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African Journal of Business Management

Table of Contents: Volume 11 Number 7 14 April, 2017

ARTICLES

- INeed for development and validation of a new product development (NPD) assessment and improvement tool: A review of literature** 127
Morteza Foroutan and Kari Baski-Reeves
- Towards the growth of domestic credit in Tanzania: Does foreign capital flow really matter?** 140
Josephat Lotto

Review

Need for development and validation of a new product development (NPD) assessment and improvement tool: A review of literature

Morteza Foroutan* and Kari Baski-Reeves

Mississippi State University, Bagley College of Engineering, USA.

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Maintaining the good quality of current products or services cannot anymore guarantee companies' survival in today's super competitive global market in which the competition gets only tougher and more challenging day in, day out. In fact, firms' prosperity is highly dependent on the successful and timely introduction of new products and services that go beyond customers' expectations in many aspects including quality and features. Even though the literature has highlighted the importance of new product development (NPD), the failure rate of successful completion of NPD projects suggests further exploration on the subject. This study, reviews what is already unearthed by the literature, and aims to find what is lacking for which further steps should be taken. In particular, the study tries to classify factors and aspects that are needed to be considered when assessing an NPD project. It also reveals that universal approaches deemed to be helpful in the successful implementation of NPD projects which have not statistically shown improvement in the success rate of NPD projects.

Key words: New product development, assessment tool, performance management, project success rate, process improvement.

INTRODUCTION

New product development process takes an already existing need or a conceptual need that can be arisen in the future and transforms it into a presentable product or service which is perceived to satisfy that need (Johnson and Kirchain, 2011).

In many instances, the need is created by marketing efforts. For instance, no one would even perceive a smart watch as a need even just a few years before it was introduced into the market. In some other instances, the

need will arise in the future due to regulatory changes. For instance, regulations regarding the air pollutants get tighter and tighter as time goes which urges auto manufacturers to come up with new products that comply with the air pollutant regulations.

New Product Development (NPD) activities involve various functions of the company, including product definition all the way through pre-series and series production (Suss et al., 2011). Proper NPD can go a

*Corresponding author. E-mail: mortezaforoutan@yahoo.com.

long way, and significantly contribute to organizations' survival and growth in the rapidly changing market. According to Wolfe (2013, 2014), manufacturing firms spend billions of dollars each year to keep their research and development (R&D) activities going forward.

Several research studies performed by the Product Development Management Association (PDMA) have shown that new products have noticeable share in sales and profits of companies (28% for sales and 33% for profit) (Barczak et al., 2009). Other sets of study conducted by PDMA show that NPD activities have an average failure rate of 40% (Markham and Lee, 2013). The majority of the companies participated in the studies were PDMA practitioner members were categorized as manufacturers of large products (more than 50%). The results are comparable with other studies conducted by other institutions such as American Productivity and Quality Center (APAQ) and Product Development Institute (Cooper and Edgett, 2012).

Results from those studies which are aligned with data coming from economic studies would emphasize the necessity and importance of successful NPD for businesses. However, the high NPD failure rate as presented in PMDA, APQC, and PDI studies shows how difficult it is for companies to complete an NPD journey successfully (Barczak et al., 2009; Cooper and Edgett, 2012; Markham and Lee, 2013).

Closer look at the subject reveals that while there is an abundance of material in the literature suggesting what to do, there is a lack of an evaluation tool to identify whether or not a given NPD project is on the right track. Using best practices mentioned in the literature, this study attempts to put together pieces required for such an evaluation tool that can help NPD project managers improve the performance of their NPD process.

According to Atilgan-Inan et al. (2010) even though an NPD is recognized as a risk-reward effort, and an unsuccessful NPD can lead to a significant adverse impact on firms' future profitability, the potential for a new and large profit stream generated by launching a new product or offering a new service makes it necessary to conduct more research and deeper explorations to learn how to further improve the NPD process.

The considerable amount of academic work on NPD practices were analyzed according to the studies of Balaban et al. (2011), Barczak et al. (2009), Barczak and Kahn (2012), Carter (2015), Cooper and Edgett (2012), Cooper et al. (2004), Cooper and Kleinschmidt (2007), Kahn et al. (2012) and Kahn et al. (2006), and the significant negative effect of a failed or poorly delivered NPD augments the NPD's value as a business process. Many elements throughout the NPD process may contribute to failure or success of it. Due to challenges happening along the way, NPD completion date might get postponed, more resources might be consumed than

what originally was planned and more money might be spent than budget. According to Afonso et al. (2008) and Lee and Wong (2010), when it comes to a successful NPD process, efficiency, time-to-market, and the overall cost of marketed product are considered as key competitive advantages.

One of the notable challenges companies experience during their NPD is time-to-launch pressure (Carter 2015). Attention is drawn to finding ways to accelerate developing new products with no compromise in specifications and budget (Langerak et al., 2008). NPD early delivery time has a favorable effect on the overall completion cost. Thus, according to Suss et al. (2011) it should be regarded as a measure of success when assessing an NPD process.

They also mention that about 70% of product's cost during its lifecycle can be attributed to the development phase. Langerak et al. (2008) conducted research to explore the relationship between product cycle time, market entry timing, and the effect of these factors on the profitability of the new product. They used a survey containing info of 72 manufacturing companies from the Netherlands. They concluded that there may be an "optimum cycle time that maximizes new product profitability" (Langerak et al., 2008).

Another research was conducted by Rodriguez-Pinto et al. (2008). The concentration was on understanding the dynamics between market entry timing and management implications for resourcing. They conclude that early market entry "does not automatically ensure a strong market position or high profitability, but it may influence performance through positioning, scope and satisfaction" (Rodriguez-Pinto et al. 2008). There seems to be some similarities between these conclusions with Langerak et al. (2008) saying that entering too early or too late in the market might not be favorable while a specific timing for market entry may be ideal. Even though there is no unique answer to identify if it is better to enter the market earlier or later, the market entry timing has a definite effect on the profitability thus is a practical success measure when assessing an NPD process.

The significance of NPD as a contributing factor to organizational success is supported by other literatures (Carter, 2015; Cooper et al., 2004; Kahn et al. 2012; Kahn et al., 2006). Research also shows that maintaining a successful record of project delivery for long-term business prosperity is hard to achieve (Driva et al., 2000; Rodriguez-Pinto et al., 2008).

According to Wolfe (2013, 2014) billions of dollars in the US are spent by manufacturing companies to support their research and development (R&D) activities. Therefore, failure in such activities would incur a lot of cost. Even though best practices on this subject are provided in the literature, the average success rate for NPD performance is still far too low (Carter, 2015). Best performers tend to apply best practices during their NPD process which have resulted in near 82% of success rate

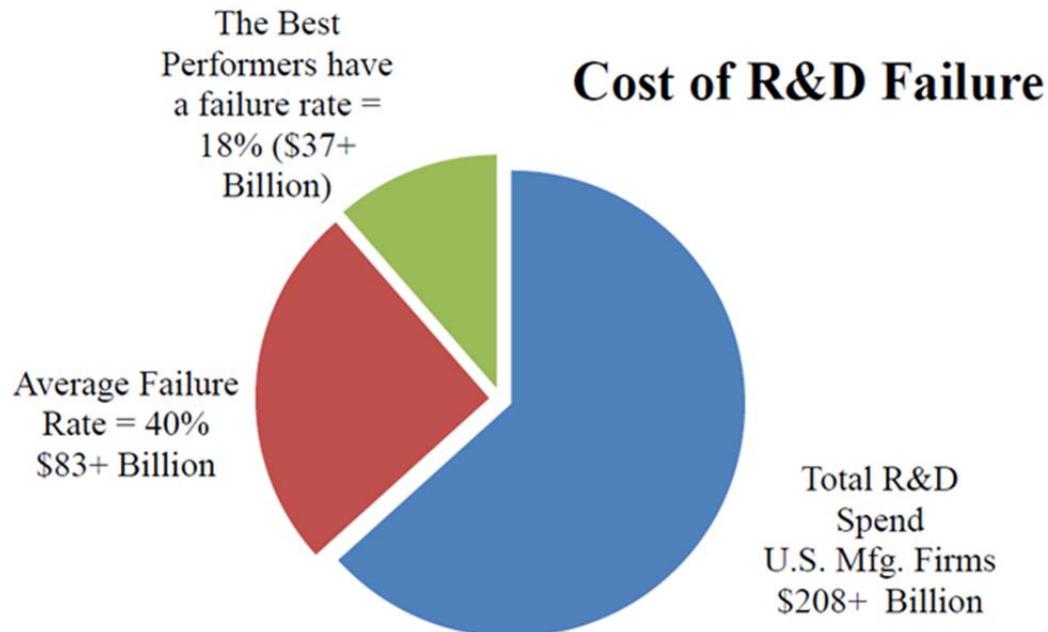


Figure 1. Cost of R&D failure supporting further studies (Carter 2015)

in NPD whereas average performers have a record of close to 61% when it comes to a successful NPD outcome (Barczak et al., 2009; Cooper and Edgett, 2012; Markham and Lee, 2013).

Companies can adopt and effectively use NPD best practices to achieve higher NPD process success rate. However, there should be an assessment activity to identify issues as well as improvement opportunities to ensure companies are not going through the same cycle of low NPD process performance (Carter, 2015).

LITERATURE REVIEW

Due to differences in the nature of companies when it comes to operations and orientations, using a unique set of NPD best practices will not consistently result in higher success rates (Panizzolo et al., 2010).

Thus, in order to get better results, it is inevitable to regard those differences and specialties while applying best practices. The argument put forth by Panizzolo et al. (2010) points out to the reason why companies still continue with low NPD success rates while studying of the best practices have been the area of focus for quite a while, and have been shown to increase NPD performance. Possibly, companies should consider and apply best practices to improve their NPD process. However, while adopting those practices they ought to internalize them in a way that takes into account their specific orientations and differences (Barczak et al., 2009; Cooper and Edgett, 2012; Markham and Lee, 2013).

According to Barczak et al. (2009) and Markham and Lee (2013), there is a direct relationship between enhanced NPD performance and increased use of NPD practices. Company economics and NPD performance are linked. Figure 1 provides a pie chart supporting a best practice approach to NPD from an economic standpoint (Carter 2015).

According to Wolfe (2013) and (2014) companies have spent billions of dollars during 2008 and 2011 on their R&D activities. It is estimated that the best performers have NPD processes failure rate of 18% which makes a total of around \$37 billion. It is also estimated that the average failure rate is 40% which translates to about \$83 billion.

Conclusions from several studies give us the approximate average number of 29% as the share of new products in companies sales revenue, and approximately same number as the profit generated from new products (Barczak et al., 2009; Cooper and Edgett, 2012). A simple comparison between mediocre performers versus top performers depicts the significant effect of NPD process performance on companies' financials and overall performance (Figure 1 and Tables 1, 2).

Data in Tables 1 and 2 provides comparison between best performers and average performers over a time period. Data comes from three different studies two of which were conducted by PDMA, and one was conducted by APQC/PDI. Data from all three studies provides consistent and rather similar insight regarding average versus best performers over time (Carter, 2015).

Table 1. Comparison data for average performers (Carter 2015) .

Study	Reported percentage (%) of sales from NPD	Reported NPD success rate (%)	Reported percentage (%) of profits from NPD
2003 PDMA n=416	28.0	59.0	28.3%
2004 APQ/PDI n=1-105	27.5	60.2	28.4
2012 PDMA n=453	31.1	61.0	30.8

Table 2. Comparison data for best performers (Carter 2015).

Study	Reported % of sales from NPD	Reported NPD success rate	Reported % of profits from NPD
2003 PDMA n=416	47.6	75.5	49.1
2004 APQ/PDI n=1-105	38.0	79.5	42.4
2012 PDMA n=453	47.9	82.2	48.5

As shown in Tables 1 and 2, numbers for best performers are much better than those for average performers. Sales revenue generated by new products makes about 47% of total sale for best performers. Also, as high as 49% of best performers' profit comes from new products (Barczak et al., 2009; Cooper and Edgett, 2012) (Table2).

As shown in Figure 1 there is an approximate difference of \$46 billion in NPD costs between best performers and average performers. The financial burdens of failing in NPD projects justifies why the NPD process has been vastly the subject of research. According to Cooper and Edgett (2012), Cooper et al. (2004) and Markham and Lee, (2013), 50% or more of the best NPD performers use NPD best practices.

Studies have been conducted to classify NPD practices to determine the effectiveness of each class, identifying best versus poor practices, and creating an assessment template based on the best practices (Barczak and Kahn, 2012; Cooper and Edgett, 2012; Kahn Barczak, & Moss, 2006; Kahn Barczak, Nicholas, Ledwith, & Perks 2012; Markham and Lee, 2013; Nicholas Ledwith, & Perks, 2011).

Providing the opportunity to transform literature content on NPD into a useful assessment tool for industrial practitioners is the essence and the main purpose of this study. Even though a noticeable amount of studies have been conducted on the subject, the undesirable failure rate implies that there is much more to be investigated hence more opportunities to enhance NPD performance still exist.

Since an organization as a system is a combination of interdependent subsystems, slight changes on one subsystem can affect other subsystems. Therefore, process change for improvement must consider the interaction between subsystems. Based on Rummler and Brache (1995) organizational performance improvement theory, there are three performance levels in every system: organizational, process, and job level

performances. Focus of the organizational level is on the dynamics of the organization, and its market. It has a top-down impact on performance via strategies, goals, and structures associated with the whole organization.

Organizational level is considered as the skeleton for the major functions that exist within an organization (Rummler and Brache, 1995). The process view gives a perspective of how and why tasks get done within different functions of the organization. Focus of the process level is on the functional work processes. According to Rummler (1995) organizational performance improvement theory, the key element of this study is the process level as it provides the most impactful leverage and the best opportunity for effective change within the organization.

It is worth noting that according to Barczak et al. (2009) "no one best way" can be used to get the most effective results out of reorganized NPD activities. However, there are poor practices that companies should avoid. Besides, there should be an audit for identifying improvement directions in order to achieve best practice. According to Panizzolo et al. (2010), sticking to one best practice as a universal approach does not work as it does not take into account unique orientations each company might have. All companies are not 100% analogous in their structure and direction, etc. Thus, it is not a realistic expectation to have one universal model that leads all companies to get the desired results. Panizzolo et al. (2010) worked on developing a prototype assessment tool for the NPD process. The tool includes a normative-contingency approach which considers the orientation of companies based on logic of coherence. Nevertheless, the authors admit about some limiting factors of the model related to the "number of organizational resources required to be involved, and the number of interactions dependent upon size and complexity of the firm (Carter, 2015).

During the implementation phase, struggles were experienced as management did not have enough

motivation to regard interaction related conflicts. Based on the model provided by the Malcolm Baldrige National Quality Award (MBNQA) "leadership drives the system that causes results" (Wilson and Collier 2000), same model claims that system development is also driven by leadership. Since one of the topics that are identified in the MBNQA model is process management, it is believed that this study can potentially contribute to this topic. The reason for it is that the study provides tools and guidance for companies to make improvement in their NPD process which is one of their crucial processes.

In short, successful NPD process improves financial measures of success for manufacturing companies. Large amount of studies have been conducted on NPD best practices topic (Carter, 2015; Cooper and Edgett, 2012; Cooper et al., 2004; Edgett 2011; Markham and Lee 2013; Wolfe 2014). Results of those studies confirm the positive correlation between using best practices and improved success rate of NPD projects (Carter 2015). Best practices are utilized more frequently by top performers, and their success rates are better than those that do not utilize them in their NPD process. Another factor that is identified to be linked to improved NPD performance is using appropriate techniques and tools (Carter 2015).

However, ineffective utilization of tools and techniques continues to result in average NPD success rates which are too low to be desirable. Assessing the NPD process is helpful in pinpointing areas of weakness thus provides opportunities for improvements. Assessing the NPD process enables practitioners to identify those best practices, techniques, and tools that have not been utilized yet. The idea is that companies who perform assessment on their current NPD process and use best practices from academic literature to identify the gaps are able to utilize the acquired insight to make improvements in their NPD process performance.

Even though there might not be a "one unique approach" to adopt and implement best practices that is applicable by all companies, practitioners may be able to utilize proper best practices, techniques, and tools while considering company's specific orientations to achieve improved NPD project success rate. In order to actualize such improvement, a best practice-based tool to assess the NPD process is needed. The tool not only should encompass useful tools, techniques, and concepts from best practices, it also should provide guidance on how to implement it while taking into account companies' specific orientations.

Based on assessment results, guidance should provide clear answer on what best practices, tools, and techniques that are recommended to be used, and also how to effectively incorporate them into NPD processes to improve the current performance and get higher NPD success rate. Hence, as the basis to develop a new NPD assessment tools a pro-best practice approach

was taken.

Theoretical framework

This study uses best practices found in the literature to identify, categorize, and rank the areas, and factors that have effect on the successful implementation of an NPD projects. An NPD process assessment tool can then be developed based upon such identification, categorization, and ranking.

NPD best practices are grouped based on the different areas of the NPD process that they can be effectively utilized. According to the literature seven areas, also known as dimensions, can be attributed to the NPD process (Carter, 2015). Nicholas et al. (2011) conducted a study to evaluate the importance of each dimension. They collected data from surveys completed by students from the University of Limerick in a Master of Technology program. Those students were sponsored by PDMA member companies in the United Kingdom and Ireland. The study concludes that out of the seven NPD dimensions, strategy has the highest perceived importance. The medium importance category includes research, process, commercialization and project climate. The low importance category encompasses company culture, metrics and performance evaluation. Such classification might be helpful when prioritizing NPD improvement activities given the limited resources. Figure 2 provides the summary of the seven NPD dimensions in terms of importance.

Another focus in the NPD process literature has been best practices benchmarking. Cooper et al. (2004) study results were published in a sequence of three articles. While not being a current reference, their study is considered as one the studies that strongly support the idea of using comprehensive best practice approach for NPD projects (Carter, 2015).

Their first article addresses topics of culture, teams, and senior management as related to NPD process. Their second article concentrates on the topics of strategy, resource allocation and portfolio management. The last article in the series focuses on the NPD process elements to and how they help drive projects into the market. Authors explored measures of performance and emphasized applying and consistently implementing the NPD process as a crucial effort to achieve success in NPD process. The collected data is a combination of quantitative data from 105 companies that were member of APQC along with qualitative site visits of five companies. Figure 3 and 4 provides a summary of the best practices, and categories that the majority of best performers have utilized while the minorities of others (average and worst performers) have not been utilized (Cooper et al., 2004).

Kahn et al. (2006) developed a framework for NPD best practices based on benchmarking studies. Their

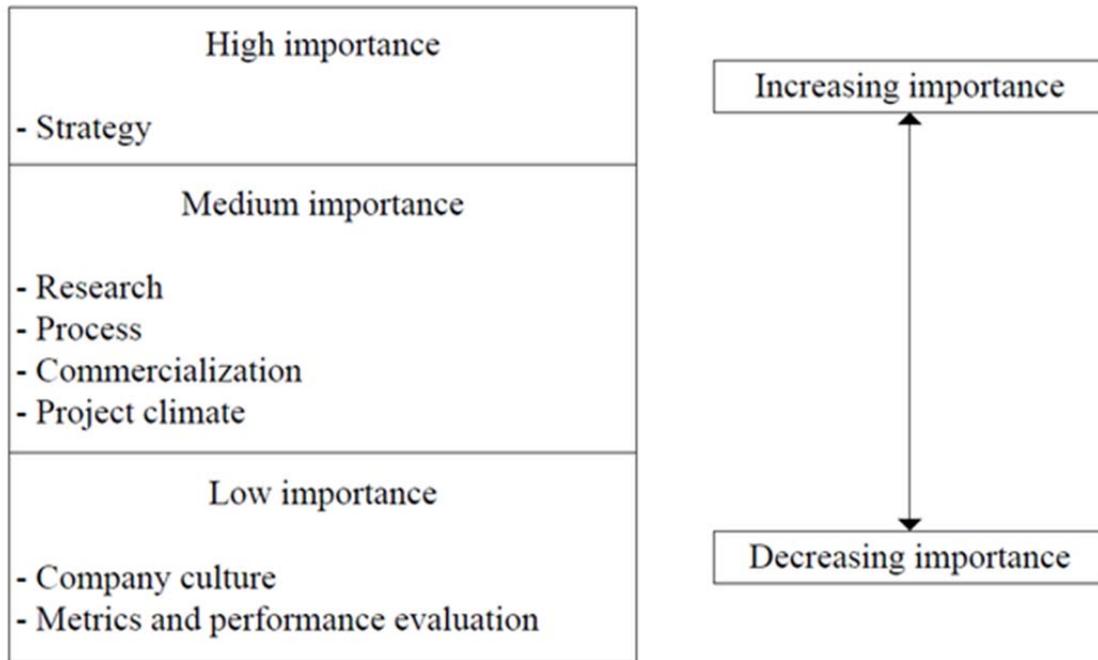


Figure 2. Practitioners' ranking for NPD dimensions from Nicholas et al. (2011).

NPD culture, climate and senior management role
+62% of Best Performers have senior management who demonstrates commitment to NPD
<ul style="list-style-type: none"> - Understands NPD process idea to launch - Helped to design and shape the NPD process - Keep score – NP overall results are measured - Provide strong support and empowerment to team members - Leave day-to-day activities/decisions to project team - Senior management involved in go/no-go decisions
+72% of best performers organize NPD project team from beginning to end of project
+55% of Best Performers have these characteristics of cross-functional teams
<ul style="list-style-type: none"> - Project teams are accountable for project's end results - Team has shared information system centrally - Good cross-functional cooperation on project team
NPD strategy
+51% of best performers have these elements within their NPD strategy
<ul style="list-style-type: none"> - NPD has a role in business goals - Clearly defined NPD goals - Long-term commitment
+65% of best performers align NPD resources with business strategy
+60% of best performers have more sales force resources (people and time) available to impact NPD performance

Figure 3. Best performers data (Cooper et al., 2004) from the first and second articles.

Driving new-product projects to market success
<p>+53% of best performers use the following for executing key front-end NPD activities</p> <ul style="list-style-type: none"> - Initial idea screening - Prelim market assessment - Prelim technical assessment - Business/financial analysis
<p>+51% of best performers use the following for executing key back-end NPD activities</p> <ul style="list-style-type: none"> - Pre-launch business analysis - Trial/limited production/ops - Market launch
<p>+58% of best performers have product advantage vs. competitive products</p> <ul style="list-style-type: none"> - Offer customer new and unique benefits - Better value for money for customer - Superior to competing products in meeting customer needs - Superior quality vs. competitors
<p>+51% of best performers have good product definitions before development stage begins</p> <ul style="list-style-type: none"> - Benefits to be delivered clearly defined - Well defined target market - Defined positioning strategy vs. competitors - Defined product concept – what product will be and do - Defined requirements, features, specs
<p>+51% of best performers are decisive to performance</p> <ul style="list-style-type: none"> - Emphasis on up-front homework before development begins - Tough, rigorous Go/No-Go decision points
<p>+55% of best performers have good quality of market info on entering development stage</p> <ul style="list-style-type: none"> - Customer's needs, problems, benefits sought - Competitive situation: prices, products, strengths - Market size and potential - Expected sales revenue from NP
<p>+55% of best performers conduct following <u>VoC</u> activities</p> <ul style="list-style-type: none"> - Work closely with customers/users to identify needs/problems - Work with lead (innovative) users to generate ideas

Figure 4. Best performers data (Cooper et al., 2004) from the third article

proposed framework consists of 4 levels and six aspects. The four levels are defined as:

1. Poor practice
2. Was better practice
3. Was good practice
4. Best practice.

A list of characteristics is attributed to each level to identify the performance level. The six aspects are explained as

1. Strategy
2. Portfolio management
3. Process
4. Market research
5. People
6. Metrics and performance evaluation.

Based upon these six aspects, they also proposed six themes for NPD best practices as

1. Instill a strategic, long-term orientation toward NPD

Strategy – Best practices
<ul style="list-style-type: none"> - Mission and strategic plan help define strategic arenas for new opportunities - Opportunity identification is ongoing and can redirect the strategic plan real- time in order to respond to market forces and new technologies - There are strategic buckets of resources to facilitate innovation and futuring - Long-term, strategic view of NPD
Portfolio Management – Best practices
<ul style="list-style-type: none"> - A formal and systematic portfolio management process is in place - There is keen consideration for balancing the number of projects and available resources - There is a ranking or prioritization of projects - There is balanced variety of projects - All projects must be aligned with the organization's mission/strategic plan - An idea bank exists
Process – Best practices
<ul style="list-style-type: none"> - One formal stage-gate type process is employed for the entire organization - The NPD process is quite visible and well-documented - Personnel are very disciplined in using the process to develop all new offerings - Go/No-go criteria are clear and pre-defined for each review gate - The NPD process is flexible and adaptable to meet the needs, size, and risk of individual projects - There is an intranet for NPD process documentation
Market research
<ul style="list-style-type: none"> - Product definitions are based on market research with customers/stakeholders - Customer/user is an integral part of the NPD process - Market studies are ongoing - Concept, product and market testing is consistently undertaken and expected with all NPD projects - Anticipate/identify future customer needs and problems through ongoing market research - Market research has an integral relationship with NPD activity
People
<ul style="list-style-type: none"> - Cross-functional teams underlie the NPD process - Each project has a core team with remains on the project from beginning to end - NPD is team-focused - Clearly identifiable project leader - A NPD group exists and is dedicated to just NPD work - Use of project management software and techniques to manage projects - Ongoing NPD training and NPD awareness
Metrics and performance evaluation

Figure 5. Best performers data (Kahn et al., 2006)

2. Have a formal portfolio management process
3. Implement a formal NPD process supported by a discipline to adhere to this process
4. Conduct market research proactively
5. Use cross- functional teams
6. Utilize standardized criteria and metrics” (Kahn et al., 2006).

Figure 5 provides a summary of best practices data (level 4) as applies to the six aspects mentioned in the study. Cooper and Edgett (2012) used data from 211 APQC member companies to explore the common practices used by the best performers. They reported that 90% of companies that were categorized as the

best performers had a formal NPD process in place. To collect data, a structured questionnaire was given to different positions related to NPD projects ranging from executives to process managers.

In order to categorize a company as “best performer” the study directed an analysis considering these areas:

NPD productivity, sales objectives, and profit objectives. Using the results of the questionnaires, the study identified the best performers and used site visits for deeper explorations into specific best practices. Figure 6 provides a summary of the study on the practices that more than 50% of the top performs utilized while less than 50% of the non-top performers utilized the same practices

NPD process
<p>+50% of best performers have these elements in place</p> <ul style="list-style-type: none"> - Formal process in place - Process is really used - Process facilitates success - Process incorporates checks - Process is adaptable and scalable
<p>+52% of best performers use management members as gatekeepers responsible for go/kill decisions at each gate and use these</p> <ul style="list-style-type: none"> - Gatekeepers attend meetings - Gatekeepers make meaningful contributions
<p>+57% of best performers ensure gate effectiveness</p> <ul style="list-style-type: none"> - Gate meetings are effective - Go/Kill criteria are defined - Gate deliverables are defined - Decisions are objective and fact based - Decisions are actually made - Gatekeepers support decisions

Figure 6. Best performers data (Cooper and Edgett, 2012).

(Cooper and Edgett, 2012) (Figure 6).

Using surveys from companies in the United States, United Kingdom, and Ireland Kahn et al. (2012) collected data to explore managers' views as relates to NPD best practices. 163 responses from U.S companies as well as 144 responses from UK/Ireland companies formed the data of the study. A Delphi methodology was used to gather the qualitative data to explore the probable NPD dimensions and also to validate the initial NPD framework proposed by (Kahn et al., 2006). Surveys were used to measure managers' perceptions regarding the importance of different NPD dimensions, and the level of practice maturity the NPD characteristics would signify. Kahn et al. (2012) concluded that there are some practices categorized as best practices that are recommended to be followed, and some as poor practices that should be avoided. Figure 7 provides a summary of best practices study conducted by Kahn et al. (2012).

Barczak and Kahn (2012) conducted a study to identify best versus poor NPD practices as relates to seven specified aspects. They developed a framework and an audit tool using data collected from a previous benchmarking study, a Delphi methodology and a survey from 300 practitioners. The audit tool was meant to allow practitioners answer questions related to the seven aspects. It was suggested that the audit be conducted by a cross-functional team from the same company. As

for each question, three possible answers were assigned as "No", "Possibly", and "Yes". To determine this, the NPD effort scores were calculated based on the total sum of attributed value to each answer. Positive scores indicate positive NPD effort whereas negative score indicate negative NPD effort. Scores equal to zero or near zero indicate marginal NPD effort. Interestingly, according to Carter (2015), practitioners had better idea on what they would consider as poor practice, and what was believed to be a best practice. Figure 8 provides a Barczak and Kahn (2012) conducted a study to identify best versus poor NPD practices as relates to seven specified aspects. They developed a framework and an audit tool using data collected from a previous benchmarking study, a Delphi methodology and a survey from 300 practitioners. The audit tool was meant to allow practitioners answer questions related to the seven aspects. It was suggested that the audit be conducted by a cross-functional team from the same company. As for each question, three possible answers were assigned as "No", "Possibly", and "Yes".

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Strategy – Best practices	
-	Clearly defined and organizationally visible NPD goals
-	Organization views NPD as a long-term strategy
-	NPD goals clearly aligned w/ org. mission/strategic plan
-	NPD projects and programs are viewed on a regular basis
-	Opportunity identification is ongoing and can redirect the strategic plan real time to respond to market forces and new technologies
Process – Best practices	
-	Common NPD process cuts across organizational groups
-	Go/No-go criteria clear and predefined for each review gate
-	NPD process is flexible and adaptable to meet the needs, size, and risk of individual projects
-	Visible and well documented
-	NPD process can be circumvented without management approval
Culture – Best practices	
-	Top management supports process
-	Management rewards and recognizes entrepreneurship
Project Climate – Best Practices	
-	Cross-functional teams underlie the NPD process
-	NPD activities between functional areas are coordinated through formal and informal communication
Research – Best practices	
-	Ongoing market research is used to anticipate/identify future customer needs and problems
-	Concept, product, and market testing is consistently undertaken and expected with all projects
-	Customer/user is an integral part of the process
-	Results of testing (concept, product and market) are formally evaluated
Metrics – Best practices	
-	None found
Commercialization – Best practices	
-	Launch team is cross-functional
-	Project postmortem meeting is held after the product launch
-	Logistics and marketing work closely together on launch
-	Customer service and support are part of the launch team
-	A launch process exists

Figure 7. Best performers data (Kahn et al., 2012)

would consider as poor practice, and what was believed to be a best practice. Figure 8 provides a summary of NPD best practices (Barczak and Kahn, 2012).

Building on previous assessments on the PDMA members data, Markham and Lee (2013) put together an NPD best practices report. It was the first study related to PDMA using global sample.

According to Markham and Lee (2013) “all the data for this study were collected electronically”. Surveys from 453 PDMA member firms were used to form the data. The analysis provides best practices for NPD tools and process by listing those practices that were used by more than half of the best performers while less than half of the rest (average and poor performers) applied those practices. Figure 9 provides a summary of NPD tools and process best practices data studied by Markham and Lee (2013).

Kuen and Zailani (2012) conducted a study on critical successful NPD factors. They distributed surveys to 72

respondents from Malaysian companies. Using regression analysis they concluded that “project personnel competency and project mission are critical factors influencing the direct NPD project success and as top management support, and project mission are two main critical factors for indirect NPD project success” (Kuen and Zailani, 2012).

According to Carter (2015), results of Kuen and Zailani (2012) study shows that those three factors (top management support, clear project mission and team competency) that had been identified years before their study continued to be grave in achieving successful project implementation in the manufacturing sector.

CONCLUSION

In order to maintain and improve their competitive positioning, manufacturing companies vastly count on the performance of their NPD process. They also rely on

Strategy – Best practices
<ul style="list-style-type: none"> - Clearly defined and company visible NPD goals - The company views NPD as a long-term strategy - Mission and strategic plan help define strategic arenas for new opportunities - NPD goals are clearly aligned with company mission and strategic plan - NPD projects and programs are reviewed on a regular basis - Opportunity identification is ongoing and can redirect the strategic plan in real-time to respond to market forces and new technologies - There is a ranking or prioritization of projects - There is keen consideration for balancing the number of projects and available resources
Process – Best practices
<ul style="list-style-type: none"> - A common NPD process cuts across company groups - Go/No-go criteria clear and pre-defined for each review gate - NPD process is flexible and adaptable to meet the needs, size, and risk of individual projects - NPD process is visible and well documented - An IT infrastructure with appropriate hardware, software, and technical support is available to all NPD personnel - A clear NPD process exists
Culture – Best practices
<ul style="list-style-type: none"> - Top management supports process - The company actively works with customers to develop new solutions
Project Climate – Best practices
<ul style="list-style-type: none"> - Each project has a core cross-functional team which remains on the project from beginning to end - Each project has a clearly identifiable project leader - NPD activities between functional areas are coordinated through formal and informal communication
Research – Best practices
<ul style="list-style-type: none"> - Concept, product, and market testing is consistently undertaken and expected with all projects - Customer/user is an integral part of the NPD process - Results of testing (concept, product and market) are formally evaluated
Commercialization – Best practices
<ul style="list-style-type: none"> - The launch team is cross-functional in nature - Cross-functional teams make decisions concerning manufacturing, logistics, marketing, and sales - A project post-mortem meeting is held after the new product is launched - Logistics and marketing work closely together on new product launch - Customer service and support are part of the launch team - A standard protocol for planning a launch exists within the company
Metrics/Performance Measurement – Best practices
<ul style="list-style-type: none"> - Non identified

Figure 8. Best practices data (Barczak & Kahn, 2012)

the financial benefits of their NPD projects given the new streams of sales, and profits they can provide.

However, companies need to improve the way they perform when it comes to realizing new products and

introducing them to the market. Failure in such efforts has considerable negative effects on companies' financial records. Although NPD best practices, effective tools and techniques have been identified in the

NPD tools
+ 50% of best performers use these - Market research tools
- Lead Users - Beta Testing - Customer Site visit - Voice of Customer
+ 50% of best performers use these engineering tools
- Design for Manufacturing - Failure Mode - Critical Path, Pert, Gantt
+50 % of best performers use these technology tools
- Rapid Prototyping - Performance Modeling and Simulation - Product Management System - Project Management System
NPD process
+ 65% of best performers use formal, cross functional
+ 47 % of best performers redesign the process on an ongoing basis
+50% of best performers use these
- Conditional decision - Skip stages - Facilitate process owner - Bigger project next - Completion celebration - Overall team effective - Team resources to be effective - Team skill to be effective - Team goals related to SBU strategy - Clear goals and objectives
+50% of Best Performers' NPD process supported by these
- Senior business unit manager - Technology manager - Marketing manager - Manufacturing manager

Figure 9. Best performers data (Markham and Lee, 2013).

literature, the average percentage of NPD failure rate is still high.

According to Markham and Lee (2013) and Yeh et al. (2010) there is evidence that NPD project success rate can be improved by utilizing effective tools, techniques, and best practices in the NPD process. Different theories have tried to explain why companies keep yielding low success rates when implementing NPD projects. Some theories highlight the fact that there should be a

contingency approach when it comes to choosing and implementing best practices according to companies' specific orientation (Panizzolo et al., 2010).

Some other theories note that currently recognized as NPD best practices are not being fully utilized by management. The notion is that a better job should be done in making best practice knowledge and research widely, and effectively utilized (Kahn et al., 2012).

It is noteworthy that there is agreement between

different views that NPD process assessment is a key to identify and potentially improve the process. Using literature, this study provided different categories an NPD assessment tool should take into account to evaluate an NPD process performance.

Further studies are needed to apply a well-developed tool based on the suggested categories from this study in a real world, and quantify the results. The goal would be to identify whether or not they perceive the tool to be valuable.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

REFERENCES

- Balaban N, Katarina B, Marko G (2011). Business Process Performance Management: Theoretical and Methodological Approach and Implementation." *Manage. Info. Syst.* 6(4):3-9.
- Barczak G, Abbie G, Kenneth BK (2009). Perspective: Trends and Drivers of Success in NPD Practices: Results of the 2003 PDMA Best Practices Study." *J. Prod. Innov. Manage.* 26(1):3-23.
- Barczak G, Kenneth BK (2012). Identifying New Product Development Best Practice." *Business Horizons* 55(3):293-305.
- Carter MP (2015). Creation and validation of a best practice new product development process assessment tool for industrial practitioners." Indiana State University.
- Cooper RG, Scott JE (2012). Best Practices in the Idea-to-Launch Process and Its Governance." *Res. Technol. Manage.* 55(2):43-54.
- Cooper RG, Scott JE, Elko JK (2004). Benchmarking Best NPD practices—I." *Research-Technology Manage.* 47(1):31-43.
- Cooper RG, Elko JK (2007). Winning Businesses in Product Development: The Critical Success Factors." *Research-Technology Manage.* 50(3):52-66.
- Edgett SJ (2011). *New Product Development: Process Benchmarks and Performance Metrics*. Stage-Gate International.
- Kenneth BK, Gloria B, John N, Ann L, Helen P (2012). "An Examination of New Product Development Best Practice." *J. Prod. Innov. Manage.* 29(2):180-192.
- Kahn KB, Gloria B, Roberta M (2006). Perspective: Establishing an NPD Best Practices Framework." *J. Product Innov. Manage.* 23(2):106-116.
- Markham SK, Hyunjung L (2013). Product Development and Management Association's 2012 Comparative Performance Assessment Study." *J. Product Inno. Management* 30(3):408-429.
- Rummler GA, Alan PB (1995). *Improving Performance: How to manage the White Space on the Organization Chart*. The Jossey-Bass Management Series. ERIC.
- Wolfe RM (2014). Business R&D Performance in the United States Tops \$300 Billion in 2012." *NCSSES Info Brief, NSF*: 15-303.

Full Length Research Paper

Towards the growth of domestic credit in Tanzania: Does foreign capital flow really matter?

Josephat Lotto

Institute of Finance Management, Tanzania.

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This study aims to examine the relationship between international capital flows, and domestic credit expansion in Tanzania during the period between 2004 and 2012. The data used in this study is extracted from World Bank database except credit regulation quality index (CRINDEX), which is taken from the Fraser Institute Index of Economic Freedom. The study disintegrated the variable capital flow into debt and equity flows, and examined the relationship between the two sub-variables and the domestic credit. The findings of this study reveal that the general current account balance is not influential enough to determine the empirical relationship between international capital flows and domestic credit expansion; rather the component of international capital flow, net debt flow, is reported to have more significant relationship with domestic credit. The perceptible empirical relationship reported in this study between net debts flows and domestic credit development brings forward the need for analytical models which can explain this relationship. Particularly, it is imperative to gain a better understanding of both the positive and negative relationships between international debt flows and domestic credit growth. In essence due to the current East African Community Common Market Agreement, the financial integration and free mobility of capital among country members will have a serious effect on productive allocation of bank credit via the rise of inflows into the non-banking sector which crowd out domestic loans to non-financial business sector. This twist in credit allocation may result into real estate booms, financial vulnerability, and poor economic growth. Therefore, creating more investment opportunities could significantly alleviate the adverse effects of capital inflows.

Key words: Foreign capital flow, domestic credit, current account balance, net debt flows, net equity flows.

INTRODUCTION

Worldwide, there have been some developments concerning financial sector reforms, and one of the notable and historical one is the one which globalized the sector after the mid-1990s. There are various initiatives brought about by these reforms, and the bigger one is the cross-border Initiative (CBI) which deals with policy development in Eastern, Southern African countries and the Indian Ocean. According to Fajgenbaum et al. (1999),

this effort has been sponsored by International Monetary Fund (IMF), World Bank, Asian Development Bank (ADB) and European Union (EU). Among the countries benefited from this support include Tanzania. The reform effort reflected in CBI opens the business door and market integration among member countries so as to trade smoothly without any obstacles. Other countries which enjoy this freedom are Kenya, Uganda, Comoro,

E-mail: tathioga@yahoo.co.uk.

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Rwanda, Malawi, Zambia, Zimbabwe, Swaziland etc. Among the relief which these countries get include removal of exchange restrictions in all current account transactions some capital transactions such as long-term, non-debt-creating, and foreign direct investments (FDI). The purpose of this effort was to expand the domestic and foreign investment environments so as to improve, and encourage participations of many countries in capital markets. The fact that the world is now interconnected than some years back cannot go unnoticed although the recent financial crisis has reviewed the global factors which governs the financial conditions in the world (Lane and McQuade, 2013),

The development of countries globally may be governed by the flow of capital from external sources and within the local financial systems. Such flow supports the domestic credit conditions in the particular country. International capital flow has been proven to support the economic growth. It is a known fact that the growth of a nation's economy depends to a great extent on a smooth flow of capital to businesses, and therefore foreign capital flow has significant impact on domestic credit (Reisen and Soto, 2001).

Several empirical studies have identified that foreign capital flow has a significant impact in economic growth as reported by Aizenman et al. (2013). According to the authors, the relationship between the two has been complex and mixed. Also, it is reported that the use of only FDI as a focal capital component has been a common practice and this has created several gaps in the literature. The literature forgets that foreign capital can be obtained in the third world countries not only through FDI but also through equity inflow and debt inflow and bank lending.

Studies which focused on FDI include Javorcik (2004), who reports positive impact of FDI on productivity; Li and Liu (2005) found out the positive direct relationship between FDI and economic growth, and indirect relationship via the human capital; Kose et al. (2009) show a significant evidence of the positive relationship between equity inflow and FDI.

Also, Choong et al. (2010) report the effect of private capital flow on economic growth. Opposing to these findings, Davis (2015) show that micro economic variables are affected more by changes in debt-based capital but not equity-based. Furthermore, Durham (2004) finds the insignificant relationship between either FDI or equity portfolio, and economic growth. Similarly, in their African study, Gui-Diby and Renard (2015) fail to get the significant relationship between international capital inflows in the form of FDI and industrialization. The authors suggested the weaker government policies which create FDI environment as the cause of failure of industrial development using foreign capital.

The developing countries have been currently affected by slow or poor movement of foreign capital due to the recent financial crisis which hit the banking industry of the

donors such as America and Europe. Lane and Milesi-Ferretti (2011) have documented that the size of recession variation during 2008 to 2009 was considerably related to the scale of domestic credit growth during the 2003 to 2008 periods, and the size of outstanding current account imbalances.

Relatedly, Lane and Milesi-Ferretti (2012) show that above-normal current account deficits during the pre-crisis period were significantly associated with major declines in domestic demand, and sharp reversals in private capital flows over 2008 to 2010.

The financial crisis is reported to be the result of two twin factors, balance sheet problems and a rapid increase in credit growth in some countries as put forward by Lane and McQuade (2013). The importance of these two factors brings the question of whether there is a significant relationship between domestic credit growth and international capital flows.

If the two variables are determined together this should develop the analytical framework which will ultimately guide theoretical and policy analysis. On one side, it would indicate that international capital flows should be a key theme in the mushrooming literature that tries to understand the dynamics of domestic credit growth. On the other hand, it would indicate that the domestic credit channel is a key channel in understanding the relation between international capital flows and domestic macroeconomic, and financial variables.

During pre-crisis period, Europe experienced substantial cross-country variation in domestic credit growth and cross-border capital flows. Lane and McQuade (2013) investigated the inter-relations between domestic credit growth and international capital flows during boom period, and established that domestic credit growth in European countries is strongly related to net debt inflows but not to net equity inflows.

The development of the cross-border initiative framework facilitates the cross-border financial flows which can influence domestic credit growth through multiple channels. At a macroeconomic level, current account imbalances can affect macroeconomic variables such as the rate of output growth, the level of domestic spending, exchange rates, inflation and asset prices which can all influence equilibrium credit growth in a range of macro-financial models.

This study, therefore, examines the relationship between international capital flows and domestic credit expansion in Tanzania during the period between 2004 and 2012. Tanzania is relevant for the study of this nature because it is involved in Cross-Border Initiative framework where the main agenda was to eliminate exchange restrictions on current account transactions without discrimination and to relax certain types of capital transactions. This agenda opens up the door for smoother flow of capital which is believed to have a great impact on domestic credit provided by banking sector in the region.

In particular, the study separately identifies net capital flows and domestic credit growth as important sources of macroeconomic imbalances, such that it is highly relevant to understand any inter-connections between such variables

METHODOLOGY

Data and variables

The sample used in this study covers the period 2004 to 2012. This period is chosen because we want to understand the impact of the financial crisis of 2008/2009 on the growth of domestic credit in Tanzania. The period represents 3 years before 2008 to 2009 world financial crisis, and 3 years after the crisis. All data is extracted from World Bank database except credit regulation quality index (CRINDEX), which is taken from the Fraser Institute Index of Economic Freedom. The variables are defined as in the database as follows:

Dependent variable

Domestic credit provided by banking sector (% of GDP): This is defined as in the World Bank's data catalog as follows all gross credit facilities extended to the different sectors except central government.

Independent variables

Current account balance: This is the total of export less primary and secondary income measured in US Dollars.

Net flows on external debt

This is payments on long-term external debt net of principal repayments of LT external debt and IMF repurchases up to 1984, measured in US Dollars

Portfolio equity, net inflows

Portfolio equity includes net inflows from equity securities other than those recorded as direct investment and including shares, stocks, depository receipts (American or global), and direct purchases of shares in local stock markets by foreign investors. Data are in current U.S. dollars.

Control variables

Gross domestic product (GDP) per capita (current US\$)

This gross value of all contributed by all resident producers including any product taxes excluding any subsidy which are not part of the products value

Credit market regulation index

This is credit regulation quality component of the Fraser Institute's Indicators of Economic Freedom dataset.

Empirical analysis

In this study, the empirical analysis includes two simple Ordinary Least Square (OLS) regressions of the dependent variable domestic credit on the explanatory variable, and international capital flow. Before the simple OLS estimation was applied its basic assumptions (heteroscedasticity and multicollinearity) were tested. The results of the two tests conducted render the use of OLS valid.

In relation to international capital flows, we use the aggregate current account balance (net capital flows). We also split aggregate net flows between net debt flows and net equity flows. In this case we run two different OLS regressions; one between the aggregate net flows (current account balance) and domestic credit, and the second one between disaggregated net flows (net debt flows and net equity flows) and domestic credit. The two models are presented below.

The first model involves the independent variable as the aggregate international capital flow measured as the current account balance as a percentage of GDP while the second equation disaggregates the international capital flows into net debt capital flow and net equity capital flows both measured as the percentage of GDP

$$DMCDT_{i,t} = \alpha + \beta_1 * CABGDP_{i,t} + \beta_2 * LnGDPC_{i,t} + \beta_3 * CMRIND_{i,t} + e_{it} \quad (1)$$

$$DMCDT_{i,t} = \alpha + \beta_2 * LnGDPC_{i,t} + \beta_3 * CMRIND_{i,t} + \beta_4 * NDEBTGDP_{i,t} + \beta_5 * NEQUITYGDP_{i,t} + e_{it} \quad (2)$$

Where;

DMCDT= Domestic credit provided by banking sector as a % of GDP

CABGDP= Current Account Balance as the % of GDP

LnGDPC= Natural Logarithm of GDP per capita

CMRIND = Credit Market Regulations Index

NDEBTGDP = Net Debt flows as a % of GDP

NEQUITYGDP = Net Equity flows as a % of GDP

RESULTS

Descriptive statistics

The analysis starts by examining the descriptive statistics. Starting with domestic credit, we theoretically know that the mean domestic credit reflects the average financial sector development.

It is reported in Table 1 that the mean value of domestic credit is 16.6. When compared to other East African Countries, it lags behind so much as, for instance, Kenya has 43.6 and Burundi 25.9. The country with the least growth of domestic credit is Uganda with the average value of domestic credit 11.8. Tanzania and Rwanda have closely similar average values of domestic credit as Rwanda has 15.6 as indicated in Table 1.

This shows, in general terms, that Tanzania's financial sector has an average lower growth rate for period from 2004 to 2012 compared to Kenya and Burundi but the financial sector growth of Tanzania is better than that of Uganda, and marginally that of Rwanda.

The other variable is current account balance. In this study, we found that Tanzania has an average deficit current account balance of -10.5 as presented in Table 5.

Table 1. The summary of mean domestic credit and current account balances.

Country	Mean domestic credit	Mean current account balance
Burundi	25.9	-9.4
Kenya	43.6	-4.9
Rwanda	15.6	-5.3
Tanzania	16.6	-10.5
Uganda	11.8	-6.9

Source: Own extraction from data, (2013).

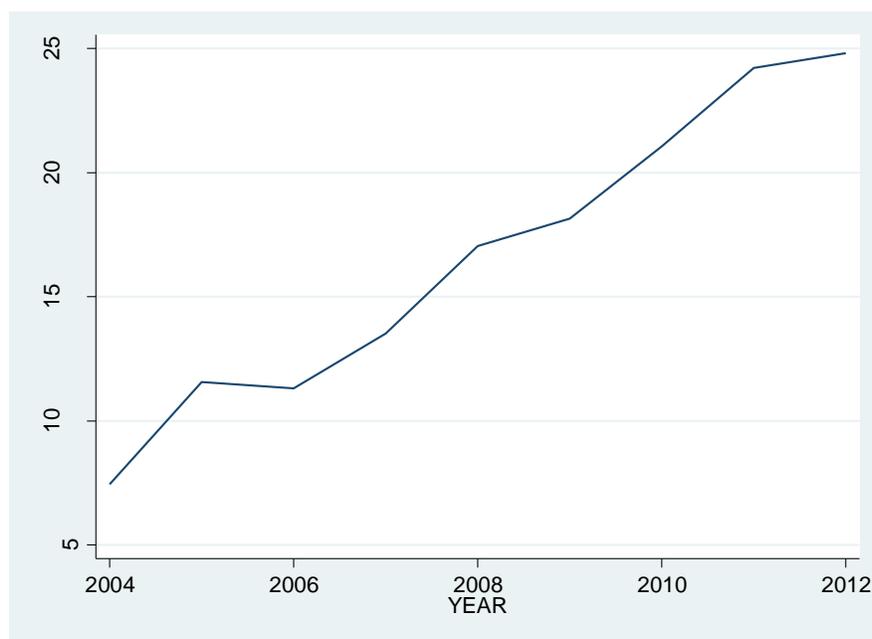


Figure 1. A graph showing domestic credit growth for Tanzania from 2004-2012.

This is the highest in East Africa compared to other four countries. The country with average lower deficit balance is Kenya with the average balance of -4.9. This is followed by Rwanda with the average deficit balance of -5.3, and then Uganda with the balance of -6.9. Burundi is closer to Tanzania with the balance of -9.4.

The study further examines the domestic credit growth during 2004 to 2012. The motive of doing this is to see the impact of financial crisis of 2008 to 2009. To understand the impact of the crisis on the growth of domestic credit, the line graph is developed and the trend studied. Figure 1 show that Tanzania experienced significant growth of the domestic credit after the financial crisis. Figure 1 shows a consistent increase in domestic credit.

The trend has been in an increasing side from 2006 to 2011 although a very slight decrease is observed between 2008 and 2009. On the other hand, current

account balance fell rapidly before the financial crisis from 2005 to 2007. It then increased sharply between 2008 and 2009 before it remained constant in 2009 to 2010. It then finally dropped rapidly between 2010 and 2011, and again started increasing between 2011 and 2012.

According to Financial Stability Report (2013), the banking sector which is the source of domestic credit growth continued to expand and remained profitable, highly liquid and adequately capitalized. The volume of deposits increased by 17.9% to TZS 14,175.57 billion during the year ending March 2013 from the level recorded in the corresponding period in 2012. The number of banking institutions increased from 49 in March 2012 to 51 in March 2013, while that of branches rose from 521 to 559 during the same period. In as far as capital adequacy is concerned, the banking sector was adequately capitalized in aggregate terms during the year

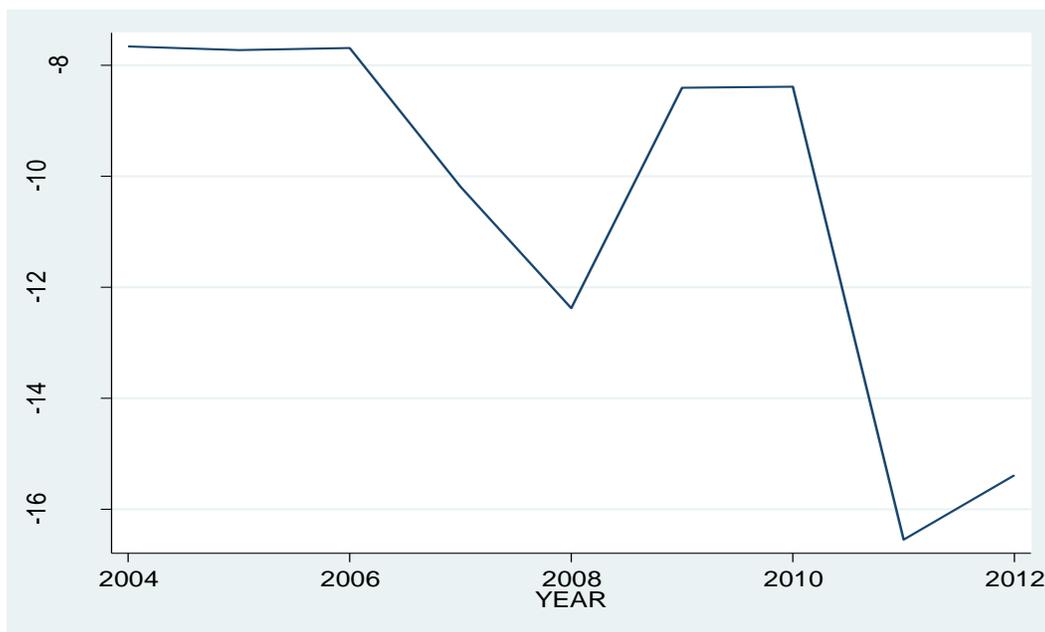


Figure 2. A Graph showing current account balance for Tanzania from 2004-2012.

to March 2013. The industry's ratio of core capital to total risk-weighted assets increased from 17.9% in March 2012 to 18.9% in the year to March 2013, well above the minimum regulatory ratio of 10.0%.

Many factors may be contributed to the domestic credit levels. In their study on emerging markets, Giray and Kutay (2013) found that loose monetary policy in the domestic market, differences between domestic and global lending rates and real trade openness positively contribute to domestic credit levels. Their findings also show that external balance and perceptions of global tail risk negatively affect domestic credit levels.

Figure 2 shows how current account balance of Tanzania has been changing between 2004 to 2012. During 2007, the current account deficit widened by 3.7% to US\$ 679.0 million from a deficit of US\$ 654.5 million recorded during 2006. According BOT Economic Bulletin, (2007), the widening deficit follows a significant increase in imports of goods and services that could not be financed by an 8.9% increase in exports.

Also, the shortfall in disbursements of official transfers added pressure on the current account balance. The dismal performance of the goods account was mainly attributed to the decline in traditional exports as it was off-season for most of the traditional export.

Furthermore, during 2010, current account deficit narrowed to USD 797.3 million from a deficit of USD 898.4 million recorded in the corresponding period in 2009, as per BOT Monetary Policy Statement (2011), largely due to the rise in exports of goods and services and official current transfers. According to the statement,

export of goods and services amounted to USD 3,356.4 million, which were 21.2% higher than the amount recorded in the corresponding period in 2009. The value of exports of goods was 25.0% higher compared with values recorded in the same time frame a year ago. The policy statement further reveals that the higher values were attributed to increases in the export volumes of coffee, tobacco, and cashew nuts. In addition, export values of manufactured goods recorded an increase during the period, with much of the increase being recorded in export of plastic items, textile apparels and manufactured tobacco.

During the year ending December 2012, current account deficit narrowed to USD 3,438.0 million compared to a deficit of USD 3,977.1 million recorded in the corresponding period in 2011. BOT Monetary Policy Statement (2011) associates this development primarily with improved industrial production associated with stability in power supply, increase in international tourist arrivals, and increase in the volumes of cotton, coffee and tobacco following good weather.

According to the monetary policy statement (2013), the slowdown in growth of imports also contributed to the narrowing of the current account deficit.

Before processing the data for analysis we checked whether the data is reliable and valid so that the results extracted from such data are unbiased and accurate. We used Cronbach's alpha as a measure of validity that is the extent to which a scale records the "true" value or score of the concept you're trying to measure without capturing any unintended characteristics. According to

Table 2. Data reliability and validity.

Test of scale= Mean (Unstandardized items)	
Average Interim covariance	0.342178
Number of items in the scale	4
Scale reliability coefficient	0.7985

Table 3. Heteroscedasticity test.

```
. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of domcredit

chi2(1) = 1.00
Prob > chi2 = 0.3173
```

Table 4. Multicollinearity test.

```
. vif
```

Variable	VIF	1/VIF
netequitygdp	9.48	0.105457
cmrind	8.29	0.120680
cabgdp	1.98	0.503960
netdebtgdp	1.34	0.745024
Mean VIF	5.27	

Boermansab and Kattenbergb (2011), a reliable measure has a zero or very little random measurement error which might introduce arbitrary distortion into the measurement process, causing inconsistent measurements.

When the Cronbach's alpha test was run, it was found in Table 2 that Cronbach's alpha of the overall domestic credit scale is 0.7985 when the scores of all variables are combined in a scale under homogeneous weighting. This suggests the internal reliability of the scale is very high. Therefore, we have no doubt of data reliability and validity (Table 2).

Also prior to running linear regression several test should be done to confirm whether it is viable to run OLS. These tests include heroscedasticity and multicollinearity.

Testing for heteroscedasticity

The sample is said to have heteroskedasticity if the variance of the error term is not homogenous that is to say the variance of the error term is constant, and this is one of the assumptions on which OLS is built. The sources of heteroskedasticity include, among others, measurement errors, subpopulation difference for instance in our study the effect of domestic credit on international capital flow differ for different countries. Heteroskedasticity can also be caused by model misspecification using logarithms of some variables like in our case par capital income.

According to Long and Ervin (2000), when heteroscedasticity is moderate, OLS standard errors behave quite well. However, when heteroscedasticity is severe, ignoring it may render standard errors and p-values biased, the direction of which depends on the

pattern of heteroscedasticity. In some cases the form of the heteroscedasticity is clear and can be easily modeled. More commonly, though, heteroscedasticity is a trouble that can't be modeled because its source is not clearly understood. When the Breusch-Pagan test is run the results show that heteroskedasticity is not a problem because the variance of the error term is not constant. Table 3 shows that the hypothesis that the variance of the error term is constant is rejected, and therefore it is imperative to believe that the effect of heteroscedasticity does not exist in our case.

Testing for multicollinearity

We also check the possibility of multicollinearity which might have an influence on the study regression results. According to Wooldridge (2006), multicollinearity increases the variance of beta although it strictly does not violate OLS assumptions.

According to Wooldridge (2006), the level of multicollinearity is directly related to the size of the standard errors in in the study regressions. This test checks whether there is a need to disregard the simple OLS results, and renders them biased and inconsistent as previously reflected in Demsetz and Villalonga (2001) and Cho (1998).

To test whether there is a potential multicollinearity, we use VIF. The 1/VIF (tolerance factor) gives us what proportion of variance of an explanatory variable is independent of all the other explanatory variables. A VIF above 10 indicates potential trouble. When this test was

Table 5. A regression showing the relationship between dependent variable domcredit (domestic credit) and independent variables lngdppc (GDP per capita).

```
. regress domcredit lngdppc
```

Source	SS	df	MS			
Model	68.2173905	1	68.2173905	Number of obs =	36	
Residual	5.48631113	34	.161362092	F(1, 34) =	422.76	
Total	73.7037017	35	2.10582005	Prob > F =	0.0000	
				R-squared =	0.9256	
				Adj R-squared =	0.9234	
				Root MSE =	.4017	

domcredit	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
lngdppc	29.89143	1.453784	20.56	0.000	26.93698	32.84587
_cons	-41.63496	2.227387	-18.69	0.000	-46.16156	-37.10837

Table 6. A regression showing the relationship between dependent variable domcredit (domestic credit) and independent variables; cmrind (credit market regulation index) and lngdppc (GDP per capita).

```
. regress domcredit cmrind lngdppc
```

Source	SS	df	MS			
Model	68.4207676	2	34.2103838	Number of obs =	36	
Residual	5.28293405	33	.160088911	F(2, 33) =	213.70	
Total	73.7037017	35	2.10582005	Prob > F =	0.0000	
				R-squared =	0.9283	
				Adj R-squared =	0.9240	
				Root MSE =	.40011	

domcredit	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
cmrind	-.4190843	.3718185	-1.13	0.268	-1.175555	.3373862
lngdppc	33.5825	3.580646	9.38	0.000	26.29762	40.86738
_cons	-46.40433	4.7778	-9.71	0.000	-56.12483	-36.68382

run, the average VIF value was only 5.27 as presented in Table 3 indicating no threat of multicollinearity as this value is far more below the recommended threshold of 10 as previously suggested by Belsley et al. (1980) (Table 4). Both tests indicate that assumptions of OLS about multicollinearity and heteroscedasticity do hold, and hence we can use OLS.

Regression results

The analysis begins by considering the international capital flow aggregately as current account balance in a regression setting. Because the current account balance is the composition of net debt and equity flows we expect different effects of such components on domestic credit, therefore, the study recognized this potential difference and therefore considered this disaggregation of current account balance to see how its components do differ in impacting the domestic credit.

The regression analysis begins by considering only

GDP per capita and domestic credit, and results of these two variables may be seen in Table 5. The results show that GDP per capita is strongly significant at 1% significant level, and has the unexpected negative sign as implied in Bezemer et al. (2014). This result shows that in Tanzania, during 2004 to 2012, domestic credit did not have a promising level of growth (Table 5).

We extend the original regression equation by including the index which reflects liberalization of the credit market as discussed in the methodology and expand the model specification to include the credit market liberalization index. This index is introduced in the equation so as to take care of the features which relate to country financial systems. For example, a country whose credit market framework is conducive and more liberal may be more likely to adopt and bear rapid growth in credit when there is low risk aversion.

When this variable was added, the result was insignificant and negative as presented in regression Table 6 contrary to findings of Giray and Kutay (2013). According to Giray and Kutay (2013), credit growth is

Table 7. A regression showing the relationship between dependent variable domcredit (domestic credit) and independent variables; cmrind (credit market regulation index); lngdppc (GDP per capita) and capgdp (current account balance).

```
. regress domcredit cmrind lngdppc cabgdp
```

Source	SS	df	MS			
Model	69.2534277	3	23.0844759	Number of obs =	36	
Residual	4.45027396	32	.139071061	F(3, 32) =	165.99	
				Prob > F =	0.0000	
				R-squared =	0.9396	
				Adj R-squared =	0.9340	
Total	73.7037017	35	2.10582005	Root MSE =	.37292	

domcredit	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
cmrind	-.3113418	.3493384	-0.89	0.379	-1.022921	.4002373
lngdppc	29.16027	3.795266	7.68	0.000	21.42957	36.89097
cabgdp	-.2705966	.1105877	-2.45	0.020	-.4958563	-.0453368
_cons	-40.56855	5.051583	-8.03	0.000	-50.85829	-30.27881

Table 8. A regression showing the relationship between dependent variable domcredit (domestic credit) and independent variables; cmrind (credit market regulation index); lngdppc (GDP per capita); capgdp (current account balance); netequitygdp (net equity inflow) and netdebtgdp (net debt inflow).

```
. regress domcredit cmrind lngdppc cabgdp netequitygdp netdebtgdp
```

Source	SS	df	MS			
Model	71.8065591	5	14.3613118	Number of obs =	36	
Residual	1.89714257	30	.063238086	F(5, 30) =	227.10	
				Prob > F =	0.0000	
				R-squared =	0.9743	
				Adj R-squared =	0.9700	
Total	73.7037017	35	2.10582005	Root MSE =	.25147	

domcredit	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
cmrind	.2088987	.2750346	0.76	0.453	-.352797	.7705944
lngdppc	34.94532	6.739023	5.19	0.000	21.1824	48.70824
cabgdp	-.1435519	.0794604	-1.81	0.081	-.3058317	.0187279
netequitygdp	1055.747	631.5478	1.67	0.105	-234.0455	2345.54
netdebtgdp	1.451757	.2484597	5.84	0.000	.9443347	1.959179
_cons	-55.71775	12.62437	-4.41	0.000	-81.50016	-29.93534

always faster under more liberal regulatory regimes, and this would have been indicated by significantly positive relationship. Unfortunately, an opposite relationship is reported in this study suggesting that the credit growth in Tanzania is not faster as Tanzania is not one of the more liberal regulatory regimes.

We further introduced the international capital flow variables in the model. We start by including the average current account balance. Regression in Table 7 shows that current account balance is significantly negative at 5% significant level showing that Tanzania was running current account deficits during this period.

We also examined whether the components of the current account balance, net international debt flows and net international equity flows, do have different patterns

relationship with domestic credit growth. The results confirm a remarkable difference: It is reported that net debt flows are highly significant at 1% significant level but net equity flows are insignificant as presented in regression Table 8.

This, according to Lane and McQuade (2013), shows that the aggregate current account balance cannot better explain the relationship which exists between the international capital flow and domestic credit but the components of the current account balance do actual give a very remarkable difference. This significant relationship between international net debt flows and credit growth is a unique result because in many studies the current account balance is taken as an aggregate variable.

In this study case, disaggregating the current account balance has provided a very important insight that current account balance is not a reliable measure to uncover the relationship between international capital flows and domestic credit expansion.

Conclusion

This study aims to examine the relationship between international capital flows and domestic credit expansion in Tanzania during the period between 2004 and 2012. The findings of this work validate that the current account balance is not a reliable measure to uncover the relationship between international capital flows and domestic credit expansion.

The study disintegrated the variable capital flow into debt and equity flows, and examined the relationship between the two sub-variables and the domestic credit. The results of the study concluded that the general current account balance has got no influence in determining the empirical relationship between international capital flows and domestic credit expansion. The results of this study show a more significant relationship between international net debt flows and domestic credit.

This perceptible empirical relationship reported in this study between net debts flows and domestic credit development brings forward the need for analytical models which can explain this relationship. Particularly, it is imperative to gain a better understanding of both the positive and negative relationships between international debt flows and domestic credit growth.

In essence, due to the current East African Community Common Market Agreement, the financial integration and free mobility of capital among country members will have a serious effect on productive allocation of bank credit via the rise of inflows into the non-banking sector which crowd out domestic loans to non-financial business sector. This twist in credit allocation may result into real estate booms, financial vulnerability, and poor economic growth. Therefore, creating more investment opportunities could significantly alleviate the adverse effects of capital inflows.

CONFLICT OF INTERESTS

The author has not declared any conflict of interests.

REFERENCES

- Aizenman J, Chinn M, Ito H (2010). The emerging global financial architecture: tracing and evaluating new patterns of the trilemma configuration. *J. Int. Money and Financ.* 29(4):615-641.
- Choong CK, Baharumshah AZ, Yusop Z, Habibullah MS, (2010). Private capital flows, stock market and economic growth in developed and developing countries: A comparative analysis," *Japan World Econ.* 22:107-117.
- Belsley DK, Welsch R (1980). *Regression Diagnostics: Identifying Influential Data and Sources of Collinearity.* Wiley, New York, 292:25-49.
- Bezemer D, Grydaki M, Zhang L (2014). Is Financial development bad for growth? Research Report 14016-GEM, University of Groningen, Research Institute SOM.
- Demsetz H, Villalonga B (2001). Ownership structure and corporate performance. *J. Corporate Financ.* 7:209-233.
- Durham JB (2004). Absorptive capacity and the effects of foreign direct investment and equity foreign portfolio investment on economic growth. *Euro. Econ. Rev.* 48(2):285-306.
- Gui-Diby SL, Renard M-F (2015). Foreign Direct Investment Inflows and the Industrialization of African Countries. *World Development*, 74:43-57.
- Jose F, Robert S, Kamau T, Hema D (1999). The Cross-Border Initiative in Eastern and Southern Africa. International Monetary Fund.
- Javorcik BS (2004). Does foreign direct investment increase the productivity of domestic firms? In search of spillovers through backward linkages. *Am. Econ. Rev.* 94(3):605-627.
- Kose MA, Prasad ES, Terrones ME (2009). Does openness to international financial flows raise productivity growth? *J. Int. Money Financ.* 28:554-580.
- Lane PR (2013). *Capital Flows in the Euro Area*, mimeo, Trinity College Dublin.
- Lane PR, Gian MM (2011). The Cross-Country Incidence of the Global Crisis, *IMF Econ. Rev.* 59(1):77-110.
- Lane PR, Gian Maria M (2012). External Adjustment and the Global Crisis, *J. Int. Econ.* 88(2):252-265.
- Li X, Liu X (2005). Foreign direct investment and economic growth: an increasingly endogenous relationship. *World Development*, 33:393-407.
- Long JS, Ervin LH (2000). Using Heteroscedasticity Consistent Standard Errors in the Linear Regression Model. *Am. Statistician* 54:217-224.
- Reisen H, Soto M (2001). Which Types of Capital Inflows Foster Developing-Country Growth?" *Int. Financ.* 4:1-14.
- Wooldridge JM (2006). *Introductory Econometrics: A modern approach* (Third edition). International student edition. Thomson South-Western, a part of the Thomson Corporation.



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