand behavior of employees. This is especially important as companies open international offices and have employees from various cultural backgrounds.

Additional research in associated business fields has found that individualism has a tangible effect on other business priorities. A strong positive correlation has been found with individualism and the number of patents produced as innovative corporate policies are often times highly uncertain and depend on the preferences and actions of the firm's employees (Chen et al., 2017). Complementing corporate innovation, significant associations have been found between corporate risk-taking and individualism (Li, Griffin, Yue, & Zhao, 2013). As individualism is negatively associated with high autonomy, recognition for an individual task success is valued, and thus individuals are more likely to adopt technology (Wong et al., 2017). These studies aid in developing the research question for this thesis; if the national culture dimension of individualism impacts these areas, then it may also impact acceptance of BI.

In addition to impacting corporate innovation, uncertainty avoidance has been found to have a prominent negative correlation on organizational innovation, e-commerce behavior, use of professional services, ICT adoption and corporate social responsibility (Chen et al., 2017; Cheung, Tan, & Wang, 2020; Erumban & de Jong, 2006; Hallikainen & Laukkanen, 2018; Perner et al., 2018). These correlations can be understood because of the social influence an individual experiences and the values which the society prioritizes. People in these countries may feel pressured by societal values or political pressures and are generally not comfortable challenging the status quo, which could be observed in their use of BIS, as seen in Table 4.

Table 3: National Culture Effect on Business Areas

	IC	UA	Summary of Findings
Innovation Rates	↑	↓	Societies that are more collectivist prefer champions to have cross-functional support. Societies with lower uncertainty avoidance (more uncertainty accepting) prefer champions to overcome norms, rules and procedures. (Shane, 1995)
R&D	↑	↓	Collectivist society tendencies of priority of individual initiatives are detrimental to innovation and weaker uncertainty avoidance is necessary to generate novel ideas. (G. K. Jones & Davis, 2000)
Innovation	↑	-	Defined innovation success as more patents, more efficient R&D into output. Confirmed that uncertainty avoidance negatively and individualism-collectivism positively influences early adopters for innovation penetration. (van Everdingen & Waarts, 2003)
Corporate Risk Taking	↑	↓	High individualism and low uncertainty avoidance support corporate risk taking- directly on risky decisions and indirectly through institutional development. Influence of culture may be impacted by size of the firm. (Li et al., 2013)
E-commerce	↑	↓	High collectivist orientation positively influences disposition to trust, but negatively on ability to trust. Influence of uncertainty avoidance are context specific when looking at trust. Societies that have a high collectivism are very trusting within their inner circle and suspicious of outsiders. (Hallikainen & Laukkanen, 2018)
Supply Chain Integration (SCI)	↑	-	Institutional and in-group collectivism negatively affect relationships between internal integration and quality and customer integration and delivery. Low autonomy and high collaborative societies see less performance from SCI in terms of quality and delivery (Wong et al., 2017)
Professional Services, Management Consulting (MC)	↑	↓	Individualism and uncertainty avoidance are negatively related to use of consulting services. Variation in MC use is caused by perceived relational and psychosocial uncertainties. (Pemer et al., 2018)
Information and Communication Technology (ICT) Adoption	↑	↓	Low uncertainty avoidance countries have higher adoption, along with more individualistic countries. Uncertainty avoidance (along with power distance) are most important when determining ICT adoption. Effect of individualism is less defined. (Erumban & de Jong, 2006)

Source: Own Work.

3 TECHNOLOGY ACCEPTANCE

This section covers the history and progression of theories and structured models of acceptance, with a focus on acceptance of technology. In order for companies to leverage the use of new technologies and innovation, leaders must do as much as possible to ensure their employees are utilizing the technology appropriately. To do this, company leadership must be aware of how and why individuals accept or do not accept change or innovation. This foundational understanding provides managers with the background to understand trends and mitigate any expected friction.

Since the 1950s, psychologists and sociologists have suggested models to understand and later optimize implementations of new technology efficiently. These models include Martin Fishbein & Icek Ajzen's work on the Theories of Reasoned Action (1975) and Planned Behavior (1991), Albert Bandura's Social Cognitive Theory (1977), and Everett Rogers' Innovation Diffusion Theory (1983). Although rooted in psychology, many of these early models are now more commonly used in business or applied health applications rather than pure psychology (Ain et al., 2019). The Theory of Planned Behavior, in separating intent and action, has been found to successfully predict health behaviors such as smoking, drinking, and substance use (LaMorte, 2019).

The Unified Theory of Acceptance and Use of Technology, and Technology Acceptance Model and their extensions continue to be referenced in research today. In understanding the earlier models and the research behind their findings, the newer models can be better understood. Terminology such as "early adopters" and "subjective norms" remain common in today's innovation conversations and factors such as the voluntariness are considered in implementation of new technology (Rogers, 1983).

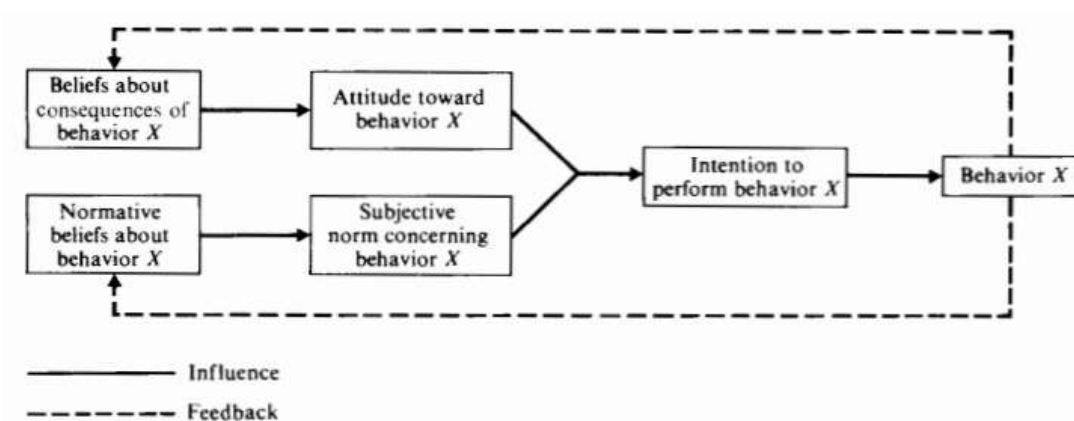
The purpose of these models is to better understand behavior towards technology with the managerial goals of encouraging further usage. Models such as the Technology Acceptance Model and Unified Theory of Acceptance and Use of Technology "develop diagnostic tools to predict IS acceptance and facilitate design changes before users have experience with a system" (Taylor & Todd, 1995). In the intersection of research and application, these models should be considered when implementing any technological change, especially in a business setting.

To understand the current research on acceptance, it is important to understand the history of acceptance models. This section of the paper will cover the following models and theories: Theory of Reasoned Action, Innovation Diffusion Theory, Technology Acceptance Model, Social Cognitive Theory, Theory of Planned Behavior, Theory of Interpersonal Behavior, Technology Acceptance Model 2, Unified Theory of Acceptance and Use of Technology (original and extension), and the Business Intelligence Extended Use Model.

3.1 Early Psychology Research Models

In research conducted in the late 1960s and early 1970s, social psychologists Icek Ajzen and Martin Fishbein developed and refined the theory of reasoned action and planned behavior. Their findings were published in “Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research” in 1975, and as of January 2020 has been cited over 340,000 times according to Google Scholar. After defining four key classes of variables (beliefs, attitudes, intentions, and behaviors), Ajzen and Fishbein showed that each variable is systematically related to one another and can be modeled in a way to support these relationships as seen below in Figure 7 (Fishbein & Ajzen, 1975). This theory proposes that a belief influences attitudes which in turn influences intention and then an actual behavior. Based on this behavior, a feedback loop develops. For each of these attitudes towards a behavior, the strength of a belief is multiplied by the outcome and then summed with the appropriate weights to form the attitude. An important assumption in the Theory of Reasoned Action (TRA) is that humans make rational decisions and act in a way of their own volition and control (Fishbein & Ajzen, 1975).

Figure 7: Theory of Reasoned Action



Source: Fishbein & Ajzen (1975).

Based on the Theory of Reasoned Action, Ajzen expanded the model to include a third determinant to look at the specific context of the scenario where the acceptance is occurring, which he called the Theory of Planned Behavior (TPB). As with TRA, Ajzen identified that these determinants do not influence behavior, but rather the intention towards a behavior. This is because intentions define how hard an individual is willing to work in order to act out the behavior (Ajzen, 1991). This model provides a more specified extension of TRA through an addition of perceived behavioral control, which may impact the behavior directly or indirectly through intention and is widely used in understanding individual acceptance.

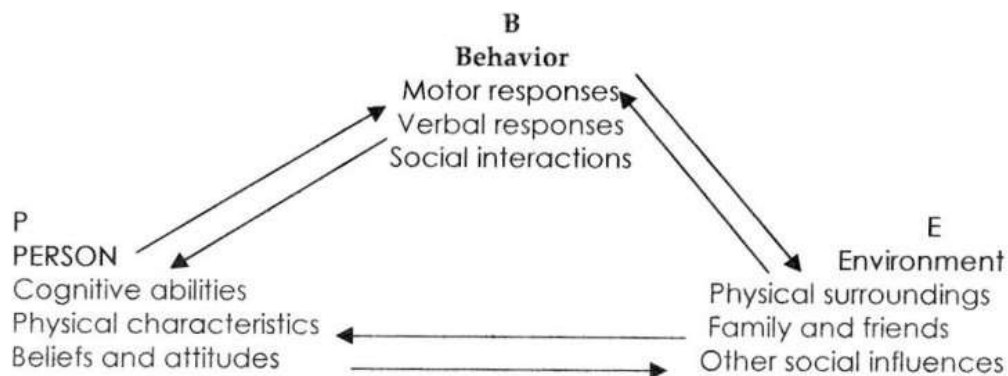
3.2 Additional Sociology Research Models

Further connected research must be included in an analysis of acceptance models as these supports a foundation in understanding human behavior. Sociologist, Everett Rogers, first published his Innovation Diffusion Theory in 1962 which studied the rate at which new ideas and technologies are spread. Differing from the rest of the theories and models, Rogers focuses on “diffusion”, defined as “the process by which an innovation is communicated through certain channels over time among the members of a social system” rather than adoption, which can be seen as routine or over-time usage (Rogers, 1983).

As new technology is communicated and spread, different categories of adopters begin usage: starting with innovators, then early adopters, early majority, late majority, and finally laggards. The rate of adoption is defined as a length of time for the adoption to have taken place within a certain percentage of members. This is measured at a system level rather than individual, another key differentiation from other models (Rogers, 1983). This measurement is defined as such because an individual is often unable to adopt a new technology independently of their organization.

The Social Cognitive Theory (SCT) is another psychological model frequently used in business research. Anthony Bandura developed SCT to provide an explanation behind individual psychological changes. This theory includes the factor of individual expectations of efficacy and outcomes, with efficacy defined as “the belief in one’s capabilities to organize and execute the courses of action required to manage prospective situations” (Bandura, 1977). This model also suggests that personal, behavior, and external factors have reciprocal relationships and that an individual is both influenced by and can influence others (Bandura, 1986). Based on research on children observing adult behavior towards a doll, Bandura found that the individuals can learn behavior by observing others and understanding the expected outcomes.

Figure 8: Social Cognitive Theory Reciprocal Determinism



Source: Bandura (1986).

In looking at relationships and their effect on behavior, Harry Triandis published and continues to adapt his Theory of Interpersonal Behavior (TIB) (Triandis, 1994). This model builds on Fishbein's research but highlights the role of social factors and emotions when developing intentions to perform a behavior (Triandis, 1994). In addition, Triandis focuses on habits and past experiences, which will be revisited in later models. Further research conducted by Triandis based on this model expands into the areas of social behavior, culture, and individualism and collectivism (Triandis, 1993).

3.3 Technology Acceptance Models

Perhaps the most widely accepted foundation for acceptance of technology as a specific field is the appropriately named Technology Acceptance Model (TAM), proposed by Fred Davis in 1989, which determines an end user's intention to use a technology. This intention is based on the following determinants:

- Perceived Usefulness (PU): “the degree to which a person believes that using a particular system would enhance his or her job performance”
- Perceived ease-of-use (PEOU): “the degree to which a person believes that using a particular system would be free of effort” (Davis, 1989)

These determinants are shaped by external variables such as social, cultural, and political factors (Davis, 1989). Like TRA but unlike IDT, this model is based on an individual's beliefs and use, as perceived usefulness and ease of use may differ between individuals.

In response to criticism and additional research findings, Davis and Viswanath Venkatesh published a revised model in 2000, TAM2, based on a study of four organizations/systems. This model built on the initial TAM but adapted to incorporate the theoretical construct of social influence and cognitive instrumental processes (Venkatesh & Davis, 2000). These theoretical constructs are consistent with TRA and TPB and were identified with the intention of understanding how these determinants may impact user experience.

Another key contribution of TAM2 is the addition of experience and voluntariness. This contribution confirms Ajzen's work and shows why Rogers' theory is not as relevant in this study as the purpose is to look at acceptance over time, not just the initial adoption. The usage of voluntariness is also helpful in recent research as Ajzen assumes voluntariness in his TPB and TRA model. In corporate settings, acceptance may be highly encouraged, with motivation provided from management and peers, but also includes a varied degree of voluntariness.

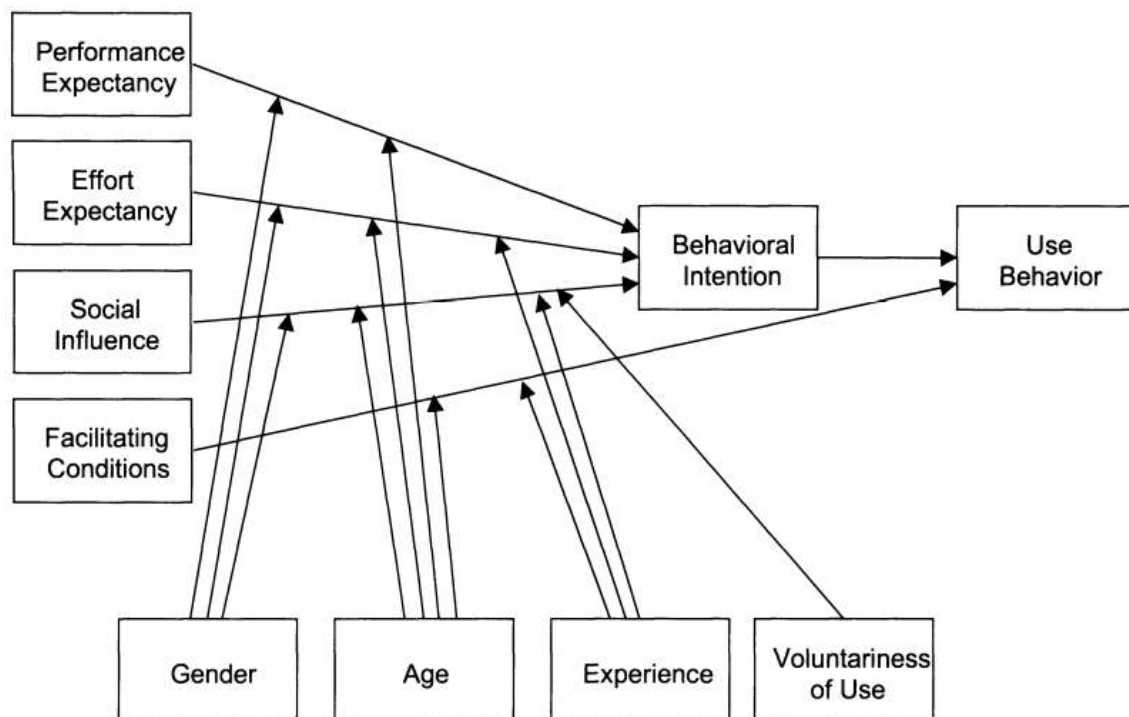
3.4 Unified Theory of Acceptance and Use of Technology

In comparing the previously mentioned models to other technology specific frameworks, Venkatesh identified a need for one source of truth and published his Unified Theory of Acceptance and Use of Technology model in 2003. This model proposes three factors:

- Performance Expectancy: “the degree to which an individual believes that using the system will help him or her attain gains in job performance”
- Effort Expectancy: “the degree of ease associated with the use of the system”
- Social Influence “the degree to which an individual perceives that important others believe he or she should use the new system” (Venkatesh et al., 2003)

determine most of a user’s intention towards a behavior, with facilitating conditions impacting the actual use, as proposed in TPB. In addition, the UTAUT model includes four moderators: gender, age, experience, and voluntariness of use as impacting the determinants. Based on their research, Venkatesh, Morris, Davis, & Davis explain 56% and 40% of variance in behavioral intention and technology use, respectively (Venkatesh et al., 2003).

Figure 9: Unified Theory of Acceptance and Use of Technology



Source: Venkatesh, Morris, Davis, & Davis (2003).

Just over 10 years after its initial release, Venkatesh published a revised research model-UTAUT2, incorporating three new constructs: hedonic motivation, price value, and habit, to study consumer acceptance and technology use (Venkatesh, Thong, & Xu, 2012). These additional factors increase the variance explained compared to the original UTAUT from 56% to 74% for behavioral intention and 40% to 52% for technology use. Another change to note here is the removal of voluntariness as a moderator. As this research is focused on consumer usage, it can be assumed that most consumer behavior is voluntary, therefore this moderator is no longer appropriate.

3.5 Criticisms of Acceptance Models

Although one of if not the most influential and commonly used theory in the field of information systems, TAM continues to face criticism. In an article in the *Journal of the Association for Information Systems*, Benbasat et al. present their concerns on the extended use and prioritization of TAM over other research with solutions for resolutions (Benbasat & Barki, 2007). These concerns range from the focus on TAM taking away resources that could be used to research other theories to the lack of research on the key determinants-PEAU and PU. These authors are not alone; many other researchers have suggested that the acceptance of TAM as truth has created a false narrative or illusion of progress.

Although most commonly used, UTAUT is no exception to criticism, with many articles highlighting this models' shortcomings. In general, criticism focuses less on specific disadvantages, but rather on the field's acceptance and enthusiasm towards this models' over other, more diverse research. With a basis in psychology and now on their second or third iterations, much of the criticism invites the field to go back to using a theoretical foundation of TRA or TPB (Pavlou & Fygenson, 2006).

Venkatesh designed UTAUT to mitigate some of the shortcomings of TAM by adding additional variables, improving the percentage of variance explained and adapting to a changing environment. Unfortunately, this research has appeared to plateau. Venkatesh's baseline variance explanation of 40% has been used as the foundation for thousands of other studies, with a found variance of typically 40-70% (Shachak, Kuziemsky, & Petersen, 2019). These high variances almost ensure a journal publication, but may not truly be contributing significant findings to the field (Turk, 2020).

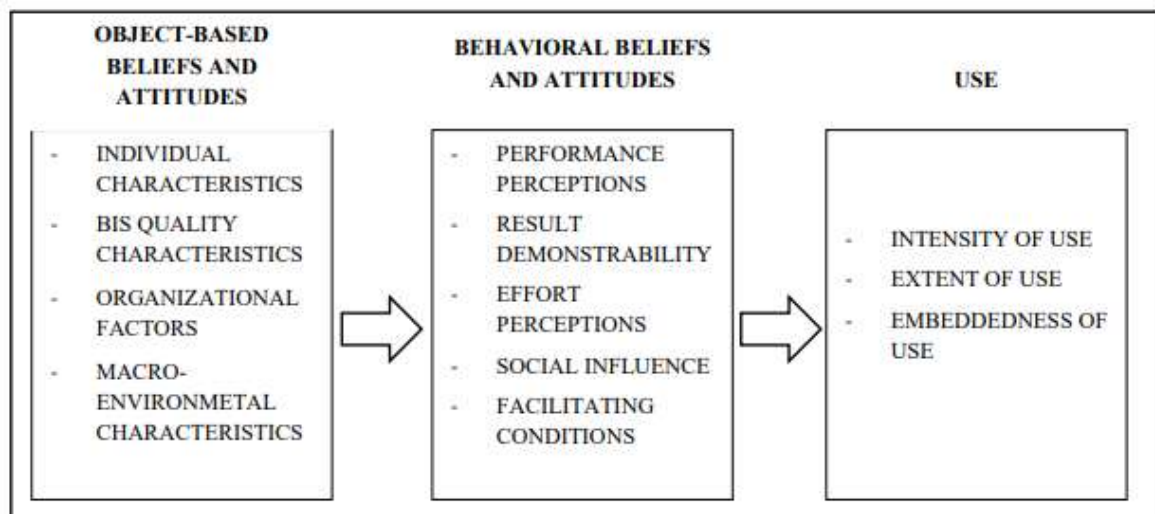
Taking psychology research and adapting for business scenarios has led to disconnect in definitions. For example, Bandura's research on SCT looks at specific actions as the end behavior. In TAM and UTAUT, tech "usage" is defined as the end behavior. This could be interpreted as oversimplified, as frequency or time spent using a system does not necessarily represent the operationalization of a system (Shachak et al., 2019). Knowing just a few of these critiques is important in an understanding of acceptance models that continue to be used as foundation for subsequent research.

3.6 Dimensions of Business Intelligence System Use

An area of inconsistency in the previous models is the definition of “use”. Some models, such as the IDT, look at the rate of communication or spread. Others, like Venkatesh’s UTAUT 2, look only at consumer behavior, which can be assumed to be very voluntary. In a corporate environment, in order to reap the benefits of the innovation, BIS must be used effectively (Burton-Jones & Grange, 2013). Some definitions for “use” look at frequency, and although this system works for IS, it is insufficient in understanding BIS usage- specifically how deeply the BIS is accepted through the organization.

To combat these issues, Grublješič and Jaklič have defined a further model- the Business Intelligence Extended Use Model (BIEUM) (Grublješič & Jaklič, 2015). This research model (Figure 10) shows that object-based beliefs and attitudes drive behavioral beliefs and attitudes, and attitudes in turn impact “use”. In this conceptualized model, “use” is broken into three dimensions: intensity of use, extent of use, and embeddedness of use. These terms can be considered to represent how much BIS is used, scope of its use, and how infused the BIS is into routines of workers (Grublješič, 2014).

Figure 10: Business Intelligence Extended Use Model



Source: Grublješič (2014).

Referenced most in previous literature on IS acceptance is “Intensity of Use”, which can be defined as “the extent to which a user is absorbed when using a system” (Burton-Jones & Grange, 2013). This dimension is firmly backed in psychology as it focuses on what is occurring within a person’s mind while working with a computer, in understanding how intensely their use is occurring (Davis, 1989).

The second dimension, “Extent of Use” is the “extent to which the system is used to carry out the task” (Burton-Jones & Straub, 2006). In general, more is not necessarily always

desirable, as many existing social and economic impacts must also be considered when an individual, group, or organization uses a system (Grublješič & Jaklič, 2015).

Therefore, these two dimensions must be complemented by “Embeddedness of Use” which looks at the long term post-adoption stages of IS implementation (Furneaux & Wade, 2011). Defined as “the extent to which the use of BIS is an integral part of organizational activity” this integral dimension of acceptance is supported by additional research on Expectation-Confirmation Theory (ECT) (Bhattacharjee & Premkumar, 2004; Furneaux & Wade, 2011).

These three determinants will be used throughout this analysis in understanding how the case studies are “using” BIS. This three-fold approach will allow a better understanding of not only the initial implementation, but also the how the BIS use has changed over time and continues to provide value to the organization. The proposed research model closely follow’s Grublješič’s BEIUM, incorporating national culture as a factor that may influence behavioral beliefs and attitudes.

4 METHODOLOGY

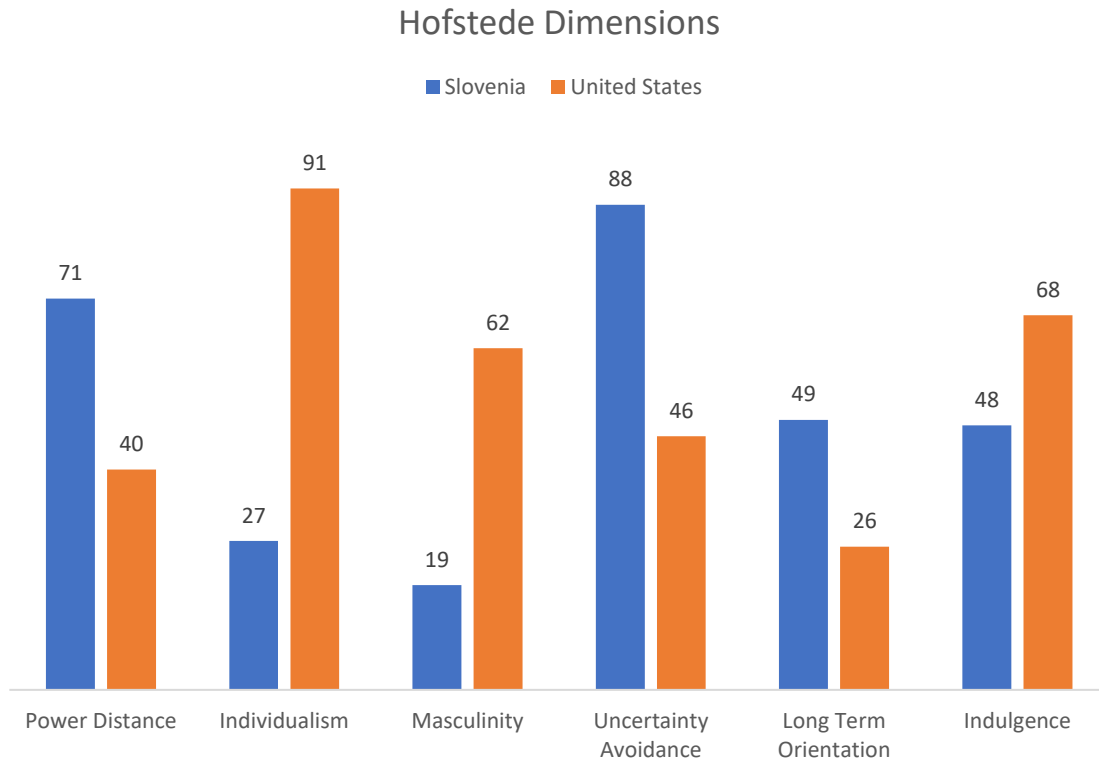
Based on the literature review provided, the methodology will be as follows. First, I will use the dimensions of national culture as classified by Hofstede to look at the research model provided by Grublješič. I will focus on comparing the United States and Slovenia. Figure 11, below, shows all six original national culture dimensions. As specified earlier, this research study will analyze Individualism and Uncertainty Avoidance, because the United States and Slovenia values differ greatly between these two countries and have been proven to adjust other business behavior.

To understand the relationship between national culture and BIS acceptance, I held semi-structured qualitative interviews with individuals from two companies about their experiences. One company is headquartered in the United States with the other in Slovenia. Chapter 5 provides detailed information about each company’s history and industry. I selected these companies for this research as they both recently implemented Snowflake as part of their digital transformation. In response to this implementation, the interviewees learned to understand tech acceptance and their experience provides an interpretation of the relationship between national culture and BIS acceptance.

Although methodologically unproven to use national-level guidance to support research in individuals, Hofstede specifies that these “theoretical constructs” provide a framework when comparing national culture norms and that quantitative analysis alone is inadequate. Equally important is the “qualitative interpretation of what differences on the dimensions mean for each of the studies societies” (Hofstede, 2011). Therefore, a qualitative interpretation in the case of two case studies supports the call for additional research on a user’s perspective of national culture. In addition, Slovenia and the United States have diverse standings in

uncertainty avoidance (88 vs. 46 respectively) and individualism-collectivism (27 vs. 91); thus, this methodology is suitable (McCoy, Galletta, & King, 2005).

Figure 11: Hofstede Cultural Dimensions for Slovenia and the United States



Source: Hofstede-Insights (2021).

In defining BIS acceptance, I will use the three-fold approach as proposed by Grublješič and Jaklič, of: intensity of use, extent of use, and embeddedness of use. This definition of BIS acceptance understands the purpose of BIS and measures if the system is used in a way that will impact performance (Grublješič & Jaklič, 2015).

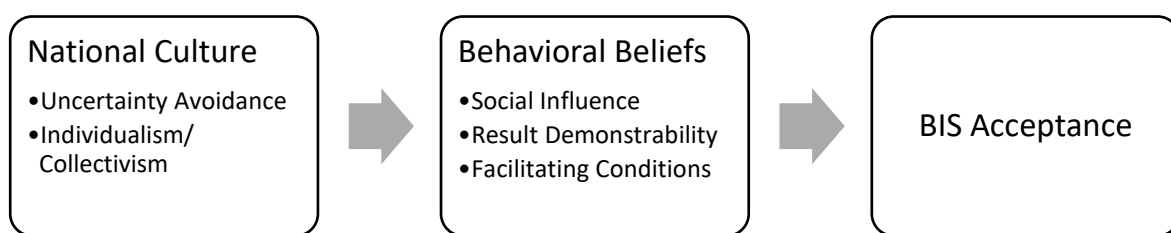
4.1 Research Model

The research model for this thesis employs Hofstede’s cultural dimension metrics coupled with Grublješič’s Business Intelligence Extended Use Model seen in Figure 12. The literature presented in Chapter 2 demonstrates that of Hofstede’s six dimensions, the two with the largest impact on acceptance of workplace innovation and change are uncertainty avoidance and individualism-collectivism. In addition, Figure 11 shows that these two values have the biggest difference between the United States and Slovenia.

From the BIEUM, literature suggested that result demonstrability, social influence, and facilitating conditions are the behavioral beliefs and attitudes that may be most impacted by the Hofstede national culture dimensions. Although national culture may also impact

performance perceptions (perceived usefulness, relative advantage, and job relevance) and effort perceptions (perceived ease of use), I leave these beliefs out of this evaluation because Grublješič's research found that these have no significant impact on creation of BIS acceptance intentions (Grublješič, 2014). This is also understood as BIS users' typically come from a more educated background and may have a stronger sense of self-efficacy. Grublješič's work, based on published research by Venkatesh and others indicates the relationship between behavioral beliefs and BIS acceptance. Therefore, this thesis aims to better understand the relationship between national culture and behavioral beliefs by contrasting two case studies.

Figure 12: Research Model



Source: Own work.

4.2 Qualitative Data Collection

In general, business research falls within the discipline of social sciences, which is unlike natural sciences in that the object of study, humans, “are capable of attributing meaning to their environment” (Bell, Bryman, & Harley, 2017). Hofstede's research aims to understand the “emic”- how individuals view the situation themselves. Qualitative research, in the form of semi-structured interviews provides the opportunity to evaluate events with the Hofstede model. In this case, BIS use and national culture are viewed through the perspective of the users themselves. This also falls under the scope of this project, while using Hofstede's guidelines to support the structure of the study, but not use his classifications as hard and fast descriptions of an individual, especially when the sample size is two individuals from each country, each working for the company.

For exploratory research, this thesis collects qualitative data to better understand the research topic. To support a different goal, a similar, larger study with a larger sample size might be conducted to survey to a broader audience, in order to probe whether there is a correlation between national culture and BIS acceptance.

Qualitative research provides the opportunity to best understand the situation from the user's point of view, though critics argue that the research may be too subjective, difficult to replicate, or impossible to generalize. The flexible questioning techniques, which allows the conversation to depart into tangents, and leaving room for longer, detailed answers, helps

the research maintain a specific focus while investigating issues that may be more ambiguous (Bell et al., 2017).

I will use internal validity, which is the match between theoretical ideas and researchers' observations and is present throughout this research and can be observed in the discussion section. Internal validity, along with reliability, is important in establishing the business research quality, even in qualitative research (Bell et al., 2017). Other ways of assessing the quality of qualitative research include authenticity and trustworthiness, defined as credibility, transferability, dependability, and confirmability (Bell et al., 2017).

4.3 Interview Guide

The semi-structured interview guide was developed using previous studies on national culture and BIS acceptance. Grublješić's BIEUM model and interview guide provides direction for many of the questions, which were based in traditional theory provided by Venkatesh, Davis and others. The interview guide is listed below in Appendix 3. In the semi-structured interview format, the interview guide guided the shape and topics to be covered, but still allowed the interviewees the opportunity to answer broadly with their own experiences and opinions on the subject matter.

A semi-structured interview format allows the researcher to "keep an open mind" in order to create an environment for the concepts and theories to emerge naturally through the interview. In general, this type of research focuses on a research topic rather than a testable hypothesis (Bell et al., 2017). Although the semi-structured interview format is flexible in a way to provide the opportunity for exploration, "closed" questions may solicit insight into some key background information (Bell et al., 2017).

I designed questions to allow for cross-case comparison and encouraged the interviewees to speak freely about the BIS and acceptance over time. I grouped the questions into the following categories: introduction, BIS, BIS acceptance, national culture, impact of national culture on BIS, and finally some closing questions regarding next steps. The simple introductory questions prove the basics, such as individual experience at the company, level of education, and similar topics. I selected these questions to give the interviewee the opportunity to relax and develop rapport before getting into some of the denser questions. In addition, these questions are "closed", as defined in the previous chapter, but are important in giving context.

After the initial introductions, I asked questions about the BI environment at the company. First, I defined BI using the definitions provided by Nagesh and Elbashir, then asked participants to explain their current BIS, their experience with the transformation, and some additional questions about initial training and support. This is important as Davis' research

on “perceived ease of use” stresses the importance of training in the early acceptance phase (Davis, 1989).

Next, I asked questions framed by Grublješič’s behavioral belief factors of performance perception, result demonstrability, effort perception, social influence, and facilitating conditions. These types of questions are open-ended, using words such as “How” and “In what ways” to understand the way these factors may be present in the experience of the individuals. It should also be noted that Grublješič’s model and support behind the interview questions pull from a variety of sources. This section draws influence from Venkatesh, (Venkatesh et al., 2003). Following the questions on belief factors, I introduced additional topics included the three dimensions of use: extent of use, embeddedness of use, and intensity of use were discussed. Again, these questions provided some context to be used for later analysis, and pulled from ideas from on previous research (Wixom & Todd, 2005; Doll & Torkzadeh, 1998; and Shanks & Bekmamedova, 2012).

Before asking questions about national culture, I provided the interviewees with definitions for individualism-collectivism and uncertainty avoidance. Next, I asked general questions about the individual’s experience and perceptions on these dimensions. I provided the questions in this order to understand interviewees perceptions prior to telling them how their country “scored based on Hofstede’s model”. I chose this ordering to avoid influencing interviews, either positively or negatively by the scoring done in Hofstede’s analysis. I intentionally presented each country in an objective way- to discourage bias or defensiveness in responses.

I then gave the interviewees the “score” of their country for each metric, with some qualifying statements and asked if they agreed or disagreed with these classifications. I also questioned whether they felt that their company fit with the national culture grade. Next, I probed to look for relationships between Grublješič’s behavioral beliefs and Hofstede’s dimensions, for example, how does individualism-collectivism impact social influence. Again, these questions were open-ended and focused on the interviewee’s perspective on the relationship between areas, rather than an interpretation from the perspective of the interviewer.

The final questions were broadly focused on the learnings from this BIS implementation. In addition to understanding how interviewees would conduct future BIS implementations, I questioned the interviewees regarding how they would see an impact of national culture on use and acceptance of BIS and if they expect this to change over time.

After multiple drafts of the interview guide, I piloted the interview guide. I implemented pilots with an American, native-English speaker, and a Slovenian native-Slovene language speaker. Piloting the interview not only provided the interviewer experience, but more importantly offered the chance to revise the questions. Creating questions based in literature,

with specific theoretical language can be challenging to translate to more business-friendly language, especially with non-native-English speakers.

In the pilot with a native Slovene-speaker, attention was brought to vocabulary choice and question phrasing, and additional suggestions were provided to assist the interviewer in ensuring a comfortable environment for the interviewees, such as speed of questioning, order of questions, and necessary definitions required. Piloting the interview questions with an American also gave insights for revisions, as she advised that not all questions would be relevant to each interviewee. She also recommended providing further definitions of terminology, which I prepared and later used in the interview process.

4.4 Interview Structure

I conducted interviews in early 2021 with two individuals from each of the two companies, one from the BI department, closer to the tools, and the other interviewee was a business user who had experience with the company prior to their digital transformation. I selected these individuals to ensure a well-rounded view of acceptance, rather than simply from the perspective of the individuals instigating the change, or senior management who had encouraged and championed the changes.

Due to the global COVID-19 pandemic, I held interviews using video conferencing provided by the SEB LU Zoom enterprise license. Although inherently less personal than meeting in person, this virtual conferencing option allowed a convenient interview process across geographies between the United States and Slovenia. As nearly all industries have had to transition to a virtual or hybrid working model in the past year, all participants and users were comfortable using video software throughout the interview process. In addition, studies have found there to be “little evidence that the interviewer’s capacity to secure rapport is significantly reduced in comparison with face-to-face interviews” when using Skype or a comparable virtual meeting tool (Bell et al., 2017). Conducting interviews virtually did pose the potential for technical problems with the application, Wi-Fi, or familiarity with the software, however in practice, no major issues were encountered beyond a few technical lags, which were easily resolved.

With permission from each participant, I recorded each interview using Zoom and a second back-up version on iOS software. Following the interviews, I used Microsoft Office 365 software to transcribe the audio and added with manual changes were necessary. Microsoft’s transcription service caused some minor problems, especially with non-native speakers or abbreviations, such as “BI” but saved a significant amount of time overall. Based on general assumptions, each hour of speech was expected to take between 5-6 hours to transcribe correctly, however the use of transcription software brought this time down to about 2-3 hours (Bell et al., 2017). Although time-consuming to transcribe interviews, the transcriptions provided better content for later analysis. Once transcribed correctly, in total there were 61 pages of transcribed questions and answers. Direct quotations are used

throughout the analysis, however for the sake of anonymity of participants and companies, the transcriptions are not available in an appendix.

5 ANALYSIS AND RESULTS

This chapter will describe the execution of the methodology, introduce the companies for the case study, and discuss the results of the interviews. As described in Chapters one and four, I selected two companies based on their use of Snowflake. Through a personal connection at Snowflake, I was introduced to an American company and through LinkedIn, a consulting firm in Slovenia made an introduction with the Slovenian firm. Although both companies asked to remain anonymous for the purpose of this paper, they were happy to support and assist throughout the research and analysis process. They allowed recordings and provided invaluable help in providing information for this case study.

5.1 Case Descriptions with main characteristics

To standardize the research as much as possible, I identified these companies because they both implemented a solution provided by the company Snowflake for their data warehousing needs. Both companies are in “traditional” business sectors: oil and gas and insurance and have undergone a major digital transformation within the last 24 months. Each digital transformation began with basic transactional reporting and is now in the stage of full-fledged data warehouses and BI teams. Although application and daily data use may differ between companies, ensuring that the companies have adopted a parallel solution will help control this variable- as applied to my research question.

I conducted the semi-structured interviews in March 2021 with two individuals from each company, one from the more technical BI team, and the other a general user, who is experienced with the prior technical solution in addition to the new BIS. During the interviews, questions supported cross-case comparison and encouraged the interviewee to speak freely about the BIS solution and acceptance over time. All interviews took about one hour.

5.1.1 American Insurance Company

The American company interviewed and studied, which I will refer to as “IN”, is in the insurance sector. IN was founded over 100 years ago and is headquartered in the midwestern region of the United States. A traditional business with very few digital transformations, management began the process in 2018 to design, build, and deploy a new digital business platform. Prior to this transformation, this company had limited BI capabilities, with a mainframe landscape and data was only accessible to IT professionals. The core legacy systems were all built in-house in a “pre-digital age architecture” with functional silos. These silos discourage a “unified customer experience” (SEC, 2018). Their digital transformation

to a cloud-based data warehouse is currently underway and on track to be released to production in July 2021.

The digital transformation project has three goals: to establish a digital-ready workforce, to increase investment in digital technologies, and to position IN to accelerate the design, build and adoption of digital business platforms (SEC, 2018). In order to succeed at these goals and strengthen their competitive position, it was necessary for the company to build out a scalable solution while also encouraging BI use and acceptance.

To meet their financial and security needs, the company adopted Snowflake as their cloud-based data warehouse solution. Snowflake differs from the previous system which kept all data on-premises, but better supports scalability and faster adaptations to new technology going forward.

The interviewees both typically work in the headquarters, although currently with the COVID-19 pandemic work remotely from their homes. The first interviewee, IN1, is a data engineer, responsible for data architecture, solutions architecture, and also serves as the lead technical developer. He has been at this company for just over one year and has substantial experience leading digital transformations across the finance and insurance sectors. He describes himself as a ‘disruptor to the status quo’. His outside knowledge of digital transformation enables him to drive further innovation at this organization, but he has been met with apprehension from more tenured employees.

The second interviewee, IN2, has worked for this company for over 20 years, starting immediately after finishing her bachelor’s degree in management information systems as a COBOL/Mapper developer. Since then, she has transitioned through different roles and applications and now functions as the product owner for data platform operations.

These two individuals provide a different perspective on the same issue because while both experience the acceptance of BIS, the first has experience as a consultant and is more experienced in accepting new technology.

5.1.2 Slovenian Oil Company

The Slovenian company, OG, is present in the oil & gas sector, and has deep roots in Slovenia and the greater Balkan region. The employee breakdown is just over 40% in corporate headquarters, 36% in subsidiaries, and the rest in third-party managed locations (Company OG, 2020). In publicly available statements, the organization highlights their improved training structure with the goal of increasing the average level of education. These initiatives are based on employee well-being surveys, after identifying that “knowledge represents one of OG’s key competitive advantages (Company OG, 2020).

About six years ago, the company's management identified a need for BI. Four years ago, management hired two individuals experienced with data warehousing and BI. The need for BI was driven by a desire to be more customer-centric, and the on-premise data warehouse was ineffective at providing speed and real time access to users.

From there, the company searched for a new solution that could be implemented and scaled quickly. Although it has taken two years to have working reports from the new data warehouse, this innovation has provided significant value to the company- now 98% of queries require no tuning and manual indexing is no longer required (Snowflake, 2019)

In understanding their customers and moving from an operational to an analytics team, OG now has the insight to look for areas to expand and improve efficiency. In their previous solution, there was not only no data warehouse, but also no readily available historical data. The new solution uses Snowflake for data warehousing and the system is modular, easily allowing new applications to be implemented and immersed in the system.

Snowflake has provided not only the cloud-based, easily scalable solution, but also opened up further opportunities. For example, the Snowflake marketplace, where this company is able to access public data such as weather and COVID cases in order to optimize pricing and product offerings. Through the interview experience, it became clear that OG has experienced the typical growing pains of adjusting to change and a new technology.

Looking forward, the company management plans to build on their data warehouse and find opportunities to use additional data to better optimize their business. In addition, the BIS strategy is changing to further disperse BIS use across other departments by having an analytics person support each team, rather than one centralized analytics team. The company can now comfortably focus on scaling and expanding their data warehouse while controlling for expenses with no concerns about speed or performance tuning (Snowflake, 2019).

I interviewed two individuals from this company: one in on the BI team and the other from the Sales team. Both interviewees had experience with the old reporting system and are now considered power users in the new system by the BI director. I also held additional meetings with the director of BI and the data architect prior to the formal interview. These meetings provided an overview of the technical implementation, the pre/post state of their decision support systems, and some thoughts on general direction, yielding insight into the BI use prior to conducting the interviews.

Table 4: List of Interviewees

Country	Interviewee	Industry Type (Business Sector)	Function in the organization	Role with BIS
USA	Interviewee 1 (IN1)	Property and casualty insurance, reinsurance operations	Data Engineer	Data architect, solutions architect, lead technical developer, “disrupter”
USA	Interviewee 2 (IN2)	Property and casualty insurance, reinsurance operations	Data Product Manager	Product owner and manager for data platform operations
Slovenia	Interviewee 3 (OG1)	Sale of petroleum products, merchandise, liquefied petroleum gas, other energy products. Energy and environmental solutions	Sales	Retail development department, analyzing data, creating reports, product decision-making
Slovenia	Interviewee 4 (OG2)	Sale of petroleum products, merchandise, liquefied petroleum gas, other energy products. Energy and environmental solutions	Business Intelligence	Writing technical specifications, making visualization reports, creating and maintaining reporting standards

Source: Own work.

5.2 Findings

The following subchapters will discuss the findings from the interviews. As previously mentioned, I designed the questions in the interview guide to first seek clarity on BIS acceptance, and later on the relationship with national culture. When looking at that relationship, I asked the interviewee to comment on their own perceptions of a relationship and aimed to verify Hofstede's national culture classifications. The following sections include summaries and direct quotations from the interviewees and are divided based on the interview guide which can be viewed in appendix 3. Individual interviewee details are explained in Table 5.

5.2.1 Business Intelligence Landscape

Throughout initial conversations, it became apparent that both organizations are undergoing a major digital transformation for the first time. IN1 mentioned that when he joined IN a year ago, he felt that he had entered "the land of the lost" and that their digital landscape was "completely untouched". This sentiment was mirrored in his counterpart, IN2, as she mentioned that she often turned to IN1 for his experience in digital transformations, both with the technical aspects and in changing mindsets. In her two-decade tenure with the company, her role and responsibilities have adapted. In interviews with the second company, OG2 expressed similar concerns. OG's previous solution supported simple SQL queries, but offered no support for visualizations and prediction modeling and OG2 felt that she had "come back into history" and was annoyed with the lack of a data warehouse system.

Another topic discussed in all interviews was the definition of metrics and a "single source of truth" throughout the data warehouse. OG2 spoke about how in her educational background she was warned that not all departments may agree on business-critical definitions, but she found this hard to believe. However, in both her previous company and now at OG she experienced disagreements due to data ownership, different definitions, and each department "having their own numbers". During OG's implementation of a new system, OG has prioritized standardized reporting and terminology along with removing the previous set up of individual data owners to help combat this issue. OG1 mentioned that the previous BIS solution provided very simple, straightforward data, but in order to understand the definitions and risks of using the data, the help of IT was required. He also expressed frustration that the previous data was not structured in an OLAP cube or other format that is easy to query against multiple dimensions. This environment also resulted in un-standardized reporting.

5.2.2 Role of Business Intelligence System

Next, I asked the interviewees about the role of BI in their position and throughout the organization. Interviewees were provided a definition of BI that related to decision-making

and its inputs, so each participant answered in a way that centered around decision-making. In general, all participants agreed that BI use has improved decision-making, however, the participants from OG specifically highlighted the impact of speed. They both expressed satisfaction in how BI has accelerated decision making, as their organization highly prioritizes such speed in making decisions. This answer contrasted with the answers of the interviewees from IN company, as those individuals focused their answers instead on the inputs- specifically quality and variety- to decisions. IN1 stated that BI has enabled improved decision-making, “because people are asking the questions that they previously weren’t able to answer” and that she thinks “that they are starting to look at problems in a different way”.

In addition, IN2 expressed that data has changed the way people approach problems, rather than just asking for a certain piece of data. Employees are encouraged and inspired to ask the important questions, like “what do you want to accomplish with it?”. However, in contrast, he argued that in practice BI is more often used as a tool for ““What do I need to get done today? What do I need to get done this month?”” and he has not “seen any strategy used with the BI tool, like any strategic thinking”. He believes this to be part of a bigger issue, that “we aren’t really so much focused on strategy anymore, it is more about the survival of me and my company” compared to his experience at previous companies.

I also asked participants about business strategy, and how BI use supports overall business strategy. All participants explained that there are no specific business goals or values centered around BI use, and instead see BI use as a means to achieve other initiatives. For example, at the insurance company, there has been a recent push to adopt across all areas of the business. As departments adopt KPIs, business leaders are approaching the BI department, often IN2, for help as they learn that BI is necessary tool to aid in “how to come up with these metrics and where to store them” in addition to monitoring procedures. However, OG2 also specifies that this way of “looking at the data is still very, very new”. The OG company employees’ responses to this topic were more general, OG1 discussed how his leadership was less concerned about BI use but was pleased with the speed and accuracy of the results and that BI leads to fewer mistakes.

Another impact of BIS is the roles and responsibilities of the individuals responsible for providing data. The insurance company has created a new role- “data wranglers”- who are responsible for “gathering data... from SQL, MAPPER, COBOL and now learning any of the new modern data platforms” to seamlessly access modern data platforms and legacy systems. Eventually this role will move towards an advisory type of position, but it is currently focused on helping enable people towards data usage by providing access and bridging gaps during this transitional period of their implementation. Within the oil & gas company, OG2 spoke about how her job has become “more intensive in both ways- even more technical and even more business” as BI has become more universally adopted. As simpler tasks become automated or obsolete, she now needs to have a better understanding of naming conventions, definitions, and how to use data to support “the business part of the

story”. This is especially important as she now supports in report preparation and data access for more than 50 coworkers.

5.2.3 Business Intelligence System Acceptance

It is important to highlight that the two organizations are in different stages of their BIS transformation and thus their acceptance. The oil & gas company is four years into their transformation and is now getting to a phase where management can see the results, people are comfortable with the tools and technology, and employees can now begin to focus on the analysis and later stages of data mining. The insurance company is just beginning the process; their new platform is about to launch and they are currently in the development phase and preparing employees so that these employees will be comfortable and ready with the new system to support their digital transformation strategy goals and objectives (SEC, 2018).

All participants mentioned the role of IT along with business users when looking at BIS acceptance. IN1, with his extensive consulting experience, believes that often the acceptance hold-up comes from IT departments, as CIOs are often not “data people”. The best CIOs come from a finance background because they are experienced in data centric roles and responsibilities. Especially those coming from a CFO background, these individuals are “some of the strongest advocates for good, strong data”. In general, he said that BI only gets attention when “the data is bad”, but the best transformations are achieved when there is a combination of technical applications, proper leadership, and the correct data. His counterpart agreed, stating that the technical developers, especially those highest in their roles with the previous technologies “are struggling the most with change”. This sentiment was confirmed at the other company, with a statement that the “IT department was scared, skeptical until last year when they were able to see what has been done, what has been developed”. Since then, the IT department is now more enthusiastic about regular BIS use and is open to additional new technologies.

To encourage acceptance, both organizations offered training to employees. The insurance company offers an abundance of online pre-recorded sessions through a license with Udemy. However, these have been unpopular, especially with remote work due to the COVID-19 pandemic and the workplace social isolation. OG2’s team has been trying to find ways to better encourage learning, such as offering “office hours” or developers to assist in answering questions for employees who partake in the Udemy courses. She also mentioned concerns with online videos, as she has found that these online self-run learning tools are ineffective compared to hands-on-learning. These trainings and videos do not prepare individuals for real world experience.

In comparison, her counterpart, IN1, has been approaching trainings from a different perspective, and believes that the “first stage of education really is kind of getting people to understand what that ecosystem looks like” and to really focus on the “conceptual- what data

is available, where is it". From there, he moves to technical training depending on the user's individual experience and data goals- from PowerBI to other visualization software. In talking to employees about what is possible with the data, these trainings aspire to inspire employees to accept BI more readily. However, he did express that often when working with individuals who are used to turning to IT for their data needs, they "don't know if they really want to learn something new because they're so scared of learning something new". Through a private "support group" he is able to mentor business users so that they are comfortable exploring the newly available data. At the end of the day, he stressed that he and the rest of his department do not pass judgment and encourage empowerment because the data belongs to all the employees and ownership and access should be more universal.

The answers received from the oil & gas company on trainings vastly differed. OG1, the business user, stated that he had undergone no formal trainings, but instead had a mentor on the BI team who helped him get started and aided along the way as he encountered difficulties. OG2, from the BI team, instead said that her department had offered a lot of education, starting with the controlling department but later for other groups. The controlling department initially was skeptical; "In everything I showed them, everything was so wrong, everything was such a trouble for them". She said that these trainings were completed in smaller groups, all in-person. The department even offered some private lessons as studies found this was more effective in overcoming defensiveness. Some trainings have had to adapt as work is now often done remote, but the company does not use any sort of pre-recorded trainings. Although the controlling department displayed more resistance to change, other departments such as the sales department were more enthusiastic and "willing to learn new stuff". In general, employees within the sales department were really happy to have insight through access to data and did not have any strong opinions about the form of the data, as long as they were given access.

5.2.4 Business Intelligence System Governance

As more data is available throughout both companies, data governance was a topic in all conversations, specifically regarding the roles of BI users. In the oil & gas company, both employees explained that roles are predefined, and that this was one of the first things to be done in the development process. Through special permission with the head of BI, additional exceptions are made, but this is not common in practice. The salesperson, OG1, as a power user, explained that he has additional insight and access into other areas of the company, but only insofar as they relate to his priorities and goals.

At the insurance company, the consultant, IN1 expressed a disagreement with this perspective of data governance. He said he is "all about breaking down silos" and that "everybody should be able to go out and get access to the data that they need to do their job". These different viewpoints make sense as there are multiple approaches towards data governance: with some companies preferring to be more open, while others operate more

based on needs and requirements. In IN1's opinion, IT has been holding data too closely because they do not think that employees can handle too much data or because they were worried sharing insight into different areas of the business, as data owners may be defensive and protective. IN1 argues that all business users should know how the company is operating. He agrees that caveats must be in place, specifically with data that is more sensitive or unorganized, but in general, "any data that the organization has brought in should be made available". His coworker agreed that more data democratization would be ideal, but based on her experience, she believes that this type of self-serve enablement may take years to adopt.

5.2.5 National Culture

In the next section of the interview, we discussed national culture in a broad sense. After hearing the definitions of individualism-collectivism and uncertainty avoidance, I told each participant about their country's classification and discussed their level of agreement. The results were mixed- the two Americans agreed to some extent with the US individualism but disagreed about uncertainty avoidance. IN1 stated that although human resources often states that the work environment is tolerant of change, "most Americans don't find themselves in a place to be direct and upfront and creative" because they are afraid to lose what they have. IN2 believes that in order to be more innovative that the entire company requires a "culture shift" because risk averse individuals are not comfortable in situations of discomfort. IN2 said, "some people are just naturally inquisitive and maybe don't even have the social awareness they're being disruptive". This confirms Hofstede and Minkov's concerns about using national country classifications at an individual level, but still an appropriate framework in this situation to look at countries relative to one another.

The two Slovenian participants fully agreed with Hofstede's classifications. In his explanation, OG1 mentioned that "it is very important to help each other and to solve other problems" and that he finds the collectivism of his coworkers to be high. OG2 agreed, stating that she has individual goals, but she is a "part of this company and we are in the same boat". However, she expressed concerns that she sees a lack of responsibility amongst her employees. She expressed this in the analogy of the "carrot and the stick" and that "it is more in in our nation" to think of the "stick" [negative reinforcement] as opposed to the "carrot" [positive reinforcement].

When discussing their own individual position, both Slovenes expressed that they are open to new ideas and innovation. OG1 believes that his individual values override national values here as he is "not afraid of new technology like others are". OG2 discussed that her personal goals are to help the company succeed by providing the best data in the cleanest format. The two Americans expressed similar views, with IN1 saying that he is trying to "blow these hierarchies out of the water" and be a "disrupter". IN2 took a different approach, believing that her goals are directly related to her department's goals, all the way up to the company

goals and feels very connected, but does not think this is the case across all areas of the business. For example, she said that “I am really focused on what I’m trying to achieve and what our team is trying to achieve” but does not see this in all departments.

In addition, all individuals surveyed stated that they see some of their own personal success due to their divergence from their national and company’s culture. IN2 stated “I feel like I’ve excelled because I am open to this modern technology and am taking steps to learn, but there’s a lot of people that aren’t ready yet” and IN1 has observed people who are “professionally disruptive” are “probably on track to get a promotion”. OG2 expressed that when she first started working, she was opposed to innovation and change, but now “really sees it as a challenge, it’s new stuff that you just have to solve” and is an integral and interesting part of her job today.

5.2.6 Individualism-Collectivism

Although the score for Slovenia and the US greatly differs when looking at individualism-collectivism, common themes arose in the answers of the participants. A sort of defensiveness was often experienced at both companies, and in discussions regarding how individualism may impact how different people accept BIS- IN1 agreed with “rugged American individualism, right? Only the strong will survive and if you’re weak and can’t keep up, sorry”. He also expressed concerns that as individuals learn and accept BI at different rates, this can create divides within departments and that the individuals that are excelling, the early adopters, and “left behind”, laggards, feel isolated and that it is the role of BI to support all levels.

In addition to different levels of BI acceptance, IN2 stated that she sees individualism come into play when employees do not directly see how they impact the larger organization, “team members have that individualism. Because I feel like they’re not sure how they contribute to the larger effort”. She also stated that she sees social influence being a part of BIS acceptance. Once one person within a department starts using BI and that person’s coworkers begin to see the results, the coworkers are then inclined to accept. This trend is more pronounced in the IT departments. These individuals’ specific technical skillsets may soon be irrelevant, and they understand the need for “report developers” and knowledge of more relevant technologies. However, for herself, she believes that “it does take a bit more to influence me” especially if the opinion comes from outside her department.

The Slovenes, OG1 and OG2, at the oil & gas company offered similar perceptions, but also mentioned that “we are very direct with communication”. It is in their character to let someone know quickly if they disagree and rely on graphs and data rather than “nice words” to get a point across. To overcome individualistic personalities that are opposed to learning new skills, the BI department tries to show employees how these skills are easily transferable and could be valuable for future roles and positions. OG used to be a product-oriented company, focused on gas and electricity, but as part of this digital transformation, the entire

company has moved to a customer-oriented company, where “finally the customer is the main point”.

In addition to the effect of social influence on individualism, we discussed result demonstrability in this section. OG1’s initial BIS use was influenced by the BI department, when the BI director asked, “What can you do for us and what can we do for you?”. Within a short period of time, he identified and observed the positive results from BIS use and began to encourage his coworkers. His coworkers now see him as a power user throughout the company and continues to inspire others through his efficiency and accomplishments.

OG2 expressed this as well when talking about IT adoption. Once the results became clear, those initially skeptical individuals began to be more cooperative with new technology. At IN, it is still too early to understand if this is a strong driver of acceptance, but IN1 is prioritizing communication to coworkers and leadership about what is possible with BI and the importance of acceptance.

When looking at the facilitating conditions, the vision and end goal of the company in regard to BI often emerged- OG2 mentioned concerns from coworkers that if they had to learn something new, they would rather leave the role and the company. IN1 had a similar statement, of individuals’ employment concerns, but also that “when automation came around... workers were trying to sabotage it”. IN2 thinks that if the company was more transparent about the goals and the big picture, then there would be less confusion and distrust, and perhaps more collectivism. She reiterated that point later on, stating that “team members have that individualism because [she] feels like they’re not sure how they contribute to the larger effort”.

5.2.7 Uncertainty Avoidance

As previously discussed in the national culture literature review section, Chapter two, the role of positive and negative reinforcements is relevant when discussing uncertainty avoidance. Nearly all participants wished that there was more structure and governance when using data, but also believed that it was the responsibility of someone higher up in management or from a financial department. When asked about governance, IN2 responded “I lean towards wanting more black and white rules, but I also understand that may stifle creativity and maybe finding something new... I don’t want to be the person to set the rules”. The company was previously extremely structured, with processes almost like checklists, and she believes that this transition of trusting people “to do the right thing” will be challenging. However, her current director has a vision and is executing towards “really democratizing data”. In addition to democratizing data, she spoke about how BIS acceptance may be impacted by individualism when “developers... don’t see themselves as part of the larger vision” as they may not have as much transparency into different initiatives and the larger overall strategy.

In the insurance company, in addition to a desire for more rules, when discussing uncertainty avoidance and facilitating conditions, both respondents discussed how people are firmly set in their ways. These groups tend to be either “I’m not a tech person, I don’t know SQL”, or “I am a strong developer and am not open to change”. In order to overcome this uncertainty, the BI department is currently trying to find that balance between structure and curiosity, IN2 states she feels that she has “a direct impact on getting us to that future state. So that’s what helps deal with the uncertainty” for herself and she hopes in other groups too. Although IN2 agrees with Hofstede’s placement of the United States as relatively low when looking at uncertainty avoidance, she stated that her company is not there yet, that her coworkers “tend to be risk averse and maybe not comfortable with being uncomfortable” but that they are pushing towards a cultural shift to be more comfortable with a certain level of ambiguity. This response may also be due to her comparison with the company with other companies within the United States, rather than a more internationally minded assessment.

At the Slovene company, having a vision for BI has also helped overcome uncertainty. OG2, joining the company from a more technically savvy organization, initially tried to make changes when she first joined, but found she was unable to articulate the changes in a way that made sense or inspired change. Once the BI head and data architect joined the company four years ago and clearly said “this will be like this and I need this amount of money” it was completely different and especially now that “they are seeing our results they are really happy about it”. OG1 expressed the same views from a different perspective; he first saw BI almost as “wizardry” and was unable to understand how it could provide value. Now, through communication of a vision, the results are better understood and there is less uncertainty to overcome.

5.2.8 Future Business Intelligence System Transformations

Although in different stages of the BIS implementation process, both organizations and all four employees agreed that BI is necessary for survival and success going forward. All individuals also mentioned that they see themselves as “agents for change”, “disrupters”, “ambassadors”, “culture leaders” and find new ways to encourage their coworkers to further adopt BIS.

One area that the interviewees disagreed on was the speed of transformation. The OG business user, OG1 said that “if a transformation happens slowly, it is maybe too late. Even if it is correct, the timeliness is most important. Make a decision just in time”. This statement contradicts those of his coworker OG2, who believes that “maybe sometimes it would be better to go slowly, ‘cause if it’s going very fast, it’s a really big shock”, and when shocked users may display more resistance. The insurance consultant, IN1 believes in “growing things organically” but knows that you can’t wait around for the perfect solution and at some point “you just have to start building”.

5.3 Analysis

The table below highlights some of the findings of the personal interviews, providing a summary of the interviewee’s views of the national culture metrics of individualism-collectivism and uncertainty avoidance. Direct quotes can be read in the previous subsections. These brief summaries will help provide context to the next subsections covering the discussion, implications for management, and recommendations for future research.

Table 5: Summary of Findings

	Individualism	Uncertainty Avoidance
IN1	“Rugged American Individualism” in theory and practice. Learning at different speeds can negatively impact all as they lose any sense of collectivism. People want to win as a team, but at the end of the day are more concerned about their own performance and stability.	Higher level management may be more willing to take risks, but lower-level employees are more averse as they fear for job security. Believes that this company scores generally higher than the nation as a whole.
IN2	Levels of individualism varies by seniority at the company. If top level management was more transparent about vision and goals, there may be more collectivism, but sees current state of individualism as the norm.	Wishes that coworkers were more open to uncomfortable situations, strives to achieve lower uncertainty avoidance to match country score. Wants structure and rules, but also concerned that this may stifle creativity and does not want to be the one to set the rules
OG1	Sees self as part of the larger company, wants to help people. Started using BIS to help himself achieve overall company goals. Other individuals are afraid to take risks that may put themselves apart from the team, even if results are positive.	Comfortable with ambiguity within reason. Longer, drawn out transitions may be less effective as people are in transitional periods for too long. Sees quicker implementations as more successful.
OG2	Self: Company goals take priority over individual goals. Clearly sees self in relations to organization. Company: Strong collectivism leads to a fear of responsibility or initiative. This fear can lead to low acceptance but is overcome with training and communicating clear vision.	Certain departments, such as controlling, with strong routines and structure were more avoidant at first. Took result demonstrability and social influences to inspire change in these areas. Other departments, such as sales, were more open.

Source: Own Work.

6 DISCUSSION

The interviews depicted above provided insight into the research topic of national culture and BIS acceptance. Through the semi-structured interviews, general trends emerged. Unlike the previous chapters, I will organize this discussion chapter around topics that arose naturally throughout the conversations, with literature support and subjective interpretation. Although this study did not test and confirm a research hypothesis, the qualitative data collection provided personal evaluations on the subject matter.

I presented the interviews and Hofstede scores in an objective way, emphasizing that there was not one correct or incorrect score, but rather that these scores showed the *relationships* of countries relative to one another. Through conversations, it was interesting to first see the subjects agree or disagree, but more importantly express where they aspired to be. For example, both employees of the American insurance company felt that their company and departments have a higher uncertainty avoidance score than the general American score but expressed the desire to become more uncertainty avoidant. In IN2's reflection on uncertainty avoidance, she mentioned that they "required a cultural shift", and that she was pushing her coworkers to be more comfortable with uncertainty. This feedback shows that although the company itself may not "fit" with the Hofstede scores, the employees see the score as the American ideal. Employees feel that through their digital transformation the company may be more successful if they are able to become less avoidant of uncertainty.

In comparison, the Slovenian employees agreed that themselves, their company, and country are generally more avoidant of uncertainty, but did not see this as a setback. Although the two individuals expressed that they themselves had perhaps more curious or open personalities and were more open to change than their peers, they did not display a similar desire to be less uncertainty avoidant as the Americans did. This provides a noteworthy context, while the Americans saw themselves as striving to change their company culture to match the countries culture, the Slovenes agreed that their uncertainty avoidance was part of their national culture and did not see this as a corporate barrier to overcome.

Another area where the themes differed was the insight that BIS could provide to an organization. Interviewees from both companies discussed initial skepticism along with an extended acceptance process but differed in how BIS has changed business strategy and operations. At the Slovene company, the new data is seen as a faster, cleaner replacement to the previous data. For example, helping the controlling department with their regular activities, but is used more to answer specific questions. The American company, though earlier in their process, is prioritizing how to push users towards enablement but also exploration, to use data to expand their typical job tasks by considering different factors. This phenomenon is evident in the answers regarding individualism. If an employee is more focused on their individual tasks and their performance, they may look for ways to stand out from the pack. Conversely in a more collectivist society, employees focus on improving routine tasks and business functions to improve the overall business (Cotič & Bavec, 2013).

An area in which national culture appears to have less influence, is in the result demonstrability supported by an overall vision, as shown at both companies throughout the interview process (Moore & Benbasat, 1991). Without a vision of the end-state and the value it can provide, acceptance throughout both companies was low. This vision had to come from top leadership, at least within the BI department, from an individual who had been involved in other successful digital transformations. This is important to note as all interviewees brought up having an executive sponsor or “champion”. This person pushed both the new technology and also the necessary processes, tasks, personnel, and innovation, and later what value it would provide individuals and the organization.

Previous studies on BIS acceptance focus on the factors for acceptance and define acceptance in a variety of ways. As this study looks for qualitative feedback on acceptance, the findings are more ambiguous, but provide context into what the users may themselves perceive to be necessary for acceptance. For example, the insurance company saw their lack of formal trainings and use of online training tools as an obstacle in acceptance. In contrast, the oil and gas company BI team member (OG2) believed that they were offering sufficient training opportunities but still desired more acceptance and did not necessarily see this as a critical shortcoming. Her coworker felt that he was a strong advocate of the new BIS but spoke about how he had taken part in no formal trainings, just some time with a mentor as questions arose and he was responsible for learning the tools himself. This shows that even within an organization there may be disagreement on what the limitations are and how they should be overcome.

In general, the thoughts around training can be seen through both national culture metrics. Literature supports that training is required, but in order to combat uncertainty avoidance the level of training may differ. As Davis found in developing the Technology Acceptance Model, even a one-hour training session may have a direct significant effect on ease of use (Davis, 1989). This was further supported by research on training impacting ability and thus acceptance (Nelson & Cheney, 1987). The Slovene company has committed substantial time, resources, and personnel in their training efforts, acknowledging that without sufficient trainings, BIS acceptance is unlikely if not impossible.

The American company addressed that they see training as an important step but did not appear to be using this technique to combat uncertainty avoidance as much as the Slovenian company. This difference in training approach strategies could be due to the country’s differences in individualism vs. collectivism. Centered in an individualistic country, the American company may be expecting employees to seek training and education on their own after being taught the fundamentals. Comparatively, in highly prioritizing education and training programs, the Slovenian company concentrates on the broader knowledge base. This could also be due to uncertainty avoidance. The American company aspires for their coworkers to be more comfortable with ambiguity, and thus would require less trainings when accepting new technology. However, this difference could also be a matter of timing

as the American company is still in the early stages of their digital transformation and may have a stronger push towards formalized trainings in later stages.

The theory that BIS or other types of decision support systems are “designed to reduce uncertainty in the decision making process” can partially be observed in the results (T. D. Clark et al., 2007). Although the BIS used at the Slovene company is built in a way to achieve the goal of removing uncertainty in making business decisions, the initial acceptance is hindered by the dimension of being general uncertainty avoidant when approaching new technology. However, this is overcome by result demonstrability- once the results of using the BIS are understood, the acceptance increases. This was observed with comparing two different departments: the Sales department was able to see the results and employees were generally hungrier for additional data access and thus were more initially accepting of the BIS more quickly. The controlling department was first hesitant as BIS use would complicate their processes before adding values and their business functions are some of the least adaptable as they must meet external compliance.

When looking at individualism, it is also important to look at the role of responsibility. At the Slovene company, with a higher perception of collectivism, the roles, both in terms of job function and access to data, are highly structured and defined. Both individuals spoke about this in a positive manner: employees know their responsibility and what data is necessary to perform their tasks and believe that data should be sanctioned off accordingly. As presented in the findings, exceptions are possible, but infrequent, and only occur when supported by a strong business case. For the American company, both employees expressed that there were silos within data access, but that they would like to see more data democratization. Through breaking down silos, this strategy would encourage creativity and curiosity. This is required for individuals to look outside of how they fit into the larger corporation and look for areas to either further their individual knowledge, or better perform at their role.

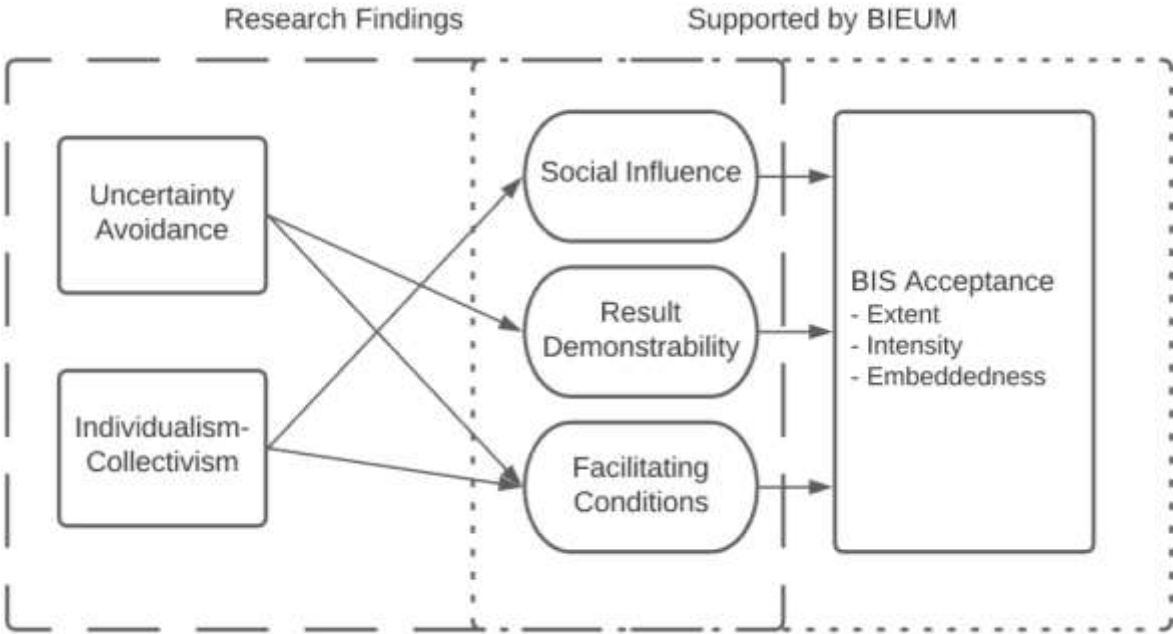
In addition to access to data, this individualism can be seen in how employees look at ownership. The Slovene BI team member said that the national culture of Slovenia as collectivist could be observed in the lack of motive in her coworkers BIS use. Even if there is enthusiasm to accept BIS or other new technology, people are hesitant about taking any sort of ownership. They fear negative punishment, rather than an opportunity to positively stand out from the pack. This is supported in the literature, where Hofstede states that management in collectivist societies avoids giving individual positive feedback to avoid disrupting the in-group at the company (Hofstede, 2010).

At the American company, both interviewees expressed the opposite opinion, that they frequently saw the “disrupters” as the individuals who were most often considered for a job promotion. Some of Hofstede’s earliest research supports this finding as well; in individualistic societies, students are taught to speak up in classroom settings and are used to and expect individual positive reinforcement in corporate environments. This type of

corporate culture encourages individualism in a way that is not seen in Slovenia, a more collectivist country.

Referencing the research model in Figure 12, some details can be added. This new revised research model is present in Figure 13 below. As Grublješič’s BIEUM supported, BIS acceptance is influenced by a variety of behavioral beliefs and attitudes including social influence, result demonstrability, and facilitating conditions. Through the interview process and analysis, some connection may be observed between uncertainty avoidance and individualism vs. collectivism in influencing these beliefs. In a society with a high uncertainty avoidance, the requirement for result demonstrability and the correct facilitating conditions may be more important than in a lower uncertainty avoidance country. The level of individualism impacts the power of social influence, but still looks to the overall goals of the company when understanding acceptance.

Figure 13: Revised Research Model



Source: Own work.

Through the semi-structured interviews, I have provided four first-hand accounts on personal experiences with BIS acceptance. With the questions structured around national culture, each participant discussed their own opinions on the relationship between these two areas. Although a small sample size, this dual case study provides insight into how national culture, specifically the dimensions of uncertainty avoidance and individualism may impact BIS acceptance. This is seen through use of training, importance of a corporate vision, role of BIS in organizational activities, relationship between individual and company, and in responsibility of data use. Interviewing two individuals each at two companies created in a

more well-rounded view of the companies' operations, especially as interviewees were selected based on their role and experience with the company.

6.1 Implications for Theory

Through the interview responses, a relationship between national culture and BIS acceptance can be observed. This contributes to both the general field of acceptance, with a focus on BIS acceptance. As hypothesized, the interview participants expressed opinions about BIS acceptance that reflected their national culture dimension scores as defined by Hofstede's classifications. Previous literature has developed a framework to look at BIS acceptance from a variety of factors, however these studies do not use national culture as an input to acceptance. Additional research shows the impact of national culture on other areas of tech adoption or business processes. This research is unique in that it is the intersection of these two areas of study.

Direct quotes from the individuals interviewed shows that collectivism may have a negative impact on BIS acceptance as there are strong social influences to remain with the norms and values of the company or department. In addition, a strong uncertainty avoidance may also negatively impact BIS acceptance. This is seen in skepticism towards innovation, along with a general distrust of change. These types of behaviors are further reinforced in the hiring and promotion practices made by management. Within the workplace, this is also observed in a stronger fear of negative feedback rather than a desire for positive feedback as remarked by these two companies.

Although the findings provide a perspective on two companies' BIS acceptance, there is a significant implication the research model could be better tested with further quantitative research. This strong association can be seen through some factors of BIS acceptance that may be observed to be impacted by national culture dimensions. Within the area of business research, this study contributes to an understanding of national culture's impacts in workplace and business performance and suggests the potential of a strong association between national culture and acceptance.

6.2 Practical Implications

In addition to research implications, these interviews also provide suggestions and context for managers. First, management should acknowledge which factors, cultural or otherwise that may be impacting behavior of their employees. Secondly, managers must act in a specific way to manage these factors.

In order to drive for further BIS acceptance and encourage more usage, management should generally look for opportunities to resist these behaviors through techniques such as clearly communicating a vision, providing adequate trainings, and finding ways to empower users

to be more comfortable when using new technologies. As shown in the analysis, this differs between cultures. In Slovenia, it would be better to highlight the results showing the overall company success and encouraging employees to better learn BIS in order to grow as a team. In comparison with the United States, BIS should be presented in a way to increase an individual's success and performance, showing that career trajectory may be increased with BIS use. Although additional training and support should be offered in both countries, highlighting the necessity to learn in order to keep up with the general knowledge level in Slovenia is more necessary, compared to a more general promotion of curiosity and exploration in the US.

In combating uncertainty avoidance, the role of management must be considered, and the level of responsibility given to each employee. Within the Slovenian company, responsibility and ownership are observed to be something to be avoided compared to the American company as an opportunity to show initiative and courage. For optimal BIS acceptance, management should identify individuals who may be more inclined towards BIS use. At the US company this may be highly motivated employees looking for career growth while at the Slovene company this could be someone with a more curious disposition. By encouraging these individuals, the later effects of result demonstrability may be observed throughout departments.

The role of financial departments also should be evaluated. In general, interviewees from both companies expressed that departments dealing with financials, such as controlling, were initially the most skeptical to change. This could be because these individuals have more defined rules and regulations they must follow and changing a business process can have more dependencies compared to other organizations. However, the American company mentioned that some of the best CIOs come from more financial teams, with the best being former CFOs. This aligns with the literature and the history of BIS. As mentioned in Chapter three, some of the earliest BIS systems were used to model and predict financial results based on historical data.

CONCLUSION

The goals presented in the introduction have been met. In this thesis, I present a broad understanding of BIS acceptance, acceptance models and frameworks, along with national culture frameworks was presented with text and diagrams. Through interviews and analysis, I have analyzed a qualitative perception of national culture's impact on BIS acceptance from the perspective of two companies from two different national countries. The main contribution of the work is to provide an understanding of how the national culture dimensions of uncertainty avoidance and individualism-collectivism may impact the behavioral beliefs of social influence, result demonstrability, and facilitating conditions, as observed in Figure 13. This relationship then supports previous research that those behavioral beliefs impact BIS acceptance.

Based on the interviewee's answers and the supporting literature it was found that uncertainty avoidance may influence the acceptance of BIS. Individuals from a country with a higher uncertainty avoidance may be less open to ambiguous situations, however this may differ at different levels of responsibility within the company. In addition, the individualism-collectivism score of a country impacts the risk an individual is willing to take and how comfortable they may be accepting BIS, especially in the earlier phases when use is not necessarily widespread.

As mentioned in the literature review, national culture classifications are contested, often based on the methodology used. Hofstede's initial research has been both confirmed and contradicted since its initial publishing and should be used with caution. As his initial research was based on global employees of just one company, these preliminary findings may be influenced by the corporate culture present at IBM. Later revisions expanded with additional companies and countries may also be subjective.

The methodology used for this thesis can also be seen as a limitation in this research. Conducting interviews with only two individuals at two companies is not a representative sample of the national culture present in Slovenia and the United States. In order to further strengthen these findings, this research should be expanded with a larger sample size of individuals within these two countries, however this is not required for this exploratory research. Including more individuals and expanding to include more countries, and an addition of other companies would help in understanding how national culture differs within a company. In addition, this would provide insight into which acceptance factors and behavioral beliefs come from corporate culture compared to a national level.

Through an enhanced understanding of BIS acceptance, international companies may better use their systems. With further BIS use a company will make better informed decisions, achieve business objectives, and best serve their customers. Looking at national culture shows that in our global community, a little more empathy towards varied backgrounds can help all parties accomplish their goals.

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APPENDICES

Appendix 1: Povzetek (Summary in Slovene language)

Zaradi napredka tehnologije in posledično lažjega mednarodnega sodelovanja veliko podjetij zdaj posluje na globalni ravni in mora temu ustrezno prilagoditi svoj način delovanja. Za ustvarjanje optimalnega načina delovanja je treba razumeti dejavnike osebne identitete deležnikov, vključno z nacionalno kulturo. Z razumevanjem in razlago nacionalne kulture lahko podjetja bolje služijo tako zaposlenim kot strankam. Pri raziskovanju tega področja se največkrat sklicujemo na dimenzije nacionalne kulture Geerta Hofstedeja, zlasti na dimenziji izogibanja negotovosti in individualizma – kolektivizma.

Trend v vseh poslovnih sektorjih so sistemi poslovne inteligence (angl. Business Intelligence System, BIS) in uporaba tehnologij, ki omogočajo analiziranje podatkov in s tem podpirajo poslovno odločanje. Sprejemanje kakršnih koli novih inovacij, zlasti tistih ki vplivajo na način poslovanja, lahko povzroči trenja na delovnem mestu. Za razumevanje dejavnikov, ki vplivajo na sprejemanje tehnologij, uporabljamo različne modele, med katere spadata tudi model sprejemanja tehnologije (TAM) in razširjen model uporabe poslovne inteligence (BIEUM).

Izvajanje raziskav o učinkih nacionalne kulture na sprejemanje sistemov poslovne inteligence je lahko koristno tako za podjetja, kot za raziskovalce na področju psihologije, sociologije in poslovanja. Prvi cilj tega magistrskega dela je analizirati dosedanja spoznanja, ki se nanašajo na modele sprejemanja tehnologije, ter spoznanja na temo nacionalne kulture. Dodaten cilj je analizirati sprejemanje BIS z vidika dveh podjetij, prisotnih v dveh različnih državah. S tem bo dosežen namen tega magistrskega dela, ki je bolj razumeti odnos med nacionalno kulturo in sprejemanjem sistemov poslovne inteligence.

Za razumevanje učinka nacionalne kulture na sisteme poslovne inteligence je bila izvedena kvalitativna raziskava, bolj natančno, izvedeni so bili osebni intervjuji z uporabniki teh sistemov. Opravljeni so bili štiri intervjuji, dva v ameriškem in dva v slovenskem podjetju. Obe podjetji sta pred kratkim šli skozi digitalno preobrazbo, tudi s povečanjem zmogljivosti in uporabo sistemov poslovne inteligence. Ti raziskovalni intervjuji tako zagotavljajo vpogled na povezavo med omenjenima dvema raziskovalnima področjema. Na podlagi pregledane literature in obstoječih raziskovalnih modelov so bile nekatere trditve s strani govorcev pričakovane, nekateri predlogi in ideje pa vendarle niso ustrezali Hofstedejevemu modelu dimenzij nacionalne kulture.

S pomočjo intervjujev in analize je mogoče povzeti naslednje ključne ugotovitve. Na splošno so osebe udeležene v intervjujih natančno predstavile splošno nacionalno kulturo svoje države v povezavi s sistemi poslovne inteligence. V ameriškem podjetju sta intervjuvani osebi menili, da se v podjetju bolj izogibajo negotovosti kot preostanek države in da je to dejavnik, ki jih omejuje pri sprejemanju BIS. Vsi udeleženci so razpravljali o vlogi usposabljanja in izobraževanja pri sprejemanju novih inovacij, vendar so ugotovili, da se raven usposabljanja razlikuje glede na zaposlenega. Poleg tega so v bolj kolektivnem

slovenskem podjetju vprašani izrazili mnenje, da je nezainteresiranost za odgovornost zaposlenim preprečila, da bi sprejeli več inovacij.

Te ugotovitve imajo praktične implikacije, saj lahko managerji prilagodijo svoj slog vodenja ter pričakovanja zaposlenih za boljše prilagajanje svoji nacionalni kulturi. Začetne ugotovitve glede odnosa med nacionalno kulturo in sprejemanjem BIS so lahko podlaga za prihodnje raziskave na tem področju. Za bolj poglobljeno preverjanje tega odnosa je potrebno izvesti nadaljnje študije s kvantitativnimi metodami, saj gre v primer tega dela za eksplorativno raziskavo, vendar kljub temu že omenjene ugotovitve prispevajo k dodatnemu razumevanju razsežnosti sprejemanja BIS.

Appendix 2: Interview Guide

Initial Information	
Demographics	
	Gender
	Age
Background Information (can you please introduce yourself)	
	Level of Education
	Years at current firm
	Title/Responsibilities
BI Environment	
Definition:	
BIS = “specialized tools for data analysis, query, and reporting (dashboards) that support organizational decision-making that potentially enhances the performance”	
“improve the timeliness and quality of inputs to the decision process.”	
*These questions are a bit formal, using vocabulary based in theory, but please feel free to ask qualifying questions, take the question in a different direction, etc.	
Situation (Kowalczyk, 2015)	
	What does the BIS landscape of this organization/unit look like? Which tools? How are you using them? The architecture?
	What role does BIS technology play in supporting decision making? Example: Do your dashboards help in deciding how to allocate cost?
Implementation (Davis, 1989)	
Who do you trust? Provisioning?	
*	When developing your BIS strategy, how did you consider your organization’s attitude toward uncertainty?
	What types of trainings were offered when the BIS was initially introduced?
*	What support did you provide to encourage individual users to accept BIS?
BI Acceptance	
Behavioral Beliefs	
PP	In what ways has BIS improved your work performance?
RD	Are you clearly able to describe the results of your BIS use?
EP	How cumbersome is using BIS for your day-to-day tasks? Define cumbersome: challenging, time-consuming
SI	How has your BIS use been impacted by your coworkers? Your superiors?
FC	Do you believe you have the necessary resources and knowledge to facilitate better BIS use? (Content, definitions, not just technical skills)
Other	
	Can you identify different groups of users in your company who have adopted the BI system differently?
Intensity (Wixom & Todd, 2005)	
	How has BIS impacted your role and responsibilities? You did this transformation, etc. Modernization
	How have you found your BIS use to change over time?
Embeddedness (Shanks et. al, 2012)	
	In what ways is BIS integrated into your business processes?

How has BIS use changed your business strategy?
Extent (Doll & Torkzadeh, 1998)
Has BIS use helped your approach to solving problems?
How has communication, internally within your company, changed with BIS? *How about externally?
Hofstede National Culture Dimensions (Halikainen, 2018)
Individualism/Collectivism (IC) <i>“degree of interdependence a society maintains among its members”</i> based on people’s self-image is defined with “I” or “We”.
How do you see importance of group success vs. your individual success?
--Which goals are prioritized, individual or company?
Uncertainty Avoidance (UA)- Negotovost <i>“extent to which the members of a culture feel threatened by ambiguous or unknown situations and have created beliefs and institutions that try to avoid”</i>
How structured and defined are the rules and regulations when using BIS in your company?
--What % of work procedures are standardized?
Impact of National Culture on BIS Acceptance
Slovenia
IC (27)
<ul style="list-style-type: none"> - Collectivist, long-term commitment to group (family, etc.) - Loyalty is paramount. - Everyone takes responsibility for fellow members of the group. - Hiring/promotions based on employee’s in-group
UA (88)
<ul style="list-style-type: none"> - Rigid codes of belief and behavior and intolerant to change. - Emotional need for rules, time is money. - People have inner urge to be busy and work hard. - Innovation may be resistant. - People prioritize security.
United States
IC (91)
<ul style="list-style-type: none"> - Hierarchies are established but all levels remain accessible. - Communication is informal, direct, and participative. - People look after themselves and immediate family only. - High degree of geographical mobility. - Employees expected to be self-reliant and display initiative.
UA (46) [reverse scale]
<ul style="list-style-type: none"> - Fair degree of acceptance for new ideas, innovative products. - More tolerant of new ideas or opinions - Do not require a lot of rules, less emotionally expressive.
Thinking globally, do you agree with the classifications defined for your country?
Do you think these characterizations are represented in your company and to what extent? How?

IC->SI	How does your individualism impact how you are influenced by others? (Venkatesh, 2003) Example:
IC->RD	In what ways do you encourage coworkers to use BI to improve the overall company performance?
IC -> FC	In what ways have you found the resources/knowledge for using BIS available to you are shaped by your organization's goals? (Venkatesh, 2003)
UA -> SI	How does your personal <i>risk profile</i> impact the effect others have on you and your motivation? (Venkatesh, 2003)
UA -> SI	Knowing your own uncertainty avoidance, how do you interact with your coworkers? (Venkatesh, 2003) Examples: Negotovost
UA -> RD	Does understanding the direct benefits of BIS help you overcome your uncertainty? (Venkatesh, 2008)
UA -> FC	Does your individual risk avoidance effect your desire for BIS governance and routine? (Shanks, 2012)
UA	In what ways are you able to mitigate the effects of your uncertainty avoidance to use BIS?
Closer	
How does national culture impact use of BIS? How has this changed over time? What will be the challenging tasks going forward? Anything else?	
Forward Looking	
How did this digital transformation experience impact how you will manage further transitions?	
What do you expect to be challenging in future BIS use in your role in the company?	