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Managing Global Transitions (MGT) is a quarterly, scholarly journal that covers diverse aspects of transitions and welcomes research on change and innovation in increasingly digitalized and networked economic environments, from a societal, organizational, and technological perspective. MGT fosters the exchange of ideas, experience and knowledge among developed and developing countries with different cultural, organizational and technological traditions. MGT invites conceptual, theory-development, empirical and review papers and case-based studies advancing the field of transitions in societies, organizations and technologies.

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Product Portfolio Management Strategic Targets and KPIs over Life-Cycle: A Case Study in Telecommunications Business

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Product portfolio management (PPM) should define, which products to develop, sell, deliver, maintain, and remove based on company's strategic targets. Aligning the product portfolio with business strategy is, however, seen challenging. Hence, an approach for PPM target setting over life-cycle is needed. A single-case study was conducted to examine the relationship between product portfolio management and business strategy to propose a practical approach for defining product portfolio management strategic targets and key performance indicators over life-cycle. The main results include proposing PPM target setting to cover horizontally all product life-cycle phases and vertically the product structure, including both commercial and technical aspects. PPM strategic targets and key performance indicators over life-cycle through four success factors are proposed. In addition, a new tool for product portfolio analysis is introduced. The study contributes to the previous studies on aligning product portfolio management with business strategy by providing a practical example.

Key Words: product portfolio management, performance management, strategic management, product life-cycle management
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Introduction

Business strategy aims to create a fit between different organisational activities. However, the difference between strategic endeavour and actual performance is often originated due to communication disconnection between strategy creation and its execution (Porter 1996). A magnificent

strategy does not matter, if it cannot be further transformed into required operational activities and related performance targets. The fit can only be achieved, if the strategy is successfully translated into objectives and measures that can be distinctly communicated for organization's members. Progress should be measured, since otherwise it cannot be managed or improved (Kaplan and Norton 2008).

Sustainable economic prosperity is attempted to be achieved by offering more choices for customers (ElMaraghy et al. 2013). Consequently, product portfolio of a company can be considered as one of the most important factors while seeking competitiveness and business success (Tolonen 2016). In general, product portfolio is considered as a collection of products, which is constructed in a way that fits the organisation and its objectives (Haines 2014). The products can consist of hardware (HW), software (SW), services or documentation items (Kropsu-Vehkapera and Haapasalo 2011). The product portfolio should reflect the strategy of the company, and it should be managed adequately to achieve the strategic business targets via the products (Cooper, Edgett, and Kleinschmidt 2001; Haines 2014). Product portfolio management (PPM) should define, which products are being developed, sold, delivered, maintained, and removed based on the strategic targets. However, the current focus in product portfolio management is mostly on new product development, and it does not adequately cover the entire product life-cycle. The situation can be seen to lead to slow product portfolio renewal, which may further cause product portfolio explosion and cannibalisation between the products (Tolonen, Shahmarichatghieh et al. 2015).

Previous studies emphasise the connection between business strategy and portfolio management (e.g. Cooper, Edgett, and Kleinschmidt 1997; Meskendahl 2010; Müller, Martinsuo, and Blomquist 2008). Responsibility over portfolio level decision-making should cover the whole organisation, and information from single product level to portfolio level should be communicated. Individual opinions should not guide the decisions, but decisions should be based on business strategy (Müller, Martinsuo, and Blomquist 2008). Aligning the product portfolio with business strategy, finding the balance for the portfolio, and achieving business targets are, however, experienced challenging (Cooper, Edgett, and Kleinschmidt 2001). It appears that the role of product portfolio management as a strategic decision-making process is not widely understood in companies. Consequently, business strategies have not been connected successfully with PPM strategic targets and their monitoring. Thus, a holistic approach for target setting, covering the entire product life-cycle and

both new and existing products is required (Tolonen, Kropsu-Vehkapera, and Haapasalo 2014). This study examines the relationship between product portfolio management and business strategy. The study is conducted by analysing the existing literature and relevant practices in a company that is a market leader in its industry. Also, a case-specific approach is proposed to create a connection between business strategy and PPM strategic targets and key performance indicators.

This said, the following research question can be set for the study:

RQ *How should product portfolio management strategic targets and key performance indicators be defined?*

Literature Review

PRODUCT PORTFOLIO MANAGEMENT

Existing literature emphasises the role of portfolio management and its connection to company business strategy (e.g. Cooper, Edgett, and Kleinschmidt 1997; 1999, 2001; Haines 2014; Müller, Martinsuo, and Blomquist 2008; Meskendahl 2010; Padovani and Carvalho 2016). Also, the significant role of products and product portfolio, and the need for innovations to offer customers more value and options to choose from have been addressed and evidently identified (e.g. O'Reilly and Tushman 2004; El-Maraghy et al. 2013; Tolonen 2016). Still, challenges to align the product portfolio with the business strategy and to create sustainable performance for the product portfolio are being confronted (e.g. Cooper, Edgett, and Kleinschmidt 2001; Tolonen, Kropsu-Vehkapera, and Haapasalo 2014; Tolonen, Harkonen, and Haapasalo 2014; Tolonen, Shahmarichatghieh et al. 2015, Tolonen, Harkonen et al. 2015) Also, problems causing distinction between the strategic targets and reaching those targets has been identified, mainly due to not utilising performance measurements well enough to improve operations (e.g. Porter 1996; Kaplan and Norton 2008).

Companies utilising product portfolio management are seen to have a better chance to improve their business performance (Cooper, Edgett, and Kleinschmidt 1999; Padovani and Carvalho 2016). Portfolio management is seen to improve the competitive position of the business by defining how strategic business objectives are going to be achieved. Portfolio management allows to create a common basis for evaluating products. Then, it is possible to make strategically right decisions and aim for common targets (Cooper, Edgett, and Kleinschmidt 2001). Financial targets guide many companies, when making the most money out of prod-

uct portfolio is under focus. Indeed, product portfolio management is considered as a necessary process in gaining success with the products (Cooper, Edgett, and Kleinschmidt 2001; Tolonen, Kropsu-Vehkapera, and Haapasalo 2014; Haines 2014). To gain success, a product portfolio should be actively developed and renewed to exploit opportunities for new business and additional turnover (Tolonen, Harkonen, and Haapasalo 2014).

Haines (2014) emphasises how PPM should be an ongoing decision-making method to achieve strategic, market, financial and operational balance. It should cover all products and all life-cycle phases in an organisation (Haines 2014). Also, Tolonen, Kropsu-Vehkapera, and Haapasalo (2014a) argue that the current product portfolio should be actively managed instead of merely focusing on the new product development phase. Further, based on Saaksvuori and Immonen (2008), regular inspection and decision-making to remove products should be conducted, since focusing only on introducing new products is not enough.

The decision-making should not base only on financial methods, but also strategic methods are needed. Strategic approaches are seen to help to create a more successful portfolio compared to merely focusing on financial methods (Cooper, Edgett, and Kleinschmidt 2001). Indeed, allocating the available resources for the advancement and fulfilment of strategic objectives can be considered as one of the goals for portfolio management (Kester, Hultink, and Lauche. 2009). Hence, the optimal alignment of portfolio items and only pursuing the projects that are in line with the company business strategy should be desired (Meskendahl 2010). Müller, Martinsuo, and Blomquist (2008) present similar kind of results noting that successful companies in portfolio management prioritise and select the projects in line with business strategy. As Tolonen, Harkonen et al. (2015) propose, the role of PPM as a strategic decision-making process should be defining the products to be developed, marketed, sold, delivered, maintained and removed, based on company's short- and long-term strategic targets. This would allow the role of other business processes to be more purely operational, as they could focus on how to perform needed activities for the products (Tolonen, Harkonen et al. 2015).

ALIGNING PRODUCT PORTFOLIO MANAGEMENT WITH BUSINESS STRATEGY

Business strategy aims to create a consistency between the different organisational activities, and thus to combine different activities together.

Strategic fit in all activities is crucial in creating and maintaining the competitive advantage. This consistency across the activities allows communicating the strategy to individuals. Top management should define company's strategic position and create this consistency between activities (Porter 1996). The strategy should be able to answer, what are the strategic customers, markets and technologies, and what is the value proposition that allows the differentiation from competitors. The strategy should also describe the key processes for creating the competitive advantage, the needed human capabilities, and the overall capability of an organisation to implement the strategy (Kaplan and Norton 2008).

In general, based on several studies (e.g. Cooper, Edgett, and Kleinschmidt 1997; 1999; 2001; Tolonen, Shahmarichatghieh et al. 2015), strategic fit, value maximisation and portfolio balance are the key performance focus areas in product portfolio management. Strategic fit ensures the consequence and alignment of the products in the product portfolio based on company's strategic targets (Tolonen, Shahmarichatghieh et al. 2015). Further, the portfolio resource spending differentiation should reflect company's strategic priorities (Cooper, Edgett, and Kleinschmidt 1999). Strategic fit can also be considered as the degree to which the portfolio content reflects the business strategy (Meskendahl 2010). Value maximisation aims the portfolio to include profitable high-value and high-return items with commercial potential (Cooper, Edgett, and Kleinschmidt 1999). Further, portfolio balance seeks to form a portfolio for different capabilities. The portfolio items should consist of both long- and short-term projects, and some of them should have high-risk and some low-risk attributes. The items should be based on different technologies and cover different types of markets (Cooper, Edgett, and Kleinschmidt 1999).

Even though the role of portfolio management and its relation to business strategy is being emphasised, several challenges related to the connection between the business strategy and PPM can be identified in the existing literature. First, complexity of product portfolios itself is considered as a challenge. Wide variety of products in product portfolios is found as a challenge in several studies (e.g. Tolonen, Kropsu-Vehkapera, and Haapasalo 2014; ElMaraghy et al. 2013; Kropsu-Vehkapera and Haapasalo. 2011). Also, different operational functions, such as sales, product development and production, may not have a common understanding over the complex product portfolio. To overcome the challenge, a company's product portfolio should be productised vertically into commer-

cial and technical portfolios based on the product structure (Harkonen, Tolonen, and Haapasalo 2017; 2018; Tolonen, Harkonen, and Haapasalo 2014). The motivation is that the more complex company's products are, the more likely it is that the ownerships between the commercial and technical items are not clear. Commercial side of the structure is better known by marketing and sales, describing how customers perceive the company's offering. Technical side is more familiar to product development, manufacturing, purchasing and logistics, allowing gaining understanding about product specific items, and common items between different products and product families.

The actual linking of the product portfolio to strategy, balancing the portfolio and thus trying to achieve set business objectives are often seen challenging at the portfolio level (Cooper, Edgett, and Kleinschmidt 2001). Considering the PPM process, the challenges start from the disconnection between company strategy and PPM strategic targets and their monitoring. Some generic key challenges faced by companies include insufficient understanding of PPM as a concept, and lack of portfolio level business thinking. PPM is mostly seen to cover new product development phase only, where product development activities should be prioritised and executed. Inadequate portfolio level clean-up activities, non-planned product life-cycles and slow product portfolio renewal have led into product portfolio explosion. More products are introduced than are removed, and that has led into cannibalisation between the products weakening their profitability. If visibility over the product portfolio is missing, such a situation may not be confronted (Tolonen, Kropsu-Vehkapera, and Haapasalo 2014; Tolonen, Harkonen, and Haapasalo 2014).

Different studies (e.g. Müller, Martinsuo, and Blomquist 2008; Cooper, Edgett, and Kleinschmidt 1997; Meskendahl 2010) emphasise the alignment of business strategy and portfolio management, but no specific tools to adequately achieve this connection are presented yet. As stated by Tolonen, Kropsu-Vehkapera, and Haapasalo (2014), creation of PPM strategic targets and performance measures based on company strategy is one identified precondition for successful PPM process. Performance management framework is proposed as a solution to successfully connect company's strategic targets and portfolio performance focus areas of strategic fit, value maximisation and portfolio balance (Tolonen, Shahmarichatghieh et al. 2015). The framework covers the PPM strategic targets and key performance indicators (KPIS) for the entire product life-

cycle. As a first step, the business strategy objectives should be first created based on relevant mission statement components. For example, David (2010) lists nine components for mission statement: customers, products, markets, technology, concern for survival, philosophy, self-concept, concern for public image and concern for employees. Next, key portfolio performance focus area targets and KPIs for each mission statement component should be defined. The intention is that PPM strategic targets and KPIs cover all three performance focus areas of strategic fit, value maximisation, and portfolio balance.

Further, criteria for different product life-cycle phases should be defined. Therefore, the idea of horizontal product portfolios covering the whole life-cycle should be concerned. Continuous renewal of the product portfolio based on strategic PPM decisions requires a flow of products through different life-cycle phases, when products should also be productised horizontally based on their life-cycle phases. Four horizontal portfolios of NPD, Maintain, Warranty and Archive are proposed, in which the focus of activities is based on requirements from life-cycle phase and business itself. Finally, PPM performance management should be connected to other business processes' strategic targets and KPIs in a specific company-wide performance dashboard (Tolonen, Shahmarichatghieh et al. 2015). Portfolio management practices influence how the portfolio performance is measured (Müller, Martinsuo, and Blomquist 2008). Strategy should be translated into objectives and measures that can be clearly communicated for the organisation. If progress is not measured, it cannot be managed or improved. Therefore, critical success factors and metrics need to be identified. (Kaplan and Norton 2008). Overall, product portfolio performance management should be based on awareness about the products that meet the agreed PPM criteria (Tolonen 2016).

Research Process and Case Company Description

The study was conducted as a single-case study (Yin 2013). Case study research design enables collecting detailed data in real-life context. Generalisability of the conclusions is, however, limited to the boundaries of the case. The research process is presented in table 1. Existing literature was first reviewed to reveal the characteristics of connection between product portfolio management and business strategy. The review provided an overview for both current challenges and utilised methodologies in strategic management of a product portfolio. The review was utilised to create a questionnaire for the company interviews. To recognise chal-

TABLE 1 Research Process

Literature review	Product portfolio management Aligning product portfolio management with business strategy
Current state analysis	Interviews Discussions Company materials
Construction	PPM strategic targets and KPIS Product portfolio analysis tool
Discussion	

lenges in current practices, the company analysis was focused on key aspects influencing the connection between the business strategy and PPM. The aspects included business strategy creation process, product portfolio objectives, and their communication within the organisation. The current PPM practices and utilised performance targets and measurements were addressed. Data for the current state analysis was gathered by the means of semi-structured interviews (Merton, Fiske, and Kendall 1990) and discussions with the case company's CEO, COO and CFO, and by utilising the case company's internal materials. At the beginning of the first session, a short introduction to PPM was given to ensure understanding the context. All the sessions were recorded and later transcribed for a reliable analysis of gathered data. Based on the company analysis and literature review, an approach for defining PPM strategic targets and KPIS was constructed, and a product portfolio analysis tool was introduced.

With a turnover of around 3 million euros, the case company is a market leader in a specific segment within a fast-growing industry, which enabled a good opportunity for the company selection. The company offers customer-tailored high-tech business-to-business solutions based on wireless technologies. Solutions consist of various hardware, software, and service components. Strategic management of product portfolio and related performance management are very relevant considerations for the company due to assorted content of the product portfolio.

Results

CURRENT PPM TARGETS AND KPIS

PPM as a strategic decision-making process was not in use, as PPM strategic targets based on the business strategy objectives had not been

defined. Also, the idea of PPM was not fully understood. The strategic product roadmap depicted, what kind of products were going to be introduced in the future based on proposals from the operational level, but the product portfolio was not being analysed in a systematic manner to form objectives for the future. The most important market segments, customers, and products could be named, but they were not systematically analysed to create specific targets for the PPM.

Currently, the product portfolio performance was being evaluated utilising the sales volumes, turnovers, and sales margins for individual products. As such they are very convenient factors for value maximisation targets and KPIs, but currently their use focused mostly on evaluating individual product performance. Since strategic fit and other qualities required for successful product portfolio performance management had not been specified, product portfolio performance covering the identified focus areas of strategic fit, value maximisation, and portfolio balance could not be sufficiently evaluated.

As specific targets for PPM had not been set, aligning the resource spending with strategic targets formed a challenge. The company has a very customer-oriented approach, and the focus of product innovation seemed to be mostly on enhancing current products and creating new products based on the old ones according to internal and external inputs. Totally new products were only being developed, if a specific need was identified in the customer interface. The prioritisation between different ideas and R&D activities was merely based on pure intuition.

DEFINING PPM STRATEGIC TARGETS AND KPIS IN GENERAL

PPM strategic targets and KPIS should be based on strategic objectives described in a company vision, mission statement, and values, since they are the highest guidelines for the business strategy. In the end, the products should be understood as tools to fulfil the business needs, to create competitive advantage, and to generate economic value for the company. Different aspects for the product portfolio are to be considered for enabling consistency and overall capability to implement the strategy. The concept is illustrated in table 2.

Strategic fit describes the degree, to which the core capabilities and competences in each presented mission statement aspect reflect the business strategy objectives in PPM. Therefore, the strategic fit target setting is to define, the most important drivers in each aspect to enable the overall capability to fulfil the business strategy objectives via the PPM process.

TABLE 2 Connection between Mission Statement Aspects and PPM Focus Areas

	Strategic fit	Value maximisation	Portfolio balance
Market segments Customers Products Technology Economic success Compet. advantage Values Public image Employees	What are the core capabilities and competences in each aspect that create the overall capability for the successful strategy execution with the company products?	How the core capabilities and competences in each aspect should be utilised to maximise the value of the product portfolio?	How the core capabilities and competences in each aspect should be considered to gain the balance in the product portfolio?

The resource spending is then to reflect these strategic priorities in all product-related activities. Strategic fit is to be ensured by targeting how the resources are to be allocated for different R&D activities and for different products based on the strategic objectives. Further, a specific KPIS to evaluate the actual resource spending should be set.

Value maximisation drives the product portfolio to include profitable and high-value items. The maximised value can be regarded as a commercial success potential, profitability and generic value for the business. Hence, the value maximisation target setting is to consider, how the core capabilities and competences in each aspect are to be used to maximise the product portfolio value. Based on the current state analysis, turnovers, sales volumes and sales margins were targeted and measured for the sellable products. As soon as PPM strategic priorities have been defined, the value maximisation could be better targeted in different aspects to minimise the portfolio costs and to maximise the portfolio value. For example, the product portfolio profitability should also be considered in market segment and customer dimensions.

Portfolio balance illustrates, how the product portfolio should be formed for different capabilities. It is then to be considered, how the core capabilities and competences in each aspect are seen to affect the product portfolio balance, and how the product portfolio should be seen from different viewpoints to allocate the resources accordingly for proper strategy execution. The current state analysis identified a lack of targets and evaluation for portfolio balance. Therefore, portfolio balance target setting could for example aim for balance between horizontal and vertical product portfolios. Especially the size of these portfolios should be paid attention to, since exposure for product portfolio explosion was identified due to lack of life-cycle planning. Further, product portfolio renewal

could be targeted to back up a long-term competitiveness and sustainability. Accordingly, adequate KPIs for each target to evaluate progress are to be defined.

DEFINING PPM STRATEGIC TARGETS AND KPIS FOR DIFFERENT PRODUCT LIFE-CYCLE PHASES

The different product life-cycle phases are of different nature and thus require different management focus in terms of product portfolio. PPM strategic targets and KPIs should hence be detailed for each life-cycle based portfolio. The targets and KPIs for both the PPM activities for each portfolio and the transfers from one life-cycle portfolio to another are to be set. NPD portfolio management should focus on renewing the product portfolio for the future by delivering new products according to set targets. Therefore, focus should be on ensuring a long-term economic sustainability with totally new products based on new technologies and new platforms, and with new products based on existing products. Maintain portfolio management should focus on running the PPM process based on the set targets focusing on the strategic products and replacing and ramping down the existing products by new products or more profitable products. Based on the resources allocated for enhancements, the existing products are to be improved and maintained by cost reductions and other minor fixes not visible to the customer.

As soon as a product has been ramped-down due to replacing products, unprofitability or non-strategic fit, it should be taken further to the Warranty product portfolio. The PPM strategic focus on the Warranty portfolio should be to support the removed products based on the set targets and contracts made with customers. A specific end-of-life (EOL) process for the product ramp-down notification was utilised in the analysed company, where possible substitutive products and remaining time for orders and deliveries were communicated to the customers. In the future, the duration of care and support services for the ramped-down products should be defined and communicated accordingly to the customers in EOL notifications. The customer-specific contracts should be considered as special cases. Consequently, no new orders or deliveries for the removed products are to be processed, but the removed products are to be supported according to the defined requirements for spare parts, technical support, service and minor fixes to care the products until their set final removal. Archive is the final life-cycle phase for the products. The products are no more to be cared or supported, but only the product data

is to be stored based on industry-specific legal requirements. As soon as the legal requirements have been fulfilled, the data is to be removed, and the products have then reached their end-of-life.

Since the general target for the product portfolio, based on the horizontal life-cycle phases, is a continuous renewal of the product portfolio and a steady flow of products from NPD to Archive phase, the criteria for Maintain as well as for Warranty should be defined in the PPM strategic targets. As new products are being introduced, the older products must be taken onwards along their life-cycle to avoid the product portfolio explosion and product cannibalisation. Therefore, during the product development, the Maintain portfolio is to be reviewed to define, which of the existing products at the Maintain are possibly replaced and taken further to the Warranty phase. The criteria for Maintain are to be based on new strategic products, and in some cases new supportive products. As the focus of Maintain is to ensure that the existing unprofitable and non-strategic products are removed, the criteria for Warranty are to be based on new replacing products, or non-strategic fit and unprofitability in relation to the set targets and KPIS. For the Archive phase, the criteria are the end-of-support time, or expired contracts made with customers.

PPM STRATEGIC TARGETS AND KPIS

Success factors to be considered in the product portfolio performance management include strategic fit, value maximisation, portfolio balance, and portfolio renewal. The PPM strategic targets are to be set to describe, the required outcomes of PPM activities for each success factor to achieve the best product portfolio performance in relation to the business strategy. Further, the progress in relation to the set targets is to be measured, and KPI for each target is to be defined. Table 3 presents formed suggestions for possible PPM strategic targets and KPIS.

The strategic fit targets and related KPIS are suggested to ensure the resource spending reflects the strategic objectives. *Strategic task prioritisation* describes, how the resources should be targeted and measured for different types of R&D activities. Further, *product portfolio focus* illustrates how the outcome of the resource spending should be seen and thus targeted and measured in the share of the sales generated by the products, for which the resources were used.

The value maximisation targets and KPIS are proposed to maximise the performance of individual items in the product portfolio, and thus maximising the product portfolio value. *Sales item chart* depicts, how the

TABLE 3 PPM Strategic Targets and KPIs

Success factor		Target	KPI
Strategic fit	*Strategic activities prioritisation* R&D resources allocated based on the strategic objectives for: (1) Totally new products (2) New products based on existing products (3) Enhancements for existing strategic products (4) Enhancements for other existing products	(1) *x* € (2) *x* € (3) *x* € (4) *x* €	R&D resources spent for: (1) Category 1 projects (2) Category 2 projects (3) Category 3 projects (4) Category 4 projects
	Product portfolio focus: The outcome of resource spending for the strategic products reflected in the share of strategic products sales out of total sales	*x* €	$\frac{\textit{Strategic products sales}}{\textit{Total sales}} \times 100$
Value maximisation	*Sales item chart:* Sales item *x* objectives met in (1) Sales volume (2) Sales revenue (3) Sales margin percentage	(1) *x* € (2) *x* € (3) *x* €	Actual sales vol. for Sales item *x* Actual sales rev. for Sales item *x* Actual sales margin percentage for Sales item *x*
	Product portfolio profitability matrix: Sales item *x* achieves profitability in all market segments and for all customers	*x* %	Actual sales margin percentage in each market segment for each customer
	Freeloaders: Product portfolio performance ensured with the minimum amount of non-sold products	0	Actual number of non-sold products

Continued on the next page

sales volumes, sales revenues and sales margins should be targeted and measured for all sales items. To deepen the product profitability analysis and target setting, *product portfolio profitability matrix* tool is introduced in figure 1, which can further be used to gain a comprehensive visual view on how the different products succeed in the different market segments and for different customers in relation to the desired targets. The labels and spots inside the cells in the matrix are coloured based on the current status of each examined relation. In labels, the green colour stands

TABLE 3 *Continued from the previous page*

Success factor		Target	KPI
Portfolio balance	*Vertical form of the product portfolio:* Reducing the product portfolio costs and maximising the commonality by reducing the total number of different components in the products	$-x$ %	Actual percentage decrease in number of components
	Horizontal form of the product portfolio: Reducing the size of Maintain product portfolio by removing non-strategic and unprofitable products	x	Number of ramped-down non-strategic and unprofitable products
Portfolio renewal	*Product portfolio renewal rate:* Ensuring long-term competitiveness with the annual renewal for the product portfolio	x %	Total number of ramped-up and ramped-down products in versus to total number of products

for strategic, yellow for supportive, and red for non-strategic fit. The spots within cells represent the profitability in each relation, where green stands for profitable, yellow for zero-profitable, and red for unprofitable status. For example, strategic product A is profitable when sold to customer B or in market segment C, but zero-profitable when sold to rest of the customers and market segments. Or, customer A is unprofitable in market segment A but profitable in market segment C. The third value maximisation target, *freeloaders,* proposes ensuring the product portfolio performance by minimising the amount of non-sold products.

The portfolio balance targets and KPIs are used to gain balance for example in product portfolio size in horizontal and vertical dimensions. *Vertical form of the product portfolio* could for example be balanced by targeting to reduce the product portfolio costs and to maximise the commonality between the different products by reducing the number of different components in the products.

In general, the needs for balancing the product portfolio in vertical dimension can be simply identified by analysing the number of items at each product structure level. *Horizontal form of the product portfolio* could also be targeted for better balance. For example, the Maintain subportfolio could be targeted to be streamlined and diminished in size by

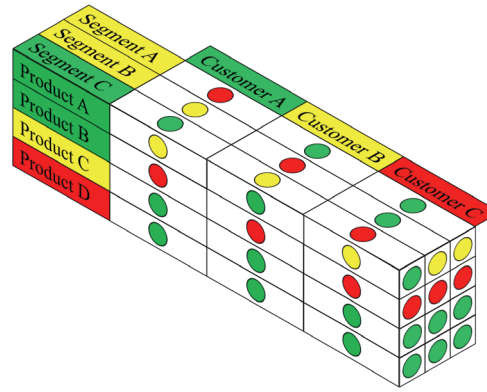

FIGURE 1
Product Portfolio Profitability Matrix

removing the non-strategic and unprofitable products. The portfolio renewal targets and KPIs are set to ensure product portfolio renewal. The long-term competitiveness could be targeted by aiming for annual renewal of the product portfolio with a specific *product portfolio renewal rate,* and thus ensuring the flow of products from one life-cycle phase to another. Since an exposure for product portfolio explosion was identified in the analysed company, targeting for sufficient product portfolio renewal is suggested to ensure the flow of products, and thus avoid the explosion.

Discussion

This study examined the relationship between product portfolio management and business strategy through existing literature and current state analysis of one case company. The analysed company being a market leader in a specific segment within fast-growing industry, with a product portfolio covering sellable items from single components to services, provided a good opportunity to investigate the relationship of PPM and business strategy.

The PPM target setting should cover all the product life-cycle phases and the commercial and technical sides of the product portfolio. The strategic fit target setting is to describe the degree, to which extent the core capabilities and competencies in each mission statement aspect reflect the business strategy objectives in PPM. The value maximisation target setting is to evaluate, how the identified core capabilities and competencies are to be utilised to maximise the value of the product portfolio. Further, the portfolio balance target setting is to consider, how the core capabilities

and competences are to be considered to gain balance in the product portfolio. The PPM strategic targets and KPIS are further to be specified for the different product life-cycle phases due to their varying requirements. The horizontal life-cycle-based portfolios are proposed to be used based on previous studies; NPD covering product planning and introduction, Maintain covering active sales and deliveries, Warranty covering aftersales, and Archive covering product data storing based on legal requirements. The resource alignment, strategic focus, and criteria for the next product life-cycle phase are then to be defined based on the PPM strategic targets and requirements from each life-cycle phase. In general, the focus should be on renewing the product portfolio by creating a steady flow of products through the different life-cycle phases fostering the products aligned with the PPM criteria.

The PPM strategic targets and KPIS are to be defined in a way that supports the PPM decision-making and allows taking appropriate actions for the product portfolio performance improvements. Success factors to be considered in the definition are strategic fit, value maximisation, portfolio balance, and portfolio renewal. The product portfolio performance management is then to be conducted using the defined PPM strategic targets and KPIS. The products meeting the defined PPM criteria are to be identified, and they are then to be tended as strategic tools creating competitive advantage and economic value for the company.

SCIENTIFIC CONTRIBUTION

The scientific contribution of this study involves extending the coverage of product portfolio management and business strategy by applying the previous discoveries in a specific practical context, hence providing support for Cooper, Edgett, and Kleinschmidt (1997) and Tolonen, Shahmarichatghieh et al. (2015). Due to the newness of the utilised holistic PPM approach, the number of previous studies implementing it into practice is currently limited. This study contributes by describing a practical case for implementing PPM targets and KPIS over life-cycle. The identified challenges justify the importance and existence of the concept, even if more feedback about the concept in practice is still needed. In addition to the above, this study provides new by introducing a product portfolio analysis tool, product portfolio profitability matrix, to provide a visual view how different products succeed in different markets and customer segments in relation to the desired strategic targets. Thus, this study extends the range of product portfolio management analysis

tools (Cooper, Edgett, and Kleinschmidt 1997; 1999; 2001) available for decision-making.

MANAGERIAL IMPLICATIONS

The managerial contribution of this study involves offering an approach to define PPM strategic targets and KPIS based on the business strategy objectives. The PPM strategic targets and KPIS definition are described in general, and also for the different product life-cycle phases. Some examples for strategic targets and related KPIS are proposed. This study offers a considerable solution for identified problems in current practices, for companies who can relate to the topic.

PPM targets and KPIS should be derived from company strategy, which should be seen in company's product portfolio and resource spending reflecting the strategy. Financial targets and KPIS solely are not enough for product portfolio management. To ensure long-term success and proper resource allocation, PPM targets and KPIS should cover portfolio's strategic fit and balance as well. Products should be analysed as a portfolio to ensure optimal product offering and to prevent product cannibalism. Analysis and decisions should not only focus on new products. The existing products and their continuation should be evaluated as well. Sometimes, tough decisions to discontinue products need to be made to enable future success.

A certain level of commitment for change is however a necessity as the solution requires top management's attention and contribution. Product portfolio management as a strategic decision-making process should be implemented to evaluate the portfolio on a regular basis. Also, the concept of productisation in horizontal and vertical dimensions is recommended to be defined and implemented before defining of PPM strategic targets and KPIS. Overall, this study contributes for further improvements; for how the entire product portfolio can be managed to support the strategy execution, to maximise the economic value from products, and to balance the product portfolio for long-term sustainability and for different capabilities. It is the product portfolio that is the most valuable business asset of a company.

LIMITATIONS

Limitations of this study include analysing the practices of a single company and basing the construction on those findings aside the literature. Hence, some further validation of the findings might prove valuable.

Also, the study was qualitative by nature setting some limitations to conclusions that can be drawn based on the study. Aside addressing the limitations, the future studies could analyse how challenging it would be to manage the strategic entity based on all the metrics, as the proportion of influence from different stakeholders may vary. This as in the described product portfolio performance management model, the PPM strategic targets and KPIS were proposed to be connected to other strategic targets and KPIS used in a company. Also, it would be interesting to analyse how the performance of different functions and business processes affect the product portfolio performance management.

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Convergence Dynamics between South Africa and Her Main Trading Partners

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The convergence of per capita GDP growth rates of less developed countries towards those of more industrialized economies is a central debate amongst growth economists. This study contributes to the literature by examining whether South Africa, as arguably Africa's most developed economy, converges towards the growth of her main trading partners (i.e. Belgium, Botswana, China, Germany, India, Japan, Mozambique, Namibia, Netherlands, South Korea, United Arab Emirates (UAE), United Kingdom (UK), United States (US), Zambia and Zimbabwe). To this end, we examine the integration properties of per capita GDP differences between South Africa and each of her trading partners and we particularly employ unit root testing procedures which are robust to ESTAR-type nonlinearities and unobserved smooth structural breaks. Our empirical evidence points to convergence between South Africa and Belgium, Botswana, China, Germany, India, Japan, Mozambique, Namibia, Netherlands, South Korea, the UAE, the UK and the US but not with Zambia and Zimbabwe.

Key Words: convergence, Flexible Fourier Form (FFF) unit root tests, unobserved structural breaks, asymmetries, South Africa
JEL Classification: C21, C22, C51, C52, O47

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Introduction

Economic growth convergence has formed part of the major themes of local and international trade summits and is one of the most studied phenomenon's in the macroeconomics paradigm. The growth convergence phenomenon hypothesizes on poor countries having a larger potential to grow faster than developed countries and will thus 'catch-up' to the steady state of initially rich countries (Rebelo 1991). In essence, neoclassical theorists predict absolute convergence of countries to the same path of growth and income per capita, where poor countries catch-up to the

economic growth levels of the more industrialised and developed countries assuming that these countries have similar characteristics such as the same population growth rates, the same savings rate, the same rate of technological progress, and the same rate of capital accumulation (Baumol 1986; Barro and Sala-i-Martin 1992; Mankiw, Romer, and Weil 1992). However, new growth economists have criticised neoclassical theorists for failing to explain the basic facts of actual growth behaviour over the last century and argue that endogenous factors play a more significant role in the economic growth process (Romer 1986; 1990; Sokoloff and Engerman 2000).

The macroeconomic theory of convergence is connected to the topic of long-term economic growth and understanding the factors that influence the different growth patterns between countries. This comes with the belief that economic growth depends on the expansion of certain key factors of the economy and that structural changes between countries may provide an explanation for the observed growth rate differences across countries. The empirical literature is filled with a plethora of studies which seek to examine the convergence hypothesis in both developed and developing countries, however, with little conclusiveness being achieved in the convergence debate. In one of the earlier studies, Barro (1991) confirmed convergence effects through a beta convergence analysis using a uniquely formed beta convergence model estimated with panel data regression techniques. This paved the way for many more studies around the convergence hypothesis with authors including Friedman (1992), Quah (1993), Bernard and Durlauf (1996) and Evans and Karras (1996) suggesting a different approach to studying convergence by focusing on the integration properties of income disparities across countries as opposed to a model which assumes a negative and statistically significant relationship between real GDP per capita over time and the economic level measured by the initial per capita GDP variable (Arbia, Basile, and Piras 2005).

Our current study focuses on the convergence growth path between South Africa, as one of Africa's largest and most sophisticated economies, and a select number of its biggest trading partners. With its wealth in natural resources and a diversified economic state, South Africa is a country with great growth potential. While many have described it as a blend of first and third world economies, South Africa remains an anomaly among developed countries. Despite being one of Africa's richest economies, the country currently threads on an undesirable developmental path riddled with immense economic and social maladies, most a clear by-product of

the legacy of apartheid, whose repercussions are setting the country back from achieving its full development potential. This paper assesses South Africa's growth performance with its top trading partners in the context of the economic convergence affirmed by Baumol (1986) and fueled by Paul Romer's (1986) production-technology-based endogenous growth theory with increasing returns to scale, which has a strong tendency for wealthy countries to maintain or increase their lead over countries with a lower level of development (Sachs and Warner 1995). Our study particularly draws from the study of Ben-David (1996) who hypothesizes on developing countries with high levels of trade and openness should, via the factor price equalization theorem, inducing the equalization of income towards that of more industrialized trading partners.

Our study also recognizes common fallacies in quantitative methodology used in economic convergence literature which tend to rely on traditional unit root testing procedures such as the ADF and PP tests which have been criticised on the premise of failing to account for existing structural breaks and asymmetries which, in turn, leads to a bias that reduces the ability of these tests to distinguish between a unit root and a close-to-unit root process (Perron 1990 and Kapetanois, Shin, and Snell 2001). To remedy such problems, Enders and Lee (2012) introduced the Flexible Fourier Form (FFF) unit root test as an alternative that allows for existing structural breaks and captures nonlinearities and unobserved smooth structural breaks.

The testing procedure used in this paper is borrowed from the works of Christopoulos and Leon-Ledesma (2010) who combine the FFF framework in conjunction with the exponential smooth threshold autoregressive (ESTAR) framework. The purpose of this paper is to examine whether the per capita GDP growth of South Africa converges towards that of its top 15 trading partners. In other words, our study is concerned with testing the hypothesis that open economies reap welfare benefits and should grow towards a similar growth paths to that of more developed trading partners. Notably, testing growth convergence between South Africa and its trading partners presents itself as an interesting area of research since it has not been previously addressed. This study makes a significant contribution to empirical literature as the first study to examine the convergence phenomenon for South Africa with its developed trading partners.

The remainder of this paper is as follows: the second section is the literature review, the third section provides the methodology used in the

study, the fourth section presents the empirical results while the fifth section provides the concluding remarks to the study.

Literature Review

Neoclassical and new growth theories form the basis of the phenomenon of growth convergence. The neoclassical growth theory faces major criticism for failing to explain actual growth behaviour and for its general assumptions. The theory assumes that countries use the same production function, an assumption which ignores international and structural differences in terms of inputs and processes used in production in different countries. Secondly, the supposed unconditional convergence in per capita growth rates does not seem to hold over long periods of time across nations (McCallum 1996) and thus it has been refuted in the works of Barro (1991) and Quah (1996). On the contrary, the new growth theory set on Verdoorn's law emphasizes endogenous technological progress and externalities and favours conditional convergence. Verdoorn's law describes a simple long-run relation between productivity and output growth which states that there is a direct spillover relationship between higher output growth and productivity growth in the long-run due increasing returns to scale. Advocates of the new-growth theory criticise the neoclassical growth theory stating that endogenous factors play a more significant role in economic growth (Sokoloff and Engerman 2000).

Early convergence theorists believed that developing countries have the potential to grow at a rate faster than developed countries because diminishing returns are not as strong as in capital-rich countries and poor countries can easily replicate the production methods, technologies, and institutions of developed countries. Some believed that for convergence to occur, countries must have the necessary social capabilities including involvement in global markets, technological innovation, and the ability to attract capital in order for them to benefit from catch-up growth (Abramovitz 1986). According to Abramovitz (1986), these prerequisites explain why there is still divergence in the world today.

Empirical literature provides a plethora of findings on the convergence hypothesis for countries in Africa and abroad. Baumol's (1986) study is one of the first studies conducted in the convergence debate. The study tested the theory of unconditional convergence by performing a univariate growth regression and analysing real per capita incomes from 1870 to 1979 for the Maddison 16 industrialised countries, namely; Australia, Austria, Belgium, Canada, Denmark, France, Finland, Germany,

Italy, Japan, Netherlands, Norway, Sweden, Switzerland, United Kingdom, United States. Although the evidence suggests convergence for the countries, Baumol (1986) finds it difficult to draw a collective inference. An extension of the study based on 72 countries for the period 1950 to 1980 with a focus on GDP per capita growth shows no evidence of convergence. By grouping the countries Baumol (1986) argues that the 16 industrialised countries in his initial regression are not the only group that has converged; suggesting more than one convergence club. However, De Long (1988) critiques that Baumol's study suffers from sample selection bias because the study involved a selection of countries that were relatively rich and had already converged in 1870 and any nation that was relatively rich in 1870 but did not converge, failed reach the Maddison sixteen group of countries. De Long (1988) modified the statistical bias by adding six additional countries to the Maddison's 16; Argentina, Chile, Ireland, New Zealand, Portugal, Spain, and then East Germany. Contrary to Baumol's (1986) findings, De Long's (1988) analysis finds that estimates of early per capita growth for a wider less biased sample of countries exhibits little sign of convergence.

Barro's (1991) study made a significant contribution to empirical literature on the convergence debate. Barro (1991) confirmed convergence effects through a beta convergence analysis using a uniquely formed beta convergence model with panel data regression techniques. This paved the way for other studies on the convergence hypothesis with authors including Friedman (1992), Quah (1993), Bernard and Durlauf (1996) and Evans and Karras (1996) suggesting a different approach studying convergence focusing on the stationarity of income disparities across countries as opposed to a model which assumes a negative and statistically significant relationship between real GDP per capita over time and the economic level measured by the initial per capita GDP variable (Arbia, Basile, and Piras 2005). The authors argued that sigma convergence reflects the actual convergence more accurately than beta convergence.

Only few studies have been conducted to examine macroeconomic convergence in African countries (Khan and Kumar 1993; Harvey 2000; Yao and Zhang 2001; McCarthy and Du Plessis 2001; Sachs, Bajpai, and Ramiah 2002; Paap, Franses, and van Dijk 2005; Rossouw 2006; Cuñado and Pérez de Gracia 2006; Burgess 2009; Zyuulu 2010), very few of which have used the time series method (McCoskey 2002; Dobson, Goddard, and Ramlogan 2003; Guetat and Serranito 2007; Charles, Darné, and Hoarau 2010; Nwosu et al. 2013; Hammouda et al. 2007; Hadizadeh 2019).

Firstly, Harvey (2000) investigates the macroeconomic convergence in SADC member countries in an attempt to establish whether Free Trade Agreements (FTA), the SADC in particular need macroeconomic convergence in order to succeed. Harvey argues that the establishment of an FTA is not reliant on macroeconomic policy convergence although it is necessary for sustaining the FTA over time. Additionally, Burgess (2009) reiterates that achieving the FTA's objectives may be neither necessary nor sufficient to achieve good macroeconomic results and the absence in sustained political commitment, the irregular growth path of national economies in addition to other factors hinder the macroeconomic convergence potential, thus, countries need to coordinate their economies policies to achieve maximum benefits otherwise not possible (Zyuulu 2010).

McCarthy and Du Plessis (2001) emphasize three distinct concepts of convergence: the long run economic convergence or 'catch up'-growth; macroeconomic convergence; and convergence in macroeconomic policies. Studies in empirical literature have equally investigated all the abovementioned types of convergence. McCoskey (2002) examines the convergence of 37 Sub-Saharan African countries using Im, Pesaran, and Shin (2003) panel unit root test and the McCoskey and Kao (1998) panel cointegration test. McCoskey finds no evidence of time series convergence across the used sample for the real GDP-based variables. Dobson, Goddard, and Ramlogan (2003) investigate the process of cross-country growth and convergence in a sample of 80 countries in the developing world by using dynamic panel unit root tests to test the convergence hypothesis. The study uses the variable real per capita GDP covering the period 1960-1995 grouping the 80 countries into regions; Asia/Pacific, Africa and Latin America/Caribbean. Dobson, Goddard and Ramlogan (2003) report that the results establish that convergent behaviour is close to none for the Asia/Pacific region, there is little convergence in certain countries within the Africa and Latin America/Caribbean regions. Overall the results appear to be in favour of some of the main hypotheses of both neo-classical and new growth theories.

In the same vein, Charles, Darné, and Hoarau (2010) test the possibility of stochastic convergence of real per capita GDP for a set of Eastern and Southern African countries belonging to the COMESA free trade agreement using the panel unit-root tests developed by Levin, Lin, and Chu (2002), Im, Pesaran, and Shin (2003) and Bai and Ng (2004). The authors establish that there is no existing stochastic convergence for the COMESA

countries. While, Nwosu et al. (2013) study tests Total Factor Productivity convergence in Africa with data spanning between 1960 and 2003 using a panel unit root method. This particular study stems from a generally accepted evidence of growth in per capita income and GDP as a result of growth in TFP and subsequent growth of neighbouring countries. The findings of this study find zero evidence of unconditional TFP convergence in Africa contrary to claims of exogenous growth theorists. Notably, little attention has been concentrated to the convergence hypothesis among the countries within African continent. On this subject, Hammouda et al. (2007) makes a significant contribution to empirical literature. Hammouda et al. (2007) investigate the convergence of macroeconomic convergence and its relationship to economic growth in the following regional economic communities in Africa; SADC, COMESA, ECOWAS, CEMAC and UEMOA for a quarterly period spanning between 1987 and 2004. A various number of methods is used in this study, including cross-country dispersion, Unit root testing (DGLS unit root test and the IPS panel unit root test), and cointegration analysis. The study finds that although there appears to be evidence of macroeconomic convergence in the various African RECS, it does not translate to expected higher growth levels. This is supported by the fact that although the various communities displayed a stable macroeconomic setting in the recent years, there is very little growth associated with it, a reality the paper attributes to the many internal and external challenges Africa still finds itself in.

More recently, Hadizadeh (2019) studies the convergence club hypothesis among MENA countries for the period 1990–2015. This study somewhat relates to that of Guetat and Serranito (2007) on income convergence on MENA countries between 1960–1990 and 1960–2000. The researchers establish existence of convergence for the sample for both periods. While Hadizadeh's (2019) study on club convergence finds that six of the 15 MENA countries form a high-income club and the remaining nine form a low-income club. Whereas a majority of researchers employ traditional unit root tests to test for convergence, in this study we employ a Fourier-based unit tests to strengthen the power of our estimation results.

Trade Relations between South Africa and Its Trading Partners

According to the World Bank classification of countries, South Africa ranks as an upper-middle income country along with its trading partners Botswana, China, and Namibia. Eight of the 15 trading partners included

in this study, namely; Belgium, Germany, Japan, Netherlands, South Korea, United Arab Emirates, United Kingdom, and United States are classified as high income countries; while India, Mozambique, Zambia and Zimbabwe are listed as lower-middle income countries. Together these economies received about 64.4% of South African exports in 2018. Table 1 shows the ranking of the countries from the first to the 15th top trading partner.

South Africa's growth is often compared with some developed and newly industrialised countries in the upper middle-income and high-income categories; such as China, Japan, and many OECD and EU member countries. Within the EU, Germany, United Kingdom, Netherlands, and Belgium are South Africa's biggest and most important trading partners. The four countries are South Africa's biggest export destinations in the EU, with Germany being the biggest trading partner in the EU followed by the United Kingdom, Netherlands, and Belgium. In 2018, Belgium, South Africa's fourth largest trading partner in the EU received exports worth US$ 2.44 Billion from South Africa and imported US$ 1.05 Billion worth of goods to South Africa (United Nations Comtrade, 2018). The country vowed to elevate trade relations with South Africa, signing a memorandum of understanding on enhanced cooperation which includes joint commission on bilateral trade agreements and intensity on economic ties between the two. Belgium has remained a top trading partner for South Africa and is among the country's top 10 investors from the EU. Whereas, relations between South Africa and the Netherlands can be traced back to 1652 when the Dutch East India Company, arguably the greatest and most successful company in history, created a trading post in Cape Town. Since then, relations between South Africa and the Netherlands have particularly strengthened since 1990.

In the same high-income category Japan, South Korea, United Arab Emirates, and the United States are among South Africa's top trading partners in the developed first world. The United States and UAE are committed to promoting international trade with South Africa. The US is one of South Africa's key trading partners in the world and the two countries have enjoyed a solid bilateral trade relationship which has maintained a consistent pattern of expansion since 1994. The UAE and South Africa strengthened their economic ties and have taken trade and economic relations to a higher level since they established formal diplomatic ties in 1994. The two countries have further committed to expanding cooperation in exploiting opportunities in the ocean economy, promoting ex-

TABLE 1 South Africa's Top 15 Trading Partners

Country	Exports	Imports	Import goods	Export goods
China	8.54	17.08	Plastics, machinery, nuclear reactors, boilers, articles of iron and steel	Yarn and fabric, iron and steel, animal hair, ores slag and ash
Germany	6.7	9.12	Commodities, Vehicles, machinery, electric and electronic equipment	Vehicles, earls, metals and precious stones, ores slag and ash
United States	6.4	5.53	Machinery, nuclear reactors and boilers, vehicles, electric and electronic equipment	Iron and steel, mineral products, precious metals, vegetable products
United Kingdom	4.81	8.05	Pearls and precious stones, edible fruits and nuts, vehicles	Pearls and precious stones, vehicles, edible fruits and nuts
Japan	4.48	2.85	Machinery, nuclear reactors, rubbers, iron and steel, commodities (not specified to kind)	Pearls, precious stones and metals, iron and steel, aluminium
India	4.42	3.85	Vehicles, pharmaceutical products, mineral fuels and oils	Mineral fuels, oils and distillation products, machinery, inorganic chemicals
Botswana	4.07	3.87	Plastics and rubber, live animals, machinery, precious metals and stones	Mineral products, machinery, precious metals, prepared foodstuffs
Namibia	3.56	0.94	Pearls, precious stones, live animals, meat and seafood, ships and the floating structure	Electrical and electronic equipment, articles of iron and steel, beverages
Mozambique	3.22	0.98	Aluminium, ores slag and ash, edible fruits, printed books and material	Mineral fuels and oils, machinery, iron and steel
Netherlands	3.1	1.15	Machinery, mineral fuels and oils, plastics, animal and vegetable products, organic chemicals	Edible fruits, inorganic chemicals, ores slag and ash, iron and steel

Continued on the next page

port of South African agricultural products and manufactured products.

In the Asian region, China remains South Africa's biggest trading partner and is South Africa's top trading partner in the world taking US$ 8.54

TABLE 1 *Continued from the previous page*

Country	Exports	Imports	Import goods	Export goods
Belgium	2.44	1.05	Miscellaneous chemical products, plastics, mineral fuels, distillation products	Vehicles, pearls, metals and precious stones, iron and steel
Zambia	2.42	2.73	Machinery, fertilizers, plastics, electrical and electronic equipment	Machinery, vehicles, plastics, iron and steel
Zimbabwe	2.31	0.27	Tobacco and tobacco substitutes, iron and steel, cotton, edible fruits	Machinery, fertilizers, iron and steel, electrical and electronic equipment
South Korea	1.9	1.05	Vehicles, electric and electronic equipment, organic chemicals	Mineral fuels and oils, vehicles, organic chemicals
United Arab Emirates	1.18	1.43	Mineral fuels and oil, copper, plastics, fertilizers	Pearls, precious stones and metals, iron and steel, edible fruits, vehicles

NOTES Compiled by author with data from UN Comtrade Database on international trade (https://comtrade.un.org).

billion or 9.1% of South Africa's total exports in 2018. In February 2019, the Asian region accepted R 31,004 million worth of goods, an increase of R 1,252 million from January 2019 and imported R 42,071 million, down from R 7,589 million from January 2019, thereby experiencing a trade deficit of R 11,067 million compared to R 19,909 million deficit recorded in January 2019. This is according to a report released by South African Revenue Services in March 2019. Bilateral trade between Japan and South Africa had been expanding since the establishment of full diplomatic relations in 1992. The Tokyo Agenda for Action cemented the trade relationship and greater co-operation between South Africa and Japan. South Africa exports mainly primary products such as mineral products, base metals and agricultural produce to Japan whilst importing technology-intensive goods from Japan. While the Japan-South Korea trade relationship is not particularly in good shape, South Africa has good relations with the country, with Japan being South Africa's fifth top trading partner taking 4.7% worth of exports from South Africa and is followed by South Korea with 2%. The latest South African Revenue Services trade statistics show that China, Germany, United Kingdom, United States, and Japan were South Africa's top export destinations for July 2019 and China, Germany, United States, India, Saudi Arabia were top import destinations.

In the African region, South Africa, Botswana, Namibia, Mozambique, Zambia, and Zimbabwe form a part of the SADC trade partnership. The African countries have a healthy trade relationship built on mutual goals based on economic, political, and trade interests. Botswana is South Africa's top trading partner in the African region, followed by Namibia, Mozambique, Zambia, and Zimbabwe. Through the signing of the SADC trade protocol, the FTA has eliminated about 85% of customs duties on trade in goods produced in the region allowing free movement of goods.

Methodology

We borrow our empirical specification from Bernard and Durlauf (1996) and Evans and Karras (1996) who define convergence as a state in which the deviations of the real per capita GDP (i.e. $y_{1,t+i}, y_{2,t+i}, \ldots, y_{N,t+i}$) from their trading partner's per capita averages $\overline{y}_t$ can be expected to approach constant values as i approaches infinity:

$$\lim_{i\to\infty} E_t(y_{n,t+i} - \overline{y}_{t+i}) = \mu_n. \tag{1}$$

From equation (1), convergence is assumed to exist if the series $y_{n,t+i} - \overline{y}_{t+i}$ is a stationary, I(0) process, otherwise if the series is integrated of order I(1) or higher, then the real per capita GDP's diverge from each other over the long-run. Suppose we define $z_t = y_{n,t+i} - \overline{y}_{t+i}$ and consider the following stochastic model for z_t:

$$z_t = d(t) + e_t, \tag{2}$$

where $d(t)$ is a time varying determinist component which we assume to unknown and e_t is a well-behaved disturbance term with properties $N(0, \sigma^2)$. Following Christopoulos and Leon-Ledesma (2010) and Ender and Lee (2012) we employ a single frequency Fourier series to approximate the unknown number of breaks in the unknown form of $d(t)$ as:

$$d(t) = \alpha_0 + \alpha_1 \sin\frac{2\pi kt}{T} + \alpha_2 \cos\frac{2\pi kt}{T}, \tag{3}$$

where k is the frequency and 1 and 2 measure the amplitude and displacement of the frequency component. In substituting (3) into (2) results in the following formal testing model:

$$z_t = \alpha_0 + \alpha_1 \sin\frac{2\pi kt}{T} + \alpha_2 \cos\frac{2\pi kt}{T} + e_t. \tag{4}$$

And from equation (4), the unit root null hypothesis is tested as:

$$\text{H0: } e_t = v_t,\ v_t = v_{t-1} + h_t, \tag{5}$$

where h_t is assumed to be integrated of order I(0) with a zero mean. The unit root testing procedure is then carried out in three steps as outlined in Christopoulos and Leon-Ledesma (2010). Under the first step, we estimate regression (5) using values of k ranging from 1 to 5 and determine the optimal value of k (i.e. k^*) as being associated with the regression which produces the lowest sum of squared residuals (SSR). Once k^* is determined, then we extract the residuals from the corresponding estimated regression:

$$\hat{e}_t = z_t - \left[\hat{\alpha}_0 + \hat{\alpha}_1 \sin \frac{2\pi kt}{T} + \hat{\alpha}_2 \cos \frac{2\pi kt}{T}\right]. \tag{6}$$

Under the second step, we test the residuals defined in equation (6) and use two unit testing regressions to examine the integration properties. The first test is based on the conventional ADF unit root tests:

$$e_t = \beta_1 e_t + \sum_{k=1}^{n} \beta_2 \Delta e_{t-1} + u_t,\ u_t \sim N(0, \sigma^2). \tag{7}$$

The second testing procedure is based on that described in Kapetanois, Shin, and Snell (2003) and can be formulated as:

$$e_t = \beta_1 e_t^3 + \sum_{k=1}^{n} \beta_2 \Delta e_{t-1} + u_t,\ u_t \sim N(0, \sigma^2). \tag{8}$$

From both regressions (7) and (8), the unit root hypothesis is tested as

$$\text{H0: } \beta_1 = 0. \tag{9}$$

And the test is evaluated by comparing the t-statistics associated with the 1 coefficient against the critical values reported in Christopoulos and Leon-Ledesma (2010). The third step of the modelling process involves validating the nonlinear trend captured by the Fourier function. This is achieved by testing the following hypothesis in regression (4):

$$\text{H0: } \alpha_1 = \alpha_2 = 0, \tag{10}$$

which is then evaluated using a F-test denote as $F(k^*)$ and we use the critical values reported in Enders and Lee (2012). If the null hypothesis is rejected then we can be confident that the series is stationary around a deterministic function.

Data and Empirical Analysis

DATA DESCRIPTION

The data used in our study has been sourced from the World Bank online statistical base and we collect a total of 16 time series variables corre-

TABLE 2 Summary Statistics of per Capita GDP Differences between South Africa and Her Trading Partners

Country	(1)	(2)	(3)	(4)	(5)	(6)	
Belgium	−1.41	−1.23	2.84	−5.92	−0.22	2.18	0.34
Botswana	−4.55	−2.89	6.54	−23.47	5.68	16.18	0.00
China	−5.96	−6.99	27.86	−17.38	7.14	205.50	0.00
Germany	−1.48	−1.31	3.20	−7.77	2.89	1.78	0.41
India	−2.44	−2.35	8.61	−9.35	3.87	3.69	0.16
Japan	−2.25	−1.73	6.44	−11.02	3.68	0.92	0.63
Mozambique	−2.31	−2.47	12.88	−15.18	5.19	7.21	0.03
Namibia	−0.70	−0.63	5.17	−8.87	3.21	3.10	0.21
Netherlands	−1.28	−1.53	4.03	−6.20	2.55	1.33	0.51
South Korea	−5.15	−4.42	7.12	−16.10	4.65	0.03	0.98
UAE	2.22	1.68	17.25	−14.35	6.85	0.13	0.94
UK	−1.15	−1.21	6.04	−8.70	3.02	0.00	0.99
US	−1.14	−0.90	5.11	−8.15	2.86	0.15	0.93
Zambia	0.56	−0.15	11.66	−9.69	4.17	1.48	0.48
Zimbabwe	0.11	−0.31	20.31	−16.51	7.45	0.89	0.64

NOTES Column headings are as follows: (1) mean, (2) median, (3) maximum, (4) minimum, (5) standard deviation, (6) JB, (7) probability.

sponding to the per capita GDP growth rates collected for South Africa and her 15 main trade partners i.e. Belgium, Botswana, China, Germany, India, Japan, Mozambique, Namibia, Netherlands, South Korea, United Arab Emirates (UAE), United Kingdom (UK), United States (US), Zambia and Zimbabwe. The series covers a period of 1961 to 2018 with the exception of Germany (1971–2018), Mozambique (1981–2018), Namibia (1981–2018) and the UAE (1975–2018). Our empirical series is constructed by subtracting the per capita GDP of the individual trading partners from the South Africa's per capita GDP with the summary statistics of the resulting series being reported in table 2 and their time series plots being provided in figure 1.

As can be observed from table 2, the averages of per capita GDP differences are negative between South African and her major trading partners with the exception of UAE, Zambia and Zimbabwe. Moreover, figure 1 more-or-less shows that time series plot for the income differences between South Africa and her trading partners are not monotonic in nature

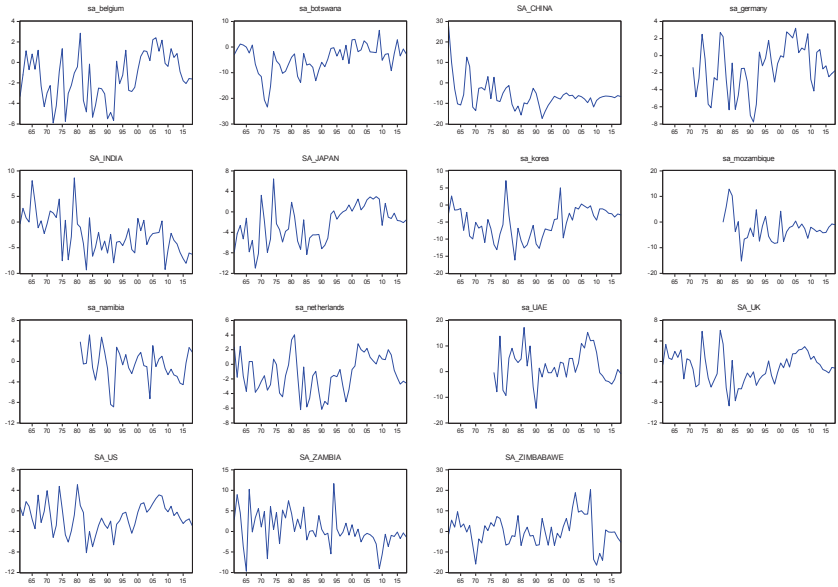

FIGURE 1 Time Series Plots of per Capita GDP Differences between South Africa and Her Trading Partners

and appear to plagued with a number of structural breaks as well as asymmetries over the long-run.

EMPIRICAL ANALYSIS

Table 3 presents the conventional unit root tests results for the ADF unit root tests along with the ESTAR unit root tests of Kapetanois, Shin, and Snell (2001). Note that we perform the both ADF and KSS tests on our series of per capita GDP differences using HAC variance-covariance matrix to deal with possible serial correlation and heteroscedasticity which may exist in the unit root testing regressions. The practicality of this approach to unit root tests is expounded in the studies of Kew and Harris (2009) as well as Demetrescu (2010). Note that we also add lags differences of the per capita GDP differences as an additional measure of robustness, with the optimal lag lengths being selected through a minimization of the modified Schwartz (SC) information criterion. From the results presented in table 3, both ADF and KSS test statistics reject their respective null hypotheses of unit root processes in favour of stationary series in all cases with the exception of the ADF test performed on per capita GDP differences between South Africa and Japan. Collectively, the results insinuate that South Africa tends to converge, over the long-run, towards

TABLE 3 Conventional Unit Root Tests

Country	ADF	KSS	Country	ADF	KSS
Belgium	−4.59***(0)	−2.48**(1)	Netherlands	4.31***(0)	−3.53***(3)
Botswana	−5.49*** (3)	−2.12* (2)	South Korea	−4.27***(0)	3.15***(0)
China	6.62***(0)	−3.42***(1)	UAE	−4.56***(0)	−3.56***(1)
Germany	−3.92***(0)	−2.88***(0)	UK	−4.84***(0)	−4.08***(0)
India	−5.38***(0)	−2.68**(1)	US	−4.63***(0)	−3.46***(0)
Japan	1.87 (3)	−2.22**(2)	Zambia	−4.68***(1)	−3.02***(1)
Mozambique	−4.32***(0)	−2.63***(0)	Zimbabwe	−4.61***(0)	−4.55***(1)
Namibia	−4.84***(0)	−3.95***(1)	Netherlands	4.31***(0)	−3.53***(3)

NOTES ***, **, and * denote the 1 percent, 5 percent and 10 percent significance levels, respectively.

the per capita GDP growth differences with both lower income (i.e. Zambia and Zimbabwe) and higher income (i.e. Belgium, Botswana, China, Germany, India, Japan, Mozambique, Namibia, Netherlands, South Korea, the UAE, the UK and the US) trading partners. However, these findings are not altogether conclusive as the ADF and KSS are notoriously known for ignoring important structural breaks in the data which may results in Type 1 error where the null hypothesis of a unit root can be wrongly rejected in favour of the stationary alternative (Enders and Lee 2012).

In view of the possible spurious results obtained from the conventional unit root tests, we proceed to report the findings obtained from our Fourier-based testing procedures. To re-call, we prefer the FFF unit root tests over other structural break unit root tests, as we do not need to know 'a priori' the exact break-dates and neither do we need to be concerned about the number of structural breaks existing in the data. Table 4 presents the findings obtained from the FFF-based tests for the ADF (i.e. FADF) and the KSS (i.e. FKSS) as described in Christopoulos and Leon-Ledesma (2010). The modelling process of the FFF-based test is instigate by selecting the optimal frequency, k^*, which is determined by the 'Fourier regression' which produces the lowest SSR after estimating across a range, $1 < k < 5$. These values are reported in the second and third columns of table 4, and as can be observed, the optimal frequency differ amongst the data but are constrained to $k^* = 2, 4, 5$. The fourth and fifth columns present the FADF and FKSS unit root tests statistics. Note

TABLE 4 FFF-Based Results

Country	Min SSR	k^*	FADF	FKSS	$F(k^*)$
Belgium	327.85	4	−9.05***(1)	−3.34***(1)	23.54***
Botswana	1404.38	4	−5.70*** (3)	−2.89** (3)	27.94***
China	2150.10	4	−7.49***(0)	−3.23***(2)	35.48***
Germany	394.99	5	−7.53***(1)	−3.86***(2)	6.92
India	1173.69	2	−7.30***(4)	−2.81**(3)	17.64***
Japan	801.20	5	−8.12***(2)	−3.16***(3)	26.67***
Mozambique	1310.59	5	−6.44***(1)	−2.96***(2)	7.23*
Namibia	562.30	5	−6.31***(4)	−2.19*(3)	8.74*
Netherlands	342.18	2	−6.37***(4)	−4.52***(6)	19.29***
South Korea	1215.66	4	−6.96***(2)	−3.50***(2)	35.68***
UAE	2574.34	5	−10.45***(0)	−6.14***(0)	6.54*
UK	612.36	4	8.09***(2)	−3.38***(3)	16.08***
US	513.26	5	−7.35***(2)	−4.64***(3)	26.48***
Zambia	1932.37	5	−9.08***(3)	−1.29(3)	19.84***
Zimbabwe	3419.39	4	6.13***(3)	−1.11(1)	16.14***

NOTES ***, **, and * denote the 1 percent, 5 percent and 10 percent significance levels, respectively.

that the FADF test statistics, which only account for smooth structural breaks, unanimously produces statistics which manage to reject the unit root null hypothesis at all levels of significance. However, the FKSS test statistics which account for both ESTAR-type nonlinearities and smooth structural breaks, reject the unit root null hypothesis for all series with the exception of the per capita GDP growth differences between South Africa and (i) Zambia and (ii) Zimbabwe. The final column reports the $F(k^*)$ statistics which tests for the presence of significant nonlinearities in the data series. All reported F-statistics manage to reject the null hypothesis of no nonlinear trends in the data and favours the use of Fourier functions in capturing such asymmetries in the data.

Conclusions

Convergence effects between developing or emerging economies and more industrialized countries has been the centrepiece of the debate on the growth dynamics. Our study sought to investigate the convergence effects between South Africa and her top 15 trading partners (i.e. Bel-

gium, Botswana, China, Germany, India, Japan, Mozambique, Namibia, Netherlands, South Korea, the UAE, the UK, the US, Zambia and Zimbabwe) using unit root testing proposed framework as proposed by Quah (1993). In differing from previous studies, our study relied on more advanced Fourier-based unit root tests which are robust to asymmetries and unobserved smooth structural breaks. Our empirical approach examines the integration properties of the per capita GDP growth differences between South Africa and her individual trading partners.

Our preliminary analysis, constituting of conventional ADF and KSS unit root tests, provides overwhelming evidence of convergence effects between South Africa and all her main trading partners, regardless of whether the trading partners are more advanced or less advanced than South Africa. In proceeding to apply the more robust Fourier-based tests, particularly that which is robust to ESTAR-type asymmetries and smooth structural breaks, we observe convergence between South Africa and her more advanced, international trading partners (i.e. Belgium, Botswana, China, Germany, India, Japan, Mozambique, Namibia, Netherlands, South Korea, the UAE, the UK and the US) whereas lacking evidence of convergence effects with her less developed, African trading partners (i.e. Zambia and Zimbabwe)). The policy implications from our findings confirm trade as an avenue through which South Africa can 'catch-up' to other more industrialized economies. The specific trade products which South Africa needs to focus on as a means of facilitating a quicker convergence path towards the growth rates of more industrialized economies, is an endeavor which we reserve for future research opportunities.

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Leadership as a Determinant of EFQM Excellence: Model Implementation in Slovenian Higher Education Institutions

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One major means to address stakeholder pressures concerning the improvement of the higher education services is the use of Business Excellence Models (BEMS) which attracted attention of both academics and practitioners. In particular, this study aims to assess the applying of the leadership criterion in the higher education institutions according to European Foundation for Quality Management (EFQM) Excellence Model. The study draws upon Common Assessment Framework (CAF) 2013 and EFQM 2013 model as references to measure the key leadership dimensions. Using empirical data based on a large-scale survey among employees within Slovenian higher education institutions (HEIS) this paper utilized the Partial Least Squares Path Modeling (PLS-PM) in order to investigate the relationships between leadership dimensions and influential factors regarding the adoption of the EFQM model in HEIS. The results showed that two leadership dimensions directly influence the implementation enablers (i.e. the perception of the employees regarding the influence of the leadership dimensions on the EFQM Excellence Model implementation), while other dimension indirectly influence the implementation enablers. The main conclusion is that a greater engagement in leadership criterion serves as a driving force of the EFQM Excellence model adoption in HEIS. The paper contributes to an ongoing discussion of a need of excellence models being adapted in higher education institutions. Hence, by investigating the leadership criterion of the EFQM Excellence Model, this study reinforces previous findings highlighting the need to integrate quality management perspective within the frame of higher education sector.

Key Words: CAF, EFQM, higher education, leadership, excellence, PLS-PM
JEL Classification: M12, I21, I23

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Introduction

Nowadays, higher education institutions (HEIS) face important challenges, such as the need of responding to diverse social demands, increase of educational spending as well as the need to adapt to the new age of information and knowledge (Calvo-Mora, Leal, and Roldan 2006). Stensaker (2007) states that the assurance of quality is becoming an important part of HEIS. According to Brennan and Shah (2000), the processes of establishing of quality assurance influences the balance of powers inside the HEI as well as has an important impact on the manner of decision-making. A transparent way of accomplishing the whole process of quality should force the leaders of HEI to make rational decisions and support the latter with evidence. Murgatroyd and Morgan (1993) insist that no approach to quality can work if there are no completely engaged leaders, who enable the emergence of philosophy and quality culture. These leaders must develop three dimensions of management, which are trust, transferring the power onto the employees and involving of other stakeholders in management.

In last decades, different approaches have been adopted for the introduction of quality management in HEIS, such as self-assessment and external assessment of the institutions, accreditation and certification systems as well as different models of Total Quality Management – TQM (Wiklund et al. 2003). Accordingly, the spread of self-evaluation, considered as the essential requirement for continuous performance improvement and benchmarking, is supported by the adoption of quality models such as the European Foundation for Quality Management (EFQM) model and Common Assessment framework (CAF) thoroughly tested in the public and private sector (Cappelli et al. 2011). It could be argued that self-assessment and quality management systems are important in HEIS (Tarí 2006; Srikanthan and Dalrymple 2004). As argued by Tarí (2006) the development of leadership within HEI is important in any continuous improvement process.

Prior literature has extensively addressed the leadership from a wide array of perspectives. As pointed out by Rao Tummala and Tang (1996) leaders are responsible for creating clear and visible quality values and high expectations and for integrating them into the way the organization operates. This requires their strong personal commitment and involvement. Leaders must take part as role models in the creation of strategies, systems, and methods for achieving excellence in quality. Laksh-

man (2006) highlighted that the role of leadership in managing quality is relatively unaddressed in the leadership literature. Several researchers in the quality management literature have pointed to the importance of the role of leadership in managing quality (e.g. Kaynak 2003; Sila 2007). There seems to be a strong consensus among the founders of the quality movement as far as the importance of leadership to managing quality is concerned (Dahlgaard Park 2011; Idris and Zairi 2006; Kanji 2008). The above arguments are supported by prior studies (e.g. Eskildsen and Dahlgaard 2000) which emphasise the positive association between leadership and the other key TQM implementation factors.

The importance of leadership has been discussed also in the context of the HEI environment. Prior studies (Osseo-Asare, Longbottom, and Murphy 2005; Calvo-Mora, Leal, and Roldan 2006) have highlighted that leadership is a key factor in the success of the EFQM implementation in higher education institutions. Furthermore, Flumerfelt and Banachowski (2011) identified several key leadership paradigms for improvement in higher education (e.g. allocating resources, clarifying roles and responsibilities, communication, planning etc.), especially those related to quality and business excellence models. It is argued that these paradigms eventually improve the quality of services in higher education.

The importance of leadership in Slovenian educational system, can also be confirmed in the work of Sentočnik (2012) who suggests that note that leadership of HEI represents a critical lever to create and maintain an efficient HE, which encourages higher student achievements (Hallinger and Heck 1996; Leithwood et al. 2007). In recent years, dispersed leadership has achieved more attention, especially because of understanding leadership as a function that serves as interaction of all stakeholders of HEI (Spillane and Camburn 2006). The model of dispersed leadership represents powerful stress on the performance of HEI as a whole, and allows more focus on the relations between leaders of HEI, as the preparation for managing and developing HEI shows the complexity of leading roles and a rise in pressure and responsibility.

Although there are an increasing number of higher education institutions (HEIS) adopting self-assessment (Hides, Davies, and Jackson 2004; Nenadál 2015), little empirical literature exists analysing the interrelationships between leadership dimensions and the factors that influence the decision to adopt excellence model in HEI. In particular, this study examines the leadership dimensions as determinants to adopt the EFQM model within Slovenian HE environment.

The paper begins with a theoretical background regarding the quality initiatives in HEIS followed by a methodology section. Based on the studied literature, the research framework is proposed which is empirically validated by the survey results obtained among Slovenian HEIS. The empirical findings then demonstrate the interrelationships between leadership dimensions and provide insights regarding the influential factors of adopting the EFQM model in HEIS. The paper finishes with a discussion of the results and reaches a number of conclusions.

Theoretical Background and Research Framework Development

Based on extensive literature studies (e.g. Vakalopoulou, Tsiotras, and Gotzamani 2013; Cappelli et al. 2011) related to the quality initiative in public sector we have developed the research framework for investigating the interrelationships between leadership dimensions as shown in figure 1. In recent years, some scientific papers have paid attention to the relationships in the EFQM model (e.g. Calvo-Mora, Leal, and Roldan 2005; Gómez Gómez, Martínez Costa, and Martínez Lorente 2011; 2015). Previously, some other studies had analysed the relationships in the CAF model (e.g. Raharjo et al. 2015). Relying on findings demonstrated by these studies, this paper is focused on studying the relationships between leadership dimensions adopted from CAF model and their impact on the decision (noted as implementation enablers in the proposed research framework) to implement EFQM model in HEI. It can be emphasised that leaders in both the public and the private sectors have to develop their own vision, mission and values and are considered as role models of total quality excellence culture (Oakland 2011). Drawing on these arguments one could argue that leaders have the ability to create culture that stimulate employees' motivation and commitment towards quality and improvement initiatives (Calvo-Mora, Leal, and Roldan 2006). From this perspective, prior studies (Dahlgaard et al. 2013; Dahlgaard Park and Dahlgaard 2010) have pointed out the importance of building culture corporate culture and values in the path towards organizational excellence. Furthermore, based on mission and vision leaders need to establish quality policy and measurable objectives in order to successfully the implementation of the quality initiatives, such as quality management system, CAF or EFQM (Vakalopoulou, Tsiotras, and Gotzamani 2013; Tarí 2006).

Several prior studies (Davies, Hides, and Casey 2001; Hides, Davies, and Jackson 2004) have analysed how the business excellence models could serve as a framework for addressing the challenges faced by HEIS

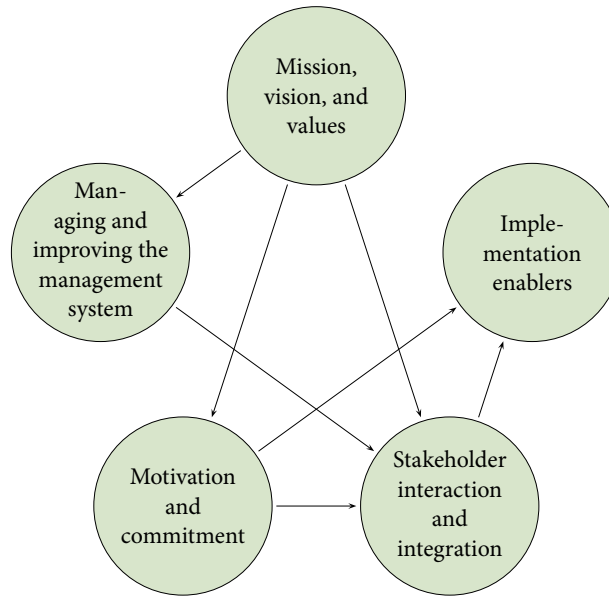

FIGURE 1
Research Framework

by the means of stakeholder pressure. As such, we argue that leadership through its efficient management system, through culture that create values, which in turn may shape the commitment of its employees, positively influence the stakeholder interaction and integration. Ultimately, this stakeholder focused strategy might have an important role in decision-making process to adopt and implement quality model, such as EFQM or CAF.

Research Framework and Methodology

MEASURES

In order to measure the key leadership dimensions, we took the Common Assessment Framework (CAF) 2013 and EFQM 2013 model as a reference. In this respect, the information included in the CAF and EFQM model is appropriate for developing measurement scales for the leadership dimension. Several topics were conceptualized to formulate the questionnaire, each tested on 7-point Likert scale. The Likert scale was based on the logic of the Plan – Do – Check – Act/Plan – Do – Check – Adjust (PDCA) system. In the subsequent empirical analysis 6-point scale was used, since the 7 corresponded to 'Prefer not to answer.' The following leadership dimensions were considered and validated in this study: mission, vision and values, managing and improving the management system, motivation

and commitment, stakeholder interaction and integration. These dimensions are based upon the CAF 2013 sub-criterion, namely: Sub-criterion 1.1 Provide direction for the organisation by developing its mission, vision and values; Sub-criterion 1.2 Manage the organisation, its performance and its continuous improvement; Sub-criterion 1.3 Motivate and support people in the organisation and act as a role model; Sub-criterion 1.4 Manage effective relations with political authorities and other stakeholders. Apart from leadership dimensions, questionnaire consisted of the section (implementation enablers) which intended to capture the leadership dimensions by the means of the key success factors for the EFQM excellence model implementation. The last section of the questionnaire was devoted to general questions about respondents. The corresponding items for measuring the leadership dimensions are presented in table 5.

Sample and Data Collection

This study is based on the use of internet-based survey methodology. Therefore, online questionnaire was used in order to collect the data. The survey was carried out among employees in the Slovenian public and private higher education sector. 45 Slovenian HEIS were considered for the purpose of this study. The HEIS were selected from the list of accredited HEIS that is available on the website of the directorate for Higher Education. In particular, the questionnaire was sent out to 3500 HE teachers in the period from 4th March to 11th August 2014. Out of 3500 invited participants, 205 answered the questionnaire which yields a 5.86 % response rate. The distribution of the respondents according to age shows a generally similar pattern for males and females (51.6 % of males and 48.40 % of females). Thirty-nine percent of respondents are in the 46–55 age group, followed by 20.64 % of the respondents in the 26–35 age group. The distribution of the respondents according to the obtained degree shows that 58.59 % of the respondents obtained doctoral degree. Among all the respondents, 70.23 % of the respondents declared that their employment is regular and full-time. Based on the position of the respondents, 20.0 % of the respondents were full professors, 16.48 of the respondents were classified as scientific associates and 27.27 % of the respondents were teaching assistants. The majority of the respondents (30.16 %) have between 26 and 35 years of working experience, followed by 23.02 of the respondents who have 6 to 15 years of working experience. The largest percentage of respondents (43.61) indicated that they are employed at the University of Ljubljana.

ANALYSIS METHOD

In order to assess measurement model and structural model we utilized the Partial Least Squares Path Modeling (PLS-PM) using the R package plspm (Sanchez 2013). PLS-PM can be viewed from a broader conceptual perspective for analysing multiple relationships between blocks of variables. It is assumed that each block of variables plays the role of a theoretical concept represented in the form of a latent (unobserved) variable. A full path model is comprised by two sub-models: the structural model also known as inner model and the measurement model also known as outer model. The inner model is the part of the model that has to do with the relationships between latent variables. The outer model is the part of the model that has to do with the relationships between each latent variable and its block of indicators (Sanchez 2013). PLS-PM is a component-based estimation method (Tenenhaus 2008). PLS-PM uses an iterative algorithm that separately solves out the blocks of the measurement model and then, in a second step, estimates the path coefficients in the structural model (Esposito Vinzi, Trinchera, and Amato 2010).

Analysis and Results

MEASUREMENT MODEL ASSESSMENT

In general, PLS Path Model is formed by two sub-models: the structural or inner model, and the measurement or outer model. The structural model is the part of the model that addresses the relationships between the latent variables. In contrast, the measurement model is the part of the model that addresses the relationships of a latent variable with its block of manifest variables (Sanchez 2013).

In order to assess the outer model one must examine the loadings and the communalities. The loadings are correlations between a latent variable and its indicators. In contrast, communalities are squared correlations and they measure the part of the variance between a latent variable and its indicator that is common to both (Sanchez 2013). According to the literature (Sanchez 2013) loadings greater than 0.7 are acceptable. Results regarding the outer model assessment are presented in table 5. As can be seen from the table 5, the majority of indicators meet the threshold criterion of 0.7. There are few exceptions of values just below 0.7. Nevertheless, these indicators were also left in the model due to content considerations.

Besides checking the loadings of the indicators with their own latent variables, we must also check the cross-loadings that are available in the

TABLE 1 Summary of the Results Regarding the Block Unidimensionality

Item	(1)	(2)	(3)	(4)	(5)
LV1	A	7	0.951	0.960	5.42
LV2	A	10	0.937	0.946	6.39
LV3	A	10	0.940	0.949	6.49
LV4	A	10	0.895	0.914	5.16
LV5	A	4	0.729	0.831	2.21

NOTES Column headings are as follows: (1) mode, (2) MVS, (3) Cronbach's alpha, (4) Dillon-Goldstein's rho, (5) Eigenvalue. LV1 – mission, vision and values, LV2 – managing and improving the management system, LV3 – motivation and commitment, LV4 – stakeholder interaction and integration, LV5 – implementation enablers.

output of the plspm function. As such, we checked the cross-loadings matrix in order to identify any possible cross-loading.

Furthermore, the following indices were used to check unidimensionality: Cronbach's alpha, Dillon-Goldstein's rho and the first eigenvalue of the indicators' correlation matrix (table 1). The first column shows the type of measurement. In this case all the blocks are reflective. The Cronbach's alpha is a coefficient that is intended to evaluate how well a block of indicators measure their corresponding latent construct (Sanchez 2013). The alpha value for each block of indicators (i.e. latent variable) was well above the recommended value of 0.70, which is considered satisfactory for empirical research (Sanchez 2013; Hair et al. 2010). According to the literature Dillon-Goldstein's rho index has some advantage over the Cronbach's alpha because it takes into account to which extent the latent variable explains its block of indicators. As a rule of thumb, a block is considered as unidimensional when the Dillon-Goldstein's rho is larger than 0.7 (Sanchez 2013). As shown in table 1, Dillon-Goldstein's rho values are well abo the recommended value of 0.7. The third metric includes an eigen-analysis of the correlation matrix of each set of indicators. If a block is unidimensional, then the first eigenvalue should be larger than one. It appears that eigenvalues for our blocks of interest are much larger than one.

DESCRIPTIVE STATISTICS

Prior to further statistical analysis, we first investigated the descriptive statistics for study variables. The descriptive statistics for leadership dimensions are presented in table 2. Observing the study variables, one can see that the highest mean value corresponds to the implementation enablers (4.04), while the lowest value corresponds to the mission, vision

TABLE 2 Means, Standard Deviations and Correlations

Item	M	SD	(1)	(2)	(3)	(4)	(5)
(1) LV1	3.26	1.683					
(2) LV2	3.31	1.563	0.906**				
(3) LV3	3.39	1.681	0.846**	0.878**			
(4) LV4	3.42	1.521	0.742**	0.777**	0.821**		
(5) LV5	4.04	0.918	0.256**	0.317**	0.369**	0.380**	–

NOTES ** Correlation is significant at the 0.01 level (2-tailed).

and values (3.26). Moreover, the results indicate that the point estimate for the true mean of implementation enablers in the population is 4.04, and we are 95 % confident that the true mean is between 3.86 and 4.21, while the true mean for mission, vision and values lies between 3.16 and 3.80.

The results of the *t*-tests show that there is significant difference between mean values for the mission, vision and values (3.26) and the implementation enablers (4.04) ($t = -3.399$, $p = 0.01$), between managing and improving the management system (3.31) and implementation enablers (4.04) ($t = -4.278$, $p = 0.00$), between motivation and commitment (3.39) and implementation enablers (4.04) ($t = -3.785$, $p = 0.00$). The results also support significant difference between mean values for the stakeholder interaction and integration (3.42) and implementation enablers (4.04) ($t = -4.820$, $p = 0.00$).

Moreover, the bivariate Pearson correlation was used to measure the correlations among pairs of variables (leadership dimensions and implementation enablers). The results indicated positive relationships between included variables, with correlations ranging from 0.256 to 0.906 ($p < 0.01$). For instance, mission, vision and values shows the strongest correlation with managing and improving the management system ($r = 0.906$, $p < 0.01$). It appears that managing and improving the management system is strongly related to the motivation and commitment ($r = 0.878$, $p < 0.01$). Strong correlation was also found between mission, vision and values and motivation and commitment ($r = 0.846$, $p < 0.01$) as well as between motivation and commitment and stakeholder interaction and integration ($r = 0.821$, $p < 0.01$).

STRUCTURAL MODEL ASSESSMENT

The results regarding the assessment of the structural (inner) model are presented in table 3. One can inspect the R^2 that are the coefficients of de-

TABLE 3 Summary of the Results Regarding the Inner Model Assessment

Item	(1)	(2)	(3)	(4)	(5)
LV1	Exogenous	0.000	0.775	0.0000	0.775
LV2	Endogenous	0.683	0.639	0.4365	0.639
LV3	Endogenous	0.561	0.649	0.3639	0.649
LV4	Endogenous	0.647	0.515	0.3330	0.515
LV5	Endogenous	0.103	0.551	0.0566	0.551

NOTES Column headings are as follows: (1) type, (2) R^2, (3) block communality, (4) mean redundancy, (5) average variance extracted.

termination of the endogenous latent variables. The R^2 for 'Managing and improving the management system (LV2)' and 'Stakeholder interaction and integration (LV4)' are above 0.6 which under the PLS-PM standards can be considered as high value (Sanchez 2013). According to the results, lower amount of variance (10.3 %) in the 'Implementation enablers (LV5)' is explained by its independent latent variables.

Furthermore, average communality indicates how much of the block variability is reproducible by the latent variable. It seems that the highest value in this respect achieved the latent variable 'Mission, vision and values (LV1),' while the lowest value corresponds to the 'Stakeholder interaction and integration (LV4).' Mean redundancy represents the percentage of the variance in the endogenous block that is predicted from the independent latent variables. High redundancy indicates ability to predict. For example, 'Mission, vision and values (LV1)' predicts 43.65 % of the variability of 'Managing and improving the management system (LV2)' indicators.

AVE is the Average Variance Extracted which measures the amount of variance that a latent variable captures from its indicators in relation to the amount of variance due to measurement error (Sanchez 2013). As a rule of thumb, AVE greater than 0.50 is acceptable. According to the results, the AVE values for our inner model are above recommended value of 0.5.

Furthermore, the results of the inner model, that is, the path coefficients are presented in table 4 and visualized in figure 2. The path coefficients are calculated by ordinary least squares regressions between latent variables (Sanchez 2013). The direct effects are given by the path coefficients. The indirect effects are obtained as the product of the path coefficients by taking an indirect path. According to the results 'Mission,

TABLE 4 Path Coefficients

(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
LV1→LV2	0.8265	0.0000	0.8265	LV2→LV5	0.0000	0.0719	0.0719
LV1→LV3	0.7487	0.0000	0.7487	LV3→LV4	0.5728	0.0000	0.5728
LV1→LV4	0.0268	0.6286	0.6554	LV3→LV5	0.0284	0.1705	0.1989
LV1→LV5	0.0000	0.2163	0.2163	LV4→LV5	0.2976	0.0000	0.2976
LV2→LV4	0.2417	0.0000	0.2417				

NOTES Column headings are as follows: (1) relationships, (2) direct, (3) indirect, (4) total.

vision and values (LV1)' has a strong effect (0.8265) on 'Managing and improving the management system (LV2).' Mission, vision and values (LV1) also strongly effect (0.7487) the 'Motivation and commitment (LV3).' It appears that 'Motivation and commitment (LV3)' as well as 'Stakeholder interaction and integration (LV4)' influence the decision regarding the EFQM excellence model implementation in HEI, captured by the latent variable 'Implementation enablers (LV5).'

Observing the indirect effect, one can see that 'Mission, vision and values (LV1)' indirectly through LV2 and LV3 effects the 'Stakeholder interaction and integration (LV4)' (calculated as $0.8265 \times 0.2417 + 0.7487 \times 0.5728 = 0.6286$). Mission, vision and values (LV1) also indirectly effects (0.2163) the 'Implementation enablers (LV5).'

Overall, the findings suggest that 'Mission, vision and values (LV1)' is the most dominant among all the studied leadership dimensions. It significantly and directly relates to the three leadership dimensions.

Discussion and Conclusions

Recently, researchers have shown increasing interest in applying quality management models or excellence models in public sector (Raharjo et al. 2015). From this perspective, prior studies have investigated the applicability of these quality systems and models in higher education institutions (Mehralizadeh and Safaeemoghaddam 2010). This study, therefore, draws upon prior studies indicating that quality management practices, in particular the leadership practices, are at the core of an organization. Conceptually, leadership can be conceived as that combination of traits, values, attitudes, and behaviours that ultimately lead to the effective long-term performance of organizations (Lakshman 2006). This study is not solely focused on the issue of how to measure leadership excellence (Kanji

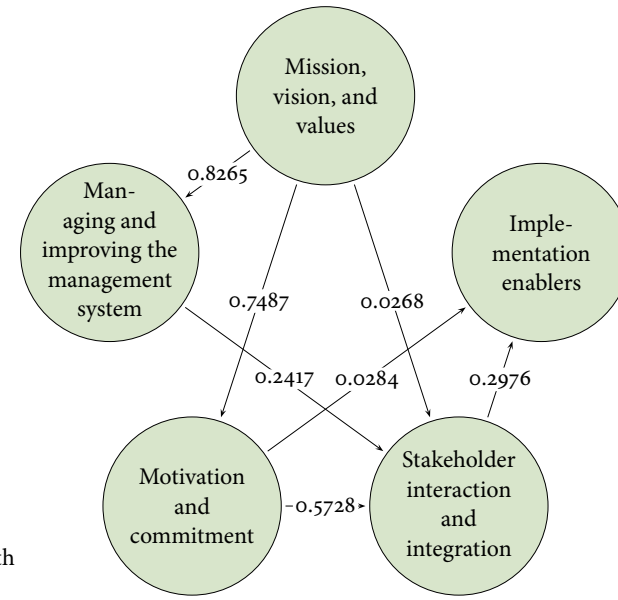

FIGURE 2

Inner Model with Path Coefficients

2008). Rather, the study explores how the dimensions of leadership criterion affect key success factors (i.e. implementation enablers) of the EFQM Excellence Model implementation in Slovenian higher education institutions. In this regard, this study contributes to the prior studies suggesting that the leadership criterion is one of the main contributor to the business excellence models (Karimi et al. 2013; Calvo-Mora, Leal, and Roldan 2005).

PLS-PM analysis was used to arrive at these conclusions, which seemed to be quite compelling. We have tested and found support for the interpretation that leadership dimensions positively impact the implementation enablers. In particular, results of the PLS-PM model suggest that the leadership dimension 'Mission, vision and values (LV1)' positively and directly influence three dimensions of leadership, namely: 'Managing and improving the management system (LV2),' 'Motivation and commitment (LV3)' and 'Stakeholder interaction and integration (LV4).' Therefore, it could be suggested that within higher education institutions where leadership is recognized as an important determinant of the EFQM excellence model implementation, there is stronger focus of their leaders to build proper quality culture, to develop management system as well as to integrate diverse range of stakeholders in their decisions. These findings provide further confirmation of previous studies (Kern

Pipan, Gomišček, and Kljajić 2014; Dahlgaard et al. 2013; Gómez Gómez, Martínez Costa, and Martínez Lorente 2011) that have emphasised the importance of management commitment, organizational culture, team work, values and communication in the successful introduction of TQM and business excellence models (BEMS) in the organizations. As suggested by Anyaleme (2007), the maintenance and improvement of the quality of higher education institutions must be the responsibility and full commitment of institutional leadership. Although our study is primarily focused on the leadership criterion, it should be noted that prior studies highlighted the inconsistency between leadership intention and the practices (Dahlgaard et al. 2013). Authors suggested that the culture aspect in terms of value, vision and mission building is explicitly focused under the leadership criterion, while this focus is more or less ignored in other enablers, such as strategy, partnership & resources as well as in the process criterion.

Likewise, our results provided evidence to support that 'Stakeholder interaction and integration (LV4)' positively and significantly effects the 'Implementation enablers (LV5).' It is argued that stakeholders' involvement is crucial for successful implementation of the EFQM Excellence Model. Accordingly, policy and strategy must be based on the needs and the expectations of key stakeholders of an organization (Calvo-Mora, Leal, and Roldan 2006). Successful implementation of the EFQM Excellence Model is not dependent just on stakeholder interaction and integration. Drawing on Davies (2008) one can conclude that EFQM Excellence Model should be integrated into the strategic planning systems of the organization as well as into other aspects of the organization. Moreover, Jackson (2001) argues that every effort must be made to actively involve all employees as fully as possible in continuous improvement activities. Furthermore, it is argued that internal evaluation process within HEI is potentially valuable, especially if this process becomes an integral part of each department and is performed on a continuous basis (Mehralizadeh et al. 2007).

Drawing on the results of the study, one can highlight several recommendations for the improvement of the leadership in Slovenian HE as well as the recommendations for the improvement of the different circumstances that are perceived as prerequisite for the implementation of the EFQM excellence model in Slovenian HE environment. Fundamental changes that are required for the successful implementation of the EFQM excellence model in Slovenian HE can be divided into several ar-

eas. It is argued that leadership is an essential element for the successful integration of the quality principles into the HE. Moreover, leadership is the important element for the transition from the existing quality systems to EFQM excellence model in Slovenian HE (Pungeršek et al. 2015). Leadership can be further classified into the following categories: public leadership and governance and leadership within HEI. Leadership in HEI is especially important in the context of achieving desired quality in all levels of the HEI. As suggested by the Dean and Bowen (1994), the management's commitment and leadership in quality must be visible, permanent and present on all management levels, since it acts as the guide and promoter of the total quality management implementation process. Furthermore, employees are also considered as an important element of the successful implementation of the EFQM excellence model in HEI. One can argue that EFQM excellence model should be in accordance with other organizational systems as well as its implementation and deployment should be based on full and active involvement of all employees (Davies 2008).

Political authorities and other key stakeholder should also be outlined when discussing the possibilities of improving the quality in HE. Ultimately, quality in HE is essentially a socio-cultural and political issue with underlying economical, technological and social implications (Mehralizadeh 2005; Stensaker 2007).

Furthermore, within the Slovenian HE environment it is essential to recognize the requirements of the Slovenian Quality Assurance Agency for Higher Education, since these can also influence the decision of whether the EFQM excellence model is suitable for the Slovenian HE. Indeed, as has been elaborated in prior studies (Prašnikar and Kern-Pipan 2011) this model can be successfully used as a tool to manage changes and improve the quality of HEIS. Likewise, Zeps, Iljins, and Ribickis (2017) suggest that integration of EFQM excellence model and Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) into university strategy is considered as beneficial for further development of university.

As with all empirical studies, there are a number of limitations and directions for future research. We acknowledge that there are possible sources of bias concerning the sample distribution. As such, one boundary condition for our study pertains to the generalizability of our findings beyond the population from which our sample respondents are drawn. Accordingly, future studies could increase the generalisability of the re-

TABLE 5 Questionnaire Items and Outer Model Assessment Statistics

Mission, vision and values	(1)	(2)	(3)	(4)
Leaders develop the mission and vision of HEI by involving employees and other key stakeholders.	0.178	0.927	0.860	0.0000
Leaders shape values in accordance with the mission and vision of HEI and respect general framework of values in public sector.	0.167	0.910	0.828	0.0000
Leaders ensure that mission, vision, values, strategic and operative goals are articulated to the employees and other key stakeholders.	0.160	0.878	0.770	0.0000
Leaders regularly review mission, vision, and values in accordance with the changes in external environment (e.g. economic change, political change, socio cultural change).	0.161	0.862	0.742	0.0000
Leaders develop management system which prevents the unethical behaviour and simultaneously supports employees at solving the ethical dilemmas.	0.158	0.869	0.755	0.0000
Leaders manage the prevention of corruption by identifying the potential areas of conflicts of interest and establishing guidelines for employees.	0.143	0.840	0.705	0.0000
Leaders strengthen mutual trust, loyalty and respect among themselves and employees and regularly evaluate and propose the standards of good leadership.	0.166	0.873	0.761	0.0000

Continued on the next page

sults by taking caution in controlling for possible extraneous variation. Several control variables could be used for this purpose, such as institution's size, governance structure and many other contextual factors. One research opportunity is to examine the factors (i.e. antecedents) that drive or hinder the business excellence framework deployment.

One of the limitations of this study is low response rate (5.86 %). Although low response rate is one of the major limitations of web-based surveys in general (Eysenbach 2005), it still reflects the unwillingness of potential respondents to express their point of view regarding the studied topic. In this regard, one can conclude that general attitude in Slovenian HE might hinder the implementation of the crucial changes concerning the improvement of the quality of HEIS and ultimately the image of the institutions. From this perspective, future studies could use several contextual variables to better explain the quality movement phenomenon in Slovenian HE.

TABLE 5 *Continued from the previous page*

Managing and improving the management system	(1)	(2)	(3)	(4)
Leaders define the appropriate forms of governance (levels, responsibility, and accountability) and enable process management system in compliance with the strategy and stakeholders' demands.	0.134	0.842	0.709	0.4843
Leaders recognize and prioritize actions regarding the change in structure, operations and management of HEI.	0.136	0.823	0.678	0.4630
Leaders establish measurable targets – specific objectives concerning the outcomes in all levels of HEI.	0.125	0.810	0.656	0.4479
Leaders develop information management system, with the inputs emerging from the risk management and internal control system and continuously monitor the achievement of the HEI objectives (e.g. by using the balanced scorecard – BSC).	0.125	0.769	0.592	0.4042
Leaders deploy the principles of total quality management principles and implement the quality management system/model (e.g. CAF, EFQM, ISO 9001).	0.116	0.745	0.556	0.3797
Leaders develop and adapt the strategy of e-education with the strategic and performance goals of HEI.	0.101	0.742	0.550	0.3758
Leaders create proper factors/frameworks for managing of processes, project management and teamwork.	0.122	0.804	0.647	0.4419
Leaders create the conditions for effective communication inside and outside the HEI based on the recognition of communication as one of the most important key success factors of HEI.	0.121	0.829	0.688	0.4698
Leaders show the commitment to continuous improvement of HEI and commitment to build innovation culture by actively engaging the employees.	0.139	0.831	0.690	0.4715
Leaders communicate the reasons for change programs and effects of these changes on employees and key stakeholders.	0.130	0.791	0.625	0.4269

Continued on the next page

Apart from leadership dimension, future studies could be focused on investigation of other EFQM enabler criteria in HE. For instance, future studies could focus on searching the possible mediation mechanisms in the relation between leadership criterion and results.

In addition, our results have also significant managerial implications. Accordingly, practical implications that arise from this study emphasise the need for institutional leaders to manage and balance the leadership

TABLE 5 *Continued from the previous page*

Motivation and commitment	(1)	(2)	(3)	(4)
Leaders lead by an example; therefore, as a role model and in accordance with established goals and values.	0.131	0.815	0.664	0.3720
Leaders encourage the culture of mutual trust and respect among employees based on actions that discourage any forms of discrimination.	0.121	0.795	0.632	0.3544
Leaders regularly inform and consult with employees regarding the key issues related to the HEI.	0.122	0.799	0.638	0.3579
Leaders support the employees, so that they effectively perform their tasks, plans and achieve the common goals of HEI.	0.125	0.796	0.634	0.3555
Leaders provide feedback to employees in order to improve the performance of teams and individual employees.	0.128	0.840	0.706	0.3957
Leaders stimulate, encourage and empower employees with delegating the authority, responsibilities and accountability.	0.118	0.814	0.663	0.3717
Leaders encourage the learning culture and stimulate employees to develop their own competencies.	0.126	0.814	0.663	0.3716
Leaders express personal readiness to accept recommendations/proposals from employees, responding constructively to feedback.	0.131	0.835	0.698	0.3912
Leaders give recognitions and awards to teams and individuals for their efforts.	0.122	0.784	0.614	0.3444
Leaders consider and address the specific needs and private circumstances of employees.	0.116	0.761	0.579	0.3246
Leaders analyse the stakeholders' current and future needs and share this information within HEI.	0.164	0.761	0.579	0.3746

Continued on the next page

dimensions in a way that this successfully facilitates implementation as well as sustained use of the EFQM Excellence Model. Seen in this way, for the implementation of any quality improvement initiative, it is necessary to have the commitment from the HEI management. Management commitment to quality should be reflected through a well-defined policy and strategy, implemented and communicated on all levels of the HEI. By engaging stakeholders in quality improvement initiatives, one can ensure that the initiatives are implemented effectively, achieve intended outcomes, and contribute to sustainable changes in the quality of the

TABLE 5 *Continued from the previous page*

Stakeholder interaction and integration	(1)	(2)	(3)	(4)
Leaders give support to political authorities during the development of public policies related to HEI.	0.128	0.761	0.580	0.3751
Leaders recognize and integrate public policies that are important to HEI.	0.118	0.713	0.509	0.3293
Leaders assure that the goals of HEI are in accordance with the results and impact of public policies and political decisions and make agreements with policy authorities regarding the required resources.	0.146	0.774	0.599	0.3874
Leaders integrate political authorities and other stakeholders into the development of the governance system of HEI.	0.117	0.639	0.408	0.2641
Leaders maintain regular and proactive relations with political authorities on the respective executive and legislation areas.	0.122	0.682	0.466	0.3014
Leaders develop and maintain partnerships and networks with the relevant stakeholders (e.g. students, local community, and professional associations).	0.152	0.774	0.599	0.3878
Leaders participate in the activities of professional associations, representational organizations and other key interest groups.	0.154	0.709	0.502	0.3251
Leaders build and enhance public awareness, image and recognition of HEI and its services.	0.134	0.656	0.430	0.2781
Leaders develop service oriented marketing principle which is focused on the stakeholders needs.	0.157	0.689	0.475	0.3071
Engagement of the leaders in the field of managing the organization based on the development of its mission, vision and values is the key success factor of the EFQM excellence model implementation in HEI.	0.371	0.797	0.635	0.0652

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HE. Nonetheless, proper measures (key performance indicators) should be established in order to monitor the progress towards achieving HEI goals.

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TABLE 5 *Continued from the previous page*

Implementation enablers	(1)	(2)	(3)	(4)
Engagement of the leaders in the field of managing the organization based on its performance and continuous improvement is the key success factor of the EFQM excellence model implementation in HEI.	0.393	0.797	0.635	0.0653
Engagement of the leaders in the field of motivation and support of the employees as well as acting as a role model is the key success factor of the EFQM excellence model implementation in HEI.	0.317	0.701	0.491	0.0504
Engagement of the leaders in the field of managing the relationships with political authorities and other stakeholders is the key success factor of the EFQM excellence model implementation in HEI.	0.254	0.665	0.442	0.0454

NOTES Column headings are as follows: (1) weight, (2) loading, (3) communality, (4) redundancy.

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Critical Thinking at Universities in BIH: Are They on the Right Track?

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The disruptive nature of the global economy causes continuous and dynamic changes in the labor market by creating new jobs and transforming existing ones. Today's companies need highly educated employees who are capable of thinking critically, having creative ideas and solutions, and who are communicative and team players. Higher education institutions (HEIS) are under considerable pressure to educate their students for the dynamic labor market and for jobs that do not even exist yet. There are high expectations from universities in fostering critical thinking among their students. The authors were interested in finding if the public HEIS in BIH fostering critical thinking of their students. The goals of the research were to discover how BIH students understand critical thinking and how they evaluate their universities regarding the promotion and practice of critical thinking. The authors developed a questionnaire and conducted an online survey among students at public universities in Bosnia and Herzegovina. The findings show that the implementation of critical thinking at BIH universities is not neglected, but it is not present to the necessary extent. There is a lot of room for improvement, particularly in the teaching process, through using new learning methods and extensive support of information technology.

Key Words: critical thinking, higher education institutions, students
JEL Classification: I23, J24

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Introduction

The first two decades of the 21st century have shown the disruptive nature of the global economy and society that is fostered by the continuous and rapid advancement of technologies such as artificial intelligence, data science, virtual reality, IoT (Internet of Things), robotics, and so on. On a daily base, new jobs are creating for wholly new occupations, while

existing occupations are fully transforming regarding job content and required skills. Although technological skills have become crucial for job-finding and job-saving, proficiency in new technologies is only one part of nowadays and future job equation. The dynamic and evolving labor markets need additional skills that span both technical and cross-functional skills. Most research on the theme of the future of jobs indicated critical thinking as one of the core skills for the new class of jobs that, among other things, imply collaboration between humans and intelligent machines (World Economic Forum 2018; 2020; OECD 2018; Bakhshi et al. 2017; Barbosa et al. 2017; Daheim and Wintermann 2016; Williams 2016).

Today's higher education institutions (HEIs) are faced with considerable pressure to educate their students for the highly volatile and dynamic labor market and for jobs that do not even exist yet. The HEIs are aware that their students need a high level of knowledge, especially knowledge of technology, but that it is not sufficient. Namely, IT created data and information overload. In that situation, it is not enough to know how and where to find data, but it is crucial to know critically distinguish fake from truthful information, to understand results of data analysis, to understand the technology, and to have critical attitudes towards it. All of the above have given critical thinking a new relevance (Bowell 2017; Frederiksen 2017; Peters 2017).

Many authors agree that critical thinking should be in the focus of higher education (Ascione 2019; Straková and Cimermanová 2018; Vero and Puka 2018; Connolly, 2017; Uribe-Enciso, Uribe-Enciso, and Vargas-Daza 2017; Živković 2016; Meyers 2012; Bensely 2011; Ahern et al., 2012; Moore 2013; Awayiga, Onumah, and Tsamenyi 2010). However, assessing and developing critical thinking in HEIs is suffering from a lack of consensus on the three major issues: definition of critical thinking, its assessment, and different approaches to foster its development (Tiruneh, Verburgh, and Elen 2014).

Lai (2011) distinguished three ways in defining term critical thinking: definitions with roots in philosophical tradition focused on how people think; definitions with roots in the cognitive psychological approach define critical thinking through the types of actions or behaviours critical thinkers can do (Sternberg 1986) and definitions based on the educational approach, i.e., on classroom experience and observations of student learning (Sternberg 1986). Hence, the researchers are still searching for a useful and precise definition of critical thinking (Schmaltz, Jansen,

and Wenckowski 2017; Lai 2011; Black 2008; Beyer, Gillmore, and Fisher 2007; Haix and Reybold 2005; Donald 2002).

For the research presented in this paper, the authors adopted the definition of critical thinking as 'purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as an explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based' (Facione 1990, p. 3). Namely, that definition was used and validated by the project 'Critical Thinking Across the European Higher Education Curricula – CRITHINKEDU' funded by the European Commission (Elen et al. 2019).

The research on critical thinking in higher education can be classified into two groups: domain-general and domain-specific (Hathcoat et al. 2016; Dwyer 2017).

Domain-general research observes critical thinking as a standalone discipline with the focus on several skills that are practiced with different types of content (Elene et al. 2019).

Domain-specific research, also called the immersion approach, takes the position that critical thinking can only be taught in the context of a specific domain and that domain-specific knowledge is a precondition to the development of critical thinking (Willingham, 2008). It means that critical thinking is influenced by the culture of the discipline in which it is taught and/or practiced (Jones 2009; Grace and Orrock 2015; Sin, Jones, and Wang 2015).

In the case of the domain-general approach, transfer to domain-specific tasks is a major issue. In contrast, in the case of the domain-specific approach, critical thinking is wholly embedded in teaching the subject matter, meaning that subject-specific knowledge is a precondition for critical thinking (Stanovich, West, and Toplak 2016).

The combination of domain-general and domain-specific approaches is called a mixed approach. In the mixed approach, general principles of critical thinking are taught as a separate part of a course or as an independent course. Still, students are also involved in subject-specific critical thinking (Tiruneh, Verburgh, and Elen 2014).

Although there is a consensus about the importance of critical thinking in today's complex world, different research showed that HEIS have not been successful in fostering critical thinking among students (Hosler and Arend 2012; Crenshaw, Hale, and Harper 2011). Namely, many higher education institutions instill students with scientific concepts and repeti-

tive practices and thereby prevent them from effective thinking. However, pure data transfer is not sufficient for solving the problems in the current societies, and the students should be provided with thinking methods (Bagheri and Nowrozi 2015).

Taking into account the above research, the authors were interested in finding the answer to the question: Are the public HEIS in BIH fostering critical thinking of their students? The focus of research is on students' perception of enhancing their critical thinking during studies. The aims of the conducted research are the following:

- To explore students' understanding of critical thinking;
- To analyze to what extent the teachers promote and practice critical thinking at their classes;
- To find how the teachers encourage students to think critically;
- To explore the students' attitude towards critical thinking in the teaching process;
- To find what teaching methods and techniques students link with critical thinking;
- To investigate if the capability of critical thinking of examined students improves during the study.

Methodology

The authors, based on a literature review, developed questionnaire. The questionnaire is divided into few parts in line with the aims of the research. Offered statements were rated from 1 to 5 (Likert scale: 1 – never/totally disagree, 5 – always/strongly agree). Moreover, the students had to answer what they are studying and at what cycle (bachelor or master level), as well as what age and sex they are. The questionnaire was prepared on Google Forms, the link for it was emailed.

The empirical research was conducted during the 2019 year at public universities in Bosnia and Herzegovina, with respondents (students) from the following five universities: the University of Mostar, the University 'Džemal Bijedić' Mostar, the University of Zenica, the University of East Sarajevo and the University of Sarajevo. In total, 573 questionnaires were collected (link to the questionnaire was sent to 2500 e-mails, respond rate 22.92%). After the control of questionnaires carried out, 565 questionnaires remained for analysis. Students' distributions by characteristics are as follows:

- Gender: 377 (66.7%) women and 188 (33.3%) men,

- Cycle: 486 (86.0%) first cycle (bachelor) and 79 (14.0%) second cycle (master),
- Study: 274 (48.5%) faculties of social sciences, 142 (25.1%) technical faculties and 149 (26.4%) faculties of other fields of science.

The average age of students is 21.12 (±2.9) years.

Data was analysed in IBM SPSS Statistic 25.0. Descriptive statistics were used: mean, standard deviation (M±SD), mode, absolute (*f*), and relative frequencies (%).

Results

In order to find how students understand critical thinking (what according to them critical thinking comprise of), it is offered to students to choose from the list whatever they think critical thinking stands for. The distributions of particular statements are presented in table 1.

In order to investigate the behavior of teachers regarding promotion, respect and practice of critical thinking, the students were asked to evaluate the current practice of critical thinking at BIH universities. Descriptive statistics by particular statements are presented in table 2.

In order to find to what extent the teachers during their classes encourage the students to think critically, the students were asked to evaluate the frequency of practicing the specific behavior. Descriptive statistics by particular behavior is presented in table 3.

In order to understand the student's attitude towards critical thinking in the teaching process, students were asked to evaluate a set of statements. Descriptive statistics by individual statements are presented in table 4.

In order to find out which activities (teaching methods and techniques) the student associates with critical thinking, the students were asked to evaluate how much (to what extent) certain activities encourage critical thinking. The descriptive statistics by activity are presented in table 5. In addition, students were asked to answer the question: 'Has your critical thinking ability improved during your studies?' The results are as follows: 281 (49.7%) students answered yes, 72 (12.7%) gave a negative answer, while 212 (37.5%) students were not sure (they answered: I'm not sure).

Discussion

The results of the research show that students have different opinions about the definition of critical thinking. Namely, critical thinking is

TABLE 1 Critical Thinking and Its Meanings

Critical thinking stands for …	*f**	%
A more complex and challenging way of logical thinking	298	52.7
Articulation of ideas	153	27.1
Finding meaning	114	20.2
Considering different arguments and finding fact to evaluate the justification of each one of those arguments	315	55.8
Formulating a hypothesis	92	16.3
Affirmation of personal beliefs and arguments	112	19.8
Decision making	202	35.8
Problem solving	269	47.6
Observation and evaluation of personal cognitive abilities and actions	68	12.0
Elementary abilities of decomposition and synthesis of ideas/arguments and an ability to evaluate performances and products that are a result of personal activities during and after the process of critical thinking.	75	13.3
The usage of reliable sources and marking the used resources	101	17.9
Finding the cause	163	28.8
Taking into consideration the situation as a whole and observing the problem from different angles.	286	50.6
Taking into consideration differing opinions and evaluating the reasons for and against a certain decision	376	66.5
A cognitive ability to give meaning to dispersive ideas that prepare people for important dialogues with other people and enable a better adjustment to their environment.	93	16.5

NOTES * Multiple answers.

vaguely defined, often with a lack of clarity what exactly constitutes it (Lai 2011; Stassen, Herrington, and Henderson 2011). Because of that, it is not odd that there is diversity among students' answers related to the definition of critical thinking (table 1). The results show that 52.7% of participants think that critical thinking means 'A more complex and challenging way of logical thinking.' Their opinion is close to the definition of critical thinking as a more complex and significantly demanding logical form of higher-order reasoning (Brady 2008; Philley 2005).

However, more than half of students agree that critical thinking is 'Taking into consideration the situation as a whole and observing the problem from different angles' (50.6%), 'Taking into consideration differing opinions and evaluating the reasons for and against a certain de-

TABLE 2 The Current Practice of Critical Thinking at Universities in BIH

Lecturers during their lectures . . .	(1)	(2)	(3)	(4)	(5)	(6)
Value critical thinking	565	16.8	46.7	3.5	1.0	3
Value critique of the ideas put forward during the lecture	564	19.3	48.4	3.4	1.1	3
Accept student's criticism if it is justified	562	14.8	60.3	3.7	1.1	4
Indulge in a more detailed conversation about the pros and cons of different ideas	563	22.4	48.1	3.4	1.2	3
Lead students to their (lecturer's) way of thinking	564	17.6	52.1	3.5	1.1	3
Allow students to express their critical thinking	564	13.5	59.9	3.7	1.1	4
Give real life examples	565	10.8	70.6	3.9	1.0	4
Explain theoretical assumptions through real-life examples	565	13.5	60.9	3.7	1.0	4
Show their critical thinking about the given subject	565	11.2	58.1	3.7	1.0	4
Encourage an argument based discussion about the subject between the students	565	34.0	33.8	3.0	1.2	3
Develop the student's self-confidence about their critical thinking	565	31.2	39.5	3.1	1.2	3
Create situations for learning in which there are no right or wrong answers	565	32.6	25.1	2.9	1.1	3
Are opened for different new solutions and accept opinions that differ from their own	565	19.6	45.3	3.4	1.1	3
Question everything that is already known in theory in order to develop critical thinking in their students	565	22.8	44.1	3.3	1.2	3

NOTES Column headings are as follows: (1) number, (2) very rarely or never (%), (3) very often or always (%), (4) mean, (5) standard deviation, (6) mode.

cision' (66.5%) and 'Considering different arguments and finding fact to evaluate the justification of each one of those arguments' (55.8%). It means that standpoints of more than half of students are close to the definition of critical thinking provided by Foundation for Critical thinking (http://www.criticalthinking.org/pages/our-conception-of-critical-thinking/411).

The results in table 2 show that grades of statements related to students' perception of the teacher's attitude towards students' critical thinking and to what extent teachers encourage students to think critically are between 3 and 4. The grades for practical 'implementation' of critical thinking in the teaching process are at the same range.

TABLE 3 The Teachers' Behavior in Encouraging Critical Thinking at Universities in BIH

Lecturers during their lectures ...	(1)	(2)	(3)	(4)
Engage in a constructive discussion	564	23.0	38.1	38.8
Criticize the presented ideas and solutions	564	23.0	37.6	39.4
Express their own ideas	564	18.4	28.9	52.7
Give constructive suggestions	564	17.4	29.3	53.4
Suggest new solutions	564	19.1	29.8	51.1

NOTES Column headings are as follows: (1) number, (2) very rarely or never (%), (3) periodically (%) (4) very often or always (%).

Although all mean grades are less than 4, the highest grades for the set of statements related to the evaluation of the current practice of critical thinking (table 2) show that teachers allow students to express their opinion and accept students' criticism if it is justified. Additionally, teachers, through their lectures, demonstrate their critical thinking relating to the subject of the lecture. This is confirmed by the share of students who agree with statements 3, 6, 9. Results show that teachers use real examples from everyday life to better explain the content of their lectures to students. Thereby teachers encourage students in linking theory and practice and in developing necessary critical thinking.

Practicing critical thinking was researched through students' standpoints concerning the teachers' behavior in encouraging critical thinking of students. According to the results of research (table 3), the teachers, during the classes, mostly encourage students to 'Express their own ideas' (52.7%), to 'Give constructive suggestions' (53.4%) and to 'Suggest new solutions' (51.1%). On the other hand, students think (table 3) that they are less encouraged to 'Criticize the presented ideas and solutions' (60.6%) or to 'Engage in a constructive discussion' (61.1%). Those results support the former conclusion that critical thinking is practicing at BIH universities to a certain degree, but not fully.

The students' view of critical thinking in higher education are presented in table 4. The results show that students expect from their teachers both to encourage them in critical thinking and to use new teaching methods in order to motivate students to take active participation and to direct the course of the lecture. More than half of students think that the teachers are crucial in their encouragement to think critically. This opinion is in line with literature sources because the researches generally

TABLE 4 The Students' View of Critical Thinking in Higher Education

Statement	(1)	(2)	(3)	(4)	(5)	(6)
Students should be encouraged to think critically.	565	2.3	89.9	4.6	.8	5
Lectures should be based on new learning methods.	565	2.3	86.0	4.5	.8	5
Lecturers (professors and assistants) are the main instigators of the student's critical thinking.	564	6.7	67.2	3.9	1.0	5
The encouragement of a student's critical thinking is dependent on the characteristics of the lecturers (professors and assistants).	565	3.9	78.8	4.2	.9	5
All of the experiences/opinions of the students should be taken into account when solving a problem.	565	4.8	78.2	4.2	.9	5
It is more important to achieve good communication with the students than it is to give the lecture.	565	5.7	75.8	4.2	1.0	5
Students can direct the course of the lecture.	564	10.1	59.0	3.7	1.0	4
Every issue has only one solution.	565	53.1	21.8	2.4	1.4	1
Students must answer questions precisely as it is written in the literature if they want to pass their tests successfully.	565	65.8	15.4	2.1	1.3	1
Students can have their own opinions that differ wildly from the lecturer's (professor's/assistant's).	565	5.0	77.2	4.3	.9	5
To think critically means to look at the issue from different perspectives.	565	1.9	82.1	4.3	.8	5
To think critically means to base a decision on verified facts.	565	6.2	66.5	3.9	1.0	5
To think critically means to question everything.	565	14.7	54.3	3.6	1.1	3

NOTES Column headings are as follows: (1) number, (2) disagree (%), (3) agree (%), (4) mean, (5) standard deviation, (6) mode.

agree about the importance of a teacher's role and guidance in developing student's critical thinking (Brady 2008; Paul 2005). In general, the results presented in table 4 show that students have a positive attitude towards critical thinking. They recognized the importance of critical thinking as well as the role of the teachers in the encouragement of a student's critical thinking. This is supported by relatively high average grades and a relatively large portion of students that agree with offered statements. The exceptions are the statements that are opposite to critical thinking ('Every issue has only one solution,' 'Students must answer on questions exactly as it is written in the literature if they want to pass their tests successfully').

TABLE 5 Teaching Activities and Critical Thinking

Activity	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Working in groups to solve a certain problem	565	9.0	22.3	68.7	3.9	1.1	5
Writing a critical review on the given subject	565	14.3	32.7	52.9	3.5	1.1	3
Presenting a solution to a problem	563	11.9	24.7	63.4	3.8	1.1	4
Presenting a critical review on the given case study	564	9.6	31.9	58.5	3.7	1.0	4
Choosing your own subject/problem to research/resolve	565	5.3	24.2	70.4	4.0	1.0	5
Writing a seminar work	565	26.4	30.8	42.8	3.2	1.3	3
Role playing	564	24.1	31.7	44.1	3.2	1.3	3
Debates/groups presenting for and against a solution	565	10.3	17.7	72.0	4.0	1.1	5
Visiting lecturers	565	12.7	25.0	62.3	3.8	1.1	5
Student's presentation on a given subject	564	16.1	28.9	55.0	3.6	1.2	5

NOTES Column headings are as follows: (1) number, (2) not at all (%), (3) moderately (%), (4) considerably, (5) mean, (6) standard deviation, (7) mode.

The students are aware that for the problems presented and analyzed on classes, more solutions exist. They expect that the teachers will give them the chance to present their opinions and use their creativity in resolving those problems instead of insisting on only one solution and require that students answer on questions precisely as it is written in the literature if they want to pass their tests successfully.

Table 5 shows to what extent, according to students' opinion, particular teaching activities encourage critical thinking. The results show that students think that 'Debates/groups presenting for and against a solution' is an activity that has the highest influence on developing critical thinking. Follow closely the activities 'Choosing your own subject/problem to research/resolve' and 'Working in groups to solve a certain problem.' Follow 'Visiting lectures,' 'Presenting a solution to a problem,' and so on. The results show that students recognize the activities that can contribute to the development of critical thinking. Generally, the researches of critical thinking usually agree that those activities are encompassed by the definition of critical thinking (Lai 2011).

The students' answers on the direct question 'Have your critical thinking ability improved during your studies?' support the view that critical thinking is practicing at BIH universities to a certain degree, but not

in full capacity. Namely, only half of the participants gave a positive answer to the previous question, while more than one third do not know the answer. This implies that there is no systematic approach to developing critical thinking on BIH universities. It is conceded to each particular teacher. However, the presented research did not comprise all public universities, so the results cannot be generalized. Since students recognized the importance of the teacher in developing critical thinking, the more systematic approach in developing critical thinking at BIH universities should start with support to teachers. The support means empowering the teacher's capabilities in developing students' and their own critical thinking through specific workshops, training, and discussion of the best practices in that field.

Conclusion

In methodology is stressed out that the research is still ongoing, meaning that findings are not final and should be taken with caution.

The research shows that BIH public universities only partially foster critical thinking of their students. Consequently, there is a lot of room for improvement, particularly in the teaching process, through using new learning methods (research projects, role play, independent study) and extensive support of information technology (augmented/virtual/mixed reality, artificial intelligence, gamification). Students confirmed that most of the teachers encourage their critical thinking. However, because of the size of the research sample, teachers with whom participants deal are probably not representative examples concerning critical thinking.

The results show that students recognized the importance of critical thinking as well as the role of the teachers in both encouraging them in critical thinking and in using new teaching methods in motivating students to take active participation during the classes. However, only half of the students think that their critical ability improved during the study. That supports the view that critical thinking is practicing at BIH universities to a certain degree, but not in full capacity, implying that there is no systematic approach in developing critical thinking on BIH universities. It can be said, concerning the development of critical thinking, that BIH universities are on the right track, but the long journey is still ahead of them. Since the teachers have the leading role in encouraging the students in critical thinking, the first step in developing a more systematic approach to critical thinking at BIH universities should begin with empowering the teacher's capabilities in fostering students' critical thinking.

Further, the HEIS should continuously work on their organizational environment to encourage the development of critical thinking, as well as on improving courses' curricula by including content that should foster critical thinking or developing standalone critical thinking courses.

The results of this research can be useful for students, teachers, and the management of public universities in BIH. Understanding students' opinions regarding critical thinking can help teachers in introducing new teaching methods to facilitate the development of students' critical thinking. HEIS can use the results as a starting point in the development and adoption of adequate plans and activities for fostering critical thinking in their institutions.

The limitations of the research are the size and structure of the sample because the sample does not comprise all BIH public universities, private HEIS were not included in the research, and only students' perspective was explored.

Further research should include all BIH public and private HEIS, and it should investigate the teachers' perceptions related to fostering critical thinking at HEIS. In addition, the analysis according to scientific fields and sub-categories should be included in future research, because it can influence the development of critical thinking at HEIS.

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Strateški cilji in ključni kazalniki uspešnosti pri upravljanju portfelja izdelkov skozi življenjski cikel: študija primera na področju telekomunikacij

Erno Mustonen, Jonne Seppänen, Arto Tolonen, Janne Harkonen in Harri Haapasalo

Področje upravljanja portfelja izdelkov (UPI) se posveča opredelitvi izdelkov, ki jih naj podjetve v skladu s svojimi strateškimi cilji razvija, prodaja, dostavlja, vzdržuje ali umakne. Pri tem poseben izziv predstavlja usklajevanje portfelja izdelkov s poslovno strategijo, saj zahteva uporabo pristopa za zastavljanje ciljev skozi celoten življenjski cikel izdelka. V študiji primera smo preučili povezavo med UPI ter poslovno strategijo, pri čemer je bil naš namen predlagati praktičen pristop k določanju strateških ciljev znotraj UPI ter ključnih kazalnikov uspešnosti v življenjskem ciklu izdelka. Kot enega of poglavitnih rezultatov študije lahko izpostavimo formulacijo predloga, naj zastavljanje ciljev znotraj UPI v horizontalnem pogledu zajame vse faze življenjskega cikla izdelka, v vertikalnem pa komercialno in tehnično strukturo izdelka. Prispevek vključuje predloge po oblikovanju strateških ciljev UPI ter ključnih kazalnikov uspešnosti v celotnem življenjskem ciklu izdelka na podlagi štirih dejavnikov uspeha. Prav tako pa predstavlja novo orodje za analizo portfelja izdelkov. Na podlagi praktičnega primera študija tako dopolnjuje predhodnje raziskave o usklajevanju upravljanja portfelja izdelkov s poslovno strategijo.

Ključne besede: upravljanje portfelja izdelkov, upravljanje uspešnosti, strateško upravljanje, upravljanje življenjskega cikla izdelka
Klasifikacija JEL: L21, M10
Managing Global Transitions 18 (1): 5–23

Dinamika konvergence med Južno Afriko in njenimi poglavitnimi trgovinskimi partnerji

Ntombiyesibini Matonana in Andrew Phiri

Konvergenca stopenj rasti BDP na prebivalca manj razvitih držav k stopnjam gospodarske rasti bolj industrializiranih držav predstavlja osrednjo tematiko razprav na področju gospodarske rasti. Pričujoča študija se osredotoča na vprašanje, ali se Južna Afrika kot najbrž najbolj razvito afriško gospodarstvo približuje rasti svojih poglavitnih trgovinskih partneric (i.e. Belgije, Bocvane, Kitajske, Nemčije, Indije, Japonske,

Mozambika, Namibije, Nizozemske, Južne Koreje, Združenih arabskih emiratov (ZAE), Združenega kraljestva (UK), Združenih držav (ZDA), Zambije in Zimbabveja). V ta namen smo preučili integracijske lastnosti razlik v BDP na prebivalca med Južno Afriko ter vsako od njenih trgovinskih partneric, pri čemer smo uporabili postopke testov enotskega korena, ki so zanesljivi pri nelinearnostih tipa ESTAR in neopazovanih strukturnih prelomih. Rezultati empirične raziskave kažejo na konvergenco med Južno Afriko in Belgijo, Bocvano, Kitajsko, Nemčijo, Indijo, Japonsko, Mozambikom, Namibijo, Nizozemsko, Južno Korejo, ZAE, Združenim kraljestvom in ZDA, ne pa tudi Zambijo in Zimbabvejem.

Ključne besede: konvergenca, testi enotskega korena Flexible Fourier Form (FFF), neopazovani strukturni prelomi, asimetrije, Južna Afrika
Klasifikacija JEL: C21, C22, C51, C52, O47
Managing Global Transitions 18 (1): 25–44

Voditeljstvo kot determinanta uvajanja Evropskega modela odličnosti (EFQM) v visokošolskih ustanovah v Sloveniji: empirična analiza

Maja Pungeršek, Matjaž Maletič, Damjan Maletič in Maja Meško

Uporaba modelov poslovne odličnosti kot poglavitnega sredstva obvladovanja zahtev zainteresirane javnosti po izboljšanju visokošolskih storitev je deležna pozornosti tako raziskovalne kot tudi strokovne skupnosti. Poglavitni namen pričujoče študije je oceniti uporabo kriterija voditeljstva v visokošolskih ustanovah v skladu z modelom odličnosti Evropskega sklada za upravljanje kakovosti (EFQM). Študija temelji na modelih skupnega ocenjevalnega okvirja (CAF) 2013 ter EFQM 2013 kot referencah za merjenje ključnih dimenzij voditeljstva. Namen raziskave je bil preučiti razmerja med dimenzijami voditeljstva in vplivnimi dejavniki pri uvajanju modela odličnosti EFQM v visokošolskih ustanovah, pri čemer je bila na podlagi empiričnih podatkov, pridobljenih skozi obsežno raziskavo med zaposlenimi na slovenskih visokošolskih ustanovah, uporabljena metoda PLS-PM (Partial Least Squares Path Modeling). Rezultati kažejo, da imata dve dimenziji voditeljstva neposreden vpliv na dejavnike, ki omogočajo uvajanje modela odličnosti (i.e. percepcije zaposlenih glede vpliva dimenzij voditeljstva na uvajanje modela odličnosti EFQM), druge dimenzije pa imajo na te dejavnike posreden vpliv. Zaključimo lahko, da predstavlja večja angažiranost v smislu kriterija voditeljstva gonilno silo uvajanja modela odličnosti EFQM na visokošolskih ustanovah. Študija prispeva k aktualni razpravi o potrebah po prilagoditvi modelov odličnosti v visoko-

šolskih ustanovah ter preko analize kriterija voditeljstva znotraj modela odličnosti EFQM podpre prejšnje ugotovitve, ki poudarjajo potrebo po vključitvi vidika upravljanja kakovosti v visokošolski sektor.

Ključne besede: CAF, EFQM, visoko šolstvo, voditeljstvo, odličnost, PLS-PM
Klasifikacija JEL: M12, I21, I23
Managing Global Transitions 18 (1): 45–66

Kritično mišljenje na univerzah v BiH – so na pravi poti?
Mirela Mabić in Dražena Gašpar

Disruptivna narava svetovnega gospodarstva povzroča stalne in dinamične spremembe na trgu dela z ustvarjanjem novih in preoblikovanjem obstoječih delovnih mest. Današnja podjetja potrebujejo visoko izobražen kader, ki je sposoben kritičnega mišljenja, generiranja kreativnih idej in rešitev ter ga hkrati odlikujejo komunikativnost in sposobnost timskega dela. Visokošolske ustanove si zato prizadevajo svoje študente izobraziti za dinamičen trg dela in za delovna mesta, ki sploh še ne obstajajo. Obenem se pričakuje tudi, da bodo univerze pri svojih študentih spodbujale kritično mišljenje. Avtorje je zanimalo, ali javne visokošolske ustanove v BiH spodbujajo kritično mišljenje med svojimi študenti. Cilj raziskave je bil ugotoviti, kako študenti v BiH razumejo kritično mišljenje in kako ocenjujejo promocijo in prakso kritičnega mišljenja svoje univerze. V ta namen so avtorji oblikovali vprašalnik in izvedli spletno anketo med študenti javnih univerz v Bosni in Hercegovini. Rezultati študije kažejo, da spodbujanje kritičnega mišljenja na univerzah v BiH sicer ni zanemarjeno, vendar tudi ni prisotno v zadostni meri. Zlasti v učnem procesu obstaja še precej možnosti za izboljšave z uporabo novih učnih metod in obsežno podporo informacijske tehnologije.

Ključne besede: kritično mišljenje, visokošolske ustanove, študenti
Klasifikacija JEL: I23, J24
Managing Global Transitions 18 (1): 67–81